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## WHMA 2015 Conference

Joe Tito  
Wiring Harness News

If you've been looking for a way to reignite your business, look no further than the 22nd Annual Wiring Harness Manufacturers' Conference on February 18-20 in Las Vegas, Nevada. This year's event promises to be the most inspiring, informative, and innovative WHMA event ever. Top billing for the conference goes to keynote speaker Allen B West.

WHMA has had some truly stellar speakers in the past, but Mr. West will bring the event to a new level with his inspirational presentation on critical leadership skills in today's challenging

business environment. Landing such a nationally recognizable figure as Allen West steps far outside the boundaries of previous events, and adequately sets the stage for the rest of the conference.

Jim Manke, Executive Director of WHMA spoke about the decision process in choosing Mr. West to deliver his strong and timely message. "The board voted unanimously, and since we are in a good financial footing, thought it was time to give back to the members, and that this key message needed to be heard," he noted. Jim feels this is an investment in the organization, and that the spark will pay huge dividends for WHMA.

As for other topics, Jim explained the board went through a lengthy process



The Honorable Allen B. West will give the keynote address at the 2015 WHMA 2015 Conference.

to select the best themes to complement the powerful keynote. He is very excited about Fridays "Digital Marketing Platform Development" as a way for members to gain insight on driving traffic, and building value, through effective use of social media and other digital tools. "We had a very popular presentation a couple of years ago with an individual from Hubspot, and this will really build on that," he stated.

Back by popular demand will be Jean Kelly of the Florida Health Underwrit-

ers Association with an update on The Affordable Care Act and it's national impact on businesses. "There are still a lot of balls in the air on this topic, and we feel it's important to stay on top of this for the membership", Jim contended.

Dave Pheteplace from Bishop & Associates will be on hand to present his "Wire Harness Industry Outlook." Dave has become a fixture at WHMA events,

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## Selecting an Automation Tool for Wiring Harness Design

By Paul Johnston  
Mentor Graphics Corp

Product Engineering for Wiring Harness emerged from a desire to produce mass market volumes of increasingly complex items at required specifications & performance and at an optimized cost. Whether from an OEM of a passenger vehicle, truck, bus, off-road vehicle or aircraft, or emerging from the work of harness suppliers to these OEM's - the trend for a century has been towards greater content. The last half century approximately is the era wherein computer systems and software automation has been available for inclusion into the engineering and business management repertoire.



Paul Johnson, Mentor Graphics

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## 5 Questions to Ask Before Choosing a New Cut and Strip Machine

By Pete Doyon  
VP Product Management  
Schleuniger, Inc

A lot of time and effort often goes into finding the right equipment for your facility. Purchasing a new wire cut & strip machine is no different. With so many options, where does one start? Asking these five questions during the decision making process will help ensure you end up with equipment that fits all of your needs.

*Will my new cut & strip machine be flexible enough to process all of my current and future applications?*

Unless you'll be running the same few jobs day in and day out, you'll want a machine that is as flexible as possible. It is best to focus on the extreme ends of

the application range in regards to wire and cable size. For example, if the largest wire you currently process is 10 AWG, determine if there is a chance you'll need to process 8 AWG or larger wire in the future. You should also determine if there is a chance you will require advanced features like a multi-blade cutterhead (for processing multi-conductor cable jackets and inner conductors) or a rotary incision unit to make radial incisions through the various cable layers when processing coaxial and other multi-layer cables. Being prepared for future needs will allow you to get the most out of your purchase.

*How long will changeovers take and are tools required?*

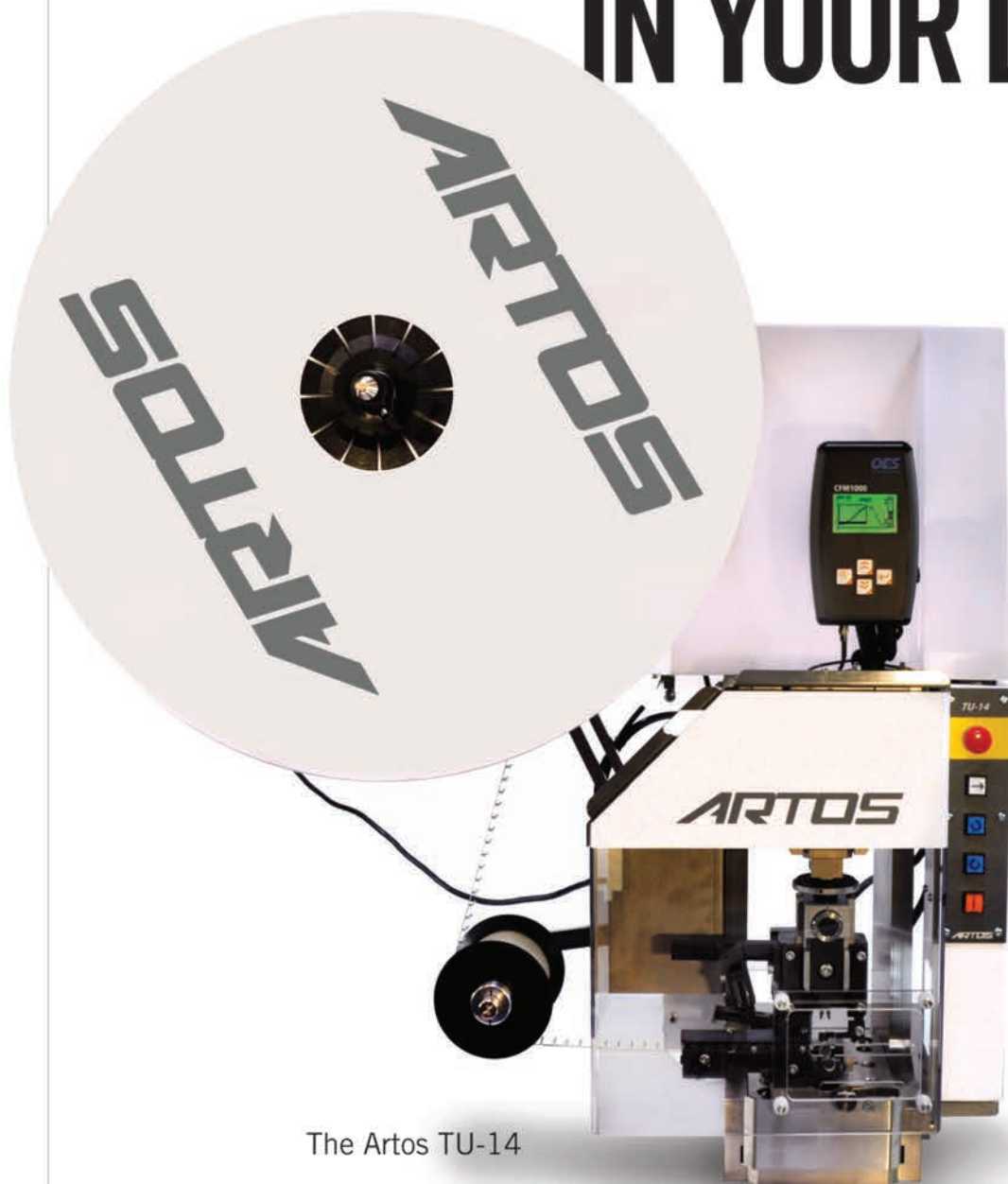
Most modern cut & strip machines are fully programmable; however there

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FEBRUARY  
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Product engineering for wiring harnesses emerged from a desire to produce mass market volumes of increasingly complex items at required specifications & performance and at an optimized cost. Trends for the century have been towards greater content.

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With so many options, where does one start? Asking these five questions during the decision making process will help ensure you end up with equipment that fits all of your needs.

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*Wiring Harness News*  
P.O. Box 527,  
Richmond, IL 60071 USA  
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**why do it twice** when once is better

# After 'Elvis'

By Paul Hogendoorn

I saw "Elvis" last night, not 'the' Elvis, but a play at the Grand Theatre that chronicled his life and music and his relationship with Tom Parker (the Colonel.) I was not a big Elvis fan growing up, but the play moved me and the story it told left me with a simple thought: his was a remarkable life, and an unfortunate death. I wanted to know and experience more, so I did what many of us frequently do; I started YouTubing him.

I started with my favourite songs, "Suspicious Minds", "In the Ghetto", and then came across a suggested link for "Unchained Melody", a song made famous by the Righteous Brothers. I was awe struck by his talent and passion; he took an already great song and took it to a higher level. From there, I had to check out the Righteous Brothers' own version of the song, and then on to the soundtrack for the movie "Ghost" (Patrick Swayze and Demi Moore). From there, I followed the suggested link to Sinéad O'Connor's "Nothing Compares to You". Near the end of the video, I asked myself the question I've asked other nights spent music surfing; "how did I get here?"

It's the power of big data, analytics, search optimization, profiling - all the new technologies developed during the still gestating internet and information



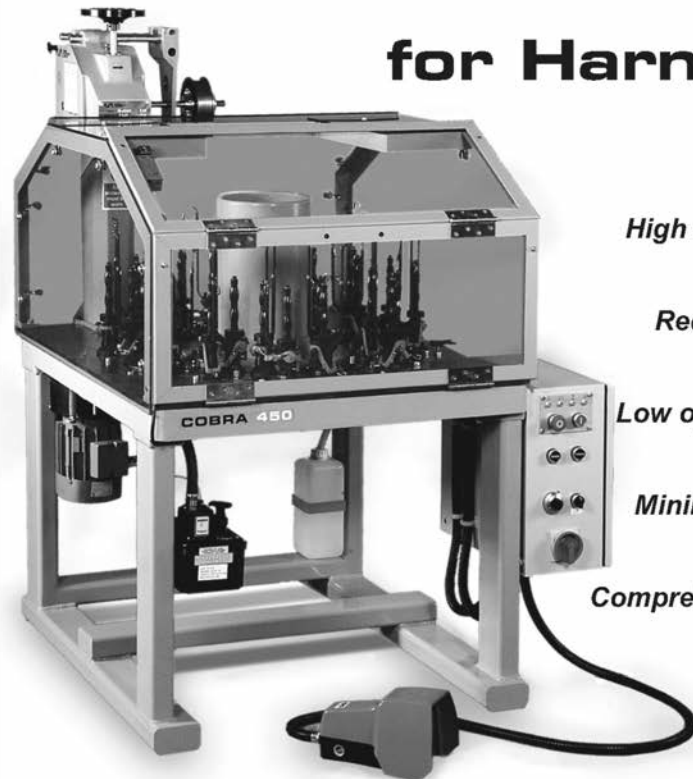
Paul Hogendoorn

explosion age. Every link I clicked on that recent journey was a suggested link - a link that "they" (the technology creators) believed I would want to experience next. All I did was input the initial emotional clue; I was thinking about Elvis and moved by the passion of a song. The rest was technology.

It was an equally scary, and mind boggling revelation. Every step we take, and every click we make, is added up, logged somewhere, and then analyzed and used to predict our next purchase, impulse or action. There's a huge data collection engine at work, and it not only follows our steps and actions, it tries to nudge

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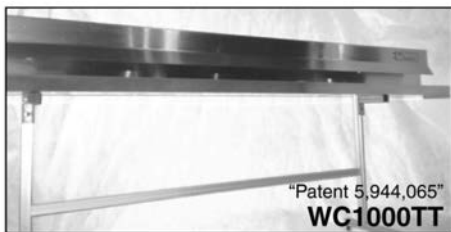
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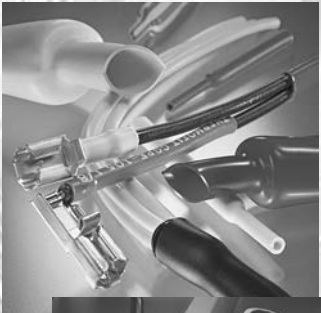
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# After 'Elvis'

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them towards a purchase or desired outcome.

We tend to think of information technology as an outbound medium that delivers content to us, be it information or entertainment. But that's only the obvious part of the picture; the other part is its tremendous capacity for gathering up information, sensing and storing it, then analyzing it all to derive meaningful information, and then acting on it. Actionable information is king.

Speaking of king, or in this case, the king of rock and roll, Tom Parker realized this connection when he discovered Elvis Presley. Others may have noticed the unique talent that the young man had had, but what really convinced the Colonel of Elvis' future success was his observation of the reaction of the fans. While other talent scouts noticed the performers, Tom Parker took notice of the audience. To him, that was the key information, and he acted on it. When the media was present at any event, he directed their attention not to Elvis, but to the hysterical audience. He saw the local frenzy and he broadcast that. He used television (and before that, the press) to capture that critical information, and then to broadcast it and push it out there. A few years later, the same technique was employed when the Beatles landed in New York. (You can barely hear the Beatles music on the Ed Sullivan show over top of the noise of the

hysterical audience. That was by design.)

As I sit here and write this column, I realize that I am unintentionally heading towards an unexpected conclusion; that it is possible to shape future habits and patterns in human beings by making objective observations, drawing intelligent conclusions from those observations, and then presenting actionable information in a timely and appropriate manner. The actual inputs are all empirical (they are what they are), and the decision to act or respond is still the individual's, but in between is the power of technology's ability to derive and convey actionable information. "Big data analytics" make intelligent predictions of future possible behaviours based on empirical observation and accurate analysis of past events.

The late 70's are said to be the start of the information age - for better or worse. Emotions move us, but information shapes the way we feel. Perhaps it has always been this way, but the multiplier in this information age is technology. Like all other technologies, it's ours to choose to use wisely. It shouldn't be ignored.

Paul Hogendoorn is cofounder of FreePoint Technologies. "Measure. Analyze. Share." He can be reached at paulh@getfreepoint.com For more on this topic, check out [www.getfreepoint.com](http://www.getfreepoint.com)



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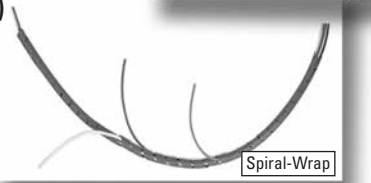
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# Wire Harnesses and Shoes?

By Loren Smith

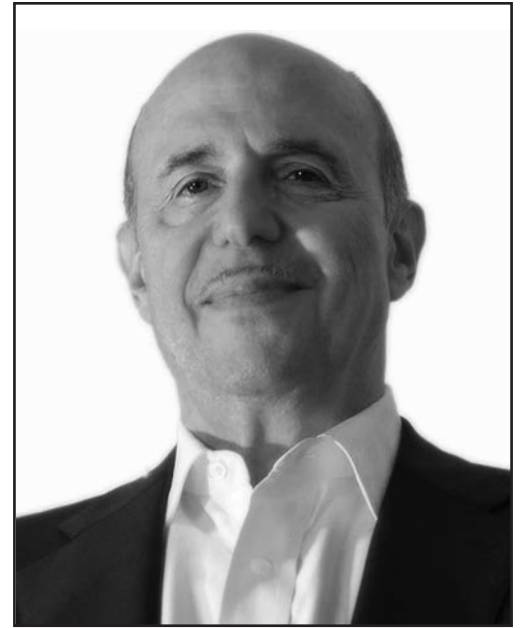
What could a company in the wire harness industry have in common with one that sells shoes on the Internet?

I recently found out from a book called *Delivering Happiness: A Path to Profits, Passion, and Purpose* by Tony Hsieh. Although I am generally not a fan of business books, especially those written by CEOs, this book is definitely worth reading. It is an inspiring tale of determination and willingness to bet everything on an entrepreneurial dream, and it is an illuminating book about business culture.

A company that created over \$1 billion in market value in less than nine years must have done a few things right, and Zappos did. Moreover, they excelled with an unlikely business proposition--to sell shoes online--and a product lacking differentiation. How? By creating and maintaining an exceptionally service-oriented culture that differentiated them from their competitors.

In one of my columns this past year, I commented that many years of observation have made it clear to me that the single greatest factor distinguishing extremely successful harness companies from the ones that just get by is culture, and that I attribute most of the success I have enjoyed in our industry to the culture my team and I created. So Hsieh's main theme was not news to

me. But the way Tony Hsieh and his team were able, over time, to embed this commitment to service into their organization was what made the book compelling.



Loren Smith, CEO

Many of the concepts pointed out in the book have invaluable application for the wire harness business: a focused hiring process that looks for cultural fit as much as technical and administrative skills; strong internal training programs; clearly stated mechanisms enabling internal promotion; managerial humility; clear, candid, consis-

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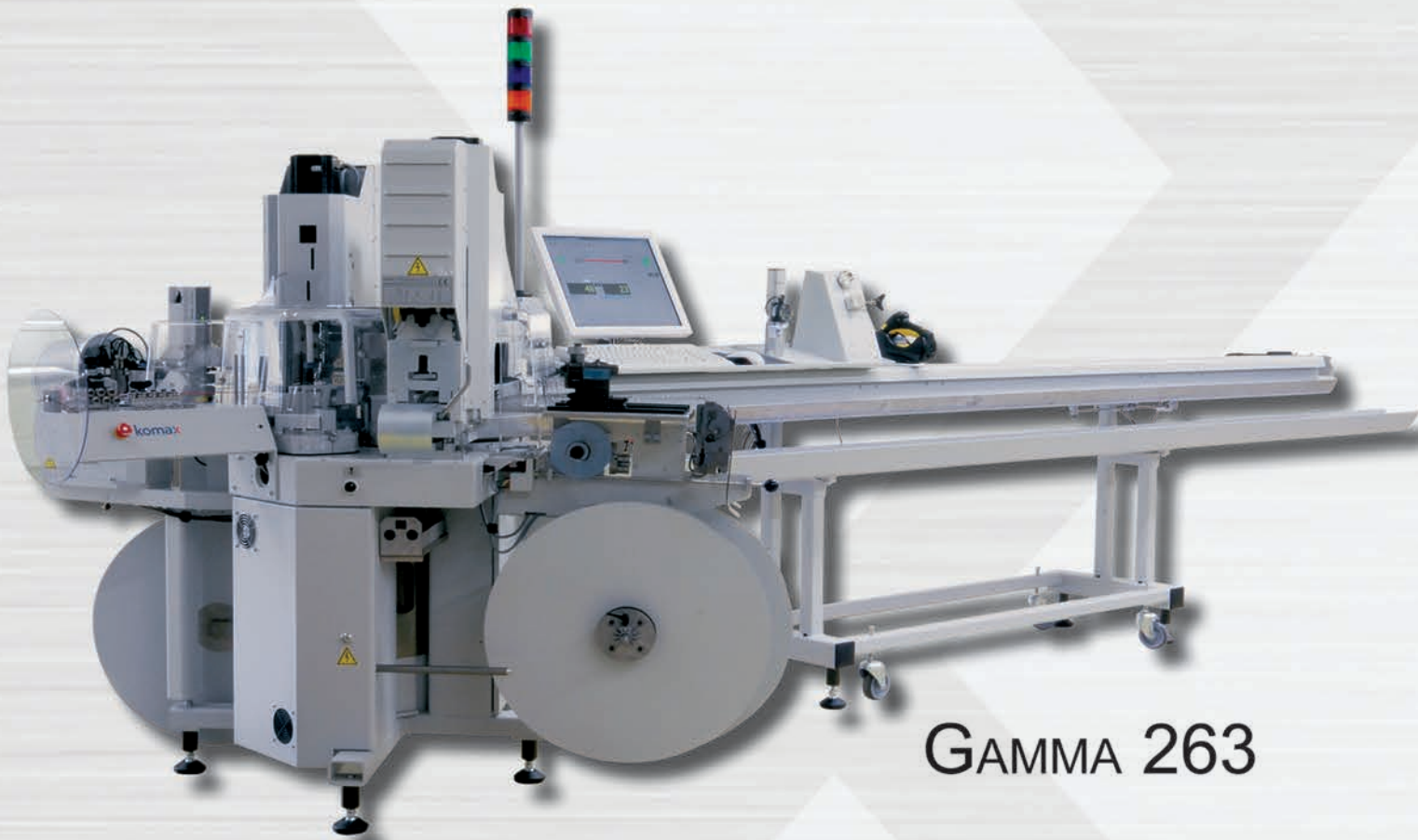
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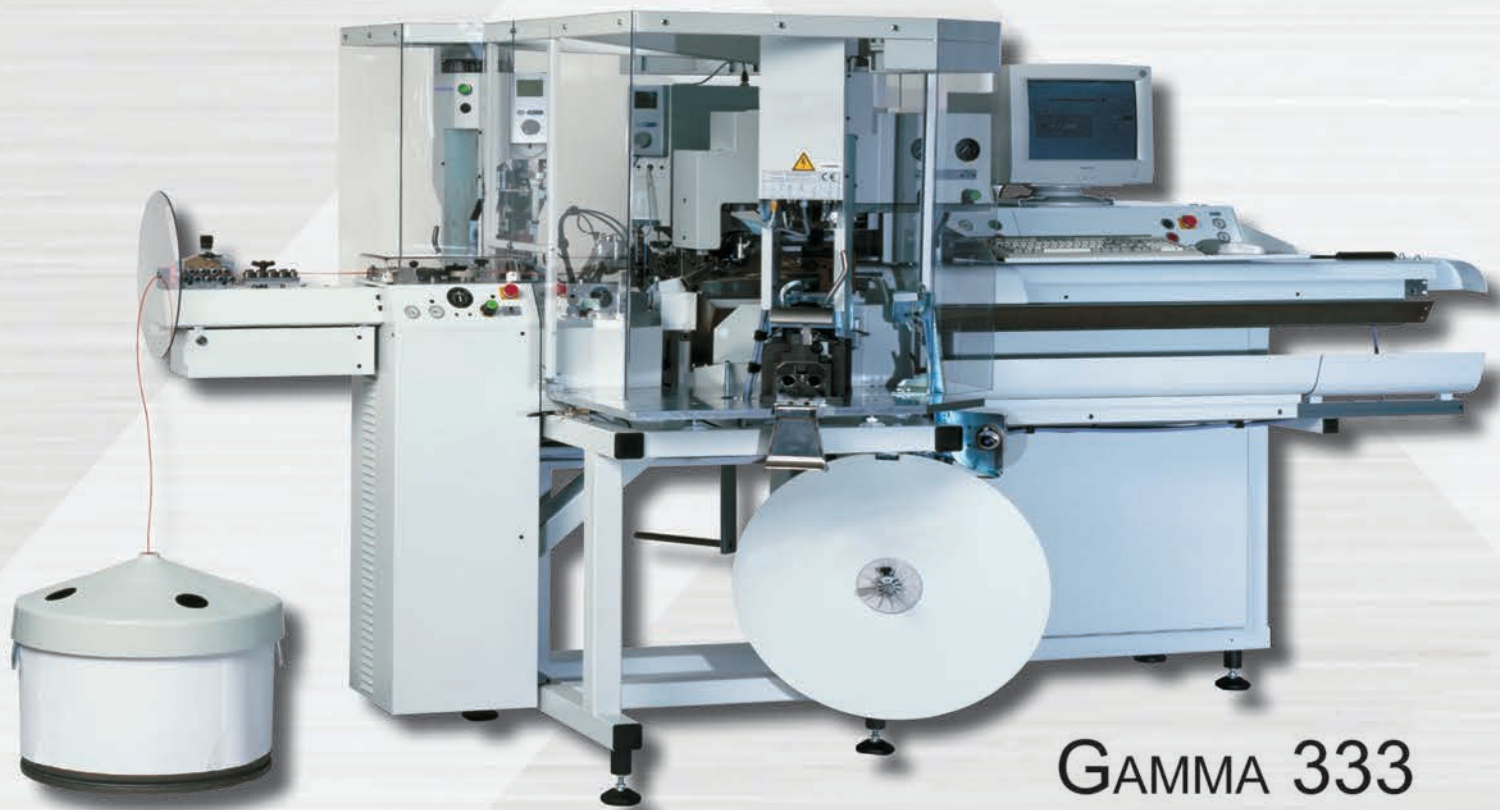
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# Wire Harnesses and Shoes?

