

This Issue Features:

- Wire Wisdom
- Growth Can Kill
- ‘Change Management’ is an Oxymoron
- Primer in Diagnosing Crimp Applicator Issues
- New Standards for Wire Management Products
- The Power Women of the Wire Harness Industry
- IPC More than 60 Years Setting Standards for the Electronics Industry



From Distribution to Harnesses: Marsh Electronics/MarVac Assemblies

By Joe Tito
Wiring Harness News

It’s rare that we get to speak with a company that has been around for 80 years, but such is the case with Marsh Electronics. In an interview with WHN, Steve Banovich, Managing Partner for Marsh Electronics, and Scott Morris, Assembly Specialist, spoke about the history of Marsh Electronics and the development of MarVac Assemblies as Marsh’s value-added division.

Marsh Electronics was started in Milwaukee in 1937 by Earl Marsh as an electronics distributor. “In the early days, there was a lot of walk-up counter business selling things like vacuum tubes for radios, amplifiers, test equipment, and later TVs,

Radios, CB’s, antennas etc.,” described Steve, “and then it grew into more of a general electronics distributorship.” His father, James Banovich went to work for Marsh Electronics right out of high school in 1956. He served in many different capacities through the years, and eventually became Vice President. In the early 90s, James actually purchased the company. “During that time, Marsh really went through some considerable growth, reaching that next level, which was the \$50 Million mark,” Steve recalled.

During the 1990s, there was a lot of consolidation in the electronics distribution industry. “There were a lot of mergers and acquisitions going on and due to some supply chain changes, my dad decided it would be best to team up with a larger entity,” Steve said, “so we were purchased



MarVac Assemblies birds-eye view.

in 1996.” The resulting larger company was then sold in a short period of time, and the Marsh identity became smaller and smaller. “Marsh was about to be rolled up into that final acquisition, and probably would have gone away,” he said. Still serving as President, James Banovich, along with long-time business partner John Casper (current President, and manager partner), who was instrumental in the deal, carved out a piece of the company specializing in passive components. They negotiated a successful buyback in 1998.

Through the years, Marsh Electronic’s distribution business centered on passive and electromechanical components. “Whether through distribution or through the cable assembly side, we’ve always been

primarily dealing with [these] components,” Scott explained. “We are not competing with the Avnets or Arrows,” he informed. “We sell what I like to call rocks and sticks...relays, connectors, terminal blocks, and the electromechanical stuff that you still need in many applications.” He joked, saying, “We don’t sell anything with more memory than I have!”

It is this specialty that paved the way for the development of MarVac Assemblies, the cable assembly and value-added arm of Marsh. “We’d been doing some type of component prep going back to the 1970’s,” mentioned Steve. It started small with various value-added services. One of the main ones was building custom potentiometers. A particular product

Continued on page 40

TECH-SONIC’S Servo Technology Adds Versatility to Ultrasonic Welding

Ultrasonic welding has gained wide popularity in wire termination and splicing applications, especially in the high-volume production automotive arena. While the basic technology is not new, many companies have strived to differentiate themselves with features and benefits. TECH-SONIC has chosen a somewhat radical path from the typical pneumatically actuated platform with their servo motor controlled systems. In a recent conversation, Byoung Ou, Founder and CEO, and Frank Myers, Sales and Marketing Manager at TECH-SONIC, spoke about the company’s history along with the development and advantages of servo technology.

Byoung started the company shortly after graduating with a Master’s Degree in Welding Engineering from Ohio State, one of the few universities offering such a degree. “I had

a company in Asia who had a lithium ion battery application, so we got involved with ultrasonic metal welding from the beginning,” he mentioned. The company then began development in the wire harness industry with machines for wire splicing and termination.

“One similarity for all units at that time was they were actuated pneumatically,” Byoung recalled. In 2009, he and his team were awarded funding from the state of Ohio for the development of metal ultrasonic welders actuated by servo motors. “The process was previously used in plastic ultrasonic welding, but we were the first to implement the technology for metal welding,” Byoung explained.

Frank then highlighted some of the main advantage of servo technology. “Foremost is the ability to

Continued on page 27

Mecal by Starn Strengthening Customers Through Training

Proper training is key to enhancing equipment lifespan and efficient product flow. Nowhere is this need more important than with crimp applicators in a wire harness facility. Several years ago, Mecal by Starn developed a formal training course on the proper care and use of their applicators.

WHN caught up with Bill Starn, President of Mecal by Starn, and John Belovarac, Operations Manager, to discuss the program and how it benefits them, their customers and the industry as a whole. Later, Chuck Dawgiello, Manufacturing Engineer, and Chad O’Roark, Flex Cell Team Lead, from CMR Group’s Leetsdale PA facility, were on hand to talk about their experience with the Mecal training program. *After the interview, John provided a brilliant narrative of some great points that hold true for all brands of applicators. You can find those points in the accompanying article in this issue titled: Primer in Diagnosing Crimp Applicator Issues.*

Mecal by Starn developed their

training program about eight years ago. As Bill recalled, “We found there were a lot of people out there using the applicators improperly. They didn’t understand how they functioned, and there really wasn’t anybody out there teaching them anything.” He lamented that when a problem arises in the crimp process, the applicator is the first component to come under scrutiny. “A lot of times the applicator is to blame when it really isn’t the applicator,” said Bill, “and we found people were getting out a screw driver and making adjustments to the applicators without analyzing the system as a whole, and that just creates a mess.” John then added, “The thing we found interesting is that most of our customers just don’t like reading directions.” So, the training was developed to help folks troubleshoot problems, not just with the applicators, but with the entire crimping process.

Continued on page 54



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May/June 2018

1 From Distribution to Harnesses

The Marsh Electronics story is a unique one. From vacuum tubes for radios in the 1930's, to a modern distributor and value-added manufacturer, the company has a compelling story.

1 Mecal by Starn

A better educated customer makes the entire industry prosper according to Bill Starn. Read about Mecal by Starn's in-house crimp applicator training.

1 TECH-SONIC'S Servo Technology

Learn how ultrasonic welders actuated by servo motors can benefit harness manufacturers.

4 Growth Can Kill

Loren Smith relates his personal story about the perils of growing too fast.

10 'Change Management' is an Oxymoron

Volumes have been written on the subject of change management. Paul Hogendoom takes a look at this paradigm, and suggests an alternative approach.

15 IPC - History

From humble beginnings to world class standards, learn the history of IPC.

19 The Power Women of the Wire Harness Industry

Melissa Femia speaks with Marvane Johnson about her interesting career path, and her experience as an engineer in the harness industry.

23 New Global Standards for Wire Management Products

Panduit's Robert Rensa will present on the subject of global harmonization of standards for wire management products at EWPT 2018.

28 Anixter - Wire Wisdom

High-Temperature Wire - Selecting the right cable for the correct environmental conditions.

34 Aircraft Wiring

Take an in-depth look at the factors that determine shielding requirements in aircraft wiring systems.

38 Sincerity: The Secret of Sales

Once again, Wes Garner provides us with some wonderful insights. He reveals how being truly genuine in our business dealings is paramount to success.

56 Primer on Crimp Applicators

Learn some key points about crimp applicators.



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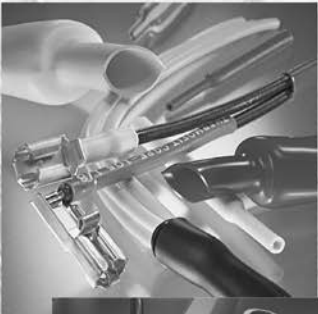
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Growth Can Kill

By Loren Smith

I pulled into our company’s parking lot at 6:30 am, the same time my controller arrived. The temperature was 10 below, and the snow was blowing so hard I could see only a foot in front of me—awful weather that was about to align with awful news. “Loren, I closed the books last night,” the controller told me as I strode with him toward the factory. “We’ve suffered a huge loss.”

That was the beginning of a nightmare. In the 15 years since I had moved my family to Iowa for the opportunity to turn around a wire harness manufacturer, we had been making money and growing. Because we were doing a terrific job serving our customers, they kept giving us additional business—and we never said no. But we had grown too fast. We couldn’t hire and train folks fast enough. We had suddenly spun out of control, failing to meet commitments we had made to our best customers. We were taking on water and in danger of sinking.

We sought relief from our bank, but the officials there hit the panic button. They had seen this crisis befall other companies, and they knew the result was usually catastrophic. They told us we had two choices: Either they would proceed to liquidate our company, or they would send in a consultant (whom we would pay for), and perhaps if we adhered to



Loren Smith CEO
Blue Valley Capital

the consultant’s recommendations we would survive.

The consultant journeyed to rural Iowa from Chicago. After spending a day with me and my team, he said, “You’re trying to put 10 pounds of rocks in a 5-pound box.” I certainly agreed with that assessment, but wanted to know, what now? He said, “I’ll go with you to all the customers that you’ll have to tell you cannot serve their needs anymore—that you have to downsize.”

I responded, “I get it, and I’ll do it myself.”

He said, “Sorry, but I don’t believe you. You’ve worked too hard to get these customers, and you’ll never be able to cut those ties on your own, we’re going with you”

Continued on page 6

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Growth Can Kill

Continued from page 4

Fortunately, my wife was part of the conversation, and she told the consultant to get out of my way and let me do it. She said she'd seen me do harder things than that.

That evening my team and I identified the core businesses we would try to keep and the businesses we'd have to let go. The next day I began having very difficult face-to-face conversations with our non-core customers, explaining that if my company were to survive I would have to downsize immediately. Although it was tough delivering the message that we would no longer be able to serve their harness needs, I was able to suggest a good alternative for them with one of my competitors, enabling them to keep their lines running without interruption.

Within one month of implementing our extreme plan, we were back to profitability. Within 6 months we were caught up with all orders from our core customers. 5 years after the near-collapse, I sold my company for many times its value when I bought it.

I was lucky. If we had not taken drastic downsize action, we would have been out of business in a few months. Growth is exciting, but it can kill you.

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

Donnie Hill Honored with 2018 WHMA Volunteer Excellence Award

Donnie Hill, President of Precision Manufacturing Company, was awarded the 2018 WHMA Volunteer Excellence Award at the recent WHMA Annual Conference. This recognition is well overdue, as Donnie has worked tirelessly to bring IPC/WHMA A-620 to the forefront as the definitive specification for the harness industry. Donnie has been on hand at many industry events to highlight the importance of the specification, both as a necessity for quality improvement, and as an effective tool for marketing. He has also served diligently on the board of WHMA for many years.

Thanks for all of your hard work, Donnie!





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In Memory of Lawrence Chambly

This past February we lost an industry great in the passing of Lawrence “Larry” Chambly. Larry was the founder and President of USA Harness, and was instrumental in the development of WHMA as one of its founding members.

Larry grew up in California and attended Pasadena Community College focusing on business. He then set his sights on serving his country in the US Army. He was stationed at Fort Hood where he met his wife Betty Ruth, and established his roots in Texas.

He served for many years with Ready-Wired, and eventually became Vice President of Sales. It was during this time that he started developing modular wiring harnesses for the heavy-duty trailer industry.

In 1983, Larry ventured out on his own and started Nationwide Electrical Wiring and specialized in harnesses for the heavy-duty trailer industry, along with other specialty transportation applications. He continued to grow the business and sold the company to Philips Industries in 1990.

Not one to remain idle, Larry began the next chapter of his life when he moved to east Texas and started USA Harness. The new venture specialized in the same types of harnesses as his previous company, and he managed to bring many of his old



Larry Chambly

customers on board. Larry’s mantra was always that what USA Harness really had to sell was quality and customer service. He repeated it often to his employees, customers and suppliers. Because of his hard work and devotion, the company thrives today as a living legacy to him.

His family and close associates knew him as a quiet philanthropist, making contributions to charities in his back yard and beyond. He held strongly that being a responsible steward to his employees and his community was integral to his success in business.

Larry was well respected and admired by his employees, customers and competitors. He never passed up an opportunity to entertain folks over a good meal. It is truly with a heavy heart that we remember Larry and his contributions to our industry.



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'Change Management' is an Oxymoron

By Paul Hogendoorn

As I write this column, I sit quietly in my favorite chair, expecting the phone to ring and announce the arrival of my 5th grandchild. And as I wait, and write, I reflect on how life has changed since my first grandchild arrived in my life, somewhat unexpectedly, 12 years ago.

I have come to conclude that the term "change management" is an oxymoron. You can't manage change; change simply happens, or it is caused to happen. Managing change means restricting change. Causing it to happen means leading change, or perhaps, "change leadership". Sometimes it is welcome and expected, sometimes unwelcome and unexpected, and sometimes it is simply needed.

I think our manufacturing companies need to change, and the ideas behind "Industry 4.0" needs to change too. Industry 4.0 seems to be led by people believing that automation and machines-talking-to-machines is the way for the future, but, what good is the future of our factories if there is no future for our people? Henry Ford is rightfully credited with lowering the cost of an automobile by changing the way cars were built, but at the same time, he was the catalyst for an even bigger change by changing the standard of living for the people he



Paul Hogendoorn

employed, creating a market for the products he made. It wasn't a matter of change management, it was change leadership. And that's what we need now in our factories, not change management, but change leadership.

One of the problems I have always had with "continuous improvement" was that it not only settled for incremental change, it usually restricts and limits a company's ability to even ponder significant changes, not to mention paradigm changes. These "CI" efforts are 'managed' by managers. There's nothing wrong with consistent incremental change, but at some point you have to be able to at least consider a complete paradigm change. Industry 4.0 purports to be this type of change, but from what

Continued on page 13



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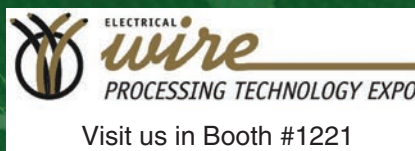


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'Change Management' is an Oxymoron

Continued from page 10

I've seen and experienced, this movement is now being 'managed' by large organizations and associations more than it is being led by people causing, or even simply allowing, significant change to happen.

To allow change to happen means allowing people, and ideas, to fail. If we manage the process by setting the rules and parameters so tightly to avoid failure, we are limiting the opportunity for success and growth within our companies, our industry, and mostly, our people. A lot of time and energy is often spent on trying to prove how we were right about something that went wrong, or why we weren't to blame for something that did, creating 2 classes of change managers: those that never make a decision unless risk is totally eliminated, and, those that are ready to offer an opposing view to any decision that does eventually get made. Change is difficult, but change is necessary, and that's why our companies need to embrace and support change leaders, because the world is full of change managers.

This is an interesting time to grow the change leadership in our organizations. The Industry 4.0 discussion and the eminent arrival of IIoT devices and technologies, the new attitudes and ideals of a younger work force, and the difficulty attracting

them to the factories to replace the current work force, are great opportunities to encourage thought leaders and bold decisions. And of course, the importance of manufacturing jobs to our middle class, our communities, and our society in general. Our factories produce more than the products they make, they create jobs for people, which in turn creates a sense of belonging, and meaning, and purpose. Change to our factory floors is eminent, and inevitable, and in these times in particular, very necessary. If you have the right outcomes in mind, you can lead change in that direction. Or, you can simply react to it when it happens, but you really can't manage it or avoid it.

When my first grandchild was born, I recall thinking "how she got here no longer matters; that she is here is all that matters." It has been 12 years of change, of growth, for her as well as for me since then. And, just when I start to think I am settled in and getting used to everything as it is, things will change again. Perhaps as soon as the phone call.

