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- Working Efficiently with Heatshrink Tubing
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- The Power Women of the Wire Harness Industry
- Searching for Manufacturers, Suppliers, Other (Where are you???)
- Asking the big questions; Making sense of big data the IIoT and Industry 4.0



Western Wire Harness

A New Company Sharpens its Focus

By Joe Tito
Wiring Harness News

The Harness Manufacturer Profiles have been a favorite among readers for years. They usually follow a similar theme. Through the humble beginnings, companies focus on their strengths and find various way to differentiate themselves. In this issue, we take a snapshot of a company that has only been in existence a few months, and is just beginning to sharpen that focus.

Western Wire Harness was formed in June of 2016 by Steve Jeffers, P.E., General Manager, Jeff Gordon, P.E., Production Manager, and Ryan Wetherall, P.E. Manufacturing Engineer. WHN recently chatted with Steve Jeffers about some of the young company’s challenges and successes.

Steve left his W2 job in April of 2012 and formed Feat Engineering, an electrical engineering and con-

trol systems design company. He had a fair amount of success, but grew frustrated with periods of too much work, then not enough. “I came to the conclusion that a purely electrical engineering company was going to suffer from ‘feast or famine,’” he lamented.

Steve had once been an employee at Caterpillar in the Electrical Systems Integration Group and had worked with harness suppliers. “We were the guys who took everybody else’s designs and pulled them together for the wiring systems; and I was just so impressed and in awe watching these guys put these harnesses together,” he recalled. He always held Caterpillar in the highest regard, and knew he was seeing first-in-class in his first experiences with harness design.

Wanting to be closer to family, Steve made a couple of career changes, but his skill set in harness design always brought him back to that table whenever he showed up at a company. At Caterpillar, he was taught



Western Wire Harness owners, (from left) Ryan Wetherall, Steve Jeffers, and Jeff Gordon.

what he is convinced is the right way to design electrical systems so they don’t fail in the field. Owning his own harness manufacturing company had always been a desire, waiting to be acted upon.

Back to the ‘feast or famine’ world of Feat Engineering, Steve was interviewing some prospective sales folks. One of the guys he spoke with had been affiliated with a harness manufacturer. He candidly told Steve that the company was really a circuit board manufacturer, but provided the harness service merely as a value-added process for their larger customers. This awakened the desire. He began doing some research in his area and

found that the potential competition tended to cherry pick opportunities. “They seemed kind of particular about what they do and they just weren’t customer service oriented,” he mentioned.

It’s hard to raise capital for a harness business, so Steve thought about forming a partnership. He had just the guys in mind, too. He knew two top-notch engineers he had worked with in the past, and thought they would make a great team. He presented his business plan to them, and they put together the capital to get things rolling.

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The Bottom Line is More Than Money

By Wes Garner
SureTech Assembly

Internal combustion engines have always intrigued me. The ability to extract raw power from a chemical reaction and convert it to motion is a process with profound implications. Do we not live in a world addicted to petrol propulsion? At the heart of this exothermic wonder is the combination of three essential elements: atomized fuel, compressed oxygen, and electrical spark. When timed and mixed correctly, the results are explosive! However, take any ingredient away and the diseased engine can only cough. It is no wonder that the carburetor has been replaced with injectors, sensors and a power control module at the helm. Precision is paramount.

I believe there is something to be learned here for wire and cable manufacturers. There is a parallel we should not miss. The corresponding truth is there are certain essentials for a company to be successful. When present, companies are propelled with explosive force. When absent, they sputter along gaining no new ground.

The first essential element in successful manufacturing is managing

people with dignity. Too often companies adopt a utilitarian approach to business. They do whatever is possible to make the largest financial profit. As such, people are sometimes seen as commodities and little distinction is made between humanity and machinery. Years ago, while working for another company, I heard a manager make the following comment, “I wished we could invent a food that was completely ingested by the body. That way our employees would never have to go to the bathroom.” This view relegates people as a disposable commodity.

However, I submit that people are the most valuable asset of every company. The things that matter most reside in the hearts and minds of people. No machine can produce ideas. No PC can display courage, diligence, or perseverance. Companies who value their employees tap into a resource that has endless dividends. Or as one wise person said, “If you will be a servant to these people today...they will be your servants forever.” So don’t wish for a “snack that can be completely ingested” but for an employee who is fully invested. In the end it will prove to be the better choice.

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Crimp Hand Tool Calibration

By Tom Andrasek
General Sales Manager
Pressmaster AB

A very common question posed by hand crimp tool users is: Do I need to calibrate my crimp tool? What they may not realize is that they really should be asking: Does my crimp tool perform properly?

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November December 2017	
1	Western Wire Harness A New Company Sharpens its Focus In a departure from the normal Harness Manufacturer Profile, we take a look at a brand new company to find out where their head and hearts are in the beginning stages.
1	The Bottom Line is More Than Money Wes Garner shares his eloquent insights on what he sees as essential elements for a successful harness (or any) company - managing people with dignity, producing excellence, and profiting with integrity.
1	Hand Tool Calibration Tom Andrasek of Pressmaster AB delves into the subject of tool calibration/recertification. This is a must read if you've got any hand-tools in your facility!
4	Asking the Big Questions; Making Sense of Big Data, the IIoT and Industry 4.0 Paul Hogendoorn takes a revealing look at proper collection and analyzation of data (even from older "legacy" equipment) in harness facilities.
8	The Partner Challenge Loren Smith tells A tale of two partners in the sale of their business, and covers some of the intrigues of selling a partnership.
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Asking the big questions; Making sense of big data, the IIoT and Industry 4.0

By Paul Hogendoorn

What is "big data" and why should you care?

The best analogy to explain the big data approach to capturing information is comparing the first generation of GPS navigation systems to the current technologies available. The first generation captured and used all the data known at a certain moment to chart your course to your destination; it used maps, your location and

your intended location, and then calculated your shortest route and time using the map information and speed limits associated with the map information. The current technology uses information collected from all the other cars travelling along your suggested route and then calculates your arrival time using the speed of traffic for your entire route, or any route you choose to take. The first-generation technology collected and used only the specific information relevant to that known situation and

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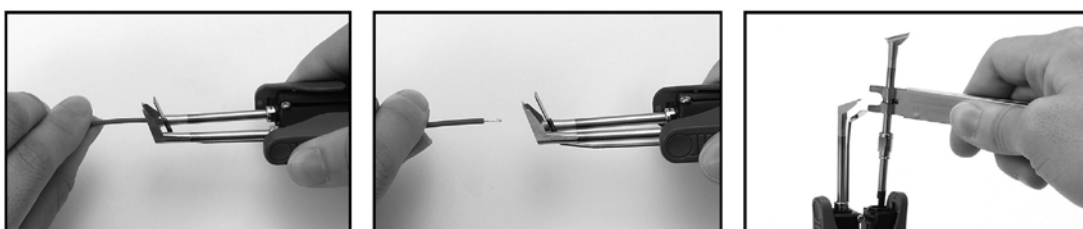
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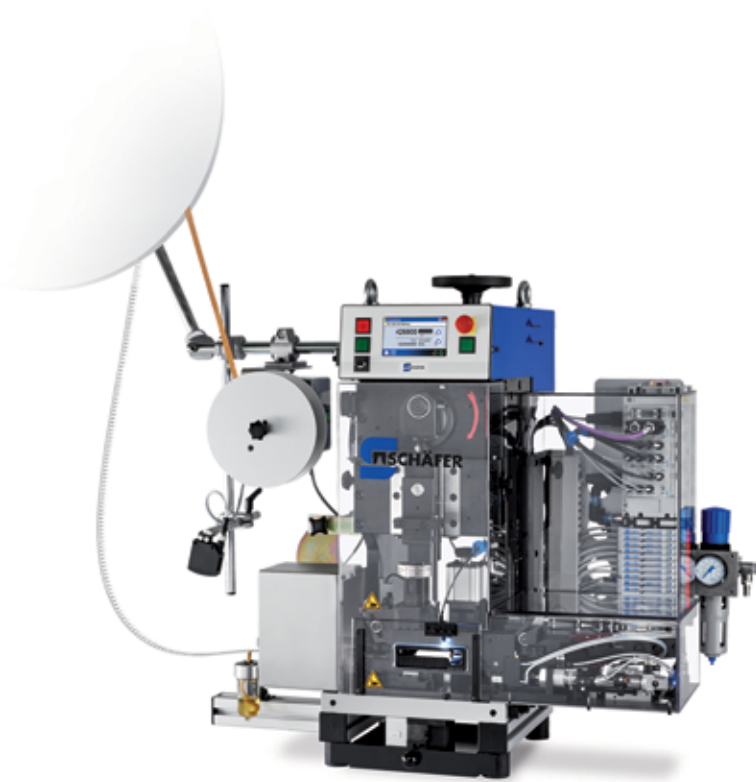
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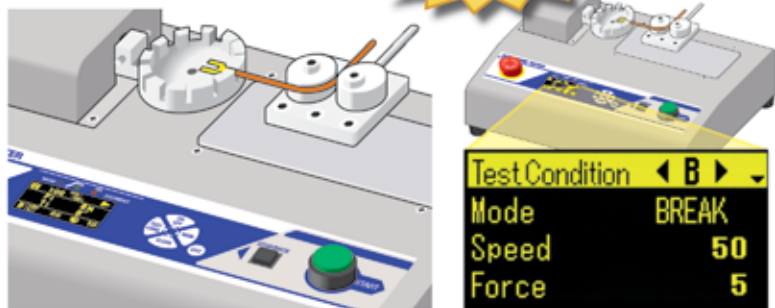
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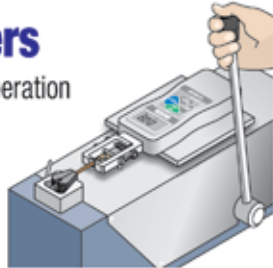
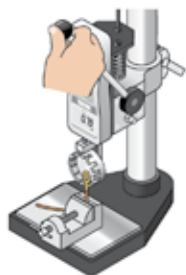
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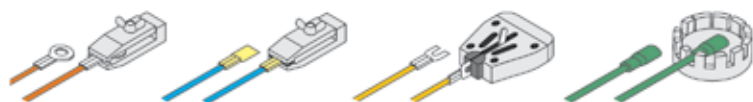
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Asking the big questions; Making sense of big data, the IIoT and Industry 4.0

Continued from page 4

known question (where am I, where am I going, and how will I get there?). This is similar to how most data collection systems are structured on the plant floor today (how many parts am I making, am I on target, and what are my constraints?)

The big data approach collects all the information available, regardless of whether there was a predetermined reason for collecting it. Data from every car travelling (with suitably equipped cell and GPS technology) contributes to that big data base, allowing you (or your system) to know the exact traffic patterns and determine the best route. My wife's car is equipped with a 1st generation GPS while an app on my Cell phone uses all the data collected from every other car on the road. On summer weekends, when we travel from our home in London to our boat in Midland, I have often put the two methods to the test, just for fun. The Cell phone app (the big data approach) gets us to the boat quicker every time and predicts our arrival time with incredible accuracy. The idea behind "big data" is to collect and store as much event by event information

empirically and in a consistent format as you can – because data storage is cheap – giving you the benefit of being able to mine it later when you come up with new questions to ask (how did that event link to this event? How did that machine change affect quality? How did a change of consumables affect the reliability of our process?)

What is the "IIoT" and how does it fit in?

From a manufacturer point of view, the IIoT, or the "Industrial Internet of Things", represents the opportunity to start to collect "big data" from all of your existing processes today – without the cost or time associated with replacing or upgrading the manufacturing equipment that you currently have in place. The IIoT movement has in effect commoditized technology to the point that information can be collected from any machine or process extremely easily and cost effectively, enabling the collection of big data without the big costs associated with upgrading or replacing more constrained and restrictive technologies typically in use today. Existing systems can be left in

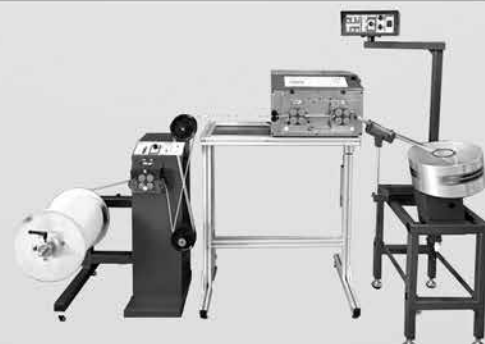


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place, undisrupted, providing the essential services that they always have. The IIoT however, gives manufacturers the opportunity to start collecting big data today, setting them on the Industry 4.0 course, without changing a physical piece of critical manufacturing equipment. The IIoT does not get you there by itself, nor does big data, but they are very effective first steps that can be taken now, and that like the modern GPS technology, they will help you get there quicker, and with more certainty.

What is “Industry 4.0” and what does that mean to my plant?

The Wikipedia definition is probably the most concise explanation: “Industry 4.0 is a name for the current trend of automation and data exchange in manufacturing technologies. It includes cyber-physical

systems, the Internet of things, cloud computing and cognitive computing. Industry 4.0 creates what has been called a ‘smart factory’”. The common dialog today focuses heavily on the data collection and automation side of things. However, I believe that an equally important objective for these technologies is to connect and engage the people in our companies better, making their work more meaningful and their efforts more constructive. Information needs to have a purpose to make it valuable; getting data out of machines is only one part of the equation, getting useful information to people (all the people, not just management) is the other.

Paul Hogendoorn co-founded FreePoint Technologies. “Measure. Analyze. Share. Don’t forget to share”. He can be reached at paul.hogendoorn@getfreepoint.com or www.getfreepoint.com



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The Partner Challenge

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thrown off kilter on the rare occasions when a customer left them.

After three decades of relative isolation, devoting his efforts to plant operations and fretting about what-ifs, Pete reached a level of cynicism that led to a deep desire to sell. He no longer could tolerate what he saw as unreasonable risk. Otto did not share his 50-50 partner's view at all, and he still loved the business and his role. But with Pete now intent on retiring and moving on, Otto relented, and that's when the partners retained me to sell their company.

It soon became clear that although Otto and Pete had come to an agreement, Otto had agreed reluctantly and lacked the motivation to surmount the hurdles that crop up in any sale process. In fact, he even created some of the obstacles himself. Although he never overtly objected to moving forward, Otto continually made the process difficult--probably without awareness that he was doing so.

In the end, we did get a deal done at a very favorable price, but that required my playing a role more analogous to marriage counselor than business broker. In fact, I have found that when business owners have been partners for a long while, the relationship does take on many of the characteristics common to a marriage.

This anecdote underlines the reality that the reasons to trust a professional with the intricate task of selling a business are many, and just one of them is the challenge of moving forward in a straight line when a company has more than one owner.

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

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Searching for Manufacturers, Suppliers, Other (Where are you???)

By Christine Siebert

Picture this — Your prospect needs a connector, wire harness, cable, etc. “Fill in your Product/Service here.” Now open up a web page and type “your product/service” into the search engine... Go ahead, I’ll wait... What are the results?

Is your company listed on the first page? On the second page?? If the answer is yes, great job! This article will be a refresher with maybe a few helpful tips. If the answer is no, do you know why? I’m pretty sure you just saw a list of your competitors and remember so did your prospect. Infuriating, isn’t it? Just think... you just lost a LEAD(s) and most likely a SALE(s). So keep reading, I’ll make

sure you get the next one. Whether your company is wire, cable, fiber-optic or industrial, technological or creative all companies need to have an online presence. This means a website. I’m going to assume that everyone reading this article has a website (good, bad or indifferent) but does your company have a Digital Marketing Strategy? Or an Online Marketing Strategy? Or even a Website Strategy? Ok, you may not know the answer or you have a partial strategy or better yet, you have one of these strategies, great!! The main point is you have to do something to get that LEAD, to get that SALE, to get prospects to your website and it’s never too late to start.

I am going to review some key topics that will help your search engine rankings and help turn your website into a lead generator. The main thing is to pick one topic and go from there. I will end this article with a short case study on a Website Redesign Project for our client Wiring Harness Manufacturer’s Association (WHMA).

Let’s start with areas of *your* website to assess.

- 1. **Review/Update** - Contact information, events, news, check all links, etc.
- 2. **Homepage** - This is the most important page of your website.

“Remember, you only have one chance to make a good first impression”

a. Does it have headline and sub-headline? It needs to tell your visitors within 3 second how your product/service will solve *their* problem. Prospects want to know why your product/service is superior to your competitors.

b. Does it have a clear Call-to-Action (CTA)? You have them on your website, now you want to make sure they know what you want them to do next. Yes, you want them to purchase from you but in reality, they want more information before they make a purchase. A Call-to-Action is the next step. This will fill their need for more information and

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will give you their contact information so you *capture* their visit and can nurture this lead. Some examples of a CTA are: Register for a Webinar, Request a Consultation, Download an EBook or Whitepaper, Sign up for a Newsletter, etc.

c. Do you have supporting images or even a short video? Remember some people are visual and visual aids can capture an emotional response from visitors but make sure the images are relevant to your product/service.

d. Do you have any testimonials? Case Studies? Prospects want confirmation from satisfied customers. Place quotes from customers on your homepage or links to case studies (with images).

e. Last but not least is Navigation. Make sure that your homepage displays easy navigation of your website. The best and most visible area is to have the menu at the top of the page. If possible, also include a Search Box.

3. Navigation Menu – Now everyone’s menus are going to be different but there are some pages that every company should make available to their visitors. Check your website to make sure you have these pages: About Us, Product/Services and Contact Us. Other recommended pages: News, Events, Case Studies and a Blog.

Next, I am going to discuss Search Engines. It is important to understand that search engines are mainly interested in delivering the **USER** timely, relevant, high-quality search results. What does this mean? This means the search engine will search through your website (and many others) and rank it for many different factors such as content, title tags, backlinks, images, meta-descriptions, keywords/SEO, indexes (pages), etc.

So, what is the

#1 secret of search engines? **CONTENT!!!** Content, Content, Content. Did I say Content? Ok, now that I know you heard me. First rule of websites is that “Content is King”. Remember search engines are grading ALL of your content. The search engines don’t only want content, they want updated, *relevant* content. Now before you just start writing content for your website, you want to have a strategy and this starts with Keywords.

1. Keywords – Keywords are the foundation of your content. Keywords are words or phrases that your prospect enters into the search engine searching for your product/service. To build a list of effective keywords, you will need to do some research. Don’t worry this is not a difficult task. There are many online tools that can assist you. My favorite

tool is a free tool provided by Google called Google AdWords Keyword Planner (GKP). To access it go to <https://adwords.google.com/KeywordPlanner>. If you don’t have a Google AdWords account, you can set one up now.

2. In this tool, click on “Search for new keyword and group ideas” and input a keyword that you think your prospect would use to search for your product/service and it will output more keyword ideas. Now make sure to keep a list of keywords in a spreadsheet. You can also spy on your competitor websites and see what keywords they are using. My favorite tool for that is <https://moz.com/explorer> and choose “root domain” from the dropdown.

Continued on page 14

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Searching for Manufacturers, Suppliers, Other (Where are you???)