Continued from page 8

tent, communication with all employees, and partnering with suppliers as opposed to the win loose dynamic that often characterizes these relationships. That's a tall order for a young business, but the Zappos team was able to incorporate all these principles while effectively managing exponential growth.

Their culture has been particularly predicated on providing customers with what they call a wow experience, a concept we surely recognize as the key to getting and keeping business, but one that can be difficult to keep front and center every day. I'm thankful I understood that objective early on.

When I first got into the wire harness business, a buyer from a major construction

equipment manufacturer showed up unannounced one day and put a set of blueprints on my desk. Explaining that he had just lost one of his harness suppliers, he told me if I could produce the harnesses over the weekend and give him product Monday morning he would not forget it.

We disrupted our schedule, worked extra hours, and were able to provide the company with product on Monday morning. We gave him a wow experience he never forgot, and the company became my largest customer.

All of us in the wire harness business need to keep learning and stay inspired. Delivering Happiness does both.

Loren Smith can be reached at lms@blv-capital.com or www.bluevalleycapital.com

## 2015 WHMA Conference

February 18-20

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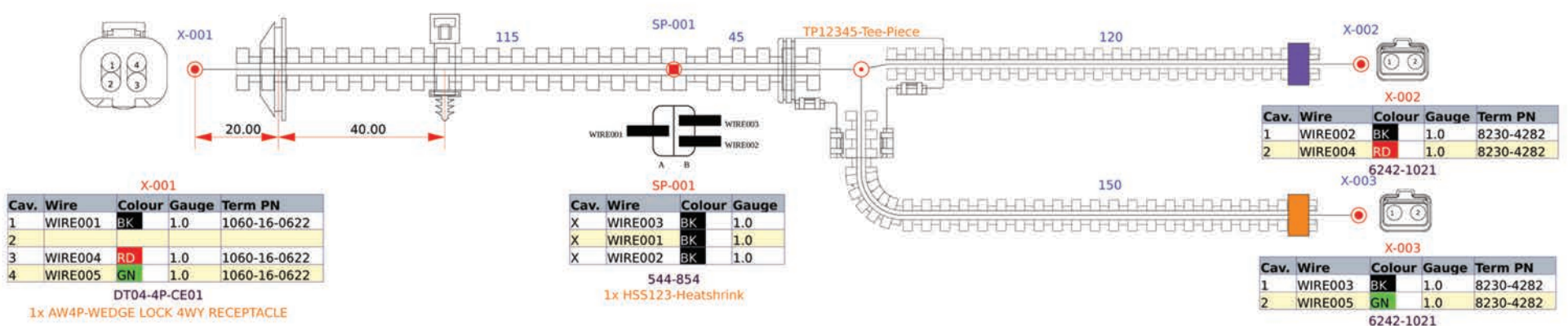
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# WHMA 2015 Conference

Continued from page 1

and his industry performance and forecast reports have become the basis for attendees' strategic planning for many years.

New this year is an in-depth, three panel review of the industry with representatives from the connector, wire, and equipment processing realms. "The Thursday afternoon sessions are designed to provide an industry perspective, not in a commercial way, but to discuss how the business is shaping, and what trends are emerging," Jim revealed.

One big issue for wire harness contract manufacturers is differentiating themselves in a highly competitive atmosphere. For this reason, the board thought it would be useful to present "Defining Your Value Proposition." This session is designed to give attendees the tools to analyze their businesses, identify those things that make them different, and articulate those differences through effective business communication.

The WHMA/IPC A-620 guidepost standard has proved to be quite a success over the past several years. Its existence as a living document, constantly addressing new issues, is truly one of its strengths. Representatives from WHMA and IPC will be on hand to present updates and take direction on the future of this important industry specification.

The WHMA conference has always provided an opportunity to review well targeted exhibits in a relaxed atmosphere. This unique tempo allows visitors to interact with the exhibitors in a way not feasible at larger, more bustling, shows. The depth of conversations generally leads to practical solutions to specific processing challenges. As an indication of the excitement building for this year's conference, Jim mentioned, "We are getting more calls for exhibit space from first time exhibitors than ever before."

Las Vegas was the host city for the 2013 WHMA Conference, and it was the most attended in event history.

As in 2013, the event location is the Renaissance Las Vegas Hotel. This non-gaming venue is a dramatic departure from traditional

Las Vegas hotels. It offers luxurious amenities, in a quiet boutique atmosphere. If it's excitement you're looking for, the famous Las Vegas Strip is only a couple blocks away at a very walkable distance.

If you've never been to a WHMA event, this is the one to attend. If you have attended in the past, you certainly will not want to miss this one. The WHMA Conference has evolved to be much more than just a peer and supplier networking

opportunity. Attendees are putting the tools they learn into immediate effect. It's really helping them achieve higher levels of productivity and success. WHMA is really stepping up the game, and the amount of business acumen gained from these events is leading to very high levels of business and personal satisfaction.

For further information on the 2015 WHMA Conference visit [www.whma.org](http://www.whma.org)



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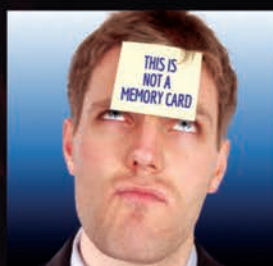
Restrict an operator from altering the program?



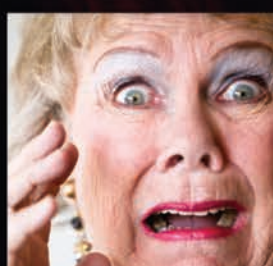
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# Emerging Technology in Wire Processing Automation

Terry Curtis  
Wire Process Specialities

Technological change has become routine in our daily lives. Barely a week passes that we do not hear of an announcement of the latest device, feature or application to make our lives better.

We are not immune to technology change in the Wire Processing Industry. In fact we have grasped change for many years. In the 3 decades our company has served the wire processing industry, we have seen automation progress from mechanical systems with long set up times through the development of linear wire feeds, programmable servo driven robotic systems and quick change tool adaptors. All of these innovations were made to reduce set up time and improve the accuracy and precision of the machine output. These changes are driven by smaller lot sizes requiring quicker set up time and very little machine down time.

In recent years, change in technology has become more subtle. Even though there are improvements in processing speed, adapting to change in materials is more prevalent than improving overall pieces per hour of output. The spread in wire range is becoming greater with

increased demands to automate this larger range of wire sizes. With a drive towards reducing weight in automobiles, new materials such as aluminum wire and ultra thin insulation are becoming more commonplace. Electric and hybrid electric automobiles require high current carrying wire assemblies. At Wire Process Specialities, we have been working on applications which are representative of some of these changes. Here are a few examples.

**Closed Back Insulated Connector from ETCO**

Processing a wire lead with multiple steps is not new to automated wire processing. For example applying a weather seal to a wire prior to termination has been part of automation in wire processing for a long time. Finding new ways to maximize the use of an automation system is a high priority with the end user and supplier. ETCO Incorporated was at the forefront of insulated terminal technology in the late 1980's with the introduction of their open barrel insulated terminal series. These connectors have been widely adopted by the appliance industry. The introduction of a closed back assembly on the ETCO insulated flag terminal allowed the

Continued on page 14

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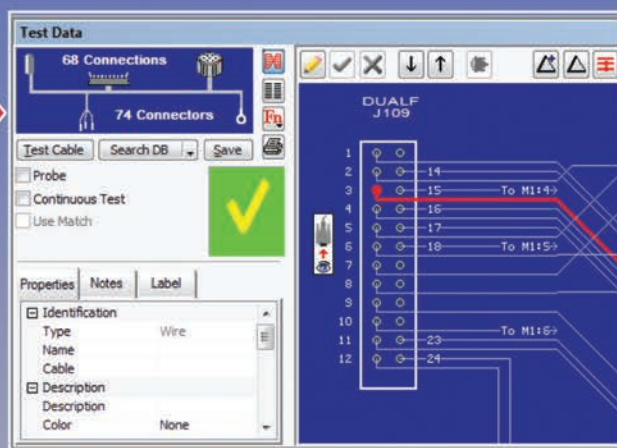
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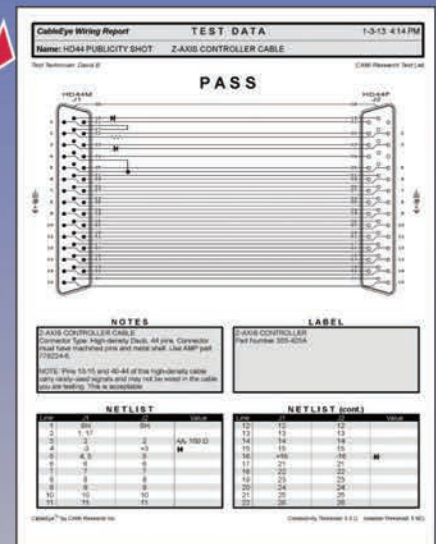
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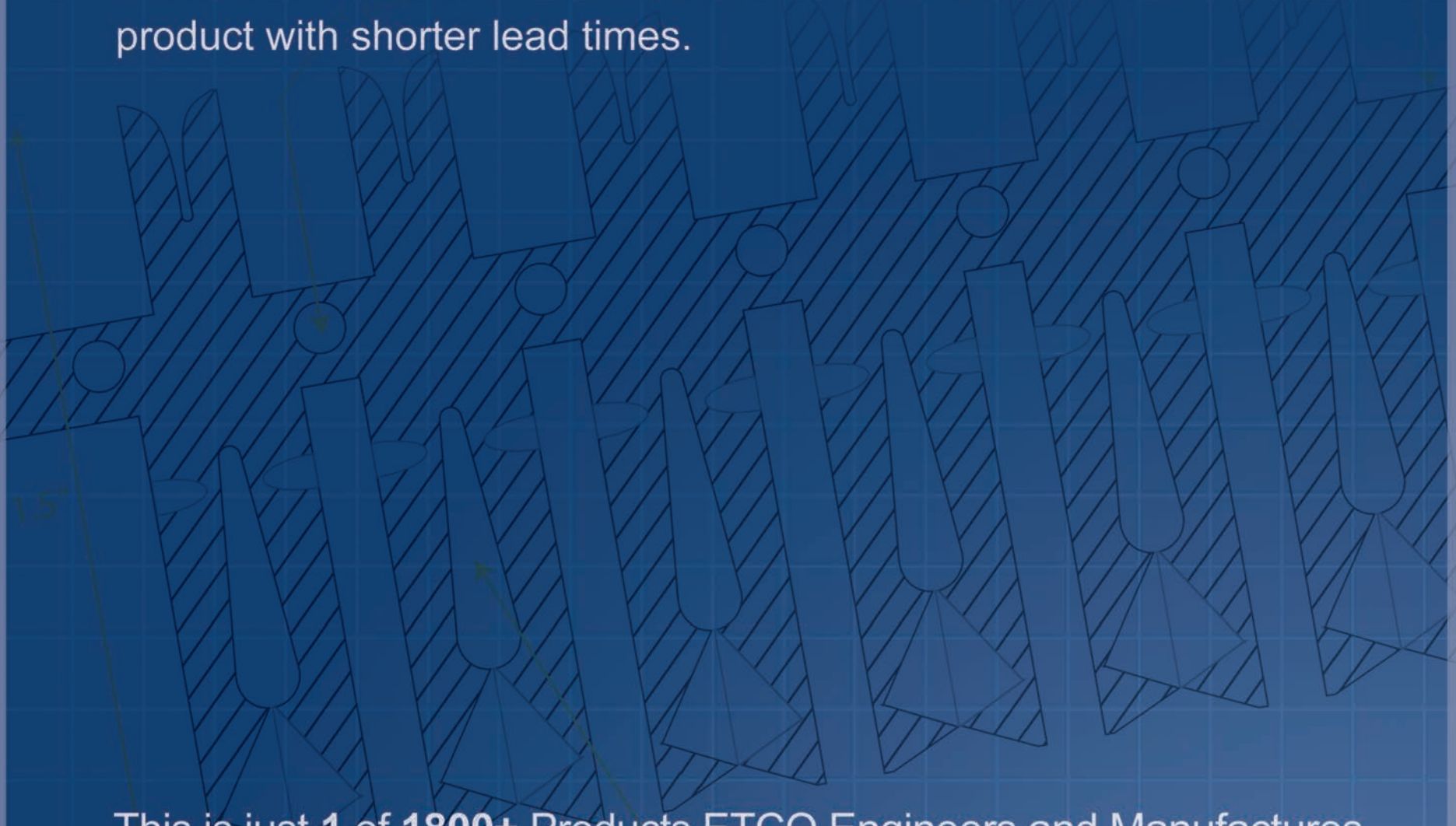


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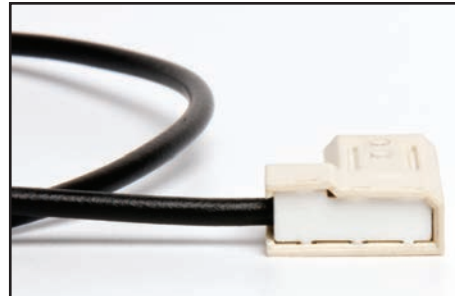
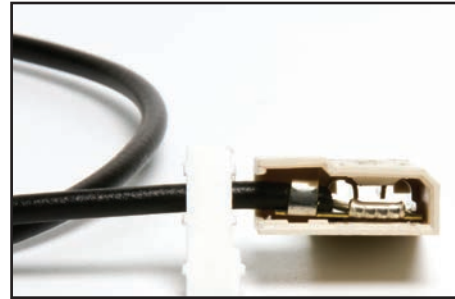
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## Emerging Technology in Wire Processing Automation

Continued from page 12



changing to meet the demands of electrical components. Most wire can be processed using typical V blades or more wire specific radius or tangent radius forms. But there are a few wire types which cannot be effectively processed using typical or specialized blade designs. Laser wire stripping is used on irregular wire profiles and difficult to strip wires. Through our partnership with Schaefer Megomat and Control Laser Corp we have assessed applications to mount laser wire strippers to Schaefer automated processing machines. The result is another method of stripping wire which can extend the use of multi-station processing machines. As wire insulation changes to meet the requirements of new electrical and electronic components, new wire stripping methods such as laser will become more prevalent in every day wire processing.

exposed open side to be fully closed off. A secondary process to the primary crimp and insulate cycle became necessary and due to the high volumes, automating is required. Through our partnership with ETCO and Schaefer Megomat, we successfully mounted the applicator and closed back assembly operation onto a next generation wire processing machine. The result is a new process that will meet the volume and quality demands from the appliance industry on this connector type.

changing to meet the demands of electrical components. Most wire can be processed using typical V blades or more wire specific radius or tangent radius forms. But there are a few wire types which cannot be effectively processed using typical or specialized blade designs. Laser wire stripping is used on irregular wire profiles and difficult to strip wires. Through our partnership with Schaefer Megomat and Control Laser Corp we have assessed applications to mount laser wire strippers to Schaefer automated processing machines. The result is another method of stripping wire which can extend the use of multi-station processing machines. As wire insulation changes to meet the requirements of new electrical and electronic components, new wire stripping methods such as laser will become more prevalent in every day wire processing.

### Plant Wide Crimp Quality Process Validation, Monitoring and Data Collection

Pre-process validation of machine set up, real time process monitoring of crimp quality and data collection requirements are driven by quality standards such as USCAR21 for the automo-

### Laser Wire Stripping

Wire construction is constantly

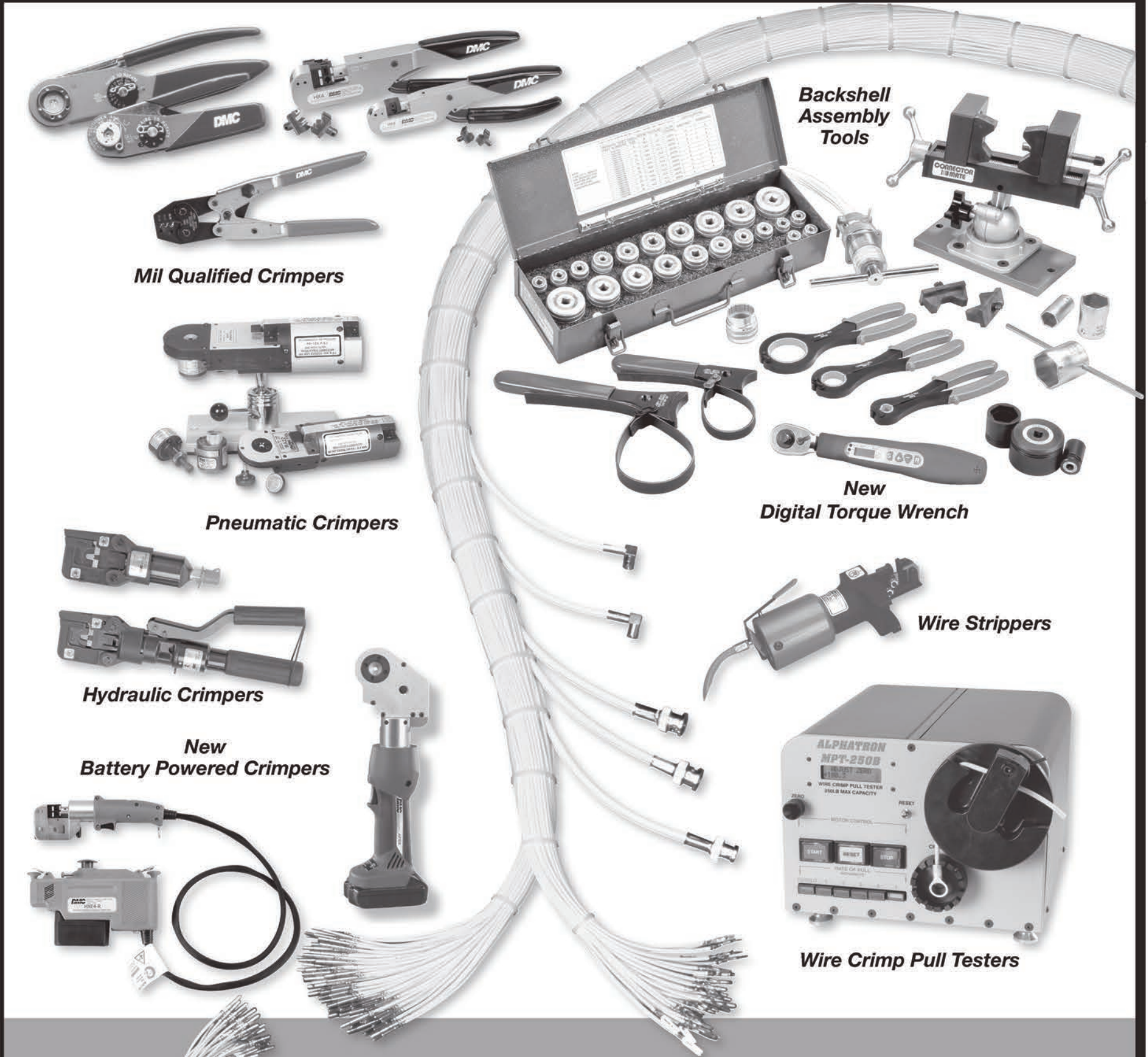
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## Emerging Technology in Wire Processing Automation

Continued from page 12

ive industry. Quality systems requirements include validation of the right materials (wire, terminals, seals) and proper application tooling (crimp tooling and seal applicators) for a given job. Validation of materials and process tools along with measurement of quality parameters such as crimp height, crimp width, pull test and terminal cross sections are required prior to commencement of production. In some cases, production machines are locked out until

process validation is complete. These pre-production steps reduce the possibility of human error such as the wrong materials being introduced or production tooling used. Pre-Production quality requirements and production data are typically stored on a network server.

