

This Issue Features:

- Wire Wisdom
- WHMA - Wired In
- EWPT 2018 Recap
- How to Select an M&A Advisor
- Building Bridges, Chasing Dreams
- Schleuniger's S.University eLearning Platform
- The Power Women of the Wire Harness Industry
- Splicing of Multi-conductors and Twisted Wires by Ultrasonic



H & L Manufacturing Shifts to High Gear

By Joe Tito
Wiring Harness News

H&L Manufacturing got its start in Caledonia, Michigan in 1967 under the ownership of Larry and Lila Alkema. The company initially made products to support the office furniture industry. Within a short period of time, they uncovered an opportunity to build a wire harness for the automotive industry. Wire harness production eventually eclipsed other manufacturing within the company as they increased both capacity and capabilities.

In 2005, the Alkemas sold H&L to Steve and Tanya (Alkema) Sawdy. The couple continued to grow the busi-

ness. In 2011, they relocated from the 20,000 sq ft facility in Caledonia to the current 54,000 sq ft facility in Middleville, Michigan. The move allowed them to take on additional new business that would not have fit in that old facility. In 2017, Steve and Tanya decided to bring some added expertise to the business in order to grow. With that, Jeff Gillesse and Russ Richardson bought into H&L as minority owners. The addition of Jeff and Russ brought added strength to H&L, especially in the areas of finance and lean manufacturing.

WHN spoke with Russ Richardson and Matt Emery, President of H&L. Russ directed the conversation to the improvements the team has made

Forty Years and Four Generations at Cobra Braiding Machinery

By Tim Crighton
Special for Wiring Harness News

Neil Hyde - President of Cobra Braiding Machinery - tells *Wiring Harness News* about his company's success and adaptability in 40 years of manufacturing, and supplying market leading braiding machinery to the wiring harness market.

Cobra Braiding Machinery has developed a strong reputation as a leading manufacturer of braiding machinery for the wiring harness market and is a global supplier.

In fact, 95% of their braiding machines are exported. Orders are shipped to a number of countries worldwide including the United States, Mexico, Europe, Middle East, India, China, Japan and Australia.

Cobra is a family run company and the current President is the fourth generation of the Hyde family to be

manufacturing braiding machinery. The first generation had a UK license to manufacture a USA braiding machine from Reading, PA.

Established in 1981, and operating for nearly 40 years, Cobra has been supplying wire harness braiding machines for use in commercial automotive, off-road, emergency, construction, mining and agricultural vehicles, marine engines and aerospace including Maintenance Repair and Overhaul (MRO).

Wiring Harness News caught up with Neil Hyde, President, and quizzed him about his business, his customers and why Cobra has remained successful in the wire harness market.

Wiring Harness News - So Neil, tell our readers a little bit about your company, Cobra Braiding Machinery?

Continued on page 21



H&L Manufacturing Team

over the last year by building on the systems already in place. They are forecasting \$11-13 M in sales with about 135 employees in 2018. One of the first upgrades was to install air conditioning throughout the facility in order to have a better work environment for the employees. "We invested a lot in the past year, not only in the building and facilities, but also into new capital equipment to have a better, more stable process," Russ said. Their capital budget for improvements in 2018 is \$1.2 M, and they have been working with Komax, Artos and other manufacturers to enhance automation and improve process flow. With a complete engineering department, they are also

designing their own tools and equipment to achieve those same goals.

One recent improvement was the addition of vision systems to improve quality, and Matt was eager to describe the rationale and details. "We did an analysis of our internal and external quality complaints from 2017, and noticed that about 45 percent of those issues could be eliminated by some type of error proofing on the detection side," he described. These defects were typically due to human error, like someone forgetting to lock down a connector, or put tape in a specified location. "We did an ROI study and we realized that our pay-

Continued on page 15

Latest Developments in Wire and Cable SAE 8A 8D Spring 2018

By Mischael Traskos
Lectromec

It is not often that you find more than two people in a room with a passion for aerospace wiring systems. One of the exceptions is the bi-yearly gathering of wiring system component and EWIS experts for the SAE 8A/8D committee. Last month, Chicago, Illinois was the host for this event that covered a wide range of topics from conductors to installation practices.

The following is a brief overview of some of the development and topics discussed at the meeting.

Heat Shrink Tubing

Since the release of the heat shrink tubing standard MIL-I-23053 (the exact release date is uncertain as earliest available version is Rev C from 1976), product manufacturers were permitted to self-certify the product base on the results of their own testing. This will soon be changing with the transition to the SAE version of the document AS23053.

With the heat shrink tubing covered as an SAE document, requirements now levied on manufacturers required third-party verification of their product's performance. Other than the verification requirements, the SAE and military documents are the same. No additional requirements or performance needs have been levied.

The exact dates for this transition have not been set in stone, but it is anticipated that there will be a short overlap when both the military standard and the SAE standard products will be available. After this grace period, the military standard will be canceled, and all manufacturers should be following the SAE version.

Dimensional Life

The dimensional life (shelf life) of heat shrink tubing was also discussed. It should be noted that each of the product specifications (slash sheets) has a specific shelf life; some materials are more susceptible to shrinkage.

Continued on page 25

ABT
PAID
US POSTAGE
PSRST STD

WE PROCESS
THE WIDEST
RANGE
OF WIRE
BAR NONE



POWER. PERFORMANCE. DURABILITY. (3 OUT OF 3 AIN'T BAD.)



Artos CS-327

Artos CS-326

BEST IN CLASS CUTTING & STRIPPING MACHINES.

Artos has a full range of cutting and stripping machines made in America. Our larger dependable wire processors share common components, software and quality.

The CS-327 powerful large cable wire processor is ideal for processing battery cable, welding cable, power cable for appliances, multi-conductor cable for signal and power, and other heavy-duty cables and wires.

The CS-326 is a totally electronic and fully programmable servo driven wire processor. This powerful design provides a degree of speed and accuracy that's simply not possible with stepper motor designs.

Or, the CS-338 portable processor offers enhanced performance and ease of use. The perfect bench-top solution for small runs and gentle small wire handling.

To improve your cutting and stripping productivity visit us at ArtosEngineering.com or call 262.252.4545.



Artos CS-338

The first name in wire processing

ARTOS
ENGINEERING COMPANY

Artos Engineering Company | 21605 Gateway Ct. | Brookfield, WI 53045 USA
Phone 262.252.4545 | www.artosengineering.com | e-mail sales@artosnet.com

July/August 2018

1 H & L Manufacturing Shifts to High Gear

With some new shareholders, and some cutting-edge ideas, H & L Manufacturing sharpens their manufacturing capabilities.

1 Forty Years and Four Generations at Cobra Braiding Machinery

Guest interviewer, Tim Creighton sits down with Neil Hyde, President of Cobra Braiding Manufacturing, to discuss the company's 40 year history.

1 SAE Wire & Cable

Wiring component and EWIS experts gather to discuss aerospace wiring standards and best practices.

4 A Fuller Answer: How to Select an M&A Adviser

Loren Smith reviews the things to look for, and questions to ask, should you be considering hiring an M&A Adviser.

10 The Power Women of the Wire Harness Industry

Melissa Femia speaks with Lisa Bellin about her education and career path, and her experience as an engineer in the harness industry.

28 Building Bridges, Chasing Dreams

It takes commitment to turn a good idea into reality. Are you willing to withstand the pressure of naysayers?

32 Anixter - Wire Wisdom

Cable Jacket Types 101 - Almost every cable has a jacket and for good reason: jackets help mechanically protect the insulation and conductor core of the cable.

38 WHMA - Wired In

The first in a new series, WHMA give a breakdown on harness producers in North America

52 Schleunigers S. University eLearning Platform

WHN speaks with Marc Lusier, Head of Group Technical Services at Schleuniger, about the companies eLearning platform for the harness industry.

54 Zuken's New Harness Builder for E3.series 2018

Zuken give us an in-depth look at their latest release, and how it interfaces with some production and test equipment names you are sure to recognize.

56 EWPT 2018 Recap

Take a look at the sights, sounds and happenings at the seminal event in the harness industry this past May in Milwaukee.



EDITORIAL CONTENT MANAGER

Joe Tito
joe@wiringharnessnews.com
Phone (407) 739-9811

ACCOUNT MANAGER

Jim Brown
jim@wiringharnessnews.com
Phone (708) 594-7764

ACCOUNTING

Marion Gray
marion@wiringharnessnews.com
Phone (708) 594-7762

Internet

<http://www.wiringharnessnews.com>

SUBSCRIPTION RATE:

1 Year, U.S. & Territories \$39.00
Canada & Mexico \$54.00 U.S. Funds
All other countries \$64.00
Internet Subscription Only \$30.00

Credit Card Only

To subscribe to *Wiring Harness News*
Please visit www.wiringharnessnews.com

Copies of *Wiring Harness News* (ISSN 1097-0789) are distributed bi-monthly to wiring harness & cable assembly shops, cord set manufacturers, companies that process electric wire & cable (including fiber optic) for use in their own products, their suppliers and other interested parties.

Copyright 2018
International Harness Resources Inc.,
(IHR Inc.)

Wiring Harness News
PO Box 669
Schererville, IN 46375
USA

Office Hours:
8:00 a.m. - 4:00 p.m. CST -
(Monday-Thursday)
Printed in the USA

International Harness Resources, Inc., dba Wiring Harness News, reserves the right to reject advertisements which in its sole judgment it considers, in whole or in part, inappropriate or unprofessional.

STORMTRONICS

SEMI-AUTOMATIC WIRE TWISTING SYSTEMS

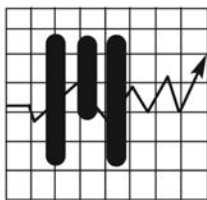
MINI-TWISTER II

- Automatic Programmable Counter
- Air Pressure Gauge & Regulator
- Variable Speed & Reversible
- Automatic Batch Counter
- Foot Switch Activated
- Repeatable Accuracy
- Rugged Construction
- Automatic Resetting
- Low Maintenance
- Simple Operation
- Custom Adapters



NOW...

a low cost, highly reliable wire twisting system designed and built to meet your specific needs.



THE MELLO COMPANY, INC.

P.O. Box 29301 • Dallas, TX 75229

PH: 214-350-7377 FX: 214-350-0521

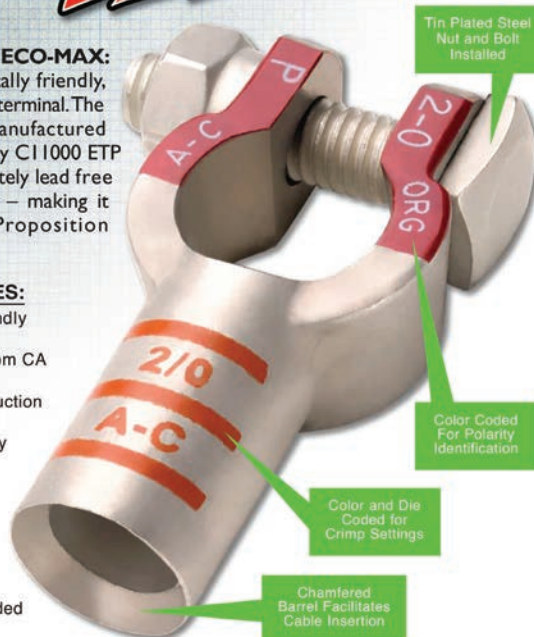
www.themellocompany.com



FTZ introduces the ECO-MAX: the first environmentally friendly, 100% copper battery terminal. The post top design is manufactured with the highest quality C11000 ETP copper and is completely lead free and RoHS compliant – making it exempt from CA Proposition 65 requirements.

ECO-MAX FEATURES:

- Environmentally Friendly – RoHS Compliant
- Lead Free-Exempt from CA Proposition 65
- 100% Copper Construction – C11000 ETP
- Maximum Conductivity 101% IACS at 68F
- Tin Plated for Corrosion Resistance
- Provided with Nut and Bolt Installed
- Exceeds SAE Standard J-1811
- Color Coded, Die Coded



FTZ's C11000 ETP (Electrolytic Tough Pitch) Copper Battery Terminals Provide the Highest Conductivity Rating Compared to Any Competing Copper Design. Conductivity Performance Ratings for Typical Designs are Provided at right:

Common Battery Terminal Alloys	Electrical Conductivity
ECO-MAX C11000 (ETP)	101% IACS at 68 F
C83300 (131 Contact Cu)	32% IACS at 68 F
C85400 (Yellow Brass)	20% IACS at 68 F

FTZ INDUSTRIES 515 Palmetto Drive Simpsonville, SC



29681 864.963.5000 fax 864.963.5352 www.ftzind.com

BRAIDERS – NEW & REBUILT

Specializing in New England Butt:

- #2 Harness Braiders
- CB1 Cable Braiders
- Specialty Application Braiders

We Purchase Good Used Braiders

SHORTEST POSSIBLE DELIVERY!!!

COMPOSITE & WIRE MACHINERY, INC.

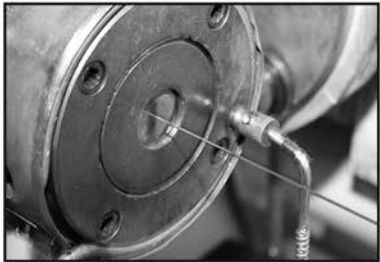
490 Old Baptist Road,
North Kingstown, RI 02852
Phone: (401) 884-4760 • FAX: (401) 885-2499
Visit: www.compositewire.com
Email: compositewire@aol.com

ASK ABOUT OUR NEW DESIGN DRIVE SYSTEM

Industrial Wire and Cable Corp.

Premier manufacturer of high quality copper wire and cable products

- Bare Copper Wire 8AWG-40AWG soft and hard
- Building Wire 600V
- Fixture Wire 600V
- Machine Tool Wire 600V
- Power and Control Tray Cables 600V
- Appliance Wire & Cable
- Cross Linked Polyethylene 150C°
- Irrigation Cable
- Pet Wire
- Thermoset Insulated Wire
- Communication Cable
- Plenum Cables
- Our products meet or exceed RoHS requirements



Industrial Wire and Cable Corp has been manufacturing wire and cable products for over 40 years. We only produce the highest quality products at competitive prices. Our manufacturing process begins with 5/16 copper rod so we can control all tolerances to the highest standards in our state-of-the-art facility located in Lake Zurich, IL

Request a complete catalog by phone, fax, or email today!

Phone: 847-726-8910
800-878-WIRE
Fax: 847-726-7644

Visit our website
www.industwire.com



Industrial Wire and Cable Corp.
66 N Buesching Road • Lake Zurich, IL 60047

A Fuller Answer: How to Select an M&A Adviser

By Loren Smith

After my presentation at the recent WHMA conference in Scottsdale, I was asked about the process of choosing an M&A adviser but was able to respond only briefly. Given my M&A work and my own experience running and subsequently selling my wire harness business, with the luxury of a bit more time I would have said that one should weigh four factors: industry knowledge, contacts, track record and chemistry.



Loren Smith CEO
Blue Valley Capital

Industry Knowledge

To ensure that your company's most compelling selling points will be conveyed as thoroughly and persuasively as possible, you need an expert--not just in mergers and acquisitions, but also in your industry. If that depth of understanding is lacking, you will need to spend time educating your adviser, and--despite your involvement--the selling document and interactions with prospective buyers might both fall short of expectations. In the worst instances, you'll need to continue coaching your adviser as you move through the process.

Contacts

While it's not possible to predict the most likely buyer for a business, established relationships with possible buyers are an essential component of the process. An M&A adviser who does not have industry contacts is starting off with a distinct disadvantage. In selling your business it's not who you know; it's who your adviser knows.

Continued on page 6



CableEye® HVX Systems The Smarter HIPOT Tester!

See What It Can Do for You...

- Amazing graphics & reports.
- Fastest HIPOT Pulse Test Available.
- Adjust ramp time and trip current to compensate for capacitive loads.
- Measure leakage to 0.1µA, Zener diode breakdown voltage, 4-wire to 1mΩ, twist pairing in cables ≥ 6ft.
- External terminals for transformer/ component testing.
- View, report and log your full set of test data for every connection ... including test voltage, leakage current, insulation resistance.
- Program automatic test procedures with macros or JavaScript. LabVIEW interface & API available.
- External relay boards available to automatically switch different circuits in UUT during test. Dozens of digital I/Os at your disposal!
- Remote control option for dead-man switch and control from your own connector panel.
- Expandable to 1024 Test Points.
- Login control for operator safety.
- Low-Voltage test without Hipot if desired.

Sample Customizable Screen Report

HDR-64		HDR-64		Value	HiPot Results	DC Current	DC Voltage	DC Isolation	AC Current	AC Voltage	AC Isolation
Line	B1	B2									
1	28	28	16 mΩ	✓	< 1 µA	1499 V	> 1 G	0.150 mA	996 V	7 M	
2	30	30	32 mΩ	✓	< 1 µA	1499 V	> 1 G	0.173 mA	996 V	6 M	
3	32	32	63 mΩ	✓	< 1 µA	1499 V	> 1 G	0.189 mA	996 V	5 M	
4	34	34	125 mΩ	✓	< 1 µA	1499 V	> 1 G	0.204 mA	996 V	5 M	
5	36	36	249 mΩ	✓	< 1 µA	1499 V	> 1 G	0.204 mA	996 V	5 M	
6	38	38	500 mΩ	✓	< 1 µA	1499 V	> 1 G	0.200 mA	995 V	5 M	

camiresearch.com/hipot

+1 (978) 266 2655 | sales@camiresearch.com

Demo
Systems
Available!



CableEye®
CAMI Research Inc.

PC-Based System compatible with Win XP3 or later & touch screen computers. Superb Customer Service!