Continued from page 15

3. Now that you are armed with a list of first-rate keywords, you can begin using these keywords on your website but don't overstuff the keywords. They need to flow naturally or you will be penalized by the search engines. Only use one or two keywords per page unless more belong in the content. Other areas to place the keywords are in titles of the pages, meta-descriptions and tagging your images. (If this is confusing, feel free to contact me and I will explain.) **Warning:** Don't try to do everything at once. Focus on one page at a time.

4. **Content** - As I stated earlier, Content is King. The more content

you have throughout your website, the more words the search engines have to search or "crawl" and the more information for your prospects. The absolute best way to start your Content Strategy and consistently add relevant content is to start a company Blog. Each blog post will be considered an indexed page to the search engine, which is a positive factor for your ranking, and your visitors will appreciate the quality content. There are challenges to starting a company blog. They can be very time-consuming and if not planned correctly can get away from you. Make sure to either have a scheduled team member(s) to write it or hire a consultant because it's not some-

thing you want to let slide. There are many professionals, such as Siebert Consulting Group, that ghost write blogs for companies like yours and the ROI is increased web traffic, increased leads and educating your audience.

By using the information I have shared with you, you are now ready to be easily found online and capture that LEAD!! Remember do not try to do everything at once, one page at a time, one tip at a time and if you need assistance, I'm always available for a consultation. So now it's time for me to take my own advice and share one of my client's Case Study.

Website Redesign for Wiring Harness Manufacturer's Association (WHMA)

Project: WHMA determined that their website www.WHMA.org required a redesign to create a stronger but lighter look, adding more value for existing members, attract new memberships and connect with OEMs. The redesigned website would rank well with search engines. Some requirements: adding more content, adding images with tagging, research keywords, SEO, mobile-friendly, backlinks, etc.

Delivered: Siebert Consulting Group delivered a redesigned website with all of the above and more. The original website had a total of

45 pages with a total of 30,386 words. There were no images except the logo and a header image. The new redesigned website is bright and colorful, full of images and has a total of 177 pages with a total of 78,140 words. It is now mobile friendly and ranks very well with the search engines. The new website has a Members Only area with added content such as presentations from previous conferences, Members Only Blog Articles, Members Message Board, and more.

The redesigned website has value-added content for both existing and possible new memberships and OEM's in the navigation menu. There is an OEM section, A-620 section and Market Segments in the navigation menu. Also an Industry News/Blog on the homepage.

Since the launch of the new redesigned www.WHMA.org on May 8, 2017, the Page views have increased by 32.19%, the Average Session Duration has increased by 63.87% and the Bounce Rate has decreased by 12.19%.


Overall the redesign has been a success but there is always more work to be done. We are moving on to Phase II - WHMA's Digital Marketing Strategy which includes Social Media Strategy, Blogs, PPC/SEM, etc. As stated earlier, you always need to keep updating and keeping your content relevant. Stay tuned.


Christine Siebert is the owner of the Siebert Consulting Group. She can be reached at Christine@siebertcg.com. View SCG's website at www.siebertcg.com.



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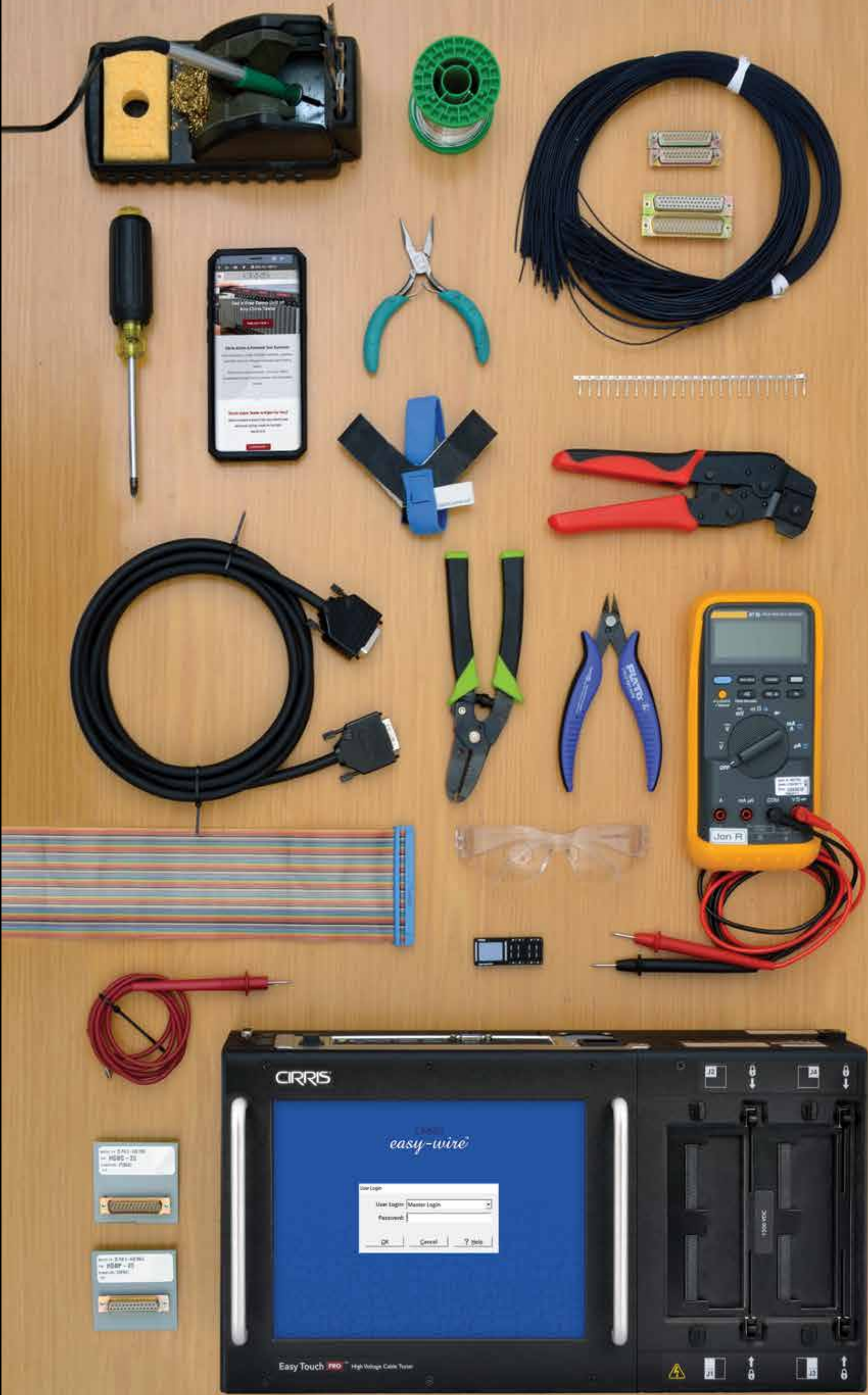
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NEWS PLUGS



TPC Wire & Cable Corp. Acquires Electra Cord, Inc.

Acquisition positions TPC to expand assembly capabilities, increase service to OEM customers

TPC Wire & Cable Corp. (TPC) announced that on September 1, 2017, it completed the acquisition of Electra Cord, Inc. Located in Massillon, Ohio, Electra Cord is a manufacturer of custom-molded cable assemblies, power cords, and cord sets for original equipment manufacturers serving a variety of end markets.

In making the announcement, President & CEO

Jeff Crane explained, “The acquisition provides unique fabrication and manufacturing capabilities that will help us expand our product and service offering to OEM customers in key regions of the country. We have been honored to work with Electra Cord’s President and owner, Randy Hutsell, throughout this process.

“His company’s strong reputation with customers and suppliers provides a great platform for growth. As we begin to implement our growth strategies for the business, we look forward to working with Randy to best leverage our resources and capital to accelerate that growth.”

Of the transaction, Hutsell stated, “Selling a business is never an easy decision, especially when it is so close to home. Electra Cord was started by my father and has been a part of our lives for decades. Getting to know TPC, and understanding

their plans for investing in and growing the business, has made the decision much easier for me. I know what we’ve built is in great hands.”

About TPC Wire & Cable Corp.

Founded in 1979, TPC is a leading supplier of high-performance wire, cable, connectors, assemblies, and accessories used in harsh industrial environments. TPC products are designed to withstand abuse from impact, abrasion, flexing, chemicals, and extreme temperatures. The company’s dependable products outlast ordinary cable in the most difficult applications to reduce downtime and overall cost. TPC serves a variety of industries including the steel, automotive, utility, transportation, food & beverage, oil & gas, and wood, pulp & paper markets.

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About Electra Cord, Inc.

Electra Cord is a manufacturer of custom power cords and cord sets, based in Massillon, Ohio. Its ability to design custom solutions in consultation with customers, coupled with its unwavering commitment to quality and customer service, make it the supplier of choice for many original equipment manufacturers.

For more information, visit www.electracord.net.



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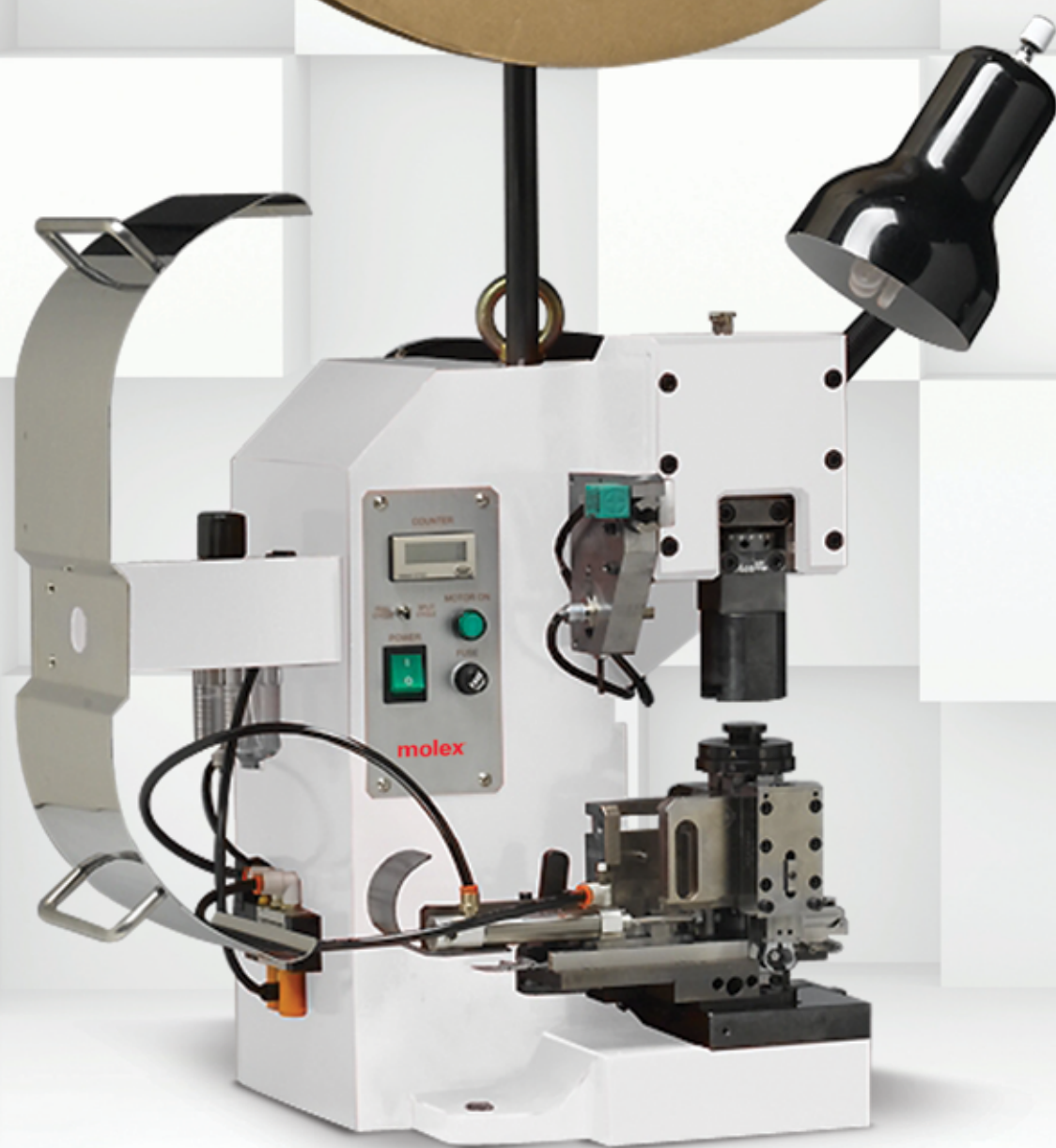






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The Power Women of the Wire Harness Industry

Spotlight on Kotomi Clegg

By Melissa Femia

This edition of the “Power Women” series features Kotomi Clegg, a Design Release Engineer (DRE) in the Front and Rear Closures Group at General Motors’ Vehicle Engineering Center in Warren, Michigan. Kotomi was recommended for the feature because she exhibits an outstanding attitude, a strong work ethic, and professional competence. The following paragraphs provide insight on Kotomi’s path from middle school in Japan to being a successful female engineer today at one of the largest corporations in the world.

Kotomi moved with her family from Japan to Ohio at the age of 15 when her father was offered a position working at a Tier I OEM supplier. Her father graduated as an Industrial Psychology Major, working in automotive manufacturing throughout his career and eventually became a plant manager. In speaking with her during her pre-collegiate years, he suggested engineering as a viable career choice along with law and medicine. Kotomi also had engineering influences on her mother’s side of the family as many of her mother’s kin were engineers. Although she was exposed to advanced math within



Melissa Femia

the Japanese school system and had engineering inspirations via her family, Kotomi entered college with an interest in Marine Science and Physical Therapy. Her secret passion was actually to become a dolphin trainer. When her parents went back to Japan during her sophomore year at the University of Miami, they told her that she either chooses a different course of study or she would need to return to Japan with them. At that point, she took an aptitude test with results showing that she would be a fit for engineering. She consequently

Continued on page 21



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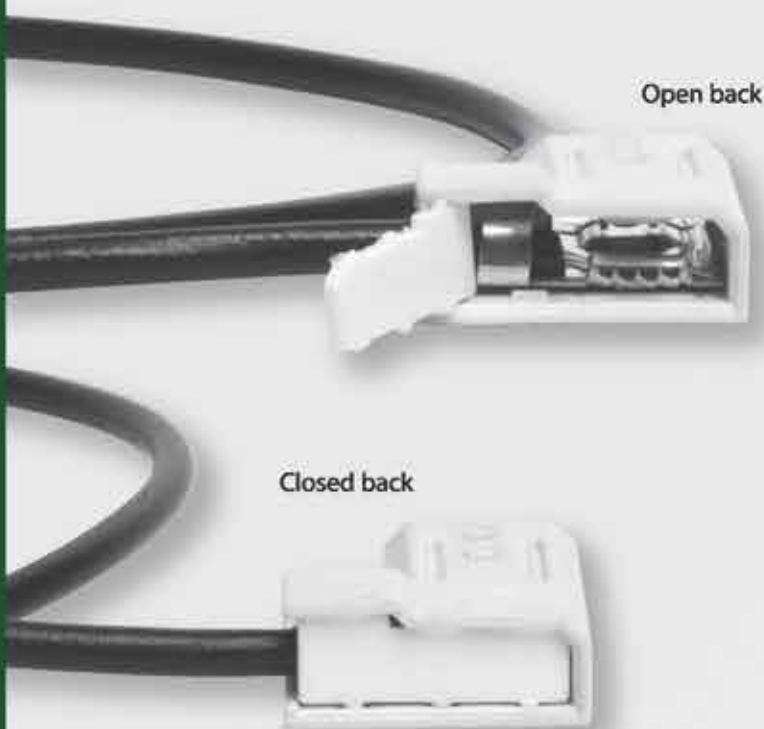
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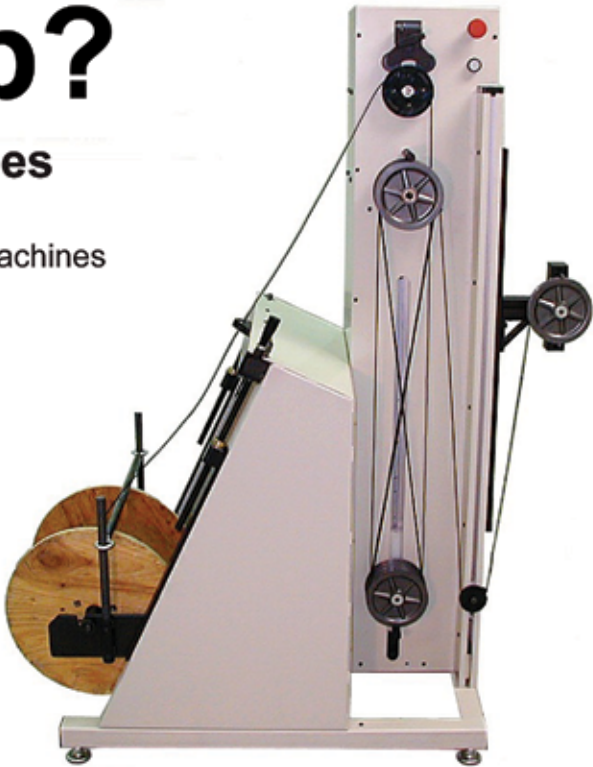
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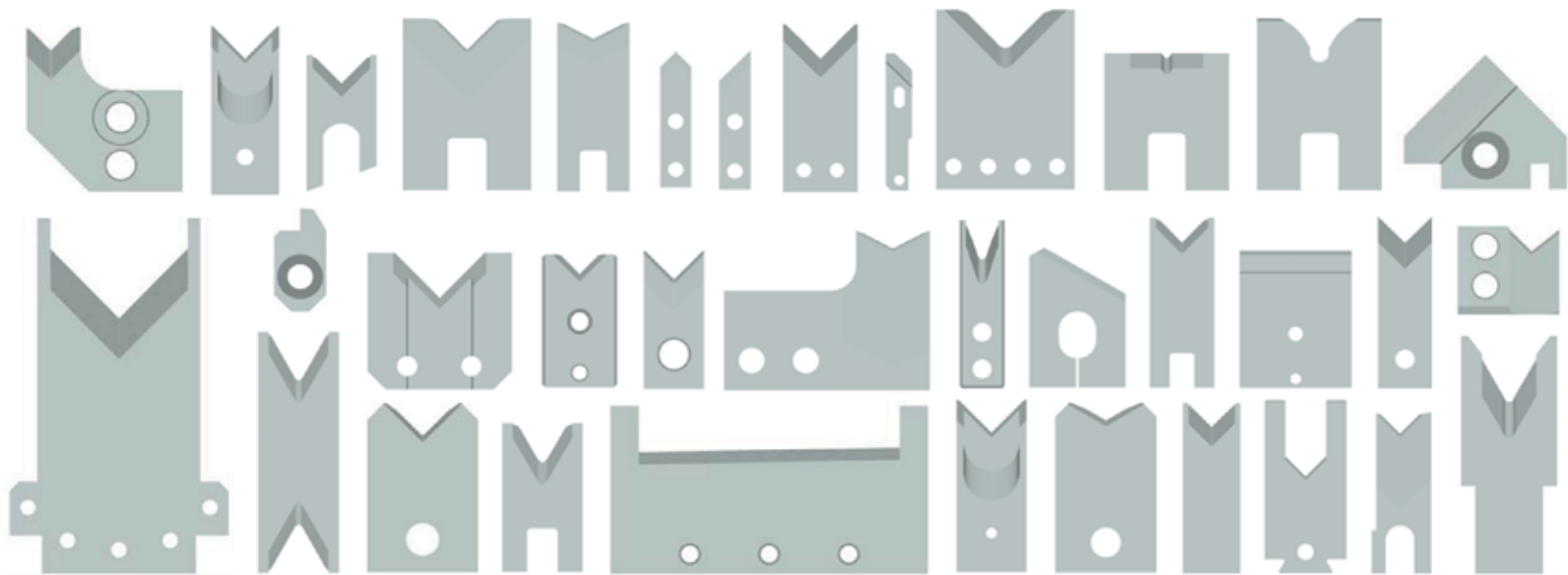
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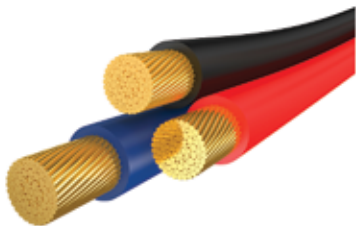
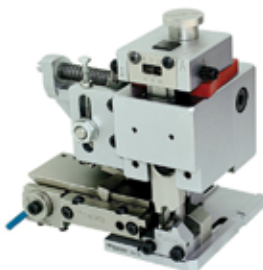
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The Power Women of the Wire Harness Industry

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changed majors and ultimately attained an Industrial Engineering undergraduate degree.