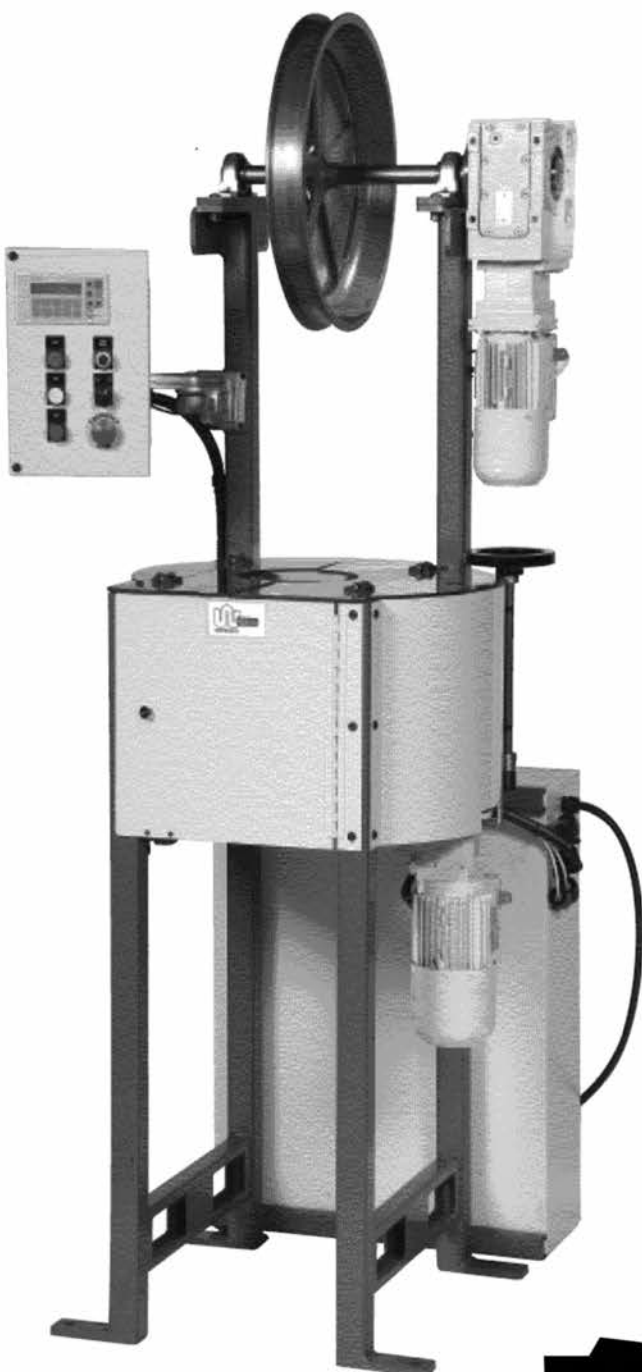
OEM machinery suppliers provide dedicated quality monitoring systems for their own machine models. In general these systems as effective as they are within their own ecosystem, do not communicate

with machines from other suppliers. This can be a challenge considering a typical factory floor has differing machine types (bench top and automation) from multiple sources. The solution is a cross platform system with common data collection devices on each processing machine or inspection stations adjacent to a machine cell. Examples of testing equipment are crimp height micrometers, pull testers and crimp cross section systems. Real time monitoring systems include crimp force monitoring, seal detection and most recently cameras for crimp measurement and profiling. A plant wide networked system of validation, monitoring and data collection provides a common quality management solution for the crimp process.

These are three examples of multi station processing, alternate wire stripping methods and quality validation and monitoring which extend the use of automation in a wire harness facility. As materials and production demands change so must the process equipment change. The process to adapt to a changing market requires a strategic partnership between several groups including the material and processing equipment suppliers, the wire harness manufacturer and the end user of the wire harness. Organizations like the Wire Harness Manufacturer's Association play a critical role in the success of partnerships such as these.

Terry Curtis is owner of Wire Process Specialties. His website and blog is located at [www.wire-process.com](http://www.wire-process.com). Terry has been in the wire processing industry for over 30 years.

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## NEWS PLUGS

### TLC Appoints New Director of Operations

TLC Electronics, Inc. is pleased to announce that Bob Olson has accepted the position of Director of Operations at TLC Electronics, Inc. Olson assumed his new role effective December 15, 2014.

Olson comes to TLC with a strong background in finance, operations, manufacturing, vendor management and process improvement. Previous employers includ-



Bob Olson, Director of Operations  
TLC Electronics, Inc

ed Select Comfort, Delta Airlines, Guidant and General Dynamics.

"Bob's analytical skills combined with a strong background in finance, operations and manufacturing will contribute greatly to TLC Electronics meeting its goals", stated TLC Electronics' President Jon Crofford. "He will be a valued addition to our leadership team".

Olson has an MBA from the University of Minnesota-Carlson School of Management and a BS in Aerospace Engineering from the University of Minnesota.

Olson is married and has two daughters. He enjoys playing tennis and other outdoor activities with his family.

Olson may be reached at b.olson@tlc-electronics.com or direct dial 651-287-2977.

TLC Electronics, Inc., based in St. Paul, MN is one of the Midwest's largest regional distributors of electromechanical components and value-added assemblies for the electronics industry.

For more information, contact Jon Crofford at TLC Electronics, Inc. 651-558-2578.

### Molex Signs Distribution Agreement with ECCO

Molex Incorporated, (NASDAQ: MOLX, MOLXA), a global electronic components company, announced that it has granted ECCO (Electronic Connector Co.) distribution rights to sell several series of its industrial and transportation style connectors.

Located in Chicago, Illinois, ECCO is a leading distributor and value added assembler of electronic connectors and

*Continued on page 18*

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## NEWS PLUGS continued



Continued from page 17

accessories to (OEM)'s Original Equipment Manufacturers and End Users across a wide range of industries and geographies as well as to the U.S. government.

"This is a great opportunity for our customers to be able to procure Molex's industrial and transportation style connectors through our reliable and trusted sales and operations team. We will bring demand creation, marketing, supply chain support as well as value added capabil-

ities to the Molex offering", said Bernard Gizzi, President at ECCO.

"An established distributor with new talent and a trusted executive management team gives us a further reach in the Industrial segment. We look forward to working collaboratively to find new customers and new designs with ECCO", adds Fred Bell, vice president of global distribution, Molex.

Molex delivers complete interconnect solutions for a number of markets including: data communications, telecommunications, consumer electronics, industrial, automotive, commercial vehicle, aerospace and defense, medical, and lighting. Established in 1938, the company operates 45 manufacturing locations in 17 countries. The Molex

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ECCO specializes in connectors of all types and maintains an extensive inventory of connectors, components, contacts, accessories, and tools to meet customers' immediate and scheduled requirements. Please visit us at [www.ecco-chicago.com](http://www.ecco-chicago.com).

### Partex Marking Systems, Inc. Moves to New Location

Partex Marking Systems, Inc. has relocated their office and warehouse to their new 10,000 square foot facility at 1155 North Main Street, Lombard, IL 60148.

A leading manufacturer of wire marking/identification products with over 60 years of industry experience, the move of the USA branch is necessitated by increased growth and overwhelming demand for the Partex brand in North America.

"The move makes sense". Says Barb Susmilch, General Manager of Partex Marking Systems, Inc. "We have always been highly committed to the success of our customers. That means being certain that we have sufficient amounts of product and well trained staff in place to help our customers succeed".

For more information, please contact Partex Marking Systems at 630-516-0400.

### Flexible Flat Cables for Automated Medical Diagnostics

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Continued on page 20

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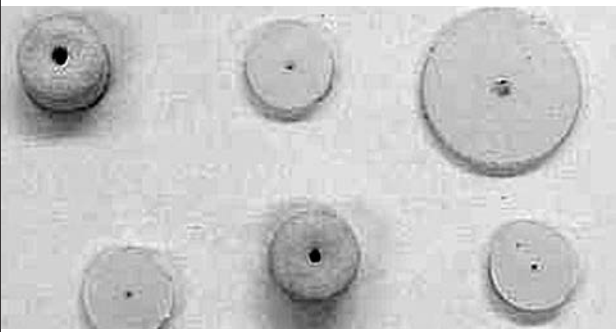
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Continued from page 18

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The proprietary Flexx-Sil™ jacket is also self-healing from small punctures and is impervious to long term exposure to de-ionized water, alcohol, steam, UV light, radiation, humidity, temperature extremes (-65°C to +260°C), autoclave and many chemicals.

Standard "off the shelf" Cables are available for immediate delivery and cable assemblies, complete with connectors are offered in 3 foot, 6 foot and 12 foot lengths. Custom designs, including assemblies with connectors of your choice, 100% tested and inspected, are also available with minimum lead times. In addition, Cicoil offers anti-friction coatings, torsion and custom shape designs by request.

Cicoil's light-weight, Flexible Flat

Cables are UL & CSA Recognized, CE Conforming, RoHS & REACH Compliant and are manufactured in an automated, climate controlled environment, with strict quality and inspection controls.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over fifty years. The company's Patented Flexx-Sil™ Flat Cable Technology provides high flexibility, extremely long life, and they can withstand temperature extremes from -65 degrees to +260 degrees Celsius. Cicoil's flat cables are used in thousands of demanding applications; including aircraft fuel control cells, semiconductor automation, and the Space Shuttle. Cicoil designs and manufactures its Flexx-Sil™ jacketed cables and cable assemblies in an automated facility in Valencia, California. Cicoil's

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

### BURNDY Adds 100 Ft Open Spool Reel for Static Discharge Applications

BURNDY® is offering a new 100 foot Open Spool Reel for static discharge applications. The 100 foot reel includes spring rewind, centrifugal brake and ratchet lock. The product offering also includes three different models of 50 foot reels, for suitable applications. These reels are often used to dissipate static charge buildup developed while filling or dispensing fuel or other combustible liquids from fuel trucks or railcars.

The BSD20100 has a rugged steel construction and comes with 100 foot cable of 7 x 7 stranded stainless steel with yellow polyester elastomer cover. All the reels are heavy duty and supplied with a 100 amp universal jaw-type grounding clamp and spring rewind and centrifugal brake. The BSD20100 reel has a permanent ratchet lock; the other enclosed reels have a positive ratchet lock with a ratchet on/off switch. The reels are commonly used in the petroleum industry but applicable in any area where static discharge creates potential hazards.

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

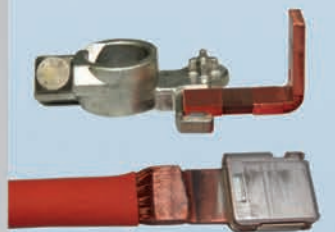


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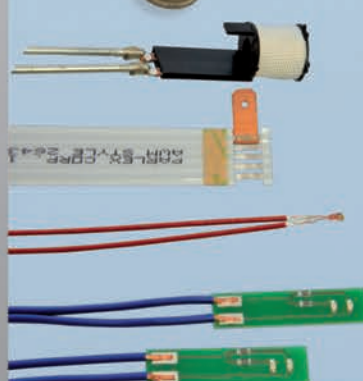
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- ▶ FLAT RIBBON CABLE
- ▶ BUS BAR WELDING
- ▶ INTEGRATED SYSTEMS

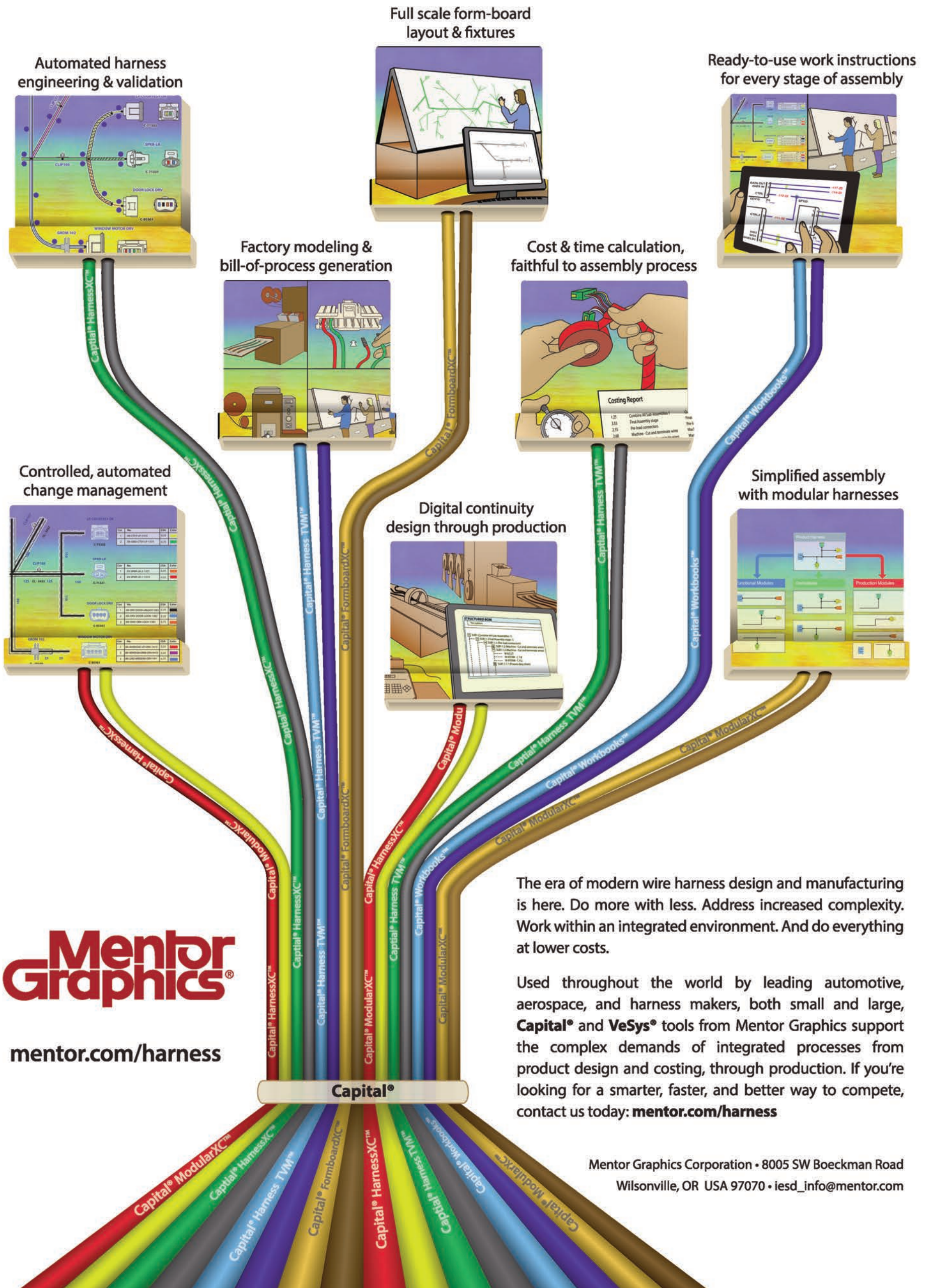
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## 5 Questions to Ask Before Choosing a New Cut and Strip Machine

Continued from page 1 \_\_\_\_\_

are always several job specific mechanical parts (guide tubes, blades, etc.) that have to be changed between jobs. Changeover times can be minimized if these changes can be accomplished without requiring tools. The smaller your batch size, the more frequent your changeovers will be. A cut & strip machine with shorter changeover times will provide a quicker ROI and continue to pay dividends over the life of the machine.

*What is a realistic production rate that I can expect with my new cut & strip machine?*

When comparing datasheets for several different cut & strip machines, you'll sometimes see a specification listed for "Maximum Transport Speed." A high maximum transport speed doesn't always correlate to a high production rate, unless you are running longer lengths. The cutting axis and other machine specifications all contribute to the machine cycle time, so it's better to focus on the "Maximum Production Rate" listed for each wire length and application. It's always best to send wire or cable samples to the machine manufacturer before purchasing to get realistic production rates for your specific application.

*What pre- and post-processing accessories are available for my new cut & strip machine?*

Keep in mind that typical entry level cut & strip machines cannot be integrated with a full range of pre- and post-processing accessories. Determine what additional operations you'll need and whether the manufacturer of the cut & strip machine offers fully integrated accessories for those operations. Typical operations include hotstamp or inkjet marking, coiling and stacking to name a few.

Another of the most basic accessories is a prefeeder. They are available in many different sizes and styles. The most basic models feed wire and cable directly by pulling it through motorized belts or rollers. The more advanced prefeeders drive the cable reel directly, which is gentler on the wire or cable being fed. The most advanced models also feature a motorized reel lift and full enclosure for maximum safety. Make sure to specify a prefeeder that matches or exceeds the maximum acceleration and feed rates of your new cut & strip machine.

*Will my new cut & strip machine be able to integrate with my ERP system or my Manufacturing Execution System software?*

Continued on page 24



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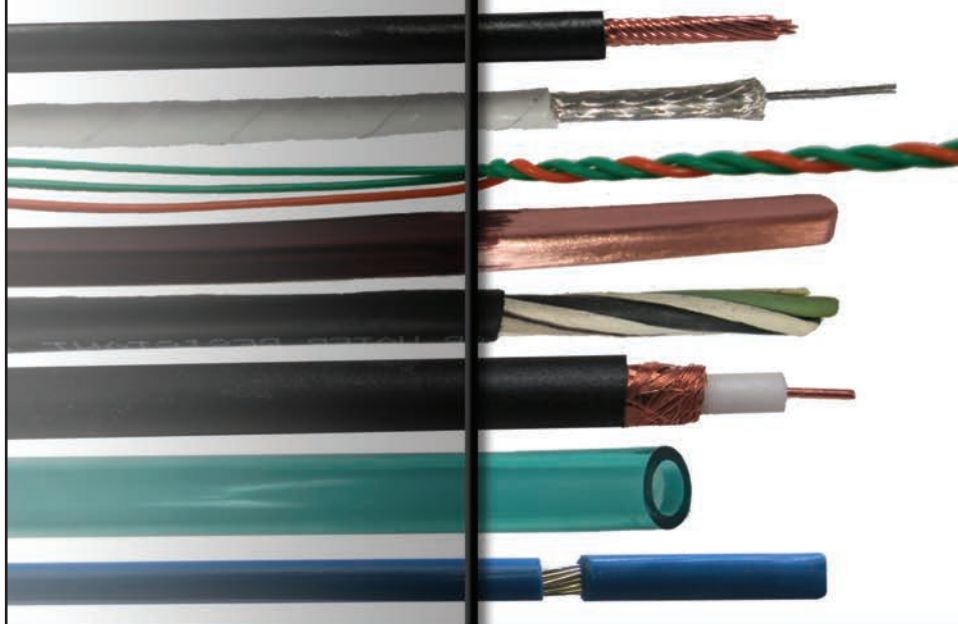
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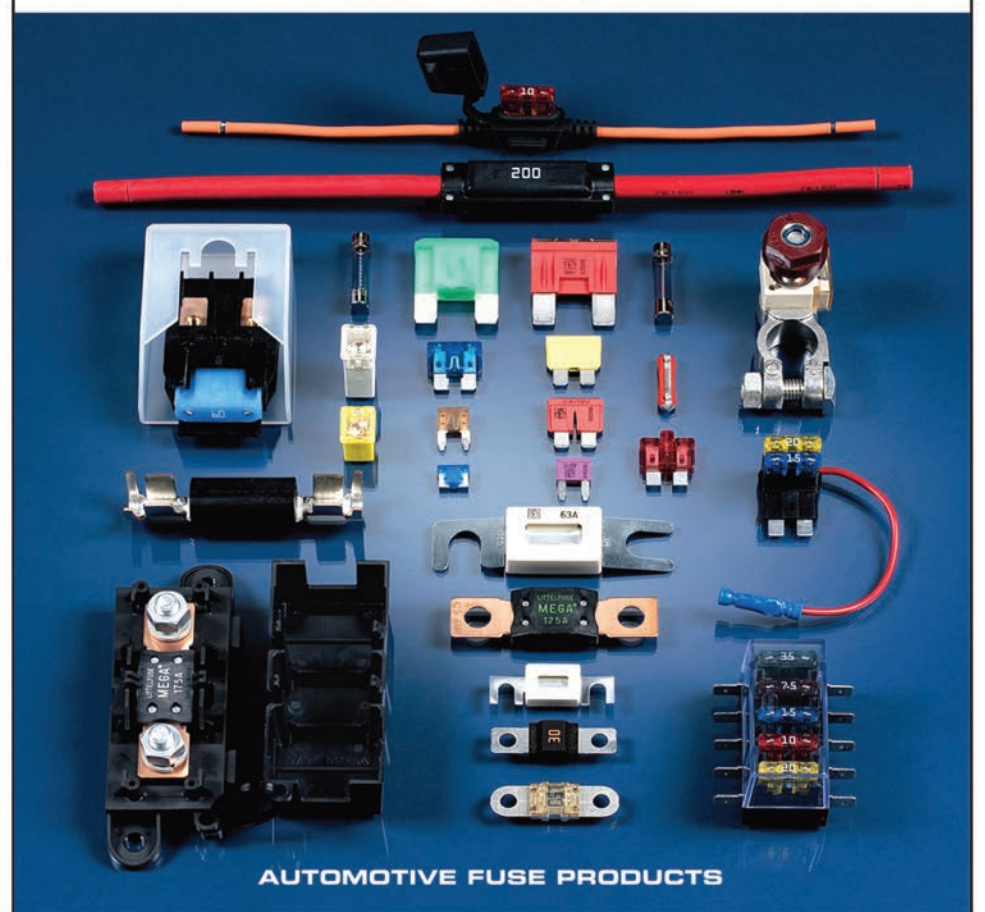
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## 5 Questions to Ask Before Choosing a New Cut and Strip Machine

Continued from page 22

The factory of the future will require that all production equipment be connected to a network. When shopping for your next cut & strip machine, make sure that it has the connectivity required for integrating it into your network. Networking your cutting and stripping equipment opens up a whole new range of benefits. By sending jobs directly to the cut & strip machine, you'll eliminate operator keystrokes (and possible errors) and save a lot of programming time. You'll know exactly when each job is started and completed and be able to monitor average production rates. You'll also be able to optimize work orders automatically in the best sequence, tak-

ing changeover times, due dates, available machines and personnel into consideration. Finally, you'll be able to keep track of how many cycles each machine has completed and when maintenance should be scheduled. An added benefit is that every job will have full traceability.

Choosing the right cut & strip machine for your factory is an easy task if you know what to look for. While purchase price is always a consideration, the main focus should be on procuring the most flexible machine that will offer the shortest ROI, resulting in the lowest cost per lead.

See Schleuniger at Booth #1631 at The Electrical Wire Processing Technology Expo, May 14 & 15, 2015 in Milwaukee, WI.