Crimping machine for multi-conductor cables



Seal-Crimp Machine SSC-1

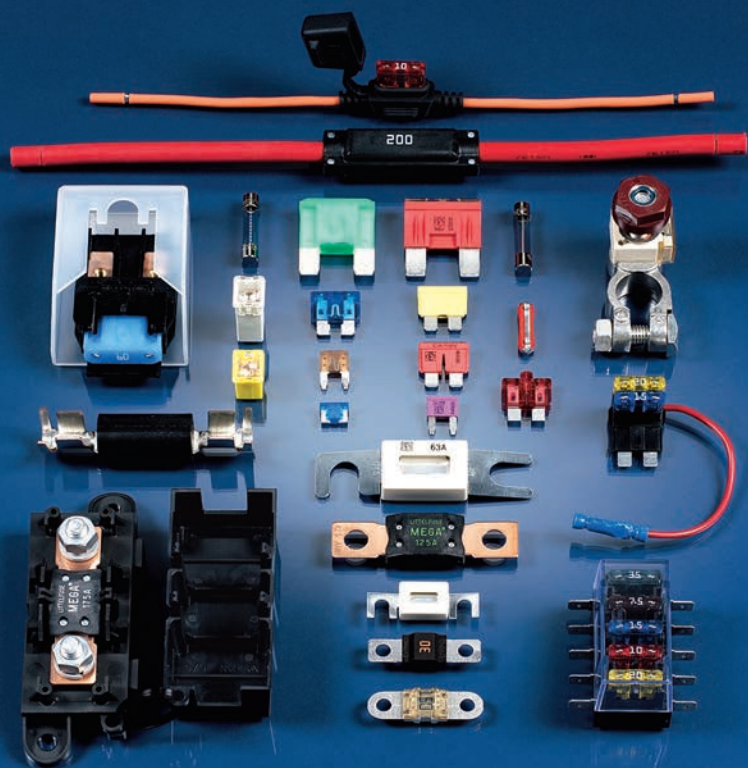
MACHINES WITH SOFTWARE STI2015

- USER FRIENDLY TOUCH DISPLAY
- INTUITIVE AND EASY TO USE
- MULTI LANGUAGE NAVIGATION
- MEGONET20 NETWORK READY
- USER ROLES FOR HIGH SAFETY
- STANDARD AND SPECIAL APPLICATIONS
- INTEGRATED QUALITY FUNCTIONS



FUSES UNLIMITED

The Circuit Protection Specialist



AUTOMOTIVE FUSE PRODUCTS

Authorized Master Distributor for:



AUTOMOTIVE FUSES AND
RELATED CIRCUIT PROTECTION PRODUCTS

Check our inventory on-line at:

www.fusesunlimited.com

TEL: (800) 255-1919



ISO 9001 Registered

A Fuller Answer: How to Select an M&A Adviser

Continued from page 4 _____

Track Record

While this data point can be difficult to ascertain--mainly because an adviser is not likely to provide references that are lukewarm or worse--putting in the time to research an adviser's performance is critical. Rank ordering advisers by the length of time they have been doing M&A work and by satisfaction with their performance is another key component of the selection process.

Chemistry--and a Caveat

If you often choose a plumber, painter or car dealer based on instinctive comfort level with that person, you surely want to employ the same radar in selecting an M&A adviser. But there's a caveat. If you will often be dealing with the adviser's support staff, you a) need to know that and b) need to meet them to make sure they impress you similarly. Firms with multiple partners and layers of management often shuffle responsibility as needed to serve multiple clients.

In my practice, for example, although I have a number of valuable support folks, when a company re-

tains BVC they deal with me alone from start to finish. We limit our engagements to a number that I can manage, and I establish that up-front. So if an adviser you are considering does not volunteer that information, ask about it.

Just to Be Clear...

While these points might seem self-serving, I want to emphasize that I never tell prospective sellers it's in their best interest to retain me. When initially talking to an individual who is considering selling his or her company, here's what I say:

"This is likely the most important transaction you will ever make, and the reasons you should take advantage of the services of an M&A adviser are widely accepted. So in selecting an adviser, make sure that person is someone who you believe will commit the necessary time to the process, who you are comfortable with, who knows your industry and has contacts in your industry, and who has a measurable track record."

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

NU-TECH



Right Angle Boot



Single Entry Seal



Multi-Entry Seal

Heat Shrink Shapes For Wire And Cable Management

A wide variety of reliable and dependable heat shrink shapes are available for immediate delivery to you! These parts, made from our rugged and durable polyolefin outer layer combined with our hot melt adhesive lining provide the perfect protection against the elements in the toughest of environments.



We now distribute electrical parts.

INDUSTRIAL AND MILITARY
WATER TIGHT SEALS

Made In USA

www.Nu-Tech.us

Custom Wire Harness Assembly!

Panel builds, box builds, and printed circuit boards turnkey!

Let us handle it for you!



Control Box Build



Cross | Technology Inc.
Nu-Tech



305 Junia Ave.
Winston-Salem, NC 27127

Precision Machining

Tool and Die
Build and Repair

Custom
Assembly

Printed Circuit
Boards

Custom Mold
Design

Engineering
Services

Wire and Cable
covering and
accessories

We can quickly cross reference many competitors' part numbers to our Nu-Tech equivalent!



www.CrossTech.us
dpoindexter@crosstech.us



Nu-Tech (336) 725-4700
Fax (336) 725-1693

The best customer care in the industry.
But don't take our word for it...



"Great people, great products, great service." - Jared O. - President

"Products work perfectly. Anytime support is needed they go out of their way to help."
- Richard G.

"We have been using Cirris cable test systems for 20 years. These systems are bullet proof. We have had Touch One systems for 10+ years and during this time we have have very few issues to remark about, but when we have needed assistance, Ray Mumma has always been there to solve our problems. We have recently purchased the Easy Touch Pro. We are very excited about the ease of use and utilities that will make test development so much easier and faster to deploy." - Wayne P.

"The Easy Touch has been a significant addition to our quality testing team and we are delighted with its performance, thus far. Production Items that took us 15 minutes to test, now take only seconds!" - Bob Y.

"Anytime I have called the tech support or our sales rep, they have been right there with the information or help that I need." - Kevin D. - Electrical Tech.

"Cirris has displayed excellent customer service, fast delivery and quality for our company"
- Karen F. - Production Manager

"Cirris team was incredibly easy to work with assisting us with our system selection and adapter requirements. System and all required peripherals shipped on time w/ tracking provided. We will be back for our next harness/cable testing needs."
- David S. - Operations



Cable & Harness Test Systems

HEAT SHRINK SPECIALIST
ISAC14

Integrated System Automatic Centering for conveyor heat shrink systems.




MECALBI USA, LLC
9100 MAYFLOWER AVE, SUITE H
EL PASO, TX 79925, USA
T. +1 915 401 2471
E. SALES.USA@MECALBI.COM


MECALBI ENGINEERING SOLUTIONS MÉXICO
#3131 - 5C, COLONIA MELCHOR OCAMPO,
CP. 32380 CD. JUAREZ - CHIHUAHUA - MÉXICO
T. +52 (1) 656 611 6477
E. SALES.MEXICO@MECALBI.MX

WWW.MECALBI.COM  **MECALBI**

NEWS PLUGS



IEWC Announces Mike Veum as New Chief Executive Officer

Milwaukee, Wisconsin – IEWC is proud to announce that its Board of Directors has appointed Mike Veum as Chief Executive Officer, effective immediately. Mr. Veum’s acceptance of the CEO position is the final strategic step in a succession plan to transition both the CEO and Corporate President leadership responsibilities of David Nestingen, who has served as CEO since January 1999. David will continue to serve as Chairman of the Board for IEWC, further ensuring a seamless shift for IEWC’s employees, valued customers, and suppliers alike.

“Over the past eight months, Mike has adeptly assumed the role of President for IEWC, demonstrating a great commitment to engaging with our employees, our customers, and our suppliers,” said David. “Time and again he has proven his passion for our business and his ability to lead our company forward.”

This appointment is an internal promotion for Mike, who joined IEWC in April 2016 as President of IEWC’s North America OEM division. In August 2017, Mike was named as IEWC’s Corporate President and identified as the next CEO, allowing a planned period of time for David and Mike to work closely

together through the final steps of transition.



Mike Veum

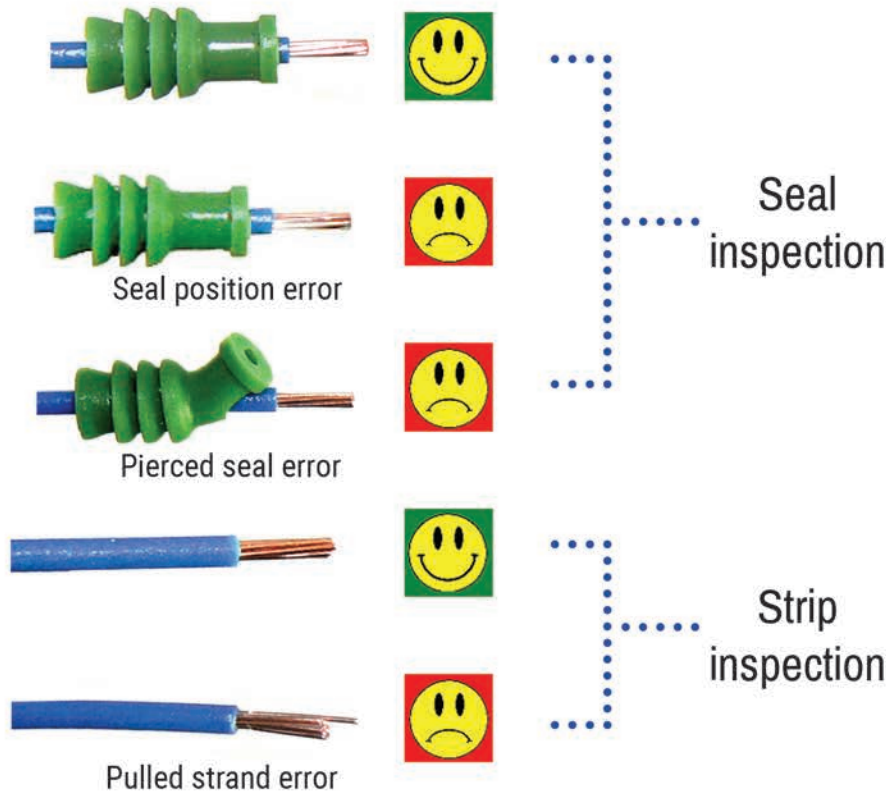
“IEWC is a company that is defined by our great people and their passion for helping our customers, and David’s stewardship of that culture for the past 18 years has been critical to our success,” Mike stated. “I’m humbled and excited to take on the challenge of leading this great company to sustained growth and new achievements.”

For additional information, contact Dave Burleton, IEWC Marketing Director, at 262.957.1124 or via e-mail at dburleton@iewc.com.

IEWC is a premier global provider of total connectivity solutions for manufacturers, broadcast and communications and infrastructure, with distribution centers strategically located throughout the world.

Because one defective wire is one too many.

OES Technologies **LPA58** monitors 100% of production parts in-process to ensure proper strip and seal application quality.




TECHNOLOGIES
Quality without Question

Ask how we can do it for you.
www.OESTechnologies.com

FLEXIBILITY REDEFINED

**40
YEARS
CUTTING
EDGE**

GAMMA 255 wire crimping

Simple, flexible and intuitive: the Gamma 255 is the number one choice when it comes to small-scale wire crimping operations requiring extremely high quality, repeatability and precision. The Gamma 255 is capable of crimping a wide range of cross sections—from as small as 0.0123 mm²/36 AWG to up to 2.5 mm²/14 AWG—and can crimp both ends of wires measuring just 20 mm in length. The compact dimensions of the Gamma 255 allows integration into existing production setups with minimum effort. It has been designed with convenience in mind, allowing the user to switch between crimping, twisting, fluxing and tinning operations in an instant. No matter what products you manufacture on the Gamma 255, this machine's intuitive platform allows full use of its flexibility.

komax
komaxwire.com

The Power Women of the Wire Harness Industry

Spotlight on Lisa Bellin

This edition of the ‘Power Women’ series features a wire harness engineer with roots in the Midwest. Lisa Bellin is not only a female in the male-dominated field of wire harnessing, she is also a mechanical engineer—of the least popular types of engineering among females. Although females represented 15% of the engineering workforce in 2015, only 9% of the mechanical engineering workforce were women (retrieved from www.nsf.gov). The figures validate that females remain highly underrepresented in engineering. This series of

articles seeks to positively impact the number of females in wire harnessing by highlighting our successful and respected female engineers. A goal is to demonstrate the success possibilities, potential paths, and quality of work life available for females in the field.

Professional Career

Although Lisa worked in wire harness companies previously, she is enjoying her work assignment at Nexans autoelectric of America, in Poland, Ohio leading Program Management in Business Pursuit. Lisa’s past experiences include her first job at Gen-

eral Motors’ Packard Electric Division where she was a Quality Engineer in the lead prep manufacturing plants in Northeast Ohio. Staying in the quality realm, she was re-assigned to the battery cable manufacturing plant. Subsequent to her quality positions, she moved to automotive Application Engineering roles where she worked on programs for General Motors and Ford. After nearly 15 years with the company, Packard relocated most application engineering positions from Warren. Because of her expertise, Lisa received an offer to work at Stoneridge, another wire harness



Melissa Femia



3M Round Conductor Flat, Controlled Impedance Cable, 7700 Series

Thin, foldable and designed to accommodate tight spaces with minimal impact to performance – and fit for IDC



Authorized Distributor
Interconnect Products

HEILIND
Performance. Trust. Innovation.

800.400.7041
www.heilind.com

company with a facility nearby in Ohio. At Stoneridge, she became acclimated with agricultural customers via her product engineering position. While her previous Packard experiences concentrated on high-volume customers, her Stoneridge customers exhibited cyclical schedules and much lower volumes. After a downturn in business and after Lisa was with the company about 6 years, Stoneridge (now MSSL) decreased its Ohio workforce. Next, Lisa was fortunate enough to very quickly find work with a local manufacturer of precision CNC machines. During this 1 and ½ years, Lisa was outside of the wire harness industry. After corporate financial concerns arose, she was again able to find a key position with a global wire harness supplier, Nexans autoelectric. Today, she works with creative component designers as their program manager—a position which enables her to capitalize on her attention to detail, strong organizational skills, and diverse engineering experience.

Early Exposure

In terms of Lisa’s early exposure to engineering, she derived from a family in which the females were primarily in the medical field and the men were engineers. Lisa’s grandfather was an engineer and his daughters both married engineers. Her father was also an engineer. When Lisa was in her Junior year of high

– Continued on page 13

Wire Crimp Pull Testing



Whether pulling to a break, pulling to a force, or holding at a force, rely on Mark-10 pull testers to satisfy your UL, ISO, ASTM, SAE, MIL, and other testing requirements up to 1,500 lbf / 6.7 kN of force.

Select from manually operated, motorized, or handheld solutions - all engineered, manufactured, and supported in the USA.

▶ Visit www.mark-10.com for videos, complete specifications, and pricing.

MARK-10
www.mark-10.com ■ 888-MARK-TEN





Old Values, New Ideas

71 YEARS OF INNOVATION

**At ETCO, we know the success of
your manufacturing depends on
the smallest component parts.**

For 71 years, ETCO has partnered with manufacturers to deliver high-quality, innovative parts from our vast catalog of precision metal stampings as well as custom solutions designed to meet our customers' needs.

Visit our website www.etc.co or contact us today at
941.756.8426 or **info@etc.co**

The Power Women of the Wire Harness Industry

Continued from page 10

school, she assumed that she would be a nurse like most of the women in her family. However, she shadowed a nurse for a day and realized that she did not want to become a nurse. Because of her strong math and science skills, she decided to attend engineering school following the path of the males in her family. She chose mechanical engineering, in particular, due to the broad scope of areas and industries in which mechanical engineers work.

Collegiate Experience

Wanting to attend a college in Ohio, Lisa went to The University of Cincinnati primarily because it was a 5-year program with several co-op opportunities. There were 4 females of 40 total students in her group within the mechanical engineering class. I asked her if the 4 girls formed a study group, but contrary to my expectation—she did not spend time socially or in groups with the other 3 females. Rather, she worked with others with whom she had social connections. She admitted to feeling intimidation while in college—both because she was not a part of the large, local commuter contingent and because she considered herself less experienced with engineering school topics. As a girl who played with dolls and thought about being a fashion designer, she was not confident that she could compete with boys who she perceived were re-assembling engines in their youths. Despite the doubts, she persevered and performed well.

Lisa specifically recommends that high school females should not discount engineering simply because they cannot envision themselves as engineers or perhaps because they do not have friends pursuing the field. She wants them to recognize the broad scope of engineering. If one particular area does not appeal, another will. In reflecting on my conversation with Lisa, I noticed



Lisa Bellin

how easily she was able to transition from one job to another. While other workforce employees take months or even years to find a viable position after leaving a previous one, Lisa was marketable and in fact, sought after due to her education and experience. Thank you, Lisa, for being a positive role model and sharing your story with me and Wiring Harness News.

Spotlight story written by Melissa A. Femia, President of Jana Diversity Solutions (J-Di). J-Di is a female-owned small business that manufactures wire harnesses and supplies warehousing & logistics as well as engineering services. If you would

like to be spotlighted in a future edition of WHN or if you would like to recommend someone to be highlighted for the benefit of advancing females in engineering, please send the contact information to melissa.femia@janadiversity.com. Inspiring individuals working in or around the wire harness industry are encouraged to participate, but the requirement is that the female must possess an undergraduate degree in an engineering discipline since the premise of the series is to encourage females to pursue and persist in engineering along with work in a wire-harness related industry.



