

## This Issue Features:

- Vectrawire
- Mishap in Little Current
- Living with the Dodd-Frank Conflict Minerals Legislation
- Wire Wisdom - Conductor Coatings
- Classified Ads - Help Wanted, Excess Inventory & Used Machinery



# Vectrawire

*Giving year 'round to the community and our veterans*

By Fred Noer

Christmas arrived a week early in 2009 for Mark Ellson. On Dec. 18 he unwrapped a gift in the form of his new business. Vectrawire is a wiring harness and cable assembly company in Eau Claire, Wis., that focuses on products for the communications industry, the federal government and the U.S. military.

The opening was the culmination of months of concentrated effort to bring shape to Ellson's vision and passion of having his own business. While his achievement may be symbolized as a holiday gift he received, he regards Vectrawire as a means of giving that continues year 'round.

As Ellson's business grows, his giving

will be embodied by the jobs he can provide to U.S. armed services veterans, particularly those who have suffered combat injuries. He can relate as an Army veteran himself. After first serving in Bosnia, he was in Iraq in 2005-06 and was injured when a roadside bomb hit the vehicle in which he was riding.

"Vectrawire is my way of giving back to the community and to vets," Ellson said. "While the nation overall is around 9.5-percent unemployment, it is 41 percent among disabled vets. There's clear and sound data that says when vets get out of the theater of war or Walter Reed Army Medical Center it's important for them to work because it forces them to be productive.

"Within the first six months of getting out they need to be gainfully employed," Ellson said. "Otherwise, they



**Mark Ellson (above) opened Vectrawire December 18, 2009. Vectrawire is designated as a Service-Disabled Veteran-Owned Small Business by the U.S. Small Business Administration.**

are involved in domestic violence, drink, do drugs or commit suicide. A veteran is deserving of a job even in a down economy. Only one percent of the general population has served in the military, so I don't think it's too much to ask for companies to do."

Ellson, 53, has served in the Army since 1976 in both active and reserve roles. His current rank is colonel, and he is responsible for logistics in Japan. He travels there twice a year, spending 4-6 weeks each time fulfilling his duties. He plans to retire from the Army in 2012.

Besides his military career, Ellson has held management positions in businesses. He was the senior vice president for Ergotron in Eagan, Minn., in which he was in charge of strategy for the firm's Asia Pacific business unit. He also was an Ergotron senior VP of global sales and marketing and a VP of global operations. Before Ergotron he was a manager at energy companies.

*Continued on page 30*

# Living with the Dodd-Frank Conflict Minerals Legislation

Joe Tito  
Wiring Harness News

Over the past few years, there has been an increase in global focus on the minerals trade in the Eastern Congo region of Africa; specifically the Democratic Republic of the Congo (DRC) and adjoining countries. Many mineral mining operations in this region are under the control of armed rebel groups guilty of committing horrific human rights violations. Those not slaughtered in countless village raids are often forced into labor in mineral mines under deplorable

conditions. Money from these mining operations is used to finance regional conflicts in the DRC or African Great Lakes Region.

Because certain minerals are mined in this region, and some proceeds may be financing armed rebels, they are generally referred to as 'conflict minerals'. These conflict mineral ores are smelted to produce certain metals, and are specifically noted as:

**Cassiterite** - Metal ore used to produce tin

**Columbite** - Metal ore from which tantalum and niobium are extracted

**Wolframite** - Metal ore used to produce tungsten

**Gold** - Both in pure form and as by-product of other mining

It is important to note that the term 'conflict minerals' refers to all of these minerals and subsequent product metals, without regard to where they were mined. Since the most commonly used metals from these minerals are tin, tantalum, tungsten and gold; they are usually referred to as the 3 T's + G.

Advocacy groups, such as Global Witness and the Organization for Economic Cooperation and Development (OECD), have worked diligently with industry groups such as the Electronic Industry Citizenship Coalition (EICC) and the Global e-Sustainability Initiative (GeSI), to increase awareness of this issue, and affect change.

## Dodd-Frank Section 1502 and subsequent SEC regulation

Slipped into the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, was a hastily worded provision (Section 1502) designed to address

this social problem by requiring that United States SEC registrants disclose the use and source of substances derived from these conflict minerals. The law requires that the SEC set guidelines for reporting. There is some confusion as the law refers to the product of the minerals as conflict minerals themselves. Thus, for the purpose of discussion in this article, these derivatives (tin, tantalum, tungsten and gold) will be referred to as conflict minerals. Also, since niobium has limited use and is closely associated with tantalum, it is expected that tracking tantalum will be sufficient; limiting reporting to the 3G's +G.

The SEC Proposed Rule stipulates a three step process in reporting. Ambiguities will be addressed further in this article:

**Step 1 - Determining applicability of conflict mineral provisions** - A company needs to determine if any of its products contain derivatives of these

*Continued on page 4*



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**INSIDE**

SEPTEMBER/OCTOBER  
2011

**1 Vectrawire**

Designated as a Service-Disabled Veteran-Owned Small Business, Vectrawire is a wiring harness and cable assembly company in Eau Claire, Wisc., that focuses on products for the communications industry, the federal government and the U.S. Military.

**1 Conflict Minerals Legislation**

Over the past few years, there has been an increase in global focus on the minerals trade in the Eastern Congo region of Africa and adjoining countries. Many mineral mining operations are under the control of armed rebel groups guilty of committing horrific human rights violations.

**7 Delphi Aluminum Cable**

With copper costs continuing to rise, Delphi Automotive is introducing an Aluminum Cable that performs comparably to traditional copper core cable without the added cost.

**9 News Plugs**

Read about the latest products on the market and points of interest about companies and people in the industry.

**12 Mishap in Little Current**

What do do when s#it happens.

**14 Hot Crimping by Resistance Welding**

Advanced technology for joining magnet wires to terminals used in motor-generator industries.

**36 Wire Wisdom**

Conductor Coatings - Metal coatings are often applied to the surface of individual wire strands in electrical conductors to improve solderability, reduce oxidation or improve electrical properties at high frequencies.

**Classified**

- 54 - 56 ..... Machinery, Job Line & Misc.
- 57 .....Calendar of Events
- 58 ..... Advertisers Index
- 58 .....Subscription Order Form



**2012 WHMA Annual Conference Program**

<b>WEDNESDAY, FEB. 15</b>		7AM- 4PM	Exhibitor Set-up	WHMA A-620 Team Member Panel Mark Wood, Moderator
		9AM – 3PM	Golf Outing at Marriott Champions Gate	2PM-2:30PM “Benchmarking: A Panel Discussion” Jerry Kearns, Moderator AIM Manufacturing
		4:30PM-5:30PM	“What’s New In Our Industry”	2:30PM-2:45PM Break
		5:30PM – 7PM	Reception with Exhibitors	2:45PM-3:30PM “REACH, RoHS and Other Regulations: Are You Prepared” Dave Bender, Tyco Electronics
<b>THURSDAY, FEB. 16</b>		8AM- 9AM	Breakfast with Exhibitors	3:30PM-4:15PM “The Opportunities in Emerging Green Markets” Tom Lewnard, General Cable
		9AM-9:15AM	Chairman welcome and Bud and Gus Award	5:00PM – 7:00PM Lawn Party, Swan Hotel
		9:15AM – 10:15AM	“Growth in Turbulent Times: Selling without Being the Cheapest Guy in Town” and “Workforce Development for Strategic Competitive Advantage” Jason Piatt, Praestar Technology Corp.	<b>FRIDAY, FEB. 17</b>
		10:15AM – 10:30AM	Break	7:30AM- 8:15AM Supplier Member / Exhibitor Breakfast
		10:30AM – 11AM	“Using Research Tools to Improve Your Market Position” Dave Pheteplice, Bishop Research	8AM – 8:30AM Continental Breakfast
		11AM – 11:45AM	“Developing a Strategy Around Commodity Prices” Brian Hirt, IEWC	8:30AM –9AM “Reevaluating Quality in American Manufacturing” Jim Smith, Electronics Manufacturing Sciences, Inc.
		11:45AM – 1:30PM	Lunch with Exhibitors	9AM – 11AM “Best Practice Roundtables”
		1:30PM-2PM	“What Lies Ahead for the A-620 Workmanship Standard”	11AM -1PM Board of Directors meeting

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*Wiring Harness News*  
P.O. Box 527,  
Richmond, IL 60071 USA  
<http://www.wiringharnessnews.com>  
Office Hours:  
7:00 a.m. - 3:30 p.m. CST - (Monday-Thursday)  
Printed in the USA.

*2010 Production Schedule*

<u>Issue</u>	<u>Reservations Due Date</u>	<u>Materials Due Date</u>
<i>November/December 2011</i>	<i>October 7, 2011</i>	<i>October 14, 2011</i>
<i>January/February 2012</i>	<i>December 2, 2011</i>	<i>December 9, 2011</i>

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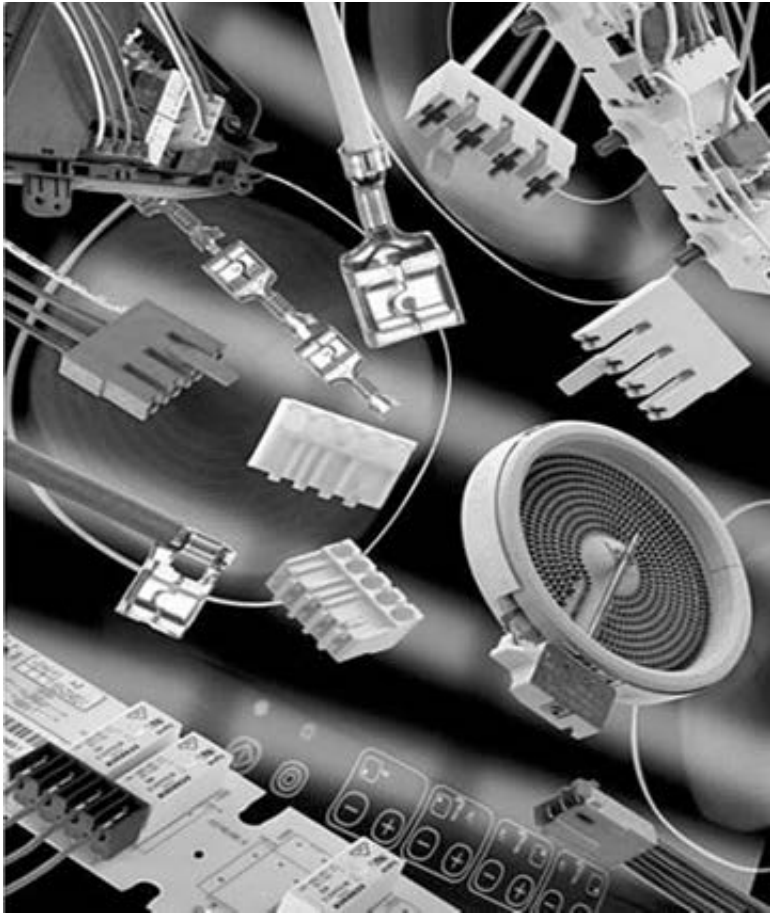
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# Conflict Minerals Legislation

Continued from page 1

conflict minerals, and if they are necessary to the functionality or production of the product. It is important to note that the rules cover products where conflict minerals were used in the production process, even if they are not present in the final product. (For example, tin is used as an alloy in solder and as a catalyst in inks and dyes, and such applications fall under the SEC guidelines for conflict minerals.) If none of this applies to the company's product, no reporting is necessary.

**Step 2 - Determining if your conflict minerals originated in DRC or surrounding countries** - Companies must determine, through a reasonable country of origin inquiry, whether their conflict minerals came from, or were in the custody of any sources in the DRC, Sudan, Uganda, Rwanda, Burundi, Tanzania, Zambia, Angola, Congo, or Central African Republic. Companies must demonstrate due diligence by using a national or international standard for an audit performed by an independent third party.

**Step 3 - Determining if your conflict minerals directly or indirectly financed or benefited armed groups in the DRC or surrounding countries** - Armed groups are listed in the

*Country Reports on Human Rights Practices* published annually by the State Department. Presence of such conflict minerals must then be reported in the company's annual report. If a company cannot determine the origin of the minerals used, that conclusion must also be disclosed in the report. **DRC Conflict Free** means the conflict minerals used in the products did not finance the armed groups in the DRC countries.

The SEC Proposed Rule really has two levels of reporting. A **Conflict Minerals Disclosure** is necessary when conflict minerals are used, without regard to their origin; even if they were obtained from recycled or scrap. A **Conflict Minerals Report** is required when products contain conflict minerals from DRC countries, conflict minerals from scrap, or conflict minerals from undeterminable origins.

Publicly traded retailers need not report, unless they have private label products containing conflict minerals.

### What this means for the Wire Harness Industry

To make sense of Dodd-Frank and the SEC Provisional Rules, *Wiring Harness News* once again asked Michael Wurzman of RSJ Technical Consulting for his input. Although he recognizes challenges with compliance, Wurzman

Continued on page 22

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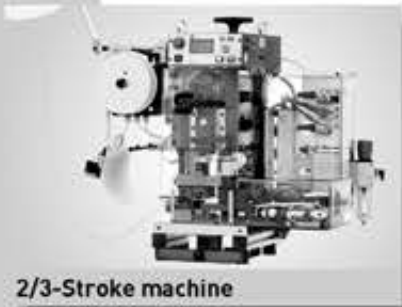
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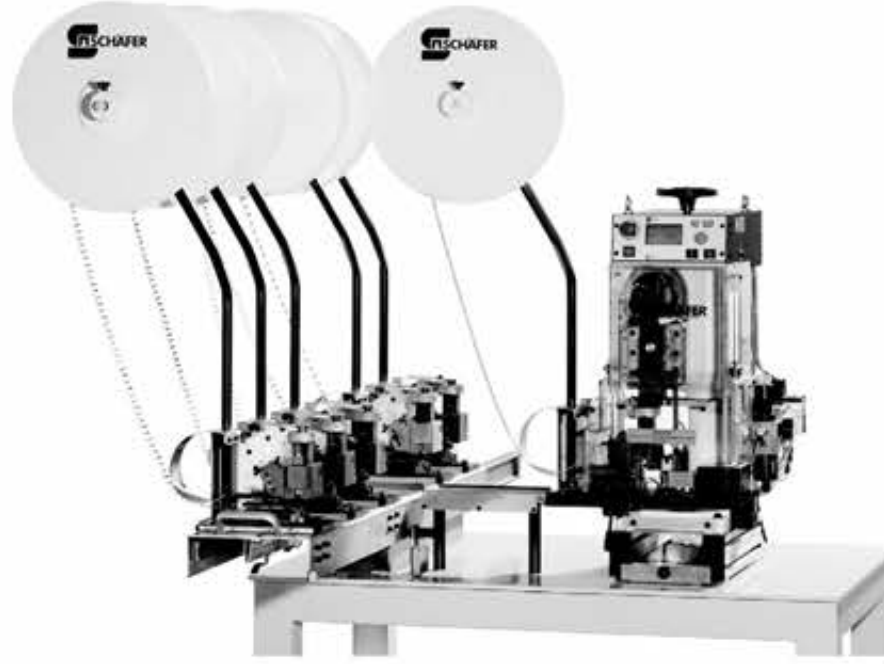
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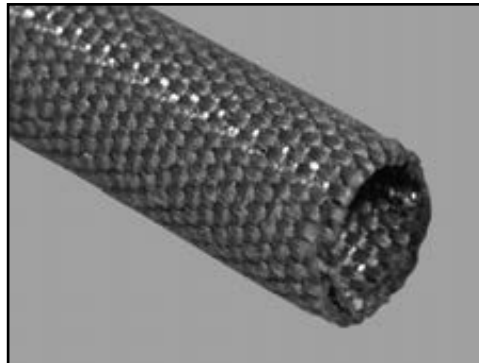
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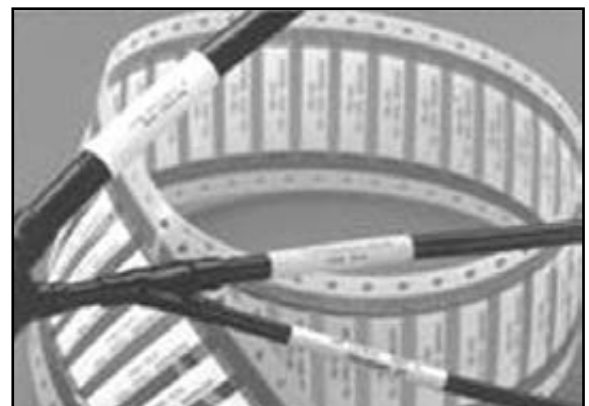
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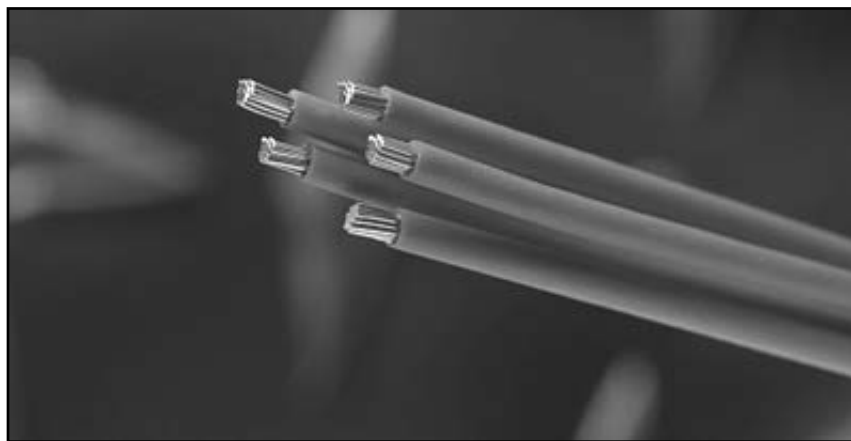
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The connector can be terminated into 0.8 mmC (18 AWG) or 0.5 mmC (20 AWG) wires as defined by SAE J1128 and 0.75 mmC or 0.50 mmC conductors as defined by ISO 6792. The new connection system can withstand temperatures ranging from -40°C up to 125°C, while maintaining a current rating of 4 A at 250 V (4-pin) and 60 V (5-pin). The IP67 and IP69K compliant Max-M12 is dust and waterproof and resistant to high pressure and high temperature wash downs.

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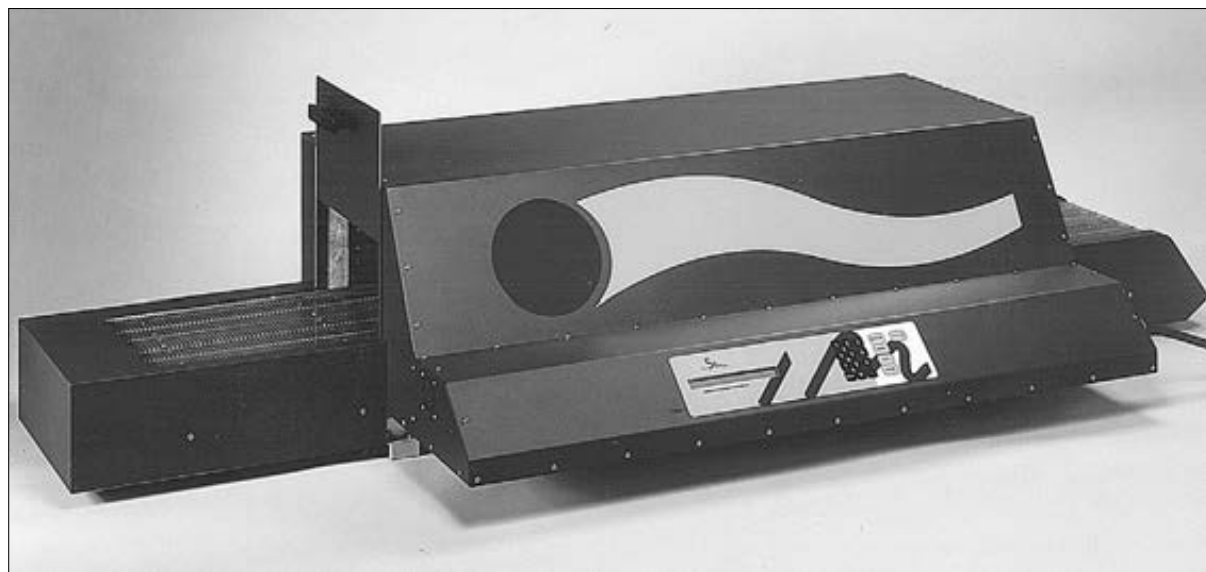
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## NEWS PLUGS continued

### TE Connectivity "Unleashes the Future" with Next-Gen Solutions at DSEi 2011

TE Connectivity will be featuring many new technologies at this year's Defence & Security Equipment International show. TE will feature major solution displays on the following leading-edge connectivity solutions (follow the link to learn more):

Electrical Network Solutions & Cable Management in support of next generation aircraft EWIS and current return requirements.

High Speed Box-to-Box Solutions supporting next generation

platforms...helicopters, UAVs, missiles and soldier systems. Avionic systems today typically run at speeds up to 1 Giga-bit. The next generation of interconnect products are demanding 1 to 10 Giga-bit end-to-end solutions. TE achieves this performance level via connectors, cables and terminations matched for high speed performance.

Advanced Development Group, a new research and development group, with the goal of applying new technology, materials, and processes to create future-generation products.

HarnWare, a re-engineered harness design software that uses the latest Microsoft programming tools to offer improvements in performance and enhance the user interface.

Sensors, technology with rugged packages sealed from harsh electrical environments and able to withstand vibration, shock, and other mechanical stresses.

Tinel-Lock, screen termination system simplifies field and factory repairs by eliminating the need for cutting tools and allowing the ring to be removed with pliers.

Variable-Angle Backshells provides a swivel body which rotates around the axis of the cable bundle, minimizing stress on the wire bundle and providing better strain relief compared with other termination systems.

Maulflex, a new conduit system provides exceptional protection to integrated cable harnesses and helps extend the service life of cable harnesses by reducing abuse to the cable.

For more information on any of these connectivity solutions, contact the Product Information Center at (800) 522-6752. Follow us on Twitter for all the latest product news @TEConnectivity.

### EIS Announces the Acquisition of Cobra Wire & Cable Inc.

EIS Inc. ("EIS"), a wholly-owned subsidiary of Genuine Parts Co., announced that they have acquired the stock of Cobra Wire & Cable Inc. ("Cobra") from Merit Capital Partners and Fulton Capital. Cobra has headquarters and a distribution facility in Hatboro, Pennsylvania and additional distribution locations in Plano, Texas and Seattle, Washington. Cobra serves the telecom, battery, uninterruptible power supply (UPS) and marine markets.