Paul Hogendoorn co-founded FreePoint Technologies. "Measure. Analyze. Share. Don't forget to share". If you have questions or comments on this topic, feel free to contact him at: paul.hogendoorn@getfreepoint.com or www.getfreepoint.com

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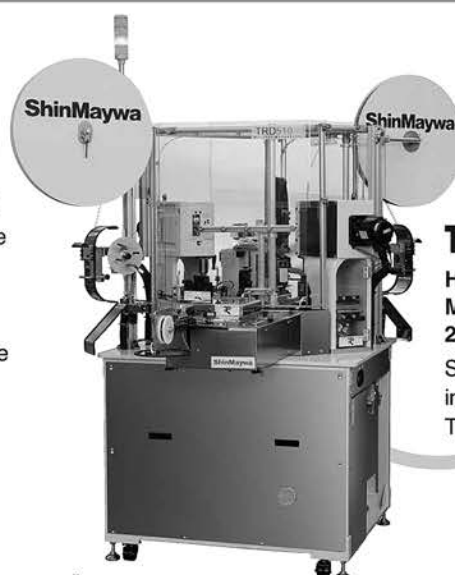
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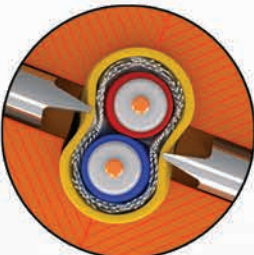
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IPC – More Than 60 Years of Setting Standards for the Electronics Industry

IPC was founded in 1957 when six independent Printed Wiring Board (PWB) manufacturers met in Chicago to form a trade association called the “Institute of Printed Circuits.” 61 years later, IPC is an international member-driven organization and a leading source for industry standards, training, market research and public policy advocacy, supporting programs to meet the needs of an estimated \$2 trillion global electronics industry. IPC is dedicated to the competitive excellence and financial success of its more than 4,300-member companies, which represent all facets of the electronics industry, including design, printed circuit board manufacturing, electronics assembly and test.

IPC Standards

IPC standards are accepted worldwide as the key manufacturing standards for the printed board and electronics and manufacturing industries. From design and purchasing to assembly and packaging, IPC standards help ensure superior quality, reliability and consistency in the electronics assemblies that go into the electronic products. Annually, IPC publishes new and updated standards in areas from printed board design and intellectual property protection through box build.

There are currently 300 active standards, with a resource library containing more than 1,000 standards. These standards are created by IPC committees comprised of more than 3,000 volunteers from electronics manufacturing companies, government agencies and other industry organizations who lend their expertise and time to standards development. These volunteers draft, edit and vote on the standards that best meet today’s technical, business and regulatory challenges.

“Quality and reliability are essential to compete in the marketplace and critical to a

company’s reputation and profitability. When IPC standards are implemented throughout a manufacturing process, companies can help ensure better performance and longer life of their products as well as compliance with industry best practices and requirements,” said David Bergman, IPC vice president of standards and technology.

Bergman added, “When companies work from established IPC standards, they speak the same language with customers

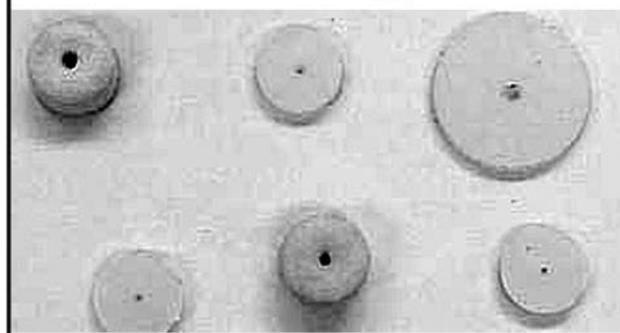
and suppliers – the language of the global electronics industry. These same companies benefit internally from employees who work together to meet the performance requirements and speak the same language needed to improve communications internally.”

Education, Training and Certification

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Continued on page 16

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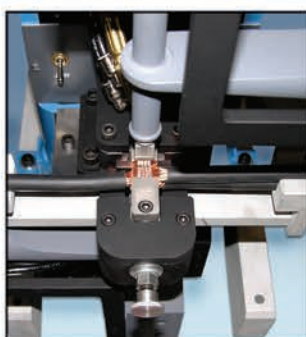
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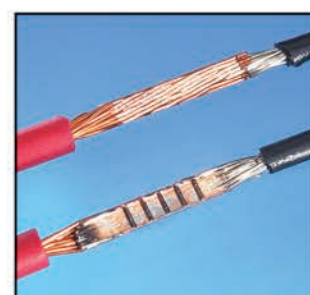
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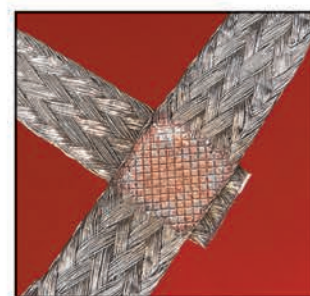


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IPC

Continued from page 15



1957 IPC Board, Al Hughes, Electralab; Robert Swiggett, Photocircuits; William McGinley, Methode. Standing: Dick Zens, Printed Electronics Corporation; and Carl Clayton, Tingstol.

the factory floor, employees need to be trained in how to use them. As a result, IPC has a robust, international network of licensed training centers, offering globally recognized, industry-traceable training and certification programs on key industry standards including: J-STD-001, *Requirements for Soldered Electrical and Electronic Assemblies*; IPC-A-600, *Acceptability of Printed Boards*; IPC-A-610, *Acceptability of Electronic Assemblies*; IPC/WHMA-A-620, *Requirements and Acceptance for Cable and Wire Harness Assemblies*; IPC-7711/7721, *Rework, Modification and Repair of Electronic Assemblies*; and IPC-6012, *Qualification and Performance Specification for Rigid Printed Boards*. Nearly 100 IPC-authorized training centers world-wide have trained and certified more than 325,000 individuals at thousands of companies around the world.

**Multimedia and
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For more than 30 years, IPC has been producing industry-approved, training videos, covering electronics assembly acceptance standards, hand soldering, lead free, repair and rework, ESD control, component ID, counterfeit components, cable/wire harness assemblies and printed board fabrication. IPC's comprehensive collection of training DVDs provides companies with another method of training and education to enhance employees' skills. In July 2016, IPC launched IPC EDGE, a learning solution to enhance and grow employees' knowledge in the electronics industry through online courses, webinars, videos, white papers, personal development, technical knowledge and technical presentations. With IPC EDGE, students learn at their own pace, with knowledge checks within each course to help reinforce areas of importance.

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Continued on page 18



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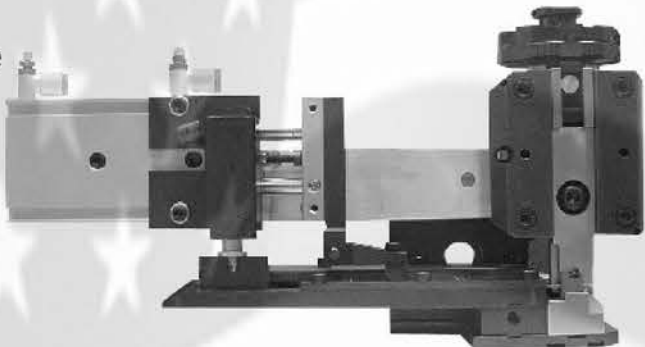


Model 1700

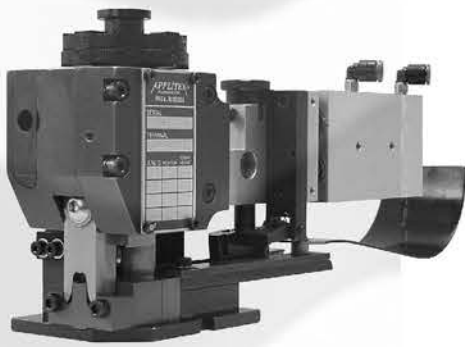


Model 2000

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

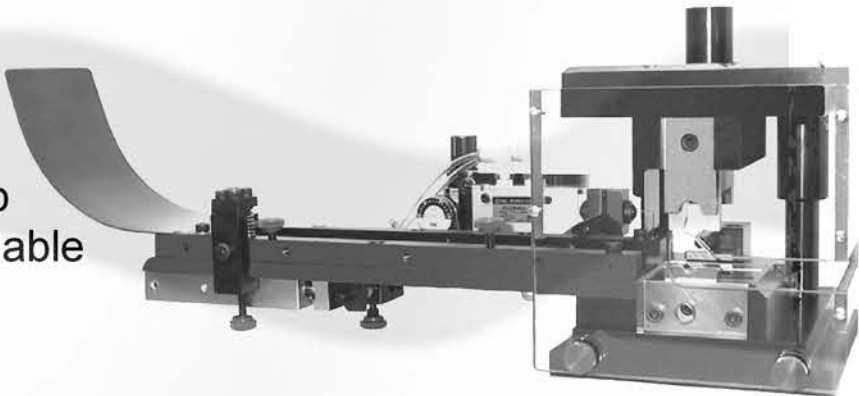


Model 1500



Model 2100

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IPC

Continued from page 16

Advocacy

Not only do IPC members create standards for the electronics industry, but their efforts are also represented in government. In 1991, IPC began to develop a presence in Washington, DC, to influence legislation in support of its members. Taking on a leadership role in public policy advocacy is now a hallmark of IPC, providing a strong and unified voice to the global electronics industry. Government relations staff continually monitor proposed legislation, regulations and rules by governments and agencies around the world. IPC actively engages with regulatory agencies to protect the interests of its members and to advocate for science-based

regulations. Major policy focus areas include: conflict minerals, export controls, R&D tax credits, the European Regulation of Registration, Evaluation, Authorization and Restriction of Chemicals (REACH), the EU RoHS directive, conflict minerals, corporate social responsibility, chemical data reporting and more.

Market Intelligence

In addition to robust advocacy efforts, IPC serves as industry's trusted source of market research. IPC provides market and business data to help companies make informed business decisions. With unique data sources that represent leading companies from around the world and



Early IPC Event

throughout the electronics industry supply chain, IPC's research reports and studies provide unique data and insights that: highlight market trends as they develop; identify growing and declining markets; and allows company executives to compare their company's performance to industry averages and world-class benchmarks and use reliable data to make informed business decisions.

The Voice of What is Next

What started as a small meeting of six representatives from the printed wiring board industry has become a thriving, international association with locations in Chicago, Illinois (IPC HQ), Atlanta, Georgia, Washington, D.C., and Taos, New Mexico, Stockholm Sweden, Moscow, Russia, Brussels, Belgium (IPC Europe HQ), Bangkok, Thailand, two offices in India, with Bangalore the HQ of IPC India, and six offices in China, with Qingdao the HQ of IPC China.

Born out of the desire to transform the electronics industry 61 years ago, IPC became the voice of what was next – the breakthrough technology of printed board. Today, IPC remains that voice as it continues to guide the electronics industry through dramatic changes.

For more information on IPC, visit www.ipc.org.

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The Power Women of the Wire

Harness Industry *Spotlight on Marvane Johnson*

This edition of 'Power Women' focuses on a female engineer whose path varied from the more traditional route. Marvane Johnson attended Martin Luther King High School in Detroit. Her mother was a single-parent homemaker who passed away while Marvane was only 19. Marvane did not have exposure to STEM classes as they were not as common during the years that she attended high school, nor did she have family members who introduced her to engineering. Certainly, with these challenges, her background story is downright commendable.

Post high school, Marvane entered the military. After her first enlistment, she returned to Michigan for a couple of years. She then decided to move to Maryland to be closer to a friend. She attended a private school for engineering for two years, then put her education on hold to work full-time. Instead of returning back to school, Marvane re-enlisted in the military and became certified in heating, ventilation, and air-conditioning (HVAC).

After her second term in the military, Marvane opted to move to Portland, Oregon after hearing positive comments about the city. Since she knew no one, she initially stayed at a

hostel. Though she had a CFC license, she had no experience outside of the military, so she called various companies listed in the phone book offering to work for free if the particular company would train her. Her newly-acquired work experience led to another job with an HVAC company, where she worked as a compensated apprentice. Marvane finished off her HVAC career, by working in the area of testing and balancing (TAB) for Northwest Engineering Services.

In her mid-thirties, she returned to engineering school full-time at California State University Chico, where she earned a degree in Mechatronics Engineering. While in college, she joined the Society of Women Engineers (SWE) and the National Society of Black Engineers (NSBE). She was sponsored by Google to attend the NSBE annual conference in Boston, Massachusetts, where she had several corporate interviews. Ultimately, she did not end up working for one of the companies exhibiting at the conference because of her interest in locating in the Midwest or on the East Coast.

She submitted a resume to Thomas Built Buses (TBB), a Daimler Company, and was contacted by Steve Jovanovich, an Engineering Supervisor



Melissa Femia

there. After discussions with Steve and learning more of TBB, she thought the company would be a great fit for her. After being employed by TBB for approximately one year, she continues to believe that TBB represents a positive opportunity for her and appreciates the family environment. Marvane works as a Design Engineer in the Mechatronics Department, on the Current Product Electrical team. Harness design is one of her daily responsibilities, and she is also a certified Project Management Professional (PMP).

When I questioned Marvane about her collegiate experience, she used the word 'odd'

Continued on page 21

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The Power Women of the Wire Harness Industry

Continued from page 19

to describe her overall path. She indicated that there were obviously fewer females in engineering, as she was often the only female in her classes. At most, there were 3 females in classes of 30. She was also the only black female in her major at the time that she attended school. She is very appreciative of the MESA Engineering Program at Chico for providing a welcoming study environment and support.

In spite of the low numbers of females in her university classes, Marvane Johnson recommends that females consider engineering as a collegiate major and employment area in light of the many opportunities for engineers, in general, and especially for capable females. As a black, female engineer with technical experience, she had many companies interested in employing her. Her hope is that females are not intimidated by their male counterparts and will give engineering a collegiate try.

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



Marvane Johnson

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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New Global Standards for Wire Management Products:

Goal to Ensure Quality and Performance

Industry standardization has been at the core of every technological revolution. It is a tremendous benefit to the overall growth of commercial industry. There has been a great deal of interest on the globalization of industry standards across the board, and the harness industry has experienced this in many categories for the past several years. Robert Rensa, BD Manager of Wire Management products at Panduit, will highlight the new harmonized standards for wire management products within UL/CSA/ANCE/EN 62275 at the 2018 EWPT Expo in Milwaukee.

Products included in the 62275 standard are plastic and metal cable ties, mounts, and integrated cable tie mounts. As Robert will explain in the presentation, the initiative towards harmonization will provide a much-needed global benchmark for the quality and performance of these products. For harness manufacturers, that means they will be able to confidently ship products to their customers in the US, Canada, Mexico, Europe, and other regions accepting the standards.

Not all products in this category are created equally, even though they might appear identical. “One of the things I’m doing,” Robert detailed



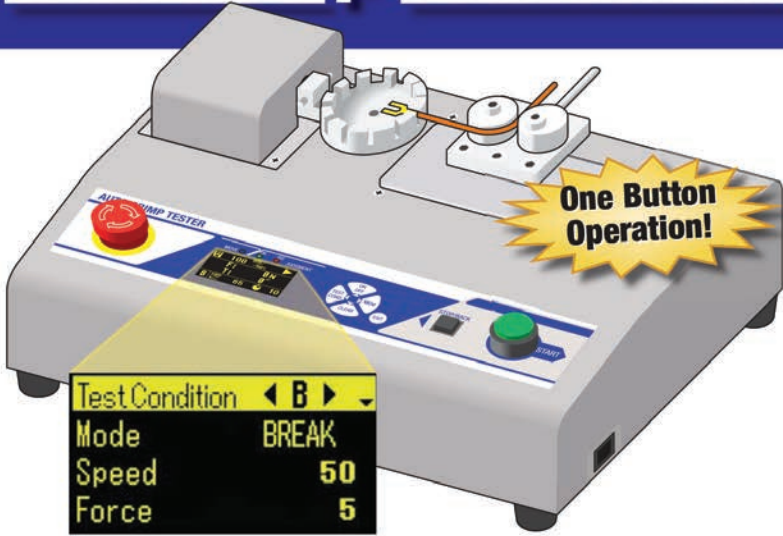
to WHN, “is explaining the different test methods for what the cable tie or wire management product must endure.” He wants to give the market a higher level of understanding of what manufacturers like Panduit go through to qualify these products, and why labeling is so important. Robert wants people to know what they are really buying when they acquire a product held to this high level of scrutiny.