Schleuniger Prefeeder 4560, MegaStrip 9650, Cable Coiler 4000

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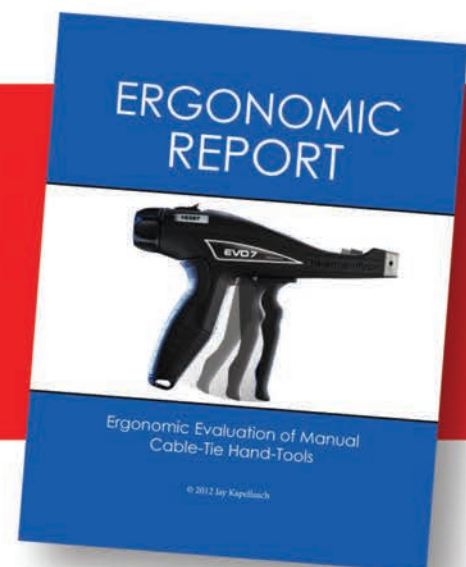


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# Cadonix Adds Formboard Tool and Back-annotation in Arcadia 1.1

Cadonix Ltd, the Cloud based automotive wiring harness CAD specialist, announced version 1.1 of Arcadia, including a new Formboard tool for harness manufacturers.

The new release, available immediately and free to existing customers, also includes closer integration of the Schematic Design and Harness Professional tools and enhanced manufacturing reports. Arcadia is the world's first cloud based CAD tool for automotive electrical wiring design, analysis and documentation.

Commenting, Andrew Armstrong, CEO of Cadonix, said, "The improve-

ments in version 1.1 are based on customer feedback, and will help OEMs and harness manufacturers alike further streamline their design and manufacturing processes. With these changes, automotive electrical designers will find it even easier to achieve the optimal design quickly and take it through to manufacturing."

Formboard is a new tool within Arcadia alongside Schematic Design and Harness Professional. It provides a complete solution for creating 2D harness drawings for manufacture.

The Formboard view provides a complete 2D view of the harness defined and includes both electrical and non-

electrical components. A Synchronize Harness feature is available to automatically update not-to-scale harness layouts to full size Formboard details in preparation for manufacture.

Cadonix has also implemented back annotation between the Schematic Capture and Harness Professional tools, giving customers the option to reflect changes made during the harness design process in the original schematic. It has also added a number of new manufacturing reports, and improved some of the existing reports.

Arcadia CAD is an easy to use, groundbreaking software tool offering schematic design, animated circuit simu-

lation and analysis, electrical networking, harness design and full design rule checking for wire harness layout and manufacture. Using the integrated simulation capabilities, engineers can be assured that their design intent is carried through into the physical implementation. Arcadia interfaces with the most popular 3D MCAD and enterprise wide PLM and ERP tools, allowing projects to transition easily and smoothly into manufacture.

A particular strength of Arcadia is real-time animated simulation which paints a clear virtual picture of the electrical system and how it will behave in deployment.

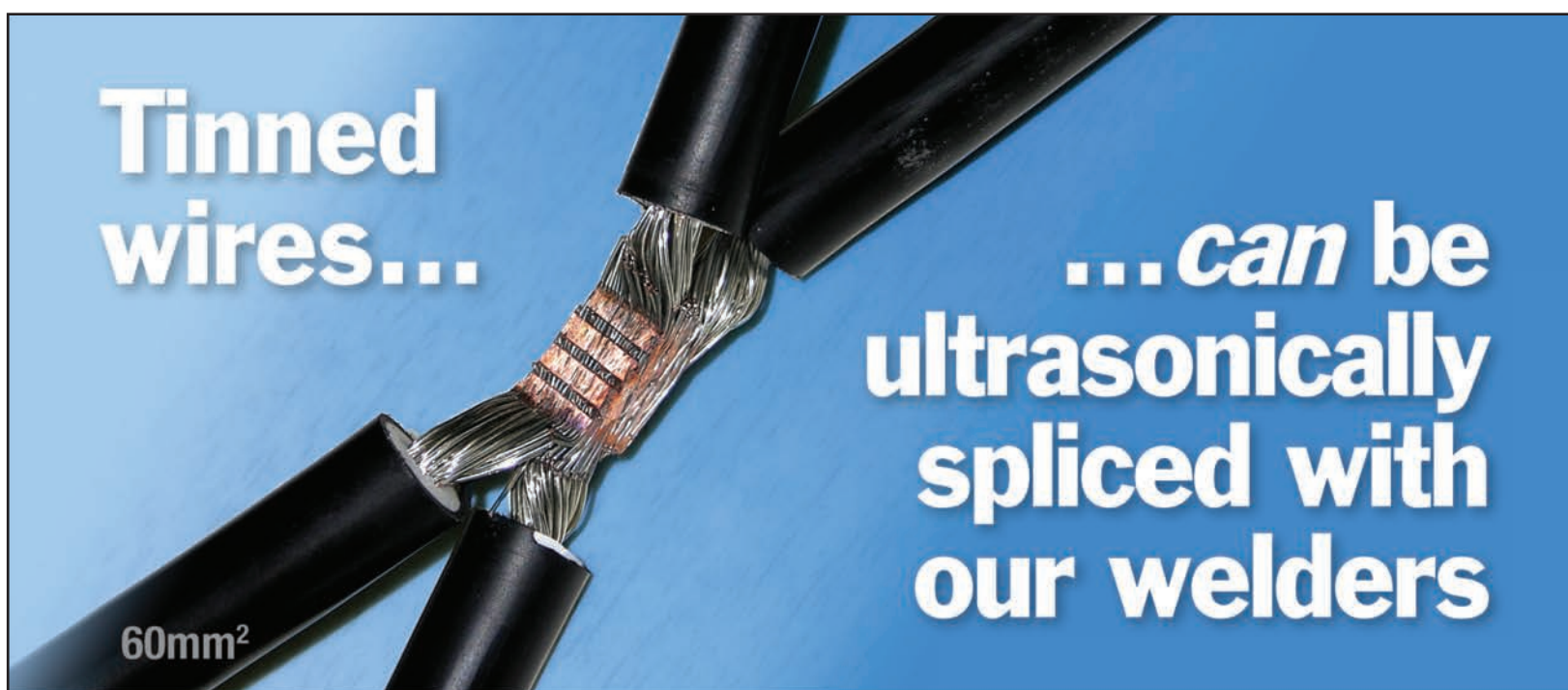
Using Cadonix patented cloud based technology customers can access Arcadia from any HTML5 compliant web browser once the license has been activated on the server. Customers have the option of hosting the tool on their own internal server, or accessing it securely from a Cadonix geographically collocated server.

Based just outside Oxford, England, Cadonix is a specialist in electrical design and project management software for the automotive industry. Its dedicated engineering and technology led team have all worked in the industries we support, our solutions are designed to work with the industry practices and not dictate particular workflows. This enables our solutions to be rapidly deployed and adopted. Cadonix aims to become a market leader by consistently exceeding its customer's expectations; providing them with best of breed technology solutions for electrical design and project management.

Cadonix is backed by Caresoft Global, a subsidiary of the \$1.2 billion ABT Group; an Illinois based Engineering and IT/ITeS Service Provider, with offices in the UK, Europe and Asia.

For further details please contact: Cadonix Ltd, Unit 3 Ridgeway, Drakes Drive, Long Crenon, Buckinghamshire, HP18 9BF, United Kingdom.

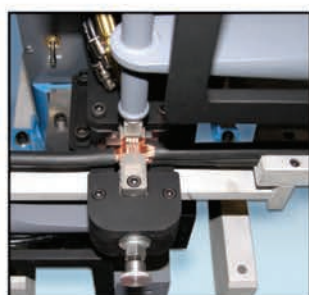
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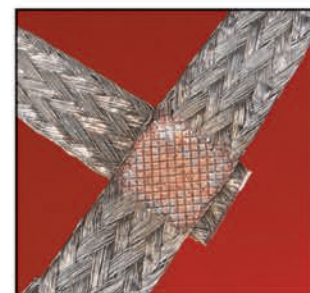
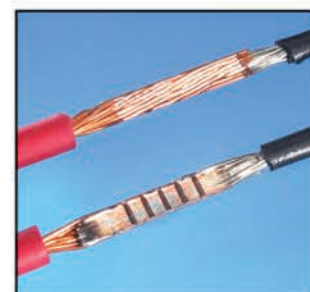
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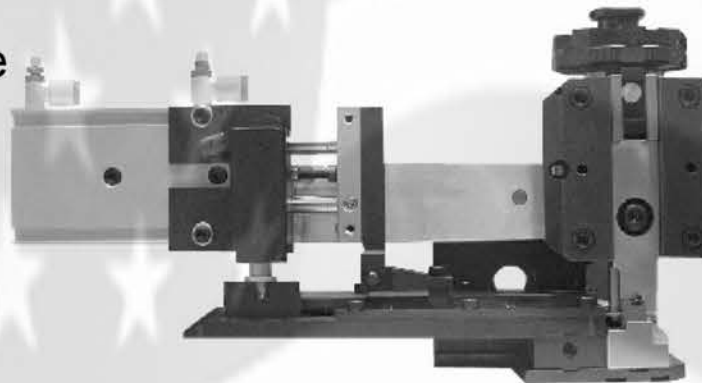


Model 1700

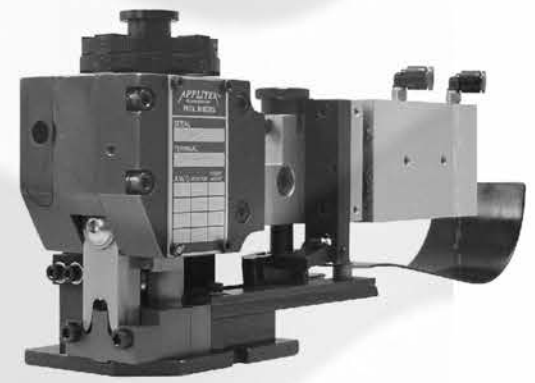


Model 2000

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

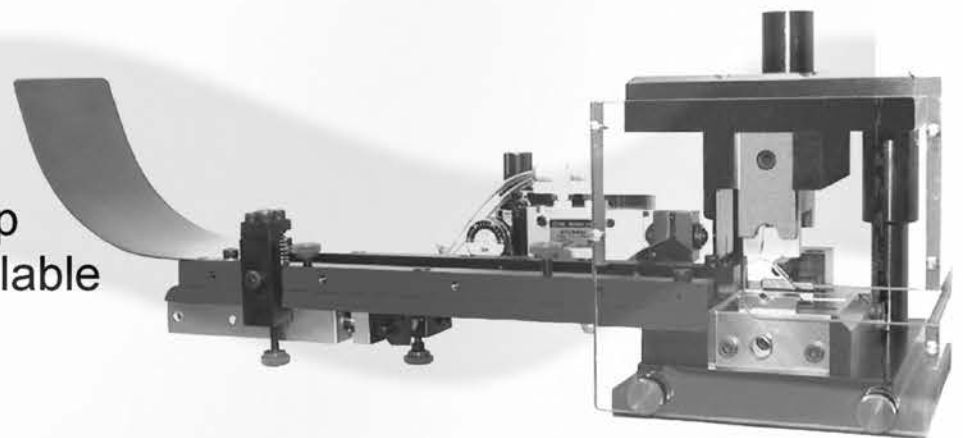


Model 1500



Model 2100

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**NEWS PLUGS** continued



**Molex OptoConnect™ Custom Optical Enclosures Integrate Sophisticated Fiber Circuitry**

Molex Incorporated recently launched its OptoConnect™ Custom Optical Enclosures. Designed to simplify complex fiber optic mapping issues, OptoConnect fiber routing system using integrated FlexPlane™ optical circuitry provides a complete end-to-end optical management system that interfaces with various manufacturers of high density telecom and datacom equipment used in communications systems.

“Advanced network architectures are driving complex fiber optic inter-

connection topologies, which are nearly impossible to implement with patch cord based connections,” states Tom Marrapode, director of marketing, Molex.

Fully tested and NEBS compliant, OptoConnect custom fiber optic enclosures handle the most complex routing schemes to greatly reduce intra-system cabling footprints and increase system reliability. By integrating high density fiber optic circuits, interconnects and optional passive components, the sophisticated OptoConnect enclosure system can streamline complex ingress and egress fiber port mapping for interconnect intensive technologies, including mesh networks, wavelength selective switching, and software defined networking / network function virtualization topologies.

Complementary products such as MPO and LC loopback connectors and MTP/MPO LC cable assemblies fill out the offering to provide a complete optical interconnect solution set. Customers also have the option to have Molex design an enclosure to meet their product specifications or



**OptoConnect™ Custom Optical Enclosures**

use their own internal design that complements their equipment styles.

For additional information about OptoConnect Custom Optical Enclosures with FlexPlane circuitry please visit [www.molex.com/link/optoconnect.html](http://www.molex.com/link/optoconnect.html) and [www.molex.com/fiber/flex-plane.html](http://www.molex.com/fiber/flex-plane.html). Please sign up to receive the Molex e-nouncement newsletter at [www.molex.com/link/register](http://www.molex.com/link/register).

**Amphenol OCS High-Speed Connectors**

Amphenol OCS connectors (oval contact system) are the newest high-speed interconnects delivering data rates of up to 10 Gbps per pair. The Amphenol OCS series features improved signal integrity via reduced cross talk. OCS offers enhanced attenuation performance as compared to other industry-standard quadrax high-speed connectors.



**Amphenol OCS Connectors**

This rugged, durable connector is ideal for high-speed data transfer applications using protocols such as HDMI, 10G Base T, SATA 3.0, Serial RapidIO and more for the military, commercial and industrial markets.

Amphenol OCS Series Feature:

- High Density: contains (4) 100 Ohm differential pairs capable of delivering data transfer of speeds of 10Gbps per pair
- Size 13 MIL-DTL-38999 connector shells
- Front release rear removable contact system for easy repair
- Solder or PCB tail contacts available



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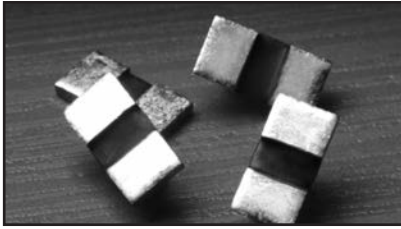
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**KOA Speer Adds 2 Watt 2010 Size Metal Plate Chip Current Sense Resistor**

KOA Speer Electronics introduces the new TLR2HW metal plate chip current sense resistor in a 2010 size, featuring a 2-watt power rating and ultra low resistance of 1mΩ to



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For more information, contact KOA Speer Electronics, Inc. 199 Bolivar Drive Bradford, PA 16701. Phone 814-362-5536 or Fax 814-362-8883. Visit [www.koaspeer.com](http://www.koaspeer.com)

**BURNDY Announces the PATRIOT® PAT46LWS Series Light Weight 15-Ton C-Head Crimping Tool**

BURNDY®, a leading manufacturer and provider of connector and tooling solutions to the industrial, energy, construction, telecommunications, petrochemical, data center, and transportation industries, introduces their new light weight 15-ton C-Head crimper — the new PAT46LWS series.

The PAT46LWS series has been designed with a new forged C-Head that offers a weight reduction of 34% over the existing design. Additionally, this new series continues to accept all standard BURNDY® "P" & "U" style crimping dies (w/PUADP-1 adapter).



**PATRIOT® PAT46LWS Series Light Weight 15-Ton C-Head Crimping Tool**

The PAT46LWS series offers customers the choice of ordering two battery platforms, 18V Makita Lithium-Ion or 18V Makita Nickel Metal Hydride, both offered in various configurations. Like all BURNDY® PATRIOT® battery tools, the PAT46LWS series incorporates the latest engineering technology with a patented high speed hydraulic pump and field proven electronics designed to provide a consistent, reliable connection every time.

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

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# Nick Lambevski Inducted as 25th President of the NTDA

**N**ick Lambevski, President of Transport Trailer Sales, Inc., was inducted as the 25th president of the National Trailer Dealers Association on Friday, Oct. 3, 2014 during the 24th Annual NTDA Convention at the La Quinta Resort & Club in La Quinta, CA. Immediate Past President Mike Shuemake, President of Central Valley Trailer Repair in Fresno, CA, presented the presidential gavel to Nick during the Association's Annual Awards Dinner and Annual Meeting.

Nick and his wife Cheryl started Transport Trailer Sales, Inc. in 1995. Initially they operated the business from their house and primarily sold used trailers. Thanks to the support of some key customers, the business quickly progressed to include new trailer sales. In 2001, the Lambevski's purchased a

14,000 sq. ft. facility located on three acres of land in Milton, Ontario, Canada, just west of Toronto's Pearson International Airport. Presently, Transport Trailer Sales is the largest flatbed dealer for Mac Trailer Manufacturing, Inc. The dealership also sells Mac dump, transfer and tank trailers throughout the province of Ontario.

Transport Trailer Sales, Inc. specializes in the sale of multi-axle, custom built trailers for the steel, lumber and construction industries. Lambevski's two sons Alex and Stephan recently began working for the dealership. Alex works in the Parts Department and Stephan just completed a mechanical engineering degree.

"Equipped with an extremely knowledgeable staff, we are able to properly design trailers that best meet each cus-

tomers' specific needs," said Lambevski. The dealership is focused on exceeding customer expectations from their service facility that also offers sales, accepting trades, leasing and renting trailers. Lambevski takes that same approach when it comes to the National Trailer Dealers Association.

"The NTDA Board is constantly focused on dealer needs and exceeding our members expectations," said Lambevski. One of the greatest challenges facing the NTDA today is managing its growth. The Association has grown from 202 members in 2010 to just over 700 members today. Likewise, Convention attendance has grown from just over 200 attendees in 2010 to 500 attendees in 2014. While the Association Board could not be more pleased with the growth of the NTDA overall, it does pres-

ent certain challenges.

"We need to ensure that the Association is adequately staffed and that programs and services are meeting members' expectations. The membership growth also creates the need to be aware of how best to manage all aspects of the convention such as the Allied Presentations, our educational sessions and the Tabletop Displays," said Lambevski. Lambevski also stated that one thing he hopes to see remain constant with the NTDA is the excellent networking opportunity that it provides.

"I was recruited by Mark Ellingson, who owned Chaparral Trailers. Mark was one of the founding members of the NTDA, and he encouraged me to run for the Board," said Lambevski. "I have really enjoyed the comradery, networking opportunities and education that it has

provided over the years." He continued, "Cheryl and I have met some great people and have made friends while visiting some of the exciting venues over the years. I enjoy the relationships we've built over the years with customers, vendors and staff. Our industry is made up of some great, honest and fun people."

Lambevski is especially proud to be President of the NTDA during its milestone 25th year. "Many of our dealer members have not attended one of our Conventions in a while, and it is my mission to get those members to come to our 25th Anniversary Celebration in 2015. I know if they come to one Convention, they will recognize the value of the Association and will keep coming back," said Lambevski. In addition to planning a very special and exciting 25th Annual Convention, the Board and staff intend to step up as an organization to do more strategic planning for the future.

"We are going to determine what we're doing right, what we could do better, and how we can best benefit our Dealer and Allied members going forward," said Lambevski. "The primary goal of the Board is to maintain the relevancy of the Association and continue to be of service to our members," stated Lambevski.

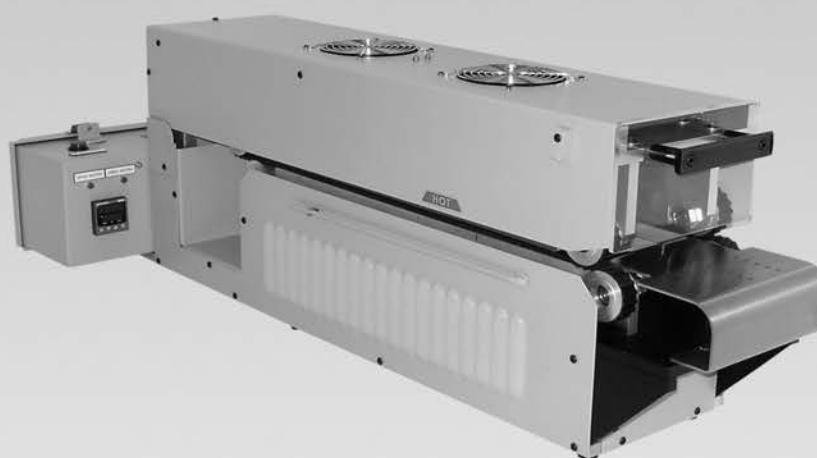
Along with Lambevski's NTDA duties, he is currently active with the Ontario Trucking Association's Allied Trade Board, and is past President of the Hamilton Traffic Club. When Lambevski is not busy with his dealership and the NTDA Board, he loves to golf. He and Cheryl are on the board and very active with the Mississauga Minor Basketball Association.

## HEAT SHRINK APPLICATION TOOLING

### Belt Heater for Heat-Shrinkable Tubing Products

#### Product Facts:

- Closed-loop speed and temperature control
- Continuous controlled process
- Adaptable for different applications
- Heater operation and over-temperature alarm lights
- Benchtop Design



## RAYCHEM MODEL 16B TABLETOP BELT HEATER

### Applications

The Model 16B is our smallest (tabletop) conveyor type processor which provides a controlled process for a wide variety of heat-shrinkable tubing products.

Double-sided timing belts on the top and bottom of the processing chamber draw the assemblies through a thermally controlled infrared heat zone and then through a fan-cooled cooling zone before depositing them into the unloading bin.

### Controlled Heating Zone

The Model 16B processor has two stamped foil heating elements that are manufactured to a strict wattage specification. Consistent temperatures (ambient to 650° C) are controlled by a thermocouple embedded into the upper heating element connected to a closedloop temperature controller. An alarm light illuminates whenever the actual heating element temperature varies from the set point temperature.

### Speed Control

The belt speed is selected using a 3-digit thumbwheel via a closed-loop motor controller and DC gear motor.

### Minimal Skill Requirements

There are clearly marked guides for aligning the assembly as well as the tubing or device. The operator only has to center the assembly then the tubing and slide it into the belts. The belts carry the assembly through the heating and cooling zone, depositing them into the bin.

Labor costs are reduced significantly because once an operator loads an assembly, that operator can begin preparing another assembly. The throughput rate is usually limited by the rate at which the operator can load assemblies into the process.

### Versatility

The processor is designed to process a broad range of heat-shrinkable products up to 19 mm [0.75"] in diameter and 90 mm [3.5"] in length. Heat output can be controlled to accommodate a wide variety of products and substrates.