Bob Thomas, President and CEO of EIS, stated, "This acquisition is consistent with our strategy to grow our current specialty wire and cable business into targeted adjacent markets. Cobra will operate as a separate division of EIS and continue operations with all existing customers and suppliers from their current facilities. We are pleased to welcome the Cobra team to the EIS and the Genuine Parts Company family."

Peter Sheehan, President of Cobra Wire and Cable will lead the Wire and Cable Division of EIS. He stated "Cobra is very excited to join EIS and Genuine Parts Company. We look forward to playing an active role in their continued expansion into the specialty wire and cable business".

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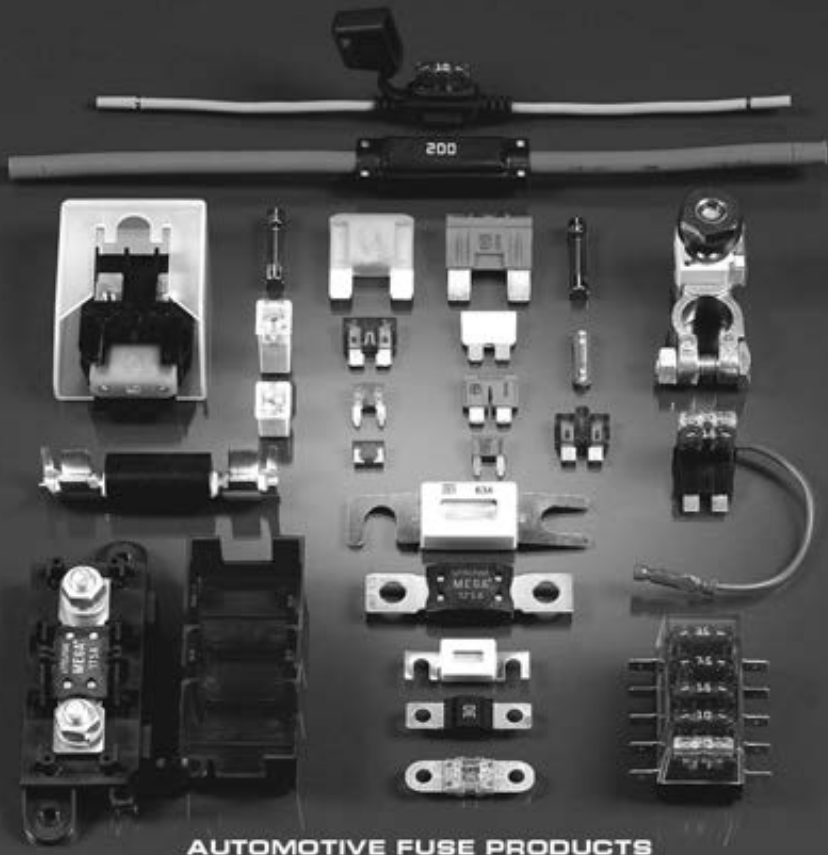
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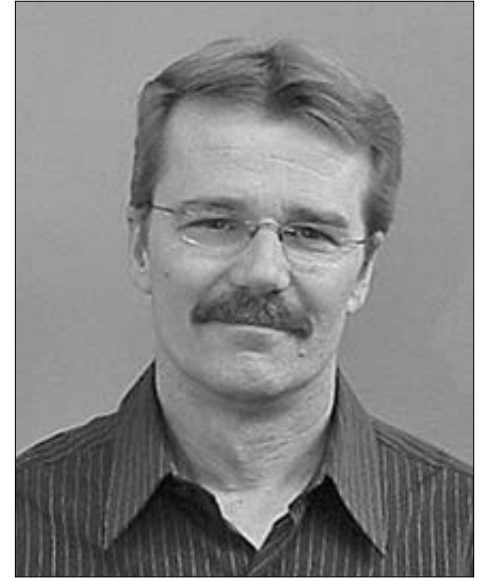
# Mishap in Little Current: What to do When S#it Happens...

By Paul Hogendoorn

Little Current, a beautiful and historic maritime town that serves as the gateway to the Manitoulin Island in northern Ontario, is aptly named. Or perhaps it's inaptly named, because on some days it should be named "Big Current".

The Manitoulin Island is the world's largest fresh water island, and it serves to separate Lake Huron from Georgian Bay. If it wasn't for a small strait on the north part of the island, Georgian Bay would actually be considered a lake, but that's another story. Little Current is a town at the mouth of the strait, named because the strength and direction of the current through it changes with the velocity and direction of the wind, and that can (and usually does) change daily. Sitting at the town dock, on a windy summer day, 'adventure' is likely to play out every time a skipper unfamiliar to the region tries to bring a boat into port. And so it was today.

On this fine August day, the wind was coming in from the east, pushing the water of Georgian Bay back into Lake Huron, creating an unusually strong current through the strait. Watching from the back of my boat (sitting with my lap-



Paul Hogendoorn

top trying to figure out what to write my next column on), I saw a large pleasure boat making for the town dock and I knew instantly that the skipper had miscalculated and was in trouble.

And so did everyone else on the dock.

I shut my laptop and jumped to the stern. Other boaters ran to the ends of their docks and we all started waving frantically and shouting instructions to him. He was coming in too fast, and he didn't compensate for the current. It was only a matter of seconds, no more than 10, before he knew he was in trou-

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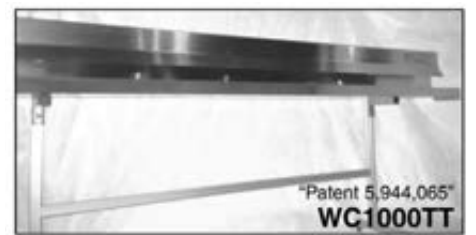
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ble too, and 10 or 15 seconds later he was bouncing off of our boats and the ends of the finger docks. There was nothing anyone could do, neither he, nor any of his 'advisors' on the docks.

As disaster was happening in slow motion, for all us docked skippers to observe, the commentary was all focused on his ineptitude, incompetence, and poor boatmanship in general. Even when he finally got tied up safely, the event was still being dissected and replayed in everyone's mind, and his reputation as a skipper was thoroughly thrashed.

But then something unexpected happened. The rattled and presumably embarrassed skipper came over to our dock and introduced himself to every boater on the dock, asking if we were all ok and if there was any damage to our boat. He was gracious, thanked us for our attempted assistance, and accepted all responsibility for what went wrong. After a quick survey of boaters, the damage was found to be minimal: one bent prop and some surface scratches well above the water line.

Suddenly the conversation on the dock changed. The focus was no longer on the skipper's ineptitude and poor boatmanship, but instead was now focused on the wind direction and the strong and unpredictable water current. The boaters familiar with the port all commented on how unusually strong the current was at that time, and how they too would have struggled in those

conditions. Others chimed in with their own harsh docking condition stories, and before you knew it, the skipper's abilities were no longer in question.

It made me think that sometimes in life, and in business, s#it happens; things get out of your control, and there's no way to prevent momentum from causing the inevitable collision to occur. What is important after that is not the post event analysis by others - which is sure to happen - but instead how you, the leader (the skipper), choose to handle it.

In this case, the skipper chose to accept the responsibility for the event, without making any excuses or offering deflecting explanations, and all those affected were instantly motivated to be gracious.

No one makes the right decision every time, and no business leader (or skipper) reads all the business conditions accurately either. And then s#it inevitably happens. The question though is what happens next? Unfortunately the all too common occurrence these days is that blame deferring explanations are offered to save the face of the company or its leadership, when the best thing to do is apologize and accept ownership of what's gone wrong.

S#it happens. We all make mistakes. Leadership isn't just what happens before the disaster occurs, it's what happens afterward too.

Paul Hogendoorn can be reached at hogendoorn.paul@gmail.com.

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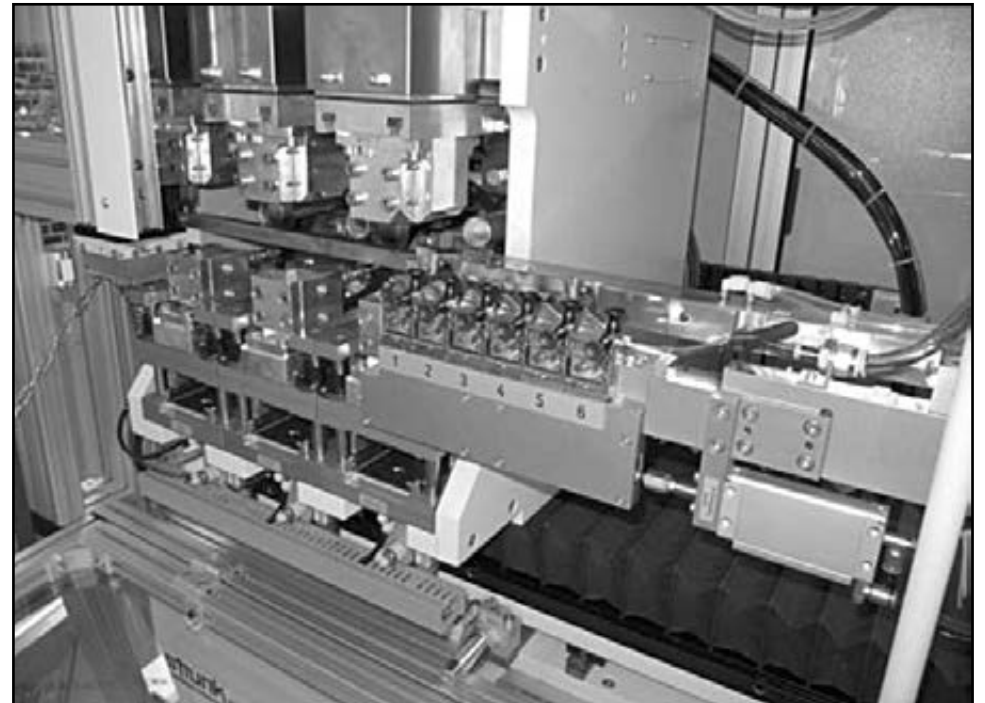
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Hot Crimping of Magnet Wires by Strunk Special Semi-Automatic Resistance Welding Equipment. (Above photo shows a cam controlled and active chilled cable shoe clamping system.)

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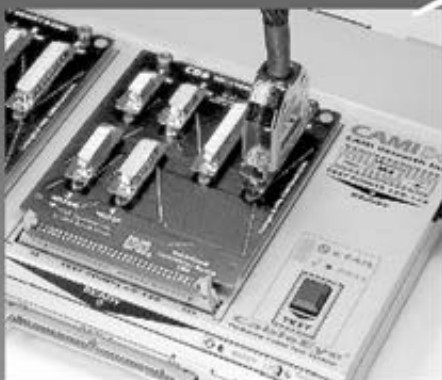
high volume production. To cover your needs Strunk Connect delivers turnkey systems from benchtop machines to full automatic lines. The machines can produce in sequence in order to react to different stator or generator sizes. The

*Continued on page 16*

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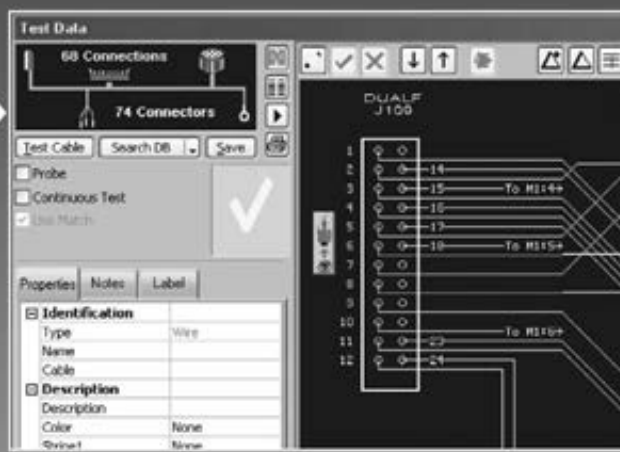


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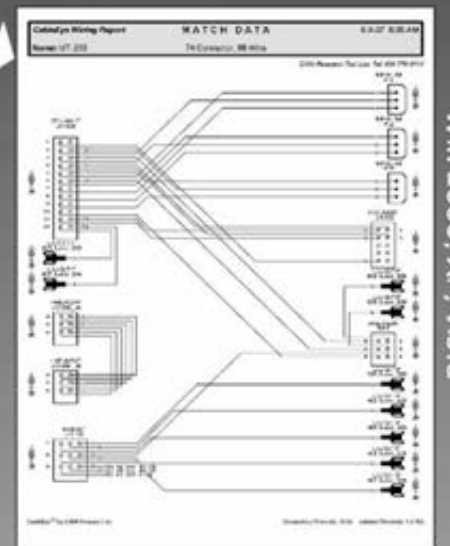
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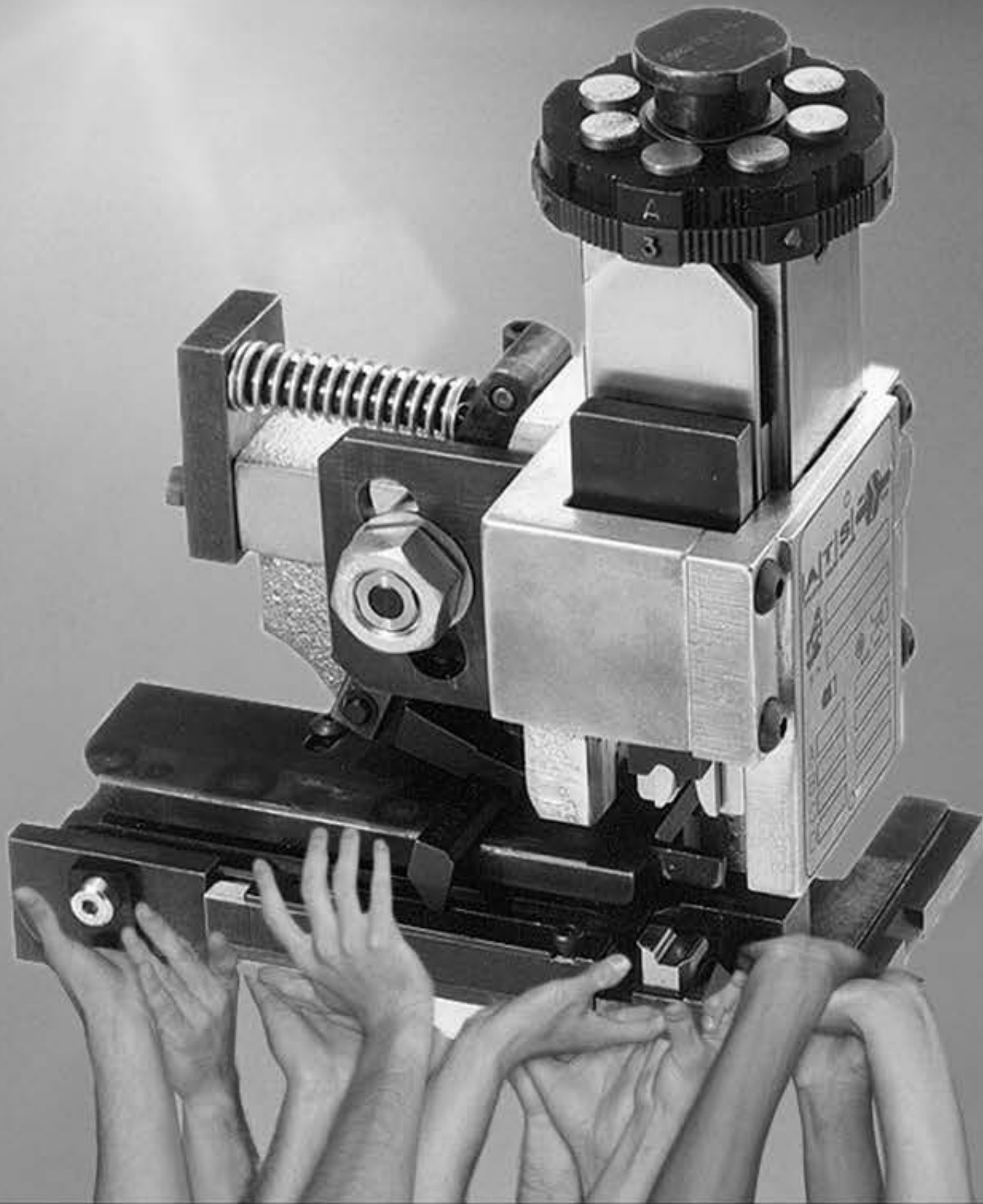
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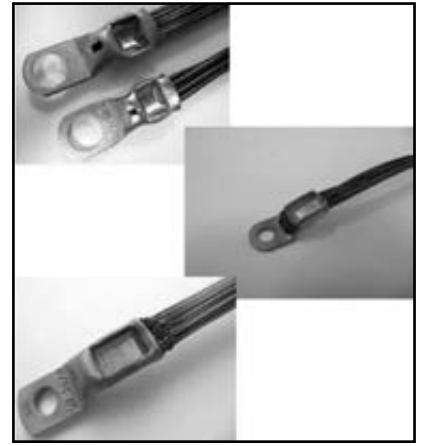
diameters of the connections are possible from AWG 30 to AWG 350 MCM.

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Samples of Hot Crimping by Resistance Welding of Magnet Wires and Flexible Stranded Wires.

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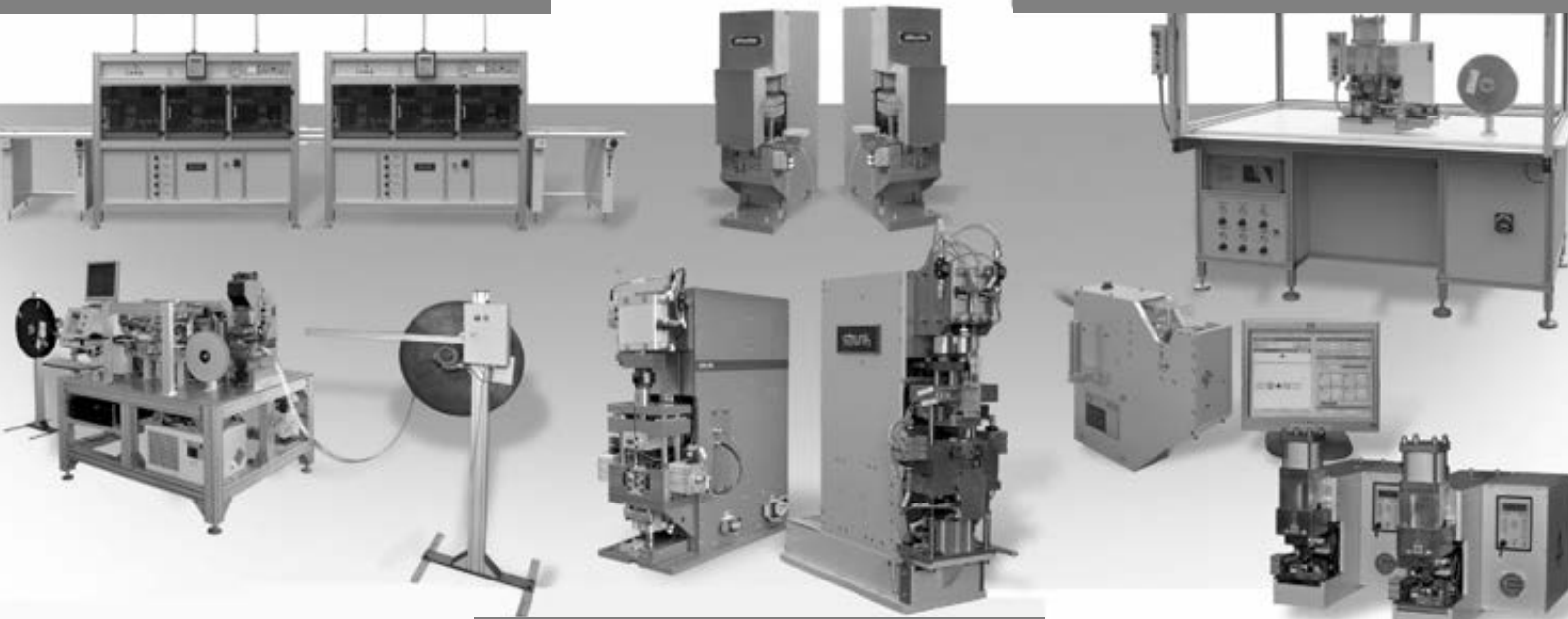


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“Calendar of Events”  
 Page 57



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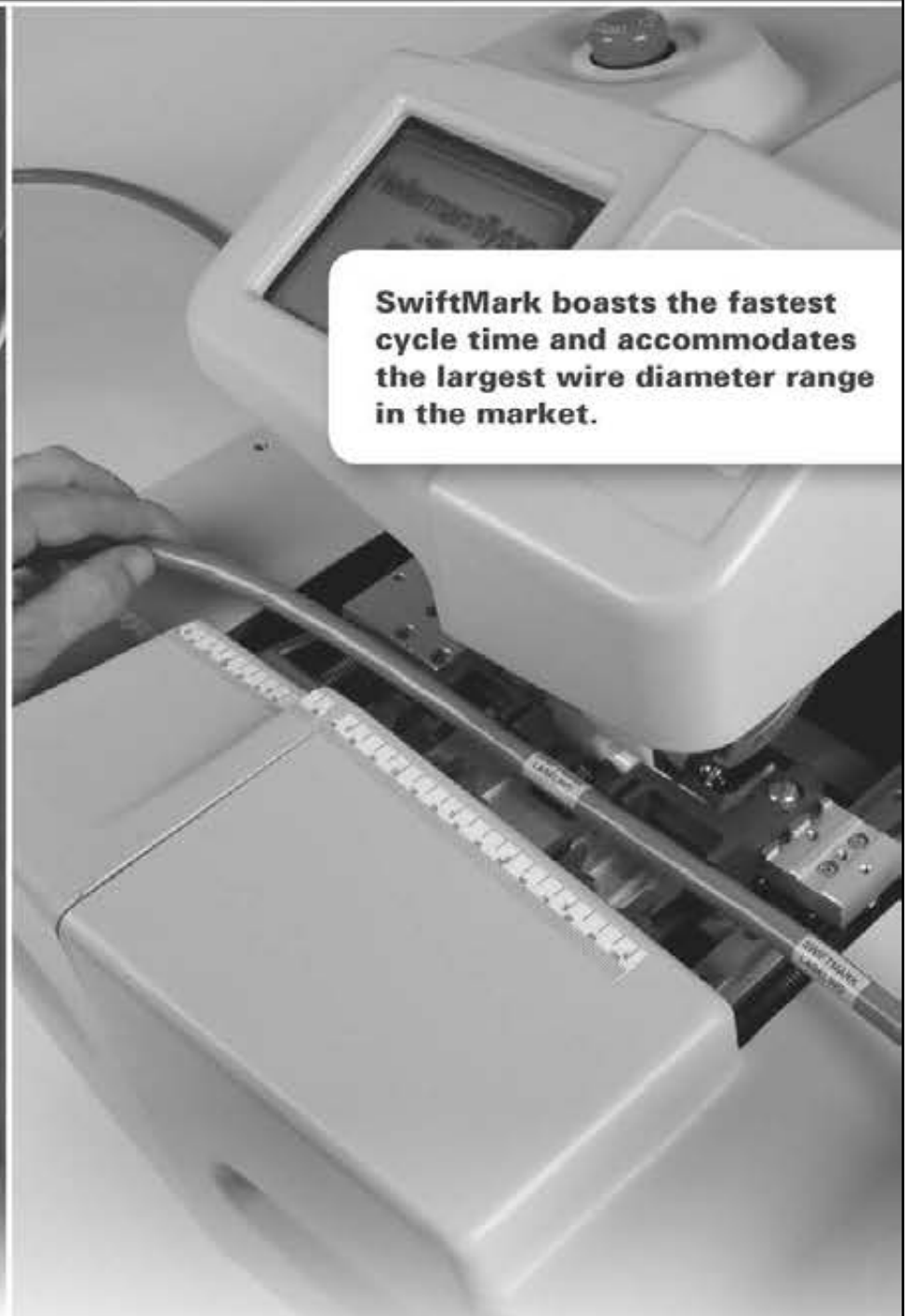
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**NEWS PLUGS** continued



Continued from page 10

EIS is one of North America's leading distributors of process materials; production supplies and value added fabricated parts. In addition to wire and cable, primary markets for EIS are the electrical OEM, apparatus repair and various assembly markets. EIS supplies over 100,000 critical products from 38 branches and 3 fabrication facilities located in North America.