Panduit has taken a leadership role in the harmonization of standards for wire management products. “There are two sides of the harness business,” explained Robert, “the wire processing side that creates the machines that process the wire, and the assembly side that is, for the most part,

Continued on page 25

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New Global Standards for Wire Management Products:

Continued from page 23 _____

manual and not automated.” He maintains the latter category receives little attention. “We have products that focus on the wire processing side, of course, but this standard is really targeting the assembly side. And it’s helping businesses select the right products for higher performance and reduced risks.”

Be sure to catch Roberts presentation at 2;30, May 9th at the EWPT Expo. For more information, you can visit www.panduit.com/en/solutions/wire-harness.html

Robert Rensa has more than 40 years of work experience in sales, Product and business management at industry leading companies including Panduit, Eaton, and Furnas Electric (now Siemens Automation). He is also a veteran of various industry standards bodies including:

- Chairman- NEMA 5FB-2- Wire Management Products
- Committee member- NEMA 5FB-2 Technical Committee
- Chairman- CANENA-THSC 23A-62275
- Technical Expert-USNC-SC23A-TAG-WG17

Remembering Jerry Smith

Cirris is sad to announce that our Southeast Regional Account Manager, Jerry Smith passed away on March 9th, 2018.

Jerry joined Cirris in August of 2013. During the almost 5 years he was with Cirris, he was a valuable friend and employee. Jerry worked hard to take care of his customers by listening to their needs and talking them through solutions. Those that worked with him appreciated his integrity and work ethic.

His knowledge of cable and harness testing was useful in helping customers overcome problems. Jerry’s experience came from over thirty years working in the industry. He worked in different areas of sales for DIT-MCO International, Manufacturers Rep, CK Technologies, and Cirris Systems. He was a major player in the industry for his entire career.

Previous to entering the cable and harness industry, Jerry served as



Jerry Smith

a soldier in Vietnam. His time with the military made him appreciative of military service and he supported veterans like himself.

Jerry will be missed by all who knew him. His dedication to his career made him a valued employee, and his love for his family made him an exemplary person.



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TECH-SONIC’S Servo Technology Adds Versatility to Ultrasonic Welding

Continued from page 1

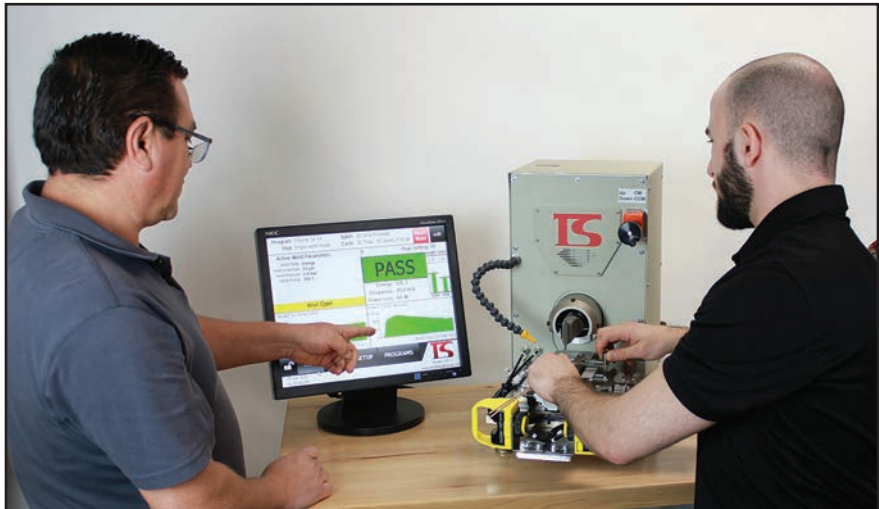
transform it from an analog process to a digital process,” he began. Standard pneumatic welders are an “open loop” system, meaning there is no system feedback to verify a desired output. “With pneumatic machines, the input data is entered, the machine reads the data, and you get output data. Using servo motors, we are able to monitor conditions during the process and actually change parameters during the weld; and weld in multiple steps, rather than being limited to a single step” he instructed. TECH-SONIC calls this ability to control the parameters Dynamic Force and Amplitude Control™, and it allows the equipment to adjust and maintain the pressure during the weld cycle. The team maintained that this leads to stronger welds and decreased cy-

cle times. Frank said it also opens the gate for a variety of additional advantages for their welding equipment.

One such advantage is the ability to weld a wide range of wire sizes with the same tooling and power requirements. “Using servo technology, we can weld small wires like 0.26 sq mm all the way up to 60 sq mm with the same piece of equipment,” Frank detailed. “Using pneumatics, you might need two or three different machines, but our standard 3 KW unit can go up to 60 sq mm.” He maintained this is crucial in eliminating downtime in a production setting by allowing the user to quickly change back and forth between wire sizes without the need for any manual adjustments.

TECH SONIC’s welders have a one

Continued on page 48



TECH-SONIC’s servo-controlled ultrasonic welder with integrated software.

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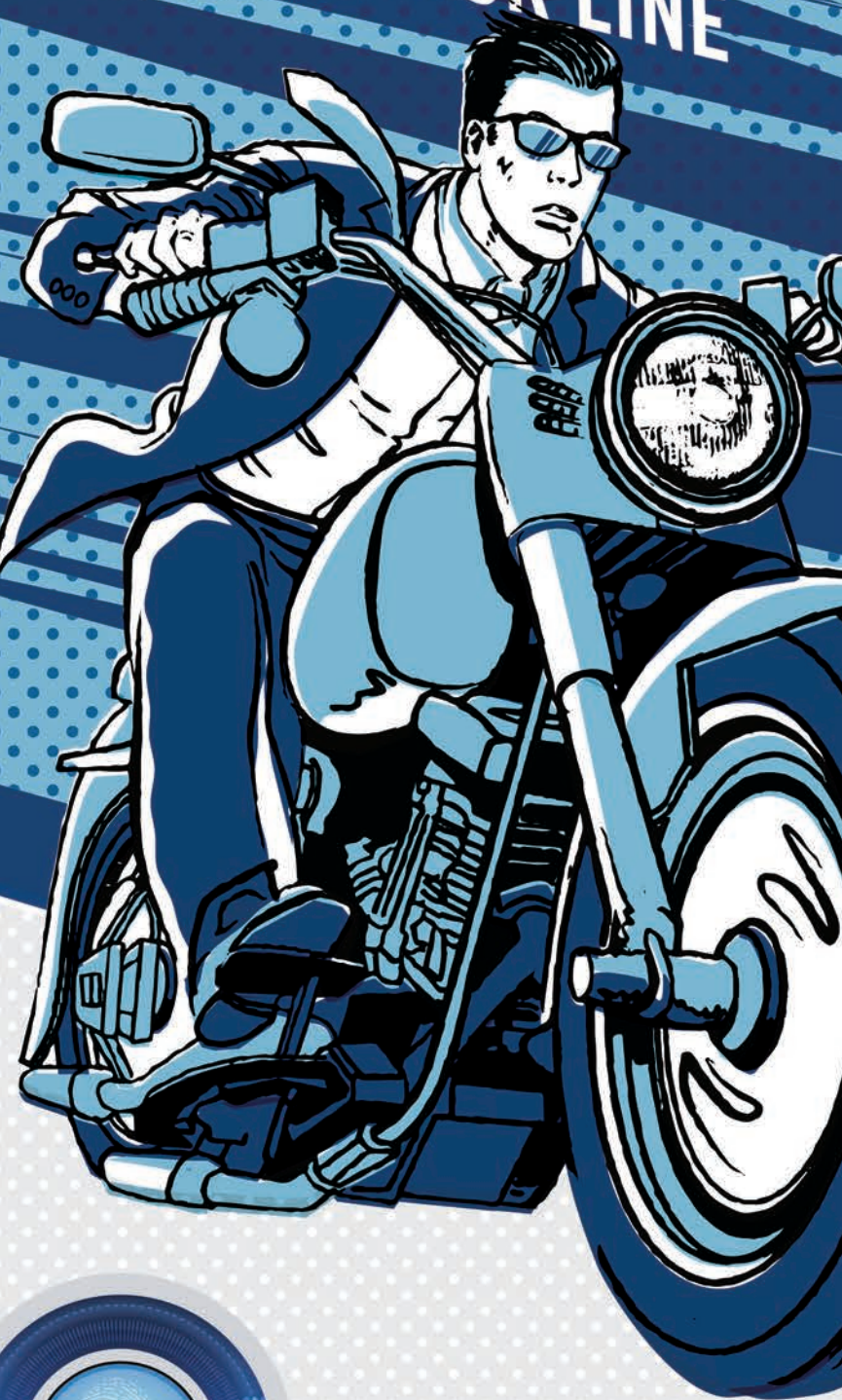
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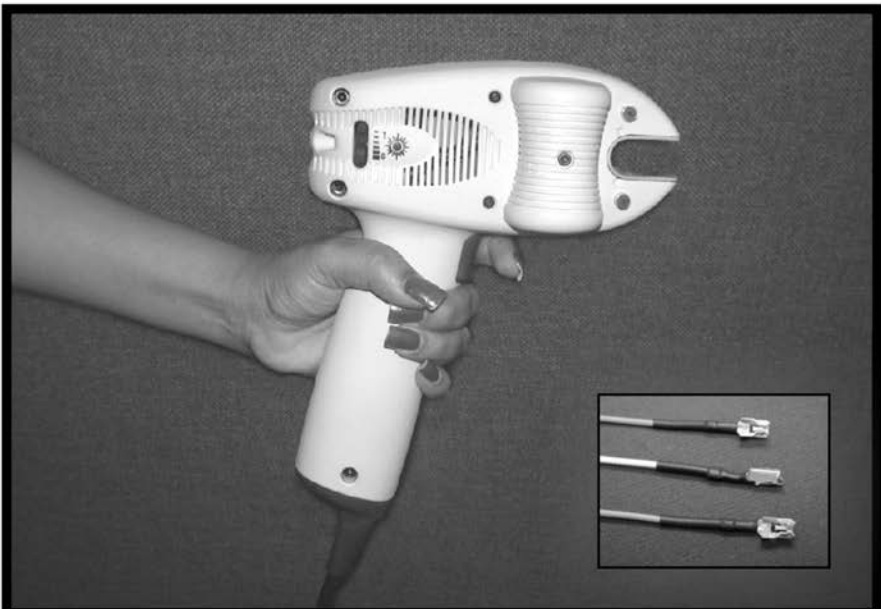
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The Focus-Lite™ is equipped with an adjustable timer for repeatable shrinking, time after time. It also has a dimmer switch that controls the power for sensitive components. Visit our website at www.judco.net and see our full line of Focus-Lite™ products.



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Focus-Lite™
Heat Shrink Processing Machines

HIGH-TEMPERATURE WIRE

Cables can be installed in environments with harsh conditions and high ambient temperatures, but selecting the right cables for the correct environmental conditions is essential to ensure the cable's expected life span will not be affected. The use of wire and cable products outside their designed temperature range can result in premature and often expensive failures in service.

UNDERSTANDING
HIGH-TEMPERATURE WIRE

High-temperature wire is often defined as a wire with a temperature rating of 125°C or higher, although high-temperature can also refer to temperature ratings as low as 90°C. High-temperature cables can either be single-conductor or multiconductor. These products commonly consist of a conductor (usually annealed, tinned copper, copper-plated or nickel-coated copper) and insulation. High-temperature wires may also have an additional jacket consisting of a fiberglass braid or K-fiber material.

Two key components to ensure high-temperature wires are suitable for the application are the wire's temperature rating and ampacity. Temperature ratings can be defined as the maximum continuous temperature that a wire can withstand during its lifetime. If a cable's temperature rating is not suitable for the environment and ambient temperature, the expected lifespan of the cable could be affected.

The ampacity is the maximum current an insulated conductor can safely carry without exceeding its insulation and jacket temperature limitations. If the cable is undersized, the heat produced by circuit load may exceed the cable's temperature rating and the cable may be compromised. For more information, please see Anixter's Wire Wisdom Wire and Cable Ampacity Rating.

HIGH-TEMPERATURE
CABLE STANDARDS

High-temperature wire can be classified as Appliance Wiring Material (AWM) meeting UL 758 Appliance Wiring Materials. Even though AWM wires are not considered to be "UL Listed" products, they are Recognized Components that can be used in UL Listed products. If a high-temperature wire is to be considered a UL Recognized Component, the wire follows the guidelines that are detailed by UL 758 through a UL style page. This style page lists specifications on gauge size range, insulation material, temperature rating and voltage rating. Some ULAWM styles can be dual listed with Canadian standards, such as UL AWM 3284 and CSA CL1254. For more information, please see Anixter's Wire Wisdom Understanding and Identifying UL AWM Styles.

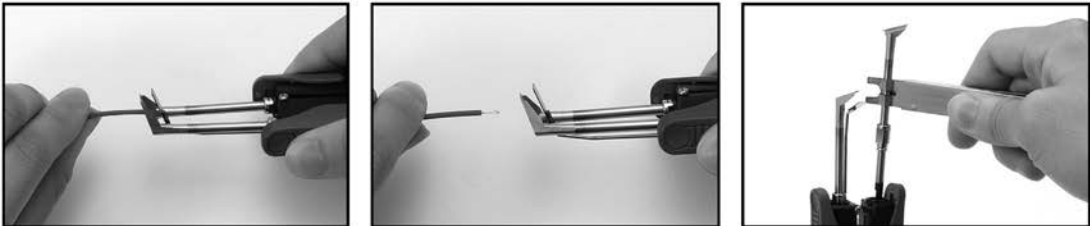
In addition to high-temperature cables meeting AWM requirements, high-temperature products can also meet and be UL Listed to the UL 83A Fluoropolymer Insulated Wire standard. UL 83A provides requirements on the cable's construction and test

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Trade Name	Description	Temperature	Voltage	Size	UL Styles, CSA Standards
EPDM	Ethylene propylene diene monomer	125°C to 150°C	600 V	18 AWG to 4/0 AWG	UL 3284, UL 3374; CSA 1254
SRK	Silicone rubber with a K-fiber jacket	200°C	600 V	18 AWG to 4/0 AWG	UL 3071, UL 3074, UL 3075, UL 3125, UL 3126; CSA SEW-2 3410
TGGT	PTFE/glass	250°C	600 V	24 AWG to 4/0 AWG	UL 5256, UL 5196
EPDM	Ethylene propylene diene monomer	125°C to 150°C	600 V	18 AWG to 4/0 AWG	UL 3284, UL 3374; CSA 1254

Table 1 – Common UL Style High-temperature Wire Types

performance for high-temperature listed products. Performance tests include longterm aging of insulation and insulation resistance testing.