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**SAWInspect System 6 (SIS 6) from Schleuniger, Inc.**

processing steps and motions have been minimized to increase efficiency and provide the fastest results. The SIS 6 can be used as a stand-alone system or mounted on a CrimpCenter automatic cut, strip, terminate machine. A variety of sample holders and the optional 0.2 mm VHM cutting blade make it possible to process many different crimp contacts on the SIS 6.

More information about this new product can be found at [www.schleuniger-na.com](http://www.schleuniger-na.com). Should you have any questions, please e-mail [sales@schleuniger.com](mailto:sales@schleuniger.com) or call (603) 668-8117.

**Kathleen Skelton joins FIBER OPTIC CENTER as Director of Strategic Marketing**

Fiber Optic Center, Inc., (FOC), an international leader in distributing fiber optic components, equipment and supplies and recognized as one of the most tech-



**Kathleen Skelton  
Director of Strategic Marketing  
Fiber Optic Center**

nically savvy fiber optics companies in the world, announces the addition of Kathleen Skelton as Director of Strategic Marketing.

Kathleen, a strategic marketing professional with expertise in business development, online strategy, social media, and content marketing, arrives at FOC with over twenty years of global business and marketing experience in the fiber optics industry.

Kathleen has held customer service, sales and marketing management positions at several companies but is best known for her consultative media management roles at Lightwave Magazine, Lightwaveonline and KMI Research.

Kathleen said, "My career has provided a great opportunity to work with most companies in the fiber optics industry.

*Continued on page 39*

**SawInspect System 6 (SIS 6) – Compact Sawing and Inspection System for Crimp Cross Section Analysis**

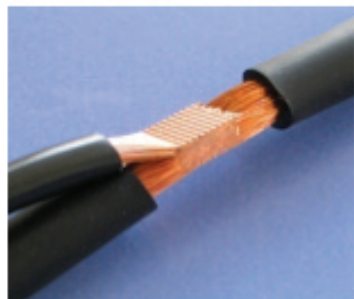
The SawInspect System 6 (SIS 6) is an innovative new product that provides crimp quality assurance and quality control to the wire processing industry. This extremely compact sawing and inspection system is used to quickly create and analyze crimp cross sections by combining three individual Schleuniger quality products into one complete system:

1. The precision cutting of the SawPolish Unit (SPU 6)
2. The high quality microscope of the MacroZoom Unit (MZU 1.3)
3. The electrolyte staining of the ElectrolyteStaining Unit (ESU 6)

The SIS 6 allows users to create cross sectioned samples in just a few quick steps. The individual sample is placed in the holder and aligned with the saw blade. The unique blade is designed to provide a very clean cut that does not require polishing. After cutting, the sample holder is quickly moved from the blade to the microscope with the use of guide rails.

The sample holder rotates 90° allowing for a perfect view of the cross sectioned sample. All necessary parameters of the cross sectioned contacts can be measured and analyzed with the equipped CrimLab 2 Standard software.

With the new SIS 6, all



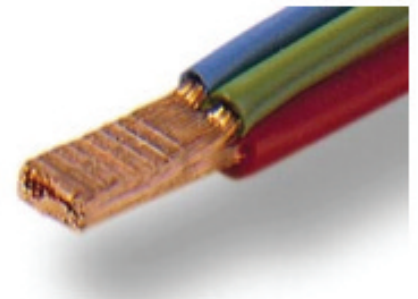
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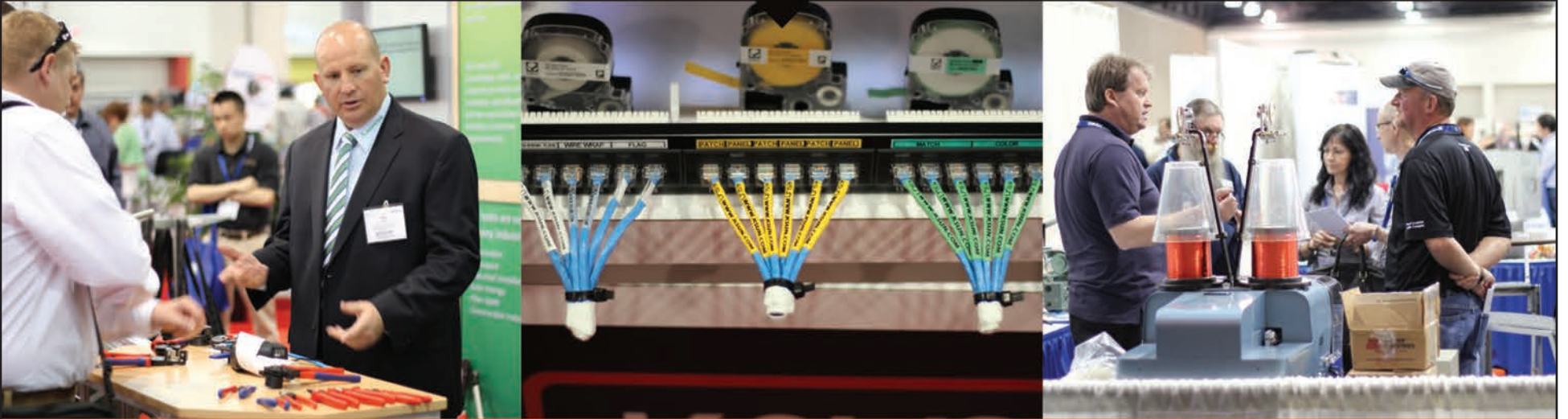
**Donnie Hill, Precision Manufacturing Co. Inc.**





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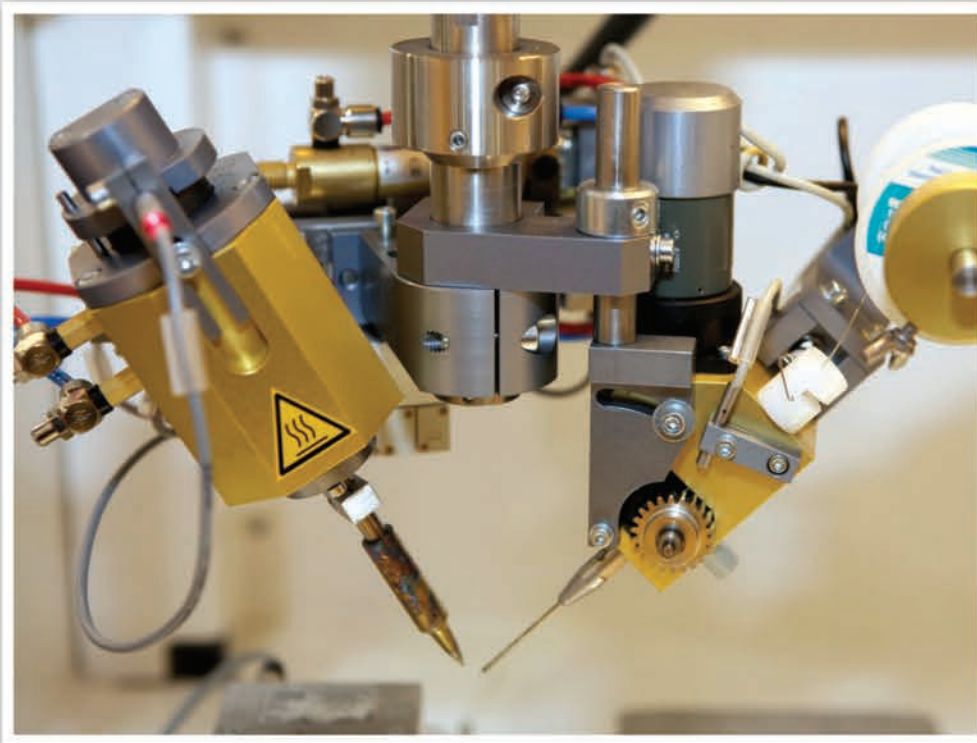
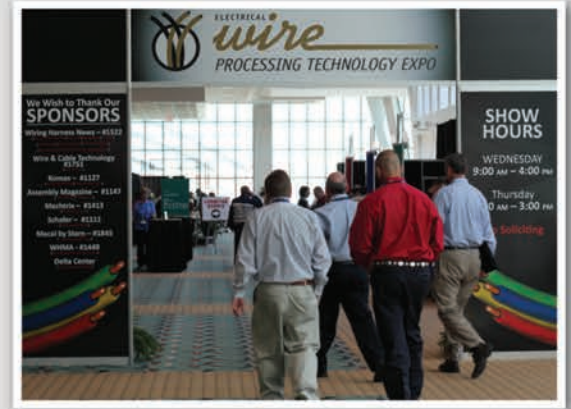
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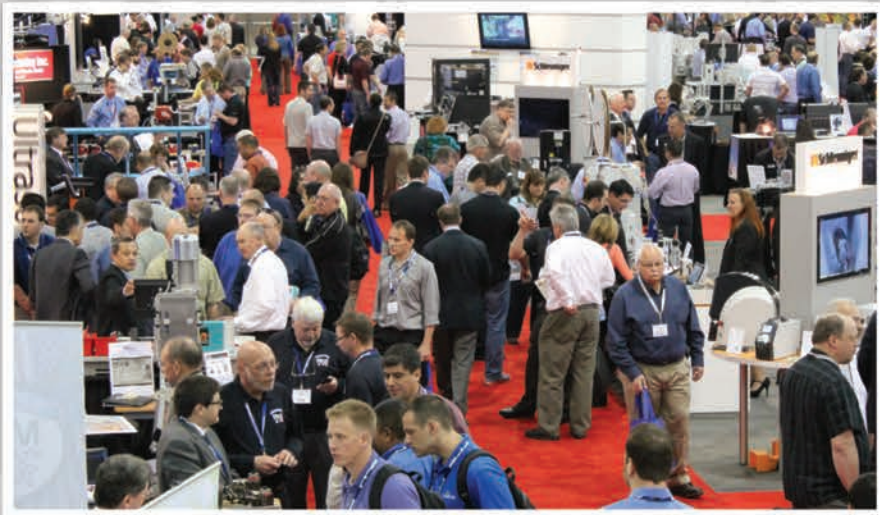


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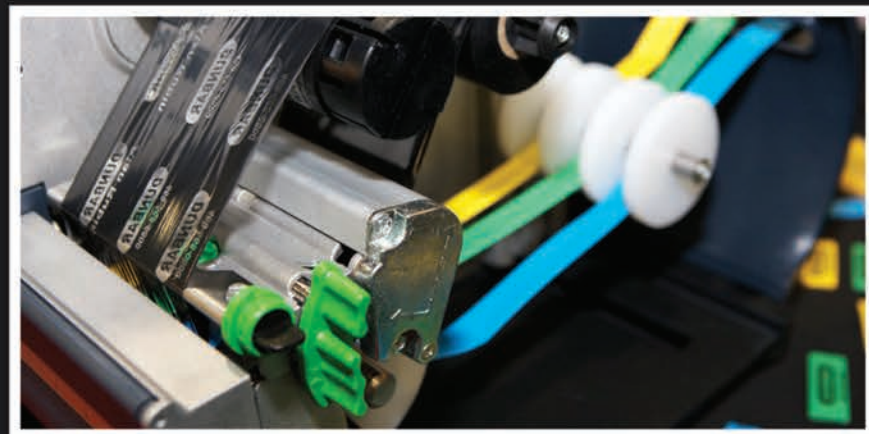
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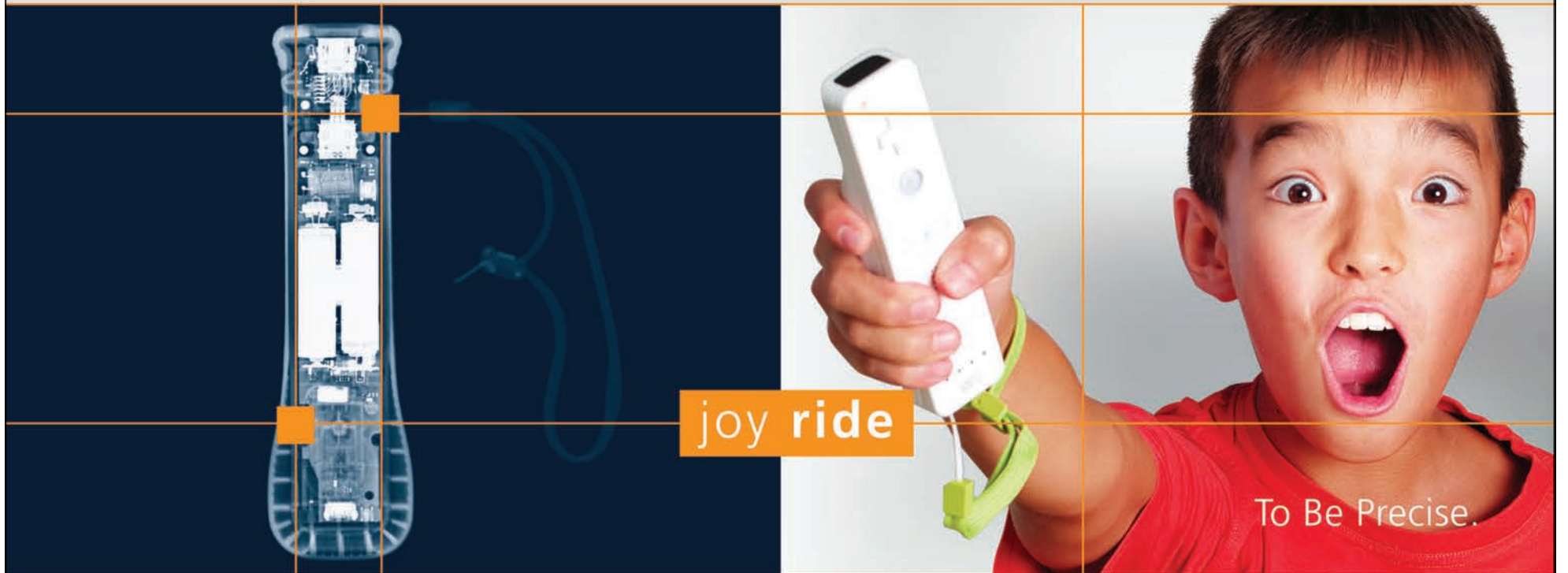


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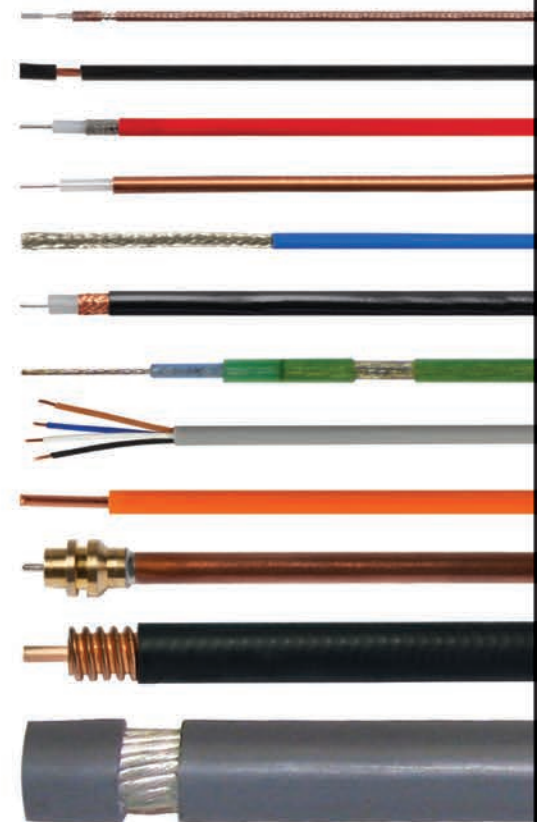
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*"Schleuniger has been an integral part of our company's growth. Because of the time savings and increased productivity, we decided to purchase another Schleuniger machine and then another. These machines became our only method of stripping coaxial cables."* **Joe Di Diego, Custom Cable Assemblies**



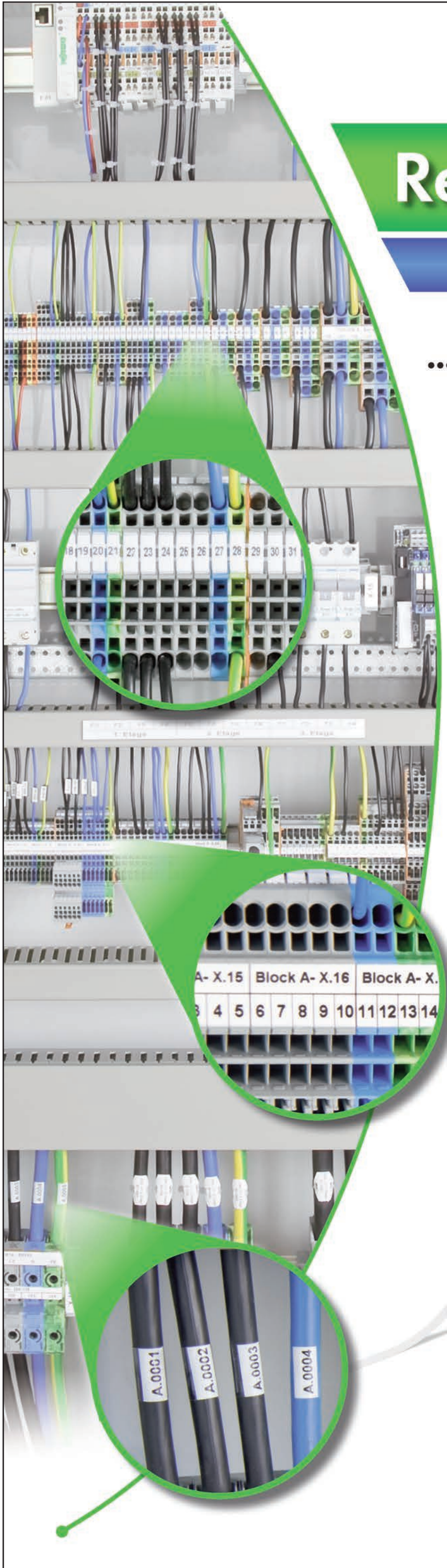
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**NEWS PLUGS** continued



Continued from page 31

Fiber Optic Center is one of the companies I have had the pleasure to work with, as a media consultant, over the past ten years. It has never been lost on me just how unique this company is in the depth of manufacturing and technical knowledge that they provide their customers but also the level of integrity and character on which the company is built. I feel honored and thankful to be a part of a company operating daily on an amazing values-based foundation."

In addition to her work in the corporate marketing world, Kathleen volunteers for several organizations including Voices of Hope; Destination Imagination and The Skelton Cohere Club that she founded with her son to support youth charity teams. She works with youth groups teaching business strategy for various community projects. In her volunteer work, Kathleen is committed to developing tomorrow's leaders through exciting, strategy-focused business education. This mission guides all of her work outside of the corporate office, including positions within the classrooms, PTO, and sports teams in her community.

Neal Weiss, founder and president of FOC, notes, "One of the advantages of being in the industry for a long time is that we can identify specific individuals who stand out as having a superior knowledge of the international fiber business as well as expertise in their particular job. Kathleen Skelton is one of those who has both. We are fortunate that she was ready to make a change, and to have her leading FOC's effort to expand our footprint worldwide and strengthen our 21st Century marketing efforts."

Fiber Optic Center (FOC) is an international high technology sales, marketing, distribution, manufacturing and consulting company. FOC has several areas of specialization and expertise, in which they are the industry leader, making them the preferred choice for many of the world's fiber professionals. In these key technology areas, FOC is "at least as technical as the manufacturer" about the products they sell. FOC also strives to "make the business part easy," offering outstanding and personal customer service, low or no minimum

purchase order values, and from-stock delivery on industry-leading products and technology. Their main focus is assisting cable assembly houses with supplies, equipment, consulting and technical support in the manufacturing and testing of fiber optic cable assemblies. FOC is the industry connection to the most innovative optical products, technologies and technical experts who integrate their manufacturing knowledge and vast experience into customers' worldwide operations.

**Zuken Plays Key Role in Innovation Award Win for Electric Vehicle Research Collaboration**

Zuken is pleased to announce that the electric vehicle research project in which they are a partner – EM4EM (ElectroMagnetic Reliability and Electronic Systems for Electro Mobility) – has won a European innovation award.

The project was presented with the



**Ralf Bruening, Zuken's project leader for EM4EM, presents at the European Nanoelectronics Forum 2014.43**

CATRENE Innovation Award for "Most Innovative Project in 2014" at the European Nanoelectronics Forum 2014, held last month in Cannes, France. CATRENE (Cluster for Application and Technology

Research in Europe on NanoElectronics) is an EU-funded research program.

Continued on page 43

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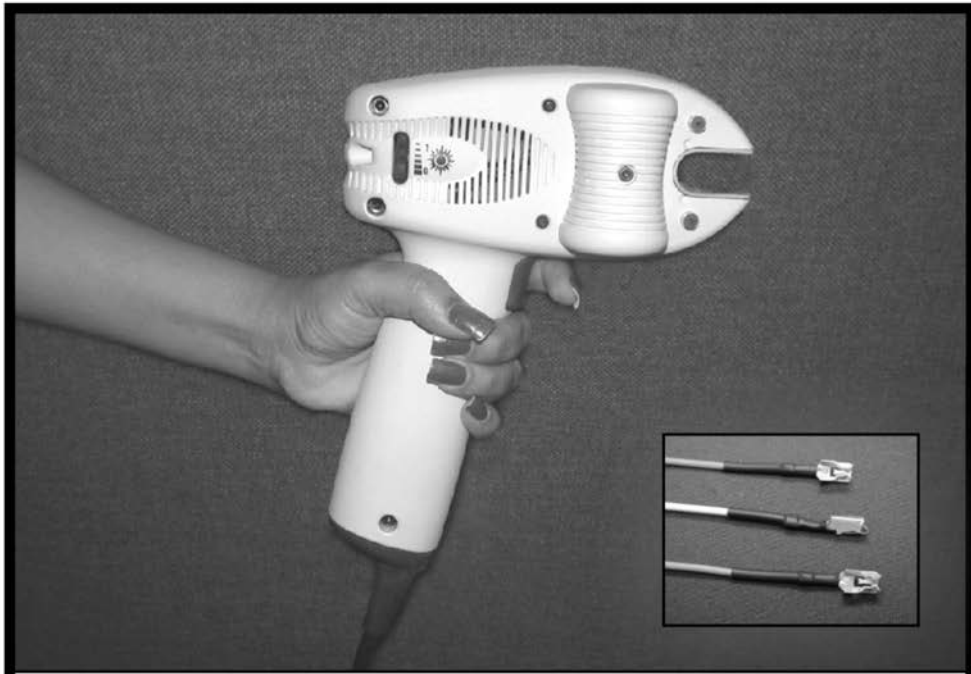
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**Control Cable Wins Northrop Grumman  
World Class Team Supplier Award**

Baltimore-based Control Cable, Inc. - a leading manufacturer and distributor of custom voice and data infrastructure solutions for the government, military, and commercial sectors - is the recipient of a Northrop Grumman Corporation's (NYSE: NOC) 2014 World Class Team Supplier Award.