Delving a little more in to the middle and high school years, Kotomi shared some interesting information about the educational system in Japan. Middle school included grades 7-9. All children attended the same curriculum, though some also studied in afterschool programs in preparation for an exam in Grade 9 that would ultimately determine which high school the students would attend. The high schools were segregated by difficulty or concentration area unlike the USA where it is more common that high school students of varying aptitudes take discretionary levels of math, science, and English. As another difference from the common US educational system, Kotomi mentioned that the teachers moved from class to class instead of the students since all of the students had the exact same course schedule.

Post college, Kotomi returned to Ohio where she was hired by a Japanese company with an office in Columbus. She was sought because she was not only an engineer, but also had the ability to speak both English and Japanese fluently. Eventually due to a joint venture path, she wound up in Michigan where she met her husband. Opting not to work together at a company that was amidst bankruptcy progressions, she pursued another job. Again because of both her engineering skill and Japanese proficiency, she was hired by Delphi and was transferred to the Delphi Mexico Technical Center in Juarez, Mexico. As a Divisional Process Engineer, she worked in the lead prep department gaining knowledge about wire harnessing tools and equipment including cutters, welders, and crimp



Kotomi Clegg

monitors. She was promoted to Lead Prep Supervisor. After nine years and daily border crossings from El Paso to Juarez, she opted to leave Delphi due to the safety issues occurring in Juarez, Mexico around 2011. Moving again to Michigan, she started working with GM as a Dimensional Performance Engineer concentrating on fit issues. Now as a DRE, she continues to utilize the skills and knowledge learned during her time in wire harnessing.

When asked about Kotomi's perspective as a female in college, she mentioned that she barely noticed the low numbers of females (she recalls about 6 females of ~40 students) in her industrial engineering group in Miami. Instead, she more so observed the multi-culturalism of the engineering group having moved from a very small town in Ohio with little diversity. She recalls there being few American students in her engineering program at the University of Miami. While working in small groups, she mentioned that one student was struggling with energy and concentration as a result of fasting due to her Muslim beliefs. The group members just met at a different time to accom-

Continued on page 23

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The Power Women of the Wire Harness Industry

Continued from page 21

modate this student's eating habits and enhanced creativity periods. Her cultural college experiences helped her to work with individuals of all backgrounds. She cited that she just thought of herself as a team member and never specifically a female on the team.

When asked about any advice that she has for female students, they should know that no one has all of the answers and not knowing something is perfectly fine. Rather, maintaining a positive attitude is the link to success as well as using that positive energy to seek the answers. Thank you, Kotomi, for taking the time to meet with me. I would also like to recognize General Motors for approving this content and being a consistent corporate sponsor of diversity initiatives.

Spotlight story written by Melissa A. Femia, President of Jana Diversity Solutions (J-Di). J-Di is a female-owned small business that manufactures wire harnesses and supplies warehousing & logistics as well as engineering services. If you would like to be spotlighted in a future edition of WHN or if you would like to recommend someone to be highlighted for the benefit of advancing females in engineering, please send the contact information to melissa.femia@janadiversity.com. Inspiring individuals working in or around the wire harness industry are encouraged to participate, but the requirement is that the female must possess an undergraduate degree in an engineering discipline since the premise of the series is to encourage females to pursue and persist in engineering along with work in a wire-harness related industry.

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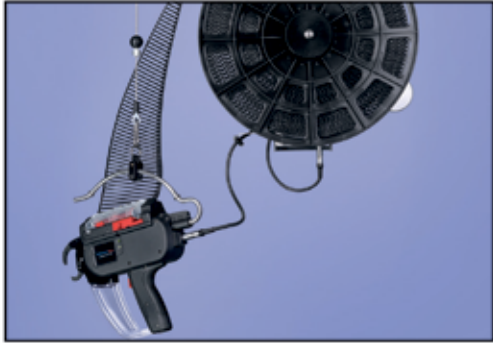
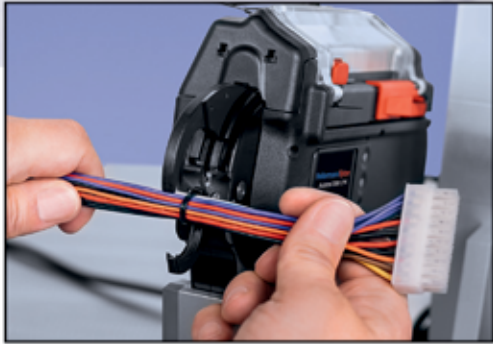
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Western Wire Harness

Continued from page 1



One early success was with an irrigation company in their neck of the woods. The company specializes in the residential sprinkler system market, but began to venture into some new products in the commercial farming and agriculture sector. The new designs required wire harnesses, a component the company was unfamiliar with, and so Western Wire Harness was there to design and produce the assemblies. “We’re pretty excited about it, and I think they were just happy to have a manufacturer one state over,” Steve explained, adding “I spoke with them last week and they are going to have some more work for us at the beginning of the year.”

The guys are also producing some specialty harnesses including one for a jet boat manufacturer. “All three of us are engineers, and so sales is a little bit foreign to us,” he said, “but these are the kind of early successes we have had with minimal sales efforts, so it demonstrates the need for the niche business we are trying to carve out.”

Asked how he was finding these opportunities, Steve quickly responded, “They are finding us, and that’s what’s so encouraging.” He admits that the team has yet to have the website SEO perfectly optimized. “We’re nowhere near the top of search engines, yet we are still getting hits.” As one of their first efforts, Western Wire Harness joined WHMA, and Steve is confident that the listing on the WHMA website is another huge help.

One of the biggest challenges for the team was assembling the right mix of equipment for the markets they wish to pursue. Steve’s initial business plan targeted aerospace and heavy machinery OEMs like Caterpillar. “Those are the areas my partners and I have had the most experience with, so we felt most comfortable going after those markets,” he advised. The team looked into wire marketing systems and knew from experience the issues with ink on Teflon wire. “That’s pretty much bread and butter for aerospace so we started looking into laser marking systems which are much costlier.” Nevertheless, the team decided it was the right direction, and took delivery of Spectrum UV Laser for wire marking in May of 2017.

That acquisition has paved some new roads for the fledgling company. “One thing I’ve noticed in my experience is just how much quality leaps when you’ve got a wire marking system,” Steve said. “It’s not just a marketing tool, but a quality measure.” The team also recently decided on a copper band splicing machine for their needs. “I’ve tested it and the

wire breaks before the bond,” so he is confident it will be a good addition to their facility.

They have also invested in plenty of strip and crimp equipment and are fully tooled for Deutsch and Molex. They are willing to invest in further tooling for a client looking for the right supplier. “So we’ve really just got tooled up in May, and for the past five months we’ve been trying to push the marketing efforts to get things going,” Steve said.

When asked what he sees as emerging strengths for Western Wire Harness, Steve outlined, “Well, as a company of engineers, I believe that our quality and customer service is going to be a cut above.” As an example, the irrigation company really didn’t know what type of wire to specify for their new application. Steve did the research and offered a couple of suggestions. “I think the tendency for lot of the prototypical harness manufacturers, at least in our area, is to build what’s on the drawing in the cheapest way possible,” he explained. “I think what really separates us is that we take [our customer’s] success seriously and are not selling just a bundle of wires, but a component that is going to serve them best in their business.”

There is another phenomenon at work that is aiding in the company’s early success. “I consider myself the last of the baby boomers, and over more recent years, I’ve seen great pressure from non-technical leaders to lean out the engineering groups,” Steve said. He described past scenarios where OEMs and Tier 1 manufacturers had a senior engineer and a junior engineer who was mentored. “Because of business decisions, the junior engineer has been left out, and with retirement, the effects are really being felt now.” This lack of brain trust has actually been a benefit to both Feat Engineering and to Western Wire Harness. “I’m not afraid to teach people how to better design a harness; as a matter of fact, I think that’s one of our greatest strengths,” Steve said. “We want to be able to build the harness, obviously, but we also provide the engineering expertise to be more than just that.”

It sounds like Steve, Jeff, and Ryan are well poised for success. Steve concluded the discussion saying, “I feel we are at the flood gate point. From sun up, to sun down, there is something to do with the business, but we’ve got some repeat sales and we are working hard to keep the momentum going.”

Visit their website at www.westernwireharness.com, or contact them at 208-345-1374.



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NEWS PLUGS continued



Heilind Electronics Introduces 3M's Revolutionary 7700 Series Flat Ribbon Cable

Heilind is now stocking 3M's 7700 series round conductor flat ribbon cable, designed for controlled impedance environments and featuring up to 20 Gbps speed

Heilind Electronics, a leading global distributor of electronic components and authorized distributor for 3M, recently added the manufacturer's new 7700 Series 0.025 inch round conductor flat ribbon cable to its growing inventory of interconnect and cabling products.

The 7700 Series supports IDC (insulation displacement contact) termination and can be used in a wide range of controlled impedance LVDS (low voltage differential signaling) wire-to-board applications -- including automated test equipment and communications network equipment. Additionally,

the 7700 Series flat ribbon cable features a breakthrough design that not only supports speeds of up to 20 Gbps, but also enables tighter folding with minimal performance impact.

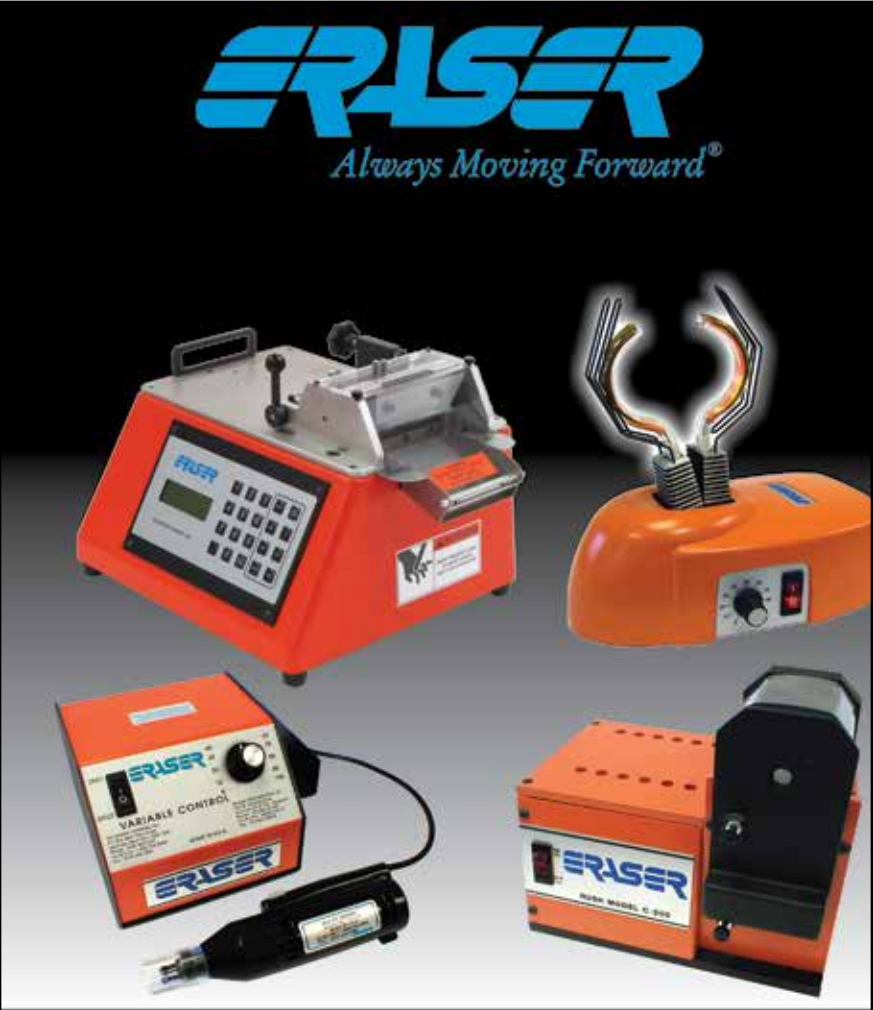
3M's 7700 Series flat ribbon cable is constructed using 30 AWG solid conductors and polyolefin insulators, with an outer layer laminated with flexible foil to control impedance at 95 ohms.

Visit Heilind's website for more information about 3M's 7700 Series round conductor flat ribbon cable with controlled impedance.

About Heilind Electronics
Heilind Electronics, Inc. (www.heilind.com) is one of the world's leading distributors of connectors, relays, sensors, switches, thermal management and circuit protection products, terminal blocks, wire and cable, wiring accessories and insulation and identification products. Founded in 1974, Heilind has locations throughout the U.S., Canada, Mexico, Brazil, Germany, Singapore, Hong Kong and China. Follow Heilind on Facebook at facebook.com/Heilind and on Twitter at twitter.com/Heilind.




Heilind is now stocking 3M's 7700 Series round conductor flat ribbon cable with controlled impedance.



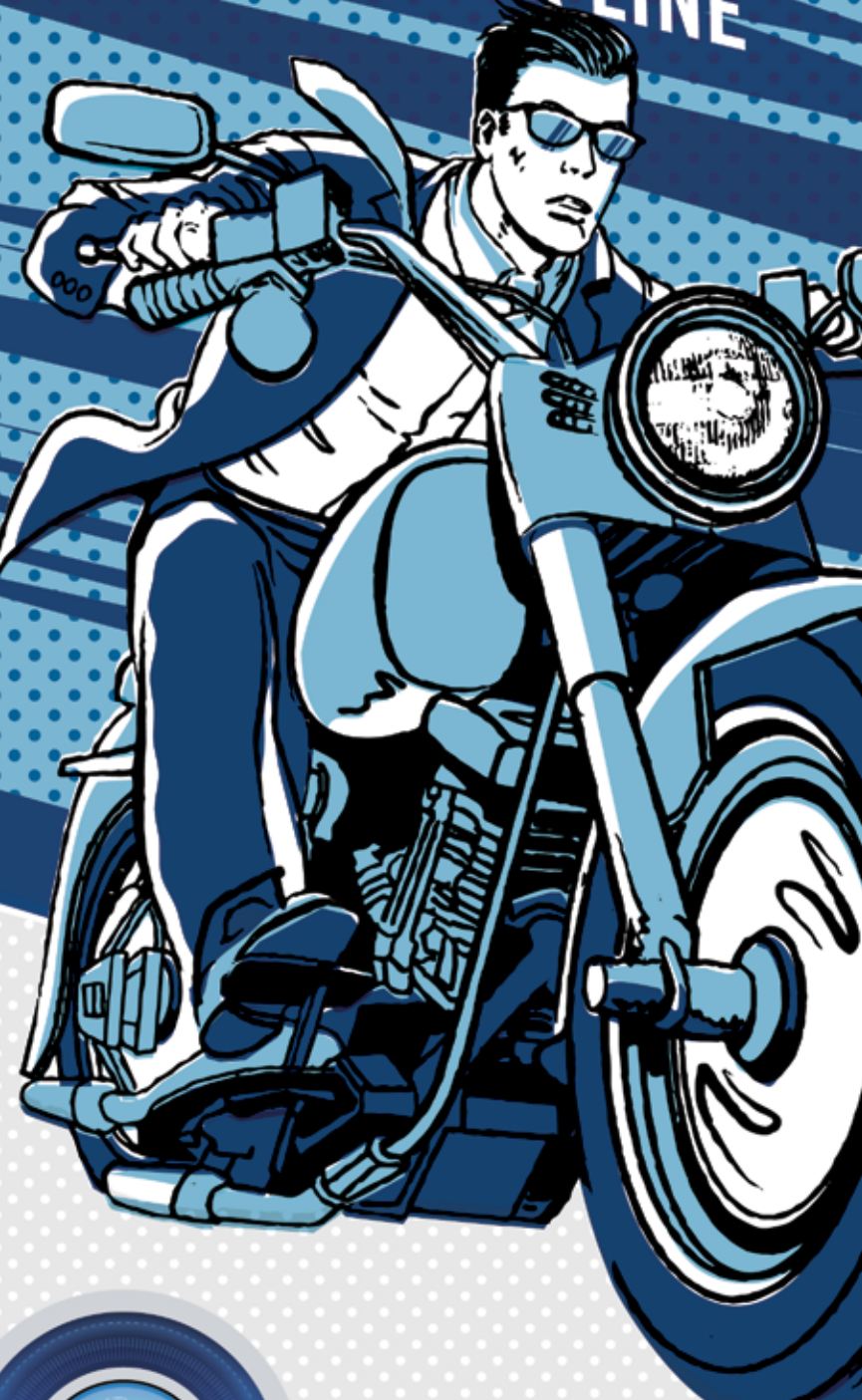
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NEWS PLUGS continued

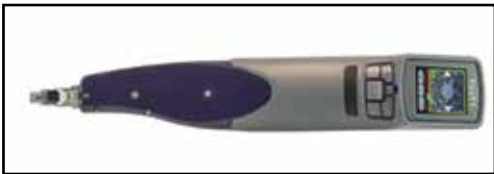


Viavi FiberChek Sidewinder

Fiber Optic Center, Inc. introduces Viavi FiberChek Sidewinder, first fully autonomous handheld inspection and analysis solution for multifiber connectors

Fiber Optic Center, Inc., (FOC), an international leading distributor specializing in helping their customers make cable assemblies, introduces Viavi FiberChek Sidewinder, first fully autonomous handheld inspection and analysis solution for multifiber connectors

The FiberChek Sidewinder is an “all-in-one” handheld inspection and analysis solution for multifiber connectors such as MPO or other multifiber connectors with reliability and speed.