THE DIFFERENT STYLES OF HIGH-TEMPERATURE WIRE

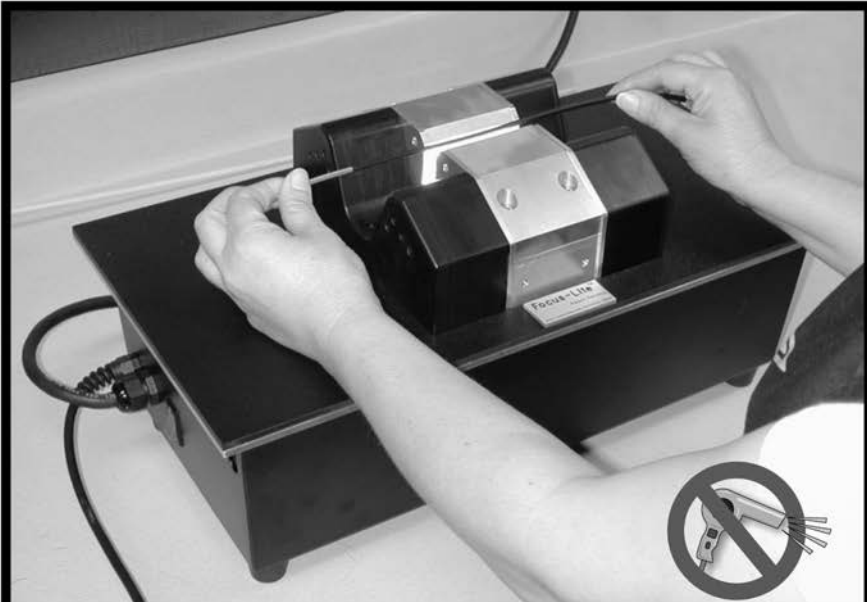
Due to the wide range of temperature ratings and applications available for high-temperature wire, there are many different agency approvals available. High-temperature wires can be UL Recognized per UL 758,

UL Listed per UL 83A or meet CSA standards. Table 1 provides some common high-temperature wire types that meet various UL AWM Styles per UL 758 and/or CSA standards. In addition to the AWM high-temperature wires, Table 2 provides examples of UL Listed high-temperature wires per UL 83A.

Continued on page 42

UL Listed Name	Description	Temperature	Conductor Metal	Size	Voltage
FEP	Fluorinated ethylene propylene	90°C (200°C special applications)	Soft-annealed copper	14 AWG to 2 AWG	600 V
PFA	Perfluoroalkoxy	90°C (200°C special applications)	Soft-annealed copper	14 AWG to 4/0 AWG	600 V
TFE	Tetrafluoroethylene	250°C	Nickel-coated copper or nickel-base alloy	14 AWG to 4/0 AWG	600 V
ZW	Ethylene Tetrafluoroethylene	90°C (150°C special applications)	Soft-annealed copper	14 AWG to 2 AWG	600 V

Table 2 – UL Listed High-temperature Wire Types



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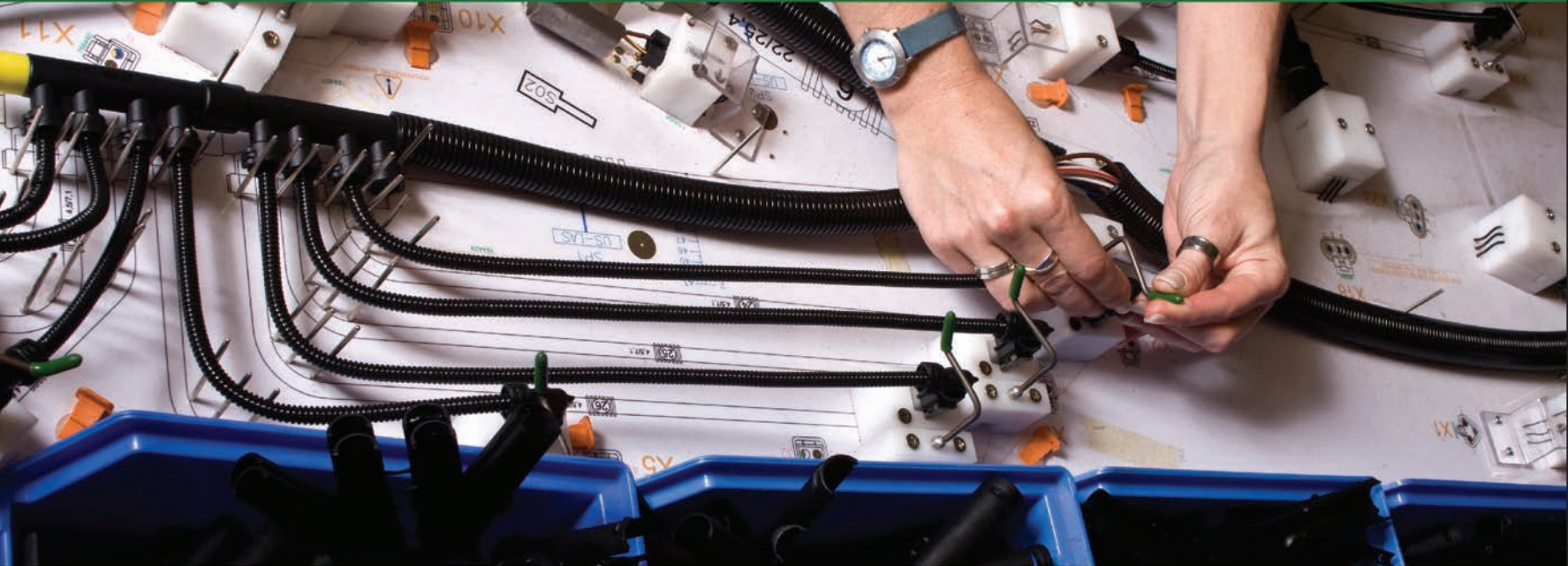


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Beyond IPC/WJMA-A-620: How IPC Specifications Help Harness Manufacturers Expand Capabilities to Add Value

Why would someone assembling cables and harnesses be interested in IPC-A-610, IPC/WHMA-A-620 and IPC-A-630?

IPC/WHMA-A-620, *Requirements and Acceptance for Cables and Wire Harness Assemblies*, is a complete standard which provides information needed to produce crimped, mechanically secured and soldered connections as well as assembly requirements for cable and harnesses. The standard is filled with criteria and graphics that are used every day by those working in the cable and

harness industry. But, let's face it, a cable or harness doesn't do much as "just a cable." The purpose of its existence is to connect electronics together sending current and voltage to various devices. The latest revision of IPC/WHMA-A-620 includes synergy with IPC-A-610, *Acceptability of Electronic Assemblies*, aligning many of the requirements that are common to both standards. IPC-A-630, *Acceptability Standard for Manufacture, Inspection and Testing of Electronic Enclosures*, sometimes called "box build" is another IPC standard which provides the criteria for

manufacturers who are making those connections.

Teresa Rowe, Sr. Director, Assembly & Standards Technology of IPC, will be providing detailed information on the content of IPC/WHMA-A-620-C and IPC-A-630 at the Electrical Wire Processing Technology Expo. In addition, Teresa will lead an IPC Task Group meeting on IPC/WHMA-A-620C following the conference. If you are interested in attending the committee meeting you can contact Teresa by sending an email to ipcmail@ipc.org.

Readers of this article who are making these electronic connections may ask how to choose between IPC-A-610 and IPC-A-630 for their facility, and the answer depends on the product they are making. The focus of IPC-A-610 is for printed board assemblies and the focus of IPC-A-630 is for box build assemblies. Cables are used in both assemblies to make the electronic connections for various products. What is an appropriate answer for one organization will be different for another, and it is possible to use all three documents in a single manufacturing environment. Of additional significance is that all three standards provide three classes of acceptance criteria. Class I is used in general electronic products where functionality is the requirement. Class 2 is used in dedicated electronic service products, where continued uninterrupted service and extended life is required. Class 3 is used for high performance electronic products, where continued performance, uninterrupted service, extended life, no equipment downtime allowed and operational in harsh conditions is required. The best way to determine which is appropriate for your work is to read through the documents to see which meets your assembly needs.

IPC/WHMA-A-620C, *Requirements and Acceptance for Wire Harness and Cable*, provides the wire and cable industry the most current criteria in acceptance and performance. With over 700 photographs and illustrations, this standard describes materials, methods, tests

— Continued on page 32



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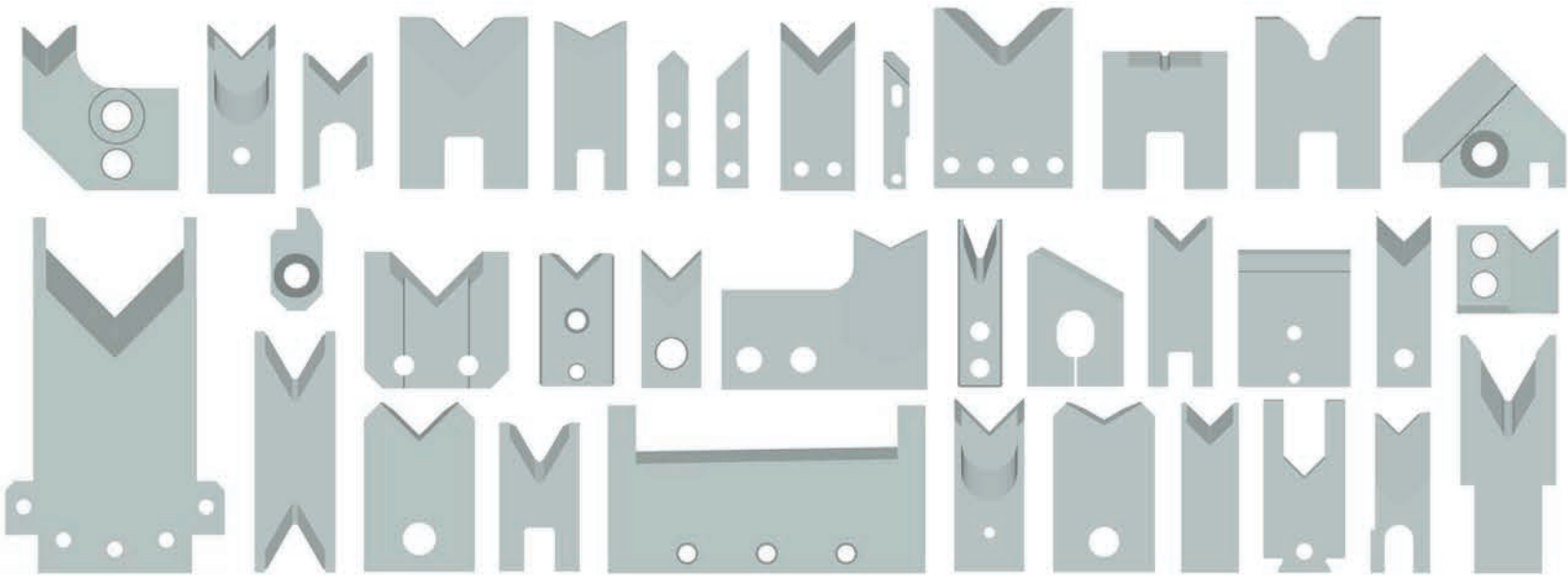
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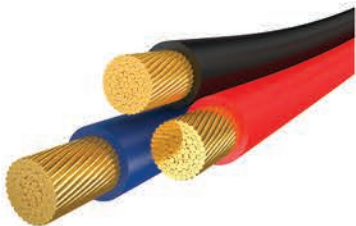
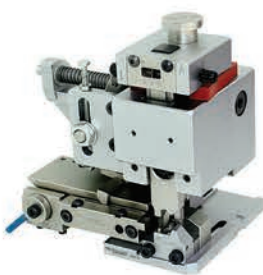
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Beyond IPC/WJMA-A-620: How IPC Specifications Help Harness Manufacturers Expand Capabilities to Add Value

Continued from page 30

and acceptance criteria for producing crimped, mechanically secured and soldered interconnections and the related assembly activities associated with cable and harness assemblies. As advanced manufacturing continues to trend, wire harness manufacturers are on the front line of technical challenges in today's electronics industry marketplace. The wire harness plays an even more significant role in the integration of electronic systems within the automotive, aerospace, and industrial applications. Globally, more original equipment manufacturers (OEMs) are looking to wire

harness manufacturers as partners in outsourcing to add capacity, reduce delivery time, control cost, or to meet local manufacturing content requirements in some parts of the world. Communication between the OEM and their wire harness manufacturing partner is critical to their success. The IPC/WHMA-A-620 can help you understand and meet the requirements of the wire and cable industry.

IPC-A-610 *Acceptability of Electronics Assemblies*. IPC-A-610 is the most widely used electronics assembly acceptance document in the electronics industry. To understand the ultimate power of IPC-A-610, you need to first understand what is at its core.

The standard is a collection of visual quality acceptability requirements for electronic assemblies. It is utilized as a post-assembly acceptance standard to ensure that electronic assemblies meet acceptance requirements.

IPC-A-610 is an essential document in an electronic assembler's tool library. Not only is it necessary to have the proper material and tools, but it is also important to have clearly-defined acceptance criteria. IPC-A-610 provides that criteria developed and accepted by representatives from some of our industry's leaders in this case from leaders in 17 countries worldwide. This is a must-have for inspectors, operators and others with

an interest in the acceptance criteria for electronic assemblies.

IPC-A-630 IPC's first acceptability standard for electronic enclosures, IPC-A-630 contains acceptability criteria that pertain to the "box build" of the assembly process. This standard has been written to direct manufacturers and end users of electronic enclosures of electrical and electronic equipment to understand the best practices to meet requirements, ensuring the reliability and function of the end-item assembly for its intended design life. The standard covers everything associated with the box, from metals and plastics to the hinges and screws that hold the

electronics in place. This standard also includes information on the paints and coatings that can be used, especially when coatings offer EMI protection or corrosion protection. A sizable portion of the standard provides terminology used for the industry so that everyone speaks a common language.

As we have learned, depending on a manufacturer's assembly requirement, you could use one or all three of the IPC standards; IPC-A-610, IPC/WHMA-A-620 and IPC-A-630. Each has its own unique requirements that cover the types of assemblies which are being produced. To learn more about IPC visit www.ipc.org.



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Aircraft Wiring: How Many Cables Should be Shielded?

By Michael Traskos
Lectromec

A common question when it comes to designing an aircraft EWIS is which of the cables should be shielded? Several standards, such as MIL-STD-461, “Requirements for the Control of Electromagnetic Interference Characteristics of Subsystems and Equipment” provide an excellent basis for topics and testing that should be considered. But for those that are not interested in reading a 280-page standard, this article reviews the several shielding considerations that should be made before making design choices.

WHY SHIELD?
The quick and simple answer to ‘why shield?’ is to limit the impact of Electromagnetic Interference (EMI) on system performance. But just because EMI is a concern does not mean that shielding should be used on wiring from every system. The consequences of selecting a shielded cable construction include increased bend radius, increased weight, and increased installation/repair time.
There are a couple of options when protecting systems from EMI and implementing shielding. These options include: shielding only the signal wires, shielding only the

power wires, and shielding both. Each of these is reviewed here.
SHIELD SIGNAL WIRES
The starting point for many engineers and EWIS designers is to limit the potential EMI impact on signal cables. After all, these cables, which send signals with low voltages (often less than 10V) at high data speeds, can be negatively impacted by the electrical noise of aircraft equipment. Protecting the integrity of signals thus improves the confidence in the data integrity.
Of course, once the signal wires are identified for EMI protection/

shielding, the question then goes to whether the individual wires/pairs should also be shielded if inside a multiconductor cable. The selection is dependent on the data rate (high frequencies generate more EMI and are more susceptible to EMI). With shielding a cable, then the internal pairs, the outer shielding can be a generalized shield and the internal shield can be optimized to shield the frequencies likely to be carried by the internal wires.
The benefits of shielding the signal wires:

- Transmitted data for each system is isolated
- If improved EMI protection is needed, it can be implemented system by system
- Conceptually easy to address and plenty of available shielded cable options

SHIELD POWER WIRES
Another perspective is to shield the power wires. A typical aircraft design will have a larger percentage of signal wires than power wires, and thus it can be easier to shield the power wires.
When considering the latest trends with electrical power systems, there are several systems which gain equipment control with the use of pulse width modulation and wide frequency power generation. Each system has benefits from the perspective of power and control, but creates new challenges for EMI. Certainly, the use of pulse width modulated power with high-frequency current changes (di/dt) can generate strong Electromagnetic Flux (EMF) and impact nearby signal wires.