The Team Supplier Awards are presented annually by Northrop Grumman to small business suppliers which con-

sistently demonstrate outstanding achievements and support for the company's Global Supplier Diversity Programs (GSDP). GSDP ensures that capable small businesses receive the maximum practicable subcontracting opportunities on all major programs.

Northrop Grumman's extensive review of more than 9,500 suppliers began last summer. Ultimately, awards were presented to 24 companies which demonstrated exceptional support and



From the award presentation (l-r): Cindy Shifrin, Senior Account Executive, Control Cable; Richard Meltzer, President/CEO, Control Cable; Voltaire Walker, Manager, Socio-Economic Business Programs, Northrop Grumman; and Valerie Hoffman, Sales Director, Control Cable.

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commitment to the GSDP goals and objectives, using criteria such as product, service, quality, and record. Other considerations included demonstrated delivery performance, outstanding program support, superior technical achievement, reported cost performance/competitiveness, and continuous process improvement.

"As a veteran-owned small business, Control Cable is extremely honored to be recognized for demonstrating exceptional support for those diversity initiatives," says company President Richard Meltzer. "Northrop's long-standing commitment to diversity in its supplier base is renowned within the industry. The World Class Team Supplier Award is a tribute to our entire team and to the values which have characterized our company since it was founded in 1975."

Headquartered in Baltimore, Control Cable manufactures and distributes standard and custom cable assemblies, wire harnesses, fiber optic products, network infrastructure and wire management products, and bulk cable.

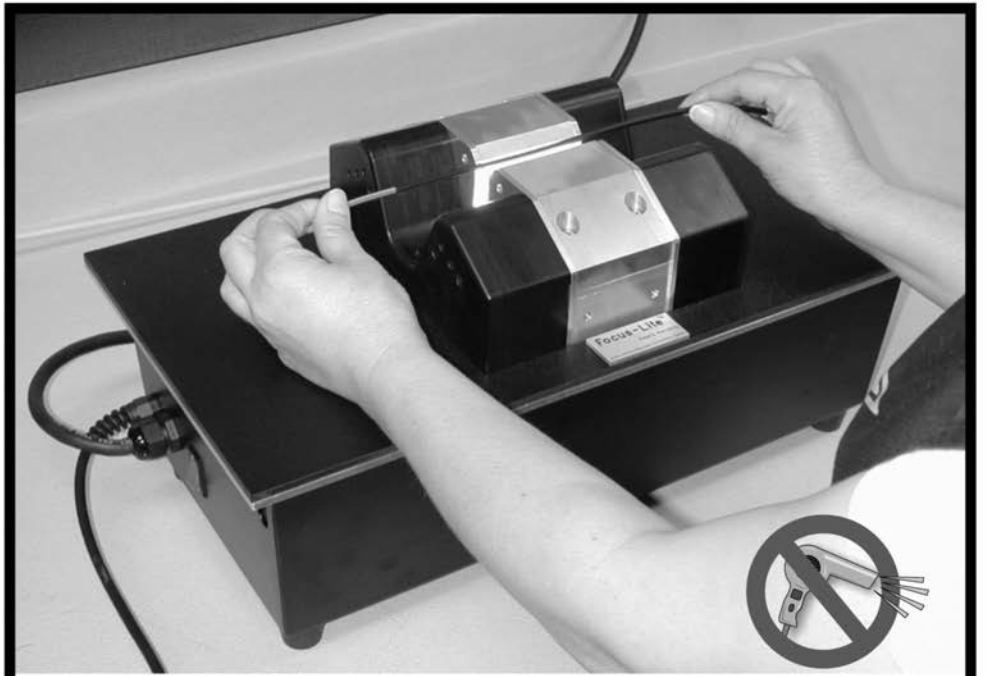
The company has undertaken a remarkable transformation from a data

communications and telecommunications supplier to one of the leading electronic manufacturing companies in the Mid-Atlantic: Through strategic partnerships with other manufacturing and installation companies, Control Cable provides end-to-end solutions ranging from product design to installation. Control Cable is ISO 9001:2008 certified and serves customers in both the government and commercial markets.

More than 32 percent of Northrop Grumman procurement spending goes to small businesses. The company has met and exceeded the 23 percent small business statutory goals for more than 10 consecutive years and has received numerous awards and recognition for its global supplier diversity programs.

Northrop Grumman is a leading global security company providing innovative systems, products and solutions in unmanned systems, cyber, C4ISR, and logistics and modernization to government and commercial customers worldwide. Visit [www.northropgrumman.com](http://www.northropgrumman.com) for more information.

For more information about Control Cable, visit [www.controlcable.com](http://www.controlcable.com).



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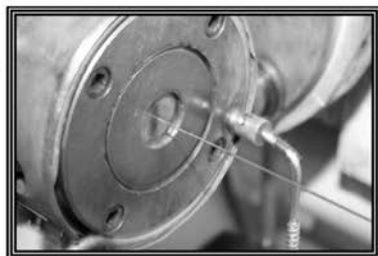
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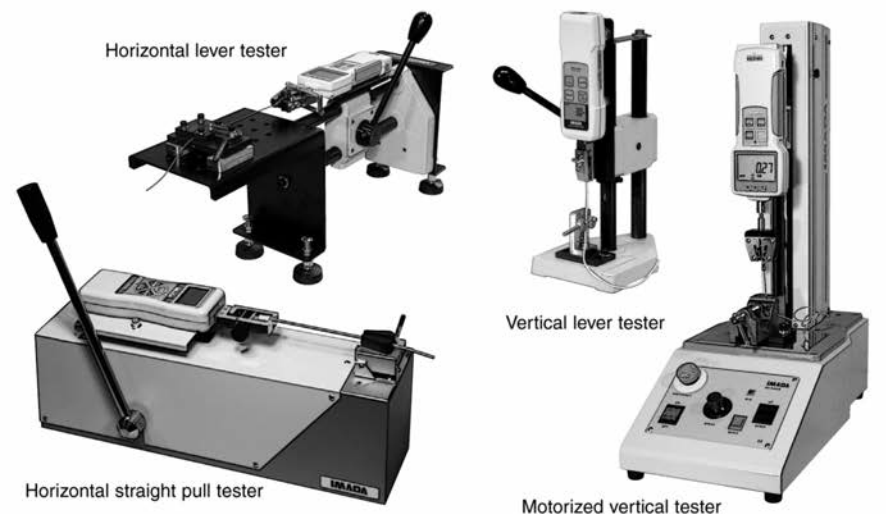
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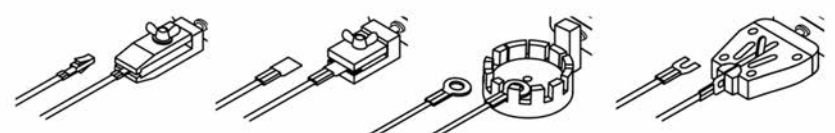
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**NEWS PLUGS** continued



Continued from page 39

Peter Koch, CATRENE Programme Director Applications, said, "The results coming out of the CATRENE EM4EM project are pre-conditions for the next generation of electric vehicles and will allow European companies in the automotive industry to secure and expand while preserving or even increasing employment in Europe. Each partner in this interdisciplinary consortium brought requirements and specific expertise that have resulted in effective solutions."

Zuken is the EDA industry representative on the three-year EM4EM project dedicated to tackling electromagnetic compatibility (EMC) problems in electrically-driven cars. Zuken has the lead on the "Advanced EMR Design for Smart System Integration" component, which focuses on modelling and analysis methodology. The project brings together 17 partners from three countries, including Audi, Daimler, Bosch, Infineon, Continental, NXP and EL MOS Semiconductor.

Zuken plays an important role in this research by advancing new technology concepts for EMC-related modelling of power and ground systems for control unit structures and for incorporating power-ground related noise in signal integrity simulation. EMC issues in electric vehicles can become critical due to the high currents and voltages required by electric vehicle engines, while control units operate in the millivolt/milliwatt range but must co-exist without disturbance close to the engine.

Ralf Bruening, Senior Consultant High Speed Design, and Zuken's project leader for EM4EM, said, "Our project was commended by the judges because of its systematic approach. We went from the project level into the specification phase and then from car, system, subsystem, and finally down to package and chip level. This type of systematic approach is vital to achieve results that can be implemented across the whole electric vehicle sector. We structured the R&D activities according to the V model, which is common in the automotive sector. The project

outcome will significantly enhance our analysis capabilities in future."

The project work organization conformed to Automotive SPICE, a quality standard for which Zuken is accredited. The results of this project will be implemented into Zuken's electronic design and wiring system solutions to create unique benefits for Zuken's automotive customers.

Zuken has recently expanded its

automotive sector activities by establishing a global Automotive and Transportation Competence Center in Germany. In October 2014, Zuken introduced its E3.Harness Analyzer product that offers efficient collaboration for the automotive harness industry as the first tool resulting from this Automotive initiative.

For more information, see [www.zuken.com/high-speed-pcb-design](http://www.zuken.com/high-speed-pcb-design) or [www.catrene.org](http://www.catrene.org)

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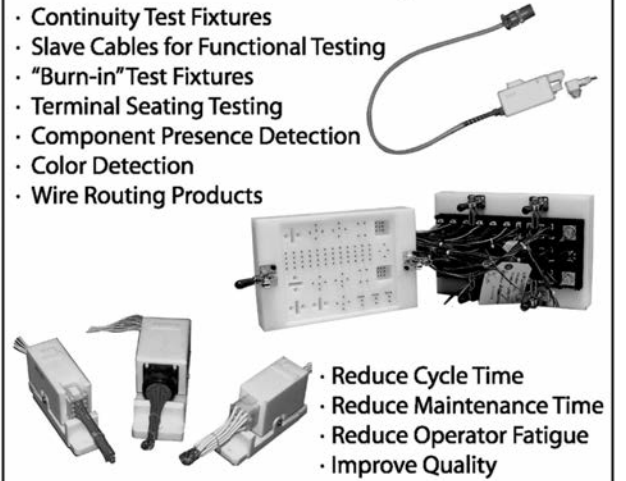
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**NEWS PLUGS** continued**Shock Absorbing Cables Resistant to Vibration & Sudden Impact**

Cicoil's highly flexible cables have been designed for use in applications exposed to harsh vibration caused by propelling force, automated machinery, excessive turbulence, intense wind, driving rain and rough seas. Unlike other types of cables that can't take the stress, the Cicoil designs excel under pressure and provide absolute reliability in the toughest of conditions.

Cicoil utilizes a unique process of completely surrounding and encapsulating conductors in its shock absorbing Flexx-Sil™ rubber jacket that renders them unaffected by constant shaking, sudden impact, severe vibration, G-Forces, extreme temperatures (-65 °C to +260 °C), salt corrosion, submersion in water, humidity, chemicals, ozone, radiation, UV light and the rigors of supersonic flight. As a result, the Cicoil cable does not require a clamping system (which is typically utilized with PVC, Polyurethane and Teflon jacketed cables) because the conductors cannot creep out of the Flexx-Sil jacket encasing them.

The Tear Resistant Flexx-Sil™ Jacket does not require conduit for protection, is self-healing from small punctures and outer cable jacket damage can easily be repaired in the field. In addition, the cable will not wear, crack or deform when exposed tight bending, continuous flexing and operational stress.

Standard "off the shelf" Cables are available for immediate delivery and cable assemblies, complete with connectors are offered in 3 foot, 6 foot and 12 foot lengths. Custom designs, including assemblies with connectors of your choice, 100% tested and inspected, are also available with minimum lead times. For rugged environments where cables are subjected to abrasion, Cicoil offers Anti-Friction Coatings by request.

Cicoil's Shock Absorbing Cables are Halogen-Free, Flame Retardant, UL Recognized, CE Conforming, RoHS & REACH Compliant, and are cured continuously, with no debris or material impurities, in an automated, climate controlled environment.

Cicoil's unique Flexx-Sil™ flat cables provide high flexibility, extremely long life, and they can withstand temperature extremes from -65 degrees to +260 degrees Cel-

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

**Portable Wiring Tool Kit Cuts Cable Jacket, Insulation and Strips Wire**

An upgraded tool kit with three essential hand tools that store in a handy trifold

canvas pouch for all types of wire and cable preparation and repairs is being introduced by Xuron Corp. of Saco, Maine.

The Xuron® TK2300 Wire Harness Tool Kit features the three tools used most for assembly and field service wiring applications all packed into a handy trifold canvas pouch that fits into a tool kit or pocket. Included is the Model 440 precision scissor for slitting coaxial cable jacketing and cutting foil insulation, Model 2175 Maxi-Shear™ flush cutter for wire up to 12 AWG, and the Model 501 thumb adjustable wire stripper-cutter for 10 to 26 AWG.

Suited for professionals who need to assemble, install, or repair wire and cable in a facility or in the field, each tool in the Xuron® TK2300 Wire Harness Tool Kit is ergonomically designed with soft rubber hand grips, no finger loops, a Light Touch™ return spring, and a non-glare black finish. The canvas pouch has pockets for each tool and a hook & loop closure.

For further information contact Xuron Corporation, 62 Industrial Park Rd. Saco, ME 04072-1840. Phone (207) 283-1401 or Fax (207) 283-0594. Visit [www.xuron.com](http://www.xuron.com)

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# WIREwisdom™ ANIXTER

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

## UNDERSTANDING AND IDENTIFYING UL AWM STYLES

Appliance wiring material (AWM) is a large category of wire and cable that spans over different constructions. Underwriters Laboratory (UL) categorizes AWM as a Recognized Component used in Listed or Classified products. AWM is commonly used in a variety of applications such as general purpose wiring circuits, control circuits and internal wiring of appliances.

## WHAT ARE UL STYLES?

Underwriters Laboratory (UL) is a third-party testing laboratory that certifies and tests products. UL assigns a different style number for each approved AWM construction and creates a style page that lists a few specifications, such as gauge size range, insulation material, temperature rating and voltage rating. Each style specifies the product's general use as determined by UL's evaluation of the product. Figure 1 is an example of a style page for UL Style 1015.

## UL HISTORY

Over the years, many different wire constructions were developed and certified as ULAWM due to the high demand from various applications and industries. The large number of AWM styles lead to different interpretations of desired performance and evaluation methods.

APPLIANCE WIRING MATERIAL  
Subj. 758 Section 1 Page 1015 Issued:1959-05-01  
Revised:2013-02-22

Style 1015 Single conductor with extruded insulation

**Rating** 80, 90 or 105 deg C, 600 Vac or 750 Vdc, Horizontal flame. Optional - 60 or 80 deg C Oil.

**Conductor** 30 AWG - 2000 kcmil, Solid or Stranded.

**Insulation** Extruded PVC

Conductor Size	Minimum average thickness	Minimum thickness at any point
30-9 AWG	30 mils	27 mils
8-7 AWG	45 mils	40 mils
6-2 AWG	60 mils	54 mils
1-4/0 AWG	80 mils	72 mils
250-500 kcmil	95 mils	86 mils
550-1000 kcmil	110 mils	99 mils
1100-2000 kcmil	125 mils	112 mils

**Standard** Appliance Wiring Material UL 758.

**Marking** General

**Use** Internal Wiring of Appliances. Tags may also indicate the following: 2,500 V peak - for electronic use only.

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Figure 1: UL Style page for UL Style 1015

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Appliance Wiring Material Style Number Designations	
Style Designations	Type/Use
1000-1999 and 10000- 19999	Single conductor, thermoplastic-insulated wire
2000-2999 and 20000- 29999	Multiconductor, thermoplastic-insulated and -jacketed wire
3000-3999	Single conductor, thermosetting-insulated wire
4000-4999	Multiconductor, thermosetting-insulated and -jacketed wire
5000-5999	Single and multiple conductor specialty items

Table 1: Appliance Wiring Material Style Number Designations

UL Standard 758 Appliance Wiring Materials was developed to consolidate general requirements for AWM, and standardize methods of evaluation. The standard includes performance requirements and methods for testing tensile strength and elongation, spark testing and dielectric voltage withstand. UL 758 also regulates marking and labeling of AWM products.

**HOW DOES UL CATEGORIZE THE STYLES?**

There are five sections of AWM wire. The different categorizations are based on the following criteria:

- Single conductor or multiconductor
- Thermoplastic or thermoset jacket
- Manufacturing method used to apply insulation, jacket or outer covering

UL has published a document that explains the different terminologies and associated numbers that are assigned to the different styles. For convenience, a reproduction of the table that addresses the style

numbers and their use is listed left.

**HOW TO FIND A UL STYLE?**

UL has a useful tool available on its “iQ™” website (iq.ul.com/awm) that allows an user to access information about AWM wires.

A parametric search is one of the most helpful features when looking for a wire that meets specific application requirements. The search form allows the user to input the temperature, AWG size, material type as well as many other requirements, and it returns a list of styles that meet the input criteria. The site also allows users to search for companies that make a particular style, and it provides visibility to the style page itself.

**COMMON UL STYLES**

According to UL iQ there are over 7,000 different UL Styles. Some of the more common constructions are listed in Table 2 along with basic details about the style.

Common Types	Size Range (AWG/kcmil)	Insulation Type	Shield	Jacket Type	Voltage Rating (V)	Temperature Rating (° C)
1007	32-16	PVC	None	None	300	80
1015	30-2000	PVC	None	None	600	80/90/105
1283	8-2	PVC	None	None	600	105
2464	Not Specified	Not Specified	Optional	PVC	300	80
2919	Not Specified	Not Specified	Optional	PVC	300	80
3173	26-9	XLPE	None	None	600	125
3266	32-10	XLPE	None	None	300	125
4511	Not Specified	Not Specified	Optional	Silicone Rubber	600	200
4535	Not Specified	Not Specified	Optional	Silicone Rubber	600	150

Table 2: Common UL Styles



- ◆ Are you a wire harness manufacturer looking for ways to increase your profitability?
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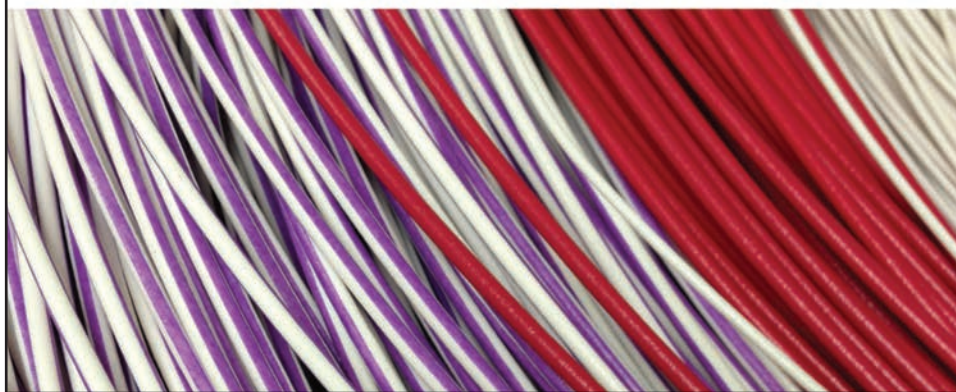
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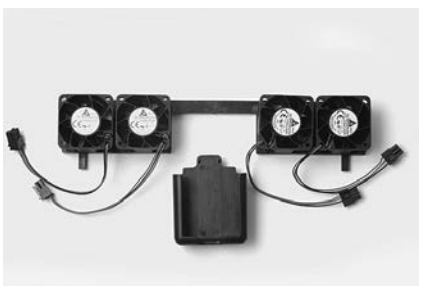
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# Selecting an Automation Tool for Wiring Harness Design

Continued from page 1

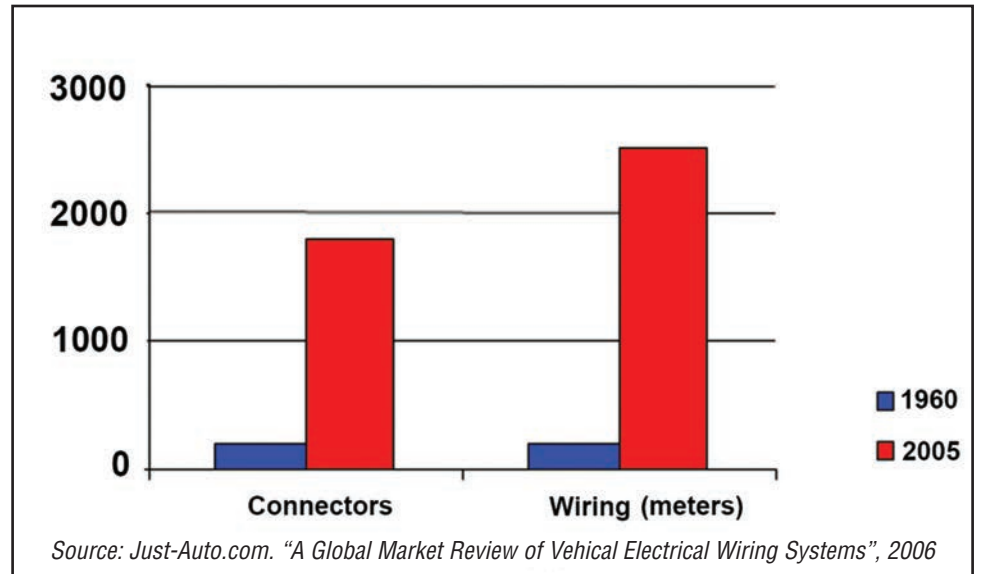


Figure 1: Increased electrical and electronic content in cars, with copper comprising 40Kg of average vehicle weight.