**New Composite Shell Circular Connectors Ideal for Low Weight Applications**

API Technologies' Spectrum Control product line announces their new composite connector series. These composite connectors feature shells fabricated from high grade thermoplastic. Designed to displace traditional metal connector shells for substantial weight reduction, this new addition to the Spectrum Control product line offers composite shell versions of its circular connectors in MIL-38999 series III and IV, available EMI filtered or unfiltered.

The new composite shell main-

tains the form, fit and function of the original connector shell, making it ideal for applications where weight is a critical factor, such as in the military and aerospace industries. Given the company's unique vertical integration capabilities, custom mechanical variations may be provided without traditional tooling charges.

The company offers a premium line of compact and extended shell EMI filtered connectors that can be designed to meet the mechanical and environmental requirements of your application, including MIL specifications. With several types of filtering available, these custom high reliability, circular connectors provide superior quality and performance.

The company's vertical integration process offers customers the chance to design any custom EMI filtered or unfiltered connector to fit the exact specifications of their application, including military or similar QPL connectors. The result is a high performance connector delivered in one of the industry's shortest lead times, 8-10 weeks, std.

For additional information, contact your Spectrum product line representative or visit [www.SpecEMC.com](http://www.SpecEMC.com).

The Spectrum Control Product line offers coaxial filters & interconnects, advanced ceramics, specialty connectors & harnessing and power filters and film mod-



**Composite Shell Circular Connector**

ules. For additional information, visit [www.SpecEMC.com](http://www.SpecEMC.com)

API Technologies designs, develops and manufactures electronic systems, subsystems, RF and secure solutions for technically demanding defense, aerospace and commercial applications. For further information, please visit the Company website at [www.apitechnologies.com](http://www.apitechnologies.com).

**Alpha Wire Puts Wire and Cable in Print for the Pulp and Paper Market**

Alpha Wire is pleased to announce its wire and cable product offering for the Pulp and Paper industry. Pulp and Paper mills operate in harsh environments where rugged, reliable cable and wire are needed to withstand a variety of hazardous conditions.

"As the Pulp and Paper industry continues to grow and become more automated, manufacturing will need to keep pace" states Justin Dubow, Marketing Communications Manager at Alpha Wire.

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Alpha Wire's large inventory and extensive network of distributors ensures fast turnaround on orders when time is critical for MRO customers. Alpha's broad offering of products available in a wide variety of configurations and small or large put-ups is also perfect for OEMs.

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Xtra-Guard® 1 Performance Cable has a specially formulated PVC jacket that prevents heat build-up for unstoppable reliability in a communication and control cable.

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Industrial Series V VFD Cable for variable-frequency drives is particularly designed for extended duty cycles typical in mixing and conveying.

For additional information, contact Alpha Wire at 800-52-ALPHA (522-5742) in North America, 800-288-8809 in Europe, and 21-61498201 in Asia. Also, please visit [www.alphawire.com](http://www.alphawire.com) to learn more about our paper and pulp product offering.

#### Faro Technologies Launches Campaign to Help Breast Cancer Research

FARO Technologies, Inc. a leading provider of portable measurement and imaging solutions announces the launch of the Real Men Wear Pink campaign, which includes an online message board to raise money for breast cancer research. Visitors to [www.faro.com/wearpink](http://www.faro.com/wearpink) are invited to add their name and message to the website in support of finding a cure for the disease. FARO will donate \$5 to charity for each message received. The Lake Mary, Florida-based company joins a growing number of American manufacturers in the fight against breast cancer.

"Everybody knows someone who has been diagnosed-with or impact-

ed-by breast cancer, and we as manufacturers are no different," said Kimberly Roman, FARO's Director of Marketing for the Americas. "Our goal for this campaign is obviously to generate donations for an important cause. We also want to show that even the manufacturing industry, with its hard-

ened and tough image, has a soft spot to help cure those affected by this terrible disease."

For each unique message added to the site ([www.faro.com/wearpink](http://www.faro.com/wearpink)), FARO Technologies will make a \$5 donation to breast cancer research.

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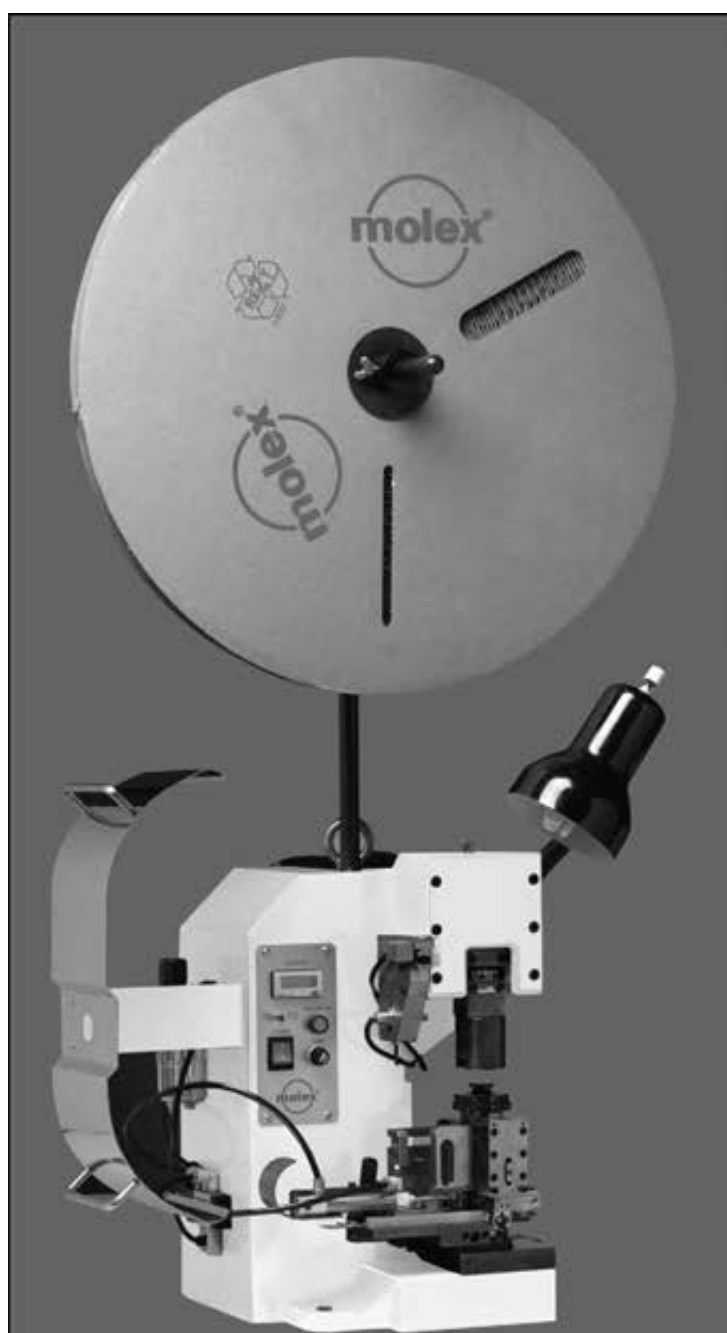
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The **TM-4000™ Universal Crimp Press** is an industry-standard, bench-top press that terminates large lug products on Mylar tape up to 4 AWG insulated and some 2 AWG uninsulated, resulting in lower overall applied costs. The **TM-4000™** has electrical requirements of 240 AC 50/60Hz.

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- Can be used with Molex Tape Module (64016-2000)
- Meets OSHA safety and noise requirements and is CE approved
- Two safety interlock switches attached to the guard prevent press from cycling if guard is open during operation

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

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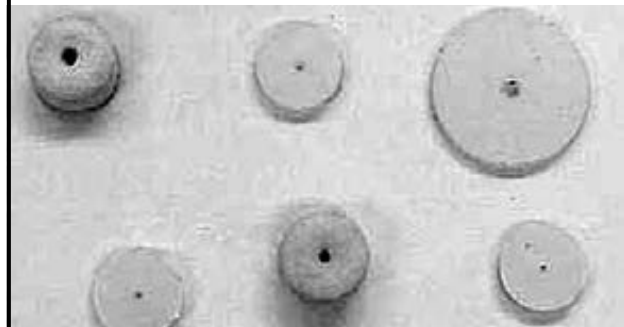
- Quick-change modular tooling accepts all existing ATP-201 and ATP-301 die sets
- Used in Molex **TM-3000™** and **TM-4000™** presses, which accept Molex applicators and most industry standard applicators
- Independent adjustment of insulation crimp height provides flexibility for various wire insulation thicknesses
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## NEWS PLUGS continued

### Current North American Business Conditions Index Rebounds in August, While Future Conditions Index Retreats

NEMA's Electroindustry Business Confidence Index for current North American conditions gained ground in August, but remained below levels suggestive of industry-wide expansion for a third straight month. The index climbed to 41.4, up 9.4 points from its July reading. The survey's measure of the degree of change in current North American conditions was in negative territory for the second month in a row, but

also improved relative to July. August's EBCI for future North American conditions slipped from a month earlier but continued to point toward better conditions over the next six months, dropping to 55.2 from 64 in July.

NEMA is the association of electrical equipment manufacturers, founded in 1926 and headquartered in Arlington, Virginia. Its member companies manufacture a diverse set of products including power transmission and distribution equipment, lighting systems, factory automation and control systems, and medical diagnostic imaging systems. World-wide annual sales of NEMA-scope products exceed \$120 billion.

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



**T&B® Fitting XD Expansion/Deflection Coupling**

### T&B® Fittings XD Expansion/Deflection Coupling for Rigid Conduit

The T&B® Fitting XD Expansion/Deflection Coupling for Rigid Conduit from Thomas & Betts supports movement and thermal expansion in conduit runs, providing a flexible and watertight connection.

The coupling incorporates an Erickson® conduit union that reduces installation time and effort, and a durable, protective stainless-steel inner sleeve that facilitates wire installation.

The coupling accommodates axial or parallel movement up to three-quarter inch, and angular movement up to 30 degrees from the normal position.

"The stainless-steel inner sleeve used in the T&B® Fitting XD Expansion/Deflection Coupling is far more durable than the conventional plastic tubes or corrugated hose found in other couplings of this kind," said Bogdan Diaconescu, product manager for Thomas & Betts. "It also provides better protection and easier wire pulling."

The T&B® Fitting XD Expansion/Deflection Coupling features include enclosed, copper ground mounting plates that are secured with tamperproof stainless-steel jacket straps to impede vandalism and theft.

The coupling has dual-layer hubs made of ductile cast iron, zinc plated and coated with aluminum acrylic paint for corrosion protection.

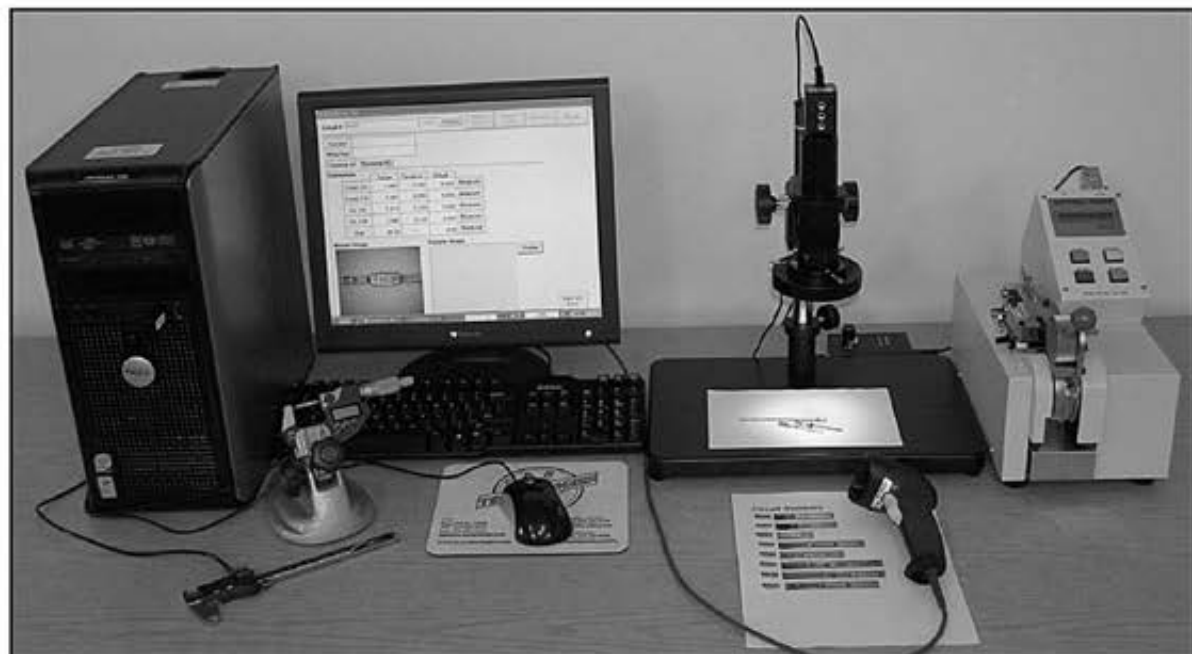
The T&B® Fitting XD Expansion/Deflection Coupling is UL Listed to UL 514B and is CSA Certified to C92.2 No. 18.3.

Suitable for Wet Locations (for hub sizes one inch to six inches). It also is watertight pursuant to NEMA 4 and is NEC Article 250.98 compliant.

For more information about the T&B® Fitting XD Expansion/Deflection Coupling, visit [www.tnb.com](http://www.tnb.com) or call (800) 816-7809.

# Crimp Inspection System

PC based system with bar code scanner, micrometer, caliper, pull tester, microscope and USB camera



First the operator scans the circuit number, his worker number and the machine number. The target crimp specs and master image are recovered from the hard drive and displayed. Using current production samples the operator measures the conductor and insulation crimp heights and widths. The operator measures the pull force. The operator captures an image, either cross section or terminal image. When finished the data is stored in Excel.

Set Up Monitor ver 1.07

Circuit # WXYZ [Hold] [Release] [Report - Chart] [Report - Sdata] [Master Maintenance] [Quit]

Dimension	Target	Target +/-	Actual	Measure
Cond. CH	0.033	0.002	0.034	Measure
Cond. CW	0.070	0.002	0.071	Measure
Ins. CH	0.080	0.005	0.080	Measure
Ins. CW	0.088	0.005	0.088	Measure
Pull	20.00	---	31.18	Measure

Master Image [Shutter] Sample Image [Shutter]

Save into Excel



Scan the circuit number, operator number and machine number



Measure conductor and insulation crimp heights



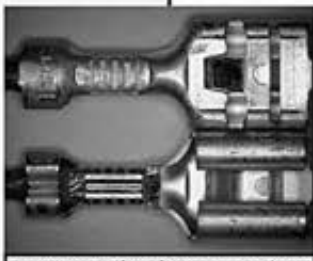
Measure conductor and insulation crimp widths



Measure pull force



Capture cross section image or terminal image



cross section images or terminal images can be captured

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

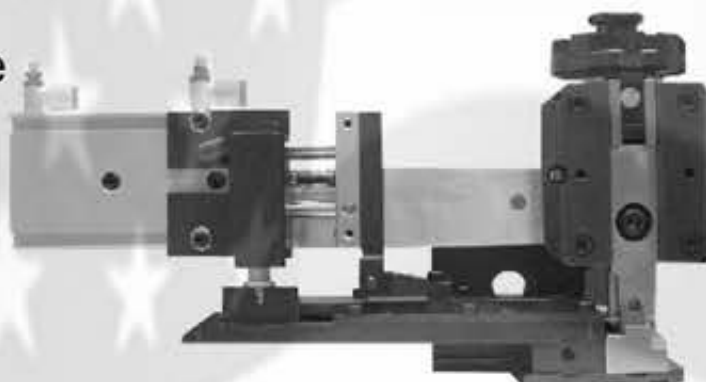


Model 1700



Model 2000

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

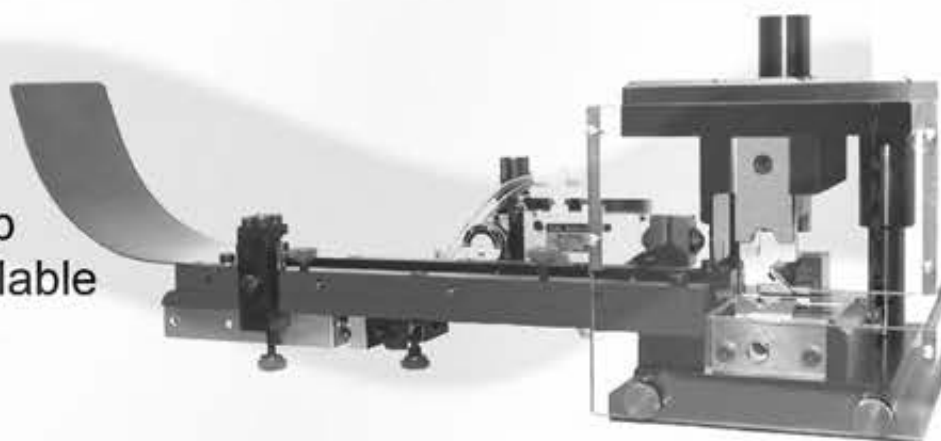


Model 1500



Model 2100

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



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## Conflict Minerals Legislation

Continued from page 4

agrees with the overall intention of the law to address a very specific economic solution to a deplorable social problem. He stated "The intention of the law is not to penalize the entire region, but to minimize the demand for minerals mined by the armed rebels."

Regulators at the SEC are used to focusing on the workings of the stock market and the intricacies of corporate statements. Full implementation has been delayed several times as the SEC struggles to write cohesive, workable, and cost effective guidelines for the supply chain. Wurzman asserted that the "wording of the law makes it difficult to enact because there are areas of ambiguity, and questions about how you can trace where the 3 T's + G are coming from." He noted the long delays are emblematic of the SEC's desire to work with NGO's and industry representatives in roundtable forums to "make the rules doable." His best guess as to when companies will need to report is the 2012 annual reports.

Wurzman sees particular difficulty for industry in tracing tin back through the supply chain since it is so widely used. "We see it as an alloy in many metals, especially in solders; in colorants for ceramics; and even as a catalyst in the production of U.V. curing ink systems," and added, "even if your product doesn't

contain tin, its production may be dependent on a material that contains tin," and would be considered to contain conflict minerals. "There is no obvious way to know this," he warned, "except to go through the supply chain and we must educate people where to look." Since there is no way to look for this information in an IMDS or RoHS Full Disclosure documentation, Wurzman feels that most companies will trace conflict minerals on a supplier basis, rather than an individual product basis. "The current thinking seems to be that if any product in any division contains or uses non-conflict minerals, then the entire organization is tainted," he said, adding, "this could be a huge problem for large multinational corporations with very diverse supply chains."

### Traceability Pinch-Point

The perceived nightmare of traceability might not be all that scary, Wurzman encouraged. "What is needed first is to determine the best pinch-point for tracing back the conflict minerals; and it seems the best point is the smelter who takes the raw materials from the mines, from other smelters or possibly the recycle market." Industry groups like iTSCi are working on a program where all smelters can be verified as DRC Conflict Free. "They are working on a bag and tag

Continued on page 24

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# Conflict Minerals Legislation

Continued from page 22

traceability program for all conflict minerals when they come from the mines, to create a verifiable audit trail," he explained.

Groups like EICC and GeSI have proposed solutions companies can use for reporting the source of their conflict minerals so they can be tied to the conflict mineral mines used by the supply chain. He warns that the EICC/GeSI spreadsheet and dashboard can be confusing, and noted that RSJ is working with the folks at iPoint Inc., a leading supplier of compliance software, to come up with a simple online tool that will roll up the current spreadsheet and ad-hoc reporting to provide a reliable audit trail. Wurzman has already presented the system to companies in the Automotive Industry, and will have the system available for the Wire Harness Industry very soon.

### Unintended Consequences

As mentioned, the bill was hastily written with much of the detail for implementation left to the SEC. Wurzman explained that the ambiguity along with delays in the publication of the final rules has caused:

In preparation, some companies have said 'we're just going to require that our supply chain does not buy anything from Africa,' and in effect

that has put an embargo on the entire region; even the people we are trying to help! And the prices have fallen precipitously for minerals from that part of the world. So now the markets [for metals mined by armed rebels] may no longer be the smelters in that region of Africa, but China and other countries as it becomes cost effective to buy from Africa because it's so cheap. This makes traceability more difficult, and you can't be sure that just because the smelter is in China or South America, that it's DRC Conflict Free.

### October SEC Roundtable somewhat hopeful

Despite the current ambiguity and the fact that the rules have not been made final, Wurzman was encouraged by the direction the SEC seemed to be taking during the most recent roundtable with the SEC Panel, industry representatives, and concerned NGO's. Clarification seems to be emerging on the concept of de minimus level as Wurzman noted, "A consensus seems to be emerging that if it is intentionally added, it should be reported." When the conflict mineral happens to be present because a pure enough material could not be obtained, no reporting would be necessary. If, however, it is designed and specified, no matter what the level, it must be reported. "This may be more manageable

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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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than a de minimus level, which would be a nightmare," said a relieved Wurzman.