WIRE & CABLE for every industry



- Solar & Wind
- Elevator & Lift
- Crane & Hoist
- Mining
- Specialty Military



JAMES MONROE
WIRE & CABLE CORPORATION



A CUSTOM CABLE MANUFACTURER FOR OVER 40 YEARS

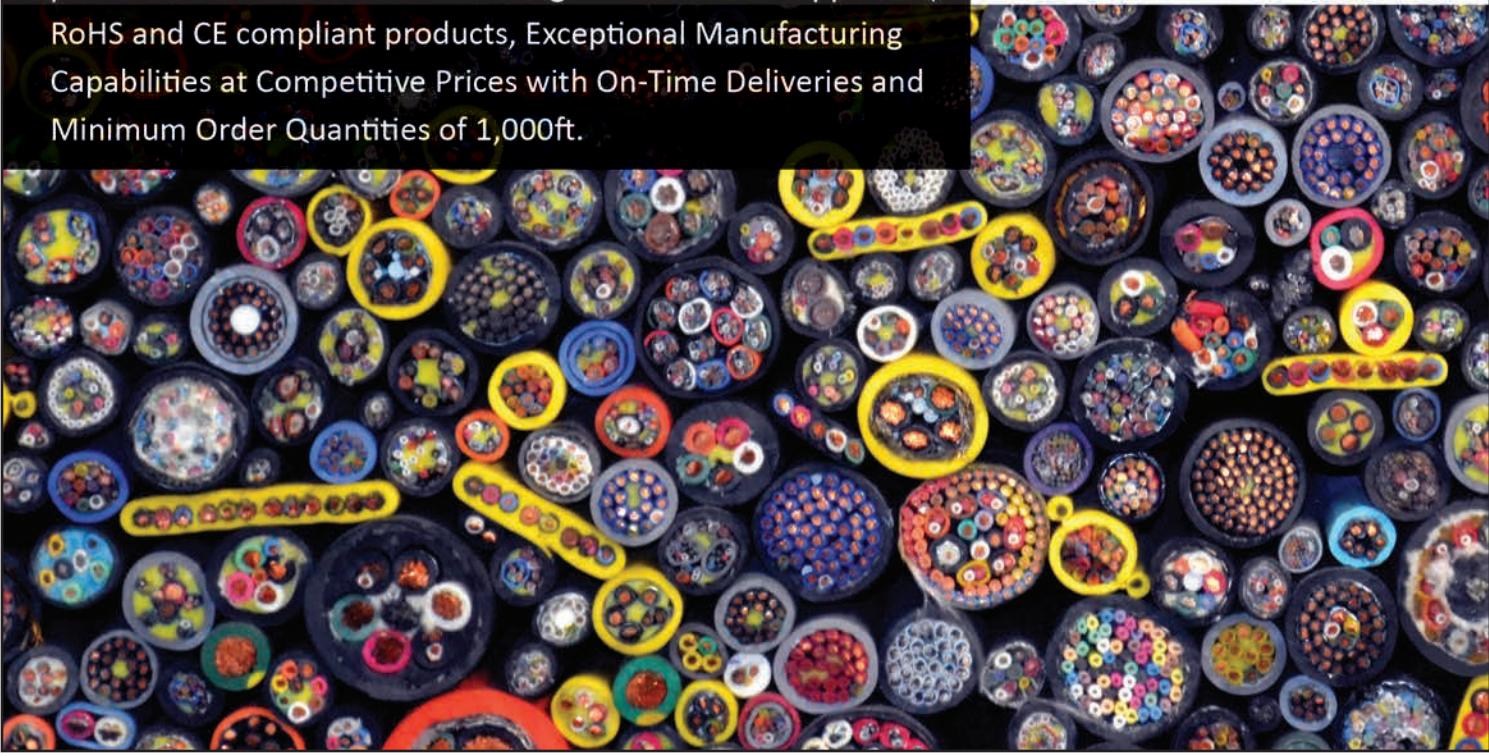
Custom Cable Solutions

We Design, Manufacture and Deliver Solutions for a wide variety of Specialized Wire and Cable Applications. We also provide customers with a broad range of UL and CSA approvals, RoHS and CE compliant products, Exceptional Manufacturing Capabilities at Competitive Prices with On-Time Deliveries and Minimum Order Quantities of 1,000ft.

- Electrical & Electronics
- Industrial Automation
- Specialty Oil & Gas
- Specialty Communications
- Custom & Specialty Cable

www.jamesmonroewire.com

info@jamesmonroewire.com
978-368-0131 / 800-316-8877



Wire Harness Design and Manufacture for the Automotive Industry

FREE
ADMISSION

iesf
AUTOMOTIVE 2018

Mentor[®]

A Siemens Business

INTEGRATED ELECTRICAL SOLUTIONS FORUM

WEDNESDAY, SEPTEMBER 19, 2018

THE INN AT ST. JOHN'S – PLYMOUTH, MI

Come be a part of the premier conference and expo for EE Design for the automotive, commercial vehicle and off-highway industry—now in its 18th year.

Reserve your spot at:

mentor.com/iesf

H&L Manufacturing

Continued from page 1

back would be about 4 1/2 months if we invested about \$45K-\$50K in vision systems,” Matt revealed.

H&L does all assembly and testing in the same fixtures. “So rather than through sensors or switch sensors, we are now installing vision system cameras directly over those fixtures to take a snapshot of that part to make sure everything is in the right location with the right orientation before they will be unlocked from the fixtures,” Matt described. The part

doesn’t move until the vision system says it’s OK, and the system is also tied to the continuity test function. “We’re not implementing anything going forward without this technology, so we’re all in,” Russ advised, “and we’re converting everything we have to one piece flow and final check using the vision system along with our new concepts on continuity blocks, and I’ll let Matt talk about that.”

Matt began his description of their continuity testing by mentioning the

Continued on page 16



Harness assembly at H&L

“WORLD’S LARGEST INVENTORY OF TERMINALS AND FUSES”

ELECTRICAL PRODUCTS SALES CORP.



1333 S.W. 30th Avenue
Deerfield Beach, Florida 33442
♦♦♦ Established 1947 ♦♦♦

Tel: 954-428-1788 • Fax: 954-429-1511
Toll Free: 1-800-342-1422
E-mail: sales@electricalproducts.com
www.electricalproducts.com

**LUGS • TERMINALS • SPLICES • FERRULES • DISCONNECTS
END CAPS • JUMPERS • CABLE TIES • SOLDER SLEEVES
HEAT SHRINKABLE TUBING • FUSES • FUSEHOLDERS
FUSE CLIPS • MIL SPECS OUR SPECIALTY**

**MS25036 • MS20659 • MS17143 • MS3367 • MS3368 • MS3339 • MS3341
MS21980 • MS21981 • MS35431 • MS77066 • MS77074 • MS25274
MS25435 • MS25439 • M83519 • M23053 • MS21266 • M23190
NAS1744-NAS1746 • MS25083 • MIL-C-83413/8 AND MANY OTHERS**

AUTHORIZED DISTRIBUTORS FOR:









ELECTRICAL PRODUCTS SALES CORP
has one of the largest inventories of terminals and fuses in the United States. When you receive requests for these items, use our vast inventory to draw from.

*Access our Line Card and Inventory on the World Wide Web:
<http://www.electricalproducts.com>*

Your Best Source Since 1947
Call Today 1-800-342-1422 Fast Delivery!
Please visit our new on-line store at electricalproductsstore.com



PERMA-SEAL™ CONNECTORS

Perma-Seal™ connectors seal and protect your terminations to provide long-lasting, moisture-proof connections.

- Heat shrink lined with hot melt adhesive to completely seal the termination area
- Protects joints from abrasion, water, salt and other corrosive compounds
- NiAc insulation shrinks 40% faster than nylon or polyolefin tubing



For more information visit
waytekwire.com/PERMASEAL
Or give us a call **888-275-7054**





Deka
Wire & Cable



Primary Wire, SXL & GXL Cross-Linked Polyethylene Wire, UL/CSA 1015 Wire, Marine Master™ UL 1426 Tinned Wire & Cable, Bonded Parallel Wire, Jacketed Duplex, Triplex, and Quadraplex Wire, Deka® Deep Freeze Welding Cable, Welding Cable, Starter Cable, SGX Cross-Linked Polyethylene Cable, Bulk Booster Cable, Trailer Lighting Cable, RV Cable, ABS Trailer Cable



EASTPENN
East Penn Manufacturing Co.
www.dekabatteries.com

H&L Manufacturing

Continued from page 15 _____

creation of a continuous improvement team H&L has assembled. The team looks at current technology and finds areas of deficiency. They then devise ways to adapt current tools or create new solutions to meet production objectives. The team found that existing continuity blocks were breaking frequently, and the change-over of the tooling was taking too long. “So we came up with new designs that we’re building in-house that are more robust, and have quick changeover times,” he said. “They can be tailored directly to the needs that we have, and we no longer have to rely on lead times from a third party.”

There were similar issues with the taping machines H&L was using, and it spawned another successful effort from the continuous improvement team. “From what we’ve seen, a lot

of the taping machines, unless you get into the really expensive ones, were not designed for long-term use, and we’ve worn out several over the past few months,” Russ lamented. He and his team assessed their specific needs, then engineered and fabricated custom machines to fit those needs. “Just to give an example,” he detailed, “we bought a commercial semi-automated taping machine for about \$7,800. By building our own units we have been able to achieve that goal for substantially less.”

Russ and Matt are proud of the can-do attitude they have cultivated. The company has put over \$50,000 in enhancing their design capability. In addition to their own CNC milling equipment, they have upgraded their computers and CAD software, and have sent their technical staff for additional training. “We didn’t have that

Continued on page 18





Now with the Addition of Wire, Power & Signal Group has All Your Harness Solutions Covered.



Power & Signal GROUP
An Arrow Company



Customer Driven Innovative Solutions

LS-100 / 200

Large Splice Welder - up to 150mm² Cu, 200mm² Al

Features:

- Fast
- Easy to use Touch Screen
- Bar Code Scanner Entry
- SPC Collection
- Data Logging
- Reject Cut Off



Ultrasonic Welding offers true metal to metal fusion for the best high strength , high conductivity connections without fillers.

Other Applications

- Terminal Welding wires up to 200mm²
- Li Ion Batteries
- Bus Bar Connectors

Stapla Ultrasonics Corporation

A Global Leader in Ultrasonic Metal Welding for over 30 years

+1 978 658 9400

www.staplautrasonics.com contact us at sales@staplausa.com

ECC

Innovative Fixture Solutions for Your Critical Testing Issues

- Continuity Test Fixtures
- Slave Cables for Functional Testing
- "Burn-in" Test Fixtures
- Terminal Seating Testing
- Component Presence Detection
- Color Detection
- Wire Routing Products



- Reduce Cycle Time
- Reduce Maintenance Time
- Reduce Operator Fatigue
- Improve Quality

Your Wiring Harness Solution Provider

ELECTRICAL CONTINUITY & COMPONENTS
Ph. 614•409•9104 Fax. 614•409•9115
www.eccco.com

H&L Manufacturing

Continued from page 16

before,” Russ said. “The tech guys were busy on the floor reacting to problems, but nobody was focused on solving them. We took them out of that situation, and now they are solving problems.” Through these continuous improvement efforts, H&L has gone from 185 employees down to 135 with slightly higher sales. “And we didn’t have to fire people, that was just through natural attrition,” Russ added. The company has full overmolding capabilities and is actively improving their process having just purchased two new Arburg molding machines.

The subject turned to customer mix, and Matt said they are about 98% automotive. This includes such products as audio component wiring, rear camera harnesses, deck lid and spoiler applications, heated diesel fuel hoses, and side-view mirror harnesses. “That tends to be somewhat volatile,” admitted Matt, “and so one of the initiatives we have is a marketing push to non-automotive customers.” Their goal is at least a 60/40 split in an attempt to relieve some of that volatility. They have had some recent success in the marine industry building harnesses for trolling


motors and lighting for small boats. They are also making assemblies for a fire truck manufacturer and some products for distribution power conveyors. “We are in the process of quoting for things like food trucks, boom lifts, small appliances and a diesel engine switch harness for heavy equipment,” Matt added. Russ chimed in saying, “We intent to break more into aerospace as well, but we just haven’t gotten there yet with our marketing efforts.”

When asked how they were doing their marketing, Russ’s answer was quick, “We developed a key initiative for

marketing and we are following an internal plan.” They are casting a wide net through cold calling and contacts they’ve made in the industry. The team is happy with the success they have had in getting new RFQs with Russ mentioning, “We actually had to put our marketing on hold for the last 30 days because we overwhelmed engineering with new RFQs.

Responding to the question of what makes H&L unique to their customers, Russ responded saying, “We don’t create noise for our customers. We are an insurance policy for them in that we have great quality systems and deliver great performance, so they don’t really have to worry about us.” He attributes a great deal of the success to their kaizen events and mentioned they had a customer team join them in a recent one. “They absolutely loved it because they saw us improving their process. So we are getting our stakeholders involved and we are showing them what we are doing to reduce their downside risk.”


For Matt, it’s the ability to help their customers problem solve. “Like coming up with a low-cost way to solve a problem—there might be an expensive machine you can buy to solve a problem, but is there something simple you can do to keep the cost low?” He is proud of H&L’s ability to provide common sense solutions versus more intricate and expensive systems.



WE ARE TUBING

HEAT SHRINK & CABLE SLEEVING PRODUCTS TO THE WIRE HARNESS INDUSTRY

CALL US



THE TUBING SPECIALIST

12753 Moore St., Cerritos, CA 90703
• Toll Free: 800-421-3536 • Local: 562-404-9998 • Fax: (562)404-9698 • sales@thermosleeve-usa.com • www.thermosleeve-usa.com

Just Say
NO

NEW

World's lowest-price
laser wire marker

ECONOLASE.
AFFORDABLE. PORTABLE.

Call for details.

NO to old laser technology

NO to high maintenance costs

NO to lower performance

NO to expensive consumables

NO to limited font choices

Say
Yes

Yes to the ultimate laser wire marker, Tri-Star's M-100L FG-TT, most advanced, cost-effective marker on the planet.

Maintenance free **YES**

Proven industrial grade system **YES**

Diode pumped solid state UV laser **YES**

Proof against dust and vibration **YES**

Unlimited software-linked font choices **YES**

Superfast 150 high-speed option **YES**

Made in USA **YES**

With nothing to slow down production and everything to speed it up, the M-100L FG-TT is the fast, low-cost high performer. Now the world's favorite laser wire marker.



M-100L FG-TT

The ultimate laser wire marker



Tri-Star Technologies
A Carlisle Company

Contact us at: www.tri-star-technologies.com
alex.kerner@CarlisleIT.com • 310-536-0444



Mando Can Do.



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

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

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

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

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

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

Mando exemplifies the Eubanks

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

Call us today. We’ll put this “can do” attitude to work for you till the cows come home.



Eubanks®

HAPPY ENDINGS



Eubanks Engineering Co.
950 E. Royal Oaks Drive, Monrovia, CA 91016
(626) 357-7011 Fax (626) 357-4718
www.eubanks.com

Cobra Braiding Machinery

Continued from page 1

Neil Hyde - We are a family run business and now in our fourth generation of developing, manufacturing and supplying braiding machines. Our machines have continually evolved due to our close relationship with our customers. The decision makers are often engineers, who are either the operators or work closely with their co-worker, so we get excellent detail in our feedback.

WHN - And how is the feedback?

NH - Generally it is very positive I'm pleased to say! These braiding machines are all that we do and they are all built to order, with both standard and customer specification based on a modular system. Our engineers all love the machines and have a superb pride and attention to detail which really helps in what is a competitive market. I'd never say everything is perfect as no business is. Far from it. We listen hard to our customers and do our best to continually evolve our products and our service.

Our biggest strength internally is the processes we follow to ensure that the machines are delivered to specification and right first time.

WHN - At this point, we shouldn't assume that all of our readers know what a braiding machine is. So what do your machines do?

NH - This depends on the end use application. Typically our machines braid vinyl coated nylon yarns braid materials. The material is packaged on paper or cardboard tubes. The machine then braids the material over wire harnesses. This makes the wire harnesses much more abrasion, chemical and fire resistant, so aiding the mechanical protection of harnesses. Alternatively, in the aerospace market braid is used, as an example, for RF screening or fire resistance with braid materials such as Nomex. Many OEM's expect wire harnesses to be braided as standard, for longevity and operational benefits such as flexibility in cold temperatures.

Braided wire harnesses last longer in tough outdoor environments. This is one of the reasons why the overall market has grown in recent years.

Most customers use the nylon yarns but some use the metal ones. Our machines can handle both with no problem.

