

## This Issue Features:

- Wire Wisdom
- Growing your Business: Part 1
- SEC Conflict Mineral Reporting
- Beyond Expectations A-620 Rev B
- Making Sense of New Conflict Minerals Rule
- Wire Harness Industry: Three Decades of Change



# Northwind Electronics

*Flexibility and responsiveness are key to their growth*

By Fred Noer

Despite the complexities of owning and operating a business in the wiring harness industry, Phillip Berry strives for simplicity each time he handles a matter pertaining to Northwind Electronics, his company in Indianapolis, Ind.



Phillip Berry, CEO  
Northwind Electronics

"Less is more," Berry, 43, said. "I'm a big believer to scale a business by being smart. You've got to know when to shift gears, and the business will tell you. Be patient. You'll know when it's right."

Berry's straightforward approach to business management coincides with his personal philosophy, which is embodied in four tenets: 1. Follow the signs. 2. Leave it better than you found it. 3. Be a good steward. 4. Make a difference.

About the first tenet, Berry said: "If it's too tough or difficult, you're probably going in the wrong direction. You have to be in harmony with your capabilities, the timing of the market and the people around you. You need to settle down long enough to listen to what the signs are."

For Berry, leaving something better than you found it is illustrated best by his purchase in late 2010 of a building in Anderson, Ind. The structure was empty, vacated three years earlier by General Motors after it shuttered a large com-



Steve Fox of Northwind Electronics monitors the wire running through one of the wire processing machines.

plex of buildings used for manufacturing. With the prospect of a new customer placing large orders, Berry bought the facility and planned to increase his workforce of 10 by 100. He spent more than \$100,000 on improving the building, but the customer backed out, prompting Berry to sell the building. "It was an eyesore, but now it looks nice," he said.

In Berry's view, good stewardship is using his gifts and talents to "be the

absolute best I can be. It means giving back to the things you support, too," he said. "I was called upon to pull together businesses, and I see it as my personal mission."

Making a difference is related to leaving something better than one finds it. Berry stated Northwind Electronics is his vehicle for making a difference in the lives of his employees, customers, family members and people in his community.

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# SEC Final Rule on Conflict Mineral Reporting

By Joe Tito  
Wiring Harness News

In the November/December 2011 issue of *Wiring Harness News*, we outlined Section 1502 of the Dodd-Frank legislation of 2010, and its specific implications to the wire harness industry. The legislation offloaded the actual rules for conflict minerals reporting to the Securities and Exchange Commission. At that time, the SEC set up a work group of representatives from industry and NGOs to design a framework for reporting requirements and rules. Using those recommendations, the SEC issued its final rule on reporting requirements on August 22 of 2012. This article highlights some of the major aspects of the final rule, and fills some of the gaps left by the original SEC interpretations of the law.

Basically, the rule covers any entity that files reports with the SEC in accordance with Sections 13(a) or 15(d) of the Securities Exchange Act of 1934. It covers corporations who manufacture, or contract to manufacturer a product containing a conflict mineral that is necessary for the functionality of its product. This includes domestic companies,

foreign private issuers, and smaller reporting companies. Obviously, privately owned manufacturers will be affected as downstream customers pull for the necessary information.

For the purpose of this article, tin, tantalum, tungsten or gold are referred to as conflict mineral. It is important to note that the term conflict mineral refers to these metals without regard of how or from where they were sourced.

This disclosure requirement will be made on the new Form SD (special disclosure). Initial special disclosures are to be due annually beginning May 31, 2014 for the calendar year 2013. The Form SD special disclosure will be "filed", rather than "furnished" based on the SEC's interpretation of the law. The disclosure will cover products that have been manufactured to completion in the previous calendar year. At the publication of this article, the SEC has not released the Form SD.

The rule exempts conflict minerals that were "outside the supply chain" or stockpiled prior to January 31, 2013. This exemption is limited to minerals that have already been smelted, or are located outside the covered countries; as

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# Beyond Expectations

*IPC/WHMA A-620 and the Launch of Revision B*

By Joe Tito  
Wiring Harness News

It's been ten years since the initial release of IPC/WHMA A-620 Requirements and Acceptance of Cable and Wire Harness Assemblies. The specification was an immediate success, and has become the single most significant document in support of process

and inspection for the industry. Now available in seven different languages, A-620 is being used by the industry worldwide. Over 1000 companies have at least one in-house IPC Certified Trainer, and that number continues to grow at 18% annually. There are now over 1100 companies, in 42 different countries, with at least one IPC Certified Application Specialists. Annual growth there is at 25%. It

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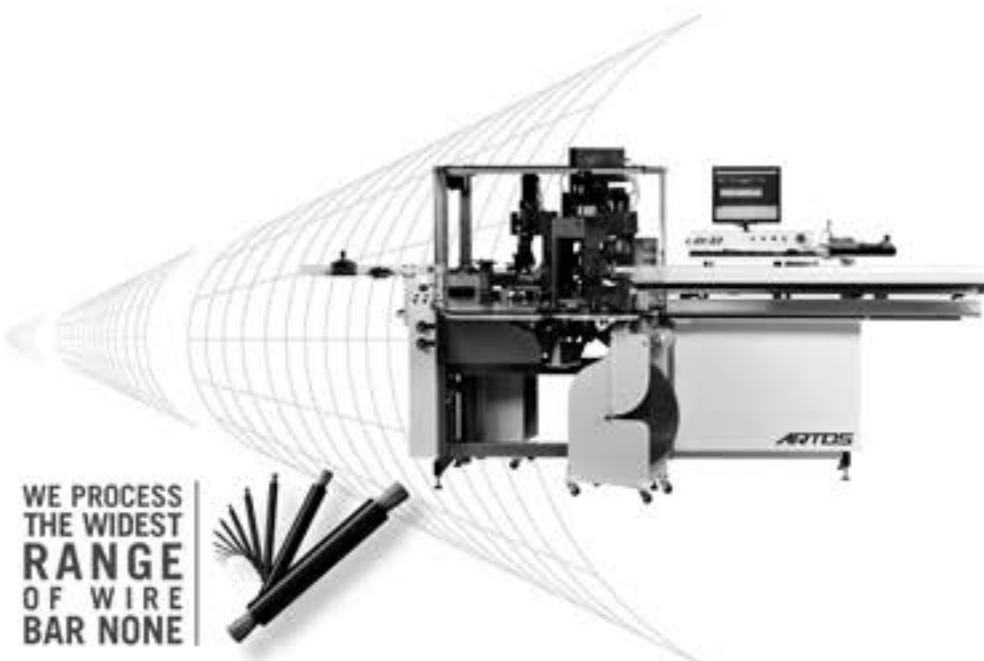
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## Viva Las Vegas!

Back in the early 1980's, I began a 15-year career with Avnet, Inc, specifically, their Hamilton/Avnet Division. In those days, the annual EDS (Electronics Distribution Show) in Las Vegas was the show to attend.

The late Tony Hamilton was the consummate marketer, so Hamilton/Avnet would arrive to EDS with our own 'castle' booth complete with drawbridge and turrets that seemed to take over most of the convention floor. We even featured a magician from the Magic Castle in Los Angeles who entertained customers and suppliers with sleight-of-hand tricks, including my favorite, pulling a rabbit out of his top hat.

I'm not sure that we got a lot of business done but I do know that we spent a ton of money as, in those days, the industry seemed flush with gross profit dollars.

But of course, times changed. Healthy double-digit margins were, in many cases, reduced to single digit as global competition helped to drive unnecessary costs out of the manufacturing supply chain. With those margins went things like owning our own castle.

Large conventions still take place today; in fact, EDS reports that their 2012 show was, "...our most successful event in years", and as I reported to you a few months ago, the WHMA Conference in April was one of our largest ever. Companies are seeing value in putting people together for a few days in order to discover ways to maximize their company's potential rather than relying on the internet, other web-based meetings and other non-personal ways of doing business. The difference in today's conferences versus some of the ones I attended in the 80's is that everybody, exhibitors and attendees, are focused on finding ways to make their business more successful in a highly competitive market.

On February 20-22, 2013 at the Renaissance Hotel in Las Vegas, the WHMA



**Mark Wood**  
WHMA Chairman of the Board

will hold its annual conference. As I shared with you last issue, the Board Committee responsible for this conference, chaired by Paul Nelson of Data Cable, has done a terrific job of creating an agenda that will help your company focus on doing things faster, cheaper and better, ultimately allowing you to compete more efficiently and add higher value to your customers.

*Conference topics include:*

*"Don't Limit Your Improvements to Manufacturing"* - Greg Lane, Low Volume Lean

*"Winning More Harness Business from Fast, Accurate and Quick Turn-around"* - James Price, Mentor Graphics

*"Re-Shoring: Regaining North American Domination in Manufacturing"* - Ken Fleck, Fleck Research

*"Without a Clearly Deployed Strategy, You Will Never Reach Breakthrough Objectives"* - Greg Lane, Low Volume Lean

*"Marketing by ROI"* - David Donlan, HubSpot

Beyond these presentations, we'll also have; roundtable discussions, a panel discussion on IPC/WHMA-A-620 Rev B, terrific exhibits from many of our supplier member companies, a chance to learn, 'What's New', and a great chance to socialize with your peers in the industry.

Of course, anybody who is interested is also welcome to join me as I hunt for somebody to pull a rabbit out of their hat. I'm betting that in Las Vegas, the odds are pretty good that I'll find someone.

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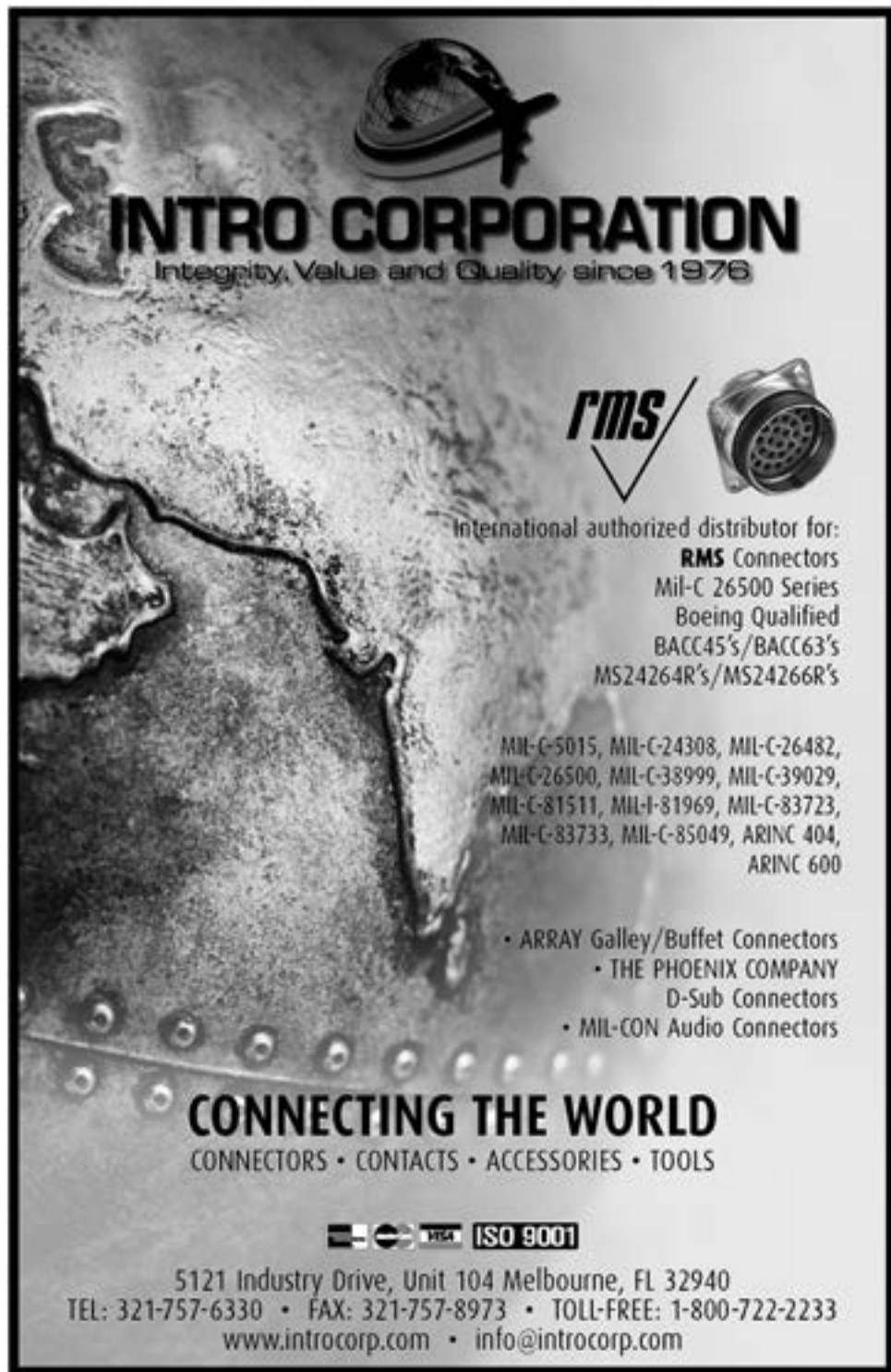
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# Making Sense of the New Conflict Minerals Rule

By Joe Tito  
Wiring Harness News

This past August, the SEC finally publicized its final rule on the U.S. Conflict Mineral Regulation that was slipped into the Dodd Frank Wall Street Reform and Consumer Protection Act. Many workshops, open meetings, and round table discussions culminated in a fairly workable set of rules. Publicly traded companies will now need to report their use of conflict minerals annually beginning May 31, 2014 (for the calendar year 2013). As we did last year, *WHN* asked Michael Wurzman, of RSJ Technical Consulting, to make sense of the new rules, point out some remaining ambiguities, and offer his comments on reporting logistics. Part of his success has been his ability to foresee regulations as they appear far on the horizon. He has been tracking the subject well before this legislation, and is well equipped to comment on some of the nebulous aspects of the ruling.

Perhaps the biggest caution from Wurzman is that private companies might think they are immune from the legislation. As he indicated, "The larger the company, the more likely that supplying CM data will be made a condition of their PO or contract."

He advised the best and most cost-effective way to collect this information is during the receiving process. "This is the only time you have leverage over your suppliers," he noted.

One of the biggest reliefs to industry is the two year period where the SEC will allow conflict minerals to be classified as DRC Conflict Undeterminable. This is to account for materials already in the pipeline for which source tracing would be daunting. As Wurzman indicated, "Absent of an existing process, it would be difficult to trace the materials back, and it will take a period of time to get the systems in place to trace back from the smelters to the mines." He cautioned that, while no audit is required under these circumstances, due diligence must be followed, and the data must still be collected and reported.

The exemption for tooling seems fairly straight forward, but Wurzman clarified the impact of conflict mineral containing catalysts used in production. "If the catalyst remains in the product after processing," he noted, "then the material will be considered to contain conflict minerals." He further explained, "If after the reaction, the catalyst is or should be part of the volatile, and does not remain in the material; then it is considered the

*Continued on page 7*



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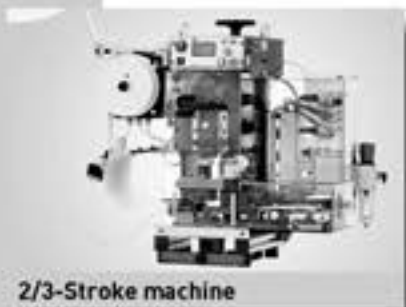
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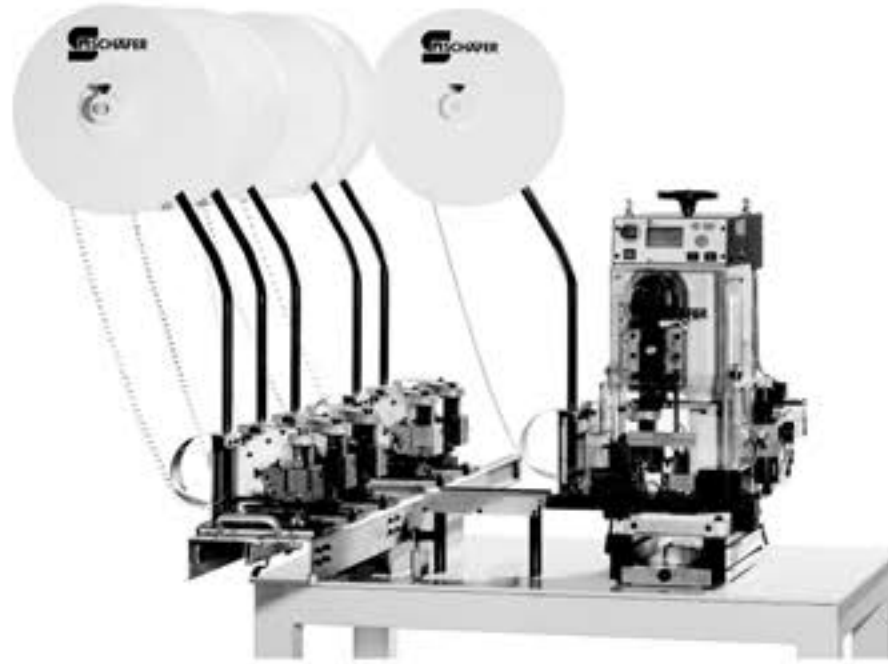
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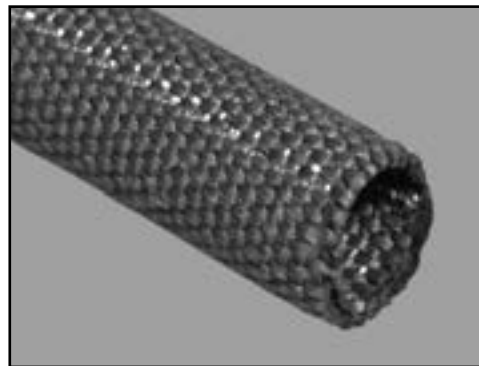
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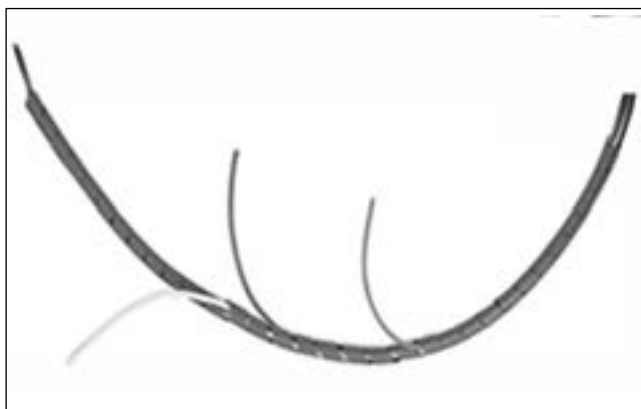
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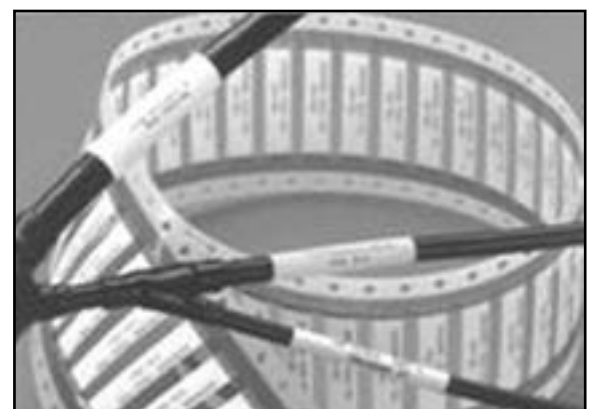
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# Making Sense of the New Conflict Minerals Rule

Continued from page 4

same as tooling, and not reported.”

Wurzman does see some ambiguities popping up surrounding the “level of influence” in determining contract manufacturer status. He specifically asked, “What if I specify generic requirements that could be filled with a conflict mineral?” He sees another potential loophole should the company at the top of the chain be privately held. This has Wurzman wondering, “If you make a generic product and sell it for branding, you could get around requirements. So I don’t know how that will ultimately be tightened down to keep people from setting up dummy companies just for the resale of a product in order to shelter it.”

Exemptions for repair and maintenance present another potential problem for Wurzman. For instance, he questions whether a refurbished product offered for resale would be covered. “If I add conflict minerals in the process that were not originally in the product,” he asked, “do I now give myself a reporting requirement?”

One of the greatest areas of concern will likely come from the Reasonable Country of Origin Inquiry (RCOI). Wurzman reminded that the threshold to proceeding to due diligence is the mere suspicion from the RCOI, that products may have been sourced in the region. Companies simply cannot rely on sketchy details, and must question whether information they receive from suppliers makes sense. “Just because you buy a product from China, that does not constitute due diligence,” he explained. He noted that Brazil and China were big importers of conflict minerals from the region, “So it’s not just an issue of where it was made or smelted in terms of doing the due diligence.”

## Due Diligence Framework and Tools for Data Collection

As for the data collection framework, Wurzman sees the highest degree of guidance coming from Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI). The due diligence guidance will come from the Organization for Economic Cooperation and Development (OECD).

These organizations have provided the structure for chain-of-custody analysis frameworks that Wurzman feels will be the best way to track information. He noted the automotive industry has endorsed a cloud based tool provided by iPoint that should be priced under the \$100 level. “There are also some free tools such as MRPRO by Papros that use Microsoft/Skydrive,” he cited, “but the key is to make sure you are using a tool that will adequately roll up the data.” Both of these tools will support the EICC/GeSI data exchange formats that will be needed to fulfill the reporting requirements.

Wurzman was emphatic that people not panic. “In interpreting the law and designing the rules, the SEC has attempt-

ed to come up with a set of rules that can actually be implemented by the industry,” he reassured. He admits a number of items might require further interpretation, and feels most of those items will be based on the due diligence standard, and how it evolves.

Wurzman concluded with these words covering exactly what RSJ Technical brings to the table for companies seeking advice on conflict minerals regulations:

Now is the time to begin putting the CM data collection process in place. At a minimum, you need to identify which of your products contain conflict minerals, where they are found, and the suppliers for those materials and components. Eventually you will need to be able to

collect reliable data back to the smelter. RSJ Technical Consulting stands ready to demystify the jargon, bring you up to speed, educate your suppliers, and implement the best and most cost-effective data exchange tool for your company.