- The benefits of shielding the power wires:
- Reduce the EMI sources throughout the aircraft
 - Possible overall aircraft EMI reduction thus reducing noise for sensitive electronic equipment
 - Additional chafe protection for power cables.


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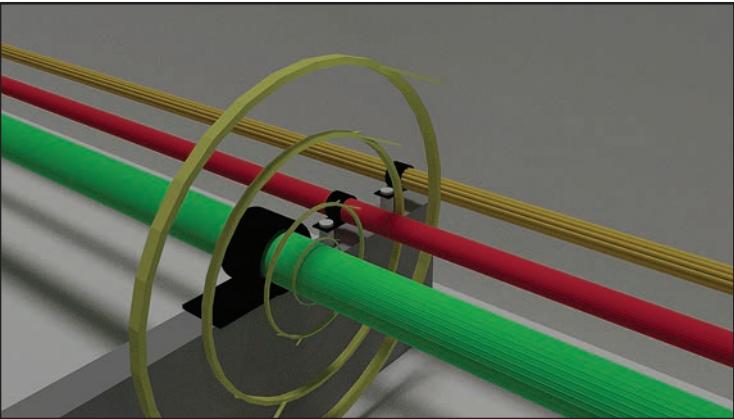


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How far away does your wire/cable need to be to avoid the impacts of EMI? This is a difficult question to answer because of all of the factors impacting EMI. Shielding can be an easier solution.

SHIELD BOTH

Another option is to shield both which provides the benefits of both; but comes with a significant weight penalty. There are solutions that exist for reducing the overall weight burden of shielding, but there will always be a financial and weight cost for shielding. The difficulty with implementing this solution is that many of the harnesses become Line Replaceable Units (LRUs) and are not designed for field maintenance. Naturally, the argument here is the if you can increase the reliability of a wire harness by a factor of 2 (as an example, no data to support), would you be willing to remove the field serviceable capability?

CONCLUSION

The use of shielding to protect wiring and signals has been around for generations, but with the modern aircraft design, the importance of protecting signal integrity is more important. There are multiple strategies for accomplishing this, and the implementation of shielding is entirely dependent on the performance requirement and the operation frequencies of the signal equipment. In the end, it comes down to what design choice can create the safest EWIS design capable of completing the prescribed task. To

find out more about how to improve your EWIS assessments and EWIS safety, contact Lectromec. Lectromec provides certification solutions for aerospace wire systems and components. Showing that your product

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To Be Precise.

Sincerity: The Secret of Sales

By Wes Garner
SureTech Assembly

A wise sage once wrote, “Whoever walks in integrity walks securely...”. This principle recently played out on the shop floor of SureTech Assembly. Our company was searching for a new piece of equipment to expand our capabilities. Naturally, there are a number of competing companies

in the industry that could fulfill our need. One such company scheduled a visit to showcase their product in hopes of landing a sale. On this occasion, the sales team included a regional sales representative and his national manager. As expected, the presentation included literature, videos, and conversation describing the benefits of their equipment. We patiently listened and gathered information in an effort to make a thoughtful decision. As one might expect, the sales team

was enthusiastic and engaging. We were cautious but interested in making a purchase. Toward the end of the presentation, I inquired if I could show the sales team a few things in our company that we were working on. To be clear, these items were completely unrelated to their equipment, however, they were important to SureTech Assembly and we wanted to share them. As we made our way to the shop floor, the disposition of the sales team suddenly changed. As I introduced our product line, the salesman cut me short and actually said, “Just get to the bottom line.” It became painfully clear that the sales team was only interested in our company insofar as it secured them a sale. They measured success strictly on the grounds of selling their equipment. Beyond that, they could care less. This sales team failed the fundamental test of sales: sincerity. Success in sales is best described as winning the heart of the customer not merely their pocket. This article describes two basic principles to sincerely win the heart of a customer.

not because apparent diligence wins sales. Sincerity avoids costumes, facades, acting, and hypocrisy. It is the attitude that I will treat the customer exactly the same regardless of the outcome. Ultimately, sincerity seeks the good of another as its ultimate end.

The first principle of sincerity in sales is taking a genuine interest in the person you are working with. Behind every buyer, engineer, manager, and owner lies a person. A living being. A soul. They have families, hopes, dreams, struggles, frustrations, and accomplishments. With that in mind, sincerity values the person more than the account. As such, sincerity seeks to know the person in front of them by asking appropriate questions and listening. Often the result is a relationship of trust between the salesman and the purchaser. However, we are not after trust to win sales but because it’s good to have relationships of trust. Here is an example that illustrates this principle.

Recently, I engaged a new customer whom I discovered from a cold call. Over the past few months, the manager and I have become somewhat of friends. Through conversations, I have learned he is married and has two young children. I know his wife injured both of her feet over the Christmas holiday. I know he used to race cars and hopes to own a small business one day. In fact, I talked to him this morning. Why would I seek out these things? Because I truly hope that his marriage will last a life-

Continued on page 44

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Before we explore those two principles, it is important to precisely define the word sincerity. Sincerity is best described as “free from pretense or deceit; proceeding from genuine feelings.” Some synonyms include: authentic, real, trustworthy, integrity, honesty, and goodness. It means our actions and words are rooted in who we are not what makes the sale. I will be kind because I am a kind person, not because kindness wins sales. I am friendly because I seek friends, not because friendliness wins sales. I am diligent because I enjoy work

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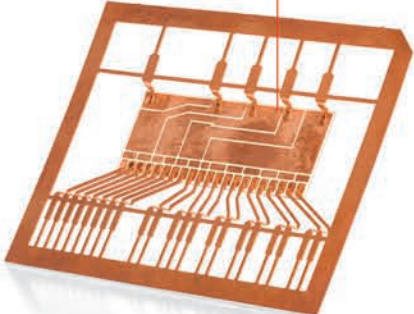
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IGBT application
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Wire splicing
Multi-conductor cables
Twisted wires



Million in sales in 2017. About \$9 Million of that came from the MarVac Assemblies Division. Scott noted their customer mix is comprised of four major sectors. The largest is the industrial sector, “and that can be anything from CNC milling equipment, welders, or big industrial tooling,” he detailed. The next is non-automotive transportation, and that’s typically fire trucks, lawnmowers, defense, or agricultural vehicles. “Those two industries make up about 70% of what MarVac does.” The remaining 30% is split between medical and food preparation products like fryers, ovens, freezers and grills. “A lot of these devices have passive electromechanical components and cable assemblies, so you can pretty much pigeon hole everything we do into one of those four categories,” he detailed. “We’re not making cell phones here in the US, and thankfully, we are not importing fire trucks from China.”

Scott went on to describe the type of assemblies Marsh produces for its customers. About 35% of the business is in traditional wire harness assembly, with another 30 percent being what they refer to as component prep. “There are some grey areas between the two,” he detailed, “but basically it’s where we are doing something like placing a wire to a rocker switch, adding a connector, wrapping a bow around it, then putting it in a bag.” The next piece of the pie would be box builds and Scott mentioned that is an area where they are really growing. The final type of build is kitting. He gave an example with a recent order they quoted consisting of 12 different wires; each of a different color, length and with different connectors; all placed together in a bag. “So, the customer has everything they need to assemble a particular component of a product under one part number,” he described.

The subject then turned to quality standards with Steve saying, “We’ve spent a lot of effort, not only on the distribution side, but also with the MarVac side, on continuous improvement, and that’s what we’re all about.” The company is ISO 9001: 2015 and manufacturers to IPC/WHMAA-620 for assemblies and IPC-A-630 for the box builds. Marsh also works with the Wisconsin Manufacturers Extension Partnership with continuous

improvement strategies. “We’ve got another very sizable project going on with them right now, and over the course of this year, which will be focused primarily on MarVac.

MarVac may have a different name, but the company exists under the same roof in Milwaukee. They share the resources of accounting, purchasing, warehousing and even sales. Most of their business is centered in the Midwest region and they have sales offices in Appleton, Minneapolis, Indianapolis, Chicago, Columbus, Cleveland, Charlotte and more recently a presence in Tampa Florida. “We followed a large customer down there and used that as a spring board for a small office,” Scott revealed.

What MarVac does have that is unique, is Scott. “As assembly specialist, I travel around with our 18 outside salespeople promoting our

value-added capabilities, because we can’t expect them to be experts on value-added.” With a thorough understanding of MarVac, Scott overcomes technical obstacles with an in-depth knowledge of current tooling and core capabilities. He also gets involved with customers on design parameters. “I usually end up making calls in about 22 states and we have a number of stray accounts in places like Kentucky, Texas and even California.

There aren’t many distributors doing what Marsh is doing with MarVac. With access to the line card of passive and electromechanical components, there is definitely an advantage in the ability to produce cable assemblies as well. “With the types of products we sell as a distributor, the harnesses just typically follow,” Scott explained, “but as MarVac has grown,

the harnesses are beginning to lead to the components.”

When asked what makes Marsh Electronics/MarVac stand out with their customers, both were quick to mention their pride as a solutions company. “It’s right on our website,” said Steve, “and that’s where we are superior. We adapt and respond quickly, and we work very hard to bring multiple solutions to our customers’ problems.”

Stop by booth #1608 at the Electrical Wire Processing Expo in Milwaukee and meet Steve, Scott and the rest of the crew. Scott mentioned he will have a box of Sharpies to sign your copy of this article!

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Continued from page 29

APPLICATIONS OF HIGH-TEMPERATURE WIRE

As mentioned above, high-temperature wire can be found in environments with elevated temperatures and harsh conditions. These applications commonly include motor leads and internal wiring of appliances, such as refrigeration equipment, heat pumps, clothes dryers, lighting fixtures, commercial and industrial ovens, room cooler units and electrical ranges. High-temperature wire

can also be found in steel mills, glass plants and chemical plants.

Table 3 provides common applications where high-temperature wires are commonly installed. Depending on the application, further information such as UL listings, cable size and other environmental conditions may be required to select the correct product.

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High-Temperature Application	°C	°F	Wire Trade/Listed Name
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	200	392	SRK, FEP
	250	482	TGGT, TKGT
	450	842	MG
Appliance and Fixture Wire	150	302	SRML, SF-2, SEW-2
	250	482	TGGT, TKGT, TFE
	450	842	MG, MGT
Control Cable	200	392	SRGK, SRGT, SRK
	250	482	TKGT, TKGK
Heating Cable	200	392	PFA
	450	842	MG
Instrumentation Cable	250	482	TKGT, TKGK
	200	392	SRGK, SRGT, SRK, FEP, TFE, PFA
Power Cable	200	392	SRGK, SRGT, SRK, FEP, TFE, PFA
	250	482	TKGT

Table 3 – High-temperature Wire Applications

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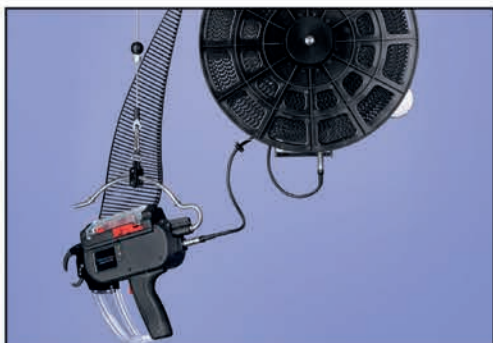
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Sincerity: The Secret of Sales

Continued from page 38

time. Because I hope his children will grow up to be healthy, good citizens. Because I hope one day he owns that dream business. If it ever opens, I'll be his first patron regardless of how the present account works out. We are friends because it is good to have friends. Some reading this article are probably thinking, "What about the sales? I'm measured on how many sales I make not how many friends I have." The reply is simply: "Whoever walks in integrity walks securely."

The second principle of sincerity in sales is taking a genuine interest in the company you are working with. Each company is the realization of someone's dream. Typically, it is built on years of hard work, perseverance, and patience. The products are often past ideas, issued patents, and current production. The customer has become an expert in their field and built a company from that expertise. With such a wealth of knowledge before you, wouldn't it be wise to investigate and understand the company? Here are a few steps to consider during an initial visit to a customer:

1. Before the visit, go to their website and read about their product, company, history, and structure. Make notes where appropriate.
2. Make a list of questions about the company and their product that you might ask during the visit.
3. If you have one, read the e-mail of the person you are visiting. What is their actual title? What is their education, nationality, experience? Ask yourself: what can I learn about this person and their company?
4. While waiting in the lobby, pick up any available literature and read it. Don't pretend to be reading it but actually read it. Learn something.
5. During the visit, ask multiple questions about their product and seek to understand it.
6. Do not rush the company tour; stop and take it in. Consider making notes if appropriate.
7. Follow your visit with an e-mail thanking them for the visit and information. Be specific on what you have learned.

Remember, taking an interest in the company is not a façade to make the sale. We take an interest because it is right to learn at every opportunity. Some reading will complain, "But I am not paid by how much I learn. I am paid by my sales." The old sage will say: "Whoever walks in integrity walks securely."

In closing, let me finish the illustration which I began. The equipment company that showed no interest in us personally and no interest in our company lost the sale. However, we did buy a piece of equipment. Who made the sale? Another salesman, from another company, who stops by regularly and whom we call friend. And by the way, he would be our friend whether he made the sale or not.

Wes Garner is the Director of Sales and Marketing for SureTech Assembly. Wes has worked in a number of industries and holds a degree in Christian Studies.

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Next Generation Tri-Star Automatic Contact Crimper (TAC) Makes Its Debut

Tri-Star Technologies, a leader in wire processing systems for more than 40 years, unveils its latest generation TAC X Series Automatic Contact Crimper at the National Electrical Wire Processing Technology Expo in Milwaukee. See it demonstrated at Booth No. 1458.

These newest crimpers, the X series, build upon the speed, reliability, durability and quality of previous TAC systems. Among many innovative fea-



TAC X Series Automatic Contact Crimper

tures, the X crimpers are smaller, lighter, and feature a dual bowl option which enables a quick change from pin to socket contacts.

Alex Kerner, President of Tri-Star Technologies, said, "Everyone's excited about our newest X series models. They really like the smaller more compact size and the ability to quickly change contacts via the dual vibratory feed bowl option." He added, "We're very proud that we've delivered more than a thousand TAC systems worldwide over the past four decades. And, with initial reaction to the new TAC X, we're confident that we'll be delivering even more."

The X series crimpers are fully automatic, with wire trigger activation; no foot pedal or other manual activation is needed. Production is very fast, with crimp rates of up to 1800 terminations per hour. Crimp quality is also a key feature that has helped make the TAC series the industry leader. All elements of crimp quality are managed by on board sensors, guaranteeing correct crimp depth and proper wire insertion. There is also a sensor that assesses the quality of the contact, so any bent, incorrect or defective contact triggers a system shutdown.

The new TAC X Series Automatic Contact Crimper is now ready for delivery.

For more information, contact Roger.Lewin@carlisleit.com, phone: 917.972.4133, or visit www.tri-star-technologies.com.