Also brought up at the October roundtable was the subject of stockpiles, or on-the-shelf materials. Wurzman advised "It looks like the rules will cover new purchases from the smelter and older material will be indeterminate." He had the sense "they are looking at materials moving forward, but have yet to define whether stockpiles need to be reported at all, or just reported as 'indeterminate.'" Concerning gold in particular, Wurzman noted, "They did say that because of the value and amount of gold that is stockpiled, it will be difficult to track. It's not like tin where there is no value in holding it for four years, and I'm not quite sure how they will handle gold reporting."

A still relatively cloudy issue is how to handle recycled or scrap materials. "They want to encourage it but they are going to need a definition of what a recycled product is in terms of conflict minerals," Wurzman indicated there is potential for misbehavior here, adding, "A tremendous amount of recycling is done without formal paperwork, so there will have to be some type of mon-

itoring of the materials brought in for recycling."

Wurzman made special note of the way the SEC ended the roundtable when they admitted there was still a need for more input on costs, especially with respect to auditing.


"Conflict minerals are front and center in the supply chain with everybody who has heard about it, and a lot of people are panicky," Wurzman cited. But he seemed hopeful that the final rules will be workable. He concluded saying that RSJ has been trailblazing solutions for tracking conflict minerals for some time, and was certain that "RSJ will have a turnkey approach available to the Wire Harness Industry that will meet the traceability standards, and be easily modified to meet the accounting and auditing standards for everyone in the industry."

RSJ Technical Consulting has a plethora of information on Conflict Minerals, REACH, RoHS, EVL and other environmental compliancy standards: [www.rsjtechnical.com](http://www.rsjtechnical.com)

You can contact Michael Wurzman at: 972-964-0981 office or email: [mwurzman@rsjtechnical.com](mailto:mwurzman@rsjtechnical.com) He can also be reached on his cell at 972-972-679-8996.

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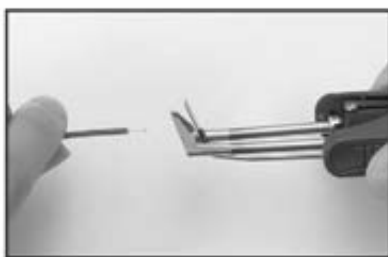
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## NEWS PLUGS continued

### EIS Announces the Acquisition of Cobra Wire & Cable Inc.

EIS Inc. ("EIS"), a wholly-owned subsidiary of Genuine Parts Company announced that they have acquired the stock of Cobra Wire & Cable Inc. ("Cobra") from Merit Capital Partners and Fulton Capital. Cobra has headquarters and a distribution facility in Hatboro, Pennsylvania and additional distribution locations in Plano, Texas and Seattle, Washington. Cobra serves the telecom, battery, uninterruptible power supply (UPS) and marine markets.

Bob Thomas, President and CEO of EIS, stated, "This acquisition is consistent with

our strategy to grow our current specialty wire and cable business into targeted adjacent markets. Cobra will operate as a separate division of EIS and continue operations with all existing customers and suppliers from their current facilities. We are pleased to welcome the Cobra team to the EIS and the Genuine Parts Company family."

Peter Sheehan, President of Cobra Wire and Cable will lead the Wire and Cable Division of EIS. He stated "Cobra is very excited to join EIS and Genuine Parts Company. We look forward to playing an active role in their continued expansion into the specialty wire and cable business".

EIS is one of North America's leading distributors of process materials; production supplies and value added fabricated parts. In addition to wire and cable, primary markets for EIS are the electrical OEM, apparatus repair and various assem-

bly markets. EIS supplies over 100,000 critical products from 38 branches and three fabrication facilities located in North America.

### Spectrum Introduces Two New Sienna High Speed Laser Wire Stripper Models

Spectrum Technologies PLC previewed two new models within an expanding SIENNA laser wire stripper range at the Productronica exhibition in Munich, Germany in November. The new SIENNA 600 and 800 models are aimed at high volume, high precision electronic manufacturing applications.

The SIENNA 600 series is a range of free-standing, fixed beam laser systems with a high speed moving stage offering a strip area of 400mm by 300mm (15.75" x 11.8"). This large process area means the system is particularly suited to large batch

processing or for long strip requirements for wires up to 6mm (0.25") outside diameter.

The maximum process speed achievable by the SIENNA 600 is 300 mm per second (29.5 inches per second) and the PLC control system ensures strip accuracies of +/-0.1mm. A colour touch screen HMI with USB port for job upload and download ensures the equipment is simple to operate.

The system has been designed to be able to incorporate different laser types depending on the end application. This enables the system to be specified for standard cable stripping, metallic shield scribing or fine magnet wire stripping. SIENNA 600 is well suited to processing small micro-coax cables used in electronic and medical device amongst other applications.

Adrian Thomas, Spectrum's Asia-Pacific Sales Manager explains,

"The SIENNA 600 series was designed with the needs of our Asia-Pacific customers in mind, who required a system that could process large volumes of micro coaxial cables, quickly and accurately. We believe that not only will this product range be the ideal solution for them but will also have wider global market appeal based on the advanced benefits it offers."

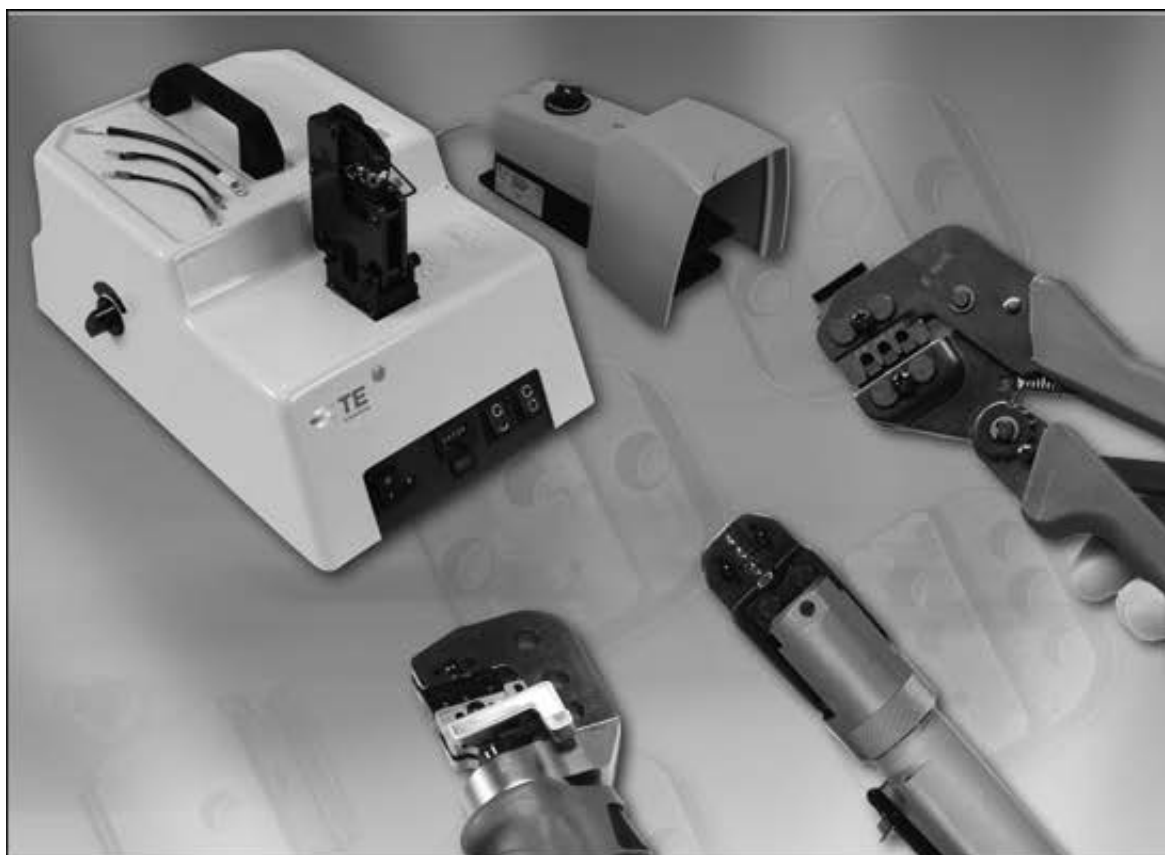
The SIENNA 800 series brings new capabilities to the standard SIENNA range with the introduction of high speed scanning optical systems for the stripping and marking of a wide range of wires and cables and other components, on a stationary tooling plate.

SIENNA 800 offers a process area up to 120mm by 120mm (4.7" x 4.7"), dependant on laser type, within which components may be processed. Optionally the system may also be integrated with a wire handling system for laser strip, measure and cut-to-length applications.

The 800 range also benefits from the high accuracy PLC control system and colour touch-screen HMI with USB port, and is also designed to house three laser types depending on the end application.

Typical applications for the SIENNA 800 range would include stripping insulation from FLC and FFC cables and the removal of enamel from fine as well as larger magnet wire.

Both products were demonstrated at Productronica and will be available in January 2012.



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## NEWS PLUGS continued

### Waytek's New Loom Tool Reduces Labor Costs for Wire Harness Manufacturers

Waytek, Inc., an electrical supplies distributor to the wire harness industry, has added a new loom tool that increases wire harness assembly efficiency.



Waytek's New Loom Tool

The loom tool helps increase productivity while reducing labor costs. Operators simply feed their wire bundle inside the tool opening, insert the tool into the loom slit, and slide the wire bundle through. It eliminates continuous manual feeding of wires into loom, preventing wear on operator hands.

Waytek, Inc. is a privately held company which offers quality electrical wiring supplies. With over 6,000 products in stock, Waytek's extensive line includes circuit protection, wire, connectors, relays, switches, cable ties, wire coverings, heat shrink, tools, cable clamps and many more wiring accessories.

For further information contact Waytek, Inc., 2440 Galpin Court, Chanhassen, MN 55317. Phone (952) 465-0436 or Fax (952) 949-0965. Visit [www.waytekwire.com](http://www.waytekwire.com).

### Dynalab Test Systems Announces NXHipot Wire Harness Testers

Dynalab Test Systems is pleased to announce the availability of NX Hipot Wire Harness Testers capable of testing with either AC or DC voltage. The new AC/DC option extends the existing offering of DC-only NX Hipot Wire Harness Testers.



Dynalab NX Hipot  
Wire Harness Tester

NX Hipot Wire Harness Testers offer the same flexibility, accuracy, and ease of use as Dynalab's line of low voltage NX Testers plus the additional capability of high voltage testing for insulation resistance up to 1.5 Gig ohm and dielectric withstand up to 1500 VDC or 1000 VAC.

Configurations from 64 to 1024 test points are available.

All Dynalab NX Hipot Wire Harness Testers provide the following features and capabilities:

- Print a product label only when the wire harness passes all tests
- Restrict an operator from altering the test program
- Identify an operator for data collection or product labeling
- Verify the correct bar code label is applied to the wire harness
- Transfer programs from a computer via a memory card
- Alert the operator if the wire harness is removed before the test is complete
- Connect to a network for program file transfers and data collection

NX Wire Harness Testers are backed by Dynalab's excellent support capabilities. Free technical consultation is available from Dynalab's knowledgeable application engineers. In addition, Dynalab offers an extensive library of application notes and product documentation containing examples for solving common wire harness and cable assembly testing problems.

More information is available at Dynalab's website [www.dynalabtesters.com](http://www.dynalabtesters.com) or by calling 1-800-SOS-DYNA (800-767-3962).

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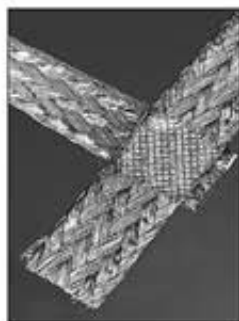
- The ability to confidently handle the widest spectrum of welds — including *tin-coated wires and terminals*, as well as aluminum, copper, nickel alloys, precious metals, and dissimilar metals.

- *Fast, easy tooling changes* that take only a minute or less and require *no calibration*.

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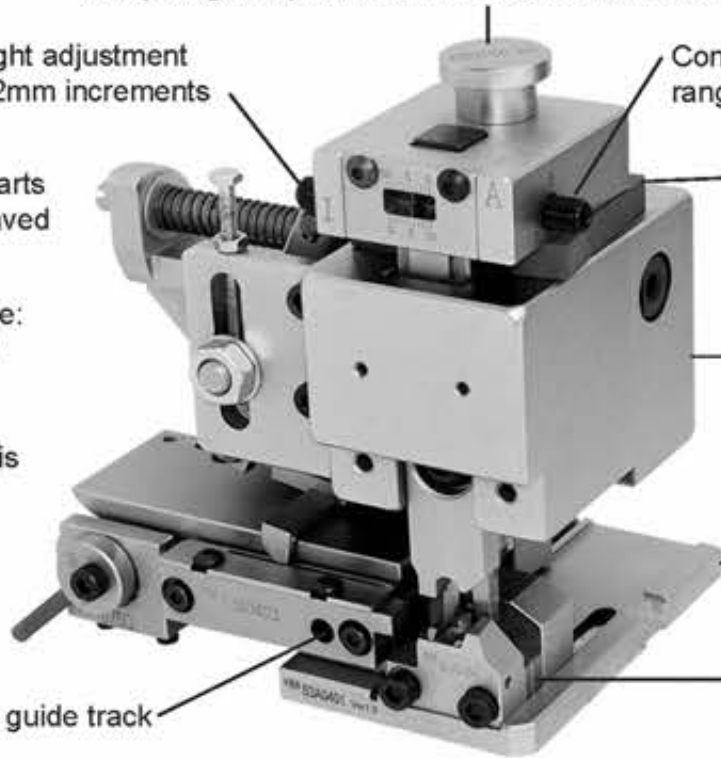
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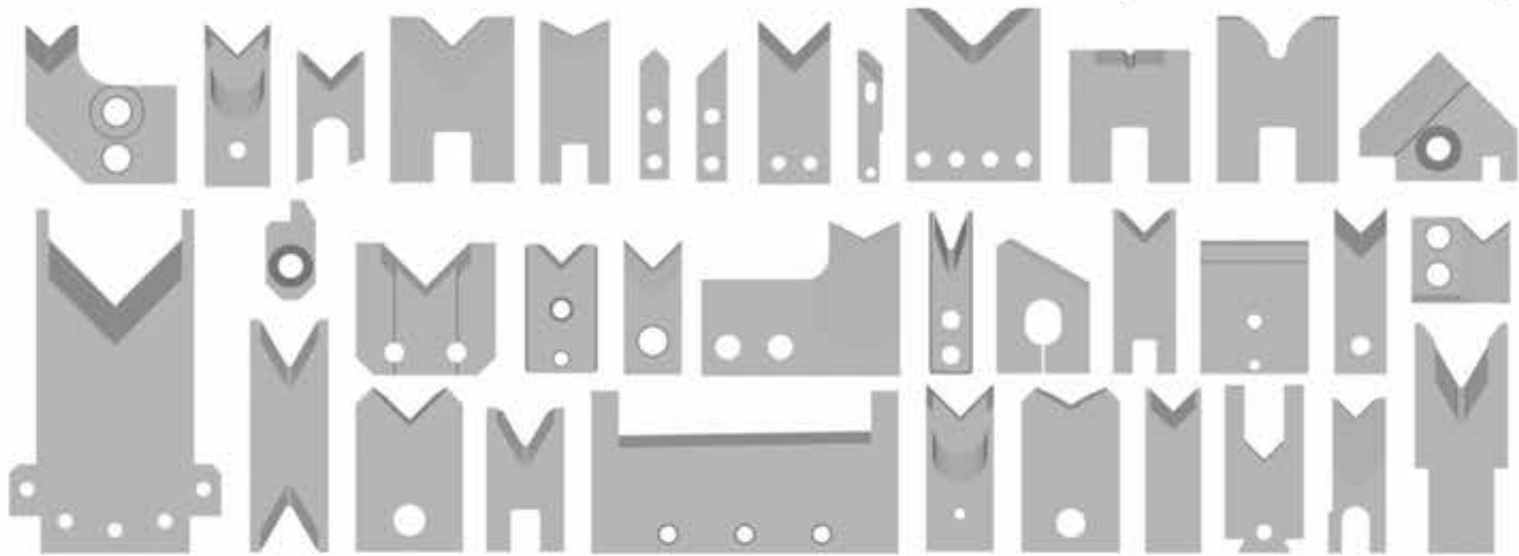
Split anvil design to reduce tooling costs



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# Vectrawire

Continued from page 1

Vectrawire is a joint venture: Ellson owns 51 percent, and Minnesota Wire (MW) of St. Paul, Minn., has 49 percent. MW designs, engineers and manufactures wiring harnesses, cable assemblies and interconnect assemblies for medical and industrial applications as well as the military through the firm's Minnesota Defense division. The 30,000-square-foot MW headquarters in St. Paul includes a facility for doing R&D, testing and measuring. Production is handled in a 60,000-square-foot building in Eau Claire.

MW is represented by Paul Wagner, its chairman and CEO. His family has owned MW since its founding in 1968. In June he received the Ernst & Young Entrepreneur of the Year Award for the Upper Midwest Region (Minnesota, Wisconsin and the Dakotas) in the technology category. The honor recognized his leadership, vision and commitment to transform MW through high-tech R&D while retaining a culture of community involvement and product manufacturing.

The award is in its 25th year and recognizes business leaders in more than



27-foot communications cable for the MRAP (Mine Resistant Ambush Protected) vehicle.

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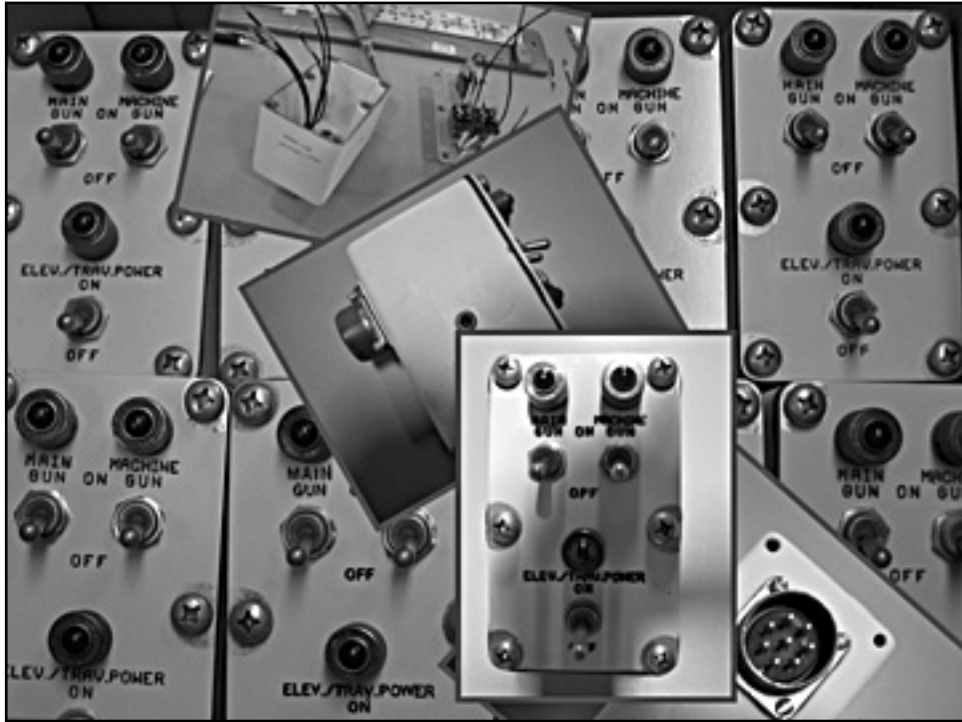
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140 cities in 50 countries throughout the world. Awards are given to entrepreneurs who demonstrate extraordinary success in the areas of innovation, financial performance and personal commitment to their businesses and communities.

Wagner and Ellson met through their involvement in Twin Cities veterans groups and activities. Wagner is a member of the Defense Alliance and the 5th Region of the Association of the United States Army. Ellson belongs to the Minnesota chapter of the Elite Service-Disabled Veteran-Owned Business Network, and he is a director of the National Disabled Veterans Business Council in Washington, D.C.

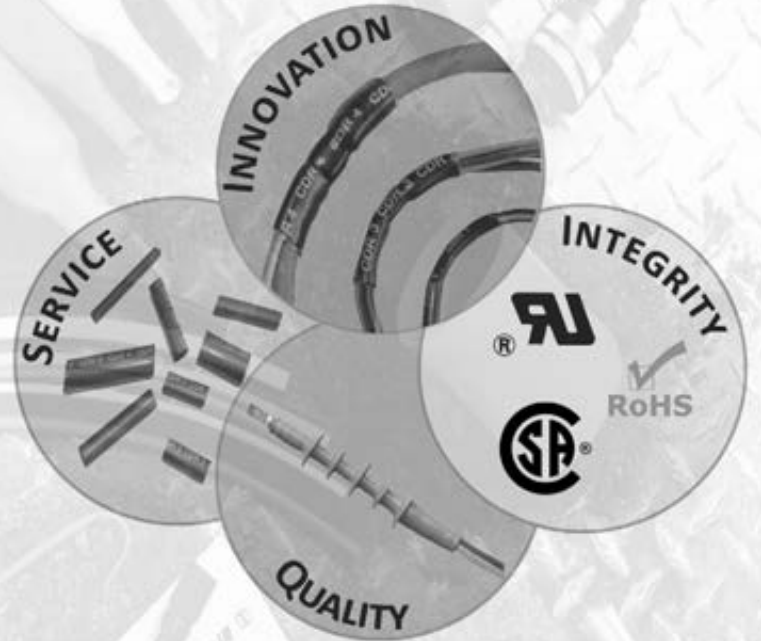
“Paul saw an opportunity for Minnesota Wire to be involved in more government contracting because I know a lot about it through my work in logistics in the Army,” Ellson said. “I knew it was a huge risk to start a small business on my own, so it’s good to have Paul and Minnesota Wire with 40 years of experience to help me with the weak points in my business.”