Continued on page 22

★★★ FOR SALE ★★★

- 1 - AMP CLS-IV+ Lead Maker
- 1 - AMP CLS-II Lead Maker
- 1 - ARTOS MTX5 Multi-Task Wire Processor
- 1 - ARTOS STX5 Single-Task Wire Processor
- 2 - ARTOS CS338 Cut & Strip Machine, 2015
- 2 - ARTOS CS337 Cut & Strip Machine
- 1 - ARTOS CS326 Cut & Strip Machine
- 1 - ARTOS CS29 Cut & Strip Machine
- 1 - ARTOS CS27 Cut & Strip Machine
- 1 - ARTOS CS26A Cut & Strip Machine w/AE563 Prefeed and WM-6 Hot Stamp
- 1 - ARTOS C4 Flat Measure and Cutoff Machine, 2000
- 1 - ARTOS WM-6 Hot Stamper
- 11 - C. DAVIS Wire Terminator Stations
- 1 - CARPENTER 56A Dereeler
- 3 - CIRRIIS Testers, Models 2000, 1000H, 1000M
- 1 - ERASER Model 1256 Wire Stripper, Part #RC-1071
- 1 - EUBANKS 2900 Cut & Strip Machine W/Model 6880-05 Prefeed
- 5 - EUBANKS 2700 Cut & Strip Machine W/Model 6815-05 Prefeeds
- 4 - EUBANKS Model 6480 Prefeeds
- 1 - FELINS PakTyer 2000 Semi-Automatic Tying Machine
- 1 - IDEAL 'Stripmaster' Model 940 Wire Stripper, Part #45-940
- 2 - KAWA Splicing Machines, Model KW-IT, New
- 1 - KENRAKE Spiral Striper, Model WST200, 10' Ovens, Teflon setup
- 1 - KINGSLEY Model MCM-650 Sleeve and Tube Marker
- 2 - KM USA 2T Crimp Presses, Model KM-802 N, 40mm stroke, 4/2016
- 1 - KODERA Full Automatic Single End Crimp, Twist & Solder Machine, Model C550HX
- 2 - KODERA Model C556 Seal, Crimp and Tinning Machines
- 1 - KOMAX DPS 272 Coiler, 2012
- 1 - KOMAX Gamma 311 Automatic Crimping Machine
- 2 - KOMAX Gamma 333PC Automatic Crimping Machines
- 1 - KOMAX Gamma 333LCD Automatic Crimping Machine
- 2 - KOMAX Alpha 411 Automatic Crimping Machines
- 1 - LOCTITE Model 10-50 Posi-Link Volumetric Dual Cartridge Dispensing System
- 1 - LOEPFE Thermal Transfer Printer, Model TTP4000 (Schleuniger TTP4000)
- 1 - METRONIC Alpha Jet C Inkjet Printer, 2006/07
- 1 - MORGAN Injection Molding Machine, Model G-100T
- 5 - MORGAN Injection Molding Machines, Model G-125T
- 1 - ONDAL Linear TaperS, 2016
- 1 - RAMATECH Prefeed, Model ABW 800/300, 2005
- 1 - SCHLEUNIGER CC67 CrimpCenter for Raydiall R3C Coax Cable, 2016
- 1 - SCHLEUNIGER CC2000 Cable Coiler, 2006
- 1 - SCHLEUNIGER CP1250 Coiler Pans, 2000
- 1 - SCHLEUNIGER CP1500 Heavy Duty Coiler
- 1 - SCHLEUNIGER CS9100 Cut/Strip Machine w/PF2000 Prefeed
- 1 - SCHLEUNIGER CS5400 Coax Stripper
- 1 - SCHLEUNIGER MP 8015 Coax Wire Stripper
- 1 - SCHLEUNIGER OS9400 OmniStrip
- 4 - SCHLEUNIGER WS1000 Wire Stackers
- 2 - SCHLEUNIGER Uni-A Applicators
- 4 - SONOBOND Ultrasonic Welders
- 1 - SPECTRUM 'Sienna 210S' Radial & Axis Laser Wire Stripper (modified to Model 210D)
- 2 - SYNTRON Bowl Feeders
- 1 - TAYMER Hot Stamp Marker, Model SM1000
- 1 - TRI-STAR TECHNOLOGY Table Top Laser Marker, M100L FG-TT



Contact: Martin Kenner
COMMISSION BROKERS, Inc.
P.O. Box 8456 • Cranston, RI 02920-0456
Tel: (401) 943-3777 • Fax: (401) 943-3670
Website: www.commissionbrokers.com
E-mail: marty137@aol.com

EXPERIENCE

THE FUTURE OF INVENTORY MANAGEMENT

Put a TTI Advanced Inventory Management Specialist to Work for You.

TTI Specialists work with you to develop a supply chain program that's flexible, scalable and tailored to your program requirements.

Visit ttiinc.com or call 1.800.CALL.TTI to learn more

TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

WIRE HARNESS ASSEMBLY STATIONS

Designed for the ergonomic assembly of wire harnesses

Surfaces tilt and adjust up and down
Holds boards from 24" x 24" up to 48" x 96".
Two models to choose from — Electric or Manual adjust
Adjustable front lip holds boards from .250" to .750".



Pro-Line

The Leading Edge in Modular Ergonomics

10 Avco Road
Haverhill, MA 01835
Ph: 800-739-9067
Fx: 978-374-4885

www.1proline.com

www.industrialworkbenches.com

E-mail Bench@1proline.com

Cobra Braiding Machinery

Continued from page 21

WHN – So what are your key markets?

NH – Our principal market is the wire processing and wire harnessing market. These wire harnesses are used in the commercial automotive, off-road, emergency, construction, mining and agricultural vehicles, marine engines and also aerospace.

When I summarise to people outside of the industry, I simplify our markets as heavy vehicle market – Caterpillar or John Deere as an example – and aerospace. It is broader than that but that’s a good starting point!

WHN – Yes indeed. That’s helpful. So your order book is healthy then?

NH – Very healthy I’m pleased to say and currently by far our biggest challenge. We know that the market for wiring harnesses is very strong at the moment from customer feedback, and also the Milwaukee show, and I know our competitors are also very busy.

Having said that, most of our customers understand the advantage that we have over other braiding machines.

It’s important to have constant dialogue with our customers and then keep them

informed of progress throughout the manufacturing process. We are recruiting new staff to help us manufacture more machines. It’s quite a skilled technical job so recruitment of the right people can be a challenge.

It’s a good position and we are working hard to fulfil all our customers’ expectations in a timely manner.

Our customers generally benefit from the increased productivity and quietness of our machines. We get a lot of compliments in the first few months after either upgrading or switching to Cobra. The latest being that ‘the operators argue over who gets to use them’.

STUNK

Connect

automated solutions

THE EXPERTS IN CONNECTION.

WHAT REQUIREMENTS DO YOU HAVE FOR A CONNECTION?

STRUNK TECHNOLOGIES PROVIDES:

- SAFE & RELIABLE CONNECTIONS
- NO AGING OVER LIFETIME
- LOWEST RESISTANCE
- HIGH MECHANICAL STRENGTH
- NO OXIDATION
- TIN COATING POSSIBLE



OUR RESISTANCE WELDING TECHNOLOGIES FOR APPLICATIONS IN THE FIELD OF:

POWER DISTRIBUTION HIGH VOLTAGE (HV-CONNECTIONS / BUSBARS / IBS)
RESISTANCE BRAZING WITH AUTOMATIC STRUNK FEEDERS / WELDING BRAZE PADS TO BUSBARS









HYBRID&EV E-DRIVES/TRANSFORMERS/SPOOLS/CHARGING PLUGS/HV-CONNECTORS
HOT CRIMPING OF MAGNET WIRES AND PROFILE WIRES WITHOUT REMOVING THE INSULATION









WIRE HARNESS/COMPONENTS TO LEAD FRAMES&WIRES/CONNECTORS/FILTER SYSTEMS
TERMINAL WELDING / SPLICING / COMPACTIONS/ MICRO SPOT WELDING











STRUNK Connect
automated solutions, Inc.
50-1 River Street | Old Saybrook, CT 06475, USA
Phone: +1 860 227 0683 | Fax: +1 860 526 9296
info@strunk-connect.com | www.strunk-connect.com

WHN – How do you export the machines?

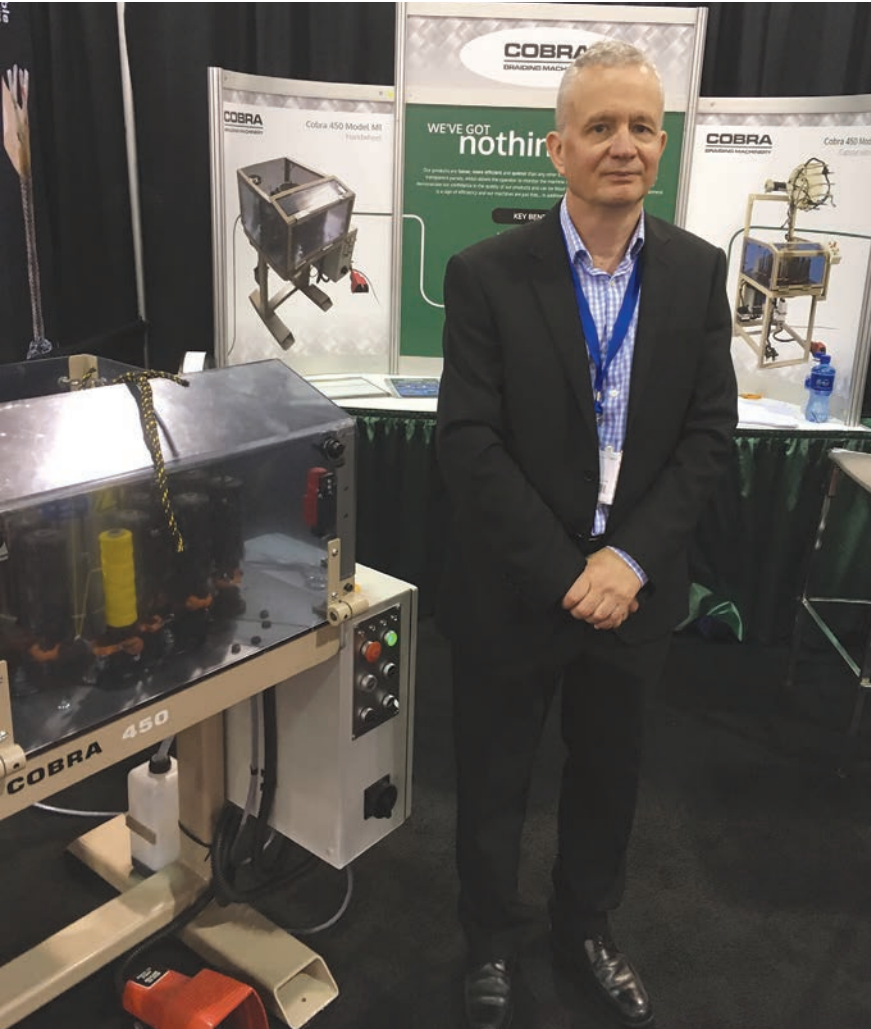
NH – Exporting these machines so they arrive in a timely manner and in top condition is a skill in itself. Experience certainly helps and the devil is in the detail as having a machine turn up late or damaged after what is a meticulous manufacturing process is annoying to say the least! Thankfully it is rare and that is because we plan the exporting carefully and use trusted carriers. Simply put, exporting is via air but using tried and trusted carriers and routes across the world.

The exporting process is all dealt with by our in-house team and not outsourced. This gives us better control and tracking.

WHN – Ok, the killer question. Why do you rate your machines so highly?

NH – I’ll try not to bore you! We believe that they are the most efficient, productive and quietest in the world. They are very fast at braiding, up to 300 horn gear rpm per minute, and have reduced downtime over other similar products.

So productivity is a key benefit. All our machines come with 360 degree transparent panels so operators can see exactly what is going on which is a huge plus. Hence our strapline “we’ve got nothing to hide”.



Neil Hyde, President, Cobra Braiding Machinery.

We also get compliments about the quietness of our machines, especially in a world where noise in the workplace has to be at the absolute minimal possible to combat future hearing issues.

Another benefit is that all of our machines can take three different sizes of braiding spools which competitor machines cannot. This is a

huge benefit for those companies that require this and a key driver for purchasing decisions for some of our customers.

Whilst carrier configurations can be specified by the customer – 16, 24, 32, 36, 40, 48 and 64 are available as standard. Enclosed Guarding is available. *Continued on page 24*

SAY HELLO TO

HEAT SHRINK CITY

TE Connectivity's Raychem Heat Shrink Tubing

TE's color coded heat shrink tubing products provide electrical insulation and environmental protection while simplifying transitions and preventing connection cross up.

8:1

Ultra-high shrink rate tubing offers heat shrink ratios up to 8:1

TE connectivity

AUTHORIZED DISTRIBUTOR

RoHS

RoHS-compliant products for automotive applications and consumer goods

260 °C

Survives high-temperature excursion up to 260 °C

Visit ttiinc.com or call 1.800.CALL.TTI to learn more

tti

TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

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

AUTOMATIC

Wire Crimp Pull Testers

One Button Operation!

Test Condition ◀ B ▶
Mode BREAK
Speed 50
Force 5

● Save up to 26 test conditions

● Destructive or non-destructive tests

● Selectable speeds: 10/25/50/100 mm/min

● Selectable units: lbf, kgf, and N

● Force hold up to 999 seconds

● Quick change attachments available

● NIST Traceable Certificate included, Optional ISO 17025 Calibration Certificate available

● Capture peak data with ACT Logger (included)

● Analyze and save results with optional data acquisition software

● Optional RS-232 printer available

Call 800-373-9989 or Visit imada.com

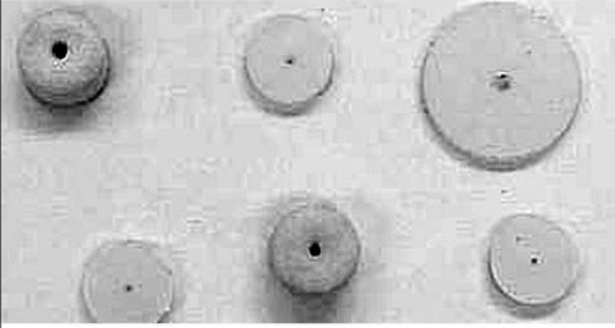
imada.com

ISO 9001 Registered ISO/IEC 17025 Accredited

IMADA, Inc.®

3100 Dundee Rd., Suite 707, Northbrook, IL 60062
Tel: 847-562-0834 Fax: 847-562-0839
imada.com E-mail: imada@imada.com

ELC Wipers



WIRE CODING WIPERS
1/2" & 1" Dia in silicone, foam & felt
Also 1-3/16" Dia gum rubber scrubbers.

For complete list & prices go to
WWW.EICWIPERS.COM
Tel: 619-303-7924
Fax: 619-303-7925

Same Day Shipping *Ask for Pete*

Cobra Braiding Machinery

Continued from page 23

able on all models, as are motorised take ups with clutches to automate the process.

WHN – You mentioned the USA being your biggest market. How has Cobra achieved that?

NH – We have done pockets of marketing to American companies but we have never been a marketing led company, so I wouldn't put it down to that.

I think our success in the USA is down to the fact that several industries that operate within the USA are Cobra's core target market that require wire harness braiding.

The American economy has by and large been strong, so these industries have grown, which has benefitted our business.

Of course, as you sell and export more products into any given market your brand awareness and reputation grows too. I know a lot of our new business is word of mouth recommendations, and given engineers are usually involved in the purchase of Cobra braiding machines, a recommendation to a fellow engineer is very strong.

Over the last 10-15 years, American companies have been more willing to buy direct overseas. This in part has been a slight culture change, and the internet has helped drive this as the world is a lot more visible in recent years. It's much easier to find out more, see more, do research, and it has changed buying behaviour the world over.

WHN – Many thanks for talking to Wiring Harness News Neil, and for your insight into industrial braiding machines. It sounds like you and your team at Cobra love what you do.

NH – The thing we enjoy here at Cobra is that every day is different and rewarding. I speak to customers all over the world and from a multitude of different industries. Our customer base ranges from the Fortune 500, Japanese multinationals, European international companies, employee owned businesses to owner managed companies. Our experience in overseas markets across a variety of manufacturing industries has allowed us to build a pretty clear knowledge of what our customers require.

However, we take nothing for granted and continually evolve the quality of our machines. A Cobra machine really does increase productivity and performance, whilst significantly reducing reworking, so we do get glowing praise from the engineers and operators that use them on a daily basis. Being faster and more efficient in your working day in any walk of life is advantageous, and that's our key goal for Cobra customers.


HEILIND

Performance. Trust. Innovation.

TM-3000 / TM-4000 Universal Crimp Presses

Industry standard electric presses with air-feed capabilities are ideal for discrete wire and cable applications.

molex



These semi-automatic crimping machines provide a versatile production tool for mid- to high-range production volumes, reducing tooling costs and providing production flexibility.

They come standard with the air hook-up, split-cycle switch, double-index switch, terminal oiler, tool kit, LED light, and a counter.

800.400.7041
www.heilind.com

Buy Now

Subscribe to
Wiring Harness News
www.wiringharnessnews.com

Latest Developments in Wire and Cable SAE 8A 8D Spring 2018

Continued from page 1

Because of this material stability variability, the guaranteed shelf life may range from one to five years. A product manufacturer can claim a longer shelf life; the standard only sets a minimum shelf life that the product must achieve.

More with High-Voltage

High voltage continues to be a topic of regular discussion at the meeting. As discussed at previous SAE meetings, the consideration of higher voltage power systems is a unique challenge for EWIS components. Those unfamiliar with the topic may find it odd that the threshold separating low and high voltage in aerospace applications can be as low as 120V (depending on who you ask). While the high-voltage threshold for aerospace is significantly lower and faced by utilities, there are practical physical limitations that create challenges. An example of this is the threshold of PARTIAL DISCHARGE. As the pressure decreases, the voltage required for breakdown also decreases. Table 1 shows the minimum voltage to create

partial discharge at different altitudes using current aircraft M38999 connectors.

The operating voltage is 33% of the DWV voltage for connectors of this style.

A limitation faced by the SAE wiring community is the lack of open requirements provided by OEMs. For a higher voltage wire or connector to be built, information must be known about the voltage level, possible voltage spikes in the case of transients/switching, and the expected life performance. Considerations that were raised was that, if high-voltage systems become the norm, then it may become necessary for life limitations on EWIS components.

This concept stems from research performed by several members of the SAE wiring community, including Lectromec, that show that the long-term reliability of wires dramatically decreases with increased voltage. Furthermore, there is an inverse relationship between the power frequen-

Continued on page 27

M38999 - Service Rating M

Altitude	Mated	Unmated
Sea Level	1300	1300
50k ft	800	550
70k ft	800	350
100k ft	800	200
Operating Voltage 50k ft	267	183

Table 1. M3899 minimum voltage to create partial discharge at different altitudes

ALWAYS BE IN CONTROL OF THE SITUATION

Panduit Ergonomic Cable Tie Installation Hand Tools

Panduit's ergonomic series of hand-operated, tool-controlled tension, and cut-off cable tie installation tools will keep you in control of your cable requirements while minimizing downtime, and improving productivity. These versatile, medium volume tools can be used for production, maintenance, or construction applications.



PANDUIT®

The Latest in
Comfort,
Performance,
and Durability.