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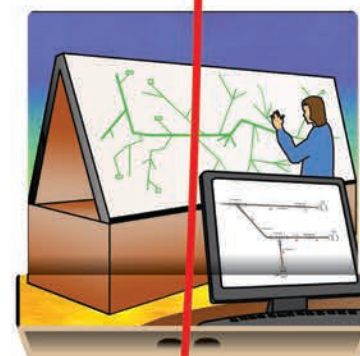
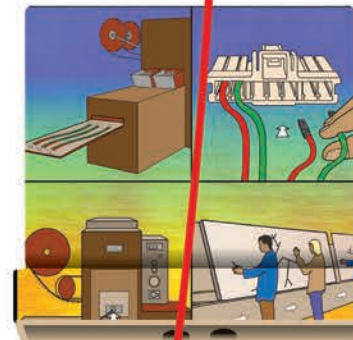
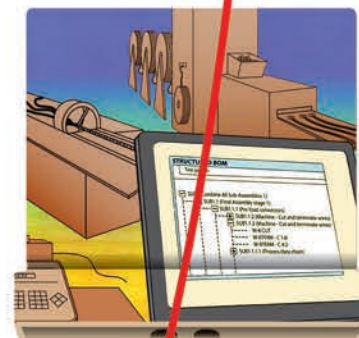
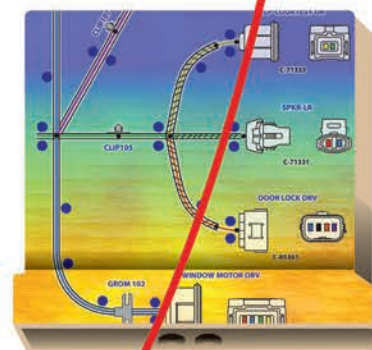
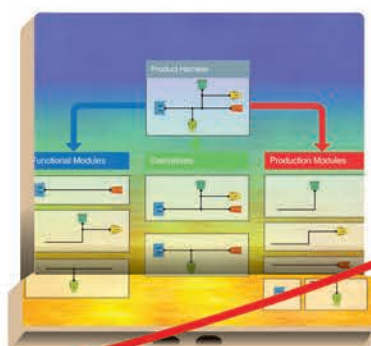
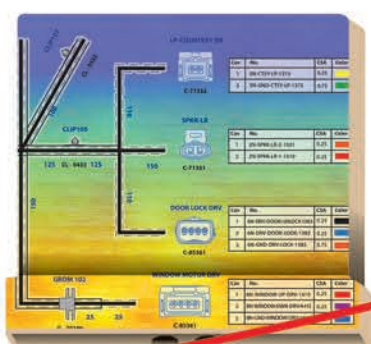
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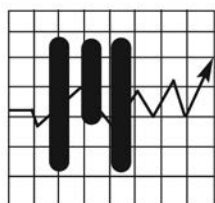
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TECH-SONIC'S Servo Technology Adds Versatility to Ultrasonic Welding

Continued from page 27

micron linear encoder built into the servo. Byoung noted that this resolution is especially useful to the wire harness industry in the detection of missing strands. He explained that the industry requires wire harness producers to detect missing strands within 3% of the total cross section. That becomes more critical with small wire sizes. "For example," Byoung said, "many 13 sq mm wires, which are the smallest wires used in automotive, have 7 strands, and the industry does not allow for a single strand to be cut or missing." Current pneumatic welders cannot consistently detect below about 5% of the total mass of a single wire. "But using servo technology, you would definitely be able to detect less than 3% of missing strands." In general, Byoung posited, the consistency of servo controlled wire welding enables users to have smaller tolerance windows in

order to reject defects and minimize false alarms.

The importance of missing strand detection is compounded when you have wires in combination with other wires in a splice. Frank explained saying industry specifications state that it's not the entire combined wires in the splice you have to account for, rather it's each individual wire within the combination. "As those combinations become larger and larger, sometimes up to 12 or more wires at a time, detecting missing strands from individual wires becomes harder and harder," he said, "and that's really where we offer a big improvement over pneumatics." He indicated some pneumatic machines are capable of detecting missing strands, but the big difference is in the level at which they are able to detect.

Another advantage of servo technology is the decreased stress the machine introduces to the strands.

Frank detailed saying, "Often times, even if the wires and strands are in perfect condition, the pneumatic welders move in a more violent nature, creating movement of the tooling that can sometimes damage the materials being welded. The servo has a 'soft touch' landing that helps preserve the integrity of the wires being welded."

This decreased stress also increases the life cycle of the replaceable tooling. As Frank reiterated, since the weld pressure is controlled during the weld, the tool and anvil are not transferring more energy than needed during the cycle. This helps to prevent cracking of the ultrasonic horn which may occur with higher power units. He also mentioned that by eliminating pneumatic components, the calibration process is greatly simplified as the force control feature of the servos requires no manual adjustment.

In their concluding remarks, Byoung and Frank proudly held that TECH-SONIC's research and development of servo controllers has created the first line of digital metal ultrasonic welders. Both maintain it's one of the greatest advancements in this technology in the new age. They have integrated the latest in electronics, hardware, force sensors and control software into their products, and seemed quite passionate about their ability to deliver a high level of quality control to the wire harness industry.

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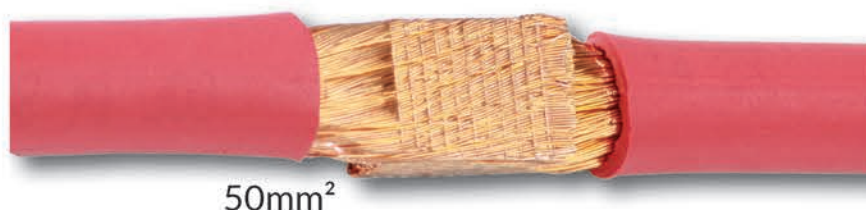
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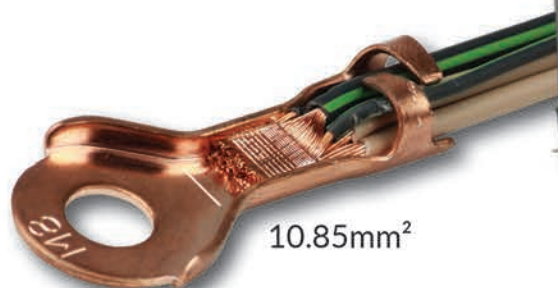
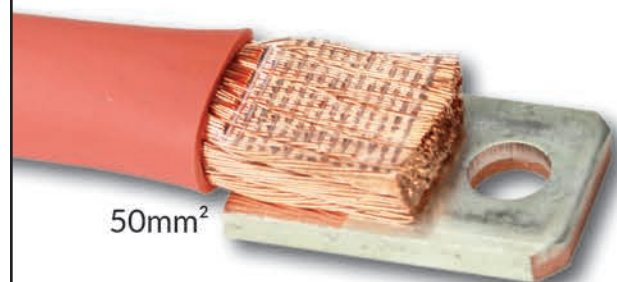
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- Detects missing strands under 3% CSA & single missing 0.35mm² wires



NEWS PLUGS continued



Telsonic SOLUTIONS Announces New Facility

After eight years of successful growth in the American market, TELSONIC Solutions, LLC has announced the move to a new home. The move to the new facility was necessary to achieve the company's organizational needs, and to meet increasing customer demands.

"The new facility is built to strengthen our position in the marketplace and make our customers feel at home and it allows them to get the full benefit of our joining solutions when visiting Telsonic," said Saeed Mogadam, Presi-

dent, TELSONIC Solutions, LLC.

The heart of the facility is the new state-of-the-art laboratory. "This will allow our engineering team to better adapt our exclusive technologies to meet our customers challenging applications, and advancement of our R&D projects," added Mogadam.

The new location is at 16 Esquire Road, Billerica, MA 01862. All other contact information including phone numbers will remain the same. The new facility is 27 and 34 Miles from Boston's Logan and Manchester Airports respectively.

TELSONIC AG, is a global provider of Ultrasonic Welding Equipment. Based in Switzerland, the company has subsidiaries around the world. TELSONIC Solutions, LLC is the Metal Welding Division of TELSONIC AG for American market, and is committed to



the wire bonding needs of OEMs and Harness Manufacturers. Local representatives can be contacted by visit-

ing telsonic.com or by phoning (617) 244-0400.

CAMI Research to Host Professional Development Workshops at EWPT Expo, Milwaukee

CAMI Research Inc. (Acton, MA), a 2015 and 2017 Wire Harness & Cable Connector Top Product, will again host professional development workshops at the Wire Processing Technology Expo in Milwaukee, and offer opportunities to win \$500 in CableEye® accessories. These sessions will be held on the Tuesday – the EXPO set-up day. At the exhibit itself, CAMI will have hands-on exhibits for visitors to experience CableEye's ease of use and flexibility, especially regarding automated testing.

A leader in development of PC-based Cable & Wire Harness Test Systems for over 20 years, CAMI returns to the Expo for the ninth straight year.

Seminar – "Beyond Continuity & HiPot Measurements"

This informative seminar is for employees of any company looking to improve product quality and productivity whether their products are cables or harnesses, or products in which cables /harnesses are parts or subassemblies. Prior knowledge of cable testing is not required.

CAMI Research will hold this complimentary workshop the morning of Tuesday, May 8 at the Wisconsin Center. Space is limited, so early booking is advised. camiresearch.com/Campaigns/wpt-expo.html#Free-Seminar

Training Session – "Improving Reliability of Continuity & HiPot Tests"

Continued on page 52



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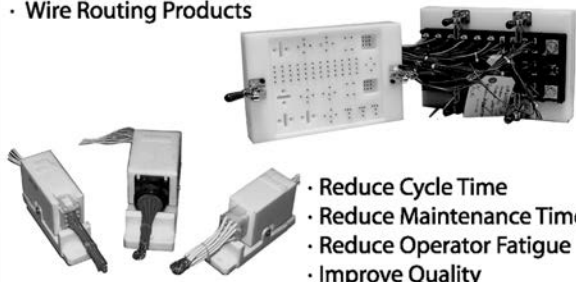


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NEWS PLUGS *continued*



Continued from page 50

CAMI Research will hold this professional development training session at a special show rate, the afternoon of Tuesday, May 9 at the Wisconsin Center. Space is limited, so early booking is advised. camiresearch.com/Campaigns/wppt-expo.html#Training

Presenter

Christopher E. Strangio is the President and founder of CAMI Research and holds degrees in Electrical Engineering from Vil-

anova University and MIT. A lecturer at the MIT Lowell Institute for twenty years, and author/presenter of a microprocessors multimedia course for the MIT Center for Advanced Engineering Study, he has been awarded two patents, developed the CableEye PC-based cable & harness test system, and is a senior member of the IEEE.

Exhibit

CAMI returns to Booth 1909 providing hands-on demonstrations of CableEye® Cable and Harness Test Systems. Visitors will be able to try low voltage and high voltage (HiPot) testers and explore the CableEye interface & reports; multilingual, dynamic, graphic-rich display;

real-time screening for intermittent connections; relay control; measuring cable length; simple automation scripting; light-guided assembly; barcode-tracking & archival data-logging; determining wire twist relationships (in pairs or triplets); and precision resistance measurement (4-wire Kelvin).

Attendees of the exhibit will be eligible to participate in a drawing to win \$500 in CableEye accessories.

JBC Net Wins Innovation Award at IPC APEX EXPO

JBC announces that it has been awarded the IPC APEX EXPO Innovation Award for JBC Net, the first smart system to optimize traceability and resources in hand soldering.

JBC Net has stood out among thirty-four products and services that were reviewed, rated and scored by a panel of industry experts.

The award was presented to the company during John Mitchell's keynote. "The product and service submissions were certainly innovative and the companies did an exceptional job in identifying their product's unique value in the industry", said the IPC president and CEO.

The Innovation Awards Review Board has highlighted JBC Net as a pioneering software system that manages and optimizes the hand soldering process, standardizes parameters and controls operator performance.

"The soldering sector is evolving by adopting the Industry 4.0. To guarantee an efficient and high-quality production, industrial leaders must face some challenges: decrease errors, control the processes and trace the soldering jobs", said Carlos Sánchez, JBC Lab Manager. "Our commitment to innovation has led us to develop a pioneering traceability and control software, to meet these huge challenges. In the future, having the best tools won't be enough. It will be necessary to control every step throughout the entire production line and thus avoid errors during the soldering process", Sánchez detailed.

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New HellermannTyton Website Helps Customers Succeed

HellermannTyton North America has revamped its website to better serve the increasingly complex needs of its distributor, manufacturer and installer customers. Among the highlights of the update:

- Product Finder – This new, self-guided search tool uses application-based questions to zero in on the right parts for the job. In the past, customers had to rely on their understanding of the solutions available, which might have eliminated lesser-known solutions from their searches.
- Products Section – The new product search engine is more intelligent, yielding results for a wider range of queries, and new filters help customers find solutions faster.

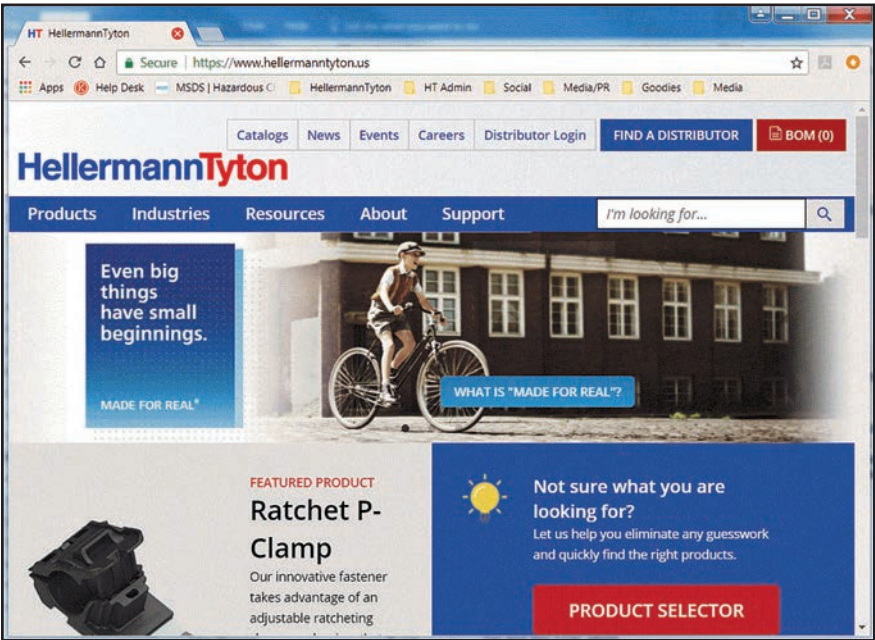
- Spotlights – Engaging stories highlight how HellermannTyton views manufacturing differently.

- Improved User Experience – The redesigned interface aligns with customer feedback and needs.

“As an international manufacturing leader, we keep our customers at the heart of every process,” said VP of Marketing Ron Kovac. “We are constantly listening. Today’s manufacturers and installers are looking for any advantage they can leverage to innovate beyond their competition. The updated website is a direct response to that. It coincides with a new, international branding initiative called “Made for Real.”

More information at: www.hellermann.tyton.com

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HellermannTyton’s new website offers innovative tools, with an updated design reflecting the evolution of user needs.