Vectrawire, which is designated as a Service-Disabled Veteran-Owned Small Business by the U.S. Small Business Administration, is located in 1,500 square feet of the Chippewa Valley Innovation Center, an enterprise of the Eau

*Continued on page 32*

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# Vectrawire

Continued from page 31

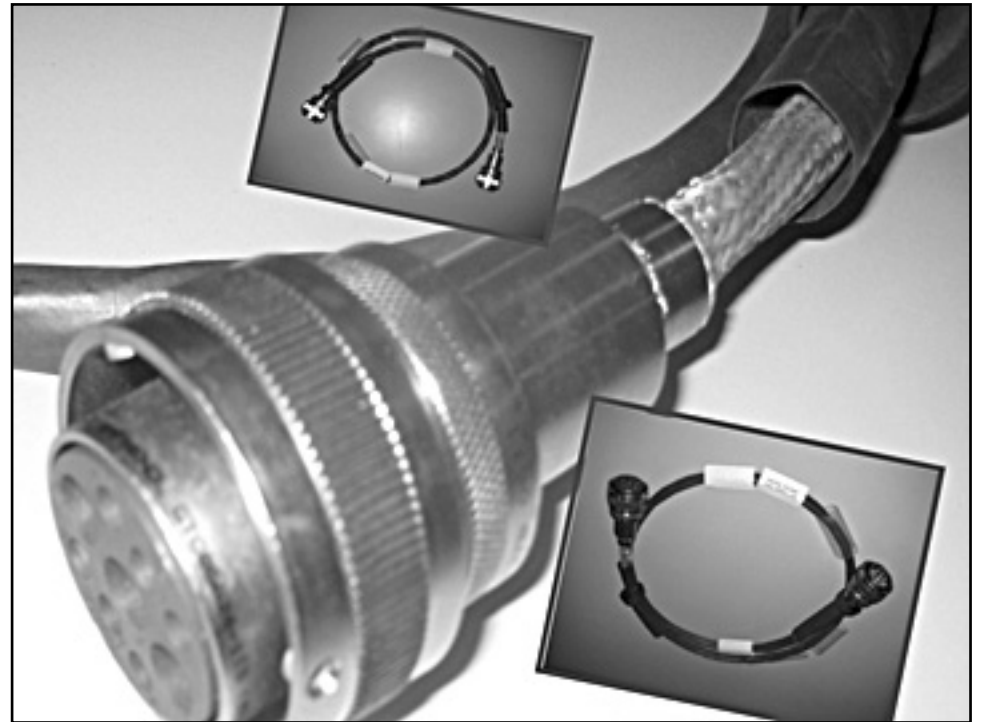
Claire County government to foster business incubation. The center has three other businesses and is 15 minutes from MW's production facility.

The proximity gives Vectrawire access to MW and its resources. "It is a large company with detailed expertise that can mentor me until my business grows up and becomes sustainable," Ellson said. "This is a special and unique model because normally I'd have to hire a consultant for such things as purchas-

ing and the supply chain. This fills in a gap."

The general manager of Vectrawire is Sarah Connors. Her and Ellson's paths crossed years ago in business, and he contacted her when he was moving ahead with Vectrawire. She worked many years for Northern States Power in Minneapolis, Minn. She is assisted by Tim Smith, the operations lead.

As a start-up business, staff size averages six, including one Navy veteran, but it grows to 10 when orders dictate. The extra workers are temporary employees



Wire harness for Defense Prime Contractor

hired through a staffing agency. Of course, veterans are given preference, often contacted through the veterans center in Eau Claire. Future staff additions are people to handle finance, IT, purchasing and human resources.

At this early stage in Vectrawire's history, manufacturing, which follows lean principles, involves straightforward processes because the custom build-to-print products are not elaborate. Harnesses and cable assemblies are 1-9 feet long and contain up to 12 wires. Shielding and coiling are included in the processes, and overmolding is available through a subcontracting arrangement with MW.

Also through subcontracting Vectrawire expands its capabilities to include product management, engineering and design, prototyping, statistical process control, extrusion wire coating, injection molding, die-casting and tooling, braiding, stamping and fabrication, CNC machining and rapid 3-D printing.

Every aspect of Vectrawire's operations is according to ISO 9001:2008 standards. One of Ellson's first priorities was the ISO certification because it is required for government contracts. Remarkably, it was acquired in just five

months. The company also has IPC/WHMA A-620 certification.

With such standards, quality is at 99.9 percent. Testing and inspection are 100 percent at the end of the line, and in-line inspection depends on the critical dimensions highlighted in each contract. Lead time averages six weeks, and the on-time delivery rate stands at 98.48 percent.

So far, manufacturing has included defense communication cables, defense power systems cables, wire prep for OEM manufacturing systems, commercial lighting product rework, switchbox for missile launch system, medical leads, defibrillator leads and ribbon cables for a medical device.

In 2010 one of Vectrawire's major projects was more than 100,000 cables for the Space and Naval War Systems Command of the U.S. Navy in San Diego, Calif. This year more than 300,000 harnesses and cable assemblies have been made for Minnesota Wire; Skyline Designs, Eagan, Minn.; Napco International, Hopkins, Minn.; WireMasters, Columbia, Tenn.; Lockheed Martin, Eagan, Minn.; and Letterkenny Army Depot, Letterkenny, Pa.

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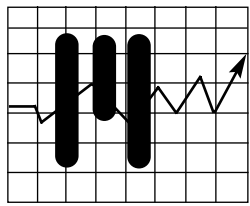
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Harnesses also have been produced for Omnicell in Mountain View, Calif. Coincidentally, the firm makes pharmaceutical dispensing machines that are used in Veterans Administration hospitals.

When Vectrawire is not making harnesses and assemblies, it does kitting. "It fits us very well when we have gaps in production," Ellson said. "We have a low-cost pool of labor but with quality standards in procedures. We have had a good response because every manufacturer has a need for kitting."

Projecting revenue of \$500,000 this year, Ellson needs a good response to his sales and marketing efforts. He travels extensively to visit clients, and he attends 1-3 trade shows a year, especially that of the Association of the U.S. Army in Washington, D.C. A manufacturer's rep firm in Minnesota is used. At least once a month Ellson or Conners attends a program presented by prime government contractors to potential suppliers that qualify as minorities, women or disabled vets.

"I love interacting with customers and finding out about their needs and wants," Ellson said. "I also love talking about the disabled veteran community and how to grow jobs. We can create a great product and put vets back to work. It's my small part in giving back to the United States."

For Ellson to meet his goal of \$10 million in sales and 50 employees on staff, he realizes a formidable amount of work lies ahead. He is prepared for the challenges, similar to those he encounters daily.

"Trying to win a contract from the government or a prime contractor that is a Fortune 500 company is not for the meek and mild," Ellson said. "You must have cash flow because getting a job can take two years. There's so much paperwork and red tape, you have to have all the different systems in place and be certified."

"You must go down this path with your eyes wide open," Ellson said. "Most companies do not start in the government space. We're prepared to sustain ourselves two years. We're ahead of schedule, and I'm very excited about where we are. With government business, if you can weather the storm and keep yourself afloat two years, it can be very attractive."

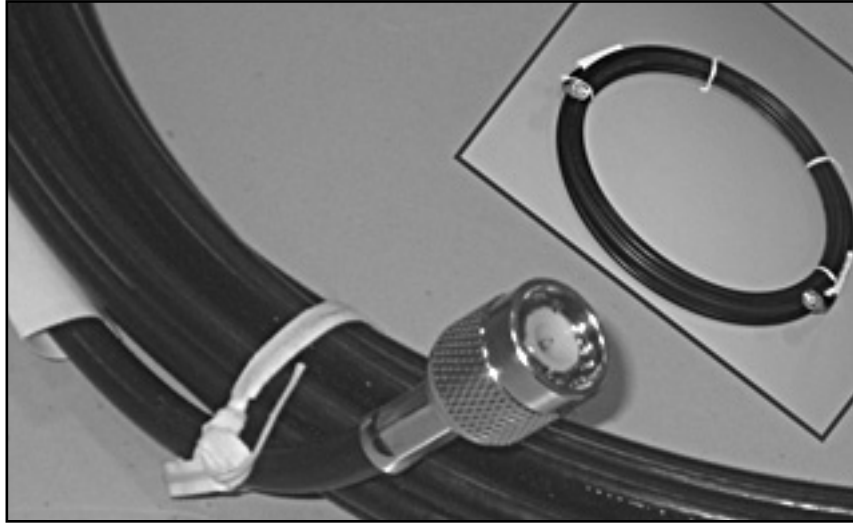
Ellson stated he will accomplish his goals by being innovative. "You must innovate a product or a process by taking cost out or adding value," he

said. "We really focus on efficiency and adding and surrounding our main products with services that add value."

"Innovating can be applied to a service and not just to a product," Ellson said. "We can be dynamic and

flexible as a new company."

For further information, call 612-670-4397, e-mail mark@vectrawireinc.com, fax 715-831-6300, visit www.vectrawireinc.com or write 3132 Louis Ave., Eau Claire, WI 54703.



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**NEWS PLUGS** continued



**BURNDY® Announces New Lithium-Ion Line of Patriot® In-Line® PATMD6-LI Series Tools**

BURNDY®, a manufacturer and provider of connector solutions to the industrial, energy, construction, telecommunication,

petrochemical, data center, and transportation industries, announces the introduction of our Lithium-Ion PATMD6-LI series of PATRIOT® IN-LINE® battery actuated tools.

BURNDY® has incorporated lithium-ion (Li-ion) technology, enhanced electronics and refined hydraulic systems advancing the PATRIOT® line of crimping and cutting tools to the forefront of performance, speed, and reliability.



**Patriot® In-Line® PATMD6-LI**

The advantages of the new 18-volt 3.0 Ah lithium-ion technology over Ni-Cd and Ni-MH are no memory effects, no self discharge, no conditioning required and a longer battery life — 2.5 times more charge/discharge cycles than traditional Ni-Cd batteries and provides 430% more lifetime work. The charge time is only 30 minutes, twice as fast as Ni-Cd and the battery weights 40% less than Ni-MH batteries.

The new PATMD6-LI series of Li-ion tools have over-molded handles for comfort and improved grip. All BURNDY® PATRIOT® tools are proudly made in the USA.

BURNDY® will continue to offer the current line of Ni-MH PATRIOT® tools allowing customers choice and flexibility.

For additional information, contact us at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, call Customer Service at 1-800-346-4175, or visit our website at [www.BURNDY.com](http://www.BURNDY.com).

**Ark-Plas® Announces New Website**

Ark-Plas® Products, Inc. has released a new web site that has been completely re-created which includes interactive features, such as:

- CAD file downloads for engineers
- Product search using description or part number
- Color coded pages for each product category
- Prints and catalogs available in .pdf format
- Online Print request form
- Complete Material Data section



Other enhancements include social networking links that will aid in following current events and product releases from Ark-Plas®.

Ark-Plas® has also changed the product layout to include 5 easy to navigate categories that include plastic fittings, extruded flexible tubing, plastic routing and protection accessories, plastic screw covers, and plastic quick bind hardware.

The new website has been designed to help customers find the part they are looking for as quickly as possible. Visit it today at: <http://www.ark-plas.com>.

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Participants from left to right: Warren Jenkins, VP of Sales, BURNDY; Tim Dove, Action Battery; Tom Halverson, Humphrey & Associates; Mark Beeson, Northeast Sales Representative, BURNDY; Eric Canning, Southern Sales Representative, BURNDY; Tim Beaulieu, Rosendin Electric; Charlie Watson, Peninsular Electric; Jackie Sylvia, Sr. Product Manager, BURNDY; Jim Grahek, Utility Sales Representative, BURNDY; John Milner, UES; Roger Ferguson, Western Sales Representative, BURNDY; Lee Herron, VP CM&R Product Line Business Team, BURNDY

**Burndy® Announces Power55 Winners!**

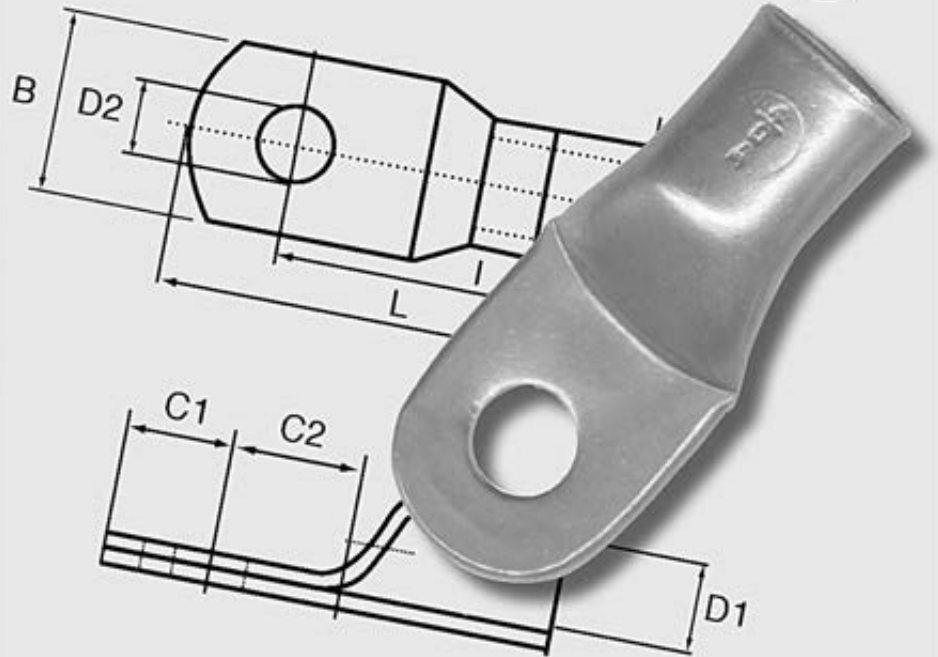
BURNDY®, a leading manufacturer and provider of connector solutions to the industrial, utility, construction, telecommunication, power generation, OEM, data center, oil and gas industries, is proud to introduce the winners of the recent Power55 contest.

The Power55 contest was based on increasing sales of our HYDENT™ compression terminal and splice products. A winner and guest was chosen from each region and flown to Manchester to participate in a Richard Petty Rookie Driving Experience at the New Hampshire Motor Speedway in Loudon, NH on Saturday, August 27th. Top speeds of 114 miles per hour were reached and everyone had an enjoyable time.

Headquartered in Manchester, New Hampshire and with over 85 years of dedicated customer support in both service and product, our customers need look no further than BURNDY® for all their connector, tool, and accessory needs. BURNDY® is the only manufacturer to have the BURNDY® Engineered System of coordinating dies, connectors and tools. The three elements have been specifically designed to work together and engineered to meet stringent, accepted quality standards – allowing the user complete confidence in the integrity of the connection.

For additional information, contact us at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, call Customer Service at 1-800-346-4175, or visit our website at [www.BURNDY.com](http://www.BURNDY.com).

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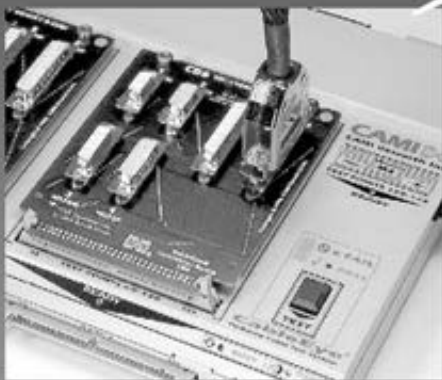
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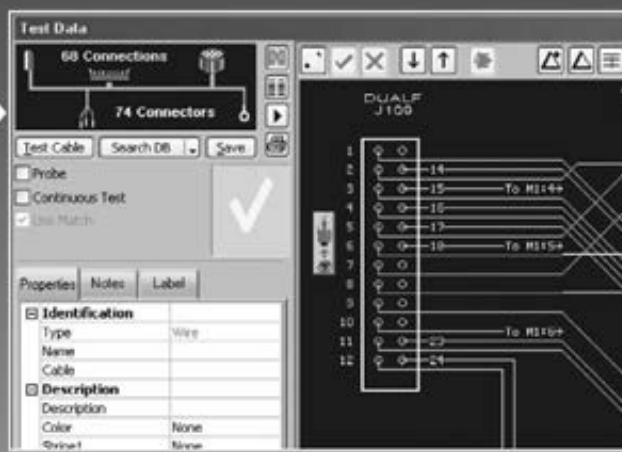
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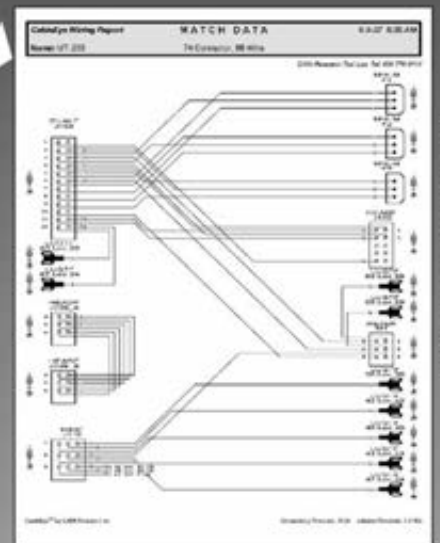
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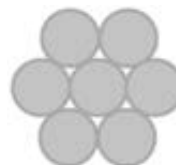
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In every issue of Wiring Harness News Anixter will bring you informative articles about wire and cable technology.

## Conductor Coatings

Metal coatings are often applied to the surface of individual wire strands in electrical conductors to improve solderability, reduce oxidation (corrosion) or improve electrical properties at high frequencies. Three of the most common coating (plating) materials used with copper conductors are tin, silver and nickel. A coated conductor with seven individual strands is illustrated at right (coating thickness exaggerated for clarity). Decades ago metal coatings were also used to provide easy stripping of the insulation, i.e., to keep the insulation from sticking to the conductor. Improved insulation materials have made that practice unnecessary.



### Coating Materials

Tin is the most common coating material. Conductors coated with tin are usually referred to as "tin plated" or simply as "tinned" conductors. Tin effectively prevents oxidation at temperatures up to about 150° C, but is not as electrically conductive as copper. At higher

temperatures, silver is often used to minimize oxidation in spite of its high cost. Silver is also used for high-frequency applications where silver's excellent electrical conductivity and the skin effect<sup>1</sup> work together to reduce impedance and attenuation. At temperatures above 250° C, nickel is often used. Although it is also a relatively poor conductor of electricity, nickel provides effective protection from oxidation up to approximately 450° C. A summary of plating material properties is shown in the table (above right).

### Application Methods

Two methods are commonly used to apply metallic coatings to the individual strands of a copper conductor. The first, called hot dip, is a process in which a bare copper strand is passed through a bath of molten metal. A second method, electroplating, applies the coating to each strand using an electrolytic process in which an electric current causes the coating material to be deposited on the copper.

### Coating Thickness

It is uncommon for industry standards to directly specify coating thickness. Instead, the thickness is usually indirectly controlled through various

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Plating Material Properties			
	Tin	Silver	Nickel
<b>Maximum Service Temperature (Typical)</b>	150° C	250° C	450° C
<b>Electrical Conductivity</b>	15% that of copper	106% that of copper	25% that of copper
<b>Crimp Contact Resistance</b>	Good but can deteriorate over time	Excellent	Good but can deteriorate over time
<b>Solderability</b>	Good but can deteriorate over time	Excellent	Requires active flux

other requirements including continuity of coating, adhesion of coating, electrical resistance and weight. Many of those requirements are detailed in ASTM standards.<sup>2</sup> Coated conductors typically have coating thicknesses that range from 40 to 2,000 microinches (1 to 50 microns) or more depending on coating material and the specific wire involved.

#### Additional Coating Types


To reduce the risk of short circuits resulting from stray strands during connectorization, stranded conductors are sometimes dipped in molten tin after the insulation is stripped from the ends of the wire. To eliminate the need for this extra step by the wire user, the wire manufacturer can bond the individual conductor strands together at the factory using one of several methods. One of these methods is called prebonding. With prebonded conductors, tinned strands are heated to the melting point of tin after they are stranded—effectively soldering them together continuously throughout the length. Prebonding is not usually available with bunched conductors, i.e., those with randomly positioned strands. A second method is

called overcoating. An overcoated conductor is one composed of individually tinned strands that the manufacturer has dipped into a molten tin bath after stranding. Overcoating is possible with both ordinary and bunched types of conductor stranding. A third method is called topcoating. Topcoated conductors are similar to overcoated conductors except that the overall tin coating is applied to a conductor composed of untinned copper strands rather than tinned strands. One disadvantage of all three types however is that they are less flexible and have a shorter flexlife<sup>3</sup> than ordinary conductors. Because of this, these wire types are usually only manufactured in relatively small gauge sizes (smaller than 16 AWG) and are not appropriate for flexing applications.

<sup>1</sup> Skin effect is an electrical phenomenon in which current tends to flow on the outer surface of a conductor.

<sup>2</sup> ASTM B-33 Specification for Tinned Soft or Annealed Copper Wire for Electrical Purposes, ASTM B-298 Specification for Silver-Coated Soft or Annealed Copper Wire, ASTM B-355 Specification for Nickel-Coated Soft or Annealed Copper Wire, [www.astm.org](http://www.astm.org)

<sup>3</sup> Flexlife is the maximum number of times a wire can be flexed around a mandrel of a specified diameter before failure occurs.



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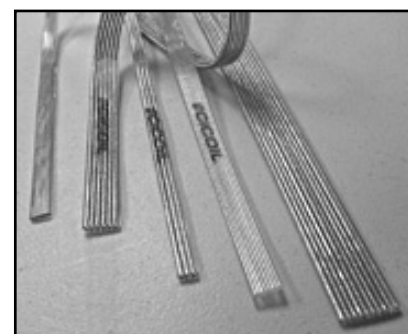
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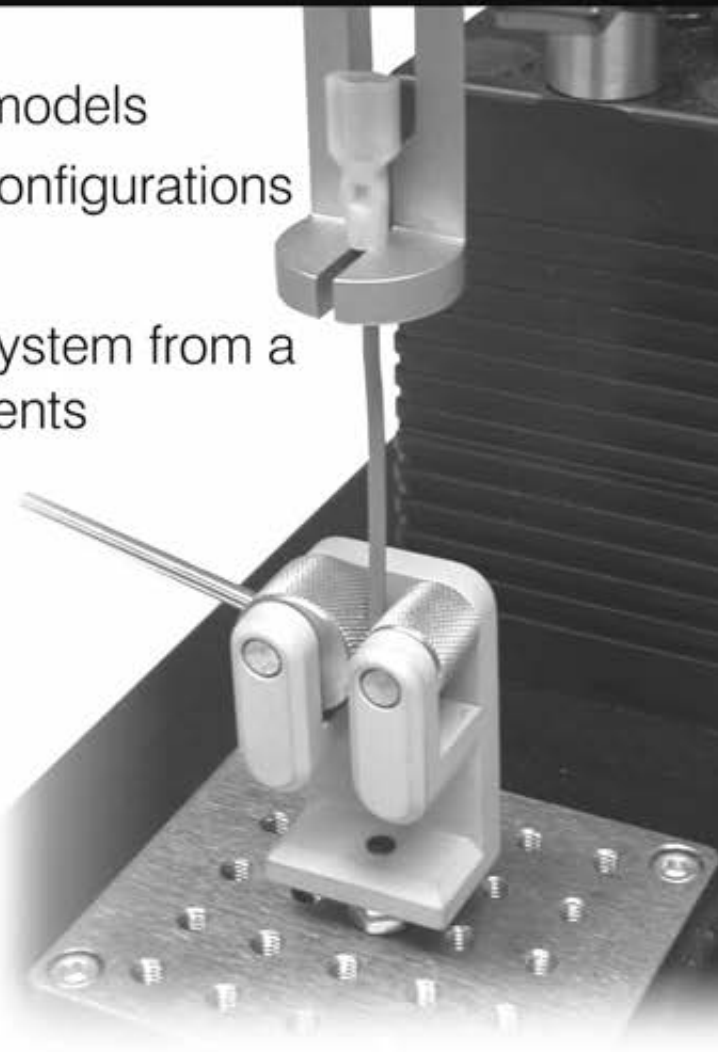
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# Allied Wire & Cable Announces Recipient of New Scholarship

Allied Wire & Cable is proud to announce Matthew Rayner as the first beneficiary of its new company-run scholarship program. Matthew is the son of Ron Rayner, a Warehouse Associate at Allied's Headquarters in Collegeville, PA since 2008.