Visit ttiinc.com or call 1.800.CALL.TTI to learn more



TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

Panduit (logo) is a trademark

Wire & Cable Management Solutions

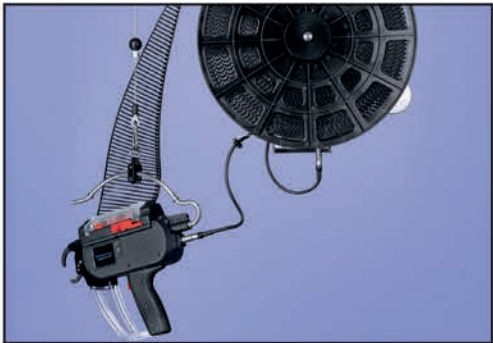
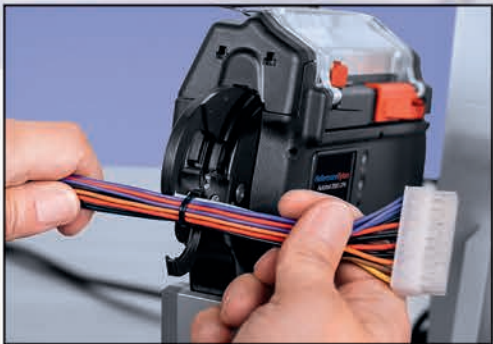
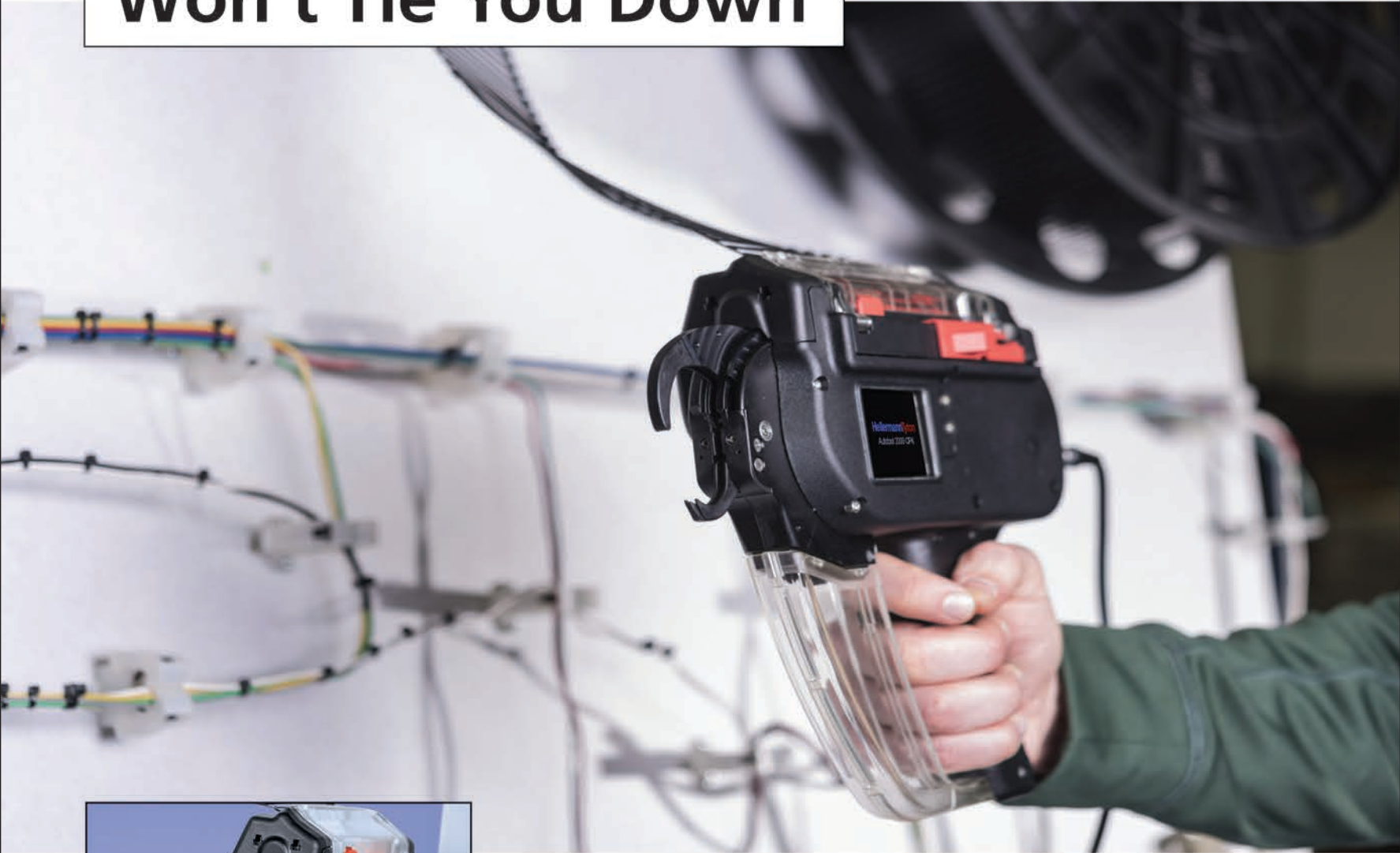
- ▶ Extendo® Expandable Sleeving
- ▶ Ben-Har™ & Suflex® Fiberglass Sleeving
- ▶ Mil-Spec Lacing Tape
- ▶ Enclose® Wrappable Sleeving



Phone: 859.356.4204
Website: www.atkinsandpearce.com
Email: ron.dallas@atkinsandpearce.com



Won't Tie You Down



The all-electric AT2000 CPK Automatic Cable Tying System adapts to any workflow.

Our exclusive Overhead Suspension mount makes the tool virtually weightless, allowing operators to control the application instead of the other way around. Bench mount the system for increased bundling precision. Or, integrate the AT2000 CPK into a fully automated production line by using the Power Pack with Control Box.

More tool options from the industry leader – performance matched to our extensive line of cable ties.

EVO 7 – the industry's preferred cable tie tool

EVO 9 – the comfortable, heavy duty strap tool

Pneumatic tools – ideal for demanding workflows

To learn more or schedule a demo,
call **800.822.4352** or email **info@htamericas.com**

Latest Developments in Wire and Cable SAE 8A 8D Spring 2018

Continued from page 25

cy and a wire’s insulation longevity under high-voltage conditions (i.e. Increasing the frequency by a factor of two will decrease the wire’s insulation life by 50%). It is likely that this will be an issue that the community struggles with for decades to come.

Secondary Harness Protection

Secondary harness protection is something that Lectromec has discussed multiple times (links). These materials are used for chafe protection, fire zone protection, and sometimes arcing protection (link). For the SAE, AS60491 provides the specifications for these materials. One of the latest developments with the standard is the incorporation of water resistance. The consideration here is that for some material types, it would be advantageous to identify the material’s fluid resistance and capability of protecting the interior wires from fluid ingress. The latest method for fluid resistance has been established and will become part of the standard

once released. This provides another way to evaluate a secondary harness protection and if it is applicable for a given application.

Conclusion

The SAE has been making significant progress in multiple areas of aircraft wiring specifications and wire systems. Although it may not seem like much after each meeting, these small changes progressively improve the safety and reliability of aircraft wiring and wiring systems. A review of wiring standards and specifications suggest that as much as 50% of the information is updated or improved every 13 years.

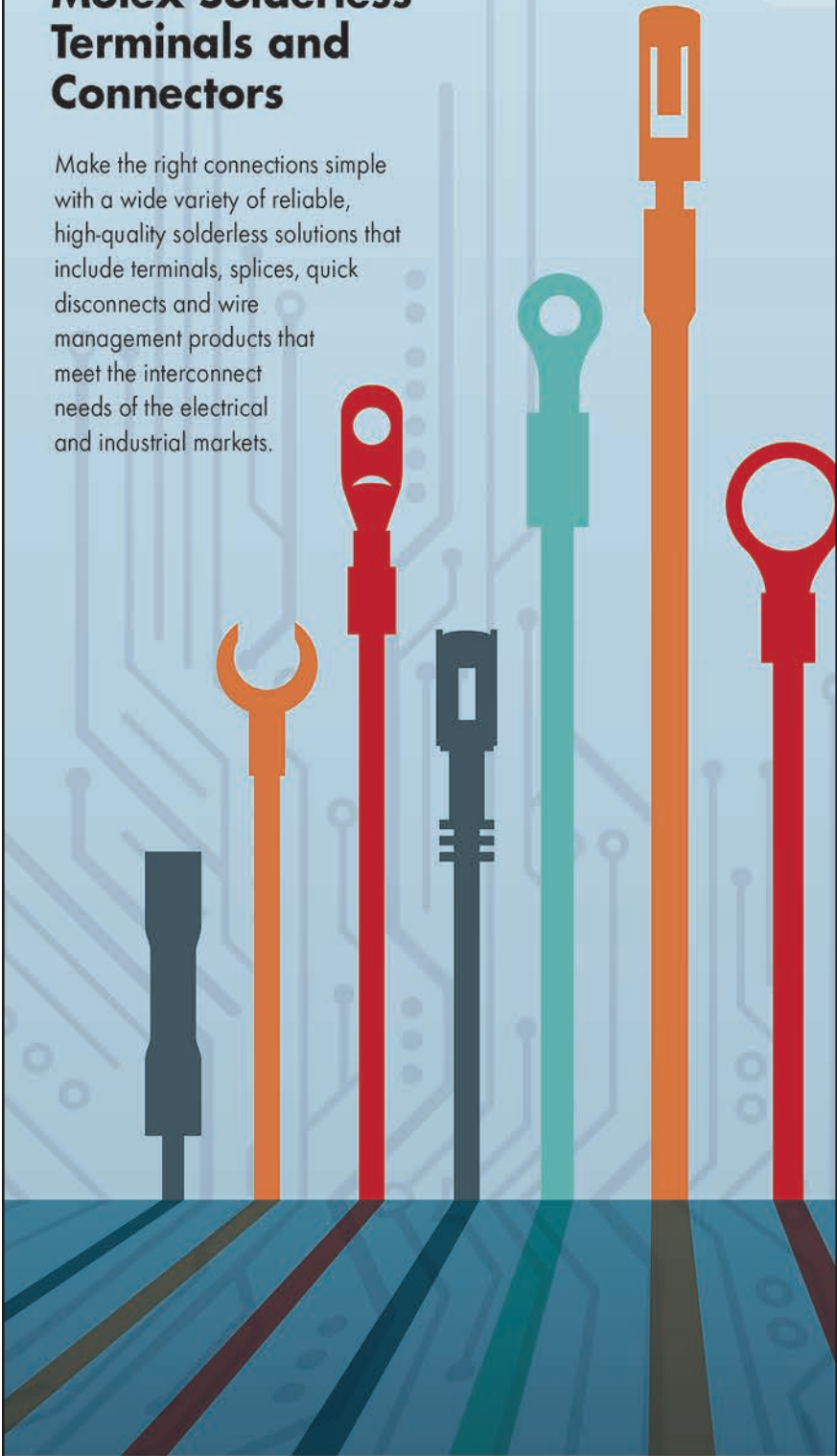
Lectromec provides certification solutions for aerospace wire systems and components and is an ISO 17025:2005 Certified Lab.

If you need to test for heat shrink tubing, or if you have any questions regarding EWIS testing and requirements, you can visit www.lectromec.com, or contact Mike Traskos at mtraskos@lectromec.com.

MAKING TODAY'S CONNECTIONS TOMORROW'S POWER

Molex Solderless Terminals and Connectors

Make the right connections simple with a wide variety of reliable, high-quality solderless solutions that include terminals, splices, quick disconnects and wire management products that meet the interconnect needs of the electrical and industrial markets.



molex

TTI Carries a Broad Line of Molex Connectors and Terminals.

- Perma-Seal Terminals
- Battery Cable Lugs
- Krimptite Terminals
- InsulKrimp Terminals
- VersaKrimp Terminals
- NylaKrimp Terminals
- MagKrimp Terminals
- High-Temp Terminals

Visit ttiinc.com or call 1.800.CALL.TTI to learn more



TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

Molex (logo) is a trademark

WHEN THE DESIGN MATTERS PEI-Genesis DELIVERS

PUT YOUR CABLE DESIGN IN THE HANDS OF THE CONNECTOR EXPERTS

- Experienced Application Engineers in-house
- Field Application Engineers available for on-site support
- Expertise in developing cable designs for harsh environments
- High quality production capability



1-800-675-1214 (NA) | +44 (0)2380 621260 (EMEA) | www.peigenesis.com

**SUBSCRIBE TO
WIRING HARNESS NEWS**
www.wiringharnessnews.com

Building bridges, chasing dreams

By Paul Hogendoorn

The Sydney Harbour Bridge was completed in 1932. It was designed and built by the British firm Dorman Long and Co Ltd., taking 8 years to build, and using more than 6 million rivets. It is the sixth longest spanning-arch bridge in the world and the tallest steel arch bridge, measuring 440 feet from top to water level. (I know first hand, as my granddaughter and I walked over the top of it, during our recent visit to Australia.) Until recently, it was also the world's widest long-span bridge, at nearly 165 feet – which is an amazing fact, since

it was originally designed to accommodate 2 lanes of traffic, or 50,000 cars per week. Today it accommodates 1 million cars a week, has 8 lanes of traffic, plus 2 rail lines, and a generous foot path. It is definitely a testimony to the forward thinking of the people that brought it into being.

It was built at a cost of 10 billion pounds, borrowed from Great Britain, and paid back fully in 1986. The life expectancy was originally 80 years, but now it is estimated to last 300 years. The Australians are justifiably proud of their bridge.

An equally fascinating story is the one of Paul Cave, the entrepreneur that came up with the idea that tours across the structure would be good for



Paul Hogendoorn

tourism for the area, not to mention a good business idea. Whereas it took 8 years to build the bridge, from start to finish, it took 9 years to get his “bridge climb” idea from dream to reality. As you might imagine, there were a lot of discussions with state and local government bodies, community groups and many experts on safety, logistics, media, heritage and conservation issues. As the story was informally told (on the tour I took with my granddaughter), when Cave first approached the authorities with the idea, they assigned someone the task of assessing the idea's merits and possibilities. The conclusion of that study was a list of 64 reasons why it couldn't be done. Undaunted, he thought it would take two years, but it took nine, and it proved to be more than he could do himself. When he got near the end, he had to find 2 other local business people that believed in that vision and were willing to invest their money to see it come to fruition.

That got me thinking about how that is not too different than what many entrepreneurs experience; for every one person that has a differentiated idea they are willing to invest their time in, there seems to be 64 reasons (or 64 people that are eager to tell you) why it can't be done. It also made me realize that getting a good idea off the ground takes more than time, energy and resources, it takes a few early believers to put their shoulder to the wagon as well. (And usually a tremendously supportive spouse). When I look back at the two ventures (adventures, really) I have been involved with, including the current one, several



Kingsley

HOT STAMP KIP-20

Prints in-line with most major wire processors and a wide range of wire size.

80 YEARS
Providing Printing Solutions to the Wire Marking Industry.

Kingsley Foil - Formulated to Print on a Variety of Substrates.

Call or E-mail for a quote!
866-421-9898
kingsley@diagraphmsp.com

Does your Cable Tester:



Print a bar code label only if the harness passes?



Restrict an operator from altering the program?



Identify the operator for labels and data collection?



Verify the bar code label is applied to the harness?



Transfer programs to tester via a memory card?



Send alert if harness is removed prematurely?



Connect to a network for file transfers and data collection?



Work as a standalone system without needing a computer?

If not, contact Dynalab today for more information!

www.DynalabTesters.com

Wiring Harness and Hipot Testers

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



Dynalab
TEST SYSTEMS

Dynalab Test Systems, Inc. | Reynoldsburg, OH USA | www.DynalabTesters.com | 614.729.6550



Pictured above is a group of bridge climbers, including Paul and his granddaughter Thea.

names and faces come quickly to mind. Sometimes they were investors, sometimes early adopting customers, and sometimes coworkers that shouldered the load day to day, or challenge to challenge. It is nearly impossible to do alone.

The first big test of an idea (or an entrepreneur) is a test of commitment – are you willing to swim against the stream long enough to give your idea a chance? And, are there any others that believe too? There will be

plenty of detractors, but all you need is a couple of believers that are willing to make a commitment too. Paul Cave obviously did, investing his time and his own money until he was able to attract others to help him see the idea come to fruition. And today, nearly 4 million people have taken the tour, each one forming indelible memories of the bridge, the courage of the workers that built it, and the

Continued on page 31

HARNESSES Braiding & Shielding

As the industry leader in cable harness shielding, Hamilton Products will meet your most demanding requirements for textile and/or wire shields.

Our capacity of 1 to 1,000 harnesses and our extensive knowledge of specialty braiding and shielding allows us to manufacture to your specifications, or custom design to meet your installation requirements.

For the best, call the best. Call Hamilton Products.

HAMILTON PRODUCTS, INC.

P.O. Box 1100 • 43A Rte 12 South • Sherburne, New York 13460
Phone: (607) 674-2030 • FAX (607) 674-9367
E-Mail: a_critton@iwgbwd.com or s_malloy@iwgbwd.com
Home Page: <http://www.hamprods.com>

ALWAYS HAVE THE RIGHT TOOL FOR THE JOB

Tools You can Trust.

Cut, strip, and crimp using TOOLfox family of hand tools. No matter what the application, this complete line of durable, ergonomic, electric hand tools provide high levels of efficiency and quality – and they're all covered by Phoenix Contact's Limited Lifetime Warranty.