Resources:

**iPoint:** [www.conflict-minerals.com](http://www.conflict-minerals.com)

**EICC Resources:**  
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**Papros:** [www.papros.com](http://www.papros.com)

**RSJ Technical Consulting** has a plethora of information on Conflict Minerals, REACH, RoHS, EVL and other environmental compliancy standards. Visit [www.rsjtechnical.com](http://www.rsjtechnical.com). You can contact Michael Wurzman at: (972) 964-0981 office, (972) 679-8996 cell. Email: [mwurzman@rsjtechnical.com](mailto:mwurzman@rsjtechnical.com)



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# Growing Your Business: Part 1

By Paul Hogendoorn



Paul Hogendoorn

Growing your business is a lot like farming. The three critical activities are seeding, cultivating and harvesting. Most of the remaining ingredients required for success are up to forces outside of your control. In the farmers' case, it's the market price for their crops, their input costs (seed, feed, fertilizer) and the biggest variable of them all, the weather. In the manufacturing industry, it's raw material costs, labour costs, and the "economic climate", which includes the market demand for your product and the availability of similar products from lower cost competitors.

Just like farmers, entrepreneurs and business leaders like to talk about the factors outside of their control, hoping that a superior force hears their pleas and somehow takes care of all those things. But, that seldom happens, and after all the wishful talking and complaining, the actual work still has to be done - and that work is the seeding, cultivating, and harvesting.

Many companies are strong in one or two of these areas, but not in all three. Similarly, many entrepreneurs are weak in at least one of these areas, and sometimes more. To grow, a company needs

to be capable and proficient in all three areas.

Seeding: to most, "seeding" is a responsibility delegated to "marketing". Typical seeding activities include tradeshow, email campaigns, advertising, websites etc. These are in fact "seeding" activities, but in most business cases I've observed, the seeds that are scattered fail to take root for one of the following reasons: the activities are not strategic, intentional, measured, or properly connected to the company's cultivation activities. Seeding has to be intentional and ongoing, and it has to be measured in order to know what is working and what is not. When some seeds do take root, those seedlings need to be properly placed in the care of



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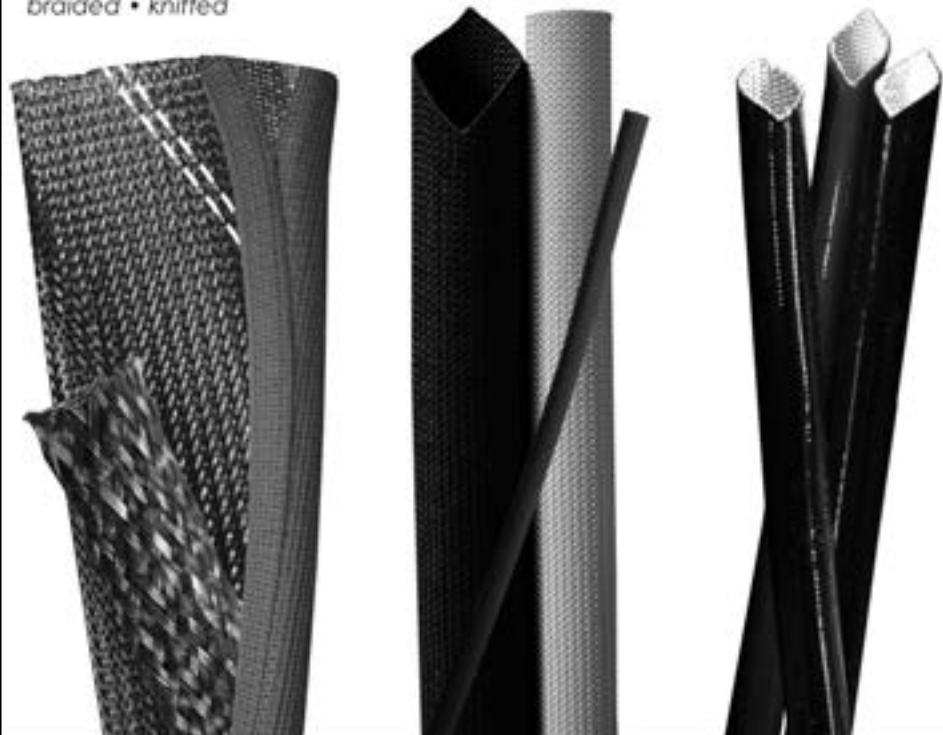
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someone that knows how to take care of them, and the seeding activity has to continue.

**Cultivating:** this is the area most of the entrepreneurs I encounter dwell. Gravity seems to pull them here. They are either relational by nature (directing most of their attention towards cultivating relationships), or technical by nature (directing most of their attention towards their technical or product passions). This results in a very common mistake - the seeding activity ceases as soon as something takes root. Deferring or missing harvesting opportunities is also a common mistake since once an something is in fact harvested, the need and opportunity for cultivating is over. Technically oriented entrepreneurs often keep raising the bar on the technology they are developing, convincing themselves that they won't release a product that is less than the best it can be. Relationally oriented entrepreneurs often miss the opportunity to close the deal or make the sale because they have focused entirely on their customers best interests, and forgotten about their own. Cultivating a product, a relationship or an opportunity, is perhaps the most valuable and effective activity for most entrepreneurs to focus on, but failing to connect those activities properly with the seeding and harvesting activities will limit the company's growth.

**Harvesting:** a product cannot stay in development forever, and all the time

invested in cultivating a relationship has to eventually bear fruit too. It's the harvest that continues to put food on the table for the farmer every season, and the only way a company can stay in business year after year too. A company that doesn't live from what it harvests is either living off of investment capital (which is a short term thing), or a company that will eventually starve.

If your goal is to grow your business, you have to do all three things well. Seeding has to be continuous, measured, and tied in to the company's cultivating activities. Cultivating can be done correctly, to the benefit of the company, or incorrectly, to the detriment of the company's seeding and harvesting efforts. And finally harvesting is not something that "just happens" all by itself; there is a right time for it - too early and the opportunity hasn't matured; too late and the crop fails to achieve its target yield.

In the next few columns, I will be writing in more detail on all three of these activities, drawing from my own experiences (successes and failures), and from what I have learned working with other successful business leaders and entrepreneurs.

Paul Hogendoorn founded TPI Associates, an organization dedicated to helping entrepreneurs and leaders build their businesses. He can be reached at paul@TPI-3.com. To learn more about these topics, please visit [www.tpi-3.com](http://www.tpi-3.com)

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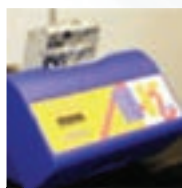
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# Beyond Expectations *IPC/WHMA A-620 and the Launch of Revision B*

Continued from page 1

can easily be said that the overall popularity and acceptance of A-620 has exceeded everyone's expectations.

## WHMA and IPC - A Winning Combination

*Wiring Harness News* recently caught up with Mark Wood, Chairman of WHMA, for the story behind the success of IPC/WHMA A-620. He recalled the amount of confusion that existed between manufacturers and customers before the industry consensus standard existed. "How do you run your business

if every customer who comes through the door has a different idea about what a quality crimp looks like?" he lamented, adding, "There was a lot of unnecessary conflict in the industry."

With the obvious need for a standard, WHMA turned to IPC who was already working on some specifications for wire processing. "They've been around since 1957, and in my mind, are the leaders in setting standards, training, and research, in public policy," said Mark.

In anticipation of the release of the new Revision B, Mark commissioned a study at Arizona State University. The goal was to survey WHMA members to see how they were using the standard.

The results were surprising to Mark. "While Production and Quality were certainly using it, [the study found that] Human Resources had wrapped their arms around it to almost the same degree." When the survey team asked one HR Director about the document, she exclaimed "Oh, you mean the bible?" It became clear in the research that A-620 has become the de facto training document in the industry.

Sales and Marketing were not far behind in the overall use of the document. The study revealed a common sales team strategy is to carry the A-620 specification along on customer visits. "Now, when the customer says 'Talk to

me about quality and manufacturing standards,' they simply pull out the document and say, 'It's all right here.'" Mark noted how this practice has streamlined the design process and greatly reduced conflict between manufacturers and their customer.

## The New IPC/WHMA-A-620 Revision B

WHMA is very excited about the new Revision B, and Mark elaborated on some of the changes. There were over 400 comments that were submitted by the user community, and Mark was proud to note that 100% of them were addressed! "Either a change was made in agreement of the comment," he cited, "or a change was not made, and a response

was given as to why that change would not be in keeping with the standard." In some very rare cases, where comments came in late, Mark noted there were agreements to the validity of those comments; and a decision was made to hold them over for the next revision. "So at the end of the day, there was not a chapter of A-620 that was not touched," Mark revealed.

There were also some changes made to Revision B that bring the document into parity with other IPC documents. As an example, Mark noted that IPC had existing standards for soldering terminals. "In some cases, WHMA/IPC-620-A didn't really jive with existing IPC standards, and so all of the conflicts were removed."

Another exciting attribute of Revision B that Mark outlined, was the addition of over 100 very useful new photos. He explained, "so rather than just counting on words, it has become much more of a show and tell document."

Although no new chapters were added, Mark stressed the significance of the Revision B updates. He and the folks at WHMA, along with IPC, recognize the document has earned a global reputation as the quintessential source document for product quality, design, and training, in the wire harness industry. He is aware of the heavy responsibility that honor bestows upon WHMA, and is committed to continuous improvement of the specification to further industry goals.

~WHN~

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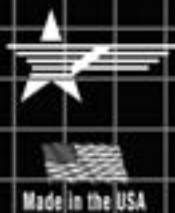


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## The Wire Harness Industry: Three decades of change

Loren M. Smith, CEO  
Blue Valley Capital

I got into the Wire Harness Business In the late 70's, leaving a job as CEO of a Connector Company, moving to rural Iowa to acquire a small (under \$1M) wire harness manufacturer (MWC). After running my own Wire Harness company for 20 years, I sold the majority to an investment firm, and stayed on to execute the acquisition strategy I had planned. I helped found the Wire Harness Manufacturers Association (WHMA) in the 80's, and I continue to be an active member. After MWC I launched an M&A Firm, Blue Valley Capital, primarily to serve mid market (\$2M-\$50M) manufacturing companies.

With a view of the Wire Harness Industry that spans over three decades. I've observed how the industry has changed, and perhaps more intriguing, how it has not changed over this period of time.

The profile of the wire harness industry today is almost indistinguishable from the way it looked several decades ago. It is still comprised of over 1000 small harness manufacturers, serving niche markets, with a few dozen medium size harness companies, and a only handful of very large harness companies serving high volume markets. Because many Wire Harness manufacturers are also in other businesses, such as PC



Loren M. Smith, CEO  
Blue Valley Capital

Board Assembly, Box Build, and Distribution, typical analysis (such as SIC codes) can't provide a complete and meaningful picture of the industry.

The basic fundamentals of the Wire Harness business remain unchanged. Wire Harness manufacturers are converters of customer designs. It's still a labor and material intensive business, utilizing components specified by customers who constantly exercise substantial leverage.

Some might even think a business model such as this makes it was nearly impossible to bring in a respectable bottom line. However, in my experience, there are many Wire Harness manufacturers who defy these odds and produce

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a bottom line on the very high end of the spectrum for manufacturing companies. The secret is the exceptional degree of mutual dependence that exists between a Wire Harness manufacturer and their customers.

Several decades ago it was predicted that all USA harness manufacturing would move to Mexico, and that a dramatic industry consolidation would take place. Neither happened. The industry is still very fragmented, and a significant amount of Wire Harness manufacturing still takes place in the USA

Movement to low cost labor markets continues to be a fluid situation. Factors such as lead time, order size, frequency of revision changes, cycle times, shipping times, shipping costs, work force training, and inventory levels are some of the factors that drive this equation.

While most very high volume Wire Harness Manufacturing, and some medium volume is now in Mexico or other low cost labor markets, there is still movement in both directions as customer priorities shift constantly.

As Wire Harness customers undergo management changes, occasionally a new purchasing regime will engage in an analysis that projects huge savings by moving Wire Harness sourcing to a low cost labor market. It's not unusual for the next regime to do the same analysis that refutes the savings, subsequently moving harness sourcing back to the US.

Some harness users who calculated savings from sourcing wire harnesses in China and other low cost labor options, have moved their sourcing back to the US, based on their experience. At the same time, industries whose volume historically did not warrant moving to Mexico, are now considering the Mexican option.

Movement to low cost labor markets will continue to be a fluid situation but in my opinion, we will continue to see a significant number of Wire Harness manufacturers in the USA.

What has changed over my several decades has occurred very gradually, and varies by market served; in this business one thing is clear, the degree of difficulty has increased exponentially. Performance standards (quality, delivery, engineering capability) have tightened over the years, while at the same time Wire Harness customers want to deal with fewer vendors.

Several decades ago

many of the companies who now demand a zero defect Wire Harness, measured their Wire Harness vendors by defects per thousand. Wire Harness customers who had more than a dozen harness vendors, now might have only 2 or 3 or even in some instances a single harness source. Delivery windows have gone from weeks to days, and many users of Wire Harnesses now require their harness vendors to have a Cad Cam design capability to enable a co design effort.

One of the more favorable changes that has occurred in the wire harness industry is the purchasing practice known as "partnering"

Wire Harness customers who employ this purchasing strategy are companies who have the foresight to seek out worldwide industry "best practices" and the discipline to utilize these practices.

Here's how it works, rather than pick-

ing the lowest quote from 3 or 4 vendors, partnering requires that a harness manufacturer "cost share" with his customer. The harness manufacturer and his customer agree on a harness gross margin (what's left after you pay for material, labor, and overhead) and then work together, starting with the design process, to drive down all of the wire harness cost components (cost of goods sold). Over time this process will result in a declining harness cost curve for the harness user, while preserving gross margin for the harness manufacturer. This provides the harness manufacturer with a level of security not present when his life was 3 quotes and a cloud of dust, and it provides the harness user with preminent quality and service at the lowest possible cost. This change has been very gradual, and at present it is utilized by a relatively small percent of total harness users, it's not theory, it's

being done increasingly, and where I've observed it first hand, it works well.

In the past, wire harness manufacturers vendors had to buy their harness components from the manufacturers of those components, and distributors were for emergencies only because of their pricing. As harness components have become available from distributors at a competitive price, this change eliminates what for many harness manufacturers was a true nightmare; not being able to get reliable delivery from a supplier of a component specified by his customer. When a harness manufacturer shuts down a customers line because they can't get delivery of a component specified component, life gets ugly. As unfair as it seems, when this happens, the customer has zero sympathy/under-

Continued on page 14

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# The Wire Harness Industry: Three decades of change

Continued from page 13

standing for the reason, their line is down because the supplier can't deliver, and you can be the bad guy overnight. Thankfully the availability of these specified components from distributors at a newly competitive price has almost

completely eliminated what was once a huge headache for harness manufacturers, and it can virtually eliminate the cost of carrying large inventories as a hedge against non-performance.

As the cost for computer hardware has come down and the accessibility of good software has evolved, management

control systems previously available only to large companies are now within the reach of small Wire Harness manufacturers. The accessibility of hardware and software that enables harness manufacturer to control all elements of a manufacturing business has leveled the playing field enabling small companies to do every thing that medium or even very large harness manufacturer can do with information technology. The one exception to this is the software that enables a harness manufacturer to automatically convert their customer's electronic prints to bill of material (BOM) and routings. Many wire harness customers now use software that enables them to automate/streamline the harness design process resulting in an electronic harness print. It's possible for harness manufacturers to convert this electronic print when received from their customers to BOM's and routings by using a software product (sometimes called middle ware) that enables this conversion to occur instantly, thus eliminating the lengthy process of doing this conversion manually. This essentially automates the front end of the Wire Harness manufacturing process. Currently, this so-called middleware is not commercial-

ly available from software providers, but most large and some medium harness manufacturers have created this middleware for their own use. Given the huge benefit that this middleware provides, I believe we will see this middleware available to the entire industry in the future.

In summary, the Wire Harness business is still very much a service business, comprised of primarily small US manufacturers, serving niche markets. In my opinion, the next few decades will not see consolidation on a major scale, but the number of wire Harness manufacturers will be reduced somewhat as wire harness customers shrink their supplier bases based on tightened performance criteria. For those Wire Harness manufacturers who stay ahead of the technology curve, and who know how to take care of their customers, the future looks bright.

In the next edition of *Wiring Harness News*, the title of my column will be "Six ways Wire Harness companies fail"

Loren Smith can be reached at [lms@blvcapital.com](mailto:lms@blvcapital.com) or by visiting [www.bluevalleycapital.com](http://www.bluevalleycapital.com)

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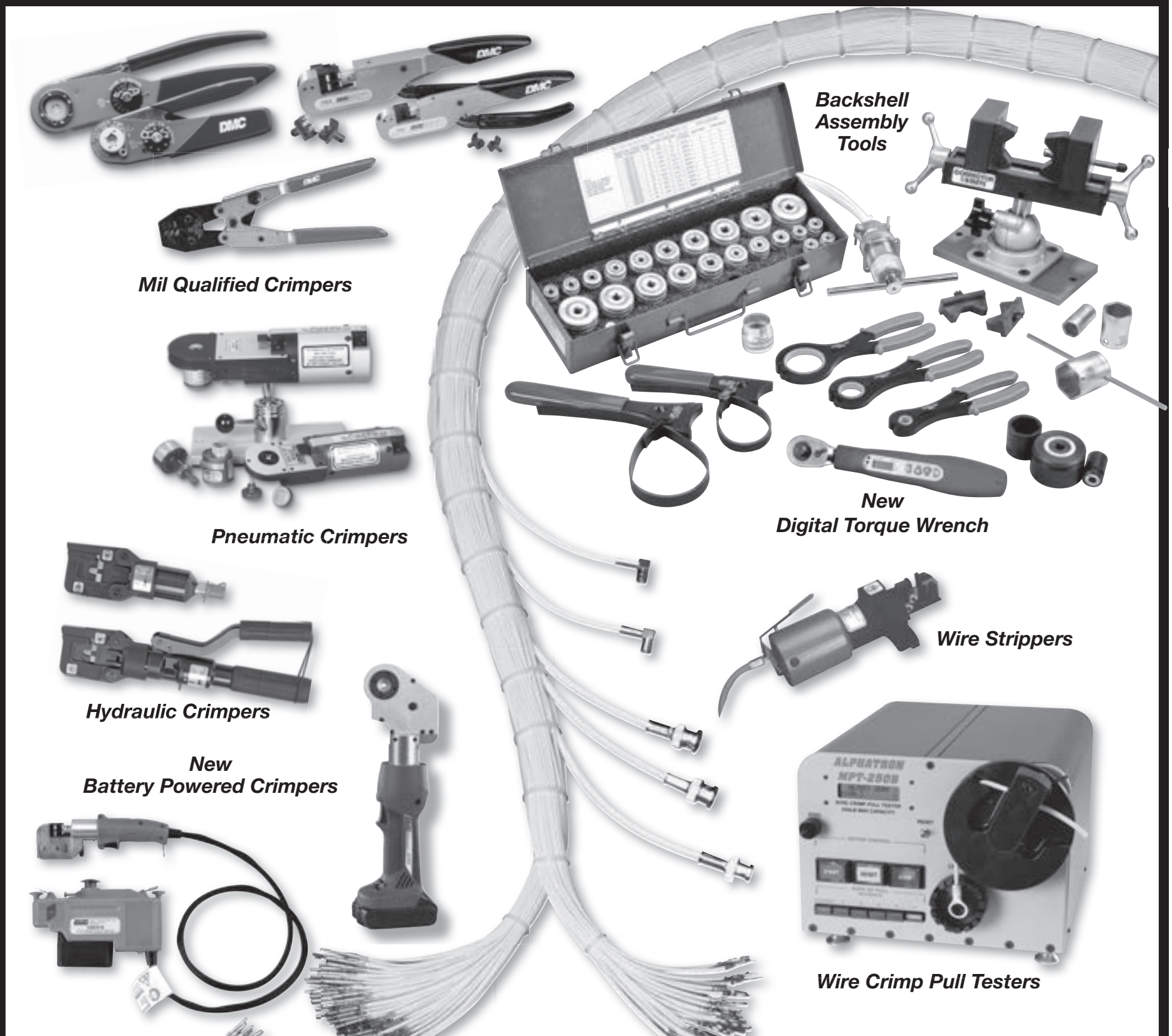
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# SEC Final Rule on Conflict Mineral Reporting

Continued from page 1

these materials can no longer benefit any armed militias. The intent of this exemption is to provide specific transition relief for any stockpiled materials that were acquired through a material purchasing strategy. A company's 2013 Form SD need not cover products made with a pre January 31, 2013 stockpile of conflict minerals.

**Contract to Manufacture** - As stated, the rule requires compliance if a company manufacturers, or contracts to manufacture, products containing conflict minerals. A company is said to be a contract manufacturer if it has influence over the manufacture of a product. A company is considered NOT engaging in contract manufacturing if it merely:

- Affixes its brand, marks, logo, or label to a generic product manufactured by a third party.
- Specifies or negotiates contractual terms with a manufacturer that do not directly relate to the manufacturing of the product.
- Services, repairs, or maintains a product manufactured by a third party.

The new SEC rule stipulates a three step process in reporting conflict minerals.

**Step 1 - Determining applicability of conflict mineral provisions** - A company needs to determine if any of its products contain conflict minerals, at any levels, and if they are "necessary to the functionality" or production of the product. This is further defined as:

- The conflict mineral was purposely added to the product, and not a naturally-occurring by-product of production.
- The conflict mineral is necessary for the intended use or purpose of the product.
- If the conflict mineral is added for the purpose of ornamentation, then the primary function of the product must be ornamental.

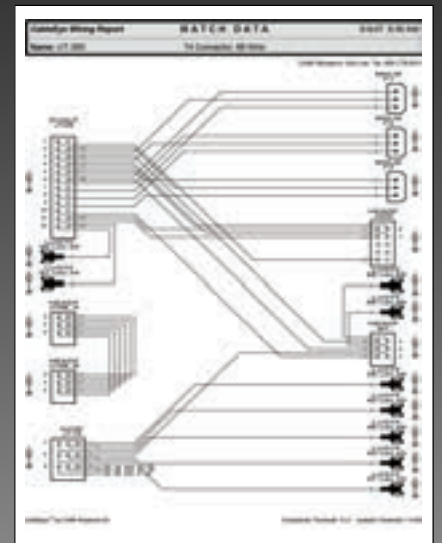
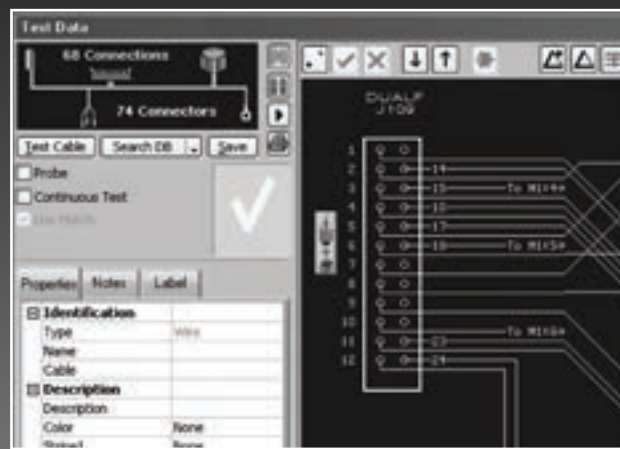
Conflict minerals in a company's product, intentionally added at any level, will trigger the filing of Form SD, and the progression to Step 2.