The scholarship program, which will run annually, is open to children of full-time AWC employees with at least three

years on the job. Students are eligible to apply for the \$10,000 scholarship during their senior year of high school. They must be college or university-bound and have a minimum GPA of 3.0. Scholarships are awarded based on both merit and financial need, and are payable over the course of the student's college career.

Matthew Rayner, Allied's first scholar-

ship winner, is a freshman at Penn State Abington this year. To help cover the cost of tuition, he will be awarded a check for \$2,500. As long as Rayner maintains a 3.0 GPA or higher, he will receive one check each year during his four-year college program, for a scholarship totaling \$10,000.

Rayner says, "Receiving the Allied Wire Scholarship is a great accomplishment in my academic career. I appreciate Allied Wire giving me opportunity (to be) the first ever recipient of this award, and it is something that I will always appreciate."

As a student at Roxborough High School, Rayner received honors all four years, and was a member of the school's wrestling, cross-country, and soccer teams. He plans to study education at Penn State Abington, pursuing his dream of becoming a teacher.

His father and Allied employee, Ron Rayner says, "I would like to thank Allied Wire and Cable for making my son Matthew their first \$10,000 scholarship winner. If you work hard enough in life, anything is possible. I saw that the eight times Matt went up on stage at graduation and I see that every single day. He works very hard at everything he

does...to say that we are proud of what he has done would be an understatement."

Allied is honored to have Rayner as the first recipient of its new scholarship, and looks forward to supporting more of the ambitious and talented children of Allied employees in coming years.

Tim Flynn, Allied's CEO says, "Allied Wire & Cable has always taken pride in helping those with needs in our community. The opportunity to help an immediate member of the Allied family achieve greatness is very rewarding. We wish Matt the very best and we know he will make us all proud."

As a family owned and operated business, initiatives like the Allied Scholarship Program are a major part of the company's identity, and remain very close to employees' hearts. Everyone at Allied is anxious to see Matthew Rayner's progress as he moves through college, and anticipates another great batch of scholarship applicants next year.

Allied Wire & Cable is a family owned and operated wire and cable distributor and value added manufacturer. For more information on Allied Wire & Cable, please visit [www.awcwire.com](http://www.awcwire.com).



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Allied Wire & Cable awards new \$10,000 company-sponsored scholarship. Matthew Rayner, a freshman at Penn State Abington and son of Allied employee, Ron Rayner, is the first scholarship recipient.

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**NEWS PLUGS** continued**Allied Wire Welcomes Three New Account Reps**

Allied Wire and Cable continues to expand its team, adding new sales representatives to its locations in Pennsylvania, New Hampshire, and Nevada.

Allied Wire and Cable continues to thrive, hiring new account representatives at three of its locations across the U.S. With more representatives at each location, Allied can now provide better service than ever.

Paul Lawruk is the newest account representative at Allied's Headquarters in Pennsylvania. Lawruk began his career in the wire and cable industry at Omni Cable, where he worked as an account manager. He became familiar with AWC during his time there, and saw firsthand the great customer service Allied is known for. Now Lawruk looks forward to working side-by-side with the Allied team. He says, "I always had a great relationship with Allied in my past wire and cable experience, and now I am proud to say I am part of the AWC family."

Allied's newest location, Las Vegas, welcomes Kristy Ventura. Of her move to Allied Wire and Cable, she says, "It's my pleasure to be part of a group who not only makes me feel like part of a family, but are excited to serve our customers with a smile." Ventura has a highly industrial background with previous positions at Anacapa Micro Products, R&B Welding, and Grainger.

Ryan Baldinelli is a recent addition to Allied's New England branch, and to the wire and cable industry. He is a 2011 graduate of Castleton State College in Vermont, where he studied business and marketing. Although he is a rookie, he brings a lot of enthusiasm to his new position, saying he "looks to make (his) footprint on the industry soon enough."

The Allied Wire & Cable family is happy to have Lawruk, Ventura, and Baldinelli, and looks forward to growing with them.

Allied Wire & Cable is a family owned and operated wire and cable distributor

and value added manufacturer. Allied services many of the largest industries in the country, including the government and the military, as well as the aerospace, automotive and telecommunications industries. Allied offers customization services, including cut and strip, printing, dyeing, striping, twisting, and more, so that customers can 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 Colleagueville, PA, Allied has offices in Florida, New Hampshire, South Carolina, Tennessee, Texas and Wisconsin, along with several warehouses across the country. For more information on Allied Wire & Cable, please visit [www.awcwire.com](http://www.awcwire.com).

**Alpha Wire Unveils Latest in Environmentally Friendly Hook-up Wire: EcoWire™ Plus**

Alpha Wire has launched a new extension of its popular EcoWire line tailored for more industrial applications. Offering all the environmental benefits and abrasion resistance characteristics of the origi-

Continued on page 42

## Solutions for seal processing

### You do have choices

When it comes to fully automatic seal applicators, you have a few to choose from. Your choices have just grown as Schaefer GmbH has introduced a new seal module or SSM for fully automatic wire process machines.

### Your benefits

One of the many benefits of the SSM is it will work with seal kits that you may already own. The seal size range for the standard track in the Schaefer unit is the widest in the industry. Its narrow construction saves space on your machine table, allowing for a wider variety of other modules. The SSM is designed to achieve maximum process speeds while minimizing space requirements.

### Wide range is standard

The new SSM unit can handle seals in a wider range of sizes and shapes. It is user friendly and will process seals with diameters up to 10 mm and 9 mm in length in its standard configuration. This includes many hard shell seal applications. Optional settings are available for large seals with diameters up to 17 mm and 16 mm lengths. The SSM has many other cost savings options available as well.

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W233 N2830 Roundy Circle W.  
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Fax: +1 262 524-1133  
Email: [pewaukee@schaefer.biz](mailto:pewaukee@schaefer.biz)  
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Web: [www.schaefer.biz](http://www.schaefer.biz)

**NEWS PLUGS** continued



Continued from page 41

nal EcoWire, EcoWire Plus also resists oils, fuels, solvents, and other hazardous liquids. EcoWire Plus meets the fluid resistance requirements of ISO 6722 for thin-wall and ultra-thin-wall wire, making it an eco-friendly and cost-effective replacement for XLPE-insulated wire.

As with original EcoWire, EcoWire Plus derives its advantage from a modified polyphenylene ether (mPPE) thermoplastic that is inherently lighter and smaller with equal robustness when compared to XLPE. In addition, EcoWire Plus is non-halogenated and contains no heavy metal pigments, meeting RoHS and Waste Electrical and Electronic Equipment (WEEE)



**Environmentally Friendly EcoWire™ Plus Hook-up Wire**

requirements for the elimination of hazardous substances and recyclability.

"EcoWire Plus is a great advancement on our EcoWire line," says Tim Howlett, Senior Product Manager at Alpha Wire. "Not only does it continue to offer space-saving design and weight reduction, its fluid and chemical resistance is ideal for demanding factory and industrial applications. Plus, it enables significant cost savings when replacing XLPE wire."

Howlett adds, "The positive feedback we received from design engineers, as

well as the strong market demand for custom orders of this product, made the EcoWire Plus line addition an obvious next step."

The initial EcoWire Plus offering is built to ISO 6722 standards for thin- and ultra-thin-wall requirements and is RoHS and REACH compliant. It is available in sizes from 28 AWG (0.09 mm<sup>2</sup>) to 10 AWG (4.92 mm<sup>2</sup>) with stranded bare copper conductors and an operating temperature range of -40°C to +110°C.

For additional information, contact Alpha Wire at 800-52-ALPHA (522-5742) in North America, 800-288-8809 in Europe, and 21-61498201 in Asia. Also, please visit our website to download data sheets, access search filters, and place free sample requests for EcoWire Plus.

**BURNDY® Announces New Packaging for Small Compression Connectors**

BURNDY®, a leading manufacturer and



**New Packaging for Specific Small HYDENT™ Compression Connectors**

provider of connector solutions to the industrial, utility, construction, telecommunication, power generation, OEM, data center, oil and gas industries, is proud to introduce new, made in the USA packaging for specific small HYDENT™ compression connectors.

Combining eye-catching look with function, the patent pending lid features the BURNDY® 'Bug' identifier and the ability to hold product when inverted while providing a stable base for spill prevention. The lid design allows for hanging on a 1 or 2-prong rack. The bottom of the jar body is indented to allow for safe stacking. The jar body is translucent along with the color-coded lids offering visual verification. Identifying reds, blues and yellows (gray lid signifies uninsulated product) has never been easier. Threaded lid design requires only 1/4 turn but locking feature keeps the contents secure.

Headquartered in Manchester, New Hampshire and with over 85 years of dedicated customer support in both service and product, our customers need look no further than BURNDY® for all their connector, tool, and accessory needs. BURNDY® is the only manufacturer to have the BURNDY® Engineered System of coordinating dies, connectors and tools. The three elements have been specifically designed to work together and engineered to meet stringent, accepted quality standards – allowing the user complete confidence in the integrity of the connection.

For additional information, contact us at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, call Customer Service at 1-800-346-4175, or visit our website at [www.BURNDY.com](http://www.BURNDY.com).

# Does your Cable Tester:

**A+**  
Print a bar code label only if the harness passes?

Restrict an operator from altering the program?

Identify the operator for labels and data collection?

Verify the bar code label is applied to the harness?

Transfer programs to tester via a memory card?

Send alerts if harness is removed prematurely?

Connect to a network for file transfers and data collection?

Function as a standalone system, without needing a computer?

If not, contact Dynalab today for more information!  
[www.DynalabTesters.com](http://www.DynalabTesters.com)

Wiring Harness and Hipot Testers

Resistance: 1Ω-2MΩ  
 Capacitance: 100pF-500µF  
 High Voltage: 50-1500VDC  
 Insulation Resistance: 5MΩ- 1GΩ  
 Test Points: 64 to 32,768

**Dynalab**  
TEST SYSTEMS

**Heavy-Duty Conduit System Provides Advanced Cable Protection**

The new Maulflex conduit system from TE Connectivity (TE) provides exceptional protection to integrated cable harnesses. The rugged, environmentally sealed system can help extend the service life of cable harnesses by reducing abuse to the cable. The conduit uses a three-layer design to protect the harness electrically, mechanically, and environmentally.

- Outer layer features a helical Convolex tubing made of cross-linked ETFE for resistance to abrasion, crushing, and a wide range of fluids, fuels, and solvents
- Middle shielding layer consists of one or two tinned copper braids to protect against electromagnetic interference (EMI)
- Inner expandable woven braid sleeving guard against chafing to the wire

Maulflex conduit is light weight and flexible, making it suited to ground support applications where test equipment cables are constantly coiled and uncoiled. The helical construction allows a tight bend radius—from 0.88 to 3.36 inches depending on conduit size—without kinking or reducing the cross-sectional area. Optional aramid strength members protect against linear strain when pulling the conduit. The system is environmentally sealed and has an operating temperature range from -55°C to +150°C.

The system uses TE's Tinel-Lock cable-termination adapters and Uniboot molded strain relief to provide a connection that allows easy reentry and reuse of the conduit.

Maulflex conduit is available in nine sizes from 3/8-inch to 1-5/8-inch nominal

diameters in lengths up to 24 feet.

For more information on TE's Maulflex conduit system, contact the Product Information Center at (800) 522-6752. Follow us on Twitter for all the latest product news @TEConnectivity.

**Upgraded Power Mount Connectors Provide More Secure Connection**

Amphenol Industrial, a global leader in interconnect systems, has improved its Traction Motor Power Connector (TMPC) to include a color-coded power mounting flange with built-in locking keys to prevent the contact cable from slipping during use.

These new single-pin connectors are ideal for power distribution equipment and traction motor power supply applications.

Utilizing patented RADSOK technology, the TMPC allows for higher amperage, lower T-rise and insertion/removal forces than any other connector on the market. The increased amperage allows for more current to go through a single connection, increasing the efficiency of the power to the end use application.

The thermoplastic molded panel mounting flanges on the connectors have four mounting holes that allow users to bolt the connector directly to an aluminum or stainless steel panel without the need for mounting boards, further eliminating the need for additional mounting fixtures.

These square connectors meet the NEC

*Continued on page 45*

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- ✓ Seal Orientation
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Display Work  
Instructions,  
Specify Test  
Parameters,  
Test High  
Voltage  
Isolation**

## **Fast Wire Harness Testing SYSTEMS**

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- **PC-Based Simplicity**
- **Test Wire Harnesses & Backplanes**
- **Audio/Visual Work Instructions**
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**SERIES**

**90**

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

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



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

**NEWS PLUGS** continued

Continued from page 43

AC/DC requirements and are designed to be used with IEEE Type P drilling cables ranging from 313 MCM to 777 MCM with contacts rated at 1,500 A. The connectors also feature color-coded mounting bases and cable side boots to help prevent cross mating while allowing for easier electrical phase identification.

**Traction Motor Power Connector**

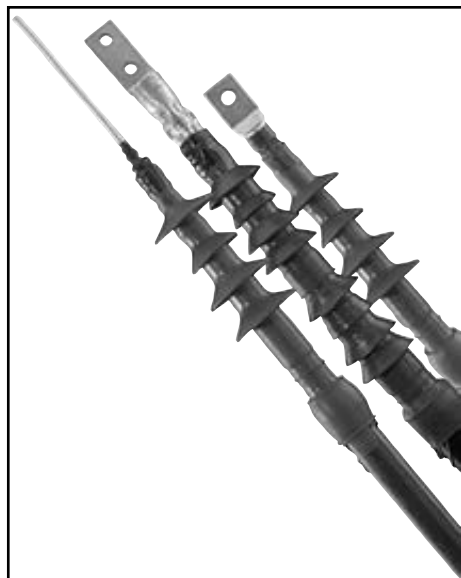
The TMPC connector series features Hypalon molded insulation boots and covers that are resistant to oil, mud and sea water.

For more information, please visit <http://www.amphenol-industrial.com> or e-mail [tmipc@amphenol-aio.com](mailto:tmipc@amphenol-aio.com).

**Elastimold® Ranger2® Shrink-Fit Terminations**

The Elastimold® Ranger2® indoor Shrink-Fit Terminations are designed to provide easy-to-install, economical terminations of medium voltage, TRXLP and EPR

cables in both interior and exterior applications. The Ranger2® Shrink-Fit Terminations are available in 15kV indoor design, and 15kV, 28kV and 35kV outdoor designs for 2 AWG through 1,250 kcmil conductors.

**Elastimold® Ranger2® indoor Shrink-Fit Terminations**

The outdoor silicone-rubber insulation design includes a skirt configuration that offers exceptional creep, strike, weather and contamination resistance, along with superior cable sealing and voltage withstand. All termination kits come complete with the housing and stress tube pre-assembled on the core, ready for quick and easy installation.

"The Ranger2® Shrink-Fit Terminations enhance the breadth of our Elastimold® line of pre-molded cable accessory components," said Mike Jackson, product

Continued on page 46

**YOUR CONNECTION FOR... Amphenol® RF Solutions**

ECCO specializes in RF, Microwave, and Coaxial connectors from Amphenol® RF. These connectors are ideal for RF, broadband, wireless, microwave, and cellular applications. We stock a wide variety of these connectors including standards; UHF, N, HN, C, Twinax, & Triax Miniatures; BNC, TNC, Mini-UHF, & MHV Sub-Miniatures; SMA, SMB, & SMC Microminiatures; MCX & MMCX as well as precision connectors, adapters, accessories, and assembly tools. Our extensive Amphenol inventory includes many factory special, low volume, and hard to find items allowing us to quickly fulfill your interconnection needs.

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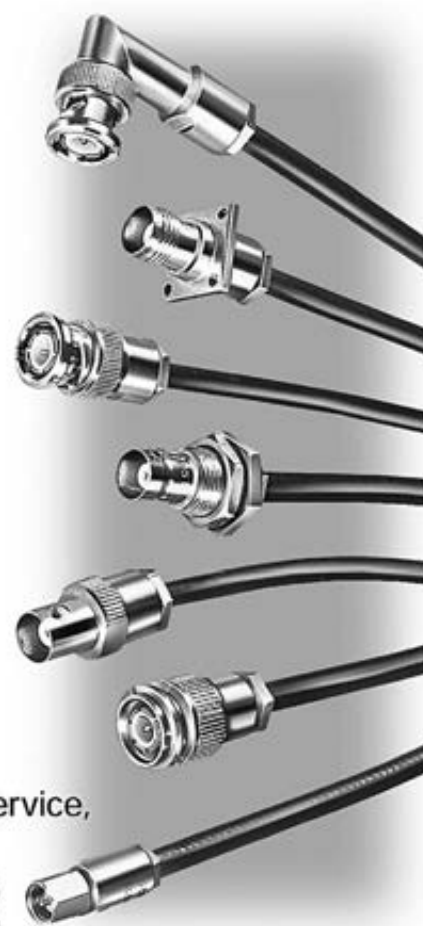
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**SAVE UP TO 80% OF YOUR LABOR COST ON HEAT SHRINK OPERATIONS**

The Focus-Lite will shrink all types of heat shrink tube with consistent quality and none of the drawbacks of conventional heat guns.

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13 SECONDS**

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**VS**

- Zero Noise / No Heat at Work Station
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- Low Maintenance
- Long Life / Rugged Design

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- No control
- Uses up to 1500 watts (always on)
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- Short Life Span

The Focus-Lite™, by Judco Manufacturing, Inc., is the solution to the outdated heat gun. You can say goodbye to the high labor cost, excessive heat, and inefficiency. 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.

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. Choose from 1", 2.5", 8", & 15.5" models. Any length of shrink tube can be processed in each machine, with the shrink time the same for all lengths. The Focus-Lite™ will improve both the quality and consistency of your shrink operation. Visit our website at [www.judco.net](http://www.judco.net) and *Focus-in* on the savings.

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

## SumiMark IV Marking System

- Flexible
- Easy-to-Use
- Reliable
- High Volume
- Low Waste
- Print Quality



### Wiring Harness Identification System!

The SumiMark IV Printing System is designed specifically for identification marking on SumiMark heat shrink tubing which meets specification AMS-DTL-23053. SumiMark heat shrink tubing is manufactured on continuous rolls, thus reducing material waste and labor when compared to formatted tubing printer models. Flexible and easy-to-use software allows marker files to be created and printed in under 1 minute. The SumiMark IV printer is manufactured with a high tensile strength aluminum frame and components - ideal for high volume operations where speed and reliability are necessary. A thermal transfer printing process creates an excellent quality mark which can be handled immediately after printing and meets print adherence requirements of SAE-AS5942.

**For more information on the SumiMark IV Marking System, please contact your Sumitomo Electric Interconnect Products, Inc. distributor or call us at 760.761.0600 ext. 258 for a demonstration at your facility.**

## NEWS PLUGS *continued*



*Continued from page 45*

manager for Thomas & Betts. "Their design provides the superior skirt configurations for riser pole, pad-mounted and other installations exposed to the elements."

The single-piece terminations for 15kV and 25kV applications feature shrink-fit design for effortless installation. The two-piece termination for 35kV applications facilitates easier core removal: one needs only to position the terminator on the prepared cable and remove the center core. The terminations are compact and lightweight to enable installations in restricted spaces and free-hanging applications.

Elastimold® Ranger2® Shrink-Fit Terminations 15-35kV meet or exceed all requirements of IEEE Standard 48 for Class 1 outdoor or Class 2 indoor terminations.

For more information about the Elastimold® Ranger2® Shrink-Fit Terminations 15-35kV, visit <http://www.tnb.com/ps/util/index.cgi?a=elastimold> or call (800) 816-7809.