PHOENIX CONTACT

Visit ttiinc.com or call 1.800.CALL.TTI to learn more

tti

TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

Phoenix Contact (logo) is a trademark



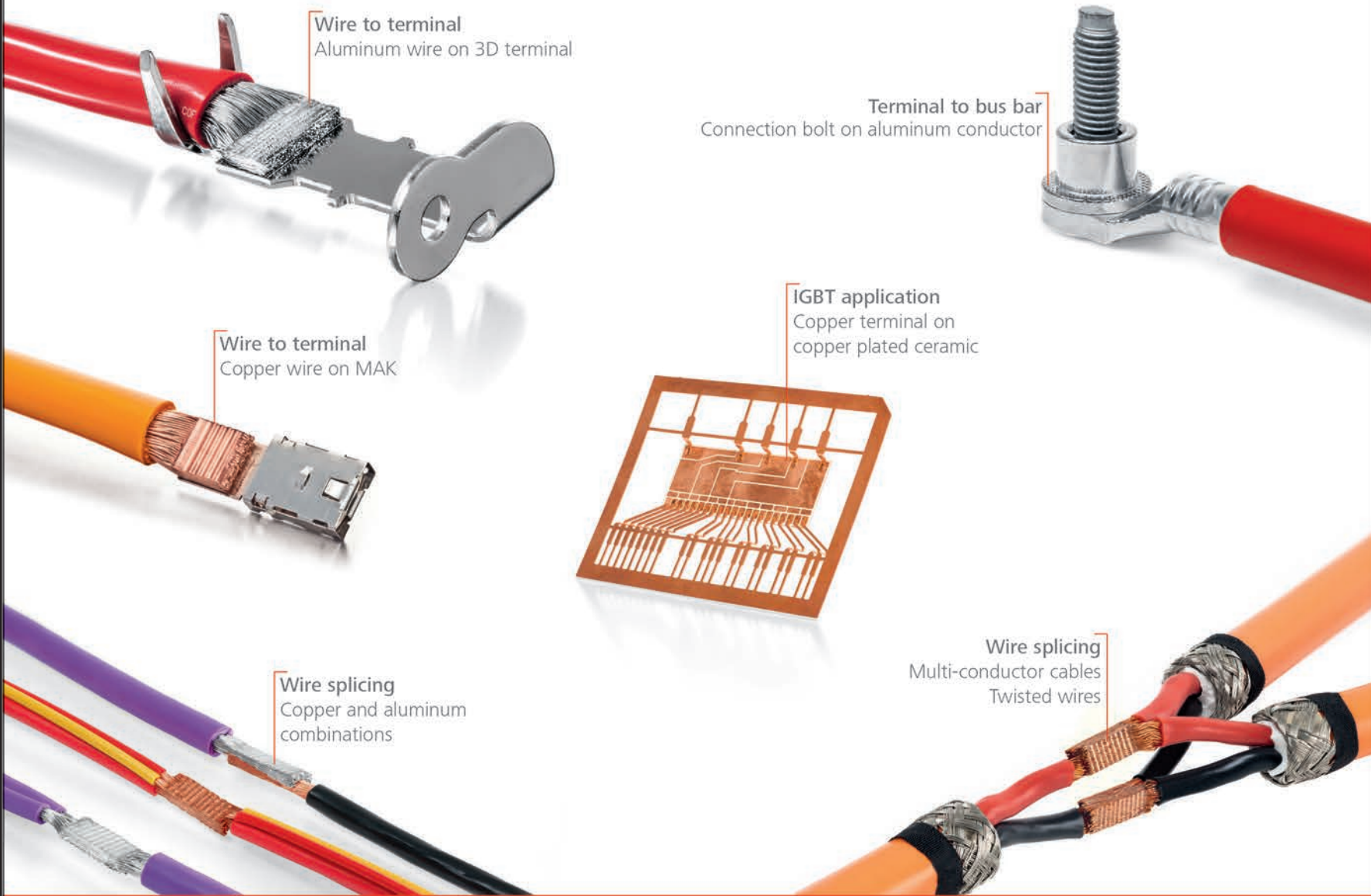
ULTRASONIC METAL WELDING

Wire splicing | Wire to terminal | IGBT | Special applications



- Wire splicing
from 0.26 – 100 mm²
- Wire to terminal
up to 240 mm² with 10kW power
- IGBT and special applications
gentle ultrasonic welding

Telsonic takes an innovative path to new solutions in ultrasonic metal welding. Our high powered systems and **unique torsional welding** expand the metal welding spectrum, facilitating the joining of a wide range of materials, sizes and geometries previously outside the capability of ultrasonic metal welding.



Wire to terminal
Aluminum wire on 3D terminal

Terminal to bus bar
Connection bolt on aluminum conductor

Wire to terminal
Copper wire on MAK

IGBT application
Copper terminal on
copper plated ceramic

Wire splicing
Copper and aluminum
combinations

Wire splicing
Multi-conductor cables
Twisted wires



The Sydney Harbour Bridge.

Building bridges, chasing dreams

Continued from page 29

foresight and engineering mastery of the people that designed it. And who knows how many of those people will be inspired by Paul Cave’s story of persisting, despite all the opposition he faced. As I stood at the top of it, I know I was. More importantly, my granddaughter was too.

To all those that have helped me pursue my dreams (or helped build bridges along the way), thank you.

Paul Hogendoorn is president and cofounder of FreePoint Technologies. He can be reached at paul.hogendoorn@getfreepoint.com or www.getfreepoint.com



ETFE (UL) AWM

HI-TEMP HOOK UP WIRE (UL10086 & UL10109)



PRODUCT HIGHLIGHTS

1

Suitable in industrial or commercial environments

2

Used in internal wiring of appliances, electronic components, signal, control, and power applications

3

EU RoHS and Reach Compliant

4

1,000' minimum runs for smaller sized projects (5,000' min. for 20AWG and smaller)

EMPOWERING YOU TO DESIGN

☐ CONDUCTOR MATERIAL AND SIZE

☐ CONDUCTOR STRANDING

☐ SPECIAL COLOR CODES INCLUDING STRIPES





PHONE: 1800-395-0200 FAX: 1718-358-2522 EMAIL: SALES@AEROSPACEWIRE.COM

To place your ad in Wiring Harness News contact Jim Brown

Email

jim@wiringharnessnews.com




THE FUTURE IS FAST, FLAT, FOLDABLE AND FIT FOR IDC

3M™ 7700 Series Round Conductor, Controlled Impedance Flat Cable

3M™ 7700 Series is an excellent choice for a wide range of controlled impedance, wire-to-board applications, designed for low-voltage differential signaling applications.

The cable's quick installation and exceptional versatility means it offers a variety of connection options, including up to 100 positions of programmable differential pairs, grounds and power – in end-to-end terminations or direct-solder PCB applications.




FAST – The Speed You Need, up to 20 Gbps


FLAT – 0.025" Cable for Tight Spaces

FOLDABLE – "L" or "S" Bends Don't Hamper Cable Performance

FIT – for IDC on .050" (1.27mm) Pitch

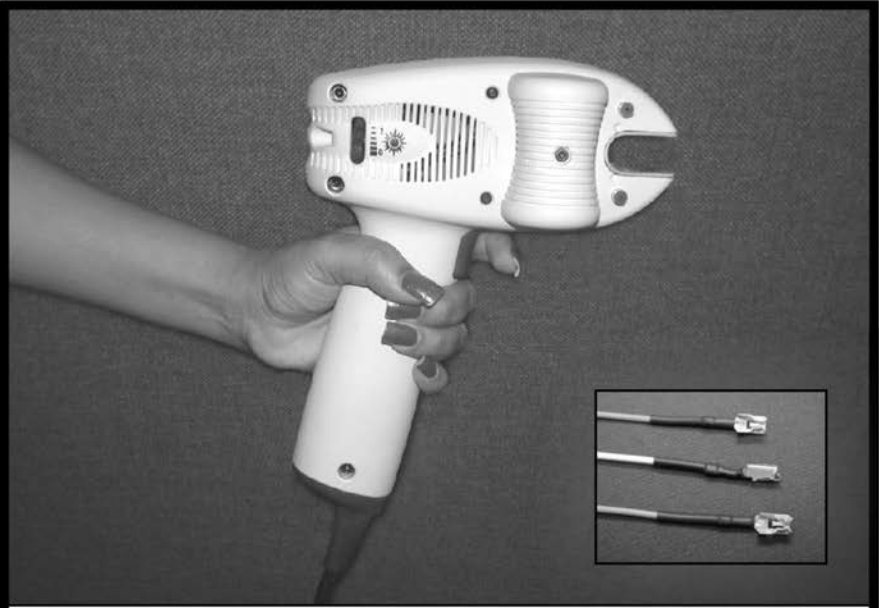


Visit ttiinc.com or call 1.800.CALL.TTI to learn more



TTI, Inc. – The Specialist in Electronic Component Distribution
A Berkshire Hathaway Company | 1.800.CALL.TTI • ttiinc.com

3M (logo) is a trademark



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

*polyolefin, 5" length
The Focus-Lite™ FLG3™ by Judco Manufacturing, Inc., is the solution to all your heat-shrink operations. You can say goodbye to the high labor cost, excessive heat, and inefficiencies of other methods. The Focus-Lite™ **reduces the time** necessary to shrink most types of heat shrink tubing. It also **improves the process** control and **overall quality** of your shrink operation. The FLG3™ can be used for **high volume** benchtop applications and is completely **portable and mobile** for board mounted harnesses and tight space assemblies.

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

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

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



Judco Manufacturing, Inc
1429 W. 240th St., Harbor City, CA 90710 (310) 534-0959 www.judco.net

Focus-Lite™
Heat Shrink Processing Machines

WIREwisdom™ ANIXTER

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

CABLE JACKET TYPES 101

Almost every cable has a jacket and for good reason: jackets help mechanically protect the insulation and conductor core of the cable. Without a jacket, cables are susceptible to abrasion, heat damage and oxidation damage, as well as weather-related damage. But not every jacket is created equal; it is imperative that each cable have the correct jacket type for each application in order for the cable to operate properly. This wire wisdom will explore some of the different cable jacket types and provide an overview on the jackets' mechanical and chemical properties.

WHAT IS A CABLE JACKET?

A jacket is the outermost layer of a cable whose primary function is to protect the insulation and conductor core from external physical forces and chemical deterioration. In a sense, the cable jacket is the first line of mechanical defense for a cable by protecting the cable's inner components. Cable jackets offer mechanical, moisture, flame and chemical protection, while also protecting the cable from damage during or after installation. It is important to note that the cable jacket has little to do with the electrical performance of the cable.

CABLE JACKET TYPES

Cable jacket types can be broken down into two categories: thermoplastic jackets and thermoset jackets. A thermoplastic jacket is a type of material that when hot enough will melt and reform, whereas a thermoset jacket is a "set" material - it doesn't have the ability to reform when heated. There are many different types of both thermoplastic and thermoset jackets, and the options listed below are only a small array of the choices one has with cable jacket types.

Thermoplastic

PVC - Polyvinyl Chloride (PVC) jackets, while not exhibiting a wide range of thermal characteristics, do have the ability to resist oils, acids, sunlight, heat, weathering and abrasion. By having such strong physical assets, PVC is an ideal jacket for cables that will be used for direct burial, street lighting and control cable. Since PVC is inherently flameretardant, it is the most common jacketing material for electronic cable.

Polyurethane - A polyurethane (PUR) jacket has excellent oxidation, oil, and ozone resistance, and when specially formulated, a polyurethane jacket can also have good flame resistance. These types of jackets also have great "memory" properties, which make it an ideal jacket for retractile cords.



Keeping Your Operation Lean and Green

With skilled labor in short supply, manufacturers are adopting new operational efficiencies to meet performance expectations. Partner with Anixter, your trusted full-line distributor, for global procurement, engineering alternatives, inventory solutions and environmental compliance expertise. We'll help you optimize the flow of raw materials to improve your efficiency and profitability so you can be more competitive in the OEM marketplace.

For more information, contact your Anixter representative or visit anixter.com/oem.

CPE - Chlorinated Polyethylene (CPE) is one of the few polymers that is available as both a thermoplastic and a thermoset jacket (thermoset CPE would be a cross-linked version). The thermoplastic CPE jacket has excellent oxidation, heat, oil, weather/sun and flame resistance. Although the thermoset version has better high-temperature properties, the thermoplastic version contains other excellent properties.

Thermoset

Neoprene - Neoprene is a synthetic rubber that allows for a resilient jacket. By not embrittling at cold temperatures, resisting permanent deformation under heat, and resisting aging due to oxidation and sunlight, neoprene jackets are suitable for cables in rugged environments, such as mine trailing cables and dredge cables.

EPR - Ethylene Propylene Rubber (EPR), another form of synthetic rubber, is a type of jacket that is a modified form of the EPR insulating compound. EPR jackets have excellent heat, abrasion, oxidation resistance and can also withstand cold temperatures down to -60°C. With fairly good high-temperature characteristics overall, when formulated correctly,

EPR can be fairly flame retardant as well.

CPE - The thermoset CPE jacket (cross-linked) has excellent physical properties that make it suitable for many cable jacket applications. This polymer is resistant to ozone and ultraviolet degradation, and if properly compounded, can also withstand prolonged immersion in water. With strong resistance to most acids, bases, and solvents, thermoset CPE jackets are well-suited for chemical plant use.

PROPERTIES OF CABLE JACKETS

As stated earlier, jackets provide mechanical protection to the insulation and conductor core. In order to provide the best possible protection for the cable, a jacket can be modified by the addition of fillers, plasticizers, activators, and inhibitors to enhance a particular physical characteristic. Some of those physical characteristics are as follows:

- Toughness, tear and abrasion resistance
- Flexibility during cable installation, at low temperature
- Stability over a range of temperatures
- Resistance to heat aging
- Resistance to cable deformation
- Flame resistance

- Oil resistance
- Low moisture absorption
- Resistance to abnormal concentrations of chemicals
- Weather and ultraviolet resistance

If you would like more information on cable jackets, please see the Anixter Wire and Cable Technical Information Handbook, as well as the IEEE 532 guide. For further information visit www.anixter.com

	Thermoplastic			Thermoset		
	PVC	Polyurethane	CPE	Neoprene	EPR	CPE
Oxidation resistance	E	E	E	G	E	E
Heat resistance	E	G	E	G	E	E
Low-temperature flexibility	P-G	G	E	F-G	G-E	F
Weather/ sun resistance	G-E	G	E	G	E	E
Abrasion resistance	F-G	O	E-O	G-E	G	G-E
Flame resistance	E	P	E	G	P	G
Water resistance	F-G	P-G	O	E	G-E	G-E
Underground burial	P-G	G	E-O	G-E	E	E

P = Poor, F = Fair, G = Good, E = Excellent, O = Outstanding



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

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

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

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

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

Judco Manufacturing, Inc
1429 W. 240th St., Harbor City, CA 90710 (310) 534-0959 www.judco.net

Focus-Lite™
Heat Shrink Processing Machines



HOT from **HAKKO®**

FT-801

THERMAL WIRE STRIPPER

Cuts insulation like a hot knife through butter!

- Eliminate wire nicks
- Strips fine wire gauge easily
- Digital power display
- Lock in a set power level with a password
- Ergonomic hand piece
- Continuous stripping without hand fatigue
- Adjustable wire stopper for repeatable wire stripping length
- Replace the blades without replacing the hand piece!
- Special tool removes hot blades safely and easily
- Holder with protective cover
- Flexible 4mm diameter cord for working comfort
- Part Number: FT801-02







For complete information, visit  ***HakkoUSA.com/wire***



CrimpCenter 36 SP

New High-Performance, Fully Automatic Crimping Machine

The new CrimpCenter 36 SP builds on the already impressive features and functionalities of the CrimpCenter 36 S. It offers reduced set-up time, increased performance, and enhanced wire handling and depositing. The CrimpCenter 36 SP can process wires ranging from 0.13 to 6 mm² (26 - 10 AWG) and features all of the latest quality assurance options, such as SmartDetect, WireCam and the Guided Feasibility Study. These features, along with an attractive price point, make the CrimpCenter 36 SP an ideal machine for complex production and quality targets.

schleuniger.com/cc36sp_wn

To Be Precise.



S.University

New eLearning Training Tool for the Wire Processing Industry

At Schleuniger, we believe the skills and know-how of your employees are just as instrumental to the quality of your product as the tools you use. Whether you've got a basic stripper or a full automation line, it's the skill and expertise of your operators that ensure a quality product, not just the machine. No one is better suited to deliver wire processing training than Schleuniger. Our group has the widest breadth of expertise in the industry; it's what we do. And now we want to bring that expertise to everyone, all in one place – At S.University.

schleunigeruniversity.com

To Be Precise.

See the VALUE of VERSATILITY

Eraser's M700 Series is a wire and tube processing system unlike anything in the industry. Thanks to an innovative modular design, preparing to cut different materials or gauges takes just seconds. Simply swap out separate cutting modules to meet **your changing needs.**



LEARN MORE ABOUT THE M700 SERIES TODAY:
call a sales engineer at 1-800-724-0594 or email
us at info@eraser.com

ERASER
Always Moving Forward®
www.eraser.com/m700

Splicing of Multi-conductors and Twisted Wires by Ultrasonic

By Arvydas Litvinas,
Key Account Manager Metal
Welding at Telsonic AG, and
Ellen-Christine Reiff,
Redaktionsbüro Stutensee

Ultrasonic welding is increasingly used to create electrical connections in the automotive industry. Typical applications are stranded wire splicing in benchtop as well as final assembly boards for wire harnesses. Today other applications such as splicing of aluminum and copper-to-aluminum combinations can be welded with the same machine. Also splicing of twisted cables or multi-conductors cables are ergonomically possible. A simple tooling change-over can uti-

lize the same machine for standard wire splicing and such special cases. The high-quality standards of the automotive industry require constant cost optimization and the highest degree of process reliability from suppliers, while continuing to drive down costs. This also applies for splicing stranded wires. At least several kilometers of cable are laid in modern vehicles. The countless cables must have fault-free connections in order to function reliably throughout the service life of a car. Ultrasonic welding is often the best choice for this, both technically and economically.

Continued on page 56



Welded connection on a high-voltage cable .



FreePoint™
Technologies Inc.

Connecting Your Machines & Connecting Your People!