### Tooling and Catalysts

The SEC rule does not cover tooling used in the production. If, for example, a crimp die containing a conflict mineral is used, it does not fall under the guideline. In the event that a conflict mineral containing a catalyst is used in production, the SEC determined that, if any level, the conflict mineral remains in the product after the reaction, it is subject to scrutiny under the law.

Continued on page 18

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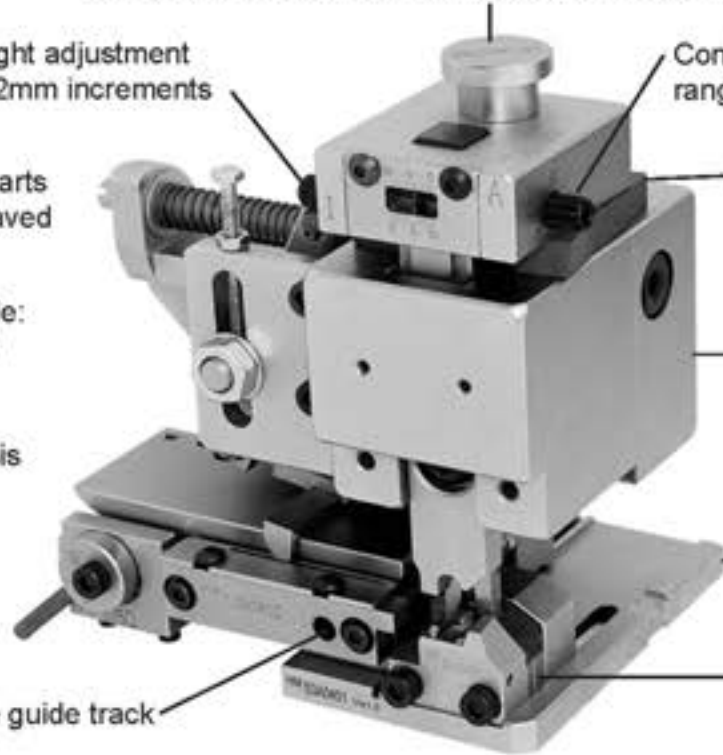
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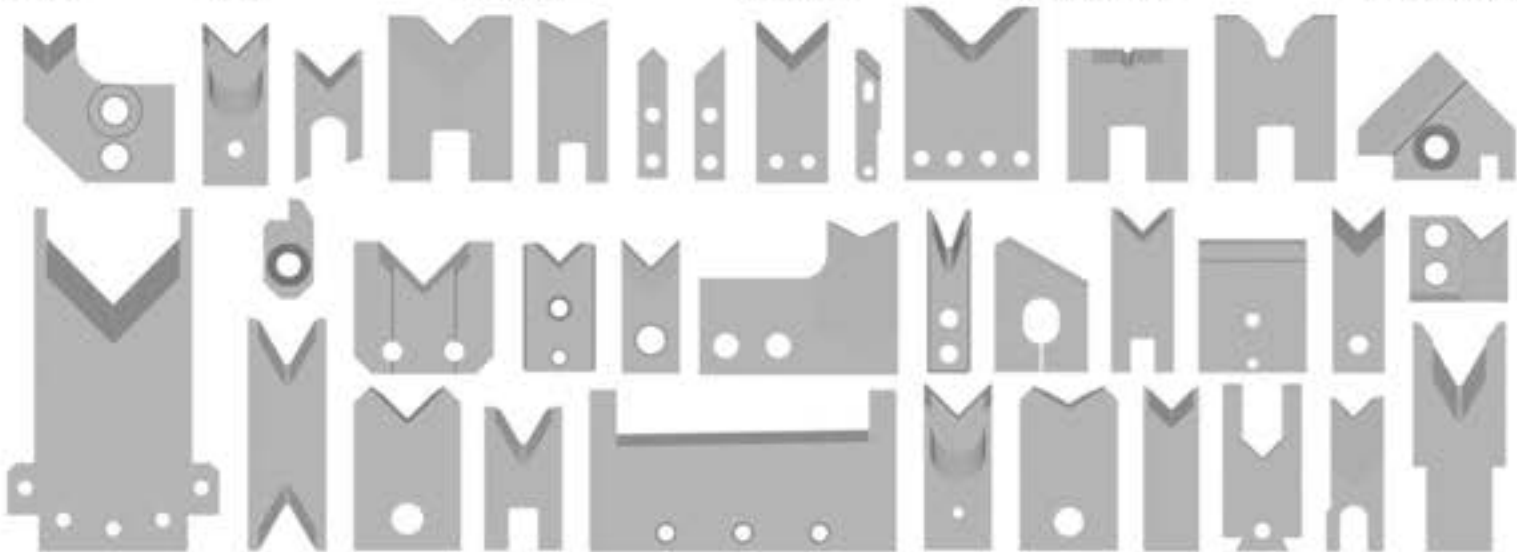
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# SEC Final Rule on Conflict Mineral Reporting

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**Step 2 - Determining if your conflict minerals may have originated in DRC or surrounding countries** - Companies must determine, through a reasonable country of origin inquiry (RCOI), whether their conflict minerals were ever in the DRC, Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, Angola, Congo, or Central African Republic. The SEC did not specifically define the RCOI in the ruling, but did provide a general outline saying the RCOI "must be reasonably designed to determine whether the issuer's conflict minerals did, or may have originated in the covered countries, or did come from recycled or scrap sources, and must be performed in good faith."

**Scrap and Recycled Materials**

The rule defines scrap as either resulting from reclaimed post consumer sources, or as a by-product of the actual manufacturing process. The rule makes it clear that unprocessed or partially processed minerals are NOT included in its definition of scrap.

If the RCOI reveals the materials to be from scrap at any step of the reporting process, it must indicate this on the Form SD along with a brief description of the procedure used to make this determination.

**Form SD** - As mentioned, if any conflict minerals are present in products, the Form must be filed. The Form SD must include a brief description of the RCOI and the results. The company must

also provide the RCOI on its company website, and include the Internet address of the site on Form SD.

**Red Flags**

If the RCOI reveals even the suspicion that conflict minerals may have originated in the covered countries, the company needs to proceed to the Step 3. Such red flags cannot be ignored, nor can the company be willfully blind to supplier assertions that should sound unreasonable. Examples of such red flags would be a supplier claiming to source from a country known to have little reserves; or from a recycler in a high risk country who may be using first generation materials masked as recycled.

If the RCOI indicates that the conflict minerals may have come from the DRC or surrounding countries, the company must then proceed to Step 3.

**Step 3 - Provide a detailed Conflict Minerals Report tracing origins of suspected materials.** - After any suspicion or red flag on any particular conflict mineral has arisen, the company must perform due diligence and on the source and chain of custody of the suspect conflict minerals. The current framework for the due diligence can be found in the OECD publication "OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-

Affected and High-Risk Areas". Should this due diligence reveal that the conflict minerals are from scrap or did not come from the region, then the due diligence description must also appear as an exhibit on Form SD. If the materials in question are found to have come from the region, then the necessity for a third party audit and a Conflict Minerals Report is triggered. Discovery that the conflict minerals originated from the region triggers the audit, without regard to whether or not they are suspected to have benefited armed groups at this point.

The third party audit is intended to be a determination of the integrity of the company's due diligence framework, and not an opinion of the actual findings. It is to be performed in accordance with independence standards established by the U.S. Government Accountability Office (GAO).

The Conflict Minerals Report is a further chain of custody study to determine whether or not the conflict minerals found to be from the region, benefited armed militias of the DRC. The report will classify the conflict minerals in one of two ways:

- **DRC Conflict Free** - did not support the militias.
- **Not DRC Conflict Free** - did support the militias.

**DRC Conflict Undeterminable** - The SEC understands that it may be difficult to obtain clear chain-of-custody information until the entire supply chain can institute concrete plans for data collection. For this reason, it has designated a period of two

Continued on page 20



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# Conflict Minerals Continued from page 18

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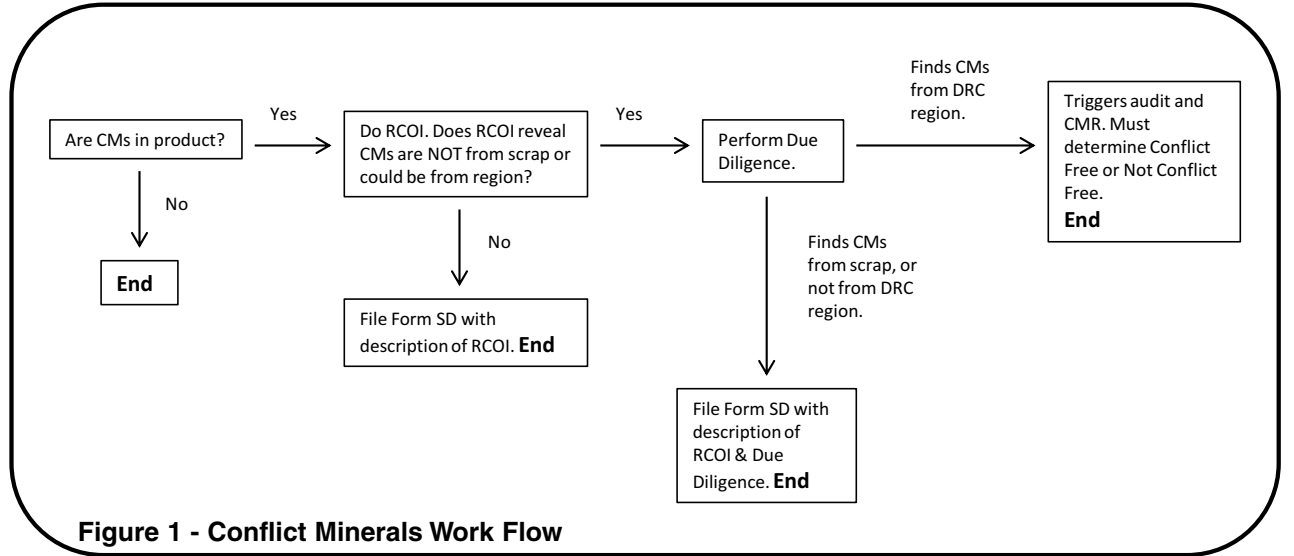


Figure 1 - Conflict Minerals Work Flow

years (four years for corporations under \$75M in value) to designate materials as DRC Conflict Undeterminable. It is important to note that

due diligence must be followed and disclosed as described in Step 3. The Conflict Minerals Report should be filed as an exhibit to the Form SD.

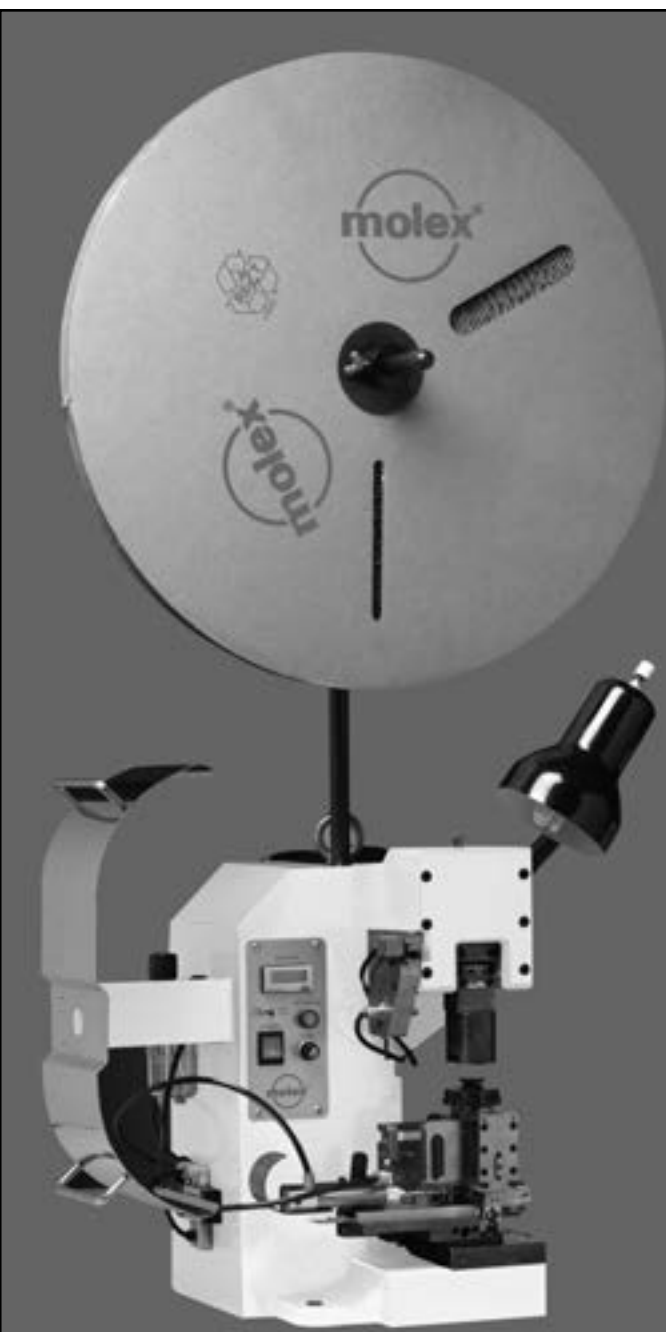
### Summary

Basically, the RCOI is used to raise any questions as to whether the conflict minerals found to be in products may have come from the region. If the determination from the RCOI is that the materials were from scrap, or did not come from the region, then the Form SD must be filed along with a brief description of the RCOI. If the RCOI affirms that there is reason to believe the minerals came from the region, then the due diligence is required. If the due diligence reveals that the conflict minerals were from scrap or did not come from the region, then the company must describe both the RCOI and the due diligence measures taken as an exhibit to Form SD.

If the due diligence determines that the materials did come from the region, then the third party audit and Conflict Minerals Report are triggered. The CMR classifies the minerals as either DRC Conflict Free or Not DRC Conflict free. The CMR must include an independent private sector audit to verify that the procedures followed in creating the CMR were sound. The audit does not confirm the determinations of the CMR. Only that it followed the criteria set forth in the due diligence framework. For a temporary period companies may classify materials as DRC Conflict Undeterminable.

The Fig. 1 flow chart (above) provides a graphic summary of the conflict minerals reporting process. The chart does not include provisions for materials outside the supply chain, or the DRC Conflict Undeterminable status, as these are temporary classifications. Refer back to the text for those specific circumstances.

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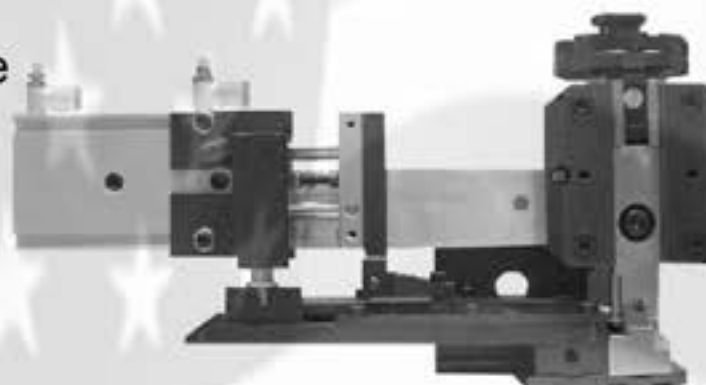


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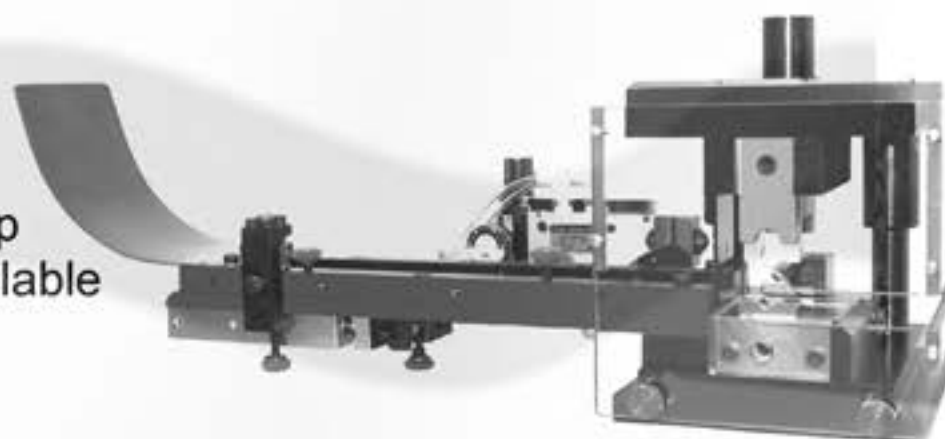


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# Northwind Electronics

*Flexibility and responsiveness are key to their growth*

Continue from page 1 \_\_\_\_\_

"A business is uniquely positioned to do these things by how we treat our customers and the world around us," he said.

Berry, 43, has applied his philosophy to Northwind Electronics since he acquired it in 2010 from his four former partners in Indiana Life Sciences, a holding company he served two years as president. In 2005-08 it bought eight companies, one of which was Northwind, founded in 1999 in Florida under a different name.

Prior to buying Northwind and working at Indiana Life Sciences, Berry was

the vice president of development and operations of standard management for U.S. Health Services. He also has been national sales director MyDoc.com and VP of sales and marketing for Knowledge Resource Group.

Berry's career also has included positions as the director of client services for Seurat, sales manager of Whittman-Hart, branch manager of Sprint Paranet, branch manager of Anatec and marketing rep for Ambassador Consulting. He earned a bachelor's degree in marketing in 1991 from Butler University in Indianapolis.

Continued on page 24



Setting up the wire marker.

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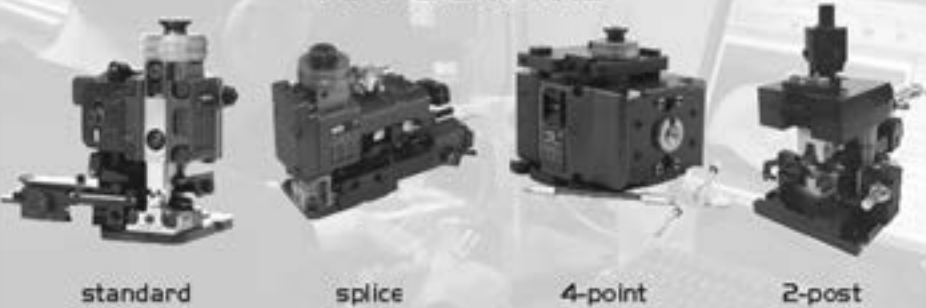
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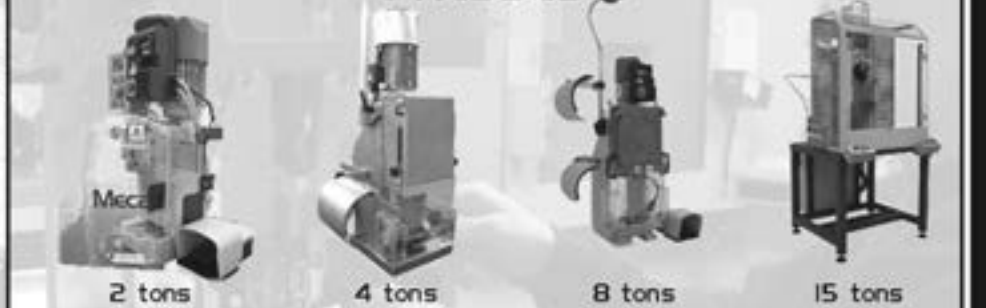
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# Northwind Electronics

*Flexibility and responsiveness are key to their growth*

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tugs.

Northwind is a contract manufacturer of wiring harnesses, cable assemblies and electromechanical assemblies. They are used in heavy-duty construction and utility vehicles, trucks, cranes, airport ground-support vehicles and mining equipment such as large drills and crawlers.

Applications include controls for vehicle lights, transmissions, shovels, dump mechanisms, deicers and brakes. Other products are for conveyor-handling controls and enclosures, lifts and

A wide variety of products is manufactured, according to Berry. They range from one wire up to large panels and harnesses with multiple points for handling 50-70 controls. He noted only 10 of one type of harness may be built, but it may contain 500 wires of various lengths totaling thousands of feet of wire.

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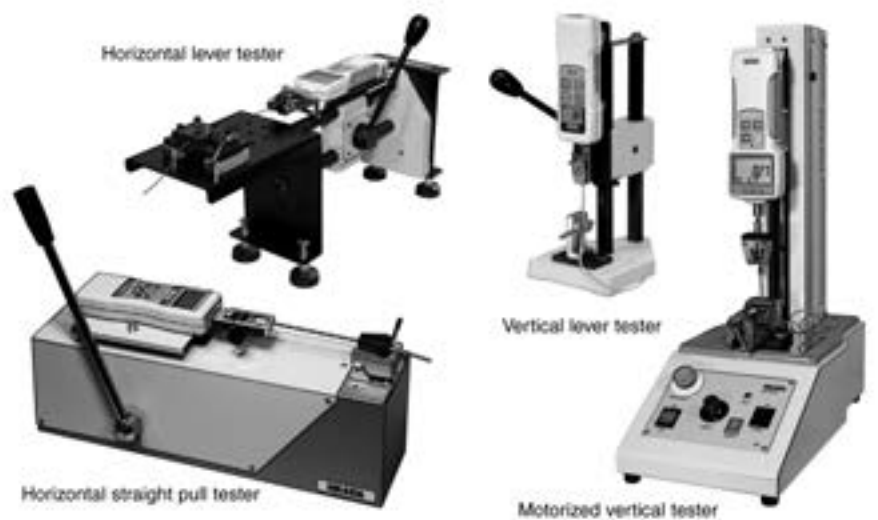
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**Operations Manager, Rhoda Capps**

"I like the fact we're building things that turn into capital equipment. I love customers that are doing big things on the world stage, are strategic and are making things that are interesting and complex," Berry said, noting his firm takes a high-mix, low-volume approach "to keep our base diverse to protect ourselves."