Thomas & Betts Corporation (NYSE: TNB) 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 industrial, construction and utility applications. With a portfolio of more than 200,000 products marketed under more than 45 premium brand names, Thomas & Betts products are

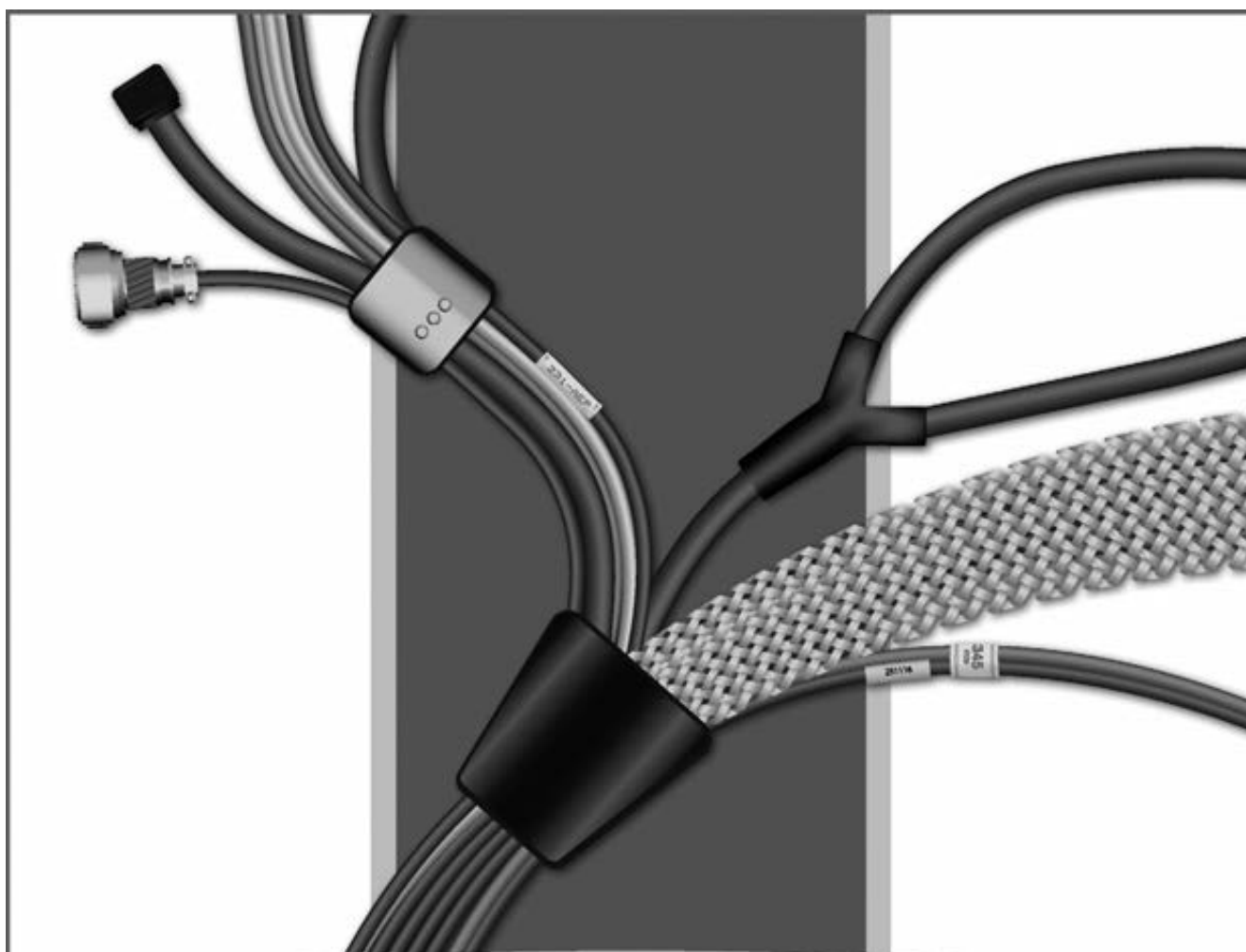
found wherever electricity is used. With headquarters in Memphis, Tenn., Thomas & Betts reported revenues of \$2 billion and had approximately 8,750 employees in 2010. For more information, please visit [www.tnb.com](http://www.tnb.com).

### Sea Wire and Cable, Inc. Achieves AS9100 Rev C Certification

SEA Wire and Cable, Inc. a leading provider of supply chain solutions for the mil-spec wire and cable industry, announced that the company achieved compliance with new, stringent AS9100 Rev C quality system requirements for aviation, space, and defense markets.

The new revision of AS9100 includes an increased focus on risk management, supplier management controls, on-time delivery, and product conformity measurements, including taking appropriate actions against vendors when planned results are not achieved. SEA has more than 40 years of experience in the wire harness supply industry which has enabled its experience to achieve AS9100 Rev C certification.

"We strive to ensure the highest quality products, processes, and quality management systems by proactively achieving key certifications, which aligns with our commitment to continuous improvement in all areas of operations," said Marty Clark, General Manager of SEA Wire and Cable, Inc. "In addition, achieving or exceeding the tighter customer satisfaction requirements in AS9100 Rev C allows us to offer an added level of quality assurance to our customers, and further solidify our reputation as a trusted and proven provider of



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A.E. Petsche Company is a leading supplier of Military & Aerospace interconnect products including the latest in harness management solutions. Utilizing its worldwide warehouse network, A.E. Petsche Company ships from its stock of high performance harness protection products including Tyco's complete range of identification, bundling, and heat shrink components.

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connectivity

highly reliable and secure products.”

The AS9100 Rev C standard was developed by the International Aerospace Quality Group (IAQG) in order to satisfy internal, government, and regulatory requirements. The goal of the IAQG is to improve product quality and on-time delivery of products. This is accomplished through the cooperative implementation of initiatives intended to make significant improvements in quality and reductions in cost throughout the value stream.

SEA Wire and Cable, Inc SEA is a leading supplier of wire, cable, tubing, termination sleeves, cable ties, EMI/RFI backshells, connectors and other cable assemblies for the aerospace and military markets. The company is headquartered in Madison, Al with offices worldwide.

For more information on SEA Wire and Cable, Inc.: [www.sea-wire.com](http://www.sea-wire.com).

**Delta Group Electronics Completes Arkansas Building Construction**

Delta Group Electronics, Inc. announced that it has completed construction of a new 37,000 sq. ft. assembly facility in Fayetteville, Arkansas. Located adjacent to Interstate 540 in the Mountain Ranch Business Park, the building will allow the company to significantly expand its employment base and provide the technology and space to meet the needs of its customers located throughout the Midsouth region of the United States.

Delta Group entered the region in May 2008 with the acquisition of assets of the electronics manufacturing firm Bitworks, Inc. that was located in Prairie Grove,

Arkansas. The company decided shortly thereafter to move its operation in Northwest Arkansas to a new, significantly larger building. “We knew at the time of the acquisition we needed a technologically-current, larger facility to satisfy the requirements to be competitive as a 21st century EMS operation. We are confident that our customers, employees and the Fayetteville community will appreciate our commitment to expand our customer base and provide more employment opportunities in the electronics industry here in Arkansas,” said Harry Mueller, President and Chief Executive Officer of Delta Group Electronics, Inc.

Founded in 1987, Delta Group Electronics, Inc. is a full-service Electronic Manufacturing Services (EMS) company offering low and mid-volume turnkey services for its customers in the aerospace, defense and commercial industries. Based in Albuquerque, New Mexico, the Company also has assembly operations in San Diego, Dallas, Fayetteville, Arkansas and Rockledge, Florida with administrative offices in St. Louis.

The Company’s quality management certificates include ISO13485, AS9100 and ISO 9001:2008. For more information about Delta Group, visit its website at [www.deltagroupinc.com](http://www.deltagroupinc.com) or call Brett Greer at 505-883-7674.

**Nordson ASYMTEK's Steven Adamson Honored with Prestigious IMAPS Daniel C. Hughes, Jr. Memorial Award**

Nordson ASYMTEK, a leader in dispensing, coating, and jetting technologies, announces that Steven J. Adamson, Nord-



**Steven Adamson**

son ASYMTEK marketing specialist, was honored with the Daniel C. Hughes, Jr. Memorial Award, which is presented to those who have made the greatest contribution to IMAPS and the microelectronics packaging industry, including technical and service contributions. IMAPS (International Microelectronics And Packaging Society) is the largest society dedicated to the advancement and growth of microelectronics and electronics packaging. The award was presented during the IMAPS conference in Long Beach, CA, USA, on 11 October 2011.

Adamson has been an active member of IMAPS for many years. He was chairman of the San Diego chapter for two years, general chairman of the 2006 International Symposium on Microelectronics, and served as president in 2008. In 2009 Adamson volunteered to be chairman of

the IMAPS Microelectronic Foundation. This organization is devoted to helping students and academia participate in IMAPS activities through grants and awards. In 2010, Adamson received the IMAPS President's Award in recognition of his lifelong efforts for the organization.

“This is the most prestigious award given by IMAPS,” said Howard Imhof, Advanced Coatings Division manager for Metalor Technologies USA and IMAPS 1st Past President 2011. “We appreciate Steve’s continued contributions to IMAPS and the Foundation. This recognition is well deserved!”

“I am truly honored to receive this award,” said Adamson. “When I was president of IMAPS in 2008 I realized how important it was to include students in our activities and how much even a small grant could make a difference in the life of a student member. Since then we instituted a foundation and have held fundraising activities so we can fund paper writing contests and provide funds for students to travel to workshops and conferences which will lead to exposure to the industry and prospective employers. It is my hope that people continue to support the foundation, provide a small grant for research, or attend one of our fun events.”

Adamson has over thirty years experience in microelectronics assembly. An employee of Nordson ASYMTEK since 1998, he’s held positions as applications engineering manager, and marketing specialist. He has worked in all aspects of

*Continued on page 48*

 <p><b>STEINEL</b> 34870 Electronic Heat Gun</p>	 <p><b>HAKKO</b> FT-801 Thermal Wire Stripper</p>	 <p><b>K-SUN</b> Leader in Professional Labeling Solutions Green Machine Label, Barcode &amp; Heat Shrink Tubing Printer</p>
 <p><b>FTZ</b> Heat Shrink Tubing</p>	 <p><b>OK</b> OK Industries Div. of Jonard Industries HW-UW-224 Wire Wrap Tool</p>	 <p><b>kester</b> Solder Wire</p>
 <p><b>IDEAL</b> 45-092 Wire Stripper</p>	 <p><b>GREENLEE</b> 45300 Cable Tie Gun</p>	 <p><b>MASTER APPLIANCE</b> 10008 Heat Shrink Gun</p>

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**NEWS PLUGS** continued



Continued from page 47

packaging and assembly from R&D to manufacturing, designing multi-chip modules, hybrid circuits, printed circuit boards, thermal printed heads, and magneto-resistive head assemblies. He has delivered technical papers on wire bond encapsulation, chip scale package and flip chip assembly, PCB design rules, and reliability and has had papers published in leading industry trade journals both domestically and internationally. He is co-

author with Charles Harper on a book titled, "Handbook of Plastic Processes," published by McGraw-Hill.

Adamson previously held positions with Kodak, Motorola in the U.S., and Plessey, International Computers Ltd in the U.K. He has been awarded five US and two UK patents. In 2005 he was presented with an award by the San Diego Engineering Council for "Outstanding Service to Electrical Engineering". Originally from the U.K., he holds a Higher National Certificate in Electrical Engineering from Stockport College of Technology and for several years was the lead instructor and advisor to the University of California San Diego (UCSD) extension course on Microelectronic and Optical Packaging.

IMAPS leads the microelectronics packaging, interconnect and assembly community, providing means of communicating, educating and interacting at all levels. The International Microelectronics and Packaging Society is the largest society dedicated to the advancement and growth of microelectronics and electronics packaging. IMAPS produces numerous publications, workshops, international conferences, professional development courses, and exhibitions bringing together the entire microelectronics supply chain. Its events and products focus on those technologies critical to the present and future of microelectronics: 3D Integration, MEMS, Flip Chip, Wafer Level Packaging, Thermal Management, Printed Electronics, Advanced Materials, Photonics, Modeling/Design and many others. Find out more at [www.imaps.org](http://www.imaps.org).

The Work Truck Show 2012 is held at the Indiana Convention Center in Indianapolis, IN, March 6-8, 2012. Educational programming, including the Green Truck Summit and Fleet Management Symposium, begins March 5.

"The Work Truck Show is by far the best place to meet the leading manufacturers face-to-face and see all the latest solutions and technical innovations in our industry," says Frank Livas, NTEA convention chairman and senior vice president of Brake & Clutch, Inc. (Salem, MA).

The Work Truck Show 2012 showcases Class 1- 8 trucks, components and specialized equipment from a diverse range of global manufacturers. Dozens of new products, including the latest vocational trucks, are launched at The Work Truck Show. In addition to expansive booths displaying new vehicles, 14 of the leading chassis manufacturers provide detailed updates on what's new and upcoming with their product lines.

Offered exclusively to fleet managers, the Fleet Management Symposium teaches methods to dramatically improve fleet and shop productivity while reducing costs. Led by consultant Kelly Walker, president of Kelly Walker Associates, (Morristown, NJ) and Bob Johnson, NTEA fleet relations director, the Fleet Management Symposium runs from 9am-4:00pm, Monday, March 5, and 9am-12pm on Tuesday, March 6. Advance registration is required.

Fleet managers are also invited to the exclusive training session and networking luncheon "Develop Your Fleet Manager's Tool Box" on Wednesday, March 7, from

**Registration Now Open for NTEA Work Truck Show 2012**

Registration is now open for North America's largest work truck event, The Work Truck Show® 2012. Register online at [www.ntea.com](http://www.ntea.com) to explore more than 500,000 square feet of the newest truck chassis, bodies, equipment and components from more than 550 exhibiting companies. Choose from more than 60 educational programs on industry topics. Sign up for the popular Green Truck Summit or Fleet Management Symposium. Take advantage of this unique opportunity to interact with thousands of industry peers, meet with suppliers, and receive unprecedented technical and engineering support.

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11:30am -1:30pm. Steve Saltzgeber, group director of fleet operations, Coca Cola Refreshments, Inc. Fleet Operations (Atlanta, GA) will cover how to use technology solutions to gain greater insight into overall fleet performance. A ticket is required.

Additional educational sessions specifically designed for fleet managers include: "The Future of Fleet Operations," "Making Vehicle Investment Decisions Using Life-Cycle Cost Analysis," "The Next Generation of Work Truck Telematics," "Ensuring Your Next Truck Chassis Matches the Job Requirements," and "The Ins and Outs of Lean for the Truck Equipment Industry." A full course schedule is available at [www.ntea.com/worktruckshow/schedule/](http://www.ntea.com/worktruckshow/schedule/).

Other Work Truck Show 2012 highlights include:

- Keynote address by President George W. Bush at the President's Breakfast and NTEA Annual Meeting on Wednesday, March 7, 7:30am-9:15am.
- Green Truck Summit on Monday, March 5, 8:00am-6:15pm and Tuesday, March 6, 8:00am-10:45am.
- Opening Reception at JW Marriott Indianapolis Downtown, Monday, March 5, 6:30pm-9:00pm.
- Green Truck Ride-and-Drive Tuesday, March 6 and Wednesday, March 7, 12:00pm-4:30pm.
- Special Session: YEN Leadership Workshop & Networking Reception, "Your Brand, Your Promise," Tuesday, March 6, 3:00pm-5:00pm.

Produced annually by the NTEA, The Work Truck Show brings together thousands of work truck professionals, including fleet managers, equipment buyers, maintenance personnel, manufacturers, distributors and dealers.

For a complete event schedule, interactive floor plan, housing and registration, visit [www.ntea.com](http://www.ntea.com) or call 1-800-441-6832.

#### **BURNDY Announces Purchase of Wiley Electronics LLC Assets**

BURNDY, a leading manufacturer and provider of electrical connector solutions and application tooling, and a subsidiary of Hubbell Incorporated, announces the purchase of substantially all the assets of Wiley Electronics LLC on October 14, 2011. Wiley Electronics is a niche provider of grounding, bonding, and cable management solutions for solar panel and rack mounting applications. Wiley Electronics products are sold under the Wiley WEEB and ACME Cable Clip names. BURNDY will now offer this complete line of unique solutions to the solar industry utilizing Wiley's patent pending designs.

According to Rodd Ruland, BURNDY's President, "This product line is an excellent addition to our extensive portfolio of grounding solutions. The innovation of the Wiley products offer time-saving solutions for installers in the fast growing and evolving solar market. We are very excited to have these products within the BURNDY offering."

Brian Wiley, President of Wiley Electronics LLC noted, "I am confident that BURNDY's track record, market reach, and

engineering expertise will enable them to carry on with the legacy that we started at Wiley years ago in solar panel interconnect solutions. I am very pleased that many of the key employees who worked with me over the years in establishing this business have decided to join the BURNDY family and carry on our tradition as a solution provider to this industry."

Headquartered in Manchester, New Hampshire with over 85 years of dedicated customer support in both service and product, our customers need look no fur-

ther than BURNDY for all their connector, tool, and accessory needs with our BURNDY Engineered System of coordinating dies, connectors and tools. Contact us at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, call Customer Service at 1-800-346-4175, or visit our website at [www.BURNDY.com](http://www.BURNDY.com).

Since 2009, BURNDY has been one of the key brands under the Hubbell Electrical Systems group of Hubbell Incorporated. More information can be found at [www.hubbell.com](http://www.hubbell.com).

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## NEWS PLUGS continued

### IPC Releases PCB Industry Results for September 2011

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

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

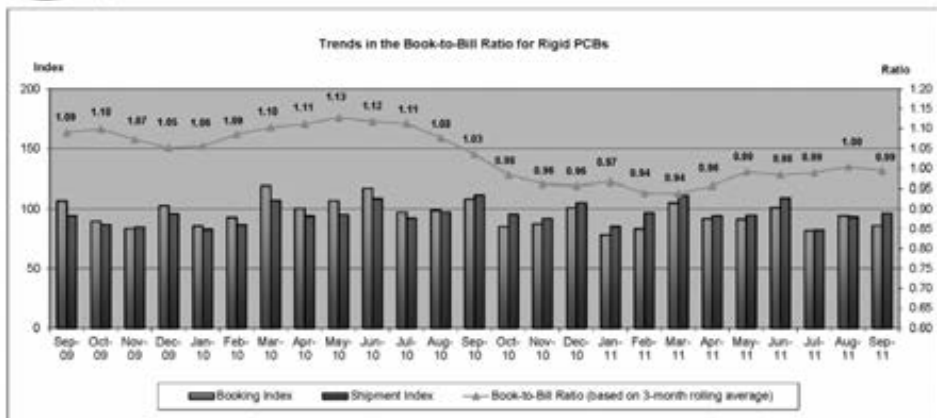
Rigid PCB shipments were down 13.1 percent and bookings were down 19.9 percent in September 2011 from September 2010. Year to date, rigid PCB shipments decreased 0.4 percent and bookings declined 10.8 percent. Compared to the previous month, rigid PCB shipments increased 3.5 percent and rigid bookings decreased 8.9 percent. The book-to-bill ratio for the North American rigid PCB industry in September 2011 dipped just below parity at 0.99.

Flexible circuit shipments in September 2011 were down 0.7 percent and bookings declined 1.8 percent compared to September 2010. Year to date, flexible circuit shipments increased 1.6 percent and bookings increased 3.0 percent. Compared to the previous month, flexible circuit shipments increased 20.1 percent and flex bookings were up 9.9 percent. The North American flexible circuit book-to-bill ratio in September 2011 fell to 0.97.

For rigid PCBs and flexible circuits combined, industry shipments in September 2011 decreased 12.0 percent from September 2010, as orders booked decreased 18.4 percent from September 2010. Year to date, combined industry shipments were down 0.2 percent and bookings were down 9.6 percent. Compared to the previous month, combined industry shipments for September 2011 increased 4.9 percent and bookings decreased 7.3 percent. The combined (rigid and flex) industry book-to-bill ratio in September 2011 declined to 0.99.

“Sales and orders were both under last year’s levels in September,” said IPC President & CEO Denny McGuirk. “Bookings have been especially sluggish and that has caused a drop in the book-to-bill ratio ... although it is still very near parity, which suggests that flat sales is the likely near-term scenario.”

The book-to-bill ratios are calculated by dividing the value of orders booked over the past three months by the value of sales billed during the same period from companies in IPC’s survey sample. A ratio of more than 1.00 suggests that current demand is ahead of supply, which is a positive indicator for sales growth over the next two to three months. Book-to-bill ratios and growth rates for rigid PCBs and flexible circuits combined are heavily affected by the rigid PCB segment. Rigid PCBs represent an estimated 89 percent of the current PCB industry in North America, according to IPC’s World PCB Production Report.



## 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.

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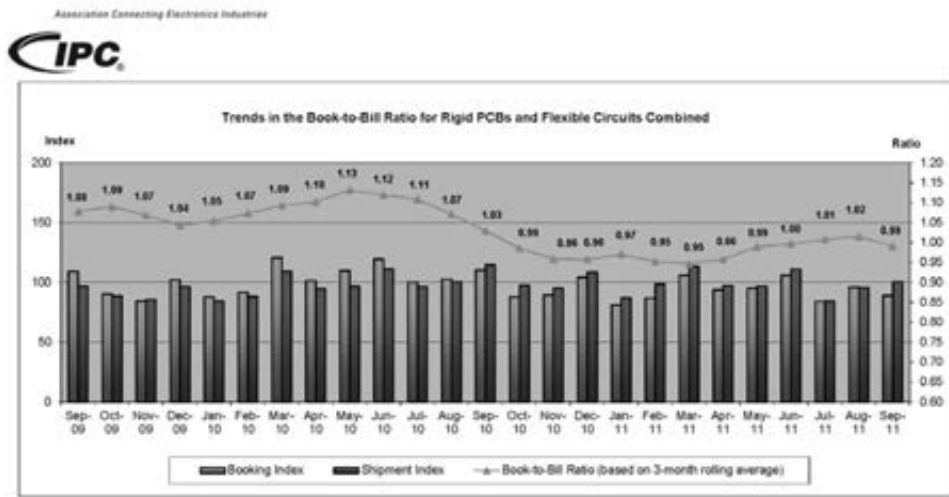
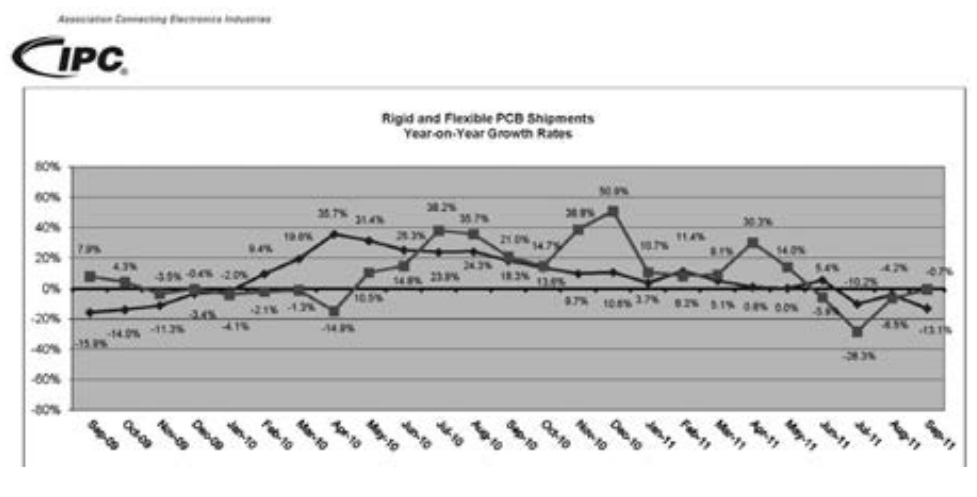
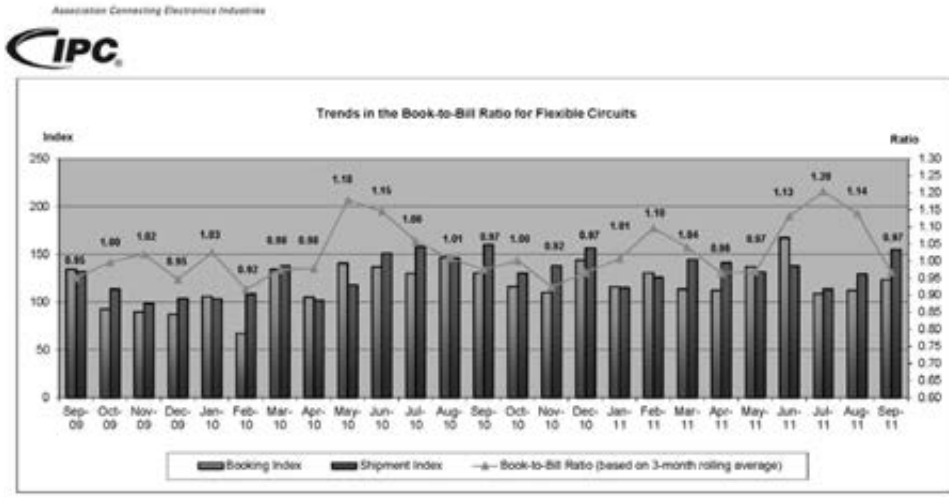
BT 3500 Port with multiple storage pockets.