Fiber Optic Center Viavi Sidewinder FOC

With contaminated connectors as the number one cause for troubleshooting in optical networks, this problem has driven the industry and International Electrotechnical Commission (IEC) to release IEC 61300-3-35, a global standard that establishes acceptance criteria for the quality and cleanliness of the fiber connector end face. This standard has been widely adopted and has also been incorporated into other standards, including both TIA-568.3 and ISO/IEC 11801.

The FiberChek Sidewinder solution addresses the challenge in MPO inspection with ability to test to industry standards with push of a button, automate inspection, locate and identify defects and scratches, identify inspection zone locations and integrate results into certification reports

FOC, working with technician needs of many different skill levels and needs, can now offer one portable MPO inspection microscope solution to Inspect, measure, and certify fiber connectors to industry standards right on a mobile device. Compatibility with multiple types of devices (Android, iPhone & iPad, Windows Tablets and PC/Laptops) provides solutions for automatic test result fibers in less than 12 seconds and review of test results on the same device.

As MPO connectivity continues to grow in adoption, maintaining MPO end faces is more important than ever. Managing clean MPO connections requires systematic and proactive methods that many technicians may find troublesome, confusing and time-consuming.

About Fiber Optic Center, Inc.

Fiber Optic Center, Inc., (FOC), is an international leader in distributing fiber optic components, equipment and supplies and has been helping customers make the best cable assemblies in the world for over two decades. FOC is the industry connection to the most innovative optical products, technologies and technical experts who integrate their manufacturing knowledge and vast experience into customers’ world-wide operations.

For further information contact: Fiber Optic Center, Toll Free in US: 800-473-4237. Email: sales@focenter.com

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DO YOU KNOW YOUR POLYOLEFINS FROM YOUR FLUOROELASTOMERS?

MATCH THE LETTERS TO THE FOLLOWING LIST:

___ FKM; ___ PTFE; ___ KYNAR; ___ Silicone; ___ Polyolefin; ___ PVC; ___ Fiberglass

F

F

C

F

B

H

F

C

F

C

H

CL

C

H

D

O

Si

O

E

CF₂

CH₂

CF

R

F

O

C

O

C

O

CH₂

G

BY THE WAY, HERE ARE THE ANSWERS:
F FKM; B PTFE; C KYNAR; A Silicone; D Polyolefin; E PVC; G Fiberglass
IF YOU GOT ALL OF THEM, THEN CONGRATULATION!

FORTUNATELY YOU DON'T HAVE TO KNOW ALL OF THEM, OR EVEN SOME OF THEM, BUT IF YOU NEED THEM WE HAVE THEM – POLYOLEFIN HEAT SHRINK TUBING IN THIN-WALL, SINGLE WALL, DUAL WALL, MEDIUM AND HEAVY WALL, 2X,3X AND SOME UP TO 6X; COLOR OPTIONS ARE ALSO AVAILABLE. OF COURSE, WE CARRY HEAT SHRINK OR EXTRUDED TUBING IN THE OTHER MATERIALS MENTIONED ABOVE ALSO.

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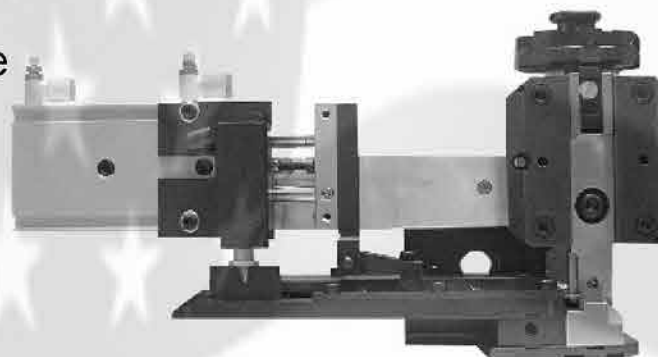


Model 1700

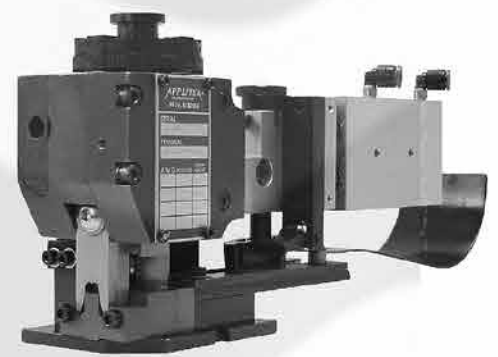


Model 2000

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

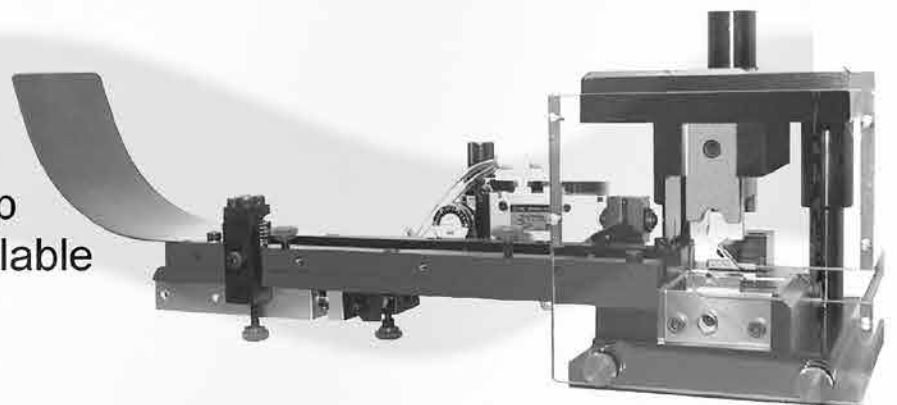


Model 1500



Model 2100

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



DSA Series

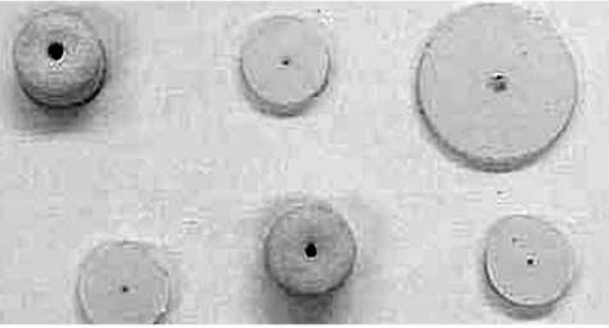
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NEWS PLUGS continued



Heilind Electronics Offering Amphenol RF's New Low Loss N-Type Connectors

Heilind is now stocking Amphenol RF's redesigned N-Type connectors, featuring a low return loss for consistent electrical performance at higher frequencies

WILMINGTON, Mass. -- Heilind Electronics, a leading global distributor of electronic components and authorized distributor for Amphenol RF, recently added the manufacturer's new low loss N-Type connectors to its growing inventory of interconnect and cabling products.

The recently redesigned connectors are optimized for use with low loss 400 cables, constructed with bonded foil to ensure 100% coverage. The connectors also feature a nominal impedance of 50 ohms and a return loss from DC to 6 GHz -- ultimately improving grounding for more stable RF performance.

Amphenol RF Type N connectors are available in straight jack, bulkhead jack, straight plug and right angle plug configurations. All designs feature crimp termination, allowing for quick and secure assembly.

The new connectors are ideal for smart city infrastructure and other IoT antenna applications requiring high reliability and low signal loss. They can also be found in medium to high power wireless, iDAS and oDAS solutions.

Visit Heilind's website for more information about Amphenol RF's low loss N-Type connectors.



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Wisconsin Contract Electronics Manufacturer Acquires Iowa based Wire Harness and Cable Company

Fort Atkinson, Wis-consin – Electronic Technologies International (ETI), a leading contract electronics manufacturer is proud to announce that it has acquired Thorson Manufacturing Company of West Des Moines, IA.

Thorson is a wire and cable processing company that has been serving its customers for more than 50 years. ETI President/Owner Bill Brink said, "I am pleased to welcome Thorson and its employees to the ETI family. The additions of Thorson Manufacturing Company as well as R&B Contract Manufacturing earlier this year diversify our customer portfolio, strengthen our regional presence, and leverage experience and skills from the different locations to better serve our customers."

Electronic Technologies International and American Cable and Harness (ACH), a wholly owned subsidiary, are headquartered in Fort Atkinson, WI. ETI is an integrated service provider for printed circuit board assemblies, box builds, and wire/cable harnesses. ETI was established in 1990.

For further information contact Electronic Technologies International, Inc. 1100 North Main St. Fort Atkinson, WI 53538 Phone: (800) 563-0840 or visit www.etimfg.com

Working Efficiently with Heatshrink Tubing

What is Heatshrink Tubing?

Heatshrink tubing is a flexible, pre-stretched tube, engineered from a wide range of polymers, that will shrink to a fixed diameter when sufficient heat is applied. Its diameter and thickness can vary, and it is rated by its expansion ratio, a comparative of the differences in expansion and recovery rate (Fig 1).

Heatshrink tubing is the ideal way to create a tight, professional finish on any wire, hose or cable management project. Once shrunk, the tub-

ing will hold its reduced state, even in elevated temperatures. Typical applications for the heatshrink tubing include: electrical insulation, termination, splicing, cable bundling, color coding, strain relief, wire marking, identification, mechanical protection, corrosion protection, abrasion protection and moisture and weather sealing.

Continued on page 33



Figure 1. Multiple colors and sizes of tubing.

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Working Efficiently with Heatshrink Tubing

Continued from page 31

What does shrink ratio (2:1, 3:1, etc.) mean?

The shrink ratio is the approximate maximum amount that heatshrink tubing will shrink relative to the unshrunk diameter. For example, a piece of 3/4" heatshrink tubing with a 3:1 shrink ratio will shrink down to a maximum diameter of approximately 1/4" when fully shrunk. All heatshrink tubing on our site is specified in its UNSHRUNK diameter, so consider the shrink ratio and the unshrunk diameter when ordering heatshrink tubing. Heatshrink tubing with a

larger shrink ratio will be more forgiving when fitting the tubing over plugs or connectors, but will have a bit thicker wall thickness and slightly less flexibility when shrunk then a lower ratio product.

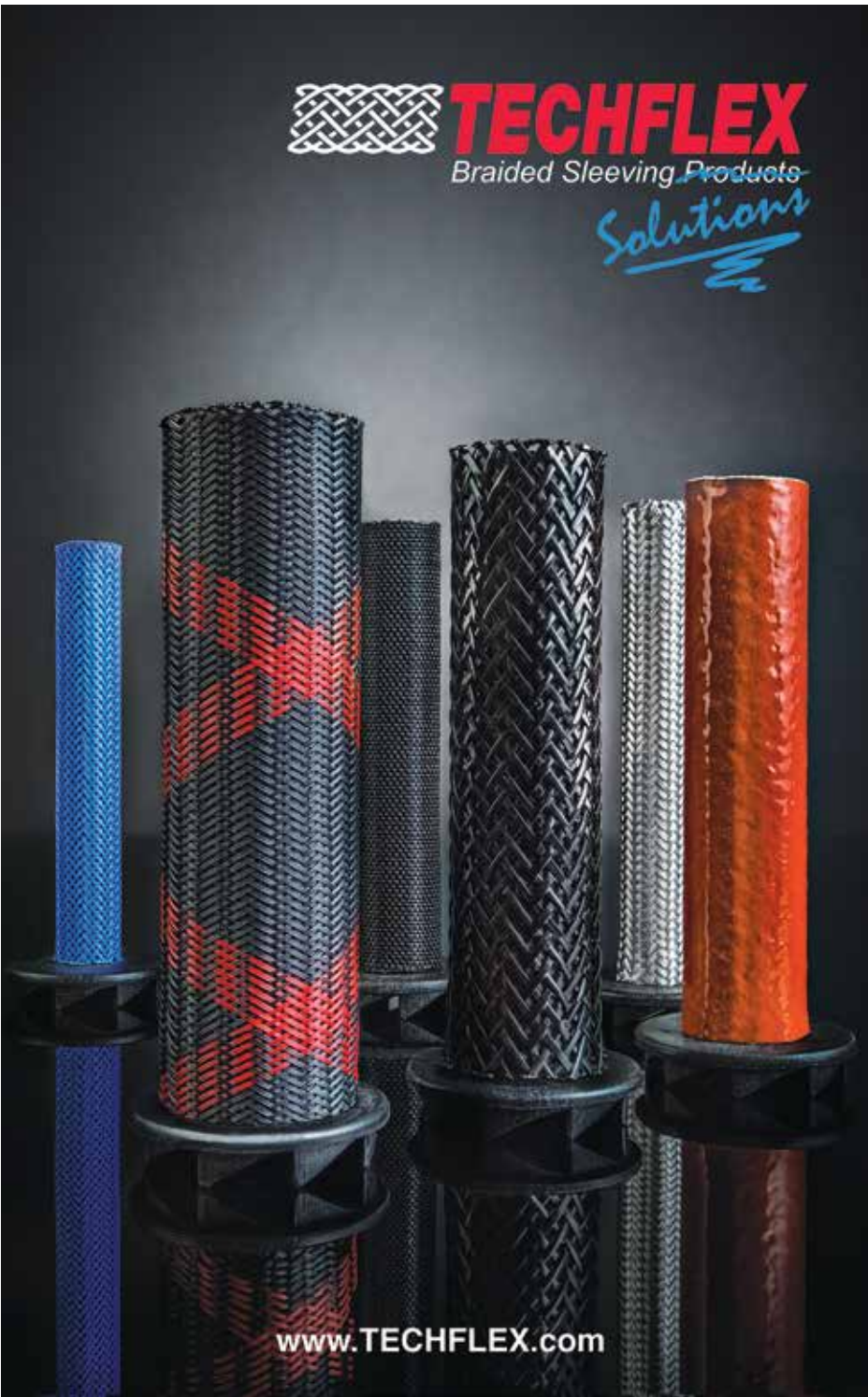
Step 1 – Measure and Cut

Measure the heatshrink tubing to length and cut with a scissor (Fig 2). The thickness of your bundle, as well as the desired final appearance, will determine the

Continued on page 38



Figure 2. Measure and cut tubing.





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NEWS PLUGS continued



HellermannTyton's Push-In Wire Connector Now 40% Smaller

MILWAUKEE – HellermannTyton announces a significant, space-saving modification to its line of HelaCon Plus push-in wire connectors, now called HelaCon Plus Mini. This type of connector speeds the process of connecting electrical wires, which has traditionally been managed with twist-on wire connectors.

The HelaCon Plus Mini's design is highlighted by its double-spring retention system. Individually, the spring plates have greater flexibility than competitive connectors. This promotes easier in-



HelaCon Plus Mini From HellermannTyton

section of wires and helps prevent stranded wire from separating during installation. In tandem, the springs produce superior extraction force for ultra reliable connections.

“Compared to twist-on wire connectors, the Minis are faster to use and easier on operators’ fingers,” said HellermannTyton Product Manager Duane Kuske. “Electrical contractors will appreciate greater assurance their installations are safe – especially where vibration or movement is involved.”

The smaller footprint will be especially appreciated in the typically tight spaces associated with electrical enclosures.

HelaCon Plus Minis are available in multiple configurations, from as few as two up to eight wire ports, to address most wire connection scenarios. The Minis accommodate a wide range of wire gauges, from 12-22 AWG solid copper wire and 14-22 AWG stranded wire.

This product will fully replace the original HelaCon Plus line of wire connectors later this year.

HellermannTyton is a global leader in cable management and protection products, identification systems and network connectivity solutions. Its systems and solutions are specified by major manufacturers and contractors in the automotive, electrical, data communications, truck/heavy equipment, renewable energy and related industries.

HellermannTyton operates in 37 countries, with North American headquarters in Milwaukee, Wisconsin. For further information visit www.hellermann.tyton.com

WINTOTAL V6 IDENTIFICATION LABEL PRINTING SOFTWARE FOR RAIL, MASS TRANSIT AND INDUSTRIAL EQUIPMENT MARKET

TE Connectivity's WinTotal Version 6 is the new version of WinTotal software, supporting high quality wire and harness identification and basic label printing applications. WinTotal v6 software has a number of new user benefits like auto font sizing and comes with 2,500 standard TE Connectivity Identification products pre-installed. This makes the creation and printing of Identification sleeves or labels a quick and simple task.

Double Sided Print

WinTotal v6 allows both sides of a product to be viewed at the same time. This enables the user to see how the product will be printed and, with the active updating of the print preview screen, it is also possible to make orientation and order changes.

Key Benefits:

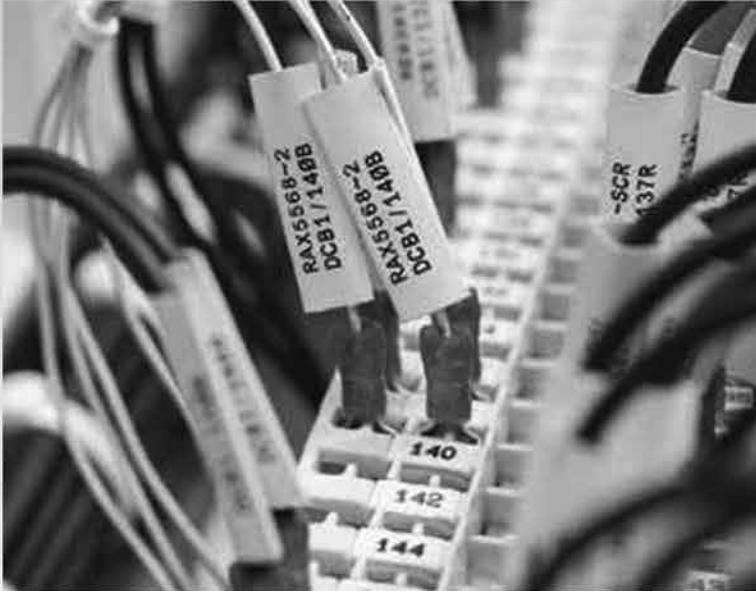
- Enable faster set up with the ability to view prior to printing
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Target Markets:

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Working Efficiently with Heatshrink Tubing

Continued from page 33

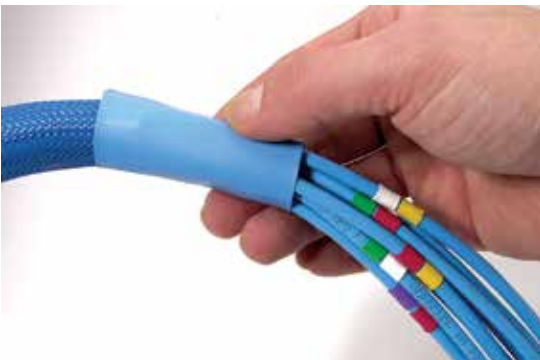


Figure 3. Position tubing along bundle.

length of the tubing you cut. Generally, a piece 1 1/2" - 2" long will accommodate almost any need (such as this bundle of network cables). Single wires, or smaller bundles, require shorter pieces.