The company has 25 steady customers, more than double two years ago. Most are located in the midwestern, southeastern and south-central parts of the United States. Some products are shipped to Mexico and other countries.

"We have a very strategic relationship with our customers," Berry said. "We blend very well as an extension of their production, engineering and management departments. We add value to what they're doing by providing feedback on drawings so they can manage their processes better, for example. We can move fast and meet just-in-time requirements."

"We work hard at making it as easy as possible and simple for the customer to work with us," Berry said. "We listen to what our customers are saying. Our flexibility, nimbleness and responsiveness have been key to our growth. We have a great team that can go the extra mile even when an unreasonable request is made. We're even able to outperform some customers' internal operations."

The Northwind team, which has 15 full-time members, is led by operations manager Rhoda Capps, quality manager James Keen and equipment technician Steve Fox. Berry's wife Sally does the bookkeeping and assists with management.

She works part time, since she also is employed as an obstetrics nurse.

Because Berry focuses on devel-

oping his business and interacting with customers, he relies on his staff to keep production, quality and delivery levels high. "I really want to have people around me who are smarter than me and have different skills and capabilities," he said. "I don't babysit them, and as a result they're confident. It's been successful because we are 95-plus percent on scorecards of our customers."

One reason for such high grades is the manufacturing process of the harnesses, cables and electro-mechanical assemblies. Many are done by hand to customers' quality specifications. A unique feature of the process is that a customer can go to a Web site for each order and track its progress.

*Continued on page 26*

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# Northwind Electronics

*Flexibility and responsiveness are key to their growth*

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Work is done in a 10,000-square-foot suite in a building on the northeast side of Indianapolis. In the suite next door is Berry's other company, Northwind Pharmaceuticals. It sells medical supplies and pharmaceuticals to clinics across the United States and specializes in medications packaged for direct dispensing to patients.

The sales and marketing effort at Northwind Electronics concentrates on e-mail, a company Web site and attendance at a few trade shows annually. Berry has found

referrals are best, as are current customers developing new products.

"The hardest part of building relationships with new customers is getting in the door," Berry said. "You might catch them when something goes wrong or there's an expansion, but usually you can't interrupt the supply chain. Most customers have a huge incentive to keep their systems steady, so there's not much incentive to shop around."

Northwind is capturing more business from companies that used to have orders filled in foreign countries. "The standard of



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living is rising in China, so there's not as much cost benefit," Berry said. "Companies in the United States are making harder plays for that business. It's not all about price. We can provide more value. At our company we can turn quickly, speak clear English and are in the same time zone."

Berry's strategy and philosophy have meant his company's sales have doubled since 2007. In 2011 they were up 12 percent and this year 20 percent. He projects doubling or tripling sales over the next five years and maintaining good profits.

Sales could rise even more if Berry succeeds in acquiring other companies that would fit well with his. Before the end of the year just such a firm from another state will be purchased and integrated into Northwind. A few more employees will be hired to fill orders for parts used in manufacturing equipment that does packaging, milling and specialty processes.

Berry is keen on pursuing acquisitions. "I love business and the fact that we can show up and succeed or fail," Berry said. "I like deals, whether they involve a company or a project."

When necessary to supplement his own funding, Berry's business transactions require bank financing. "It has not been easy because banks are locked down, and they don't buy into futures or a vision anymore," he said. "They only care if something can pay for itself. Banking adds a level of clarity and takes out all the superfluous things."

"The one thing that has been a godsend is our ability to manage with bank financing and our own money," Berry said. "It was a testament to our business and our model to get money for the building in Anderson. Astute bankers got to know our business. I have seen more effort from bankers to find ways to do business with us. I think bankers are more savvy with the new normal."

Besides the challenge of properly financing growth, Berry works extensively on finding the right people to fill new positions. He worries, too, about the economy and how people perceive how it is doing.

"You've got to keep as small as possible from an expense perspective by not overhiring," Berry said.

"You should not bring in people until you absolutely have to. I've seen many businesses that had outstretched their capacity too early. You need to be conservative on growth and money."

"The five-year horizon is still legitimate, and you have to ask yourself what do I do to go that distance," Berry said. "You don't want to get out in front too much because then you burn cash faster."

Berry's horizon for his company is a long one, since he foresees his wife eventually working in it

more. They have four children who could participate if they are interested.

"I like this property and what we can do with it," Berry said. "We can do big things, so I want to see what it can do if given the time."

For more information, call 317-522-1627, e-mail phil.berry@northwindelectronics.com, fax 317-578-3141, visit www.northwindelectronics.com or write 9402 Uptown Dr., Suite 1200, Indianapolis, IN 46256.

~WHN~

## 20<sup>th</sup> Annual Wire Harness Conference February 20-22, 2013

For further information visit [www.whma.org](http://www.whma.org)



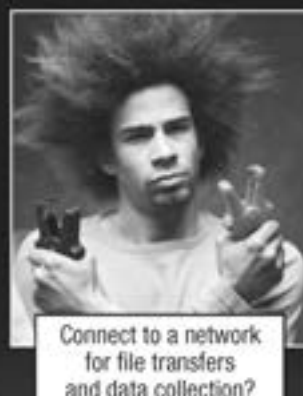
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*In every issue of Wiring Harness News Anixter will bring you informative articles about wire and cable technology.*

### UL Follow-Up Services Maintain Product Integrity

Most products destined for commercial, consumer and industrial applications require some sort of certification. Underwriters Laboratory and its UL Mark are highly recognized in North America and the rest of the world. The UL Mark and its variations are often the subject of questions relating to wire and cable products. In this Wire Wisdom, we look at what it takes to be able to use the UL Marks. More specifically, we look at the value that UL's Follow-Up Services brings to users.

#### Certification Providers Serve Important Roles

Certification service providers typically offer a broad array of services including, but not limited to, engineering evaluation, testing, and inspections of products and systems that are sold into nearly all industries and applications globally. Without certified products, it would be difficult to standardize on electrical and electronic systems. Lack of standardization could result in


serious issues with compatibility, safety, reliability and efficiency. The services and corresponding certification marks, often called "listings" and offered by certification providers, are part of a complex supply chain. The goal of the supply chain is to supply products that are safe when used as intended.

#### How Certification Programs Work

Many certification providers offer product certification and listings through testing, factory inspections and engineering design reviews. Typically, a product manufacturer determines that a particular product certification is needed in order to fulfill regulatory or customer requirements. The manufacturer then searches for a certification provider that can evaluate the product and provide a certification or listing mark that can be applied to the product(s). Once the certification provider completes the evaluation phase, it will then grant use of the appropriate marking to be applied to the product(s) and the manufacturer can then begin to sell the product with the new certification.

Here's an example: the NEC (National Electrical Code) requires cords to be list-

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If you have the responsibility of designing, specifying or ordering wire and cable, visit [anixter.com/literature](http://anixter.com/literature) to order your FREE copy of the **Electrical and Electronic Wire & Cable Products** catalog.

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ed by a NRTL (Nationally Recognized Testing Laboratory) if they are to be used in certain applications. It's important to note that certification providers are also often identified as NRTLs. In this case, one of the most common standards to which portable cords are listed is UL Standard 62 (i.e., UL 62). Sometimes, the certification provider is also the author of the standard that the product will be certified to, as is the case when someone has UL certify a portable cord to the UL 62 standard. In this example, UL not only authors or contributes to the development of the standard, it also tests and inspects manufacturers' product to ensure they meet the standard.

There are certification providers and NRTLs other than UL, and their certification programs may be slightly different. Most providers use product evaluation, testing and inspection as part of their certification program. Providers often include inspections of the manufacturing, testing and shipping facilities as part of their certification programs. However, ongoing inspections are something that not all certification providers offer.

**Why Follow-Up Services is Important**

Ongoing inspections are a way for the certification provider to audit the manufacturer to make sure the certified product is still made according the original design for which it was certified. If the certification provider identifies that the products are being produced outside the limits allowed by the original certification, there are a number of things that can be done to protect the user/consumer of the product.

There are other systems of quality that can accomplish goals similar to UL's Follow-Up Services program using different methods. Such quality systems are often employed in industries such as automotive and military supply. Even though nothing is foolproof, ongoing inspections and audits of processes and systems is a time-tested method of improving product quality. The advantage to users of products bearing the UL Mark is that the auditing process used in UL's Follow-Up Services will help to increase the consistency, quality and the safety of the product they are buying.

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# Calendar of Events

## Page 65

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## NEWS PLUGS

### New 3M Cable Assembly for PCI Express Extender Cards Enables Higher Density Designs

Designers of enterprise computing systems using PCI Express (PCIe) now have a more versatile interconnect solution. The new 3M™ Twin Axial Cable Assembly for PCI Express Extender Card Applications, now available from the 3M Electronic Solutions Division, is a high-performance interconnect capable of a variety of routing configurations, helping to increase system density and flexibility, while also designed to reduce cost. The cable assembly is the newest addition to the 3M line of highly routable cable assemblies, which includes solutions for MiniSAS, SATA, QSFP+ and SPF+.

Until now, interconnect extender choices for PCIe have been limited to short cable assemblies, rigid PCB assemblies or flexible circuit assemblies. Using the 3M cable assemblies, industry standard PCIe peripheral cards can be placed in virtually any orientation within a system chassis. Commonly used rigid riser cards are limited to a simple offset (up and over). 3M cable assemblies for PCIe can be configured to virtually any orientation within the cable length while maintaining

excellent signal integrity.

The cable is based on the thin, ribbon-style 3M™ Twin Axial Cable, which is designed to have stable, predictable performance and exhibits a lack of resonance up to 40 GHz. The highly routable 3M cable assembly allows the designer greater flexibility in card placement, enabling higher density designs.

The cables can be bent and folded to maximize space and reduce obstruction to airflow without significant signal degradation.

For PCIe over long printed circuit board (PCB) traces, re-timer chips are often required. The 3M cable assembly for PCIe may eliminate the need for these chips, providing a material cost savings benefit to the customer. Routing signals over the 3M cable assemblies, rather than in the board, may also allow designers to reduce layer count or avoid costly high-performance laminates, further reducing costs.

The 3M Twin Axial Cable Assembly for PCI Express Extender Card Applications is available in PCIe X4, X8 and X16 sizes. The cable assembly is EU RoHS compliant.\*

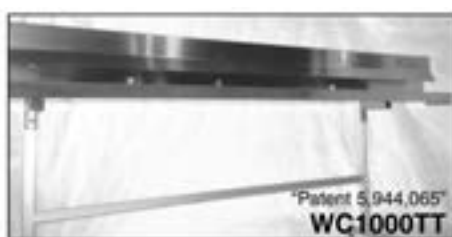
3M Electronic Solutions Division's Interconnect business offers a variety of innovative connectors, cables and cable assemblies, embedded capacitance materials and Textool brand test and burn-in sockets for component engineers and designers in the electronics industry.

For more information about 3M's interconnect solutions, visit: [www.3Mconnectors.com](http://www.3Mconnectors.com).



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### Delfingen Completes Acquisition of HILEC

Delfingen Industry SA ("Delfingen"), the global supplier of electrical wiring protection systems, announced it has completed the strategic acquisition of the business and assets of Hilec LLC, Arcade, NY ("Hilec").

Hilec is a leading manufacturer of coated fiberglass insulation sleeving and related products for use in electric motors, generators, transformers, appliances, lighting devices and wiring harnesses.

Hilec produces vinyl, acrylic, and silicone rubber coated sleeving as well as heat-cleaned glass and saturated grades. The products are called out for use in a wide selection of UL Insulation Systems. Hilec also produces unsupported silicone rubber tubing and expandable monofilament sleeving in several materials.

Hilec activities will be transferred into the Delfingen sleeving plant in Niagara Falls, NY, contributing to the improvement of its operational performances.

As part of its growth strategy, Delfingen is seeking to build a group that is comprised of three Business Groups: Protection Systems, Fluid Transfer Solutions and Assembly Technologies.

The Hilec acquisition supports this growth and is an important step in Delfingen's strategy to seek acquisition which strengthen its core business capability and enhance its global business.

This acquisition broadens the Group's expertise in textile sleeving and product development potential. It allows Delfingen to take a leading position in this market in North America and to diversify its customer base from the Automotive industry.

Delfingen is a global leading manufacturer of protection systems, fluid transfer solutions and assembly technologies, working closely with car-makers, automotive suppliers and other OEM's. Delfingen operates in 17 countries, employs 1300 people worldwide, with sales revenue of €112M in 2011.

For more information, visit the company's web site at [www.delfingen.com](http://www.delfingen.com)

### Joslyn® Surge Protection Products Available with Stainless Steel Enclosures

Joslyn® AC surge protection devices (SPDs) from Thomas & Betts, which includes more than 1,300 standard configurations, now are available with

stainless steel enclosures for corrosive applications, such as wastewater treatment facilities. Other applications include oil and gas processing, civil construction, utilities, pulp and paper manufacturing, food and beverage processing, and mining.

Available through Thomas & Betts' network of distributors, Joslyn® SPDs protect operations from the damaging effects of electrical power surges, transients and noise, from the service entrance to the equipment level. Suitable for protecting single, split and three-phase applications ranging from 120 V to 600 V Delta, Joslyn® SPDs are capable of han-

dling high-surge energy from 20 kA to 400 kA per phase and are suited to meet the many requirements of industrial, commercial, institutional and residential applications.

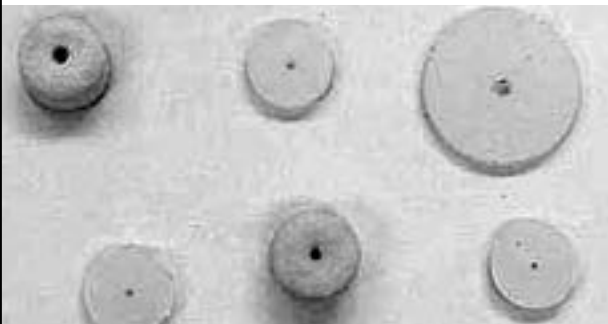
The stainless steel enclosures are standard in Type 304 stainless steel, an alloy of iron, chromium and nickel. Enclosures in marine-grade Type 316 stainless steel, which contains molybdenum in addition to the metals contained the Type 304 stainless steel alloy, are available through special order.

For more information about Thomas & Betts' Joslyn® SPDs, visit [www.tnbpowersolutions.com](http://www.tnbpowersolutions.com) or call (800) 816-7809.

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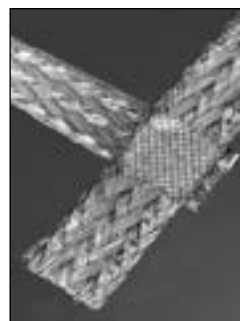
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## NEWS PLUGS continued

**Let Eraser Certify the Correct Machine for You!**

Syracuse, NY – September 26, 2012: The Eraser Company, Inc., manufacturer of wire, cable, and tube process equipment, has launched a new program called The Eraser Certification Program (E.C.P.). This new program will help manufactures receive the Eraser machine that is best suited for their job(s). Our skilled product specialists and lab technicians work closely with each customer to ensure that their needs and tolerances are being met.

Participation in the program is easy and it is at no cost to the consumer:

- \* Send 10-15 feet of sample material

- \* We will process the material on the appropriate Eraser machines to determine the best product fit for your application.

- \* Our team will provide you with a formal evaluation report certifying the Eraser product for your specific application.

- \* Our team will send back your processed material along with the evaluation report and proposal for the best Eraser solution.

Since 1911 a wide variety of industrial manufacturing companies have taken advantage of Eraser's broad product line and superior customer service.

"We do the sample program to ensure that the customer is getting exactly what they need, because all wire is created different. We want to make sure that our customers are 100% satisfied with their product before it is even in their hands," says Laura Prattico, Sales & Marketing Manager of the company.

The Eraser Company, Inc., celebrating its 101st anniversary in business, manufactures a wide range of industrial products including wire, cable and tubing cutters, wire and cable strippers, wire twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and FybRglas® erasers.

The company is ISO 9001:2008 certified. The company offers Free E.C.P. (Eraser Certification Program). Send a 10-20 foot sample of your material and Eraser will recommend the best solution for your processing needs from its line of more than 200 products.

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#### Thomas & Betts Enables Distributors to Embed Catalog Easily on Their Websites

Thomas & Betts has made it easy for full-line distributors to embed its catalog on their websites with the recent introduction of a free, copy-and-paste iframe function. Once the catalog is embedded, distributors will have no maintenance, as the embedded catalog will be updated automatically when Thomas & Betts updates its web catalog.

"The advantage of this is that the distributor's customer need not leave the distributor's website to access the Thomas & Betts catalog," said Brian Herington, president, U.S. and Latin America electrical business at Thomas & Betts. "This significantly reduces the risk of the customer going elsewhere for the sale when surfing the Internet for T&B catalog information."

Thomas & Betts' online catalog contains more than 400,000 items, with data sheets available for more than 26,000 of these items. Other resources include 3D models, installation instructions, material safety data sheets (MSDS), drawings and cross referencing of more than 60,000 items, representing more than 250

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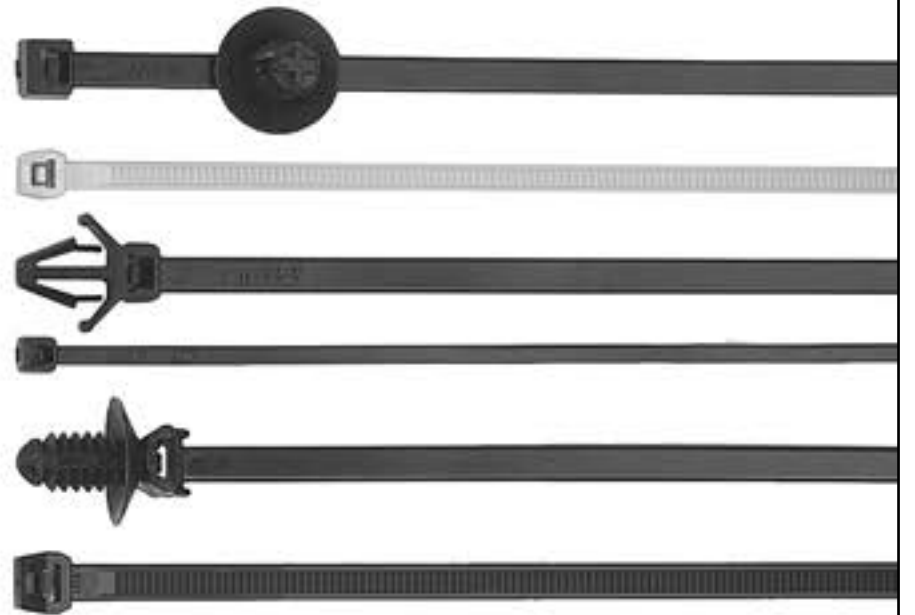
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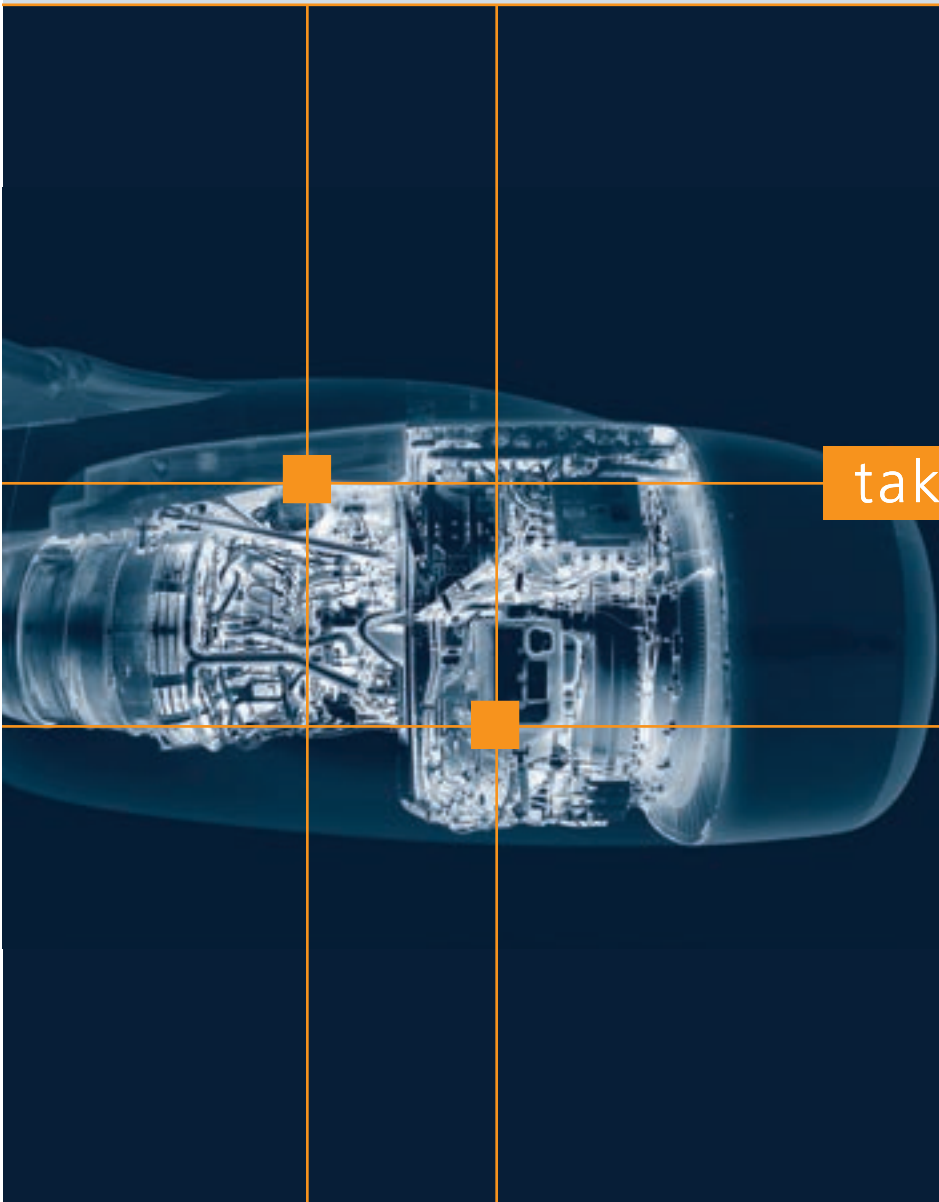
HellermannTyton is globally recognized for manufacturing a full line of high quality cable ties and fastening systems. Manufactured in the USA, the EVO 7 cable tie tool and HellermannTyton's cable ties together produce bundling and fastening systems of unparalleled quality. Learn more about HellermannTyton at:

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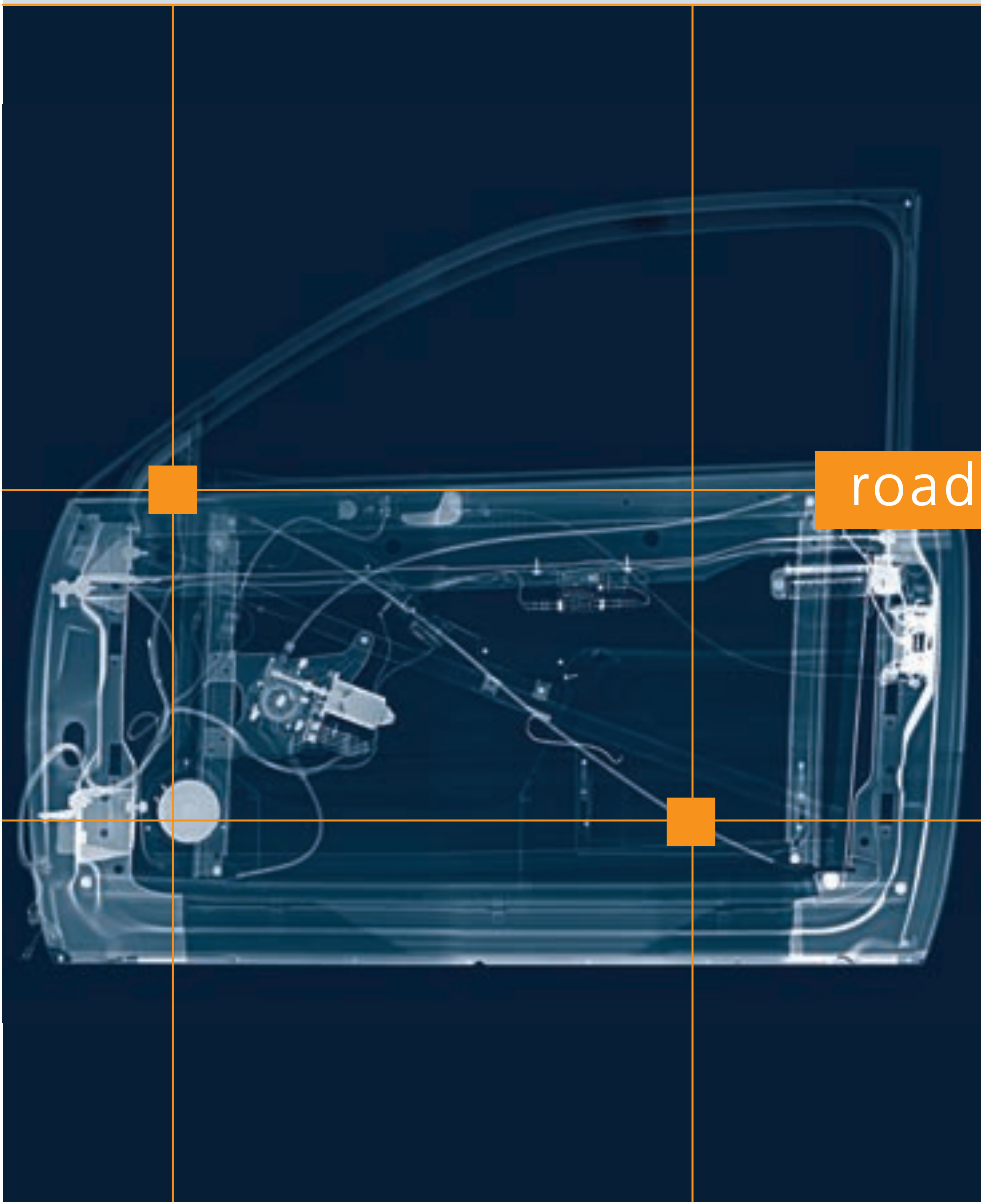


The **PowerStrip 9550** is a modular cut and strip machine available in four basic configurations to cover a wide range of wire processing applications. Shielded cable and complex multi-conductor applications can be processed in one automated operation. Processing modules, such as the programmable cutter head system and rotary incision unit allow for a customized, application oriented configuration. All processing and functional modules can be retrofitted at a later date, making the **PowerStrip 9550** a future-proof investment.

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## NEWS PLUGS continued



Continued from page 32

brands. The online catalog also offers submittal packages with e-mail capability and PDF print options.

"We provide our embedded catalog to distributors free of charge," Herington said. "We also ensure that the information displayed in the embedded catalog will always be current and complete. It's the same information displayed on the T&B website. Distributors don't have to do anything to update the catalog on their websites."

For more information about Thomas & Betts' catalog embedding for authorized distributors, visit [www.tnb.com](http://www.tnb.com) or call (800) 238-5000.

### Connector Series Ideal for Use in the Mining Industry

Amphenol Industrial Global Operations, a global leader in interconnect systems, has updated its third party approvals of the Starline EX and Amphe-EX series of connectors to meet hazardous area classifications and expands its support into new markets. These harsh environment connectors are ideal for use in the mining industry.

Amphenol's Starline EX and

Amphe-EX now meet hazardous area classifications for both American and Canadian EX ratings as well as those in Brazil and Australia. Before, the connector line only met hazardous classifications ATEX and IECEx which were prevalent for the European market. All of the connectors in the Starline EX and Amphe-EX series are put through vigorous testing to meet third party approvals, including but not limited to flammability resistance, temperature resistance, temperature rise and hydrostatic pressure testing.

Because they offer a higher level of corrosion resistance in some of the harshest environments, both connector series can be used on the mining industry's surface and underground machinery, crushing and screening equipment, drilling equipment, communications systems and asset locator equipment, where rugged construction and a variety of configurations including copper, coax, fiber optics, Ethernet and hybrid configurations are essential.

Starline EX and Amphe-EX are also perfect for use in petrochemical refining, oil and gas exploration and production, as well as pharmaceutical and chemical manufacturing. Instrumentation and power supply OEMs looking for various interconnect options can also successfully use the connector series.

Both the Starline EX and Amphe-EX hazardous environment series of connectors are rated to the current



**Starline EX and Amphe-EX  
Series of Connectors**

AEx (American EX listing per the NEC 505), Canadian EX, ATEX, IECEx, Inmetro, GoST-R and Australian Group/Mining (through TUV Rheinland). The standard Starline connector series is approved to the UL 1977 and CSA C22.2 standards for circular connectors. The connectors also carry gas and dust certifications.

Amphenol also offers hazardous area cable glands that carry many of the same approvals as the connector series including ATEX, IECEx, Inmetro, UL and GoST-R and can be used in the mining industry as well.

Designed for hazardous ATEX and IECEx applications requiring high power or high speed signal, these rugged connectors feature exceptional mating properties and are available in high grade 316 stainless steel. They are threaded, flameproof and fabricated to prevent the mixture of explosive gases and the electrical circuits by means of tighter tolerances in mated junctions.

Approved for Zone 1 rated applications, both the Starline EX and Amphe-EX connectors eliminate hard wiring to terminal blocks

## Small Details

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.

With every year, BURNDY continues to invest in and improve our Small HYDENT™ terminal options with:

- Newer technology that gives Cheryl and her co-workers better quality control
- The full-cycle ratchet HYTOOL™ that was developed specifically to ensure UL Listed and CSA Certified connections with BURNDY terminals
- Custom built jars that make it easy to see, store and use Small HYDENT™ terminals

Like the teamwork Cheryl finds in her job each day, the BURNDY™ Small HYDENT™ line and corresponding tools work together to ensure long-lasting, quality connections.

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enclosed in junction boxes and provide quick and safe interconnections to modular equipment.

For more information, please visit [www.amphenol-industrial.com](http://www.amphenol-industrial.com).

#### Molex Showcases Sealed USB Interconnect Solutions For Boat Builders At IBEX 2012

Molex Incorporated highlighted its portfolio of sealed Universal Serial Bus (USB) connector solutions for harsh duty marine applications at the International BoatBuilders' Exhibition (IBEX), October 2-4, 2012, at the Kentucky Exposition Center in Louisville, Kentucky.

"Featuring fully-shielded cable and heavy-duty construction, Molex sealed connector assemblies provide exceptional performance in high vibration and harsh weather conditions, with superior protection against electromagnetic and radio frequency interference on land or water"

"Our complete line of sealed USB interconnects and assemblies are suitable for any boat application requiring a secure, robust connection," states Kurt Krutsch, product marketing manager, Molex. "Harsh-duty sealed USB connectors bring the convenience of one of the most popular I/O connector formats safely, securely and cost-effectively into marine environments."

Rugged plug-and-receptacle Molex USB interconnect designs feature secure bayonet style latching, encapsulated PCB receptacles and overmolded cable assemblies, with IP67 and NEMA 6P ratings for optimal protection against dust, debris and water. Delivering high performance and ease of use, Molex industrial USB cord sets are available in varied lengths for any marine application requirement. The overmolded cord sets allow faster on-site installation than traditional field-wired connectors.

"Featuring fully-shielded cable and heavy-duty construction, Molex sealed connector assemblies provide exceptional performance in high vibration and harsh weather conditions, with superior protection against electromagnetic and radio frequency interference on land or water," adds Krutsch.

Also highlighted at the show were the sealed Ethernet connectors featuring bayonet-style latching as well as Brad® M12 and Ultra-Lock®. The RJ-45 bayonet style ensures proper insertion depth when mating and a quick, easy connection.

For more information on sealed USB RJ-45-style and M12 connector technologies for boat builders visit: [www.molex.com/product/industrialusb.html](http://www.molex.com/product/industrialusb.html). To receive information on other Molex products and industry solutions, please sign up for our e-announcement newsletter.

#### ETCO Incorporated Focuses on New Range of Products to Increase Consumer Safety and Reduce Manufacturing Automation Errors

ETCO Incorporated, a manufacturer of custom precision stampings for appliance, automotive, medical and other industries, has announced a range of products whose primary purpose is to ensure consumer safety while working towards reducing production line and automation errors. The products are part of an ongoing effort to provide value to

manufacturers while ensuring production line continuity.

The wire termination products being focused on include the Closed Back Insulated Female Disconnect Product, model numbers PDF-224-CB and PDF-225-CB. This product is currently being used by a host of large scale appliance manufacturers in applications such as dishwashers, washing machines and refrigerators. Utilizing the industry-leading "F" crimp developed by ETCO, the Closed Back connector renders an absolute minimal loss of voltage. The patented Closed Back cover of the insulated DF-224 and DF-225 terminals paved the way for compliance to UL 749. This locked-in cover offers a fortified hazard defense to prevent electrical shock caused by

Continued on page 38

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Making Critical Connections™

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**NEWS PLUGS** continued



Continued from page 37

accidental probing of a tool or utensil; this is sometimes referred to as a "knife test."

Another product available for immediate use in appliance manufacturing, wire termination and a multitude of other industries is the patented FlatSnap product (product numbers that range from F260-HB through FW-265-CX). Currently, the FlatSnap product is being used by major appliance makers in ranges, dishwashers, washing machines and other appliance applications. This product helps to reduce injury by allowing workers to snap and lock the connection in place. Many manufacturing injuries arise as a result of repetitive motion and components

not built with this in mind. ETCO's FlatSnap component product solutions are ergonomically designed to reduce repetitive stress related injuries.

ETCO President John Macaluso states, "These products demonstrate ETCO's commitment to helping manufacturers and their employees improve the safety of the products

they produce every day." He continues, "The products also provide cost-savings to manufacturers and helps to reduce down-time due to automation problems and injuries."

ETCO plans on enhancing its entire wire termination product line with consumer safety measures in place, as part of long-range initiative to make manufacturing more efficient and less costly.

Founded in 1947, ETCO is a privately owned company. The Company manufactures precision stampings and rubber and plastic molded products used principally by major automotive and appliance manufacturers. ETCO also has major customers in a variety of other industries in the USA and over 30 countries throughout the world. ETCO has factories and a research complex in Bradenton, Florida and a factory and engineering center in Warwick, Rhode Island.

For more information on ETCO, visit the Company website online at <http://www.etco.com>

**Durable Technologies Named Gold Manufacturer of the Year**

Marking Industry Magazine, the only national trade publication targeted to the marking devices industry, announced that Durable Technologies of Worcester, Massachusetts has been named the 2012 Gold Manufacturer of the Year.

"This prestigious award, along with our celebration of the 60th anniversary of our Durable Mecco division, are a testament to our employees and their commitment to customer service, developing quality solutions, and our cumulative wealth of expertise in our area of focus, direct part marking", states Kari Lunden, President and CEO of Durable Technologies.

Durable Technologies

**BT 3500 Battery-Hydraulic Hand Tool**

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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.

**We are now accepting orders for the BT 3500 Battery-Hydraulic Hand Tool.**

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continues to capture market share in the core markets it competes in supplying manual marking tools, semi-automated part identification systems and equipment, and direct part marking technology. Durable Technologies manufacturers and supplies custom designed marking tools and systems that allow companies to permanently identify just about any type of part made from most any material.

Durable Technologies supplies a wide range of industries including automotive, metal fabrication, defense, aerospace, firearms, medical, food and beverage, pharmaceutical, jewelry, electronics, tooling, and personalization.

Where many competitors have recently merged or gone out of business, Durable continues to thrive through a commitment to customer service, a deep expertise at solving part marking problems, and a promise to always suggest the best part marking solution based on their customer's budget and specific marking requirements.

For more information on Durable Technologies you can visit them online at [www.durable-tech.com](http://www.durable-tech.com).

#### Allied Wire & Cable Introduces Father/Daughter Sales Team in TN

Allied Wire & Cable welcomes Liz Gilmore to its Tennessee sales team, where she will work alongside her father and industry veteran, Allied account representative, Tom Gilmore.

Allied is proud to add Liz Gilmore to its sales team in Tennessee. Although she has been part of the Allied family for some time, as veteran account representative, Tom Gilmore's daughter, she looks forward to beginning a career with Allied as well.

She says, "I think (Allied Wire & Cable) is an amazing company filled with opportunities. I know that this is a family owned business, and I am definitely feeling that through all of the wonderful people here that are so willing to help."

Liz is new to wire and cable, but is eager to learn as much as she can about the industry. In true Allied fashion, her wire and cable education will be a family affair.



**Liz Gilmore**  
Allied Wire & Cable

Her father, Tom Gilmore has been with Allied for seven years, but has been working in the industry since he was just eighteen years old. With his experience, he has become the go-to-source for information on all types of cable, from mil-spec cable, to automotive wire and aerospace cable. With such a well-rounded wire and cable background, it would be hard to think of someone more qualified to show Liz the ropes.

Of coming to work with her father, Liz says, "I am thrilled to be joining Allied to work alongside my dad. He has over 35 years of experience, and is going to be taking me under his wing, so with his knowledge and my drive, there is no way I can be anything but a success!"

Allied Wire & Cable is happy to count Liz as its newest team member, and looks forward to seeing her follow in her father's footsteps, as an Allied representative.

Allied Wire & Cable is a family owned and operated wire and cable distributor and value-added manufacturer. Allied services markets in the government, military, and the aerospace, automotive, and telecommunication industries. Allied offers customization services, including cut and strip, printing, dyeing, striping, twisting, and more, so customers get their wire and cable exactly the way they need

it. Allied also assigns individual sales reps to customers, providing a single point of contact to guide them through the cable buying process. 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 information on Allied Wire & Cable, please visit [www.awcwire.com](http://www.awcwire.com).

## 20<sup>th</sup> Annual Wire Harness Conference February 20-22, 2013

For further information visit [www.whma.org](http://www.whma.org)



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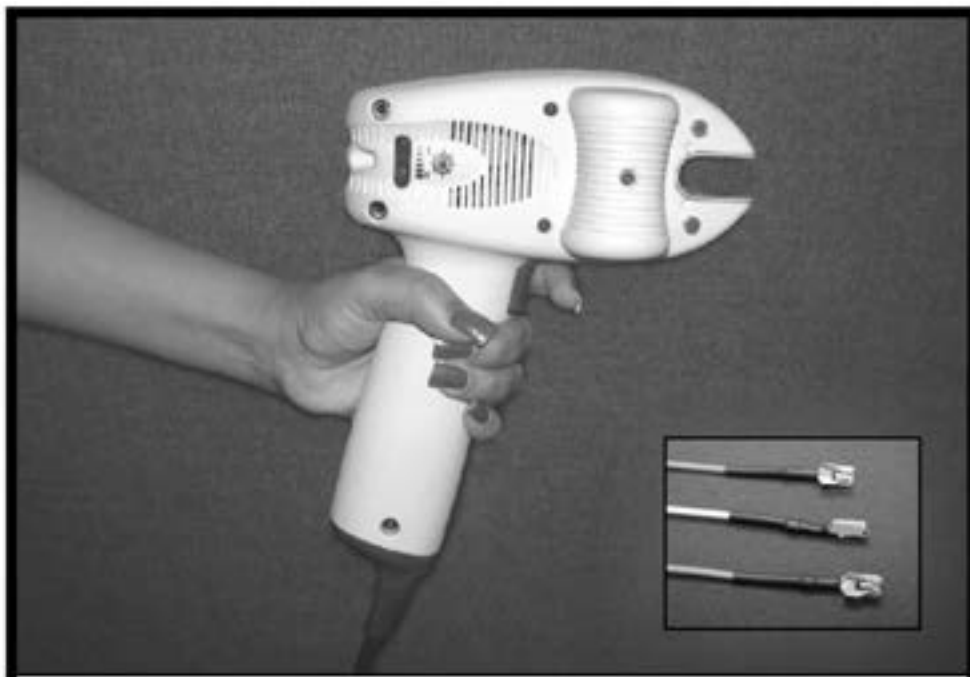


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## Our Gun out-shrinks the competition 5 seconds vs. 12 seconds\*

\*polyolefin, 5" length

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

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

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

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



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1429 W. 240th St., Harbor City, CA 90710 (310) 534-0959 [www.judco.net](http://www.judco.net)

**Focus-Lite™**  
Heat Shrink Processing Machines

## NEWS PLUGS continued



### Devices Enable Quick and Easy Transition from MRJ21 Cable Connectivity to RJ45 Connectivity

Bel Stewart Connector, a division of Bel Fuse Inc. are 48-port MRJ21 1U patch panels for high-density networking and telecommunications applications. The 10/100BASE-T (PN ASY60300-005) and 10/100/1000BASE-T Gigabit Ethernet (PN ASY60300-006) patch panels are the latest additions to Stewart Connector's MRJ21 Cabling System, a high-density, high-performance, copper cabling solution. The new patch panels are engineered to assist installers to rapidly connect equipment using MRJ21 interfaces to infrastructure or equipment with RJ45 ports, as well as save valuable rack and cabinet space in data centers or telecommunications rooms.

Stewart Connector's MRJ21 Cabling System supports high-density, small form factor connectivity in any plug and play environment including data centers and zone cabled or office environments. The patch panels fit into standard 19-inch racks and are ideally suited for use with Stewart Connector's MRJ21 cable assemblies, which offer the ability to connect 24 twisted pairs (12 two-pair or 6 four-pair ports) with just one connection. Available in common and custom sizes, the factory terminated and tested cable assemblies facilitate quicker installation together with highly reliable and robust connections.

The cables are supplied in shielded and unshielded configurations in addition to plenum, riser and LSZH jacket constructions. Multiple versions of MRJ21 end configurations, including hybrid MRJ21 to RJ45 and RJ21, are provided.

Patch panels feature a straight panel design with push-on keyed connection, jackscrews for positive latching and secure cable retention, and on-site configuration label.

Designs for T1/E1 and DSL applications, along with custom connector terminations, are available upon request.

In ten-piece quantities, pricing for Stewart Connector's MRJ21 1U Patch Panels (48-Port RJ45) are \$375.00 each for 10/100BASE-T (PN ASY60300-005) parts, and \$425.00 each for 10/100/1000BASE-T (PN ASY60300-006) parts. Delivery is 12 weeks ARO; limited stock is immediately available.

MRJ21 is a trademark owned by TE Connectivity used here under license.

For further information visit [www.bel-fuse.com](http://www.bel-fuse.com).

### Model G10S Bench Wire Twister from Eraser Company

Eraser's Model G10S Bench Wire Twister is used for many diverse twisting needs. The unit can twist pre-stripped stranded wires, twist strands of two or more wires together, twist wrapped shields on coaxial cables and tighten the twist of already twisted wire. Model G10S is supplied with one set of three twist length spacers to vary the twist length, depending on application needs. Twisting inserts can be ordered depending on wire size to be twisted.

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Specifications are as follows:

WIRE SIZES:

- 12-18 AWG (2.06-1.02mm $\phi$ )
- 18-24 AWG (1.02-0.51mm $\phi$ )
- 22-26 AWG (0.64-0.41mm $\phi$ )

TWIST LENGTH:

- Up to 1" (25.4mm) dependent on spacers used

TWISTED PAIRS:

- Not to exceed 2 18 AWG (1.02mm $\phi$ ).

THREE SIZE SPACERS:

- 1/2" (12.7mm) thick
- 1/4" (6.35mm) thick
- 1/8" (3.18mm) thick

POWER:

- 115V, 60Hz or 220/240V, 50Hz



Model G10S Bench Wire Twister

The Eraser Company, Inc., manufactures a wide range of industrial products including wire, cable and tubing cutters, wire and cable strippers, wire twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and fybRglass® erasers. The company is ISO 9001:2000 certified. The company offers E.C.P. (Eraser Certification Program). Send a 10-20 foot sample of your material and Eraser will recommend the best solution for your processing needs from its line of more than 200 products. For more information on Eraser's entire product line visit [www.eraser.com](http://www.eraser.com) or call 315-454-3237.