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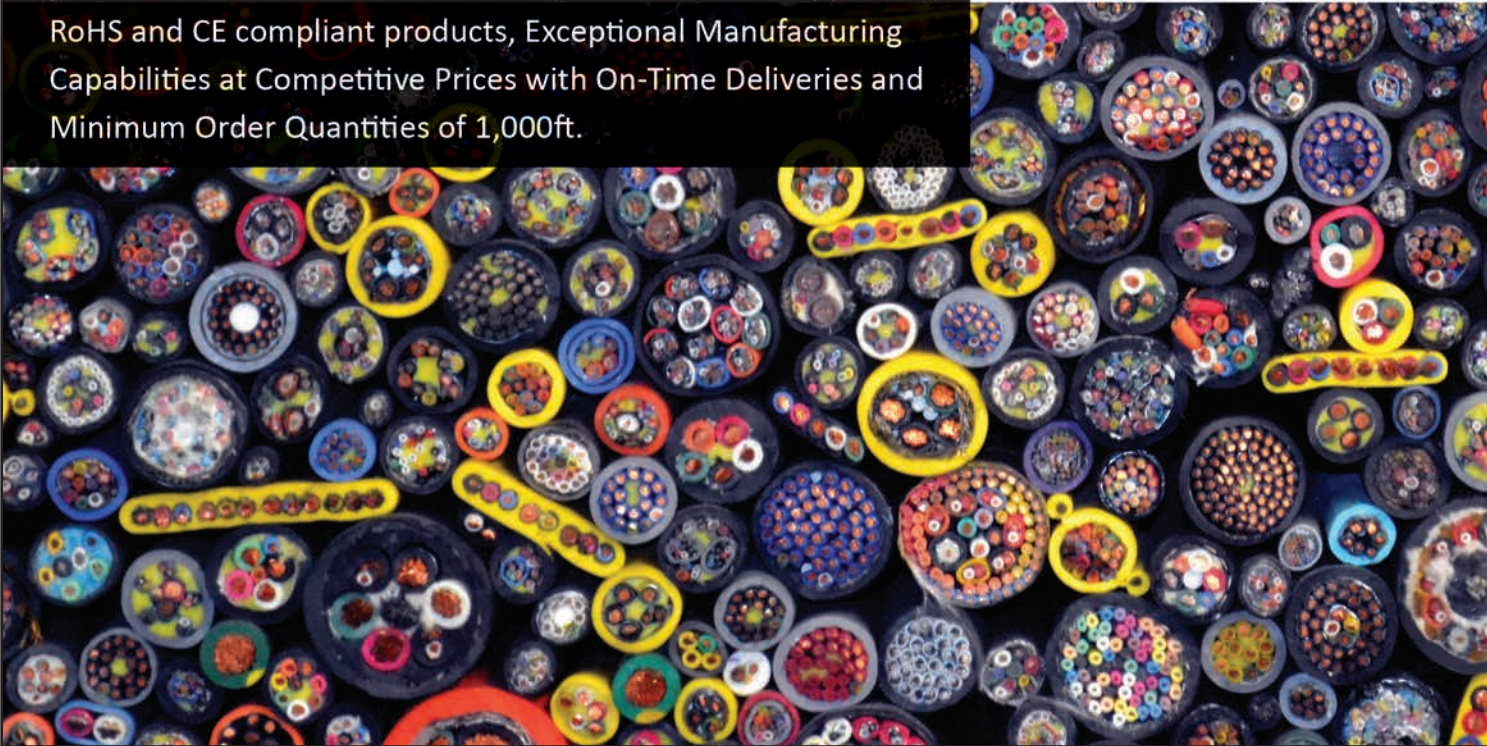
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Mecal by Starn Strengthening Customers Through Training

Continued from page 1

Mecal by Starn has a special training room set up at their facility, and can accommodate a class size of five. Each station has applicators and all the tools necessary to make the proper adjustments and maintenance protocols. “All they have to do is get to Meadville Pennsylvania, get a hotel room, and we’ll train them for free in about a day and a half,” mentioned Bill. They mentioned that Mecal by Starn will also perform on-sight training for a fee to cover costs. They asserted, however, that the training in Meadville provides a better platform for learnings as it’s free of distractions.

The syllabus is geared towards the basic mini applicator. As Bill stated, the goal is to understand what equip-

ment they are using in conjunction with their Mecal applicators, and where they are having issues in their operation. Then they fine tune the instruction based on those parameters. “Obviously, there’s a proper procedure for putting the applicator in the press and making sure your not going to crash the tool,” Bill said. “But many of our customers have multiple applicators that they switch in and out of the press all day long, and they want to be able do those changes quickly. As long as the height is set properly on the press and you have a well-adjusted, well maintained applicator, you should easily be able to do that.”

As a partner with Mecal Italy, Mecal by Starn receives the applicator housings from Italy, and customizes the components for markets in the



Figure 1. Applicators in enclosed cabinet

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United States, Canada, and Mexico. Part of the training is taking students through the actual manufacturing process so they better understand the applicators, and can gain an appreciation for the quality and craftsmanship required to produce them.

It doesn't matter what level of expertise attendees have. They can accommodate folks who have only a rudimentary understanding of the products, but they can also teach an old dog some new tricks. Bill summed it up saying, "The smarter they are, the better equipped they are to get their product out the door." He also mentioned they make a better customer. "Their technical expertise is greater, so their ability to call us with a specific question is better because they've learned the right language, and they can identify the right parts."

Bill Starn is encouraged by the training efforts he sees not only from providers of other levels of wire processing equipment, but by his competitors as well. "I'd like to mention that I appreciate the fact that Rob Boyd from Schleuniger did that arti-

cle on applicator maintenance (WHN March/April 2018)," Bill feels passionately that if the industry can help all customers build better products, the OEMs and those who ultimately receive the end product will benefit. "It's good for the country to have better skills and knowledge throughout all levels of industry."

Feedback from Class Attendees

It seemed fit to speak with a couple of former students. Chad Dawgello and Chuck O'Roark described their recent experience with Mecal by Starn's training program. "I've used Mecal products for years, and I didn't think the training was going to show me much," said Chuck, "but I had no idea what I didn't know!" He added, "We got a lot of hands-on experience on the preferred way to introduce the applicator into the press, and the proper way to slide the terminals along the guide without having them catch." They were able to do cross section analysis and learn how the adjustments to the applicator affect

Continued on page 56



Figure 2. Proper reel storage on pie shelf

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Mecal by Starn

Continued from page 55

the various internal dimensions of the crimp.

When asked what practical directives they put into place post training, they were quick to mention how they scheduled preventative maintenance on the 30 or so applicators that CMR stocks. "We've gone back through and preformed the fine-tuning adjustments and lubrication on our applicators that have been around for a long time, and it's creating better crimps," Chuck mentioned. They also began to store the applicators in a designated cabinet, instead of on a shelf where dust can collect in sensitive areas (Fig 1 - Page 54).

Chuck and Chad also learned a better way to store their terminals. They now store them flat on a pie shelf (Fig 2 - Page 55). "Using the pie shelf and taping the ends of the reels has helped us keep the terminals safe so they don't get damaged," advised Chad. They saw firsthand during the training how damaged terminals can cause issues with the applicators.

Overall, the training was key in some of the continuous improvements CMR has made to their crimp process. In concluding their remarks, Chuck enthusiastically mentioned, "If they add any other types of training, we'll be the first ones to run up there!"

Primer in Diagnosing Crimp Applicator Issues

By John Belovarac

John Belovarac, Operations Manager at Mecal by Starn, has been running their training program for many years. WHN asked him provide us with a list of tips and recommendations useful to harness manufacturers without regard to the brand of applicator they are using. Many thanks to John for his hard work in putting together these major points:

1. Slide Adjustment - There are a group of parts that control the movement of the terminal through what we call (and I think most oth-

ers as well) the slide. I call the individual component the slide, and the entire assembly the slide unit. In my opinion, the terminal should have no chance to move away from or toward the operator as they move into position over the anvils, or the exit side of the slide unit. There may be a little movement (.003" - .005") on the entrance side. Something we see commonly with applicators coming back for repair or upgrade is an excessive amount of clearance for the terminal with the guide and slide. We believe there are several possible reasons for this. One, someone has re-adjusted the guide not realizing the importance of controlling the terminals,

two, terminals being supplied by the manufacturer are different (no one would admit to this though), and three, there is a belief that the pin and socket version of the terminals are the same and should fit through the applicator the same. The adjustment can be such that it can cause a pinching effect on the terminals and causes them to roll before they get to the crimping zone.

Our training empowers the operator to understand when he is faced with a situation like this and what he can do about it.

2. Feed Finger (Pawl) - The feed finger is what pushes or pulls the terminal through the slide unit and can have an effect on the repeatability of the final position of the terminals over the anvils. For your typical side feed applicators, when the feed finger moves back to engage the next terminal, it should never come out of the hole in the carrier strip. If the feed finger is allowed to move too far, and ends up resting on top of the carrier strip, it can skip over the hole and not advance the terminal. The feed finger must also be adjusted to be able to push from the center of the hole, and not forced to one side or the other.

3. Alignment of the Upper Crimp Punch with the Lower Crimp Anvil - This is very important to achieve the life expectancy of the crimping tools, and the quality of the final product. We have seen several man-

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ufacturers advocate the use of a paper or something placed over the anvils while installing the upper crimp tool. This paper creates a consistent clearance of both side of the crimp tool relative to the anvil while it is being secured into place. The Mecal applicators (not sure about any others) are intentionally made with enough clearance for the crimp tool to “float” to the proper aligned position and compensate for any manufacturing tolerances, or minor assembly errors. In the end, you can still have perfect alignment of the crimp tools.

4. Torque Specification for Screws - Years ago I had a customer ask me if we had any recommended torque specs for our screws. At that time, the answer was no, but I started to do some research on the subject. Size, material and heat treatment, all play a role in the possible torque specifications. Mecal uses the highest quality screw available on the market. And we can now offer a specific torque specification for a couple of the very important screws. But short of asking all our customer to buy a torque wrench, we just teach them to make the screws about as tight as you can comfortably make them. Another important thing is that the purpose of securing something down with a screw is basically to put clamping pressure to the pieces under the screw. And you can get more clamping pressure at the same torque with a lubricant on the screw than you can with no lubricant. So we always recommend applying a little grease to all the screws.

5. Quality and Calibration of the Press - When things start to go bad, it seems the first blame is on the applicator. But in reality, the performance of the applicator is directly controlled by the quality of the press. I read a statement that the “crimp height is the closed position of the crimp tools”, but this is far from the truth. The crimp tools should never touch one another. There is no such place as the closed position. Instead, they need to be driven down toward one another in a very controlled motion, stop at some very precise location before colliding with each other,

generate enough force to finish the crimp, and then immediately pull away. If your press cannot do that, then you can have the best applicator in the world and it won’t work right.

As stated earlier, the standard proper shut height of the press accommodating a mini-applicator is 135.8 mm (technically it’s 135.78). I’m not sure where this dimension came from, but I believe it is basically the warm fuzzy place you want to be.

Will your applicator work if your press is slightly different? Yes. But any assistance we give with theoretical settings of the regulation head will not match. I actually had a customer tell me that because we stated to have a specific setting for the applicator’s regulation head, that our applicator must create the proper crimp height at that setting in his press, and that he was bound to abide by our (manufacturer) recommendation. But I cannot control his press, so how can I guarantee anything? All presses flex under pressure, and they all flex differently. You may get different results when changing from press to press.

6. Crimp Height vs. Pull Force - We have done some very in depth studies to find the “optimum” pull force or tear out value, both for some customer and ourselves. When you are crimping the terminal onto the wire, you are compressing the wire to a total area something smaller than the total area of all the lose wire strands combined. We call this the compression ratio. Some think tighter is better. But it’s like holding a bunch of cooked noodles in your hand - not tight enough and some may slip out... too tight and you can squeeze them to the point where they come apart in your hand. So, as you are reducing your crimp height, little by little, you can watch the pull force value increase, but only to a certain point. Then the pull force will start to decrease, and it will continue to decrease as you go lower on the crimp height. In all the tests we have done, we have found the absolute peak of the pull force value to be pretty close

Continued on page 58

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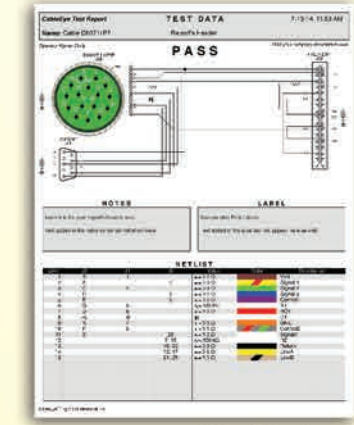
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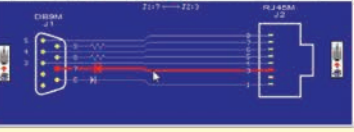

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Printing	Reports & Labels
Speech	Guided Assembly
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Primer in Diagnosing Crimp Applicator Issues

Continued from page 57 _____

to a 15% reduction in area of the wire. Mecal's standard for compression ratio is 17% to 24%.

7. External De-reeling Forces on the Terminal - Any automatic machine should have a de-reeling mechanism to help unwind the terminal to provide a consistent tension of the terminal as they make their way to the applicator. The applicator cannot be responsible for untangling terminals that may be caught on the reel, or on the edge of a bench. It is the function of the drag brake (friction) to put a consistent resistance on the terminal as it is fed through the applicator. Anything else will have an effect on the final position.

8. Mechanical vs. Pneumatic Applicators - We have found a huge benefit to use a pneumatic applicator over a mechanical version when using terminals that are very fragile. Our applicator has an adjustment valve that can control the speed only of the advancing terminals. You can slow them down enough to allow the operator to get the finished crimp out of the way of the incoming terminal without colliding, and you can speed them up fast enough (usually even faster) to keep up with any automatic wire processing machine. A nice subtle, gentle feed motion is always easy on the terminals. The better condition they arrive at the crimping zone, the better the results.

For more information, go to www.mecalbystarn.com. Visit the Mecal by Sarn booth #1826 at the EWPT Expo in Milwaukee.

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Visit with Wiring Harness News at the
18th Annual Electrical Wire Processing Technology Expo - Booth 1422

Schleuniger, Inc. to Debut New Wire Processing Equipment at EWPT Expo

Schleuniger, Inc., a leading international manufacturer of high-precision wire processing machines, will be among the over 175 world-class suppliers and service companies to exhibit at the 2018 Electrical Wire Processing Technology Expo. This annual event for the wire and cable processing industry will be held May 9-10, 2018, at The Wisconsin Center in Milwaukee, WI. Schleuniger will be at booth #1732 providing hands-on demonstrations of innovative solutions for stripping, cutting, sealing, crimping, and marking of all types of wire and cable.

New for 2018, Schleuniger will debut its latest cut, strip, and terminate machines, the CrimpCenter 36 SP and the CrimpCenter 64 SP. Equipped with the latest high precision technology, the CrimpCenter 36 SP offers decreased set-up times with its new wire straighteners and programmable gripper pressure, increased performance with higher feed rates, and refined motor synchronization. The CrimpCenter 36 SP also adds enhanced wire handling with a new deposit gripper and an automatic batch tray. The CrimpCenter 64 SP fully automatic crimping machine is built with a dynamic and powerful control system that provides the highest production rates to meet the most demanding production schedules. With remarkably improved processing stations, the CrimpCenter 64 SP is guaranteed to minimize any errors and provide long-term durability.

Also new this year, Schleuniger will exhibit its newest coaxial cable stripping machine, the CoaxStrip 6380. With an increased stripping length and cable processing range up to 8 mm (0.315”) cable diameter, this high-performance machine offers improved incision quality and cable diameter verification. With the latest generation user interface and independent central-

izer drive, this powerful, yet precise machine is designed to provide the highest possible productivity and performance.

Schleuniger will also provide wire processing training courses that will be offered during the expo. Classes will be provided for both intermediate and advanced level wire processing professionals. “Solutions and Processing Improvements” will be held Wednesday, May 9 from 8:30 A.M. to 11:00 A.M. And “Cut/Strip/Crimp Basics: Quality Makes the Difference”, will be held Thursday, May 10 from 8:30 A.M. – 11:00 A.M. Both classes will be held in room 202AB. You may choose to take one course or register for both. Classes are free and open to all Electrical Wire Processing Technology Expo attendees, but advanced registration is required and space is limited. For more information and to register visit www.schleuniger-na.com/training/registration/.