Step 2 – Position the Tubing

Slip the tubing over the bundle and position it so that both the sleeved and unsleeved portions are sufficiently covered (Fig 3). Notice the small pieces of tubing installed on single wires as part of a color coding system. If your project requires multiple operations, always work up from the smallest to the largest bundle.

Step 3 – Finish Installation

Gently apply heat from a heat gun, hair dryer or torch with an appropriate attachment. Keep the heat source far enough away so that hot metal or direct flame don't come in contact with the tubing, wires or sleeving (Fig 4). Move the heat around the bundle to prevent damaging the sleeving and to ensure that all areas of the tubing have been shrunk. Once cooled, your installation is complete.

For more information on heatshrink selection and proper usage, visit www.techflex.com.

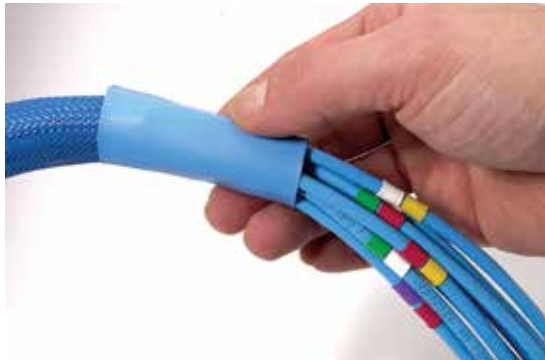


Figure 4. Use heat source to complete installation.



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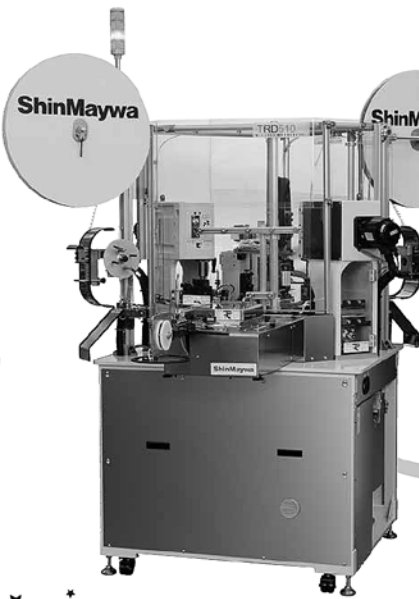
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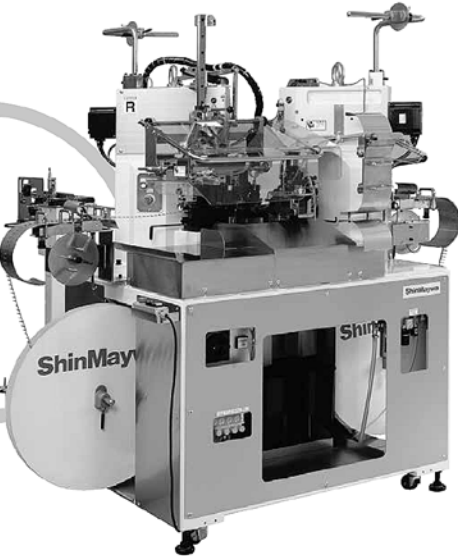


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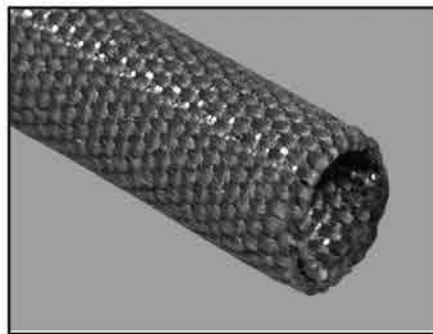
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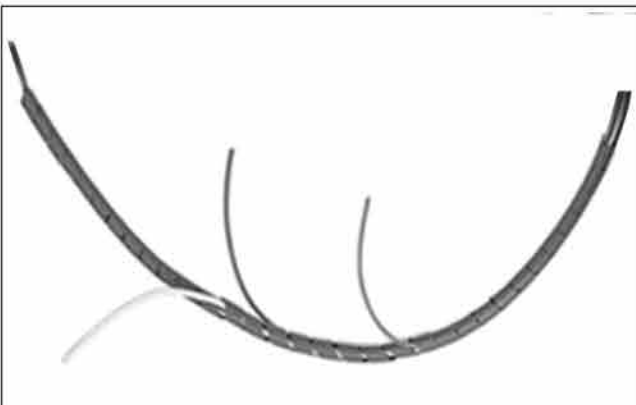
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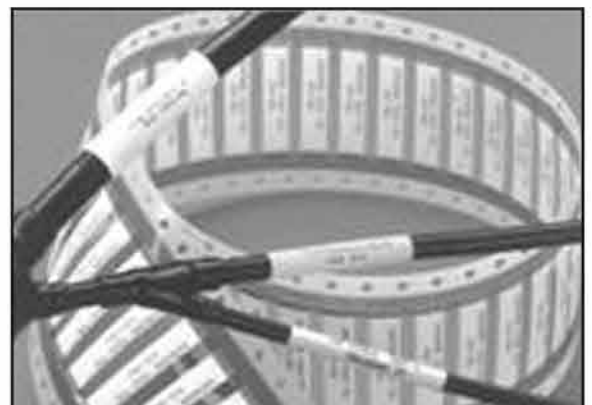
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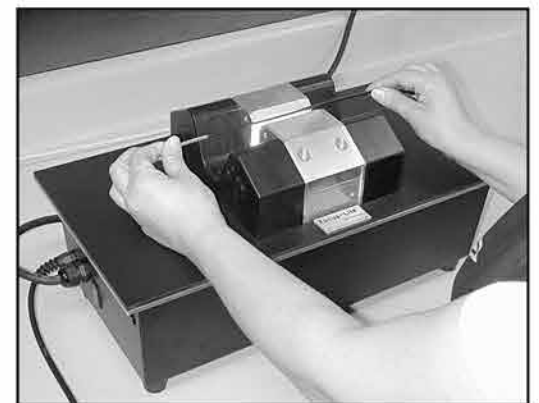
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NEWS PLUGS continued



New Test Cables Feature Rugged Design and Deliver Ideal VSWR and Insertion Loss

Fairview Microwave Inc., a supplier of on-demand microwave and RF components, has introduced a new series of rugged, portable, phase stable RF analyzer cables. Typical applications include handheld network analyzers, base station analyzers, portable spectrum analyzers, field testing, tower measurements, distance-to-fault measurements and site maintenance.

Fairview’s 19 new portable, RF analyzer models provide optimal amplitude and phase stability with flexure. They deliver a maximum operating frequency of 27 GHz and VSWR as low as 1.2:1, depending on the model. These rugged test cables are designed with a UV-resistant jacket, stainless steel body connectors and silver-plated copper cable conductors. They feature a multi-layer armor for torque resistance and 1200 psi of crush resistance, and they boast an operating temperature range of -55°C to +105°C. These test cables are available with 7/16, N, SMA, TNC or 3.5mm connector options and test data is included with each serialized assembly. They can be used as replacement cables for Sitehawk®, Site Master, FieldFox® or CellAdvisor® handheld analyzers.

“Field maintenance and tower technicians will find our new line of test cables is a must-have to keep their projects on schedule. Nineteen different configurations provide more length and connector combinations available off-the-shelf than any other RF component supplier,” said Dan Birch, Product Manager at Fairview.

Fairview’s rugged, portable, phase stable RF analyzer cables are in stock and ready for immediate shipment with no minimum order quantity.

For detailed information on these products, please visit <https://www.fairview->



Handheld-RF-Analyzer-Rugged-Phase-Stable-Cable-Assemblies-SQ

microwave.com/rf-products/rugged-portable-phase-stable-rf-analyzer-cables.html. Fairview can be contacted at +1-972-649-6678.

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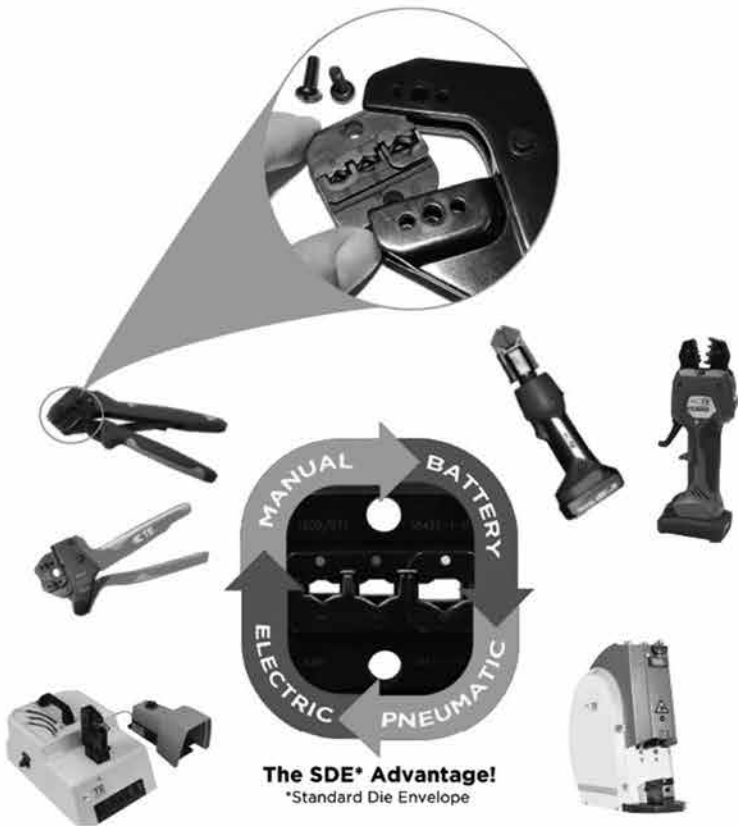
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You can be sure your dies will fit your long-term needs, because they are completely compatible with all tools in the SDE system. They move with you as your needs grow.



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Continued rom page 1

A second essential element is producing product with excellence. Certainly every company ascribes to this mantra but does it really permeate the culture? Excellence can be defined as “the quality of being outstanding.” So, we must ask, “When our product is placed beside the industry, does it stand out? Is it uniquely good? Can it be distinguished from competitors? How is it packaged and presented to the customer?” It’s here we discover a hidden pitfall in our industry. Wire and cable assemblies are industrial by nature. Aesthetics know no part of our product. They are generally dull and uninviting. The problem is the generic, industrial feel of cables easily propagates throughout the company. Suddenly the shop floor, equipment, facility, raw materials, offices and attitudes are equally uninspiring. They match the glamor of cable assemblies but are incongruent with the customer and their end product. Excellence is lost.

Perhaps a reminder from Jim Collins bestselling book, “Good to Great”, would be helpful. His opening sentence declares, “Good is the enemy of great.” Thus, we must strive to make an ordinary product extraordinary. Consider the following five ideas as spring boards toward excellence:

1. Ask someone outside of the cable industry to come and visit your facility. Give them a tour and ask for their impres-

sions. Consider implementing changes based on their assessment.

2. Don’t be satisfied with second rate social media. Invest in a quality website, Facebook page, YouTube channel, etc. These are places to easily and dramatically dress up your product.

3. Create a key word or phrase that is used internally in the company and externally with customers. Can you name the mega company that always responds with the phrase, “My pleasure”?

4. Where appropriate pack goodies or candies in your shipping boxes. Sound silly? Ask Sweetwater, a very successful audio product provider. It sends the message of excellence externally to the customer and internally to the shipping department.

5. Logo your brand and distribute the logo through websites, building signs, shirts, hats, boxes, etc.

A final element for successful manufacturing is making profit with integrity. Here we deal with the subtleties of sales and purchasing. Integrity means “the quality of being honest and having strong moral principles.” From a sales perspective, this means representing your company truthfully by not overcommitting or mispricing. In purchasing, it means seeking the lowest price but not by the lowest means. Let me illustrate. Years ago, I knew a purchaser who padded the company’s pockets by buying knock off ring terminals instead of the name brand called for in the customer’s drawing. In time, the end product began to fail in the field and the customer was rightly dissatisfied. The embroiled purchaser responded by calling in the name brand sales representative to give an account for the failure. This was obviously a set up but only the purchaser knew what was happening. The entire management was seated around the conference table as the purchaser ground into the sales rep demanding answers. Under great duress, the sales rep asked to see the terminal in question and realized by the stamping the terminals were not produced by his company. He immediately revealed the dishonest purchaser before the entire company. What began as a loss of integrity ended with the loss of a customer for the company and job for the purchaser. Oliver Wendell Holmes is attributed to saying, “What lies behind us and what lies before us are small matters compared to what lies within us.”

Indeed, there are three essentials to success in manufacturing: managing people with dignity, producing product with excellence, and making profit with integrity.

If you’re looking for a wire and cable manufacturer who strives for these qualities, then check us out at www.suretechassembly.com

Wes Garner is the Director of Sales for SureTech Assembly. He has worked for a number of contract manufacturers including Flextronics Intl.



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

“Once I helped round up a cow that got loose in a customer’s plant.

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

Customers report something unusual too: Mando’s “can-do” attitude.

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

“Can’t be done” is not in Mando’s vocabulary—either English or Spanish. On his own initiative, he solves problems, leads training classes, helps boost plant efficiencies, and makes lasting friendships while doing it.

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

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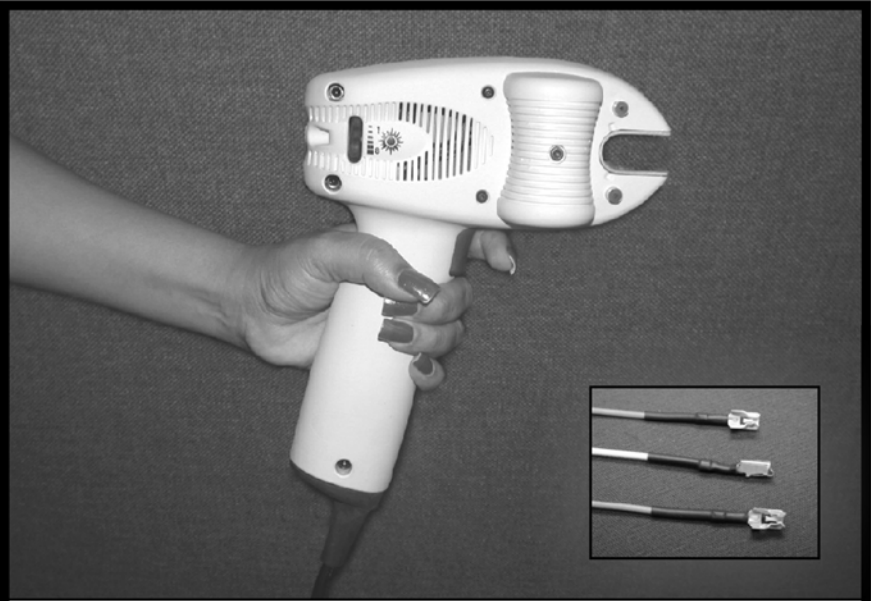


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Focus-Lite™ technology uses radiant energy to shrink heat-shrink tubing in a fraction of the time of traditional methods.

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WIREwisdom™ ANIXTER

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

EXPOSED RUN TRAY
CABLES - U.S.

This Wire Wisdom addresses some of the most frequently asked questions regarding a supplemental rating for type TC, ITC and PLTC tray cables—the ER rating for cables used in exposed or extended runs.

WHAT IS AN ER RATING?

In the 1990s, a new ER rating for unarmored but physically rugged instrumentation, control, and power tray cables was made possible by changes in NEC (National Electrical Code) and UL (Underwriters Laboratories) requirements. The new rating was created for Type TC (tray cables), Type ITC (instrumentation tray cables) and Type PLTC (power-limited tray cables). If these cable types meet certain additional crush and impact test requirements, UL permits the manufacturer to add an “-ER” suffix to the basic listing printed on the cable, i.e., “TC-ER”, “ITC-ER” or “PLTC-ER”.

The “-ER” signifies that the cable is sufficiently rugged to permit its use as extended run or exposed wiring. Exposed wiring is wiring that is not installed in a tray, conduit or other raceway. It is also sometimes referred to as open wiring.

WHY THE INTEREST IN
ER-RATED CABLES?

Tray cable types TC, ITC and PLTC are permitted in cable trays by the NEC. However, if more than 1.8 me-

ters (6 feet) of cable is brought out of the tray for a connection to a motor or other electrical device, cables without an ER rating must be either armored (type MC) or be installed in conduit or some other type of raceway.

Cables with an ER rating, on the other hand, can extend outside the tray if given adequate protection and support. Thus, in some applications, the use of ER-rated cables can eliminate the cost of installing conduit between the tray and an electrical device or the cost of using armored cable.

ER CRUSH AND IMPACT TESTING

Cables are required to meet crush and impact testing to be marked -ER. For the crush test, a cable is laid over a steel rod and a flat horizontal steel plate slowly crushes the cable on the rod. The cable passes the test if, at a particular crushing force, no contact is found between circuit conductors, and no contact is found between a circuit conductor and any shield or grounding conductors.

Passing the impact test requires withstanding the energy of a steel block dropped onto the cable laid over a steel rod without contact of circuit conductors. Momentary electrical contact between circuit conductors or between any circuit conductors and any shield or grounding conductors indicate an impact test failure.



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CABLE MARKINGS

The jacket of ER-rated tray cables must be marked (printed) with the letters “TC-ER”, “ITC-ER” or “PLTC-ER,” as appropriate for the specific cable. Industry codes and standards require the markings so that the electrical inspector at the job site can confirm the cable meets applicable requirements. Prior to 2005, exposed run cables were marked with the words “open wiring” instead of the “-ER” suffix.

GROUNDING CONDUCTOR REQUIREMENTS

TC-ER constructions are required to have an equipment grounding conductor if the cable contains circuit conductors greater than 6 AWG. Cables containing circuit conductors 6 AWG and smaller can select an insulated conductor to use as the grounding conductor per 2017 NEC Section 250.119(B). This can be accomplished by stripping the insulation from the entire exposed length, coloring the exposed insulation green, or marking the exposed insulation with green tape or green labels. Cable types ITC-ER and PLTC-ER are

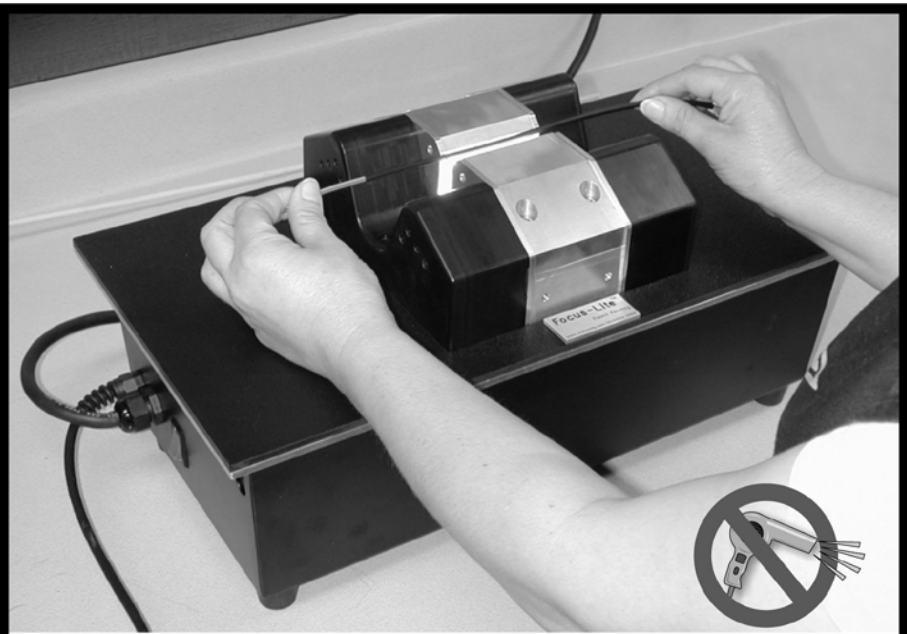
not required to have an equipment grounding conductor.