Innovation in the design and manufacturing wiring harnesses has been, as with most engineering disciplines' development derived from a combination of technological advances, commercial impetus and consumer demands. Technological advances in the devices which can be placed into vehicles, the electronic controls, sensors and actuation systems have proliferated the number of signals and circuits. Customers' expectations of equipment levels have risen and concomitant with this availability consumer tastes through marketing grew to embrace the new features and comforts

on offer from competing manufacturers. Whether various aspects of design through to manufacture are supervised, owned as a core responsibility in the wider vehicle engineering tasks by an OEM or outsourced varies from company to company and is not static over many years. Whether the contractual relationship with the harness maker is as a "build to print" partner for the OEM or there is a more "pro-active-assists-in-design" professional service, there is an imperative to both parties to collaborate.

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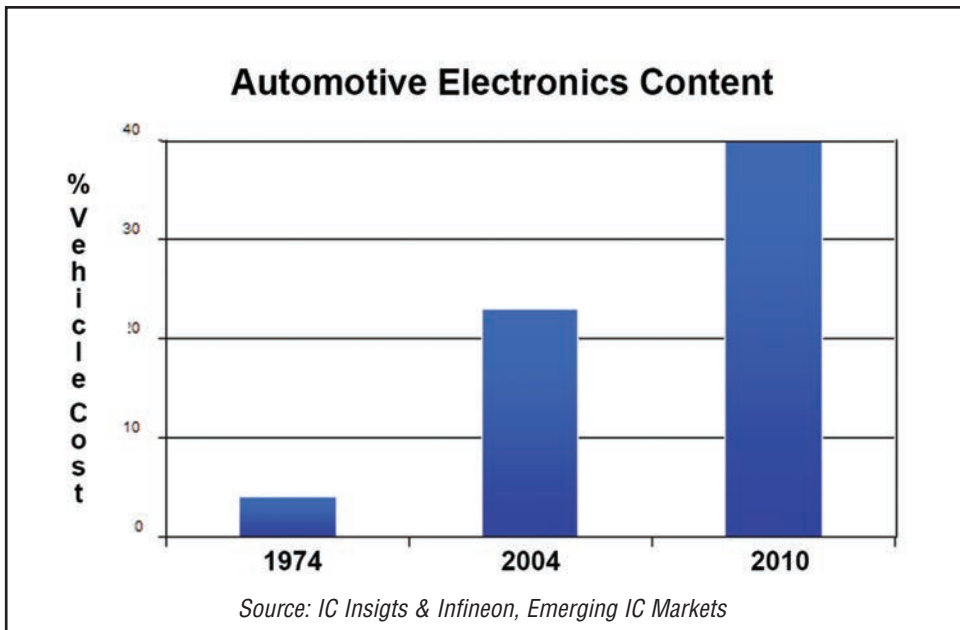


Figure 2: Proportional cost of electronics in vehicles.

**Selecting a “Good” Tool Set?**

Selecting a wiring harness design tool is not a trivial project. In 2006, I began a study to examine Request for Information (RFI) and Request for Quotation (RFQ) documents that we had received at Mentor Graphics. In this proprietary study, patterns began to emerge in the data that suggested selecting and evaluating an automation tool could be reduced to a few categories of needs, in this case four.

A. About one quarter pertain to the need to adequately and accurately model reality of the electrical platform cabling harness product. This is important to users because the technical complexity and variation in the engineering, if not catered for results

in workarounds and compromises. If the model is deficient, eventually the deficiencies bring down the efficacy of the whole system. Likewise if the process of engineering change or the workflow of design cannot be wholly encompassed by the functionality the software is not usable.

B. Another quarter require the software suite to produce business benefits. Expressed simply that is the desire to yield more from less and to eliminate waste and maximize efficiency.

C. Approximately one quarter had a requirement that electrical interconnect systems be understood

*Continued on page 50*

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3	3	67	↔ 0.1 Ω	✓	< 1 µA	1200 V	> 1 GΩ	0.071 mA	820 V 12 MΩ
4	4	68	↔ 0.3 Ω	✓	< 1 µA	1200 V	> 1 GΩ	0.071 mA	818 V 13 MΩ

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# Selecting an Automation Tool for Wiring Harness Design

Continued from page 49

by reference to Computer Aided Design artifacts — blueprint outputs, drawings, schematics and the like. Those generally have standards to which organizations choose to adhere.

D. Finally, a quarter of the "must have" requirements are interoperability in the Enterprise. Downstream, sometimes upstream, out to MRP/ERP, to manufacturing, to simu-

lators, test equipment, across geographies and time zones everything is interdependent. Companies of all sizes perceived that integration of systems could be a huge hidden cost to tag on to the purchase price of new tools.

A balance of these requirements is essential. Imbalance can be a problem across these categories. A and C are tactical to a user's business, but B and D are more strategically aligned to that business's top level goals and initiatives. Also there is a difference in emphasis in indi-

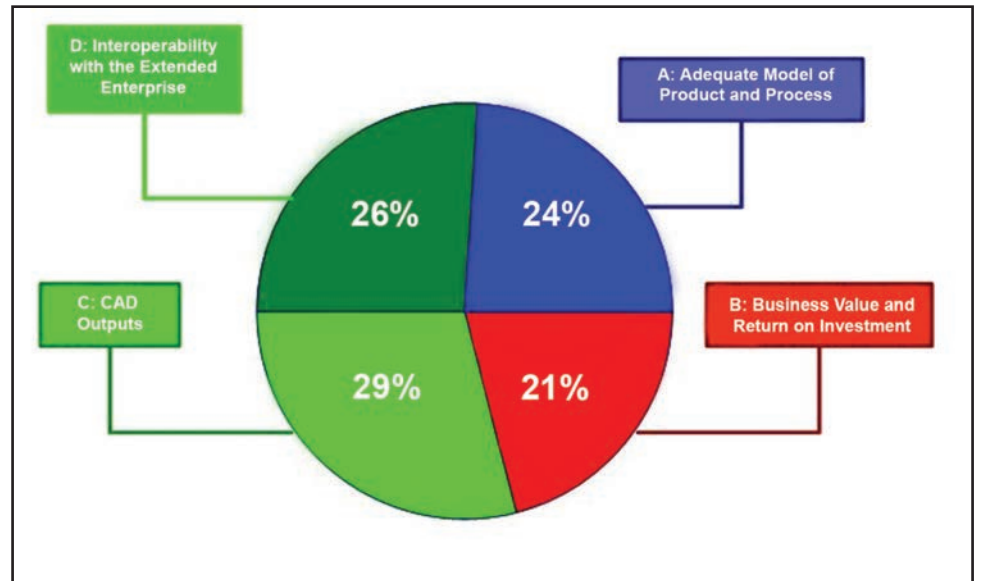


Figure 3: Research revealed these four principals involved with selecting an automation system.

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vidual cases — a build to print supplier of harnesses for medical equipment has different needs and expresses them differently than an organization designing the electrical interconnect for satellites and missiles. Reviewing more and more RFQ's trended towards a macro view of the requests.

### Adequate Modelling of the Product and Process

Let's break down the two aspects which I refer to in the summarized principle of modeling as "product and process." I am making a distinction between how you use IT to construct a model of the designed item and the

workflow, the way in which you develop that design through to manufacturing of the physical thing which results from your design

Modeling your finished product, or refining your product model as it is being developed without the appropriate, adequate level of detail has drawbacks. There may be legitimate debate about the level of detail necessary in a given area or at a stage of design. I think everyone can agree however that accuracy is paramount — for example — if the underlying simulation model for an electrical part is flawed, FMEA studies can become unreliable or invalid.

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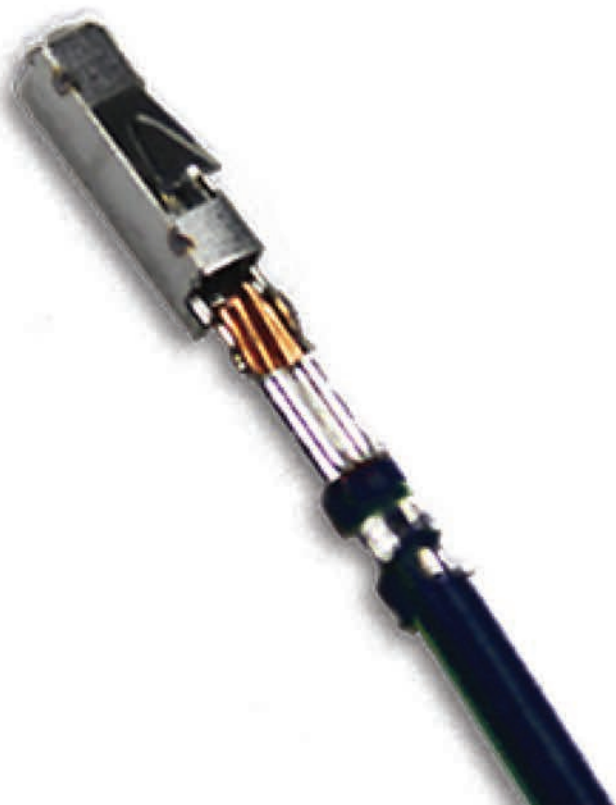
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want to work is important too. If you are considering a new way of working, want to expand or re-formulate the work flow or are being obliged to do so by the pressure of business it would be a disappointment to have a software system which knows nicely the difference between Kevlar sock-weave and heat-stakes and Insulation Displacement (IDC) connectors but condemns users to shoe-horn their work flow, the collaboration steps and hand-offs and release safeguards into functions inadequate to represent the organization's reality. Things like these consist of another set of representations which need here to be adequately modeled - ones which could be overlooked during evaluation, but will not go unnoticed during deployment by disgruntled users as inefficiencies and compromises become apparent.

**Business Value and Return on Investment**

The goal of profiting from owning automation software is surprisingly often neglected, or lost sight of when organizations are considering refreshing their capabilities for systems interconnect tool integrations. The IT professionals involved in evaluating the vendor offerings know what they are looking for, the electrical engineers, the harness designers and wiring specialists have a well-polished technical appreciation of what they want. However around a quarter of the research for an automation tool should go to the heart of the business case for owning software.

It is good if a software application looks nice. Better still if some of the things which happen are impressive, some functions execute fast. However, unless the results of examining a new set of tools reassures you that your business will operate more effectively (higher efficiency and/or reduced costs) these benefits matter very little.

This is the crux of the need, the business rationale. The other three principles involved in the selection of an electrical interconnect design system are subordinate to this one - they answer the question "will the job get done okay using a specific tool or set of tools?" This principle is tantamount to an answer to the question "what's in it for me?" It is highly desirable to have a known good, justifiable and evidence-based answer. An alternative approach is to ask "what other resources or expenditures you are prepared to sacrifice in order to own new software which meets your needs?"

There are motives which are positive, like the drive to increase market share, expansion and ambition to diversify into a different market. Market conditions mean you are always seeing need to trim costs, to make engineering human capital spread already thin range even further. Competition in the market place can also stimulate your desire for innovation and software re-tooling.

Sharing details of your anticipated return on investment, the business objectives, the executive level initiatives, the plans to combat competitor

*Continued on page 52*

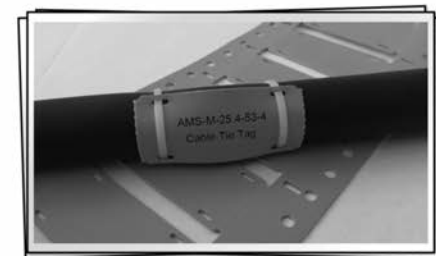
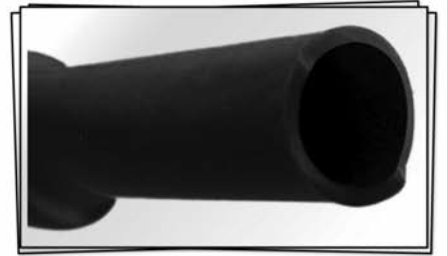


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# Selecting an Automation Tool for Wiring Harness Design

Continued from page 51

strategies with a software supplier is an expression of confidence in the future relationship. A non-disclosure agreement should of course be in place and it may be wise to hold back a little at first. Not telling your future close business partner how you want to unlock improved performance, efficiency and savings is like asking a person on the street for directions to the park and when they say "which park?" you reply, "Well, I can't tell you that, it is personal. All I can say is that it has some trees and some children's play equipment, and other things I can't mention. But if you give me directions

and get me to the right park in this city, then I'm going to be very grateful." You'd get a puzzled smile and sympathy at best.

Here are some examples of requirements statements where the business value is openly displayed.

- We need some software can the support design development in half the time we can currently manage

- Quotes should be turned around for our customers in maximum 3 days, currently the average is 10

- We will restructure so that diagrams are authored and released by

Engineers, not by a remote CAD drafting department

- Quality issues and BOM mistakes cost us \$837k/year per program on average and contributed to two project deadline overruns last year.

- We don't know whether our suppliers of harnesses are quoting fairly for the work we award to them. We know costs are rising, and we must get control and believe a 10% reduction in piece costs can be obtained without de-sourcing our manufacture.

Making a business case, calculating ROI, NPV etc. etc. is a fact of life for many people doing budget submissions. Procedures vary to getting your procurement project approved and understood by finance, purchasing but the business case needs to be strong

## CAD Outputs

Computer aided design artifacts in automotive electrical platform engineering — schematics, blueprints, drawings, are absolutely central to the way electrical and wiring engineers do business. They encapsulate the design in a simplified way, so that peer reviews, team validation, hand-off to release can be done on the basis of common understanding, using fixed graphical representation standards. Without these outputs electrical engineers and their colleagues do not have a convention in which they can understand the product. Electrical CAD works on the basis of diagrams as the primary source of reference and communication.

Vendors are seldom asked for capability to change or progress the drawing standards. Almost invariably the stated requirement is to conform to existing drawing appearances.

An example requirement I have often seen is that the Graphical User Interface (GUI) should be capable of zooming in and out a) to defined portions of the drawing b) to specific devices c) to the extents of conductors d) to the extent of the drafting template/frame .... and so on. Satisfaction in this area is usually the first priority for end users, and failing to meet requirements for

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- Total and batch counter
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- Split-cycle operation
- Standardized 1 5/8 [41.3] stroke
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drawing appearance is often the cause for kick-back from end users comfortable with years of working a certain way.

Product knowledge, the management of change in highly complex systems can be thrown into chaos if new CAD features are introduced that are inadequate. This has to be sensitively handled. Here are some representative examples of requirements and how they can be stated:

- Format of file must be either .pdf .dwg or .svg
- Off-page references shall be as per fig. 14A

• Application will automate the placement of title block information on the drawing

- Standards according to appendix D shall be achieved in the software without customization, i.e. as installed

These examples look innocuous - but they can split out into clusters of sub-requirements. Take the first one. What type of PDE, what version of the .dwg format? Take the last one, does "without customization" mean without the user ever having to configure their own client installation of the ECAD software because there are security and configuration control concerns. Or it may mean that you are concerned about the divergences from common processes as a result of having to trawl across drawings with utilities to "clean" them and have been disappointed in the past with the support overhead your internal IT

group has to devote to making and maintaining custom code to localize drawing appearances. Expressions of requirement for design diagram formats can appear simple but may have underlying needs to some depth.

This aspect of evaluating a new tool needs to be planned carefully. A list of 2-300 items "the drawing tool must do ..." takes time to compile and takes time to ratify amongst often many stakeholders who are custodians of the drafting standards. The best advice is to isolate some top level requirements, and plan to examine the vendor's capability in all the desired detail through a fast-tracked evaluation stage of your selection.

Bear in mind also that the transition from one system to another is the golden opportunity to review your drafting needs. In parallel with the tool selection I recommend you initiate a review of the CAD standards and output requirement and see whether there exists a strong case for retention or a good case for relaxing some of the requirements. What opportunities exist for harmonizing standards across your enterprise? Now is the time to take a critical look at what your competitors do — possibly for the first time in several years. Can you eliminate paper copies of schematics in part of your design review process? Does it save money and time to adjust the way you do things? That's a good exploration to undertake.


#### Interoperability to Extended Enterprise

Requirements which described the fourth segment were, like that sub-set of needs referring to business needs and ROI, closely bound up in the adopting organization's strategic relationships, and the business operations. The electrical platform systems interconnect product definition and release to manufacturing domain does not exist in isolation from the mechanical CAD (MCAD) information systems, nor likewise the product lifecycle data infrastructure (PLM and PDM systems) and may even need to interact with sales (CRM) and finance (for quotation tracking, engineering change management control) and enterprise resource planning ERP.

Dig into the interdependence relationships between systems a little further and you may uncover requirements to interface to manufacturing tools involved in harness testing prior to shipping and installation, cut/strip/terminate automation machines. That's sometimes described as the "back end" of the design to manufacture process.


Service based technical outputs may be needed, and either the software being considered caters for these needs inside a comprehensive environment with a functional offering, or there is a hand-off interface of import/export offered. Requirements for all the interfacing should be defined, understood just

Continued on page 54


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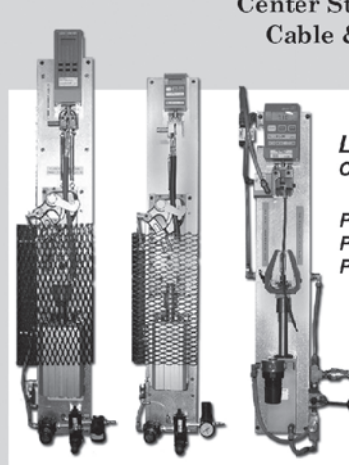
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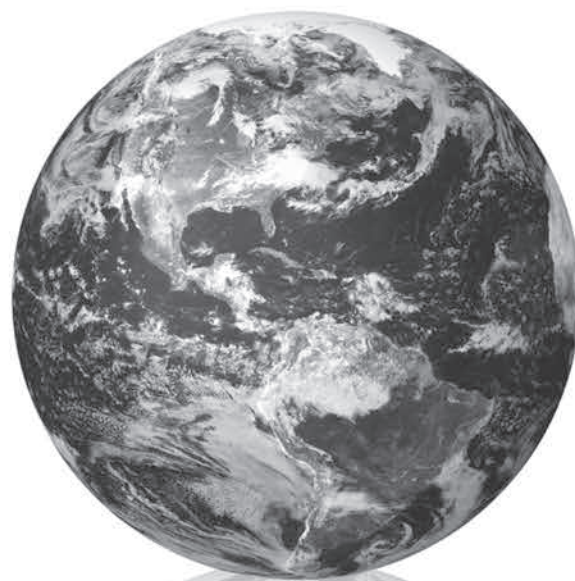


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# Selecting an Automation Tool for Wiring Harness Design

Continued from page 53

tified and documented. There are few things more difficult to deal with implementing a new system (and costly) than discovering you cannot retire a piece of software because something downstream is totally reliant on an output which a new system is incapable of providing.

The expense of systems integration can be considerable and should be fully exposed. If your budget bid and commercial justification does not include a provision for systems integration, then your information systems professionals will catch up with the deficiency and rectify the fault later, delaying your time to productivity and increasing your

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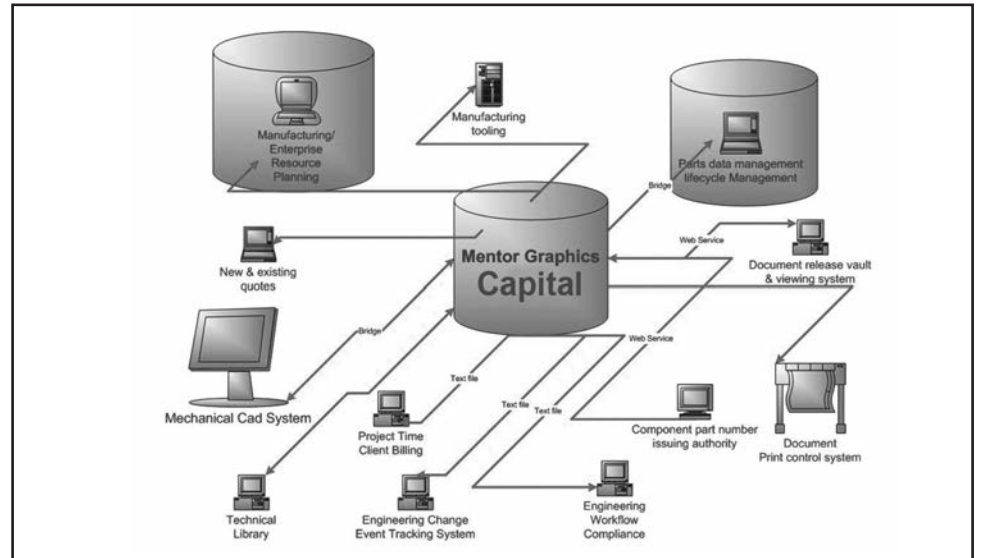


Figure 4: This illustrates all the functions that an automation system, such as Mentor Graphics Capital, must have to fulfill the four categorical needs found in customer research.

costs. Factor it in from the start. You are working to a common goal - the health and growth of your company - and there are usually more people than you first think who share this interest!

Keep your eye out for maintenance implications. What happens if format X or standard Y or system Z changes in six months or six years? Predict the frequency and type of modifications to a base set of interfaces.

Look at your interoperability and interfacing requirements. Does this tell you that you need a point tool vendor or a partner with more extensive capabilities? If your vendor cannot make the grade in keeping the links to your extended enterprise's information systems functioning and adapting to the

future, you must recognize the burden of the task will then fall on your own organization. So when you are evaluating responses, the testimonials from the vendor, their credentials in the industry in terms of collaborating with other players in mechanical CAD or PLM for example could assume an elevated importance for you.

Selection of a software automation tool for wiring harnesses is a fairly complex task. However, the research presented here indicates that you can safely reduce your requirements into four general categories to simplify your search. Using this research data, you can now run a vendor selection process in weeks instead of months and save time and money.