Smart
DEVICES



Cloud Storage
& DATA ANALYTICS



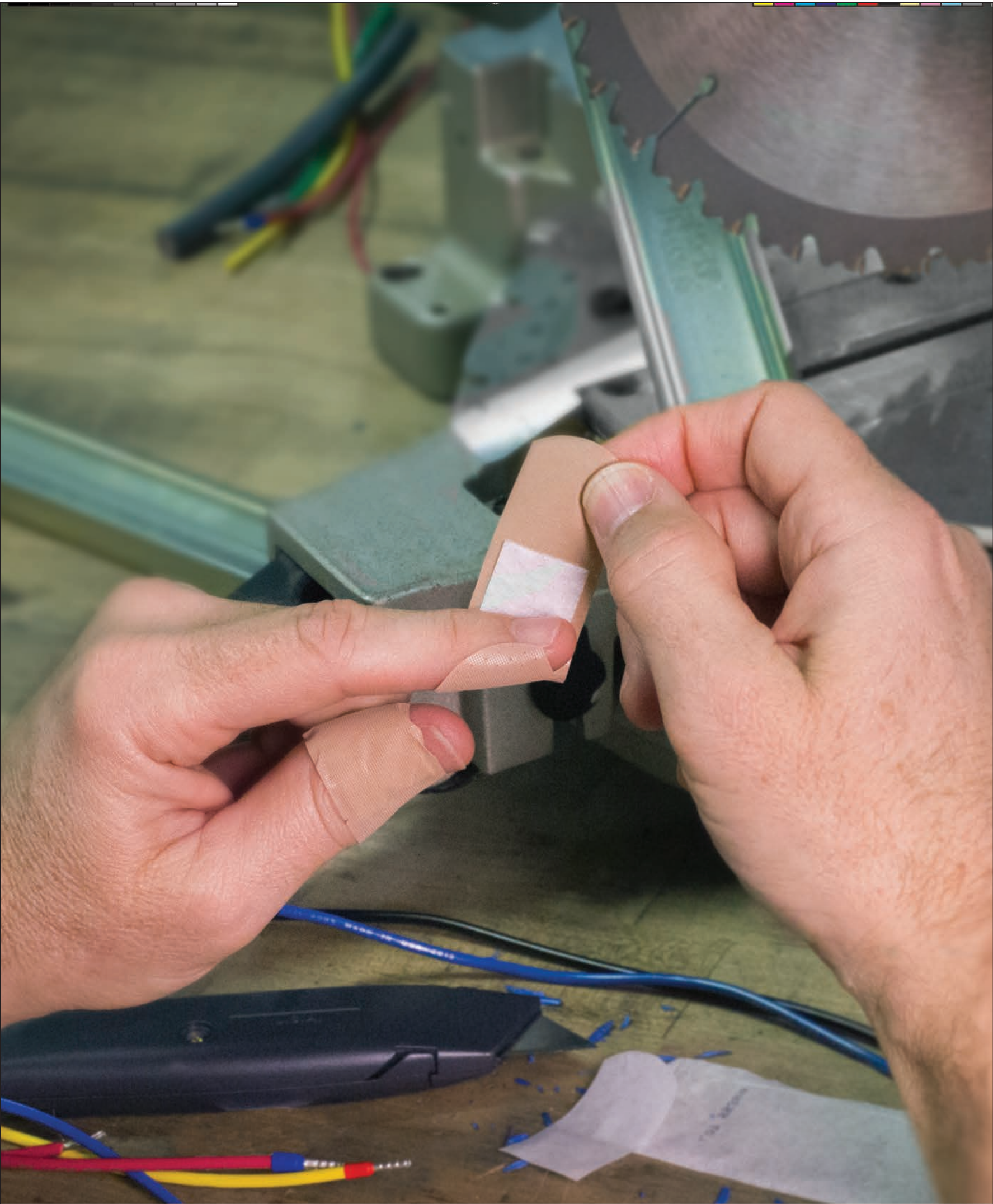
Engagement
TECHNOLOGIES



226.663.2289



www.getfreepoint.com



TOOL fox
Tools you can Trust

Ouch! Did it again?

Hand tools from Phoenix Contact: the safer, ergonomic way to work

Stop removing cable insulation with a utility knife and cutting DIN rail with a chop saw. Be safe. Strip cable using our Wirefox D40, with no exposed sharp edges. Use our PPS Basic I/M DIN rail cutter, with non-exposed blades, for a smooth, burr-free cut and no metal shavings to clean up.

Get a **TOOL fox** brochure and a free screwdriver at:
www.phoenixcontact.com/handtools

Wired In

By Jim Manke, CAE
WHMA Executive Director

The Wiring Harness Manufacturers Association (WHMA) has enjoyed a long and mutually beneficial relationship with Wiring Harness News (WHN). In fact, over ten years ago, the WHMA Board of Directors declared WHN as the “Official” publication of the association.

WHN has graciously granted WHMA a regular column in each edition to communicate to the wire harness and cable assembly industry which it represents, starting with this one.

First, a little background on WHMA for those not familiar with the association. WHMA was established in 1993. WHMA is the only organization exclusively serving manufacturers of wiring harnesses, electronic cable as-

semblies, along with their suppliers and distributors.

WHMA members have banded together as a not-for-profit association in the spirit of volunteerism and mutual benefit to provide the only industry forum through which member companies can aggressively solve both their specific problems and also address pressing industry issues.

WHMA is dedicated to providing our members the technical support, access to leading edge technologies, benchmarking and the ability to network with the leaders of the wire processing equipment, services and manufacturing.

WHMA connects members to resources that make them industry leaders. The organization is currently

comprised of over 200 manufacturing companies (there are over 1,100 wire harness and cable assembly shops in North America) and over 55 supplier organizations in the industry.

Despite the name of the association, WHMA is not just about wire harnesses. It’s cables and any type of external electrical / electronic inter-connection assembly that connects different pieces of equipment of assemblies.

Those in the industry know that these assemblies are often an “after thought”. They are typically the last thing to be considered in the design of the product being manufactured by an OEM.

Continued on page 41



Quality, precision hand tools for wire harness, cable assembly and electronics manufacturing applications.



#9180 Kevlar® Scissor

#2175 Maxi-Shear™ Flush Cutter

#501 Wire Stripper

Made in the USA

For a demonstration or a listing of authorized distributors, please contact sales@xuron.com

To see our full range of products, please visit www.xuron.com
TEL: 207-283-1401

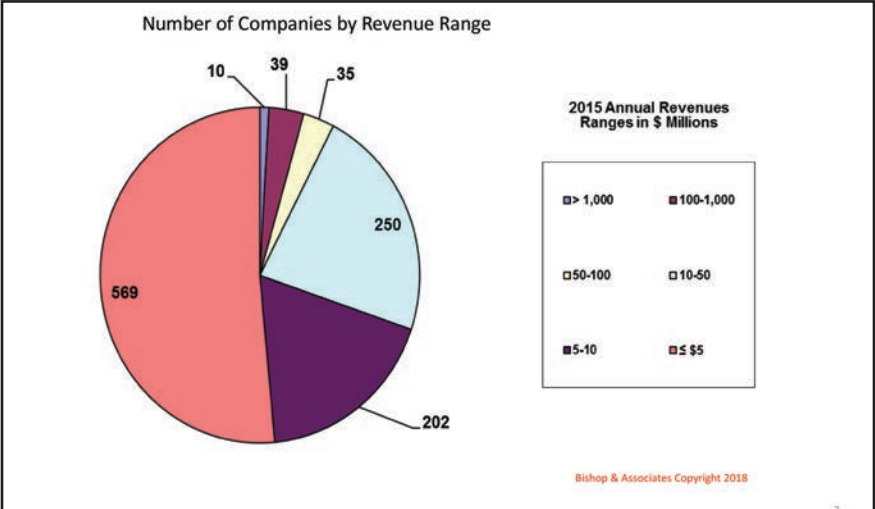


Figure 1. North American Harness Companies by Revenue



LAKES PRECISION^{INC.}

Your Global Source for Wire Processing Perishable Tooling

LAKES PRECISION
GLOBAL HEADQUARTERS
1900 Epler Court / P.O. Box 630 • Three Lakes, WI 54562
Phone: (715) 546-3070 • Fax: (715) 546-2565
blades@lakesprecision.com

LAKES PRECISION • EL PASO, TX
12350 Montwood, Suite 200 • El Paso, TX 79928, U.S.A.
Phone: (915) 856-6606 • Fax: (915) 856-6608
laura@lakesprecision.com



www.lakesprecision.com



Applitek
TECHNOLOGIES CORPORATION

Crimping Applicators

Applitek and all of its employees are proud of the fact that we are one of the oldest independent applicator manufacturers in the United States. Our Company was founded on designing and manufacturing quality products using our in-house capabilities. To this day the tradition continues and we are prouder than ever to say "Still made in the USA"

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

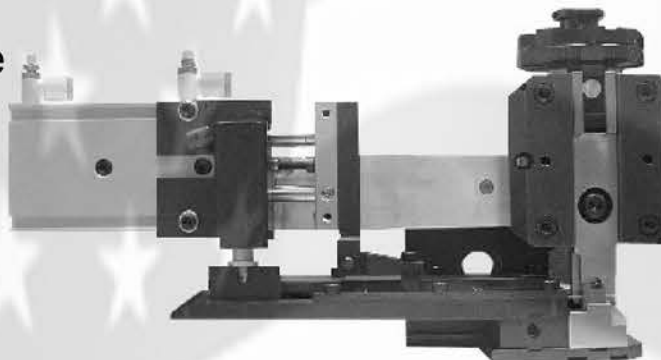


Model 1700

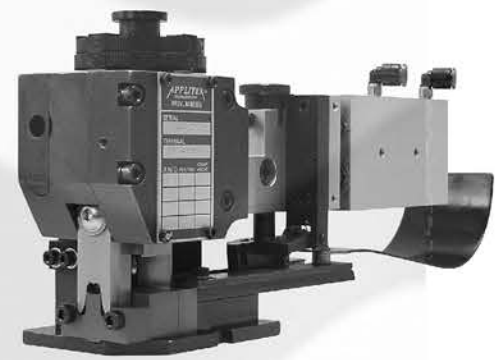


Model 2000

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

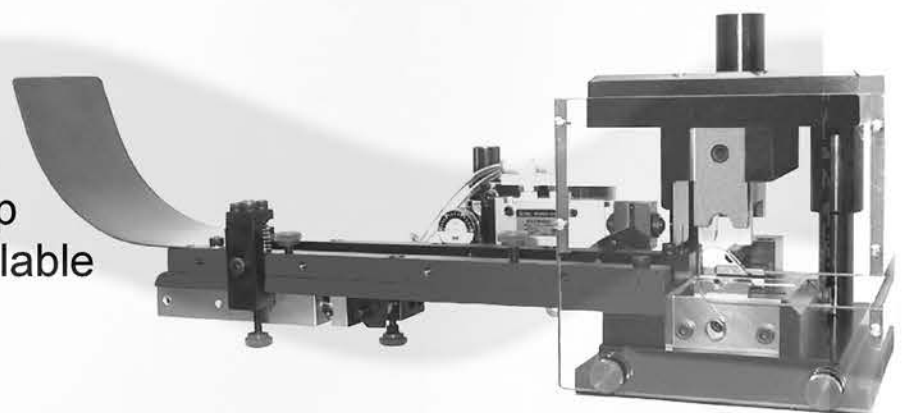


Model 1500



Model 2100

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



DSA Series

Applitek has a solution for all your termination requirements. That's why many major wire harnessing companies and Original Equipment Manufacturers use and specify Applitek applicators. Our base applicator frame designs have proven themselves over the years with their reliability and have been able to accommodate over 3000 different types of terminals.

Give us a call at (401) 467-0007. Our business is applicators, not terminals, not wire, not connectors, etc., etc. It's our only business.

Visit our web site: www.applitek-usa.com

Applitek Technologies Corporation, 174 Georgia Avenue, Providence, RI 02905 Tel: 401-467-0007 Fax: 401-467-5525

Insulation Supply Company

Your Electrical Interconnect Distributor

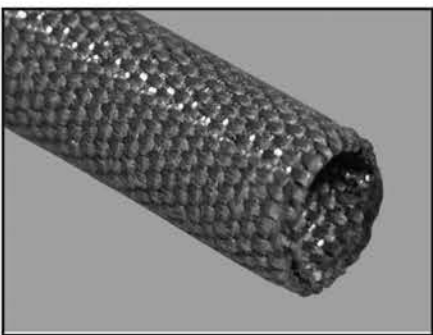
We Stock and Distribute Heat-Shrinkable Tubing, Adhesive Coated Heat-Shrinkable Tubing, Heat-Shrinkable Molded Parts, Crimp Splices, Solder Splices, Heat Guns, Wire Identification Solutions - Labels, Software, Label Printers, Tape, Electrical Protection Sleeving, Lacing & Tying Cord, Cable Ties, Spiral Cut Tubing, Split Loom Tubing, Corrugated Tubing, Medical Grade Tubing, PVC Tubing, PTFE Tubing, PEEK Tubing and Value Added Services.

Industries We Support:

- Aerospace
- Aircraft
- Automotive
- Defense
- Electrical Appliance
- Electronics
- Energy
- Medical
- Rail
- Utilities



Electrical Interconnect
Heat-Shrinkable Solutions



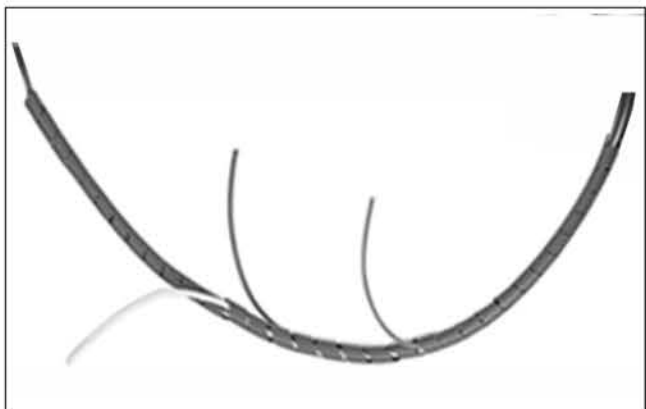
Nomex & PPS
Abrasion & Bundling Solutions



Heavy Wall Heat-Shrinkable Tubing



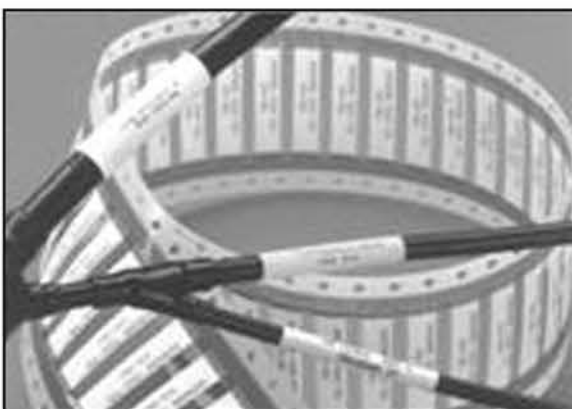
Thermal Transfer Printers, Software,
Labels and Wire Markers



PTFE Spiral-Cut Cable Wrap



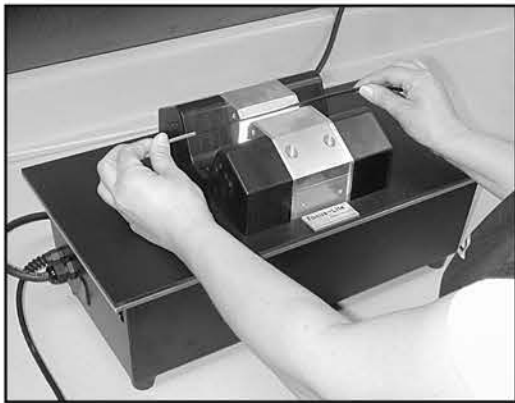
PTFE Heat-Shrinkable Tubing



Heat-Shrinkable Wire Identification

Our Top Product Lines:

- Atkins & Pearce/Ben-Har & Suflex
- Brady Product, Facility & Safety Identification
- Breyden/Gudebrod
- CYG/THERMOSLEEVE/USA
- DSG-CANUSA
- Federal Mogul/Bentley Harris Protection Products
- Grayline
- Hilec/Delfingen
- Insultab
- Judco/Focus-Lite
- LS Cable/Dunbar
- Panduit
- Permacel
- Steinel
- TE Connectivity/Raychem
- Thomas & Betts
- Varflex
- Western Filament
- Zeus



Judco/Focus-Lite
Heat-Shrinkable Tubing Processing Machine



TE Connectivity (Raychem Products)
Americas Specialty Distributor of the Year – 2012



insulation supply company

Since 1952



TUV USA Inc.
ISO 9001:2008/AS9100C
Certificate Registration No.14-1561



www.inscoinc.com

(800) 457-7715

info@inscoinc.com

Wired In

Continued from page 38

The membership of WHMA is very diverse in the market segments served as well as various applications and requirements. This creates opportunities for multi billion dollars in sales. In fact, according to the latest Bishop Research World Cable Assembly Market report, worldwide sales of cables and harnesses reached \$155 billion in 2017 (compared to 2017 worldwide sales of connectors at \$61 billion). These numbers do not include OEM's building their own harnesses.

Cable assembly and wire harness sales in North America alone are expected to reach over \$35 billion this year and projected to approach \$50 billion by 2023.

Even with some companies selling over \$1 billion in revenues annually, the mean average revenues per company are \$60 million. The median average company size is \$5 million (see Figure #1).

One percent of the companies sell 68% of the revenues in North America.

The majority of these companies, 1100+, has remained constant for 25+ years even with consolidations and acquisitions. There are new entrants continually getting into cables & harnesses. This shows the large and diverse need and application requirements of this industry and the reason for so many specialized manufacturers.

Typically, smaller companies in North America produce assemblies which are low volume / high mix - meaning they produce many different assemblies but lower in volume.

The top five market segments in North America are (see Figure #2):

1. Automotive
2. Military/Aerospace
3. Industrial
4. Telecom/Datacom
5. Transportation

These market segments are similar worldwide, but with Military/Aerospace moving to #5.

Also, of note,

though 8 of 10 of the largest revenue companies in North America are in the automotive sector, there are still 314 additional companies serving that industry in multiple tiers and applications.