### Raymond Foo Joins IPC as New Southeast Asia Representative

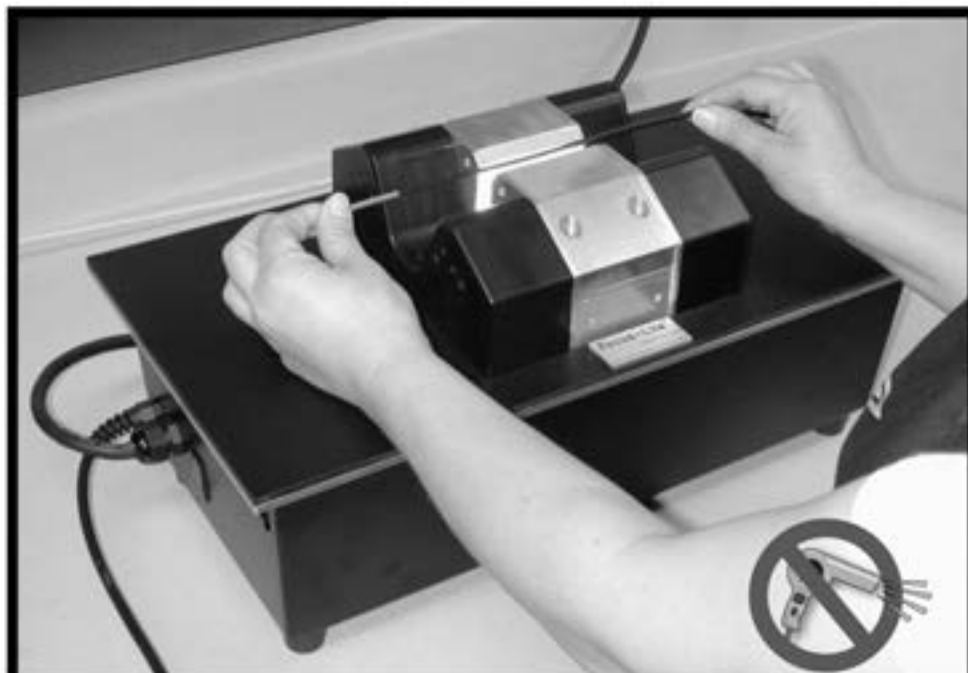
IPC — Association Connecting Electronics Industries® announced that Raymond Foo has joined the IPC staff as the Southeast Asia representative, working from Bangkok, Thailand.

As IPC's new Southeast Asia representative, Foo will have responsibility for providing standards development activity support, raising awareness of IPC and its programs, making company visits and establishing relationships with new IPC authorized document distributors in the region.

"IPC is continuing to extend its global presence in the electronics manufacturing industry and we're here to help serve companies in Southeast Asia through training programs, standardization efforts and certification," said David Bergman, IPC vice president of international relations. "Our mission is to strengthen and advance global electronics manufacturing and we're happy that Raymond has joined IPC's team to help support this important manufacturing region."

Foo has more than a decade of experience in product manufacturing and technology transfer and implementation within the electrical and electronics industries. In addition, he has more than 10 years of experience as a researcher and writer for technology publications including Electronics Manufacturing (EM) Asia and EMSNow. Foo holds a degree in electrical engineering from Queensland University of Technology in Brisbane, Australia.

Foo can be reached via e-mail at [RaymondFoo@ipc.org](mailto:RaymondFoo@ipc.org) or by phone at +66 89449 6628.



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

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

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

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

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



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**NEWS PLUGS** continued



**New Compounds From Teknor Apex Meet Broad Array of Green Requirements For Wire & Cable**

In late stages of development at Teknor Apex Company are nearly 50 PVC compounds that incorporate new bio-based non-phthalate plasticizers and other formulation enhancements that address the "green" concerns of wire and cable users, it was announced by Vinyl Division industry manager Mike Patel. Teknor Apex will present data on some of the new compounds at 2012 IWCS International Cable Connectivity Symposium. .

The new RoHS- and REACH-compliant compounds will be available commercially in First Quarter 2013 under the brand

name BioVinyl™. They will be the first wire and cable offerings from Teknor Apex that incorporate bio-based plasticizers, which are manufactured using plant byproducts. The use of these bio-based ingredients by Teknor Apex enables BioVinyl compounds to possess lower greenhouse gas emission potential than conventional vinyl and a carbon footprint that is even smaller in comparison with non-vinyl plastics used for wire and cable, according to Patel.

Target applications for the new BioVinyl compounds include power cord, appliance wire, data cable, and tray cable. Beyond reducing the carbon footprint of PVC, Teknor Apex has completely reformulated the compounds to achieve these additional enhancements:

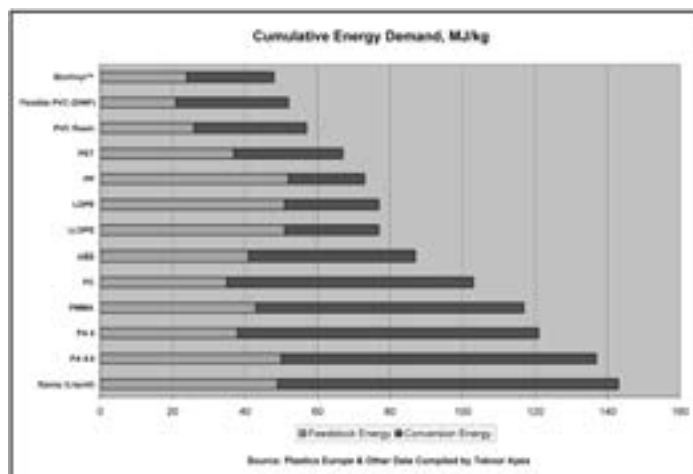
- Phthalate-free plasticizer. The bio-based plasticizers in BioVinyl compounds are derived from naturally occurring vegetable substances. (Since these sub-

stances are not used for food, they are unaffected by supply/demand forces impacting other bio-derived plastics feed stocks such as corn starch.)

- Improved flame and smoke performance. "We have eliminated bromine and antimony additives while still achieving a level of flame and smoke performance comparable to or somewhat better than standard PVC," Patel said.

- Reduction in volatile organic compounds (VOCs) resulting from formulation changes.

- Options for reducing acid gas. Alternative compound formulations are avail-



able that reduce acid gas content substantially, from the 24 to 25% level typical with standard PVC to the 12 to 13% range.

"Recognizing that wire and cable manufacturers must consider many 'green' concerns in developing and marketing products, Teknor Apex set out to formulate compounds that address the broadest possible range of regulatory issues," Patel said. "Our tests of BioVinyl compounds indicate that customers can make substantial progress in dealing with these issues without sacrificing performance."

Because half of the PVC polymer is derived from seawater and typical plasticizer loadings are 30%, the substitution of bio-based plasticizers for conventional phthalates enables significant reduction in energy demand for production of BioVinyl compounds compared to that of many plastics, according to Patel. He cited life cycle analysis tests reviewed by an independent third party which indicate that every ton of vinyl compound manufactured with the new plasticizers helps the industry reduce carbon dioxide equivalent emissions by 0.7 ton.

Teknor Apex has compiled comparative data indicating that the cumulative energy demand of BioVinyl compounds, including feedstock and processing, is the lowest in comparison with a wide range of plastics, including other thermoplastics commonly used in wire and cable (see graph at top of page).

The VINYL DIVISION of Teknor Apex Company is a leading manufacturer of compounds based on PVC, including Apex flexible and rigid vinyl, Flexalloy vinyl elastomers, and Fireguard low-flame, low-smoke compounds for wire and cable.

Headquartered in Pawtucket, Rhode Island, U.S.A., the Division is an international supplier to the appliance, automotive, construction, medical device, wire and cable, and other industries.

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As always, Thermosleeve USA products are safe and reliable high-quality products that are manufactured under strict quality controls (some meet or exceed UL/224/MIL) and are certified under the following agencies: F-Mark, TUV, VDE, UL/CUL.

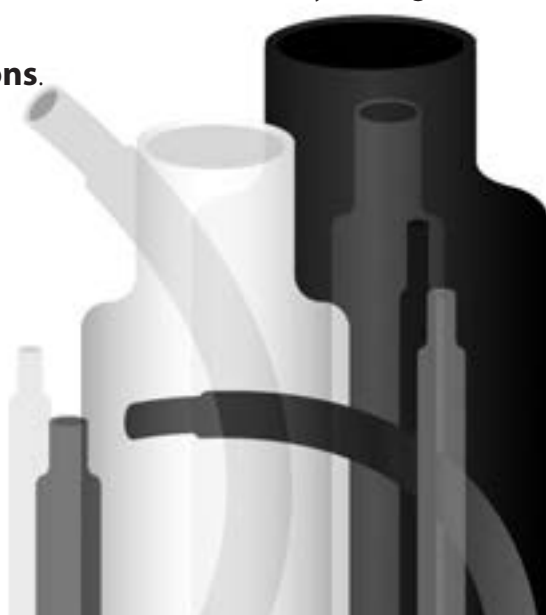


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(800)421-3536 and **expand your options.**



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# US Manufacturing Needs a Brand Makeover

*To engage this new generation of manufacturers, we must restore -- and elevate -- the perception of manufacturing in America.*

By Eileen Markowitz,  
Thomas Industrial Network

When I was growing up, it seemed like everyone believed that United States manufacturers made the greatest products in the world. From our home appliances to our cars, we all chose Made in America products for their quality and their value. No other country put as much pride, innovation, and workmanship into their design, and looking elsewhere wasn't even an option.

U.S. manufacturing was a flagship of our economy, and nothing could knock it from its pedestal – or so we thought.

Of course, the sentiment has changed since then as the economy has grown more global, and countries like China compete on price. But the pendulum is swinging back – or should I say forward – as Made in America quality once again becomes a status symbol for consumers and a competitive advantage for manufacturers here at home.

My company recently conducted its annual Industry Market Barometer® survey of U.S. manufacturers on the growth and outlook of the industrial sector as well as strategies companies are employing to get there. The findings confirm this transformation.

In the end, we heard from more than 1,600 manufacturers, and nearly eight out of 10 of them indicated that they

expect growth this year.

By standing behind their Made in America quality, these manufacturers are even taking back business from the Chinese. They're borrowing a page from the playbook of The Rodon Group of Hatfield, Pennsylvania, an injection molder of small plastic parts. A few years ago, when they sensed Chinese competitors gaining ground, Rodon launched an online "Cheaper than China" campaign to focus on their American manufacturing values. Within two years, their sales jumped more than 30%.

These companies never lost sight of the glory of American manufacturing, and now the world is coming to share their point of view.

Our research shows that U.S. manu-

facturers are entering new markets, expanding into new regions, and increasing their exports. With their gears fully in motion, American companies are looking to hire more workers to meet new market demand.

And that's where this engine of economic growth suddenly starts to sputter.

Our research supports what we are all seeing every day: Despite an unemployment rate of close to 8%, manufacturing jobs are going unfilled. Nearly half of our respondents want to bring in line workers, skilled trade workers, and engineers. But the people who are qualified for these jobs are either untrained, or uninterested.

This is a symptom of a larger problem. Despite the resurging interest in U.S. products, American manufacturing is in need of a brand makeover.

## *The Changing Face of U.S. Manufacturing*

While Americans are proud of the quality of our products, many have a far different perception of manufacturing jobs. They see manufacturing as "dead," lacking opportunities or challenges, and even as dirty or "undesirable" work. They're blind to the reality that today's manufacturing jobs blend design with technology and robotics, and many pay extremely well.

With shop classes disappearing and families and educators pushing students of all abilities toward a bachelor's degree, however, younger generations have no opportunity to be exposed to the rewards of a manufacturing career.

Respondents to our survey are vocal about this issue. They stress the importance of STEM (science, technology, engineering and mathematics) curricula, along with support for technical and vocational schools. One of them notes that we must "get the message out that manufacturing isn't dead in the U.S.; it has just gone high-tech."

It's gratifying to hear from individuals like Tracy Tenpenny, vice president of sales and marketing with Tailored Label Products (TLP) in Menomonee Falls, Wisconsin.

Tracy advocated for TLP's sponsorship of a program called Second Chance Partners, which helps high school students to gain manufacturing skills. Many of these students come from challenging backgrounds, and they are at risk of not finishing high school. Through Second Chance, they continue working toward their diplomas while beginning to learn a trade. TLP actually installed a classroom at their plant so that these students can continue

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**Eileen Markowitz,  
Thomas Industrial Network**

their academics there for two hours a day. The rest of the time, they are working at TLP and other area manufacturers. TLP is not only introducing them to a new profession; the company has hired two of these students.

Rodon, too, has innovated to

develop a solution. The company formed a consortium of about 50 local manufacturers. Together, these firms have approached two-year colleges and trade schools in their area, asking them to send graduates their way. Not only does this help Rodon and neighboring companies to grow; it's a competitive advantage for the schools, who are able to demonstrate a return on their training. In addition, consortium members are presenting at middle schools and high schools to ignite students' interest in manufacturing.

These are just two of many examples of manufacturers who are taking the initiative to help their industry make a comeback. Families, educators, associations, government, and businesses are all stepping up. We were gratified to endorse National Manufacturing Day, another wonderful example, with manufacturers opening their doors to students and their families, and associa-

tions offering insights and resources to aspiring and current manufacturers alike.

U.S. manufacturers, after all, have a passion for their industry. Eight out of 10 of those we surveyed would choose their industries all over again, and they want to share their enthusiasm with the next generation. Great things are possible when bright, ambitious young people have the opportunity to apply skills and knowledge to real-world applications, and contribute meaningfully to the growth of a company, a sector - and ultimately the economic vitality of our nation. To engage this new generation, we must restore - and elevate - the U.S. manufacturing brand.

Eileen Markowitz is president of Thomas Industrial Network, an information and technology company that connects manufacturing and industrial buyers and sellers. You may contact her at [emarkowitz@thomasnet.com](mailto:emarkowitz@thomasnet.com).

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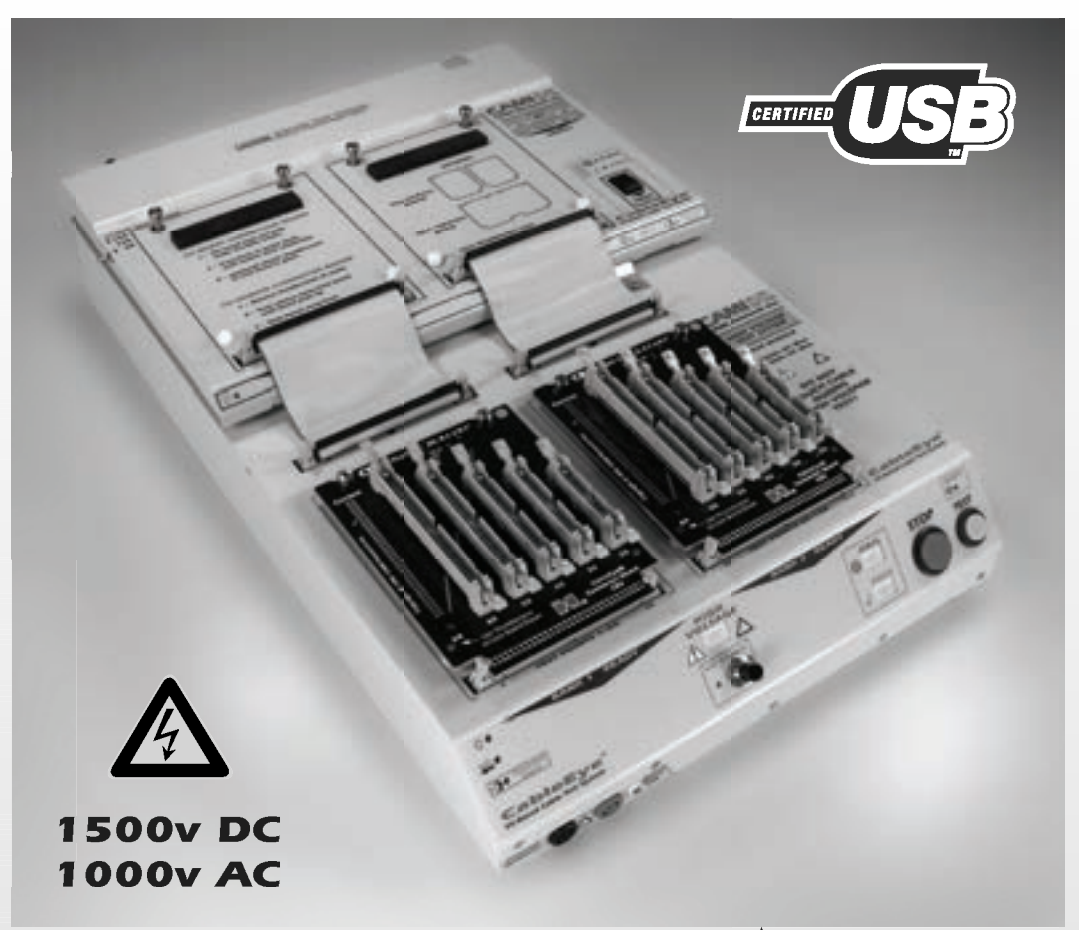
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2	2	66	↔ 0.3 Ω	≡ ∞	< 1 µA	1200 V	> 1 GΩ	0.067 mA	818 V	12 MΩ
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**NEWS PLUGS** continued**Gaining a Competitive Edge in Eastern Europe's Fast-Growing Electronics Assembly Market**

To support the rapidly growing electronics assembly market in Eastern Europe, IPC — Association Connecting Electronics Industries® will hold "IPC Conference on Solderability and Reliability for Electronics Assemblies" on 6-7 February 2013, in Budapest, Hungary. This two-day event will include a technical conference, workshops, a tabletop exhibition and networking opportunities to help attendees gain insight into new technologies and trends in electronics manufacturing services in Eastern Europe.

"Building upon the past two con-

ferences in Budapest, this conference will focus on how IPC standards can be used as a resource for improving quality, making better materials choices and achieving the 'perfect' solder joint," said Lars Wallin, IPC European representative and conference presenter. "New this year and as an added bonus, our panel of invited technical experts will present case studies so attendees can learn about real solutions through first-hand experiences."

This year's technical conference will cover a wide range of topics including: design and process control for package-on-package assemblies, solder paste selection in lead-free processes, measuring printed solder paste volume, avoiding solderability problems in bare boards, parameters for surface finish selection, placement and reflow in solder joints, and the effects of heat and moisture on passive and active electronic components. In addition, industry experts will provide

insight into EMS growth in central Eastern Europe, environmental trends and legislation, and relevant industry standards to use throughout production.

Preceding the conference, workshops will be held in the morning on 6 February. Dr. Thomas Ahrens, Trainalytics GmbH, will address lead-free solder joint rework and repair; industry consultant Bob Willis will address printed board inspection and quality control for BMC, LGA and QFN designs and steps for practical failure analysis; IPC European Representative Lars Wallin will provide information on solder joint troubleshooting and demands for producing IPC Class 3; and IPC Director of Government Relations and Environmental Policy Fern Abrams will cover conflict minerals.

For more information on IPC Conference on Solderability and Reliability for Electronics Assemblies in Budapest or to

register, visit [www.ipc.org/european-conference](http://www.ipc.org/european-conference).

The event will also feature tabletop exhibits and sponsorship opportunities, contact Maria Labriola, IPC manager of trade show sales, at [Marialabriola@ipc.org](mailto:Marialabriola@ipc.org) or +1 847-597-2866, or Lars Wallin, IPC European representative, at [LarsWallin@ipc.org](mailto:LarsWallin@ipc.org) or +46 8 26 10 07.

**Helukabel® Introduces Flexible, Aluminum Power Cable to US & Canadian Wind Markets**

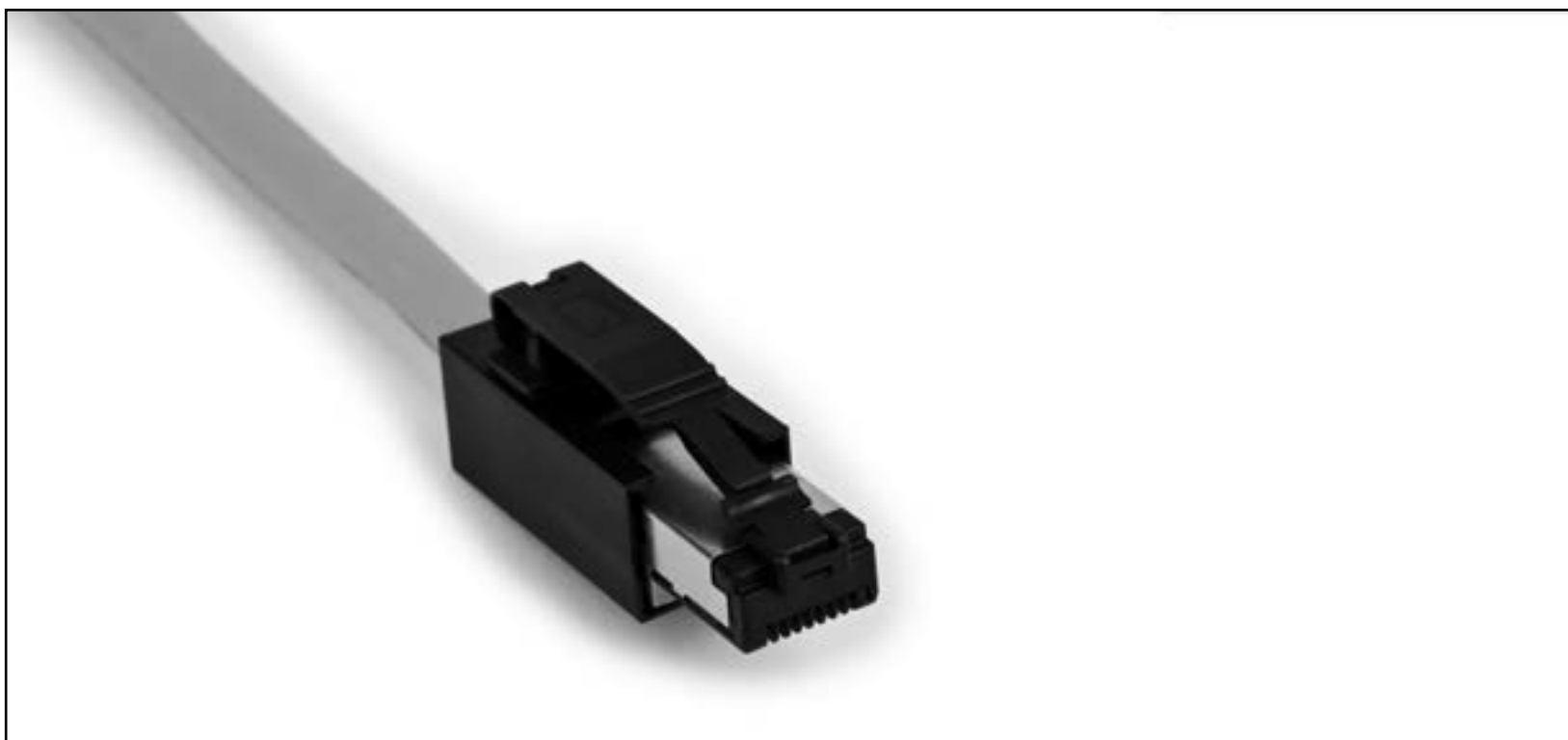
Aluminum power cable technology for wind turbines took a giant leap forward today with the introduction of HELUKABEL®'s HELUWIND® WK POWERLINE ALU. This diesel locomotive (DLO)-like power cable is made of finely-stranded aluminum and is highly flexible, offering customers the performance capabilities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

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The 3M Industrial RJ45 Modular Plug is designed to be used mainly in industrial atmospheres as an interface for industrial ethernet. More and more industrial machines are connected and controlled using ethernet technology to optimize factory and process automation.