Schleuniger will unveil its new industry leading training tool, S. University. No one is better suited to deliver wire processing training than Schleuniger. With the widest breadth of expertise in the industry, Schleuniger would like to bring that expertise to everyone, all in one place. Visit our booth to learn more and to receive a discount off your first training course!

Attendees of the Electrical Wire Processing Technology Expo are invited to attend technical seminars presented by industry experts. Dr. Paul Taylor, founder of Laser Wire Solutions, will present an educational seminar on the benefits of Laser Wire Stripping. The presentation, “Laser Wire Stripping Master Class” is open to all attendees.

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



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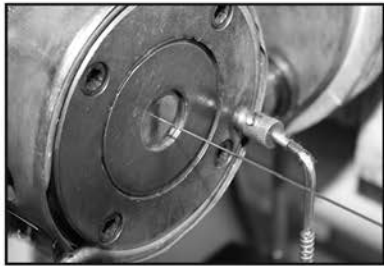
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NEWS PLUGS continued



Randy McDonald Joins FreePoint Technologies

We are thrilled to announce that Randy McDonald has joined FreePoint Technologies.

Randy has 30 years of experience in machining, fabrication, and manufacturing from the plant floor to general management. Having been certified as a Certified Manufacturing Sales Engineer (CMTSE), he has an understanding of machine design and control systems along with manufacturing processes. For the past six years, Randy has been deeply engaged in the evolution of digital machine monitoring. He believes that this need not be a complicated process. His mantra is to “Make Every Minute Accountable.”

Randy offers a consultative ap-



Randy McDonald

proach to each project. His process is to first understand each company’s specific priorities; then to assist in defining the needs; and plan and oversee the implementation cycle as well as the stabilization, and validation of targeted ROI.

FreePoint is excited to have Randy on board at this critical point in our company’s history – and its future. Randy will assist FreePoint in sales throughout the GTA as well as the development of the sales and marketing plan in North America.



Gustavo Garcia Cota

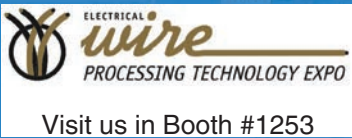
Telsonic North America Adds Gustavo Garcia Cota as Managing Director of Telsonic Solutions, LLC.

We are pleased to announce a new addition to our management team at Telsonic North America. Gustavo Garcia Cota joined us as the Managing Director on March 26th. He comes from a strong background in the automotive

Continued on page 62



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NEWS PLUGS *continued*

Continued from page 60

industry, as well as years of working experience in product and key account management with our cooperative partner, Schleuniger. Gustavo reports to Saeed Mogadam, president and will manage our day to day operations. Telsonic welcomes him to our growing global team.

By utilizing the spirit of innovation and long established technologies, the team of metal welding experts at TELSONIC is poised to meet the demands of growing markets such as the automotive industry. With high pow-

ered systems and the unique Torsional welding technology, the TELSONIC Group has expanded the metal welding spectrum, facilitating the joining of various materials, sizes and geometries previously outside the capabilities of ultrasonic metal welding.

Telsonic facilities in North America are located in Massachusetts, Michigan and Windsor, Ontario in Canada.

Gustavo Garcia Cota's office is located in Billerica, Massachusetts. Many of you will meet him at the Electrical Wire Processing Technology Expo in Milwaukee during the event on May 8th & 9th. For any questions, please contact Gustavo at 617 244 0400.

Laser Wire Solutions at Electrical Wire Processing Technology Expo

Laser Wire Solutions is gearing up for a busy show at the 18th annual Electri-

cal Wire Processing Technology Expo which will take place at the Wisconsin Center, Milwaukee on May 9th and 10th. The company this year will be co-exhibiting with the Schleuniger group, in booth 1732.

Laser Wire Solutions' CEO, Paul Taylor states, "We have had an exceptionally successful and busy period since the last show in 2017 and this has meant that we have a number of new, innovative products to showcase at this year's event", additionally, "We have worked tirelessly both independently and collaboratively with our partner Schleuniger to develop and market these to meet customers' needs".

The most recent addition to the range of laser wire strippers is the Mercury-6, which is a rotary stripper unit customized for the stripping of multi-layer cables up to an outer diameter of

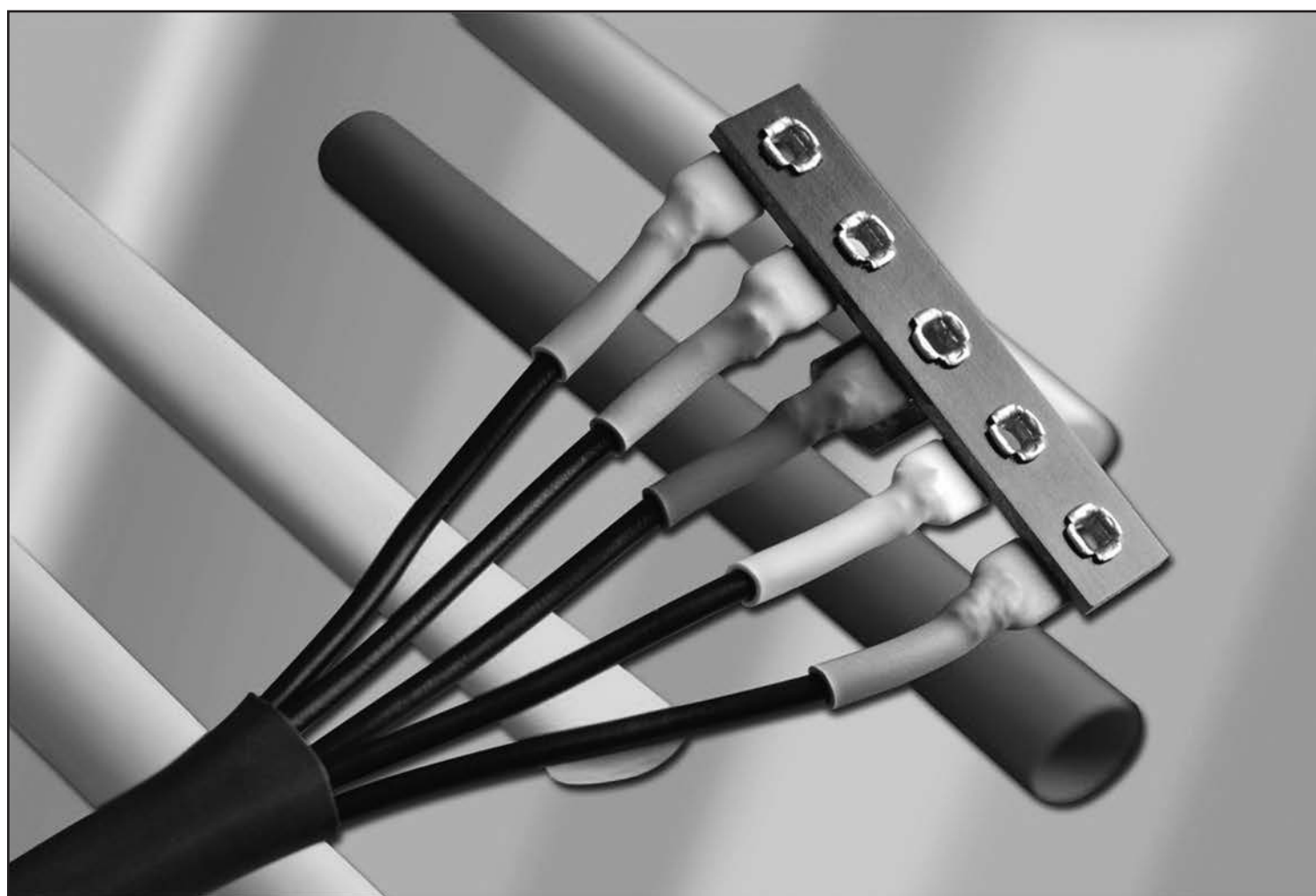
1.18" (30 mm). As with the company's other laser wire strippers it gives an intrinsically perfect strip every time with no nicks and no scrapes. The laser light efficiently vaporizes a line of insulation around the wire which harmlessly reflects off the conductor or shield producing a perfect strip every time.

The Mercury-6's optical system features both a linear and a rotary axis. The rotary axis gives the circumference cut and the linear axis moves the optics to make the slit (up to a maximum 7.84"/200 mm length). The optics head has a programmable focus to allow for changes in cable layer diameter. It's a benchtop system that is simple to use and effortless to maintain. Fitted with an HMI touchscreen, strip programs can be easily configured and selected. The self-limiting laser process means that a wide range of wires and cables can be stripped in a single machine with the same set-up.

Similar in concept to the Mercury-6 is the Mercury-5, which made its debut in Munich last November at the Pro-ductronica Show. The Mercury-5 has been a collaborative project between Laser Wire Solutions and Schleuniger. This specific Mercury edition was introduced to strip tough outer jackets of large cables up to 0.79"/20 mm in diameter with strip lengths of up to 7.84"/200 mm.

Typical applications for the Mercury-5 and Mercury-6 machines are the stripping of high voltage cables used in electric and hybrid vehicles. Both the Mercury-5 and Mercury-6 machines can be fitted as in-line units into existing production lines for improved efficiency and automation.

Laser Wire Solutions will also be shining the spotlight on its new Odyssey-4. Whilst the Mercury systems feature carbon dioxide lasers, the Odyssey system uses UV laser technology. This is a highly innovative, first-of-its-kind product that was designed to handle and ablate very delicate enamel (polyimide) wires down to 50 AWG or less. Such wires are typically found in high speed data cables and in medical devices (catheters). The stripping of micron-thin polyimide insulation is clean, fast, and of an exceptionally high standard. Strip quality is verifiable with a reliable closed-loop camera vision system monitoring every stage of the process. The Odyssey-4 can also be configured to automatically strip



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Alongside the above, will be the Mercury-2 and Mercury-4 carbon dioxide laser wire strippers. See why these laser strippers continue to be so popular.

Staff from Laser Wire Solutions are very much looking forward to welcoming visitors to its booth 1732 and to demonstrate the full capability of the systems described above. Please bring along wire samples for testing and demonstrating proof of capability.

Founded in 2011, Laser Wire So-

lutions is an innovative expert in the field of laser wire stripping, providing off-the-shelf and bespoke solutions, including benchtop, inline and fully automated laser wire strippers.

Promotions & Growth Within the Starn Family of Companies

MEADVILLE, Pennsylvania — Mecal by Starn has promoted Jim Smith as it's General Manager. He will oversee all the sales and operations for the facility. Jim has been with the Starn family of companies for nearly 30 years. He started out as a janitor at Starn Tool &

Continued from page 64



Mercury 6 with barcode reader

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NEWS PLUGS continued



Continued from page 60



Jim Smith

Mfg. Co, then slowly moved his way up throughout the company while taking night classes for additional training. He operated a surface grinder for 4 years and then moved into the assembly department. In the meantime, Jim continued doing maintenance, material prep and various other miscellaneous duties throughout the facility such as shipping and inspection. He then transitioned into the Engineering Department

ment at Starn Tool where he worked for several years. With the onset of a new sister company, Mecal by Starn (2008), he moved to their facility to assist as a technician in 2012. This transition slowly morphed into quoting and customer service and eventually he took over the sales department becoming the Sales Manager at Mecal by Starn. With Mecal by Starn's continued growth, the need for a General Manager was determined and with Jim's vast knowledge of the business, he was selected. Jim resides in Guys Mills, PA with his wife Mary. They have 5 children and 3 wiener dogs.

Shawn Shmitz has been promoted to General Foreman at Starn Tool &



Shawn Shmitz

Manufacturing. Shawn has been with the company for 20 years, starting out cleaning and painting at the age of 18 while in high school. Hired full time after graduation, he worked in various departments of the shop including the Saw Room, CNC lathe and Manual Mill areas. With the addition Wire EDMs, he became the Supervisor for this department and eventually the Manufacturing Manager for Mecal by Starn. Shawn has taken various night classes including inspection, CAD/CAM, wire EDM, accounting and business. As General Foreman, he will oversee and be responsible for the entire manufacturing process on the shop floor.

Shawn and his wife Megan reside in Meadville, PA and are proud parents of 3 daughters Anna, Lillian and Lydia.

Zach Tinko has been named Manufacturing Manager at Mecal by Starn. Zach began working at Mecal by Starn in 2013 as an assistant for inspection, job set up and summary billing. He then took over the shipping and receiving responsibilities and eventually moved to the manufacturing floor operating the Wire EDMs.

Zach will oversee the entire wire EDM Department, track and monitor job costs and work ow. He attended Penn State Behrend for Plastics Engineering and has received his certificate of achievement from Leadership Development classes.

Zach lives in Meadville, PA with his black lab Sasha.



Zach Tinko

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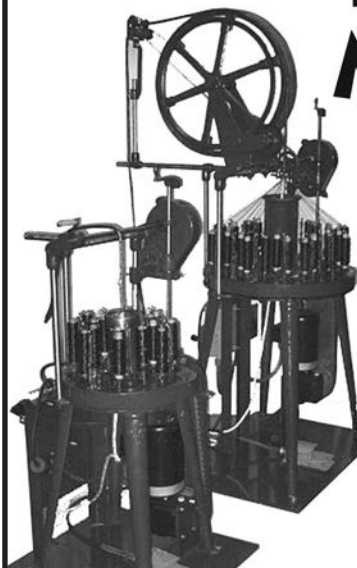
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Trends in the Interconnect Industry

Lyle Fahning, Industry Consultant

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Robert Rensa, Panduit

THURSDAY

IPC A-630: Box Build Requirements

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Richard Dobson, TE Connectivity

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Applitek Technologies Corp	17	Heilind Electronics	18, 32, 34, 46, 52, 56, 58, 62	Pro-Line	16
Artos Engineering Company	2	HellermannTyton	43	RTT Machine & Welding	63
Atkins & Pearce	57	Imada, Inc	23	Schaefer Technologies LLC	5
Atlas	44	Industrial Wire & Cable Corp	60	Schaefer Megomat USA Inc.	50
Cablescon	24	INSOCO/Insulation Supply	4, 6, 8, 10	Schiffer Corp	38
CAMI Research, Inc	4, 57	James Monroe Wire	53	Schleuniger Inc	36-37
Carpenter Mfg. Co., Inc	19	Judco Manufacturing Inc.	28-29	ShinMaywa	13
Chief Supply Inc.	58	Kingsley Machines	35	Sonobond Ultrasonics	15
Cirris Systems Corp	7	Komax Wire	9, 72	Spring Mills Manufacturing	6, 63
Commission Brokers Inc	21	Lakes Precision Inc	8	Stapla Ultrasonics	41, 55
Composite & Wire Machinery, Inc	3	LPMS-USA	61	Strunk Connect Automated Solutions Inc	30
Daniels Manufacturing Corp	14	LTL Tooling & Assembly	59	TE Connectivity	71
Diamond Die & Mold Co	64	Mark-10	11	Techflex	59
Dynalab Test Systems	35	Mecalbi	42	Tech-Sonic	49
East Penn Manufacturing Co, Inc.	55	Mecal by Starn	22	Telsonic Solutions	39
ECC	52	Mechtrix Corporation	31	Thermosleeve	16
EIC Wipers	15	Mello Company Inc., The	48	Tri Star Technologies	20, 54
Electrical Products Sales	27	Mentor Graphics	47	TTI	21, 23, 25, 27, 55
Eraser Company, The	25	Molex	51	Waytek, Inc.	40
Etco Inc.	12	Multi/Cable Corp.	46	White Products	30
Eubanks	45	Nu-Tech, US	38	Wire Association International	66
Electrical Wire Processing Expo	69	Odyssey Tool	44	Wiring Harness Manufacturer's Assoc.	65
FreePoint Technologies Inc	10, 60	OES Inc	42	Xuron Corp	54

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