NEC REQUIREMENTS-SUMMARY

The NEC has several additional requirements that must also be met before ER-rated cables can be used in exposed runs. These include:

- Exposed runs are permitted only in industrial establishments where the conditions of maintenance and supervision ensure that qualified persons service the installation.
- The exposed run must be between a cable tray and equipment, such as a motor.
- Cables must be supported and protected against physical damage using mechanical protection such as struts, angles or channels.
- Cables must be secured at intervals not exceeding 1.8 meters (6 feet).

For further information visit www.anixter.com



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



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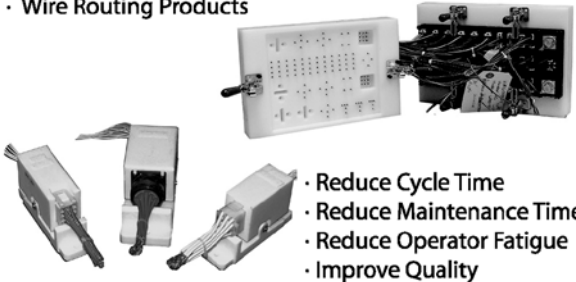
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NEWS PLUGS continued



Indium Corporation Launches New Halogen-Free, Ultra-Low Voiding Indium10.1HF Solder Paste

Indium Corporation has launched Indium10.1HF Solder Paste, a new solder paste specifically formulated to achieve ultra-low voiding in bottom termination component (BTC) assemblies and improve reliability by minimizing voiding and maximizing ECM and head-in-pillow performance.

Indium10.1HF is an air reflow, no-clean, halogen-free, Pb-free solder paste with a flux chemistry



Indium10.1HF Solder Paste

UNIQA-PRO SINGLE CRIMP WIRE PROCESSOR

This lead making machine combines a proven platform, with a cost-effective, multiple station design and a wide range of customer options.

TE Connectivity's UNIQA-PRO Single Crimp Wire Processor is an ideal cost-effective solution for companies looking to ramp up production from multiple bench top machines without making the large capital investment of a double ended lead maker. With this single ended-lead maker, you will be able to save labor costs by measuring, cutting, stripping both ends, and crimping one end of a wire lead all with a single machine.

Features:

- 20% smaller footprint than a typical double ended lead maker.
- The UNIQA-PRO can ramp up your throughput by approximately 4X over a standard wire prep. and benchtop applicator.
- User-friendly PC control.
- Available in three different models to fit your needs: Basic machine with a passive wire collection system, basic machine with a passive wire collection system, crimp force monitor, and terminal scrap chopper, and a high force machine with an active wire collection system, crimp force monitor, and terminal scrap chopper.



Applications:

- Appliance industry
- Medical equipment
- Wire sizes ranging from 12 AWG – 26 AWG
- Anywhere manufacturers want to keep labor costs down without a large capital investment

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engineered to improve reliability with:

- High ECM performance under low standoff components, RF shields without proper ventilation, and components in low-clearance cavities
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Indium10.1HF is compatible with lead-free alloys such as SnAgCu, SnAg, and other alloy systems favored by the electronics industry. This solder paste is halogen-free per IEC 61249-2-21, test method EN 14582.

For more information about Indium10.1HF Solder Paste and other Indium products, visit www.indium.com/indium10.1HF.

Control Cables Pass UL Cold Bend Test & Enhance Temperature Rating

ELGIN, Illinois – HELUKABEL, a leading cable manufacturer, announced that seven TRAYCONTROL family of products have passed the UL -40°C Cold Bend Test and have enhanced their conductor temperature ratings from 90°C dry/75°C wet to 90°C dry/wet.

Electrical cables are exposed to harsh temperature extremes, where both low and high temperature fluctuations impact a cable's performance. The TRAYCONTROL 500, TRAYCONTROL 500-C, TRAYCONTROL

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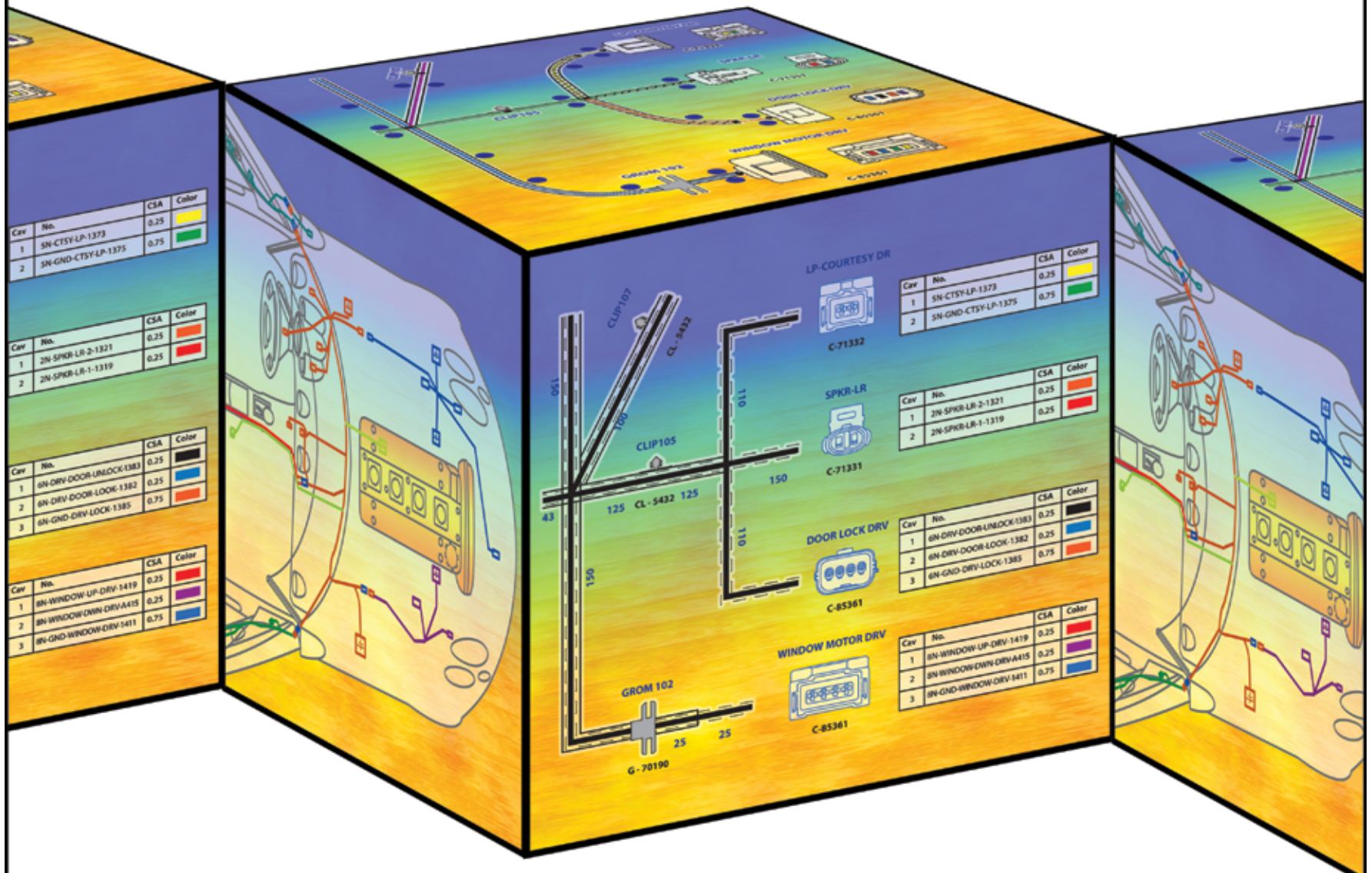
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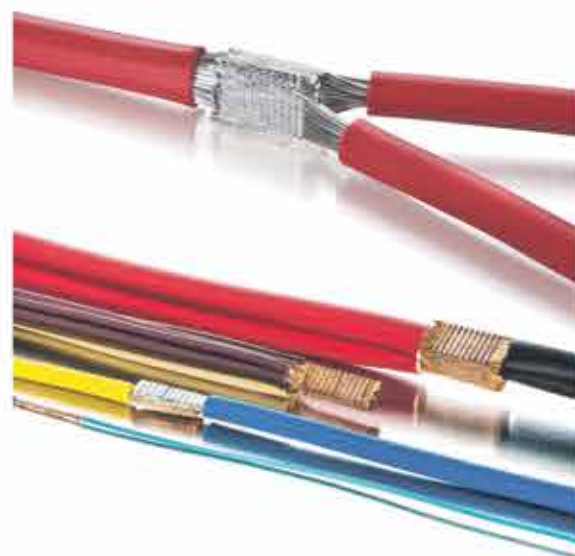
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NEWS PLUGS continued



Continued from page 46

530, TRAYCONTROL 550 TPE, TRAYCONTROL 600, TRAYCONTROL 600-C, and TRAYCONTROL X cable products are now tested in accordance with UL, CSA and NEC for applications where bending in cold temperatures is required in temperatures as low as -40°C (-40°F).

Cold bend testing determines how the entire cable (conductors, insulation, jackets, etc.) might react to cold temperature bending, which is often required when installing or working on electrical cables during cold weather conditions.

Cable samples are frozen to a specified temperature for a set number of hours. Once the freezing process is completed, the samples are wound around a steel mandrel determined by the cables outer diameter. After winding, the cable is removed and examined for surface damage, i.e. cracks, splits, or tears. If there is no visual surface damage, or issues after undergoing further electrical tests, the cable passes the UL cold bend test.

With new innovations in plastics, HELUKABEL is able to offer its TRAYCONTROL products with a UL tray cable, exposed run (TC-ER) 90° dry/wet approval. Products with the 90°C dry/wet ratings allow engineers and integrators to design electrical systems for maximum ampacity without concern for the environment (dry/damp/wet) where the cable will be located.

HELUKABEL's TRAYCONTROL 500, TRAYCONTROL 500-C, TRAYCONTROL 600, TRAYCONTROL 600-C are UL 1277 and 2277 flexible, shielded and non-shielded, oil-resistant (Oil Res I and II) control power cables that have various TC-ER ratings that allow them to be installed in- or outside of a cable tray to connect control panels to machine equipment. The main difference is the coloring of the outer jackets – TRAYCONTROL 500 and 500-C are gray (RAL 7001), while the

TRAYCONTROL 600 and 600-C are black (RAL 9005).

The TRAYCONTROL 530 (PVC) and TRAY-

CONTROL 550 TPE are UL 1277 and 2277 flexible, oil-resistant (Oil Res I and II) control power cables that have a special combination of TC-ER, PLTC-ER and ITC-ER allowing them to be used as connecting cables for AC, DC or control wiring in accordance with NFPA 79. The blue-colored conductors are ideal for machine tool and production line suppliers to the automotive industry.

The TRAYCONTROL X is a NFPA 79 compliant flexible control power cable with cross-linked (thermoset) polyethylene (XLPE) insulation. It is ideal for applications that require long cable runs due to its low capacitance. A higher current load rating is possible due to a conductor temperature resistance of 105°C. The TRAYCONTROL X series is 600 V and WTTC 1000

V rated allowing them to be used in both industrial plant machinery and 1 kV wind turbine cable tray applications.

For further information please visit <http://www.helukabel.com/>



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NEWS PLUGS continued

HELUKABEL Continues International Growth with Two New Branches

HELUKABEL GmbH, one of the leading global manufacturers and suppliers of cable, wires and accessories, is enhancing their global distribution channels by opening local subsidiaries in Mexico and Brazil. “Following our philosophy to ‘Think Global and Act Local’, we have become a reliable supplier to our customers around the world while simultaneously increasing the level local personalized service. Seeing the rising demand for our products in Central and South America meant now is the right time to open our own subsidiaries to grow even closer to our customers,” said Mark Luksch, managing director of HELUKABEL GmbH.

The subsidiaries in Brazil and Mexico are located in the industrial heartlands

of their respective countries, where numerous global companies have already set up operations.

In Mexico alone, there are thousands of global companies and sustainable investments are being made in the automotive and food and beverage industries, to name a few. Both are key markets for HELUKABEL and the central location of the new office north of Mexico City provides access to an excellent infrastructure for supplying diverse industrial regions.

27th and 28th Global Subsidiaries Open in Brazil and Mexico

“With the opening of HELUKABEL Mexico we have now built one cohesive business unit covering NAFTA (Canada, Mexico and the United States). Our customers, especially those that are export-oriented, now have access to a HELUKABEL branch in each country to provide enhanced product availability and the person-



alized service that our customers in each country have grown accustomed to,” said Markus Dannheim, president of HELUKABEL USA.

Fast delivery times and on-site availability also form the basis of the new subsidiary near São Paulo, Brazil. Of the 1,300 German companies based in Brazil already familiar with the HELUKABEL brand in Europe, 1,000 are in São Paulo and the surrounding area.

Despite the current economic downturn, HELUKABEL views its commitment in the world’s fifth most populated city as a long-term one. Many of HELUKABEL’s large international customers have been active in Brazil for years, and in some sectors the local industry has produced several internationally renowned companies, which are supported by HELUKABEL’s worldwide service network.

HELUKABEL® is a German-based manufacturer and supplier of cables, wires and accessories. Combining a vast array of products with a global footprint of 47 sales and production locations in 28 countries, makes us a reliable partner for our worldwide customers

For further information please visit <http://www.helukabel.com/>

SLIMLINE TWIN AXIAL CABLE ASSEMBLIES

Qualified to SFF-8654 specification, SlimLine is one of 3M’s several high-speed assembly products utilizing thin, low profile ribbon cable. In fact, it is lower profile than similar AWG twin axial cables – thus allowing for more packaging configurations and routing options within a server. The product also features foldable ribbon construction, enabling extremely tight bend radii without compromising performance.

Ideal for PCIe (85 ohm) applications, 3M’s SlimLine features signal wire sizes of 30 and 31 AWG and standard lengths of 0.5 meter, 0.75 meter and 1 meter. It is offered in both x4 and x8 configurations, as well as straight and right angle options. Custom folded assemblies available.

- x4 and x8 configurations
- SFF-8654 straight and right angle
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Hand Tool Calibration

Continued rom page 1

and damage, so their performance can vary over time. Wear and damage may affect their performance to the point that they may not be fulfilling the required specifications even though they are still within the warranty period. Many end-users are not

aware that these tools can be adjusted and repaired to compensate for wear and damage so they can be restored to their original performance.

Hand crimp tool users should ask: *What should I do to make sure my crimp tool is performing properly?* The answer is that their tools need proper inspection, maintenance, ad-

justment and certification on a regular basis to insure that their tool is performing properly during its lifespan.

Calibration in the quality world refers to measuring devices so it is technically not correct to use it when referring to crimp tools even though many people do so. It can be used to refer to the adjustment needed when attempting to restore the performance of a tool. Quality professionals use the term “certification” to mean verifying the performance of a measuring instrument at a given point in time, so this can be used to mean that the crimp tool is tested and the crimp results are compared to the manufacturer’s specifications and certified to fulfill them. If it does not fulfill them, then it may be calibrated and recertified until it does meet the specifications.

How can crimp tools be certified? Ideally, the tool should be used to crimp the connector and then the crimped connector should be tested to determine if it meets all of the manufacturer’s crimp specifications. This sounds easy but is impractical to do since complete testing of the crimp is a very elaborate, time consuming and expensive process. So the certification process normally falls into the two less rigorous categories below which require substantially less testing:

1. Measurements of the crimp tool

Many tools are required to fulfill certain measurable specifications. For example, the Thomas & Betts crimp tool p/n ERG4001 has three die nests whose sizes must fall within their published minimum and maximum dimensions. This can be checked with gauges.



TABLE 1

ERG4001 GAGING REQUIREMENTS		
NEST	GAGING MIN. – MAX.	WIRE SIZE AWG
RED	.100 – .103	#22 – #18
BLUE	.117 – .120	#16 – #14
YELLOW	.149 – .152	#12 – #10

Furthermore, a certain minimum amount of handle pressure must be applied to the handles to achieve the ratchet release. This is called “preload” and is meant to insure that the tool will close completely when crimping the terminals. This can be measured with a device like the HTC100 made by Pressmaster AB of Sweden.



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HTC-100 Handtool Calibration Device

Many coaxial crimp tools like the Trompeter CT5 with their various crimp dies can be checked in the same way. If the tool is measured and fulfills these requirements, then it is assumed that it will terminate the connectors specified for use with it to the required specifications. However, no actual crimp test was performed and checked so it is an indirect test of the crimping performance of the tool.

2. Perform actual crimp tests and verify that the crimp results meet the manufacturer’s specifications

This is a more direct test of the tools performance since it evaluates the crimp results directly. Many crimp results can be verified by measuring the conductor crimp height and width (primarily for stamped and formed open-barrel type of terminals) and by performing a pull test. One can perform both tests on an open barrel terminals but usually only a pull test is conducted on other types of terminals such as insulated terminals. The assumption is made that if the crimp results fulfill these specs, then they will fulfill all of the rest of the requirements that are not being tested.

Since crimp tools are subject to wear, most high quality crimp tool manufacturers like Pressmaster AB of Sweden recommend that their tools should be inspected, maintained, certified, and adjusted and recertified if needed every 6 months or 6000 crimp cycles. Many end users mistakenly think it is sufficient to check their tools once a year and they fail

to appreciate the need to check them based upon usage.

End-users tend to forget the need to lubricate their tools and to keep them clean. These two factors have a great impact upon the wear of the tools and therefore, on their crimping performance, yet it is commonly ignored by end users.



Source: Artos Engineering Co.