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**Powerline ALU Cable from Helukabel®**

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 finely-stranded aluminum core and wrapped with specially-formulated, heat-resistant insulation and outer jacket, the POWERLINE ALU is not only highly flexible, but 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 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 POWERLINE ALU or to request a product sample, please contact sales@helukabel.com or 847-930-5118.

Established in 2007, HELUKABEL® 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.

**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

*Continued on page 48*

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**NEWS PLUGS** continued

Continued from page 47

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 3,500-foot 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](http://www.tnb.com) and look for Ty-Rap® on the "Brands" tab. or call (800) 238-5000.

#### TE Connectivity Nanominiature Connectors 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 reduc-

tion. 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

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## Wire Terminal Pull Testers

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### Manual WTT-110

The WTT-110 is easy to use: Simply insert the wire into the appropriate slot in the terminal fixture (12 slots accommodate a wide range of sizes). Select the Peak-Hold or Continuous Measurement mode via the keypad. Then rotate the easy-glide lever clockwise, clamping the wire and creating a consistent, repeatable pull force with minimal effort.



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CHECK-LINE'S® WTT Wire Terminal Pull Testers accurately measure the pull-off force on soldered and solderless wire terminals. These all in one solutions don't require additional grips, fixtures or accessories.

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- RS-232 and analog outputs available for data transfer.



Rotating fixture has slots of different widths to hold various materials.

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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 more information on TE's nano-miniature connectors, contact the Product Information Center at (800) 522-6752 or visit [www.te.com/catalog/menu/en/13953?BML=10576](http://www.te.com/catalog/menu/en/13953?BML=10576).

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

**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.



**MICRO2™ Fuses**

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.

The new website can be accessed at: [www.waytekwire.com](http://www.waytekwire.com). Waytek, Inc. can be reached at 800-328-2724.

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

Videojet Technologies Inc., a world-leading 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.

"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

*Continued on page 50*



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## NEWS PLUGS continued

Continued from page 49

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 Videjet'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: "Videjet 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.videjet.com](http://www.videjet.com).

### 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.

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- Dual Booster Cable Wire

East Penn Manufacturing Co., Inc. is recognized worldwide as a state-of-the-art manufacturer

of the finest wire and cable products made with the most modern equipment. Our products meet rigid quality and performance standards such as Underwriters Laboratories (UL), Canadian Standards Association (CSA), Society of Automotive Engineers (SAE), and RoHS compliance.

East Penn's facility has been certified to ISO 9001:2008, ISO/TS 16949:2009, and ISO 14001:2004 Management System Standards to assure customers a high quality connection with premium wire & cable products.



### EAST PENN manufacturing co., inc.

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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 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?BML=10576,26437,23182](http://www.te.com/catalog/menu/en/23181?BML=10576,26437,23182).

factured in the United States and is covered by a 3-year warranty. For further information visit [www.mark-10.com](http://www.mark-10.com)



Mark-10 TT02 Torque Tool Testers

### Digital Torque Tool Testers

Mark-10 introduces their all new Series TT02 Torque Tool Testers, presenting a simple and accurate solution for testing manual and electric torque screwdrivers, wrenches, and other tools.

These testers are compact and rugged, suitable for production environments in virtually every industry. A universal 3/8" square receptacle accepts common bits and attachments. The TT02 captures peak torque in both measurement directions, and also calculates 1st and 2nd peaks, useful for click-type tools.

A blazingly fast sampling rate of 7,000 Hz and accuracy of  $\pm 0.3\%$  produce reliable and consistent test results. The TT02 includes a range of sophisticated productivity-enhancing features, including USB, RS-232, Mitutoyo, and analog outputs, automatic data output/zeroing/data storage upon tool slip or click, memory storage for 1,000 readings, pass/fail indicators and outputs, and more.

Password protection is provided to prevent unauthorized changes to settings and calibration.

Three torque capacities are available: 12 lbin (135 Ncm), 50 lbin (570 Ncm), and 100 lbin (1150 Ncm). Series TT01 testers include MESURTM Lite basic data acquisition software, USB cable, AC adapter, rechargeable battery, user's guide, and NIST-traceable certificate of calibration. Rundown fixtures are available for electric tools. The TT02 is designed and manu-

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To learn more, call **1-800-322-3225** or request a free sample book at [www.phoenixcontact.com/toolfox](http://www.phoenixcontact.com/toolfox)



**PHOENIX CONTACT**  
INSPIRING INNOVATIONS

**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.

Waytek, Inc. is a privately held compa-

ny 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 (952) 949-0965. Visit [www.waytekwire.com](http://www.waytekwire.com)



**EV07 Cable Tie Gun**

**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.

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 [www.pasternack.com/t-Low-pim-connectors.aspx](http://www.pasternack.com/t-Low-pim-connectors.aspx) directly.

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

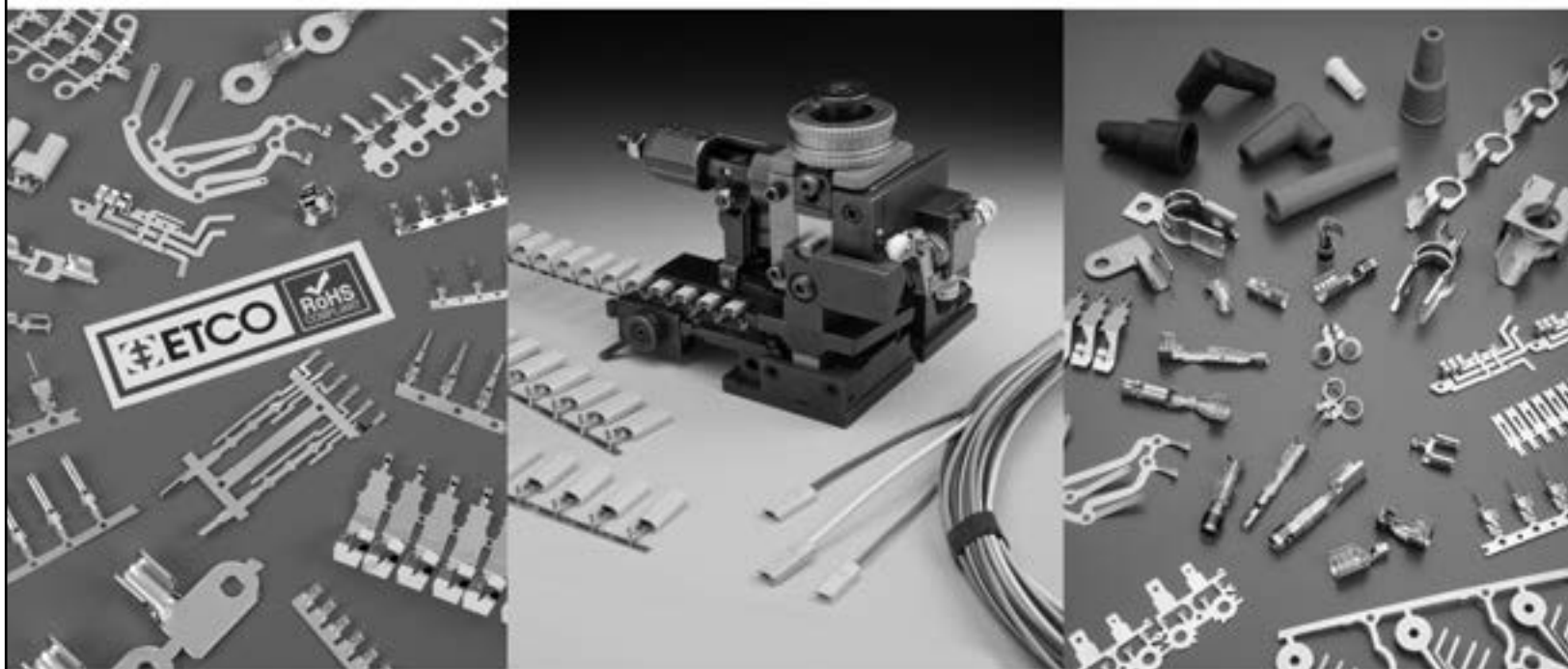
A leader in RF cables, adapters, connectors and components since 1972, Pasternack Enterprises is an ISO 9001:2008 certified manufacturer and international supplier of RF, microwave and fiber Optic products. Pasternack offers off-the-shelf availability and same-day shipping of the industry's broadest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

**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

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With over 500 standard parts consisting of electrical terminals, disconnects, molded products, and automotive connectors—and an even larger number of custom products—ETCO is at the forefront of terminal engineering for a variety of industries.

ETCO has maintained its commitment to quality, competitive pricing and unrivalled lead times since 1947. Contact us directly to see how ETCO can help provide solutions to your toughest engineering problems today.

ETCO is celebrating over 60 years as an industry leader in the manufacturing of stamped, molded-metal electrical components.

With locations in Florida and Rhode Island, ETCO also operates an innovative research and development facility to offer the most sophisticated, custom engineering expertise possible.

View ETCO's Standard Products selection online at <http://products.etco.com>



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' Electro-magnetic 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/spectrum-control](http://www.apitech.com/spectrum-control), or contact API's sales team at [sales@apitech.com](mailto:sales@apitech.com).

#### Delta Group Electronics Completes Company AS9100 REV C Certification

Delta Group Electronics, Inc. announced 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 cus-

tomers 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 exciting 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 industries. Based in Albuquerque, New Mexico, the Company also has assembly operations in California, Texas, Florida and Arkansas, with administrative offices in Missouri.

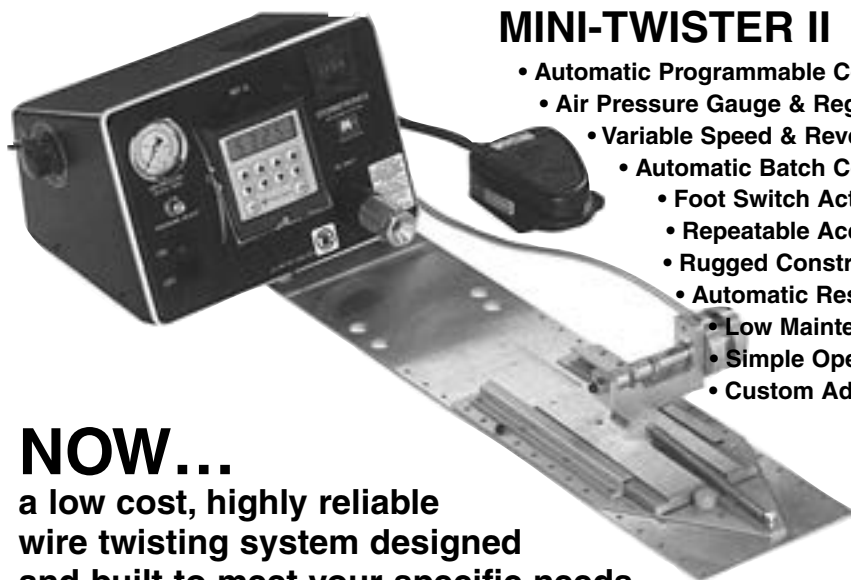
For more information about Delta Group, visit its website at [www.deltagroupinc.com](http://www.deltagroupinc.com) or call Tod Cummins @ (505) 883-7674.

## STORMTRONICS

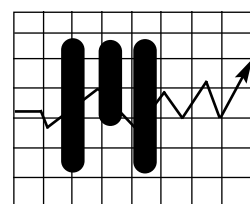
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## NEWS PLUGS continued

## Product Display Boards Help Train Apprentice Electricians

Thomas & Betts presented a product training electrical component display board to the Joint Apprenticeship and Training Center/National Electrical Contractors Association/International Brotherhood of Electrical Workers (JATC/NECA/IBEW) training facility in Lanham, Md., on Sept. 14, 2012. Thomas & Betts, a global leader in electrical components that manage the connection, distribution, transmission and reliability of electrical power, developed the display board is used to educate apprentice electricians in the use of common electrical components and test their knowledge of how

they are used in the field.

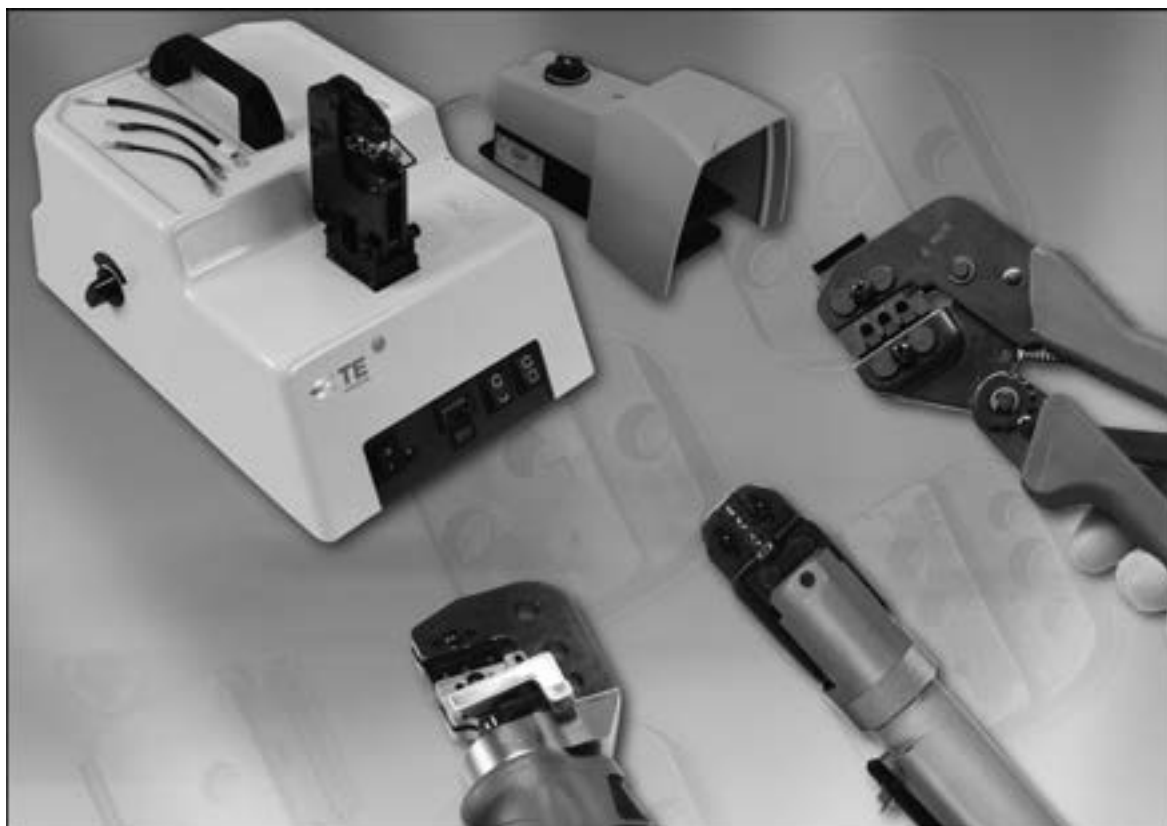
"The Thomas & Betts product display board is just an example of the pledge Thomas & Betts has made to support the NJATC, NECA and the IBEW. We have also placed six other display boards in JATC locations throughout the United States and plan to add additional units in 2013," said Charles Treadway, president and CEO of Thomas & Betts Corporation.

"We greatly value the opportunity to partner with industry leading training partners, such as Thomas & Betts, to provide tools which aid our mission of supplying the electrical industry with the most highly skilled highly trained electrical workers," said Michael I. Callanan, NJATC executive director, "I believe these boards are an important tool in our effort to succeed with this mission."

Products featured on the board include Liquidtight fittings and conduit, Ty-Rap®



Pictured at the unveiling of the Thomas & Betts display boards at the JATC/NECA/IBEW training facility in Lanham, Md are: (L to R) Ken Bassett, Potomac Testing Inc.; Kevin Burton, Assistant Training Director, JATC; Michael Shoemaker, Financial Secretary for Local Union #26; (front) David McCord, Training Director, JATC; (back) Chad Simpson, Thomas & Betts; Tim Max, Thomas & Betts; David Kendall, Thomas & Betts.



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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 experience 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.
- **Applicators and tooling** from TE can be your key to productive wire harness manufacturing. These applicators come from a long tradition of quality, reliability, and precision.
- **Insertion Machine platforms** combined with performance enhancing accessories provide flexibility to meet a wide range of customer requirements in the manufacturing of printed circuit boards.



For all your application tooling needs, contact Heilind Electronics or visit [www.heilind.com/rpages/gatd](http://www.heilind.com/rpages/gatd)

TE Connectivity, TE connectivity (logo) and TE (logo) are trademarks



cable ties, Steel City® boxes and pre-fabricated assemblies.

"Thomas & Betts' management, in addition to our thousands of field sales, operations and supporting personnel, are dedicated to a long-term, mutually beneficial commitment to NECA, IBEW and the NJATC," said Brian Herington, president, Electrical Division, US & Latin America at Thomas & Betts.

Thomas & Betts Corporation, also recently announced a two-year commitment to the National Electrical Contractors Association (NECA)'s Premier Partner program. The focus of the program is on the Partners helping NECA members run their companies as efficiently and profitably as possible. Thomas & Betts' commitment is for 2013 to 2014.

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](http://www.tnb.com).

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## NEWS PLUGS continued



### Custom Cable Resources Expand on Allied Wire & Cable Website

Allied Wire & Cable is proud to introduce the newly expanded custom cable section of its website. Featuring custom cable articles, engineering resources, video, FAQs, design tools, case studies, and more, www.awcwire.com is now a one-stop source for all things custom cable.

Custom cable is an Allied specialty, and now they've developed it into a major component of the Allied Wire & Cable website.

The Custom Cable Center is designed to be a one-stop-shop for any and all custom cable needs. It is organized into three main sections: the Custom Cable Information Center, Custom Cable Design Center, and the Custom Cable Gallery, each of which provides unique value to customers interested in custom cable manufacturing and design, whether they are brand new to ordering custom, or a seasoned veteran.

"We wanted to expand the resources available to our customers because we want them to have the best information available. It's all part of our dedication to customer service. We want to give them tools and information they can really use," said Allied co-owner, Tim Flynn, of the added custom cable content.

Allied's Custom Cable Gallery is an interactive portion of the site featuring case studies of custom cables Allied has completed. Staying with the theme of customization, customers can browse the case studies in one of three ways: by industry, type of cable, or as a slideshow, using the navigational arrows on each page.

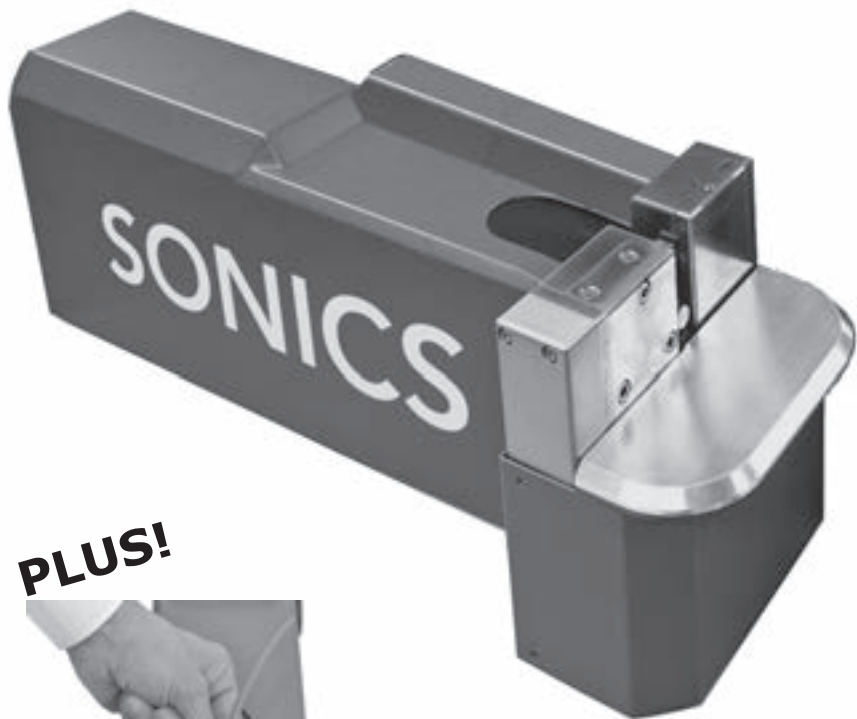
The Gallery reflects Allied's scope of services and experience with diverse industries. Flynn explains, "We have successfully designed cables for all branches of the US government, Lockheed Martin, Caterpillar, Verizon, and all the way down to Joe's automotive shop."

In the Custom Cable Information Center, customers can view custom cable articles, engineering resources with detailed information on cable components, materials, and construction concepts, FAQs, and even a "Custom Cable Design Basics" video that serves as a great starting point for anyone new to custom cable.

The Custom Cable Design Center is where everything comes together. A step-by-step form walks the customer through their requirements, to create a solid foundation for their design and quote discussions with one of Allied's custom cable experts.

"Many times, customers don't even need a new cable spec-ed out. They'll tell us things like, 'I've been ordering so-and-so stock cable, and it works alright, but I wish it was a little more flexible, or I wish it had a different jacket material, or whatever,'" says Key Account Specialist, Chris Burke. "A lot of times, people seem sur-

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prised when I let them know I can do that for them."

With the new online focus on custom cable, Allied hopes concepts like these won't come as such a surprise, and that new customers won't be intimidated by the thought of ordering custom.

"One of the benefits of working with us is that we'll sit down with you, discuss your application, and help you create a custom cable design that meets your exact needs," said Burke. "Even if a customer is unsure of what they need, or even if a custom cable is right for them at all, we will help them find or create whatever cable is best for their particular application."