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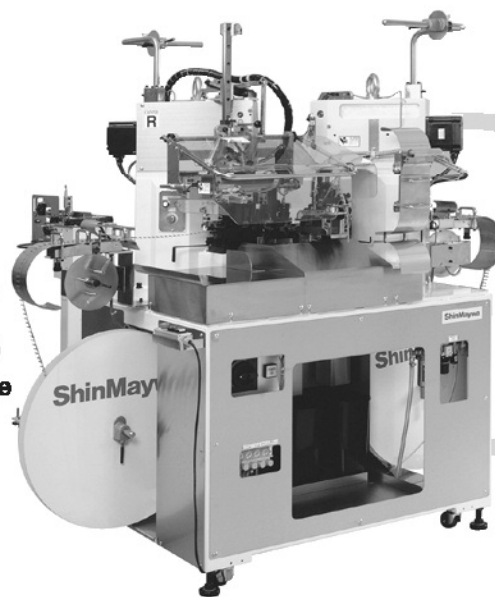


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# Nordson Advanced Technology K.K. Japan Moves to Larger, Customer-Focused Facility

Nordson Corp., announces that Nordson Advanced Technology K.K. Japan has relocated to new, larger facilities in Tokyo to deliver superior sales, service, technical training, and support to its customers in Japan. With an expanded demonstration

room, applications lab, and office space, Nordson Advanced Technology K.K. is able to integrate its dispensing and coating, test and inspection, and plasma treatment equipment and expertise to improve the processes and products of electronics manufacturing companies.



The move was effective November 25, 2014.

The Advanced Technology group sells and supports the products from several Nordson divisions (Nordson ASYMTEK, Nordson DAGE, Nordson MARCH and Nordson YESTECH) under a unified, in-country management and physical infrastructure to regionalize their products and services to benefit customers, suppliers, and employees. Customers can purchase these Nordson products using Yen rather than US dollars.

“We want to deliver high quality services that exceed our customers’ expectations,” stated Nobuo (Neal) Okuda, general manager, Japan Nordson Advanced Technology K.K. “Bringing together the experts from the different Nordson Advanced Technologies companies will lead to new discoveries for customer solutions.”

“This move is an important part of our efforts to ensure that our customers can easily do business with us in the regions in which they operate,” stated Greg Wood, vice president, Nordson Advanced Technology Asia. “Our customers get hands-on local support and technical help in selecting the right equipment and developing the most efficient and cost effective processes to produce high quality products, yet have the backing of an international R&D, equipment manufacturing, and engineering team.”

The address for the new office is: Nordson Advanced Technology K.K., West Tower 17th Floor, TOC Ariake Building, 3-5-7 Ariake Koto-ku, Tokyo 135-0063. For more information contact the office at Tel: +81.3.5762.2801 or email info-jp@nordsonasymtek.com.



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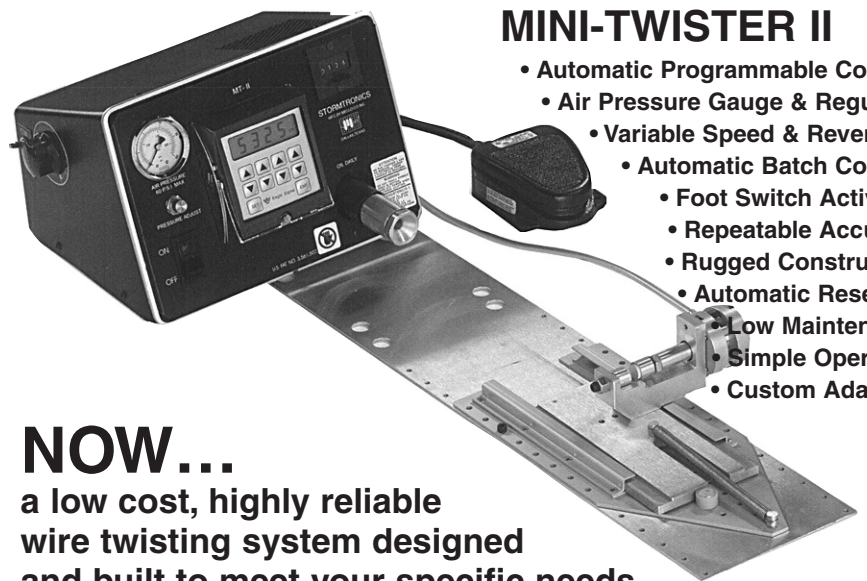
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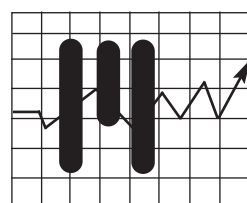
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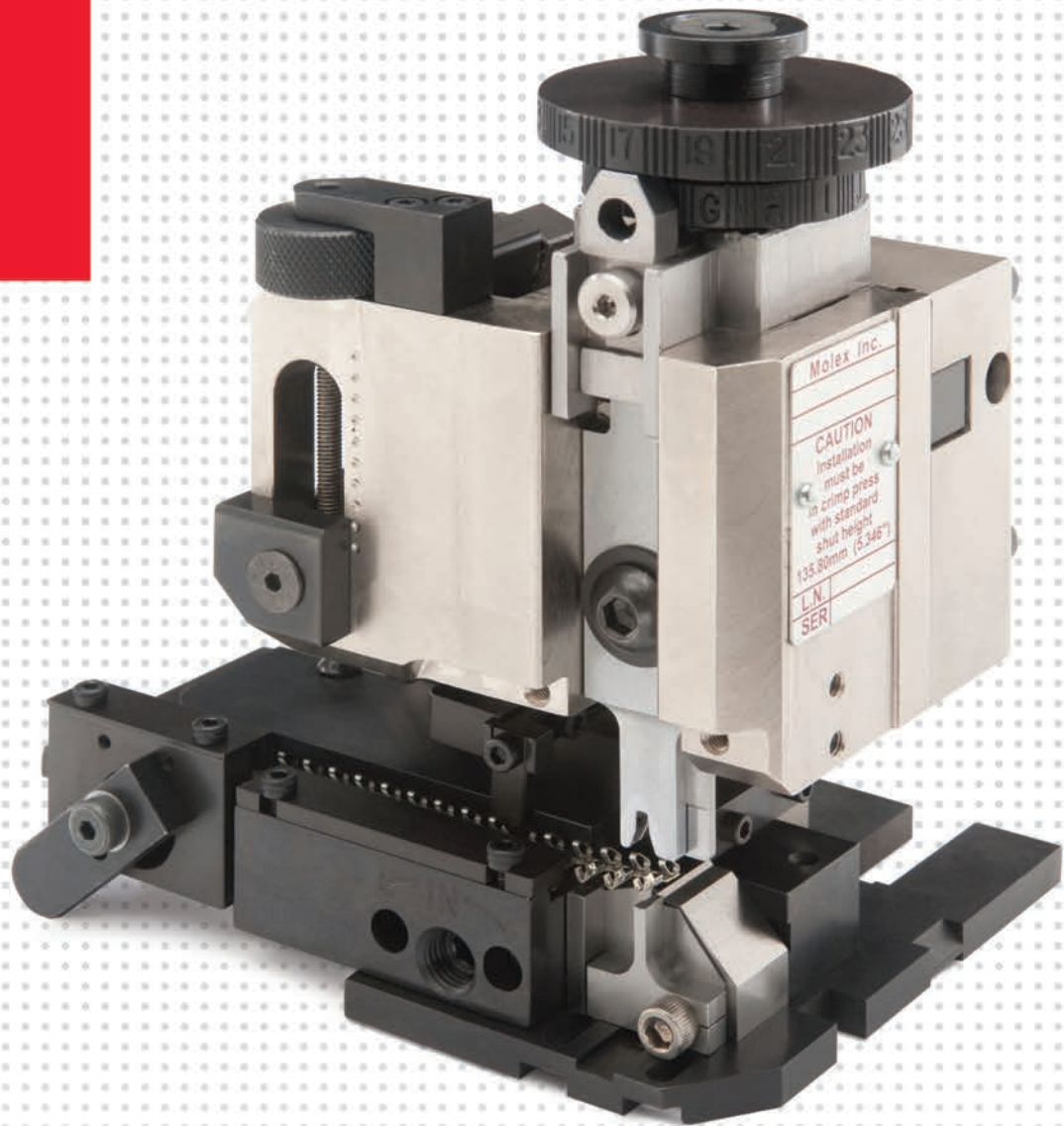
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dren and young people. A strong focus on environmental and social aid activities rounds out their efforts nicely and has produced amazing results that have changed a number of lives for the better.

Sophie has every reason to be proud of their recent successes. The Loof Foundation has recently completed a two year project where the foundation along with ambassadors from Partex Marking Systems, collaborated with Hand In Hand India, to 'adopt' the village of Panapuram, in India.

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They also conducted training sessions focused on democracy, computer literacy, and environmental studies. To date, 1210 trees have been planted to provide shade and to prevent soil erosion. Two water cleaning tanks were donated for the schools and two syntax tanks are providing clean water to 135 households.

"In my life, it's been important to feel an involvement in social issues and to give something to someone else". Says Sophie. "It gives me the feeling that my life is meaningful. I think everybody benefits from focusing on others' well-being and development".

To learn more about the Loof Foundation, feel free to visit [www.looffoundation.org](http://www.looffoundation.org)



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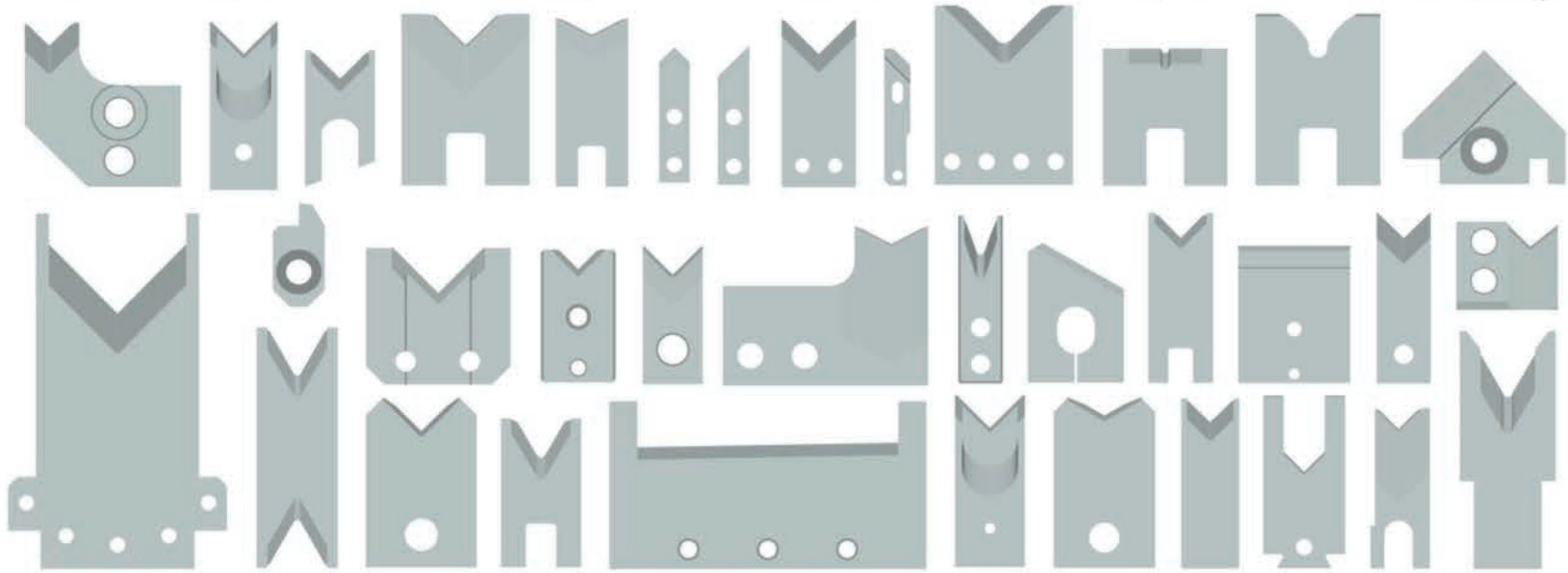
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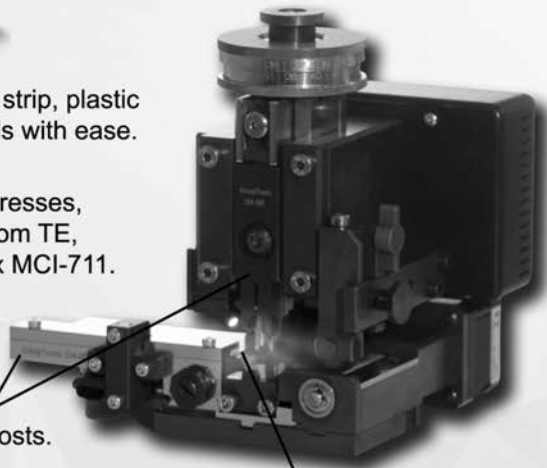


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By Pete Doyon,  
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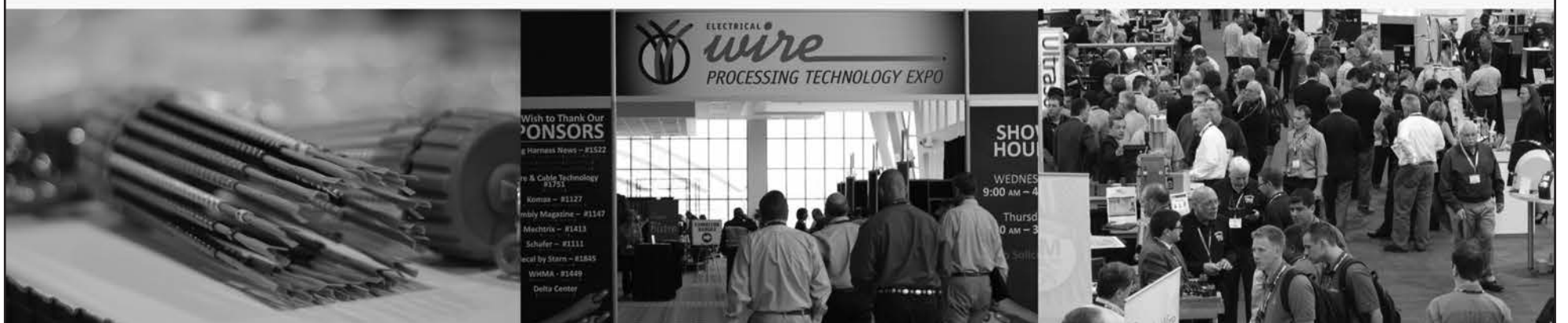
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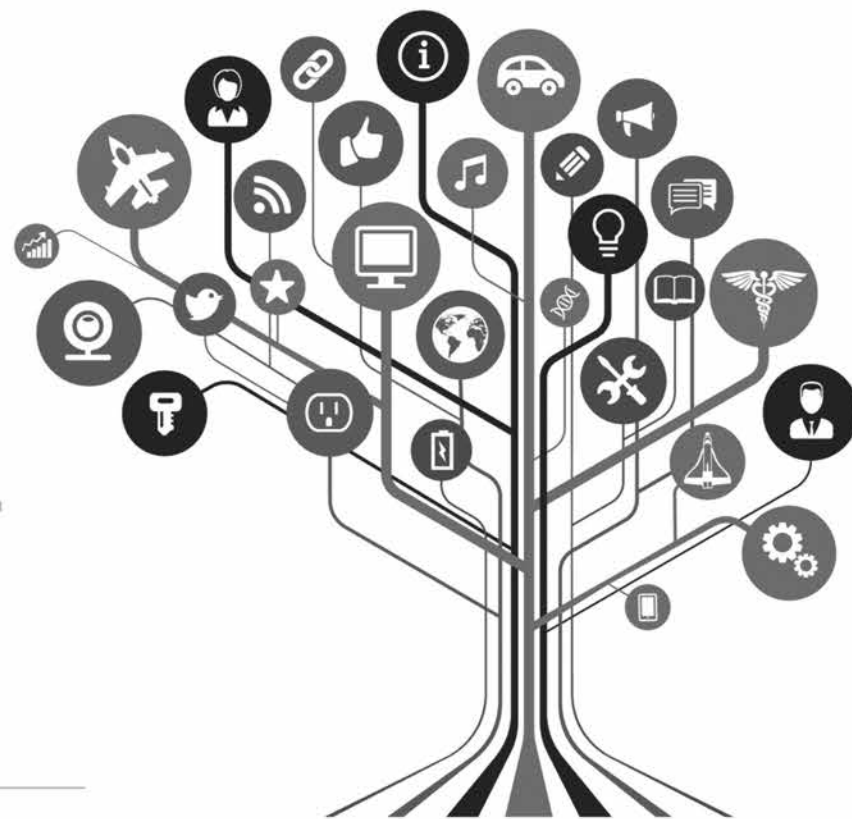


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## TECHNICAL SALES ENGINEER

Due to explosive growth of our ground breaking cloud based automotive harness software solution; Cadonix is seeking to recruit a technical sales engineer to drive its sales in the US.

The successful applicant should have at least three years industry experience working as an EDS engineer in either a vehicle OEM or wire harness manufacturer. Ideally qualified to degree level or have relevant experience.

*Duties will include the following:*

- Driving our sales initiative in the US
- Providing web based or face-to-face product demonstrations
- Contribute to the success of Cadonix Ltd by increasing customer satisfaction and productivity with Cadonix Cloud based Arcadia schematic and wiring harness products.
- Communicating customers' technical requirements as well as customer feedback to the Product Team. This will include an understanding and communication of the urgency and impact of these to the product and Customer.
- Developing a network of technical relationships at a peer-to-peer level with both our customers and the Product engineering teams.

Full product training and support will be provided which will necessitate a two week stay in the UK. Full telesales support will be provided to help with lead generation.

There will be a requirement for moderate travel within the US to support this role. The successful applicant can work from a home office if preferred.

**Please send your application to:  
Jon Collins, e-mail; jonc@cadonix.com or  
telephone +44 777 613 3392**

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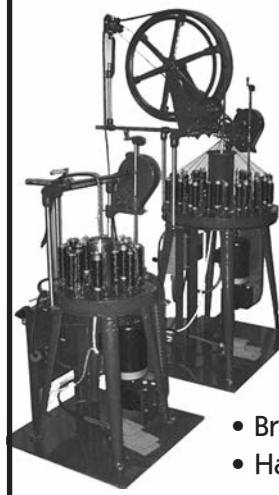
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## Production Scheduler

CHS Department (Custom Heated Hose)

#### The Company

MJM Industries, Inc. is an electronic contract manufacturer of electrical harnesses, over-molded cable assemblies, flat flexible cables and box builds. Located in Fairport Harbor, Ohio we have been in business for twenty years.

#### The Opportunity

The CHS Production Scheduler is responsible for scheduling production orders and monitoring material and labor for commercial automotive accounts. Use of our MRP system, customer gateways and Microsoft Products, the schedule is expected to coordinate, prioritize, capacity plan, level-load, control and communicate production order flow through production areas to meet customer on-time delivery requirements. A well seasoned individual will be able to establish a balance between vendors and internal and external customers based on supply and demand of materials and capacity planning.

#### Essential Duties and Responsibilities for the CHS Production Scheduler Position

- Work with Production Manager to understand weekly and monthly output goals
- Work with production leads on achieving the optimal flow of product within a scheduled time period
- Work with customer service on level loading, expedites and expected ship dates
- Resolve line down issues
- On a daily basis, upload job status on customer website with material needs, best date and 5 Why's on potential late orders
- Responsible for downloading customer schedules, comparing against MRP and creating exception reports
- Responsible for monitoring inventory levels and days-on-hand, to ensure sufficient material is available for scheduled production
- Set customer supplied material goals and monitor with the input from appropriate stake holders
- Main point of contact with customer supplied material planner, min/max programs and vendor on-time delivery resolution
- Monitor daily output from manufacturing cells
- Publish productivity goals vs. actual output with the assistance of Quality Dept.
- Monitor and publish customer delivery metrics with the assistance of Quality Dept.
- Issues periodic reports on trends

#### Job Requirements

- Associate's or Bachelors degree
- 3 years' related experience and training in manufacturing production scheduling
- Knowledge of Six Sigma, Lean, Kaizens and continuous improvement
- Proficient in manufacturing computer software (examples: MRP, ERP, SAP, Oracle)
- Must be highly proficient and able to manipulate data in Excel (advanced formulas, pivots, if/then)
- Past experience working with the fast paced environment surrounding automotive or off-road automotive customers

*MJM offers a competitive working schedule, compensation program and benefit package.*

**For questions, please contact Human Resources at 440-350-1230**

Send all resumes to:  
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c/o: Human Resources  
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Fairport Harbor, OH 44077



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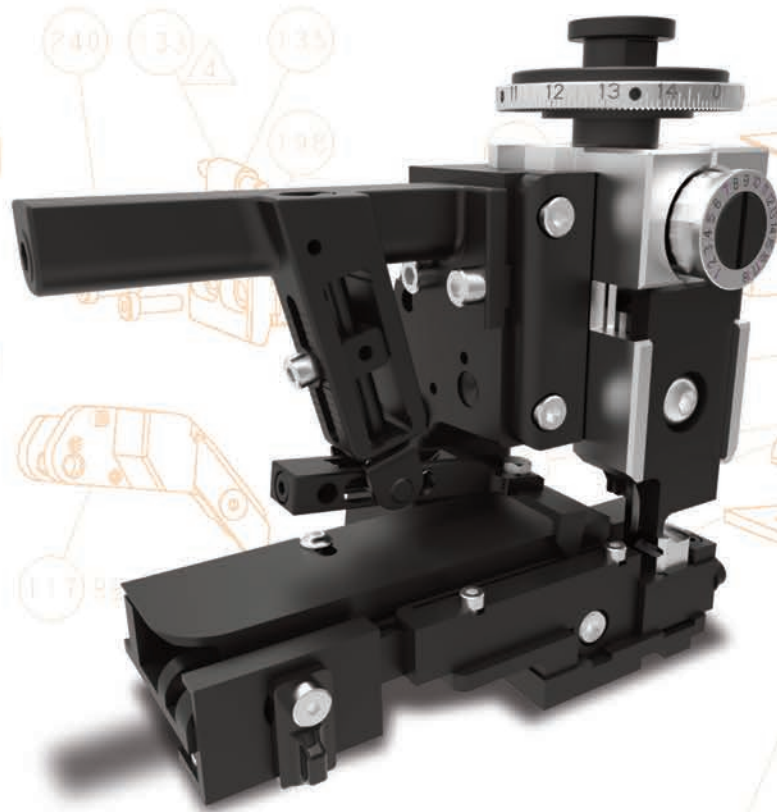
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