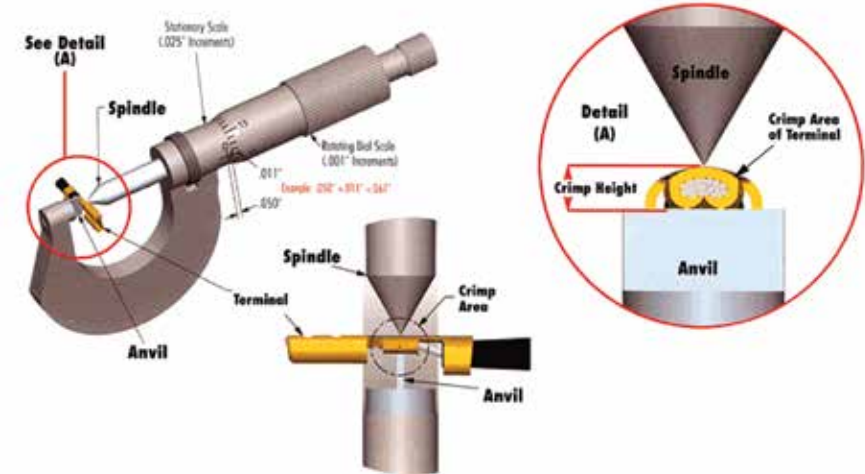
Example of Wire Pull Tester

While it is possible for end-users to perform the maintenance, repair, adjustment and certification testing themselves, it is time consuming and many of them do not have access to the necessary gauges and equipment to do this. Furthermore, they may not have the knowledge and experience that factory trained professionals have to perform this work correctly. This is why end users should use a specialized tool maintenance, repair and certification company like CrimpToolExperts to perform these services for them on a regular schedule. End users can avoid many problems by making sure that their tools are always in good condition and perform properly, so the costs to have them professionally maintained can result in cost savings and improved quality.

CrimpToolExperts can also supply a calibration sticker on the tool and a certificate of calibration, which many companies require as proof that their tool has been certified.

For more information about CrimpToolExperts, please contact them at info@crimptoolexperts.com.

Tom Andrasek is General Sales Manager for the Americas region of Pressmaster AB, one of the world’s leading designers and manufacturers of high quality crimping tools. You can reach him at tom.andrasek@pressmaster.se.



Source: ETCO Inc.

Example of crimp micrometer used to measure crimp heights

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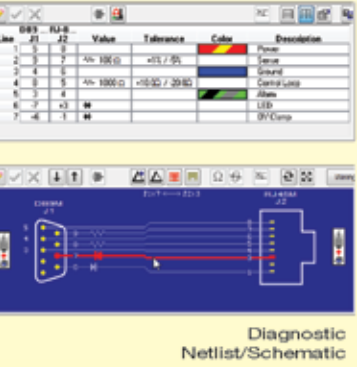
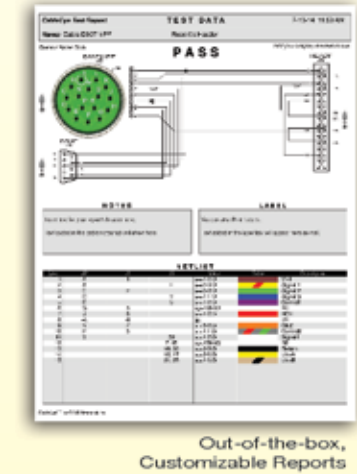
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GUI	Schematic, Netlist
Export Files	csv, xml, Excel, Archival Data-Logging

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NEWS PLUGS continued



NEW Flat Cables for a Round World Video

Cicoil, a leading manufacturer of high performance Flat Cables, is

pleased to announce its newest video: “Flat Cables for a Round World”. This Informational tutorial illustrates the multiple advantages of using Cicoil’s EZ-Flexx flat design concept in place of multiple round cables. View the broadcast here: <https://www.cicoil.com/videos>.

For years, Cicoil only offered a standard flat profile cable design,

which limited its use in some markets that required round cables. To meet these new needs, Cicoil developed a new easy to use, flat contoured cable named EZ-Flexx, that could be utilized in round cable applications. Unlike, the standard flat cable designs, this new concept incorporates Round Components which can be easily split apart from the main cable body, are easy to strip, are thinner, weigh less, and extremely easy to work with.

Cicoil’s patented computer-controlled extrusion process allows various individual round components, such as power conductors, twisted shielded pairs, and even tubing, to be placed in a flat parallel profile, precisely controlling the spacing of each component, insulation thickness and the overall cable shape. This ensures that each of the internal contents do not rub against each other and wear during operation.

Additional videos in the series will include: “A History of Innovation”; “Mission Critical Flat Cables”; “Standard Cicoil Flat Cables Overview” and “Top 5 Reasons to use Flat Cable (vs round cable)”. If you would like to learn

more about our Innovative Flat Cable Technology and how Cicoil developed the First IDC Ribbon Cable, helped put a Man on the Moon, and designed the first Class 1 Clean Room Cable, please contact our office at 661-295-1295 to discuss your application or to set up an on-site visit to your location.

Cicoil’s quality assurance system is certified to the ISO 9001 (AS9100) standard. Visit www.cicoil.com for more information, or call 661-295-1295 to speak to an application engineer.

Positronic Appoints Air Electro as an Authorized Distributor

Positronic, a global manufacturer of high reliability electronic connector products based in Springfield, Missouri, has appointed Air Electro, based in Chatsworth, California as an authorized distributor for the full line of Positronic products in the North American market.

“Air Electro brings over 60 years of experience in many of our core markets”, states Positronic VP of Sales & Marketing, John Grimm. “We are excited to partner with Air Electro given their proud commitment as specialist in the distribution of electrical connectors, contacts and accessories,” he added.

According to Air Electro President, Steven Strull, “Air Electro is very pleased to be part of the newly established network of authorized distributors for Positronic in North America. We believe the synergies and shared market focus will be the backbone of a solid business partnership for years to come.”

Air Electro is now authorized to sell the entire Positronic connector product offering, which includes power and hybrid, D-sub, rectangular, modular and circular connectors. Many configurations of these series types will be stocked in the Air Electro warehouse in southern California and available for immediate shipping. Customized or tailored solutions are available as well. To learn more about Positronic products available from Air Electro, visit www.airelectro.com Founded in 1966, Positronic is a global manufacturer of highly reliable electronic connectors known for distinctive core capabilities, including solid machined contacts with low resistance/high conductivity for use in standard and quick-turn custom connectors.

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2018 WHMA Conference

The 25th annual WHMA Wire Harness Conference will be held February 13-15, 2018 at the Scott Resort and Spa in Scottsdale, AZ.

WHMA Chairman of the Board, Rick Bromm of Altex, says the conference will focus on the important role wire harness and cable manufacturers play in a variety of business sectors. “We have members involved in medical devices, aerospace and defense, electronics – whatever the sector – our members are committed to high quality manufacturing. Our conference is an annual opportunity for the membership to gather and learn the latest trends in our industry and to share ideas with each other.”

Toward that end one of the major presentations at the conference will feature Winn Wise, President of Southwire’s OEM Division. He will address the current and future state of the wire and cable industry. Southwire’s utility cable and building wire carry electricity to wherever it is needed. One in three new homes built in the United States contains wire made by Southwire.

This year’s keynote presentation will be made by Burgess Owens, a Super Bowl Champion, Conservative Thought Leader, Media Contributor and Best Selling Author.

Burgess played as a defensive back on the 1982 Super Bowl Champion Oakland Raiders. Since retiring from the NFL, Burgess has been involved in a variety of corporate and entrepreneurial endeavors. A regular contributor to Fox News, Burgess is the best selling author of “Liberalism: Or How to Turn Good Men into Whiners, Weenies and Wimps”.

Other topics to be covered during the conference include: keys to successful mergers and acquisitions, addressing the workforce development problem facing our industry, ways to use the A-620 standard as a competitive advantage, risk management and operational best practices.

According to WHMA Executive Director Jim Manke, WHMA members who attended recent conferences have requested more time to share business ideas with each other. “As a result of that member input, we have expanded our

Roundtable times for this year’s conference. These nuts and bolts discussions are invaluable.”

Of course, no WHMA Conference would be complete without some fun. The golf outing will be held at Eagle Mountain, consistently rated as one of the top 50 public golf courses in America.

And, back by popular demand, is an evening at the Octane Raceway. This Go-Kart Track is the country’s only indoor/outdoor track. Two year’s ago this activity got everyone’s competitive juices flowing to see who could be king or queen of the track!

To register for the conference go to: <https://annualconference.whma.org/> or contact the WHMA office at 763.235.6488.

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NEWS PLUGS continued



Sonobond Ultrasonics' Battery Assembly Capabilities Expand to China

Company's Metal Welders Accommodate Manufacturers' Requirements With Reliable, Cost-Effective and Eco-Friendly Results

Sonobond Ultrasonics' battery assembly equipment is now in use in China as manufacturers worldwide advance innovative renewable energystoragetechnologyforconsumer, automotive, military and industrial

applications. Bolstered by Sonobond's recent participation in the China International Battery Industry Fair, and supported by the company's new Wuxi, Jiangsu, China-based sales agent Wen Zhang, Sonobond's ultrasonic technology has been embraced by several of the country's manufacturers.

"Increased demand for affordable and efficient battery storage, as well as for rechargeable batteries, has boosted manufacturers' awareness of our ultrasonic assembly method," notes Janet Devine, Sonobond president. "Companies are especially interested in the ability of Sonobond's equipment to weld multiple anode and cathode

foils to tabs, and stranded copper wire to terminals.

This increased interest in Sonobond's ultrasonic assembly technology was also evidenced at the recent Battery Show Exhibition & Conference, held in Novi, Michigan. Visitors to Sonobond's booth were impressed with the quick, easy welding process of the SonoWeld® Ultrasonic Spot Welder and the durable results.

"We have already received several requests to produce sample welds, which we gladly offer at no charge," notes Devine.

Any manufacturer can take advan-

tage of Sonobond's free Ultrasonic Welding Viability Test. Using manufacturer-provided materials, Sonobond produces no-cost, no-obligation sample welds to determine the benefits of ultrasonic welding for their specific applications and requirements. If Sonobond's equipment is incorporated into the customer's production process, service and technical support are provided before, during and after installation.

Ultrasonic Welding with Sonobond Technology

Sonobond's welders achieve durable bonds by employing the company's unique, patented Wedge-Reed ultrasonic bonding system that com-

bines high vibratory force and low amplitude coupling. Using shear mode vibration parallel to the welding surface – while the line of force is directly over the parts to be welded – the welders achieve precise, dependable, solid-state and highly conductive welds. No external heat, current, fluxes or fillers are required and no arcs, sparks or fumes are produced. Additionally, the Wedge-Reed is the only ultrasonic metal assembly system that can weld most oxidized and tinned metals in one pulse and without pre-cleaning.

Sonobond produces two ultrasonic spot welder models that join multiple layers of foils to tabs or terminals, and accommodate battery pouch assembly and HV termination welding.

The SonoWeld® 1600 and Dual Head Spot (DHS) Welders join foils as thin as seven microns without tearing. The SonoWeld® 1600 unit outputs 1,500 to 2,500 watts of power to join non-ferrous similar or dissimilar metal assemblies, including copper to aluminum, and multiple layers of foils to tabs and terminals for lithium-ion and NiMH battery assembly.

The Dual Head Spot Welder features two ultrasonic welding heads; one on either side of the welding area for increased welding capacity. It is the first ultrasonic welder



PRE-CRIMPED LEADS

Molex's range of pre-crimped leads offers a simple and cost-effective solution for any pre-production and prototype requirements. Available for the most popular Molex connector families, the leads are offered in female-to-female and male-to-male configurations and lengths of 150mm and 300mm.

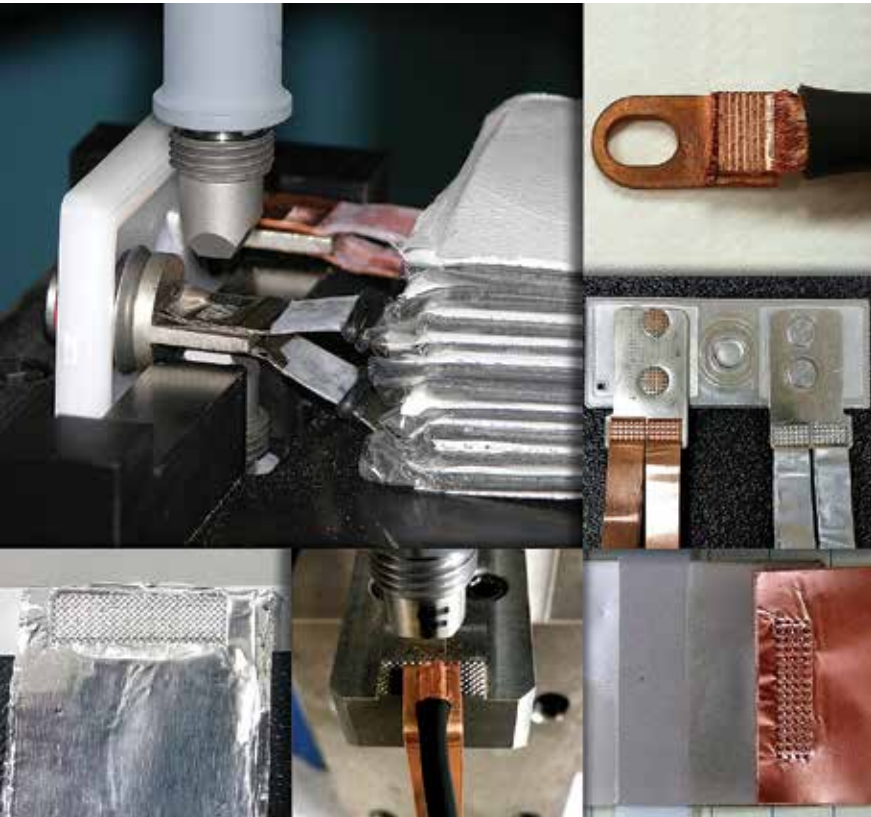
The Pre-Crimped Leads are crimped on both ends, which makes them suitable for wire-to-wire applications and when cut in half, wire-to-board applications. The UL listed cables assure high-quality approved materials.

Features Include:

- Pre-crimped and fully tested cables
- Available in 150mm and 300mm lengths
- Leads crimped on both ends
- UL listed cables

Applications Include: Commercial Vehicle, Consumer, Data/Computing, Medical

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A collage of Sonobond Battery Welds

to join up to 100 layers of copper or aluminum foils without tearing and in just one pulse. The Dual Head Spot Welder also attaches wires to terminals; welds non-ferrous sheet metal, including aluminum, up to 3mm thick; and accommodates lightly tinned or oxidized wires. The unit uses Sonobond’s 3,500-watt power supply.

Both Sonobond ultrasonic spot welders have built-in, microprocessor-controlled systems that allow automatic frequency control, overload protection, and storage and recall of up to 250 protocols. Digital displays permit selection of welding modes by time, energy or height. The units use heat-treated, tool steel Taper Lock Tips that perform up to 30,000 welds before redressing is required, and as many as 100,000 welds before being easily removed and replaced, without recalibration. As with all Sonobond equipment, the spot welders require only minimal training.

Assisting Manufacturers in Producing Innovative Battery Storage

“Experts predict that in the next few years, the worldwide market for batteries providing stationary energy storage will grow from about \$1 billion to approximately \$6 billion, as reliance on alternative energy sources increases,” notes Devine. “Storage batteries will become essential for backup power. Sonobond looks forward to assisting battery manufacturers as they continue to develop new formats for home and utility-sized energy storage systems, as well as new types of rechargeable batteries.”

Pioneering Ultrasonic Technology

Innovation, performance and service have made Sonobond the industry leader in ultrasonic welding technology for nearly six decades. Founded in 1960, Sonobond (then known as Aero-projects), received the first patent for ultrasonic metal welding. Since then,

the company has received more than 150 additional patents for metal welders and custom-engineered ultrasonic bonders of all types. Manufacturers in the automotive, appliance, filtration, HVAC, apparel, aerospace, medical, electronic, electrical, photovoltaic, and ballistic vest/body armor fields use Sonobond products.

For details on submitting materials for a free Ultrasonic Welding Viability Test; to view Sonobond’s Metal Spot Welding video; or to download free technical data sheets on the SonoWeld® 1600 and Dual Head Spot Welders, please visit the Sonobond website at www.sonobondultrasonics.com. For immediate assistance, call 800-323-1269 or contact

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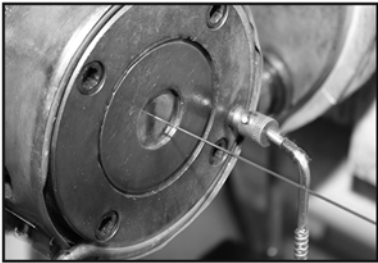
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Wisconsin Company Uses Total Cost of Ownership Model - Wins First National Reshoring Award

Mitchell Metal Products of Merrill, WI has received the first National Reshoring Award in recognition of the company's success bringing manufacturing back home to the United States. The award, given by The Reshoring Initiative and the Precision Metalforming Association (PMA), honors a company that has effectively reshored products, parts or tooling made primarily by metal forming, fabricating or machining.

Mitchell Metal Products was se-

lected after using reshoring to complete more end products with less lead time. In 2016, the company manufactured a cultivator handle subassembly product, increasing the production volume from 4,500 made overseas to 30,000 made in Wisconsin.

"We are thrilled and honored to receive the first National Reshoring Award," said Tim Zimmerman, president of Mitchell Metal Products. "By utilizing the total cost of ownership approach pioneered by The Reshor-

ing Initiative, we have won a number of value-added contracts and brought work back home. We are proud to be delivering high-quality products to our customers and creating good jobs here in Wisconsin. Right now, eight percent of our workforce is employed because of products we have helped to reshore."

The award was presented in Milwaukee, Wisconsin, on September 28, 2017, at Sourcing Solutions™, a popular procurement program hosted by PMA. This premier sourcing

event brought together buyers and engineers from top manufacturing companies with pre-screened suppliers, enabling companies to find the most competitive resources for their projects.

The 2018 National Reshoring Award will be presented next fall during Sourcing Solutions. Additional details about the event will be available in early 2018.

"We are proud to be a sponsor of the National Reshoring Award and to

celebrate companies who are contributing to the strength of the American manufacturing sector," said Allison Grealis, vice president of membership and association services at PMA. "Through Sourcing Solutions and other efforts, PMA is committed to supporting manufacturers in their quest to find local, competitive suppliers and keep work here at home."

"I was delighted that the winning product was a relatively conventional item, instead of being an advanced aerospace or electronics component," said Harry Moser, founder and president of The Reshoring Initiative. "Mitchell's success demonstrates that large portions of offshored work are eligible to be reshored."

Questions about the first National Reshoring Award can be directed to Harry Moser at 847-726-2975 or harry.moser@reshorenow.org.

Founded in early 2010, The Reshoring Initiative takes action by helping manufacturers realize that local production, in some cases, reduces their total cost of ownership of purchased parts and tooling. The Initiative also trains suppliers how to effectively meet the needs of their local customers, giving the suppliers the tools to sell against lower priced offshore competitors.

AMP-O-LECTRIC MODEL G II TERMINATOR

TE Connectivity's (TE) Model G II is the latest and most advanced design in the long-standing series of their AMP-O-LECTRIC machines for terminating wire using reeled terminals and contacts. This unit is designed and built to continue the tradition of work-horse terminators from TE.

The new terminator improves key performance areas for operators. For operator convenience, TE improved access to, and significantly updated, lighting in the under cabinet and target area. A variable speed option was also added to provide more flexibility for those complex applications that benefit from slower ram and feed speeds.