Allied is dedicated to helping their customers find a cable that will work with all of their requirements; going beyond just performance and ratings, to a customer's time frame and budgetary needs. "Nothing satisfies us more at Allied than

solving customers problems. Custom cables are designed to solve each customer's unique needs, whether they be environmental concerns, the bundling of wires, temperature requirements, sizing issues, industry requirements, jacket and inner colors, fiber plus copper, special compounds, or anything else," Flynn says. "What makes us unique is that we can do both small factory runs with low minimums, and large factory runs with the fastest turn-around time in the industry and the best pricing."

With the new online resources, customers can explore these concepts from several different angles. They can choose to read an article in the Info Center, view related case studies in the Gallery, or go straight to the Design Center to share their requirements with a sales rep. The online resources allow the entire custom cable experience to be tailored to the customer's preferences.

Allied hopes that users find the new Custom Cable Center to be a valuable resource, and looks forward to building on this portion of the website based on the feedback they receive from site visitors. To use these tools and resources, visit [www.awcwire.com](http://www.awcwire.com) and click on the "Custom Cable" tab.

#### Red•Dot® Code Keeper® Universal While-In-Use Covers Meet NEC® Extra-Duty Requirements

Red•Dot® Code Keeper® Universal While-In-Use Covers from Thomas & Betts now meet National Electric Code® (NEC®) requirements for extra-duty applications, as well as receptacle instal-

lation in wet locations. The covers comply with Section 406.9 (B) (1) and 590.4 (D) (2) for extra-duty outlet box hoods, which are now required for any installation other than one- or two-family dwellings.

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For more information about Red•Dot® Code Keeper Universal While-In-Use Covers, visit [www.tnb.com](http://www.tnb.com) and look for Red•Dot® on the "Brands" tab, or call (800) 816-7809.

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](http://www.tnb.com).



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Cicoil's proprietary silicone extrusion process allows multiple wires, shielded pairs, power conductors, coax conductors, tubing, and other design elements like Cicoil's patented StripMount™ fastening strip to be placed in a single flat cable, pre-

cisely controlling the inner component spacing, jacket thickness and the overall cable shape. Incorporating various components into a single, mechanically tough flat cable allows for greater current carrying capacity, a tighter bend radius, space savings, extended operation-life and eliminates the need for external conduit, plastic pipe, interlocking armor or protective devices.

Unlike other outdoor cables that become brittle, discolored or stiff when exposed to sunlight, Cicoil's ultra-durable silicone is "self-healing" from small punctures and will not deform, wear or crack due to prolonged exposure to UV rays, ozone, intense heat (+260°C), acid rain, flames, shock, salt, humidity, cold temperatures (-65°C), vibration, weathering, coarse sand, submersion in water, mechanical stress and most chemicals.

For applications that require additional abrasion and adhesion resistance, Cicoil offers anti-friction coating options by request.

Cicoil's Sunlight Resistant Cables are UL Recognized, CE Conforming, RoHS & REACH Compliant, Halogen-Free, Flame Retardant and are manufactured in an automated, climate controlled environment. Standard "off the shelf" single conductor, multi-conductor and hybrid cables are available from stock in continuous lengths, cut to order, or as assemblies with connectors of your choice, 100% tested and inspected.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over fifty years. The company's unique silicon coated flat cables provide high flexibility, extremely long life, and they can withstand temperature extremes from -65

degrees to +260 degrees Celsius. Cicoil's cables are used in thousands of demanding applications; including aircraft fuel control cells, semiconductor automation, and the Space Shuttle. Cicoil designs and manufactures its cable and cable assemblies in an automated facility in Valencia, California. Cicoil's quality assurance system is certified to the ISO 9001 (AS9100) standard. Visit [www.cicoil.com](http://www.cicoil.com) or call 661-295-1295 to speak to an application engineer.

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A Lapp Group Company**Three things to look for  
when purchasing wire**

Just as two cars may be of vastly different quality even though both have one steering wheel and four tires, not all wire is exactly the same, even though it appears to be on the outside. Those purchasing building wire should be aware that wire manufactured "on the cheap" may come in the same sizes as high quality wire, and may nominally meet the same UL standards, but that does not mean it will perform as well as better quality wire. To ensure that wire you buy can be easily installed and get the job done, look for three key factors that signal high quality wire: the wire is produced using length control techniques to make sure you get what you paid for; insulation is applied using co-extrusion; and wire is inspected with quality control equipment that measures dimensional control, detects defects, and tests for PVC insulation integrity.

**Length control**

The first factor to look for begins with asking this question – Are you getting exactly what you are paying for in your building wire? If wire you purchase is manufactured using length con-

control, this is a question you can actually answer. When wire contains an accurate footage mark, it allows for quick identification of the re-order point, guaranteeing the full purchased wire length and reducing random lengths. This better controls end-of-reel scrap, prevents the need to carry excess cable inventory, providing precision length, accurate footage, and cost control.

For example, Cerrowire's True Sequential Footage™ uses a footage mark to document remaining wire, beginning with zero at the bottom of the reel and ending with the finished length at the top. The accurate footage mark allows for quick identification of the re-order point, guaranteeing the full purchased wire length and reducing random lengths. This better controls end-of-reel scrap.

Cerrowire is the only wire manufacturer with a footage guarantee; footages on Cerrowire's standard reels are guaranteed to be within +/-0.5 percent of the tagged footage. If the footage falls below that range, Cerrowire credits the customer for the amount of the product that is short or replaces the length of wire that is short. In addition, Cerrowire also reimburses the customer for reasonable, direct, out-of-pocket labor costs incurred as a result of the shortage,

#### Tandem extrusion versus co-extrusion

One of the key features of quality wire is insulation/jacketing that is smooth and consistent. There are two main methods for applying multiple layers of insulation/jacketing to wire: tandem extrusion and co-extrusion. With tandem extrusion, insulation/jacketing layers (for example, PVC/nylon) are put on one at a time and the finished product is placed in a cooling bath.

With co-extrusion, the two layers are applied simultaneously. This gives an advantage in diameter control. The PVC and nylon layers adhere to each other much better and when the product is cooled and finished, as it bends, the two layers bend together better.

With tandem extrusion, the PVC and nylon layers tend to separate from each other, especially in colder weather. The nylon can crack and fall off, so the wire might lose the resistance to gasoline and oil added by nylon. The product is said to "horse-collar," a term that refers to the ripples that form along the inside of the tight circle when wire is bent. When wire horse-collars, the ripples may rip right off as the wire goes around a corner if it is tight in a conduit, exposing copper. In the process of installation, you lose the physical protection of the nylon layer and the insulation function of the PVC layer.

Use of co-extrusion rather than tandem extrusion to apply the PVC insulation and nylon jacket ensures a tight, yet flexible, nylon jacket that will not horse-collar or wrinkle and hang up or tear during installation. Even as the wire is cornering, the cable remains smooth and the two layers stay together. The method results in more consistent properties and a more durable product, far less susceptible to brittleness at low temperatures and stress cracking, which is prevalent with tandem extrusion. Although the end product may look similar, the co-extruded insulation will have better abrasion resistance, and the nylon jacket will be more likely to remain intact. The co-extruded jacket will be tighter, and

Continued on page 62



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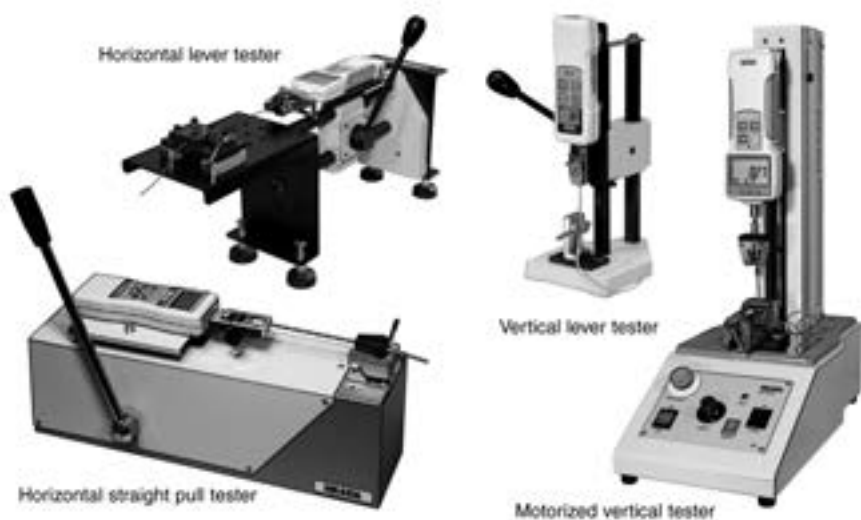
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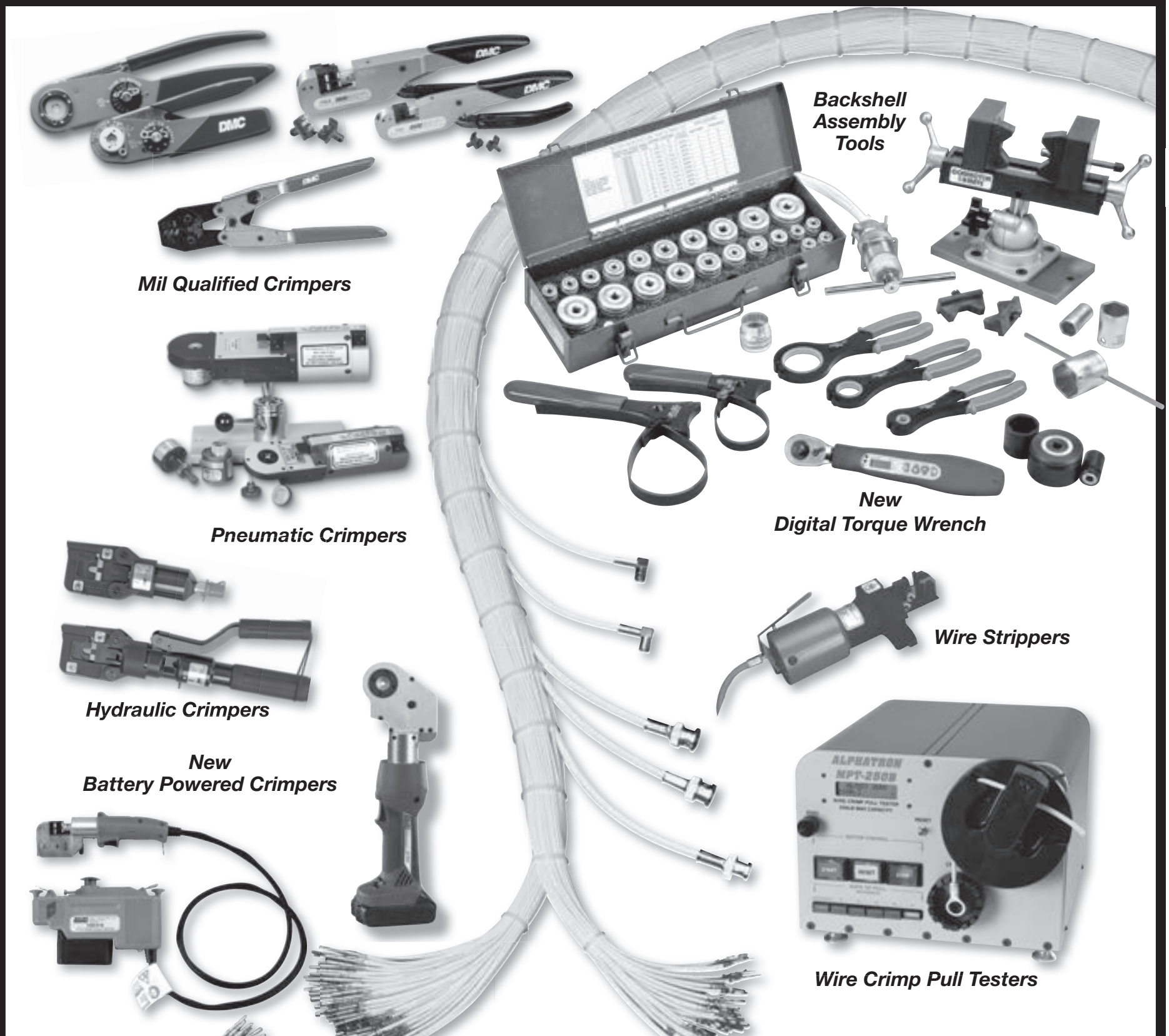


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## NEWS PLUGS continued



Continued from page 59

the nylon will adhere better to the PVC.

Issues associated with faulty installation can lead to aborted installation if severe. The wire may have to be pulled out, causing loss of time and delay to construction schedules. If installed, it might be rejected by the owner on a job. If really acute, it could lead to damage to the PVC layer, failure of dielectric and a wire shorting out. In most cases, installers spot torn away nylon at the leading end, where the wire comes out of the conduit during installation, and the job is stopped while the wire is pulled out.

The need to eliminate horse-collaring, wrinkling, and its attendant installation problems, along with elimination of low

temperature brittleness, were of sufficient gravity that Cerrowire began converting line by line to co-extrusion a few years ago. While a significant expense, the process has resulted in a better product, as well as eliminated a leading cause of customer service call and returns. This in turn has reduced labor costs and the need to reimburse customers when installation is affected. Issues with torn nylon have dwindled tremendously, and low-temperature cracking is virtually non-existent.

Equipment and testing – watch out for dimensional control, spot defect detection, and high voltage testing for PVC insulation integrity

The third tip centers on ensuring that wire you buy makes use of quality control and inspection technology. First up is ensuring dimensional control of PVC and nylon wall thickness. If the wire does not have adequate wall thickness, it may be subject to the chance of insulation pene-

tration, which could cause a failure. Also, the wire's dielectric strength is automatically reduced by reducing the thickness; there is more protection with adequate wall thickness.

To ensure dimensional control, the wire should be manufactured using a laser micrometer to monitor the wall thickness of the PVC insulation and nylon jacket as it is being extruded onto the wire and microprocessors control the process to insure that every foot of wire has the correct thickness of PVC and nylon. Laser micrometers are extremely effective in maintaining a consistent wall thickness.

A variation of the laser micrometer can also be used to include spot defect detection. The same sensors, processing the information differently, can spot defects and eliminate them before they could become a problem during installation. The sensors are like multiple curtains of light, crisscrossing the wire from different angles, taking thousands of samples

per second over many feet of wire. Measuring the average wall thickness by how much light is blocked out, the computer microprocessor processes this data to calculate and compare with pre-set wall thicknesses. It also uses information from the same sensors to locate any instantaneous change in wall thickness, using other software to spot defects like high or low spots, or bumps.

The wire machine can be programmed to reject the spot. (In fact, the defect may or may not cause a failure, but installers pulling wire who see a deformity have to assume the wire would result in a probable failure, stop the installation, pull out all the wire and reinstall, leading to a great deal of lost installation time.)

When the laser results in a lot of rejections, operators can stop and take action to prevent further defects and correct the problem. The laser micrometer therefore prevents bad wire from going out, helps diagnose and correct problems, and results in an extremely high quality level.

Another manufacturing step that improves wire quality is conducting a high voltage test to ensure there are no defects in the insulation. Copper conductor being insulated is grounded at the beginning of the process coming off a reel or coil. After the insulation is applied, it goes through a "bead chain" curtain, which is energized to test a voltage, from 7.5 kilovolts for smaller sizes to 15000 volts for larger sizes. If there is a hole or weak spot in the insulation, as that section goes through the bead chain, the potential on the bead chain will arc out to the grounded wire inside. When this occurs, it sets off a visible and audible alarm and also ejects the package to one side as having a defect. In some cases the operator manually rejects the section and sends it off to be reworked (the defect area is cut out) or scrapped.

Quality manufacturing techniques will lead to quality wire

In short, within the general category of wire that complies with UL specifications, there is wire that barely meets the specification and wire that is well above it. And this definitely relates back to the performance of the cable in field. The key is to have excellent control of manufacturing processes so there is not a great deal of variation. When selecting wire for your next project, look for some of the extra product benefits and quality measures taken during the manufacturing process. Asking questions on the three key factors that establish that wire was manufactured correctly will prevent problems from happening during installation and end up saving you money.

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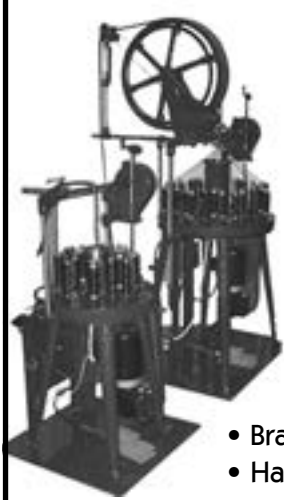
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# CALENDAR OF EVENTS

## Contract Manufacturing Expo November 14-15, 2012

The Contract Manufacturing Expo features leading providers of contract R&D service, custom molding, custom CNC metals processing, specialty electronic contract manufacturing and full service, turnkey contract manufacturing. Alongside Design 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.canontradeshow.com](http://www.canontradeshow.com) for further information.

## Palais des congrès de Montreal Montreal, Quebec, Canada

## Printed Electronics USA 2012 December 5-6, 2012

Co-located with Graphene Live and Photovoltaics USA 2012. USA's leading event on printed, organic and flexible electronics, hosted by IDTechEx. This event will focus on the commercialisation of the technology, covering broadly organic, inorganic, thin film and flexible nanotechnologies. To that end, we have some of the world's largest user companies presenting on their needs and experience with printed electronics, and many are in attendance to learn how they can use these new technologies in their products. Printed Electronics is one of the fastest growing technologies in the world. It is of vital interest to industries as diverse as consumer goods, healthcare, aerospace, electronics, media and transit. It is allowing electronics to be used in places it has never been before and it is improving existing electronics and electrics. This event, attended by more buyers than any other, is your information and networking hub on the topic. The international tradeshow, with more than 120 exhibitors, covers all the technologies throughout the entire supply chain across all major component types. See [www.idtechex.com](http://www.idtechex.com) for further information.

## DesignCon January 29-30, 2013

DesignCon is structured as a comprehensive B2B event, segmented into well-defined technological sections of the engineering & manufacturing industry. See [www.designcon.com](http://www.designcon.com) for further information.

## Electronics West February 12-14, 2013

Meet face-to-face with electronics professionals offering the best solutions. Explore first-hand the latest developments, technologies, products and services affecting 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.canontradeshow.com/expo/atxw13](http://www.canontradeshow.com/expo/atxw13) for exhibitor or attendee information.

## Wiring Harness Manufacturer's Conference February 20-22, 2013

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.whma.org](http://www.whma.org) or call (952) 253-6085.

## IPC APEX Expo February 19-21, 2013

APEC 2013 continues the long-standing tradition of addressing issues of immediate and long-term interest to the practicing power electronics engineer. Outstanding technical content is provided at one of the lowest registration costs of any IEEE conference. See [www.appec-conf.org](http://www.appec-conf.org) for more information.

## APEC 2013 March, 17-21, 2013

IPC APEX Expo is the largest event in North America featuring advanced and emerging technologies in printed board design, electronics and test. Show highlights include:

- 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
- FREE! Industry poster sessions-catch up on the latest research and meet the authors.
- And much, much more!

See [www.ipcapexexpo.com](http://www.ipcapexexpo.com) for more information.

## Assembly New England April 10-14, 2013

Assembly New England is the only trade show dedicated exclusively to the function of assembling discrete parts into finished products. Today's challenges demand innovative thinking. Whether the path to your success lies in improving quality, keeping a tighter rein on costs or cutting lead times, this event has the resources you need. For more information see [www.cancom.com](http://www.cancom.com).

## Interwire 2013 April 23-25, 2013

Introduced in 1981, Interwire is the largest and longest-running wire and cable marketplace in the Americas. It is an international trade event that includes exhibiting companies, speakers and attendees from more than 50 countries around the world. The show crosses dozens of vertical industries including automotive, construction, aerospace, transportation and communications among others. For more information see [www.wirenet.org/events](http://www.wirenet.org/events).

## Del Mar Electronics Show May 1-2, 2013

A high value design and manufacturing show, this event serves the electronics, medical and biotech industries. The show will play house to an impressive list of exhibitors. For further information or a listing of the seminars available visit [www.vts.com](http://www.vts.com).

## EDS 2013 May 6-9, 2013

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](http://www.edsconnects.com)

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

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](http://www.expoproductionsinc.com).

## Semicon West/Intersolar July 9-7, 2013

SEMICON West attracts more than 30,000 professional attendees representing the leading global technology companies, including IDMs, foundries, fables, contract packaging and test houses, OEMs, materials manufacturers, components and sub-systems companies, and many others. Visitors come to see the latest products and technologies, meet with and learn from technologies and technical experts, and source solutions that enable them to advance their own product development and move their ideas and businesses forward. For further information visit [www.semicon-west.org](http://www.semicon-west.org).

## PCB West 2013 September 24-26, 2013

All the major design software providers are here, and scores of topnotch board fabricators and assemblers are represented. We see a real trend whereby OEMs are reconsidering their outsourcing strategies, and in many cases moving product design and build back to North America. The Silicon Valley remains the world's most vibrant electronics engineering community. For 21 years, PCB West has been the best place in the Silicon Valley to extend that community. For further information visit [www.pcbwest.com](http://www.pcbwest.com)

## MD&M Minneapolis 2013 October 30-31, 2013

For 21 years, MD&M Minneapolis has been the trusted resource for what's next in 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

productronica is THE leading trade fair for electronics production. It showcases the entire value chain for electronics manufacturing- from software to process control, from technology to applications, and from products to system solutions - under a 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](mailto:info@productronica.com)

## Georgia World Congress Center Atlanta, GA

## Del Mar Fairgrounds Del Mar, California

## The Cosmopolitan Las Vegas, CA

## The Delta Center (formerly Frontier Airlines Center) Milwaukee, WI

## Mosecone Center San Francisco, CA

## Santa Clara Convention Center Santa Clara, CA

## Minneapolis Convention Center Minneapolis, MN

## New Munich Trade Fair Centre Munich, Germany

If you have an event you would like to have listed here, send it to Marilyn Magowan  
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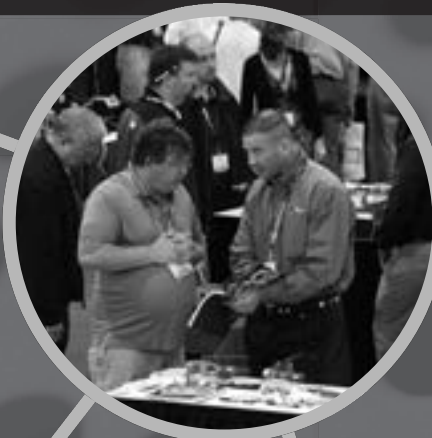
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- This Expo attracts industry buyers who normally do not attend other assembly and industry shows.
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