### Bare Circuits versus Assembly

Flexible circuit sales typically include value-added services such as assembly, in addition to the bare flexible circuits. In September, the flexible circuit manufacturers in IPC's survey sample indicated that bare circuits accounted for about 53 percent of their shipment value reported for the month. Assembly and other services make up a large and growing segment of flexible circuit producers' businesses. This figure is also sensitive to changes in the survey sample, which may occur at the beginning of each calendar year.

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Book-to-Bill Ratio and the PCB Statistical Program Report each month. Statistics for the previous month are not available until the last week of the following month.

month by the month-to-month growth rates reported by the current sample of companies in the statistical program. The baselines, set at 100, are based on the average monthly data for the year 2007.

Notes:

1. A new indexing system was implemented in September 2011 that more accurately shows month-to-month growth rates as well as long-term trends.

2. The book-to-bill ratios are calculated using actual volume data and not the index numbers. Because bookings and shipments have different baselines, they cannot be used to calculate the ratios accurately.

The index numbers are calculated by multiplying the index number from last

Interpreting the Data

Year-on-year and year-to-date growth rates provide the most meaningful view of industry growth. Month-to-month comparisons should be made with caution as they may reflect cyclical effects and short-term volatility. Because bookings tend to be more volatile than shipments, changes in the book-to-bill ratios from month to month may not be significant unless a

trend of more than three consecutive months is apparent. It is also important to consider changes in bookings and shipments to understand what is driving changes in the book-to-bill ratio.

The information in IPC's monthly PCB industry statistics is based on data provided by a representative sample of both rigid and flexible PCB manufacturers in the USA and Canada. IPC publishes the PCB

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# William Shatner to Keynote IPC APEX 2012

With all votes tallied from the special IPC APEX EXPO® keynote speaker election, William Shatner has emerged the clear winner, taking the popular vote by a considerable margin over the other candidates. The award-winning actor, director, producer, writer, recording artist, horseman and major philanthropist will serve as the IPC APEX EXPO 2012 Opening Keynote speaker at 8:30 am on February 28, at the San Diego Convention Center in San Diego, Calif.

One of Hollywood's most recognizable figures, Shatner has cultivated a career spanning more than 50 years with life inspirations that have taken him into myriad arenas. Perhaps recognized best for his role as Captain James T. Kirk, Shatner has numerous accomplishments in television, film, and stage,

including Emmys, Golden Globes and SAG award nods. At the tender age of 80, Shatner, much like his horses, does not like to stand still.

Ironically, his real-life mission resonates with an all-too-familiar prologue to "seek out new life." In his keynote address, "Captain's Log — Boldly going where no man has gone before..." Shatner will share his life's inspirations, his drive to "explore strange new worlds," and his newly published set of rules to live by.

Shatner has authored nearly 30 best-sellers in both the fiction and nonfiction genres. His autobiography, *Up Till Now*, was a New York Times best-seller. In Shatner's latest book, *Shatner Rules: Your Guide to Understanding the Shatnerverse and the World at Large*, he pro-

vides a glimpse of what makes him uniquely Bill and he presents a number of rules that, he says, like his life are, "suitably unique, strange and worthy of some measure of wonder." While he admits that many of the rules are tongue-in-cheek, he stands by the fact that, "in their amusement, there is a truth."

IPC APEX EXPO attendees will relish an intimate and amusing visit with this illustrious American icon as he sets the tone for a week of exploring new research, new products and new opportunities to innovate and to boldly go where no man has gone before.

Shatner's opening keynote address on Tuesday, February 28, is free to all registered IPC APEX EXPO attendees. Following his keynote, he will sign copies

of his latest book which will be available for purchase on-site.

The IPC APEX EXPO conference and exhibition will run February 28–March 1, 2012; standards development meetings, professional development courses and other show activities will take place February 26–March 1. For more information on IPC APEX EXPO or to register, visit [www.IPCAPEXEXPO.org](http://www.IPCAPEXEXPO.org).

## First Annual IPC APEX EXPO Hand Soldering Competition and IPC HAND SOLDERING GRAND CHAMPIONSHIP — Who's the Best-of-the-Best? February 28–29 and March 1

Do you think you have what it takes to win at soldering? Does your company brag about how many IPC Certified

Specialists it has on staff? Inquiring minds want to know who the best-of-the-best is at hand soldering. If you think you have what it takes to be the Top Gun of soldering, BRING IT at the first IPC APEX EXPO hand soldering competition.

Over two days, this competition will pit competitors against each other to build a functional electronics assembly within a half-hour time limit. Assemblies will be judged on soldering in accordance with IPC-A-610E Class 3 criteria, the speed at which assembly was produced and overall electrical functionality of assembly. IPC-A-610E Master Instructors will serve as the judges.

Cash prizes of \$500, \$250 and \$100 will be awarded to the top three finalists at the close of IPC APEX EXPO competition at 5 pm on Wednesday, February 29.

The entry deadline is December 31, 2011. Participants will be selected and notified by mid January 2012. Please note that the maximum number of competitors from any given company will be two. Submit Your Entry [IPC HAND SOLDERING GRAND CHAMPIONSHIP](#)

The winner of the IPC APEX EXPO Hand Soldering Competition will then move on to the IPC HAND SOLDERING GRAND CHAMPIONSHIP on Thursday, March 1 to face off with the winner from the IPC Midwest Hand Soldering Competition.

The winner of the IPC HAND SOLDERING GRAND CHAMPIONSHIP will be awarded with a \$1,000 cash prize!

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# CLASSIFIEDS

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The Regional Sales Manager takes the lead role in developing and maintaining business for MJM Industries on targeted regions and industries. This includes identifying, screening and qualifying new business opportunities with accounts, maximizing the value proposition and coordinating the follow-through needed to close new business.

### TERRITORY:

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### ESSENTIAL DUTIES AND RESPONSIBILITIES

- Responsible for new harness and assembly growth within territory at a double digit pace.
- Develop and ensure a solid understanding of any key customers within the territory, assigned to manage, driving new opportunity..
- Work closely with National Sales Manager on meeting metrics and understanding the direction of MJM Industries.
- Ability to prioritize opportunities that have the greatest Return on Investment.
- Understand key players, applications, requirements, trends and needs as well as MJM's potential and market share within the targeted industry. Become an industry and solutions expert to leverage successes.
- Establish a linkage between the customer's business strategy and MJM's capabilities.
- Monitor the competition to better understand issues and threats and develop plans to respond to barriers.
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- Bachelors in Mechanical or Electrical Engineering.
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- Proven track record of generating and qualifying new sales leads and closing opportunities.
- Strong sales, price negotiation and presentation skills.
- Experience in planning.
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- Proficient in Microsoft Office Suite.

### EXPERIENCE

- 5-10 years in wire harness, cable assembly, over-mold product industry.
- Minimum of 5 years in customer-facing role.

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- Interpersonal Skills – Communicates effectively both verbally and in writing. Listens effectively and clarifies as needed. Works well with others in a team environment.
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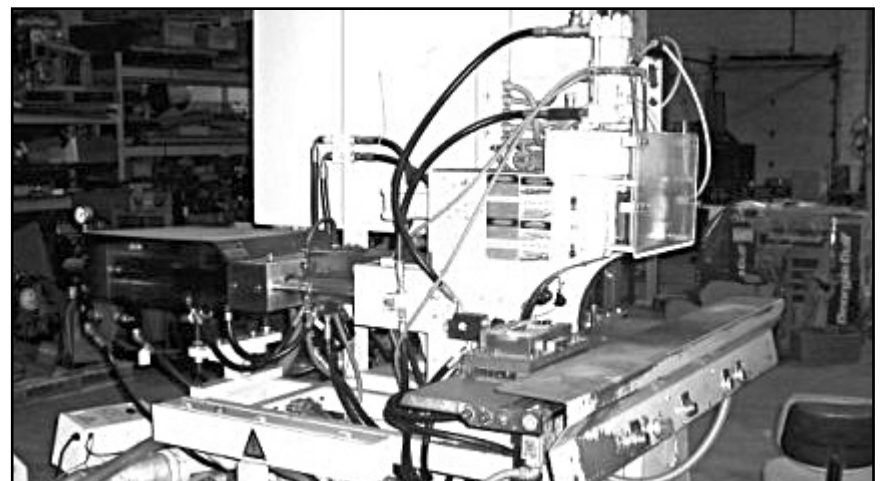
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# CALENDAR OF EVENTS

## Automotive News World Congress January 10-12, 2012

World Congress attendees receive a pass to visit the auto show on Thursday, January 12, before it opens to the public. This past January, more than 800 people came to the Detroit Marriott Renaissance Center for the annual Automotive News World Congress to hear the industry's top executives explain how they will compete and thrive this year. 2012 promises to be even better. *For further information visit [www.autonews.com](http://www.autonews.com).*

**Detroit Marriott Renaissance Center  
Washington, DC**

## Electronics New England April 25-26, 2012

Meet face-to-face with electronics suppliers offering the best solutions. Explore firsthand the latest developments, technologies, products, and services affecting your industry, including: components, subassemblies, software, contract services, assembly, test and inspection products... and much more. *For further information or a listing of the seminars available visit [www.canontradeshow.com](http://www.canontradeshow.com).*

**Boston Convention Center  
Boston, Massachusetts**

## DesignCon 2012 January 30 - February 2, 2012

DesignCon is a premier educational conference and technology exhibition for semiconductor and electronic design engineers. At DesignCon, engineers talk to engineers to find practical solutions to the challenging problems they share in design and verification. DesignCon emphasizes education and peer-to-peer sharing among practicing engineers, creating a unique atmosphere for learning about state-of-the-art design methodologies and technologies. Individuals presenting papers at DesignCon will join an elite group offering leading-edge case studies, technology innovations, practical techniques, design tips and application overviews. *For further information visit [www.DesignCon.com](http://www.DesignCon.com).*

**Santa Clara Convention Center  
Santa Clara, California**

## Del Mar Electronics Show May 2-3, 2012

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

**Del Mar Fairgrounds  
Del Mar, California**

## APEC 2012 February 5-9, 2012

APEC 2012 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. *For further information visit [www.apec-conf.org](http://www.apec-conf.org)*

**Disney Coronado Springs Resort  
Lake Buena Vista, Florida**

## EDS 2012 May 8-10, 2012

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).*

**The Cosmopolitan  
Las Vegas, California**

## MD&M West February 13-16, 2012

MD&M West is dedicated to offering the West Coast's premier conference program for research and development, design, engineering, manufacturing, and regulatory affairs professionals within the medical manufacturing industry. MD&M West will provide a unique combination of presentations from high-level medical device industry professionals, the FDA, and some of industry's leading experts. *For further information visit <http://canontradeshow.com/expo/west11/conference.html>.*

**Anaheim Convention Center  
Anaheim, California**

## SMT Hybrid Packaging 2012 May 8-10, 2012

SMT Hybrid Packaging is Europe's leading event on System Integration in Micro Electronics. Meet the industry's leading companies for SMT-Equipment, Components and SMT-Services from 8 - 10 May 2012 in Nuremberg, Germany. With 32% foreign exhibitors, the event offers not only a wide, but also an international spectrum. The perfect platform to get the latest information on newest trends and developments!. *For further information visit <http://www.mesago.de/en/SMT>*

**Exhibition Centre Nuremberg  
Nuremberg, Germany**

## Wiring Harness Manufacturer's Conference February 15-17, 2012

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

**Swan Resort  
Orlando, Florida**

## APEX Expo 2012 February 28-March 12, 2011

Join thousands of colleagues from more than 50 countries at our industry's premier event — featuring advanced and emerging technologies in printed board design and manufacturing, electronics assembly and test. In 2012, be part of the new focus on printed electronics! Find new suppliers with new solutions and connect with colleagues from around the world. *For further information visit [www.ipcapexexpo.org](http://www.ipcapexexpo.org).*

**San Diego Convention Center  
San Diego, California**

## Westec 2012 March 27-29, 2012

WESTEC, the region's definitive manufacturing event, returns in 2012 to the Los Angeles Convention Center redefined, and with renewed commitment to area industry. WESTEC is a true manufacturer's think tank where creativity, vision, and strategy join forces to spotlight the promise of ground-breaking products for vital global markets. *For further information visit [www.westeconline.com](http://www.westeconline.com).*

**Los Angeles Convention Center  
Los Angeles, California**

## NPE 2012 April 1-5, 2012

Join the celebration as SPI: The Plastics Industry Trade Association marks its 75th anniversary at NPE2012! Founded in 1937 by a small group of friends and competitors with a sense of mission and camaraderie, SPI has advanced the interests of the plastics industry, provided companies with a forum to address issues and identify opportunities, and helped catalyze growth through eight decades. The producer of NPE, has once again partnered with other industry-leading conferences, organizations and companies to provide new features, educational programming, technical paper presentations, the second International Plastics Design Competition, and co-located events geared to create mass appeal to the entire plastics industry value chain. *For further information or a listing of the seminars available visit [www.canontradeshow.com](http://www.canontradeshow.com).*

**Orange County Convention Center  
Orlando, Florida**

## Atlantic Design & Manufacturing 2012 May 22-24, 2012

Atlantic Design & Manufacturing can provide you with everything you need, all under one roof. You'll find hundreds of suppliers and industry experts, a complete array of design and manufacturing resources and solutions, and the education you'll need to keep a step ahead of the competition. The Innovation Briefs Theater features 30-40 minute FREE presentations from leading OEM suppliers on the latest developments and technologies important to your industry. Discover better processes, new information, and innovative technology and return to your work place with the tools you need to make your business stronger. *For further information or a listing of the seminars available visit [www.canontradeshow.com](http://www.canontradeshow.com).*

**Pennsylvania Convention Center  
Philadelphia, Pennsylvania**

## Semicon West 2012 July 10-12, 2012

With many new manufacturing technologies coming to market (including vertical transistors, 3D IC, advanced materials, 450mm, and EUV) and with the continued growth of emerging and adjacent microelectronics markets (including high-brightness LEDs, MEMS, power semiconductors, and flexible electronics), 2012 is already shaping up to be an important year for the global microelectronics supply chain. *For further information visit <http://MDMminn.com>*

**Moscone Center  
San Francisco, California**

## Electronica 2012 October 20-23, 2012

Microchip products, assemblies / subsystems (other types), discrete semiconductor components, other discrete components, system equipment, electromechanical components, system peripherals, ED / EDA equipment, measuring and testing. *For further information visit [www.tradefairs.com/Trade\\_Fairs/electronica/2012/](http://www.tradefairs.com/Trade_Fairs/electronica/2012/)*

**New Munich Trade Fair Centre  
Munich, Germany**

## MD&M Minneapolis 2012 October 31-November 1, 2012

For 20 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>*

**Minneapolis Convention Center  
Munich, Germany**

**If you have an event you would like to have listed here, send it to Marilyn Magowan  
[marilynmagowan@yahoo.com](mailto:marilynmagowan@yahoo.com)**

A E Petsche.....46	Electromatic.....24	Mecal by Starn.....18, 37
Aerospace Wire & Cable.....37	Electronic Connector Corp .....14, 45	Mechtrix Corporation.....29
All-Spec Industries.....47	Eraser Company, The.....43	Mello Company Inc., The.....32
American Hakko.....25	Escubedo.....4	Multi/Cable Corp. ....48
AMTI American Mfg & Technologies Inc.....9	Eubanks .....39	National Wire .....24
Anixter.....36	Fuses Unlimited.....12	OES, Inc. ....43
APEX.....52	Grayline.....22	Precision Plus, Inc. ....36
Applitek Technologies Corp.....21	Hamilton Products, Inc.....32	Pro-Line .....16
Artos Engineering Company.....2	Hatko Electronics.....51	Quick Cable.....24
Atlas Wire Corporation.....40	Heilind Electronics.....10, 19, 26, 50	Schaefer Megomat USA Inc. ....41
ATS Application Tooling Solutions.....15	HellermannTyton.....17	Schaefer Technologies LLC.....5
Cablescan.....44	Hoffman Products.....35	Schleuniger Inc.....7, 31, 49
CAMI Research, Inc.....14, 35	Industrial Wire and Cable Corp.....30	Sheyenne Dakota, Inc.....34
Carpenter Mfg. Co., Inc.....13	Imada .....13	SbinMaywa .....22
Cirris Systems Corp.....11, 48	INSCO .....6	Sonobond Ultrasonics .....28
Chief Supply Inc. ....28	Insulation Supply.....6	Southwire.....27
Coastel Cable Tools.....7	Intro Corporation.....30	Steinel.....34
Composite & Wire Machinery, Inc.....3	Judco Manufacturing Inc.....45	Strunk Connect.....16
Crimping & Stamping Technologies, Inc.....20	JWB Manufacturing, LLC.....10	Sumitomo Electric Interconnect Products.....46
Daniels Manufacturing Corp.....23	Kawa Machine Tools SND, BHD .....32	Techflex.....49
DSG Canusa .....30, 31	Kingsley Machines.....19	TE Connectivity .....8
Dynalab Test Systems.....42	Komax.....9, 60	Thermosleeve USA.....33
East Penn Manufacturing Co, Inc.....13	Lakes Precision Inc.....4	Waytek, Inc. ....12
ECC.....38	Lone Star Industrial.....25	White Products Division (J.R.Greenleaf).....33
EIC Wipers.....20	LTL Tooling & Assembly.....18	Wire Systems.....12
Electrical Products Sales Corp .....40	Mark-10.....38	Wiring Harness Manufacturer's Assoc.....53
Electrical Wire Processing Tech Expo.....59	Master Appliance Corp.....40	

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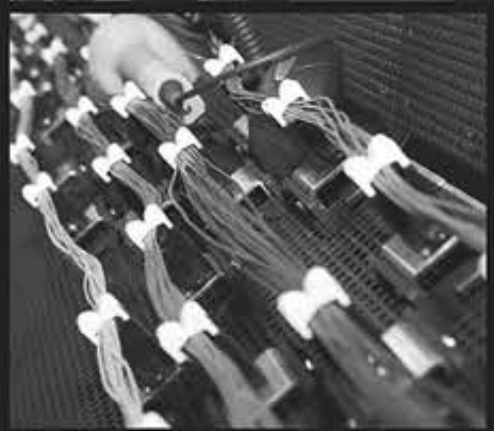
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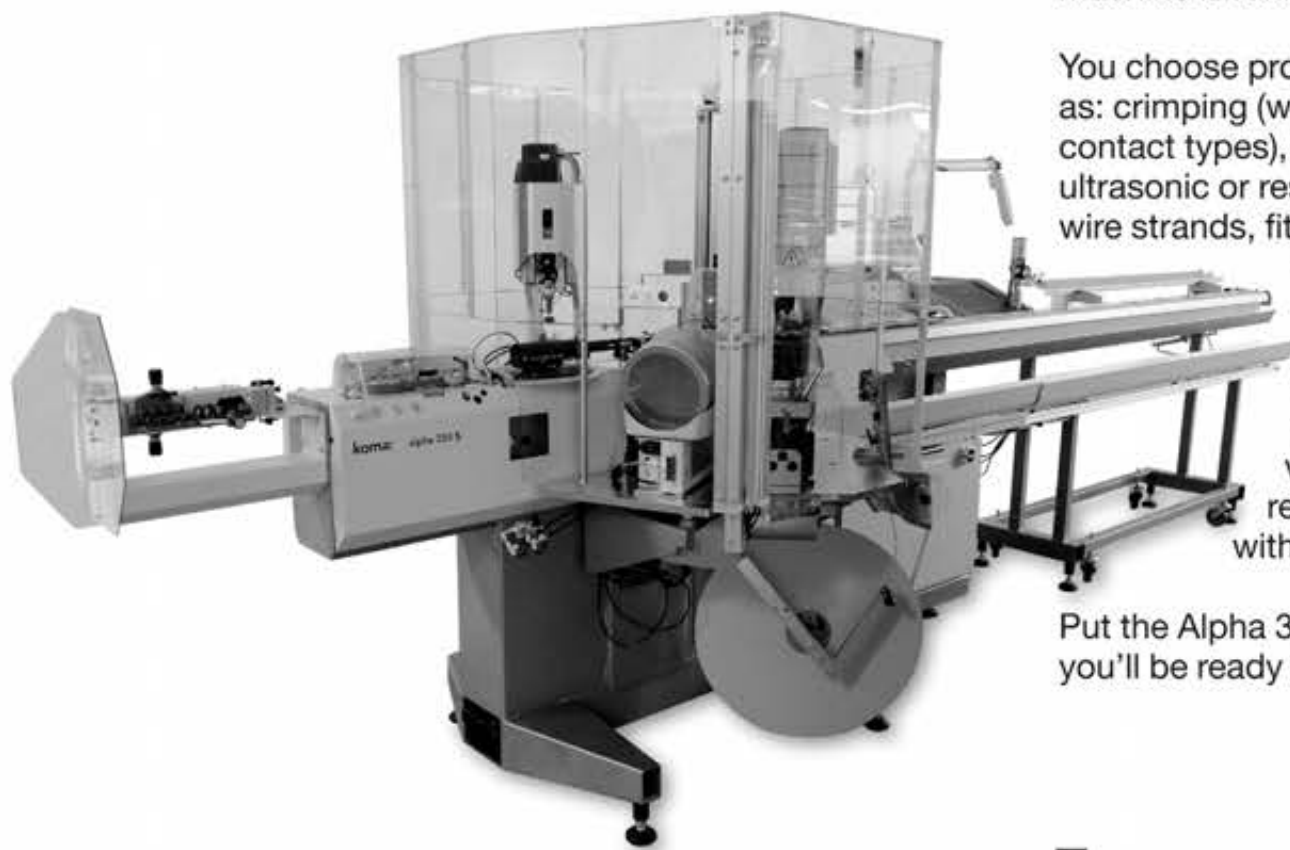
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