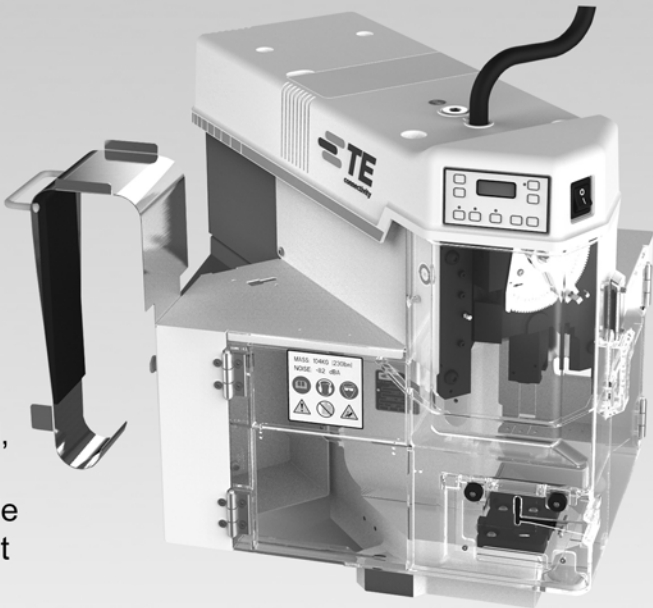
The Model G II terminator is one of the quietest machines available and the improved guarding meets applicable CE and domestic safety requirements. The improved guarding also creates open access for quick and smooth installation of both end-feed and side-feed applicator styles.

User Friendly

At the push of a button, you can power the motor on or off, jog forward or reverse, switch to split-cycle operation, turn the work light off or on, power the air feed on or off, or reset the batch counter. And, it's all reported on an LCD display. The controls will also detect and report errors in the machine, and stop cycling when a bad crimp is detected by the CQM II. The operator must then push the reset button to continue. The Model "G II" will accept all existing TE miniature applicators.

Product Features

- Quiet operation
- Improved guarding and lighting
- Tool-less changeover of applicators
- Precision manual adjust for crimp height
- Total and batch counter
- Accepts all existing TE applicators, with minor modifications
- Reduced maintenance requirements
- Split-cycle operation
- Standardized 1 5/8 [41.3] stroke
- Operates on either 120 or 220 VAC, 50 or 60 Hz



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More Than 50% of Electrical and Electronic Engineering Product Designers say PLM Systems Have Limited Suitability for Their Specific Requirements

By Verena Bunk, Senior Analyst,
Techconsult GmbH, Kassel

Techconsult GmbH, Kassel – Electrical and electronic engineering product designers spend an economically unsustainable 45% of their time on administrative activities, according to the report “Design Data Management in Electrical and Electronic Engineering”, produced by techconsult.

One of the main reasons is insufficient management of design data and component libraries. However, PLM systems are not seen as the ultimate solution for managing these issues and winning back time, with 52% of those using PLM systems to manage electrical and electronic engineering data rating their systems as being suitable, but with limitations. When questioned further, 77% of respondents did not believe that a PLM system would help them work more productively.

Key results – Survey of electrical and electronic engineering product designers

- 52% have doubts about the suitability of current PLM environments for their specific requirements.
- 39% need to better coordinate mechanical and electronic engineering activities.
- 52% cited growing product complexity as their greatest challenge.
- 45% see a need to implement end-to-end digital processes from sales to engineering and production.

Winning back time to deal with increased design challenges

Technologically advanced industries such as mechanical and plant engineering, transportation (including aerospace), electrical engineering and electronics are facing a highly competitive global marketplace characterized by shorter product lifecycles, growing product complexity and the digitization of business and manufacturing processes.

In many design departments administra-

tion and documentation activities, which arise during engineering processes, take far too long. Indeed, engineers were found to spend 45% of their time, on average, on supporting activities – taking away from them time they could be spending on design and innovation.

“This distribution of engineers’ time needs to improve for companies to continue to be successful; for optimized development processes leading to increased productivity. In every design project a huge amount of data is generated and, with growing product complexity, this will only increase. So design engineers need access to solutions that allow them to manage large volumes of data and retrieve up-to-date information when it is needed,” said Verena Bunk, Senior Analyst at techconsult.

Continued on page 60

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More Than 50% of Electrical and Electronic Engineering Product Designers say PLM Systems Have Limited Suitability for Their Specific Requirements

Continued from page 59

Engineering data management solutions

Solutions for effective engineering data management could support engineers in their day-to-day work by making processes more effective and allowing them to focus more on their core activities. When asked whether PLM systems were likely to help with this, 77% of respondents did not expect to work more productively using a PLM system. Engineers perceived PLM systems as complex and requiring duplicate data entry, and there is also the expectation that the specific requirements of engineers of all disciplines would not be adequately considered. Indeed, 62% expected additional overheads due to the manual data entry required to maintain different systems.

Industry challenged by growing product complexity

Respondents, who were primarily engineering team leaders, R&D directors, product managers and project managers, cited product complexity as their greatest challenge in electrical and electronic engineering (52%), followed by the need to increase design productivity (46%) and increase design reuse (45%). Almost half, 45%, see a need to implement end-to-end digital processes from sales to engineering and production, while 39% need to better coordinate their mechanical and electronic engineering activities.

However, the majority of companies do not have a dedicated solution in place to support and control engineering activities. The result is a growing non-productive overhead for engineers, taking away valuable time for core engineering activities.

These factors combine to create substantial economic issues.

About the Survey

The survey: “Design Data Management in Electrical and Electronic Product Design” was designed and conducted by techconsult GmbH on behalf of Zuken GmbH. 163 leading manufacturing companies in Germany, Austria and Switzerland were surveyed about the design of their electrical and electronic engineering assemblies and systems. The sample covered technology-intensive industries such as mechanical and plant engineering, vehicle construction including the aerospace industry, electrical engineering and electronics. Only companies of all sizes with an annual turnover of 80 million euro and more were considered.

About techconsult GmbH

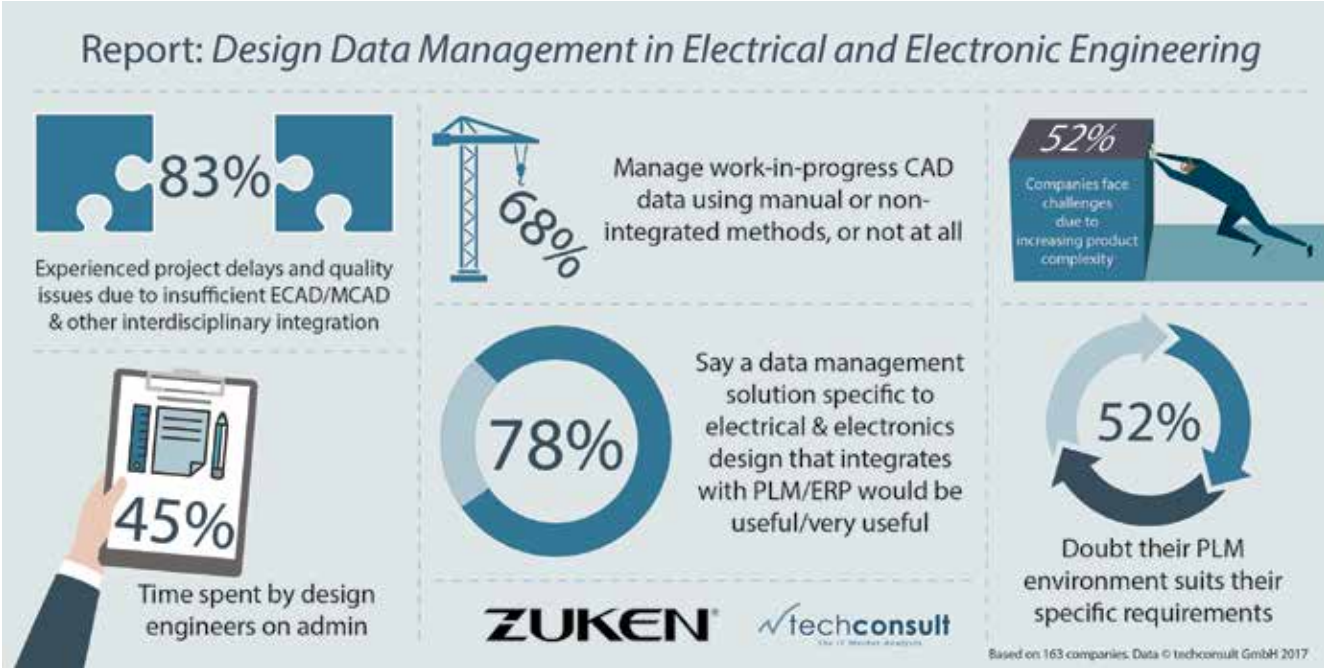
Research and analyst firm techconsult has been the partner for suppliers and consumers of digital tech-

nologies and services for 25 years. Conducting analyses at businesses provides an insight into their problems and their future visions regarding the use of information technologies. More than 20,000 interviews conducted with business and IT decision makers each year provide an accurate impression. Additionally, techconsult continuously screens suppliers’ products and services to provide strategic and implementational consulting to the IT industry and business users. For a number of years techconsult has been providing specialized assessment tools to business and IT decision-makers for the identification of problem areas and conducting positioning analysis. techconsult GmbH is headed by managing partner and founder Peter Burghardt with offices located in Kassel and Munich. The company is part of the Heise Group. You can contact the author at verena.bunk@techconsult.de, and learn more about techconsult at www.techconsult.de.s

About Zuken

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Safety is a Team Sport

Harnessing the Untapped Power of Teams for Safety in a Multi-Generational Environment

By Carl Potter, CSP,
The Safety Institute

Groupthink can lead to a strong safety culture, yet leaders must be aware of this condition and exercise diligence to leverage the power of a team that has strong opinions about safety. One of the most significant negatives of groupthink is the tendency to alienate those who are not part of the group. An aspect of the workplace that is related to groupthink is multiple generations.

Multi-Generational workplaces are the norm in workplaces. Most workplaces have four generations present (baby boomers, including people from the following groups:

- Baby Boomers – born 1946-1964
- Gen X (Baby Bust) – born 1965 – 1979
- Gen Y (Millennials) – born 1980 – 2010
- Generation Z – born 1996 – 2010

Some workplaces may include Traditionalists (those born prior to 1946), making FIVE generations at work! Each generation has differences and similarities that create the need for leadership awareness. There’s a lot of research on generations in the workplace that you can

get your hands on and I encourage you to do so. I want to devote the rest of this article to some important points about generations that impact safety that come from my observation in my consulting work with numerous clients.

I’ve learned that people in every generation are strong contributors yet there are some distinct differences with regard to authority. There seems to be an invisible continuum from Traditionalists to Generation Z with older, more seasoned, workers not being as comfortable with authority as younger workers. One study showed that traditionalists respect authority because of position and Generation Z believes respect must be earned – and once earned they will honor authority. Workers in the Gen X, Y, and Z are more comfortable interacting with, even challenging, authority than are Traditionalists and Boomers. Combine this with the notion that Traditionalists and Boomers tend to lean on their experience and Gen X, Y, and Z workers rely on education over experience. This can make some lively debates in safety meetings and maybe even lead to workers ‘choosing up sides’ based on generational demographics. Sometimes these “sides” can feel like blockades if you are responsible for rolling out a new rule or work practice.

There is hope, but it’s important to build an elite safety force through team building. The primary piece of advice I have to share on this topic is to LISTEN and encourage listening. Multiple generation workforces can be extremely powerful when experience meets education and vice versa. Along with listening comes learning.

One way to foster listening and learning is through conducting discussion groups and peer-to-peer discussions. Research shows that the desire to communicate in these two types of interactions is a commonality among all the generations. (if you need help establishing or learning more about these types of communications, let me know.)

Make it a point to model your openness and willingness to listen and learn from those of all generations. You will find others following your example.

The constraints of this newsletter don’t allow deep or adequate explanation and discussion of the impact generations, their unique characteristics, differences and similarities, and relation to safety. I hope you will do some digging on your own to learn more about generations. Some recommended books on the topic are:

Generations at Work: Managing the Clash of Boomers, Gen Xers, and Gen Yers in the Workplace and Sticking Points: How to Get 4 Generations Working Together in the 12 Places They Come Apart. As with any good read, you will find things you agree with and others you don’t, but you can always learn something new that applies to your environment.

As a developing leader, model these behaviors:

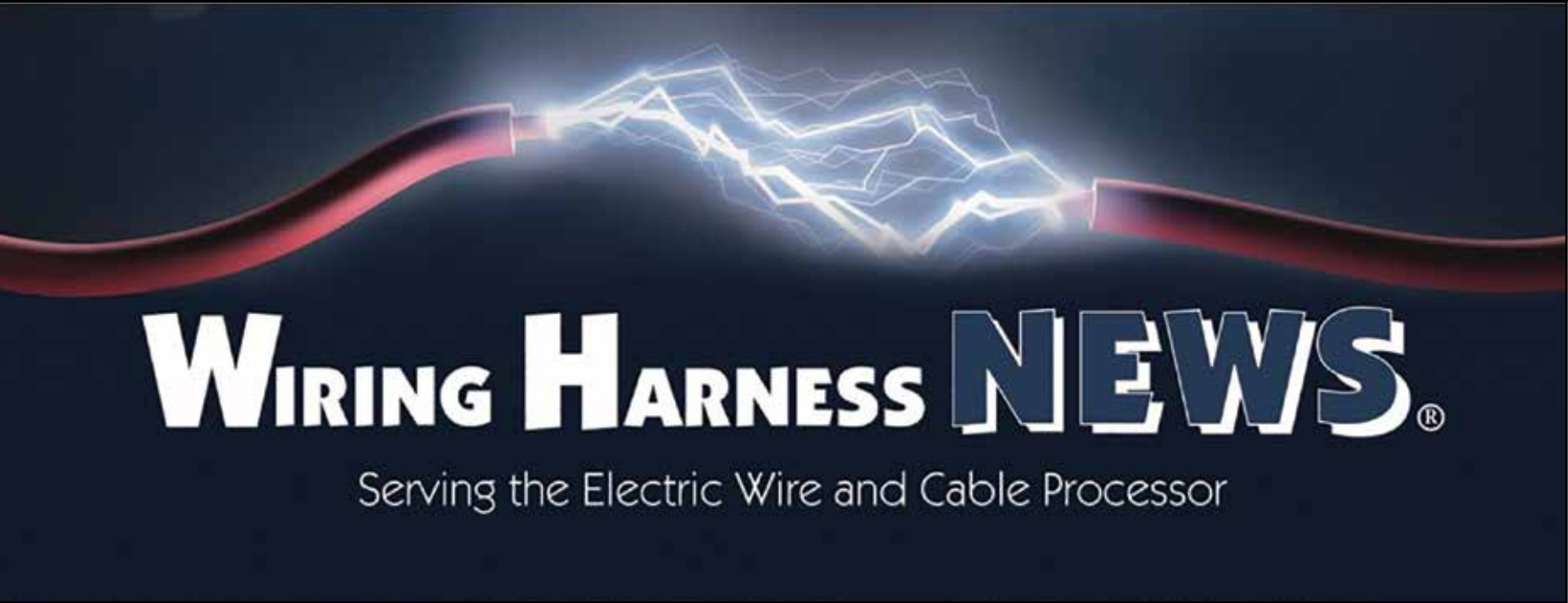
- Demonstrate that you are willing to listen to people from each generation and to learn from them.
- Make it a practice to incorporate diversity of generations in major projects, leading safety meetings, developing new safety rules and training.
- Be intentional and your likelihood of success will increase exponentially.

You will also find that the combination of experience and education of various generations can lead to safety improvements that will make it difficult to get hurt at work.

For more information from The Safety Institute, or to receive their newsletter, call 800.259.6209 or email nona@safetyinstitute.com.

Profiling??

We do it all the time. Each issue, we interview a harness manufacturer, covering their history and some of the things that make them stand out. If you would like your business profiled, contact Joe Tito at joe@wiringharnessnews.com



IPC APEX EXPO 2018 Educational Programs Highlight Technology’s Accelerating Speed of Change

Changing technologies that are driving the electronics industry will take center stage throughout the IPC APEX EXPO 2018 technical conference and professional development sessions, which will take place February 24-March 1 at the San Diego Convention Center in San Diego, California. Registration is now open at www.IPCAPEXEXPO.org.

In keeping with the event’s theme, “Succeed at the Velocity of Technology,” the technical conference will feature approximately 80 technical papers detailing original research and innovations from industry experts around the world. Subject-matter experts will cover topics in the areas of board fabrication and design, electronics assembly and test.

“As the importance of automation and data exchange in manufacturing grows at an exponential rate with increasing miniaturization of assemblies and the assembly of new components, the complexity of design increases, so designers and engineers need to keep current. Which is why the industry needs the education that IPC APEX EXPO 2018 will offer,” said Jasbir Bath, IPC APEX technical conference director. “Our programs are not theoretical—they’re grounded in, and driven by, real-world application that’s happening right now. IPC APEX EXPO 2018 attendees will access new research on materials and processes, learn more about trending materials, applications and processes such as Industry 4.0 and wearables and address real-world problems. Industry experts teach the practical to help attendees succeed at their job,” Bath added.

IPC APEX EXPO’s full- and half-day professional development courses will blend traditional electronics industry topics with hot-new developments, delivered by corporate technologists, consultants, training center staff and university faculty. Attendees can choose an array of leading topics such as: PCB fabrication troubleshooting; dispensing/jetting; printing; manufacturing yield, defect analy-

sis, failure analysis; reliability and design for excellence (DFX).

In addition, IPC APEX EXPO features many free activities, including technical BUZZ sessions, poster presentations and an opening keynote on “Game Changers: Technology and the Next Big Disruptions” by founder and director of Google Ideas at Google and now CEO of Jigsaw, Jared Cohen. The highly popular New Products Corridor and a new networking event on the show floor will be featured along with more than 450 of the industry’s top suppliers. Access to the exhibit hall, which is currently 95 percent sold, is free to those who

register in advance, a savings of \$40 on-site.

More information about IPC APEX EXPO 2018, including details on education and technology, networking opportunities, show floor activities, schedule, travel and more is available at www.IPCAPEXEXPO.org. Registration is now open, and the show floor more than 95% sold!!

IPC (www.IPC.org) is a global industry association based in Bannockburn, Ill., dedicated to the competitive excellence and financial success of its 4,200 member companies which represent all facets of the electron-

ics industry, including design, printed board manufacturing, electronics assembly and test. As a member-driven organization and leading source for industry standards, training, market research and public policy advocacy, IPC supports programs to meet the needs of an estimated \$2 trillion global electronics industry. IPC maintains additional offices in Taos, N.M.; Washington, D.C.; Atlanta, Ga.; Brussels, Belgium; Stockholm, Sweden; Moscow, Russia; Bangalore and New Delhi, India; Bangkok, Thailand; and Qingdao, Shanghai, Shenzhen, Chengdu, Suzhou and Beijing, China.

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