The Worldwide market grew 6.5% in 2018 and is projected to grow 6.5% CAGR from 2018 to 2023. During that same period the North America projected CAGR is 5.8%

So, all told, the future looks bright for the wire harness and cable assembly industry and WHMA is proud to represent this growing industry.

If you have any questions regarding the industry or WHMA please contact our offices. Also, we want to thank Bishop and Associates for information provided in this article. Bishop reports on the Worldwide Market as well as North America are available from WHMA. Visit our website for more information www.whma.org

North American Market Sector Sales

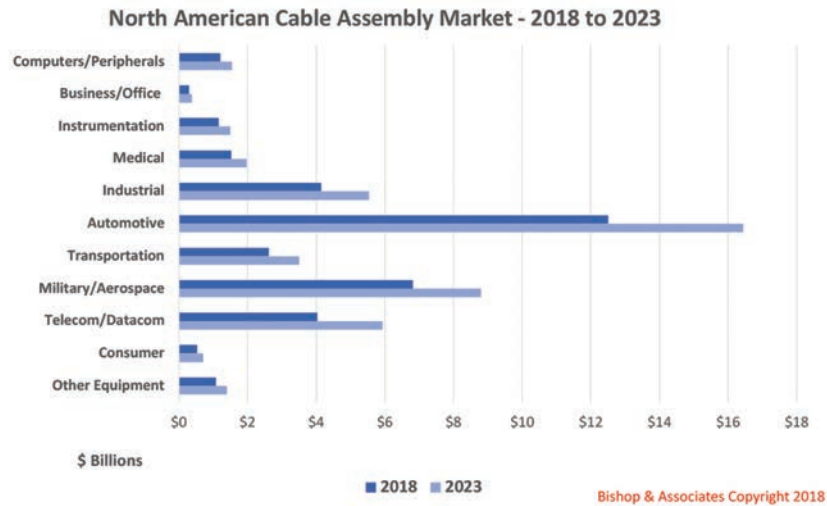


Figure 2. North American Cable Assembly Market by Sector.

Wardwell Harness Braiding Machine



The Wardwell Harness Braider is the ideal machine for over braiding on harnesses. It works equally well with wire materials or with textile and synthetic threads. The improvements to this type of standard machine include: a motor driven capstan take-up for accurate coverage of the harness, a new tubular frame, a self lubricating horn gear, a new operator station and sound reduction, among many others.

Technical Features

- ◆ Carriers for both textile and wire
- ◆ Infinitely variable motorized take-off system (18" capstan)
- ◆ Variable speed drive with foot potentiometer
- ◆ Self lubrication horn gears

Remote Operator Station equipped with

- ◆ Siemens OP3 Display with alphanumeric fault annunciation for pitch set and fault messaging.
- ◆ Start, stop, jog and Emergency Stop
- ◆ Optional Speed potentiometer
- ◆ Articulated Arm
- ◆ Empty bobbin and material break detection

Original!!!

Stolberger Inc. DBA Wardwell Braiding Co.

1211 High Street, Central Falls, RI 02863

Tel: 401 724 8800 Fax: 401 723 2690 www.wardwell.com



CHIEF SUPPLY INC.**EMPTY REELS WANTED***We buy
empty reels...***Plastic • Wood • Cardboard
Almost any size or shape****CHIEF SUPPLY INC.
(847) 290-8686****145 S. Lively Boulevard
Elk Grove Village, IL 60007****chiefsupply@att.net
Phone: (847) 290-8686****NEWS PLUGS** continued**Heilind Electronics Now
Stocking Amphenol
Industrial Gray Zinc
Nickel Connectors**

Heilind Electronics, a leading global distributor of electronic components and authorized distributor for Amphenol Industrial, has expanded its selection of rugged interconnect solutions with the company's Gray Zinc Nickel (ZnNi) circular connectors.

Comprised of gray zinc over electroless nickel, gray ZnNi plating is a RoHS-compliant and cadmium-free alternative to

standard plating options. Additionally, it is non-magnetic and results in no significant galvanic reaction when mated with electroless nickel, olive drab cadmium or black zinc nickel-plated connectors.

**Gray Zinc Nickel (ZnNi)
Circular Connectors**

Like its traditional counterparts, ZnNi plating also offers superior performance in harsh environments — including ex-

tremely high corrosion resistance, <2.5 m ohm conductivity and -65 degrees Celsius to +200 degrees Celsius operating temperature range. This makes it ideal for applications like marine crafts, electric vehicles, power generation and industrial machinery and equipment.

Visit Heilind's website for more information about Amphenol Industrial Gray Zinc Nickel Circular Connectors.

**Minnesota Wire's iSTRETCH®
Cable Chosen for Glacier Climate Change Study**

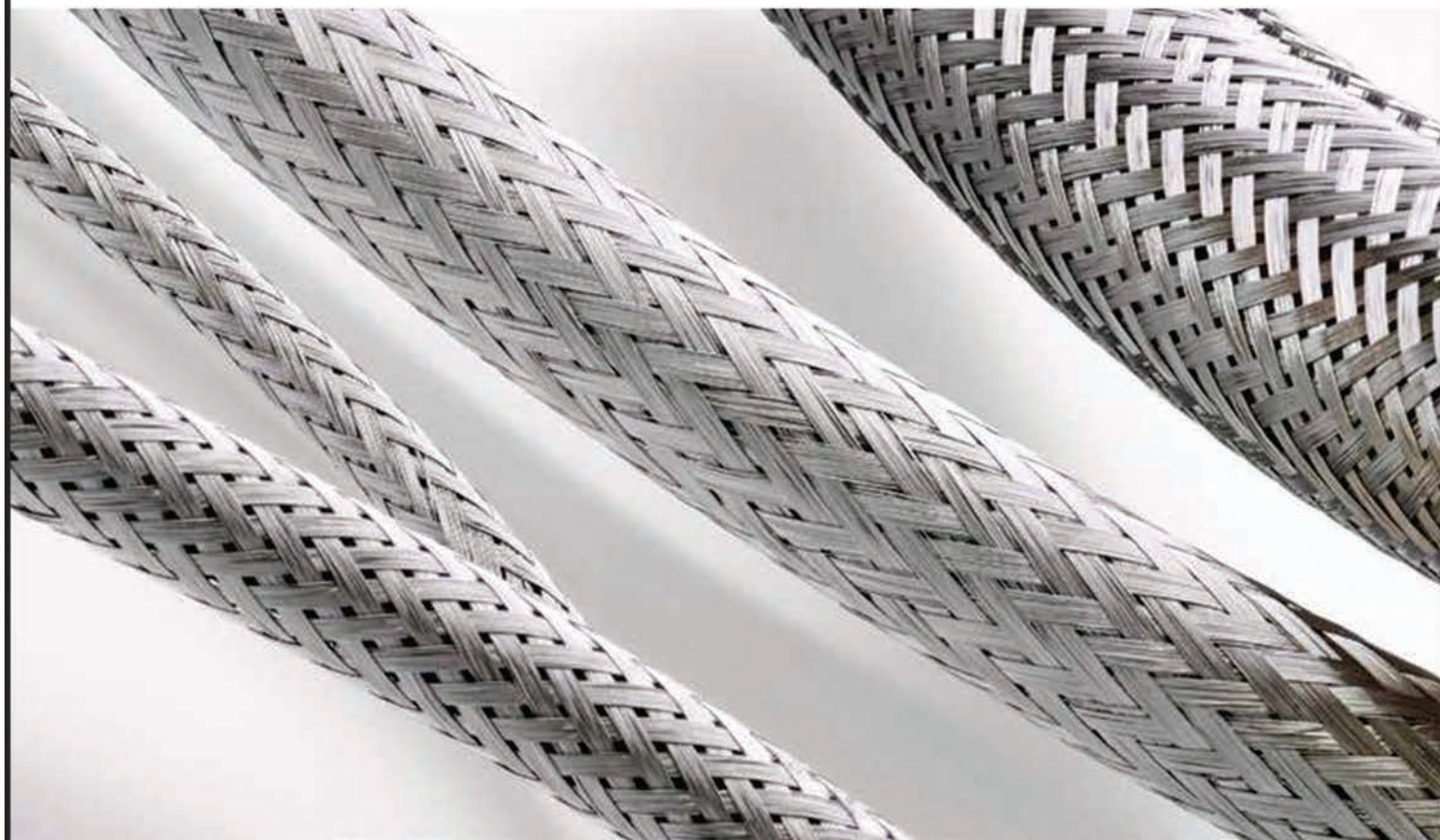
Minnesota Wire's iSTRETCH® cable has been selected for a climate change study on the Greenland Glaciers. The internationally-renowned Centre for Glaciology at Aberystwyth University in Wales and the Scott Polar Research Institute at the University of Cambridge is conducting the study.

The team is analyzing the glacier's response to climate change. Initially, standard cables were used in the monitoring systems but were unable to withstand the moving ice. These cables snapped after three months. To ensure longevity, the researchers chose Minnesota Wire's iSTRETCH—an electrical conductor that stretches 40% while maintaining electronic performance.

"We developed iSTRETCH for exactly this type of sensitive, yet rugged project," said Paul Wagner, Chairman and CEO of Minnesota Wire. "We are honored and excited to have the opportunity to play even a small role in this important work."

iSTRETCH is an electrical conductor that maintains its performance even when stretched. The researchers will deploy probes and sensors connected to iSTRETCH cables into the ice to accurately measure ice movement. This cable is designed for demanding environments and its integrity will be unaffected by the cold temperatures and shifting ice.

"It is very exciting to be using the iSTRETCH cable," said Dr. Sam Doyle from Aberystwyth University. "It will allow us to make measurements on a fast-flowing glacier for months, if not years, which has not been

HEILIND**Performance. Trust. Innovation.****TE Connectivity's Raychem
INSTALITE Lightweight Braid**

**Up to 50% weight savings over traditional copper
braids, INSTALITE lightweight braid has excellent
electrical shielding performance over a wide
frequency range.**

**AUTHORIZED DISTRIBUTOR**
**800.400.7041
www.heilind.com**

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

Continued on page 44



Can You Keep Up?

Mechtrix Prefeederers Optimize Your Capabilities

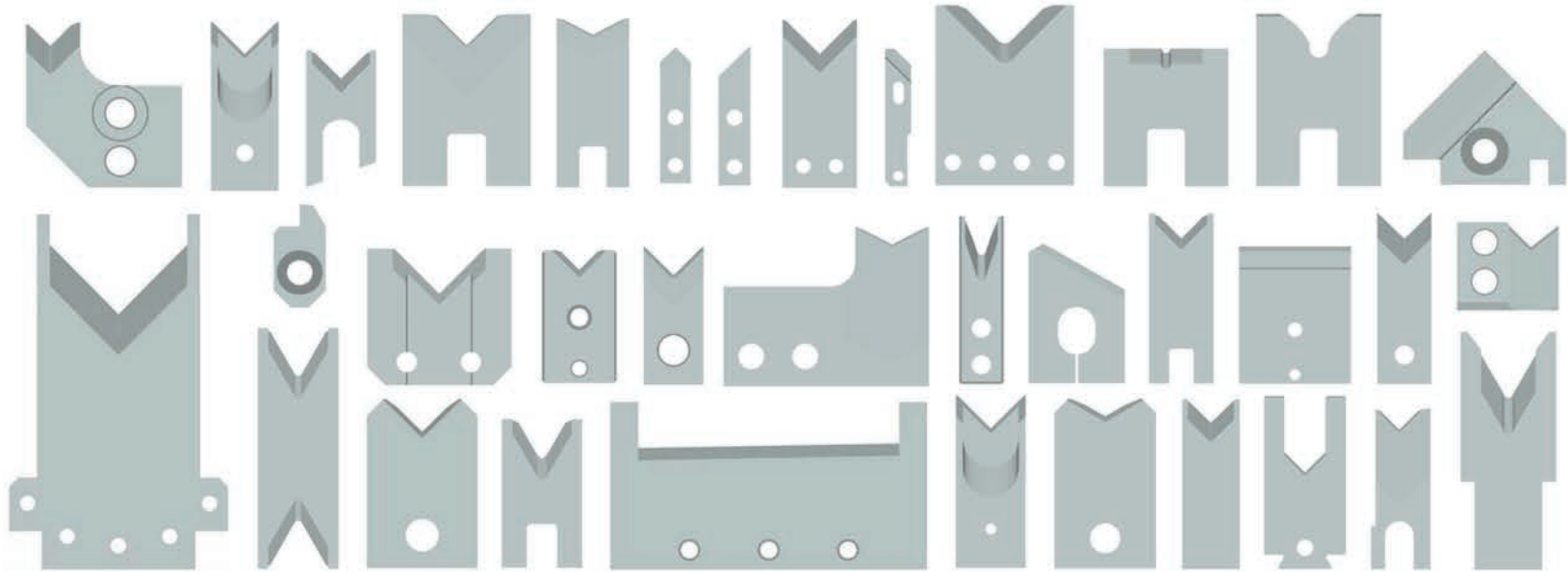
- MPF-33 Prefeederers for bench-top wire processing machines
- MPF-35 Prefeederers for high speed fully automatic wire processing machines



Mechtrix Stripping Blades

Mechtrix designs and manufactures standard replacement and custom stripping blades for:

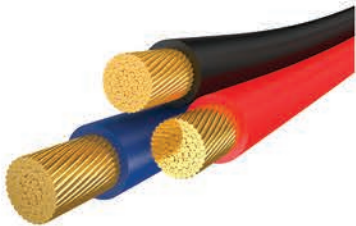
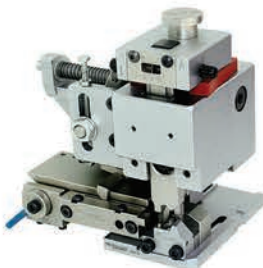
- | | | | | | |
|---------------|---------------|-----------|-----------------|-------------------|----------------------|
| • Amp/Tyco/TE | • Ideal | • Kirsten | • Kut-Rite/Weix | • Schäfer/Megomat | • Tekuwa/Dorema |
| • Artos | • KM Digitech | • Kodera | • Makfil | • Schleuniger | • Toyojamco/JAM |
| • Eubanks | • KMI | • Komax | • Metzner | • ShinMaywa | • and many others... |



Mechtrix Equipment

Mechtrix has designed a number of unique machines to solve specific wire processing problems. These machines range in complexity from our patented center stripping machines to terminal paper winding machines and include the following:

- | | |
|---|--|
| • Wire Prefeeder Equipment | • Terminal Carrier Strip Cut-off Devices |
| • Heavy Duty Benchtop Wire Stripping Machines | • Terminal Paper Winding Machines |
| • Automatic Center Stripping Machines | • Terminal Applicators |



Mechtrix Corporation
W147 N9461 Held Drive
Menomonee Falls, WI 53051
Tel (262) 255-6555
Fax (262) 255-2628
sales@mechtrix.com
www.mechtrix.com

NEWS PLUGS continued



Continued from page 42 _____
previously possible.”

The study has been featured on the BBC’s Frozen Planet hosted by David Attenborough and is funded by the European Union’s Horizon 2020 Research and Innovation Programme.

Minnesota Wire has been engineering and manufacturing custom solutions for complex cable assemblies

since 1968. They are a full-service development and manufacturing house for wire, cable, harness and interconnect assemblies, exceling at custom solutions. Minnesota Wire serves the medical, defense, military, industrial, commercial, and aerospace markets. They are unafraid to jump over the moon, deploy into battle, and create lifesaving connections. Learn more at mnwire.com

Fast Imprinting of Cables and Wiring - Leibinger JET Rapid Printer

When hunting, a lion can run at speeds of more than 60 km/h. Modern

cable extruding machines operate at a similar pace. The problem: marking systems run the risk of creating bottlenecks in production. The solution from Paul Leibinger GmbH & Co. KG: JET Rapid –one of the world’s fastest continuous inkjet (CIJ) printers, that can keep up with speeds of up to 1,000 m/min. Its users include cable manufacturers such as HUBER+SUHNER from Pfäffikon in Switzerland.

As part of the cable manufacturing process, electrical or fiber optic wires shoot through extruders which coat them in a protective outer layer made of materials such as Teflon or PE. Top of the range production systems are getting faster and faster: some of them now able to operate at up to 60 km/h. These are speeds that threaten to bring the printers located downstream of the extruders to their knees. The manufacturer’s name, logo, batch number and length label become distorted and, in the worst case, completely illegible.

The consequences present a real challenge to many cable manufacturers: if the printer hits its limit for a mere two minutes, two kilometers of expensive cable will end up in the trash. So, how can production be made more reliable?

The JET Rapid can mark 1,000 meters of cable a minute

“To ensure our printers didn’t become a bottleneck in these high-speed production systems, we developed the C, which is one of the very fastest industrial marking systems in the world”, explained Christina Leibinger, Managing Director at Leibinger, the product marking specialist, based in Tuttlingen, Baden-Württemberg, Germany. “The printer guarantees a reliably legible typography, even at system speeds of 1,000 meters per minute.”

The JET Rapid is predestined for high-speed labeling tasks in the wire, cable and pipe manufacturing industries, confirmed HUBER+SUHNER AG,



JET Rapid at work: 128,000 electrically charged ink drops fly towards the gutter every second.



ATLAS WIRE CORPORATION
Insulators of Electrical Wires & Cables

- | | |
|-------------------------------------|---------------------------|
| ✓ ISO 9001:2000 Certified | ➤ Lead & Hook Up Wire |
| ✓ Facilities in Illinois & Arizona | ➤ 125C & 150C Cross-Link |
| ✓ Huge Inventory of Conductor | ➤ UL & CSA |
| ✓ Customized Print & Packaging | ➤ MTW |
| ✓ Striping (Spiral & Extruded Line) | ➤ Building & Fixture Wire |
| ✓ Bonding & Twisting | ➤ Military |
| ✓ Drum Pack | ➤ Automotive/Marine |
| ✓ Small Min. Order Quantities | ➤ Nylon |
| ✓ Short Lead Times | ➤ Speaker Wire |

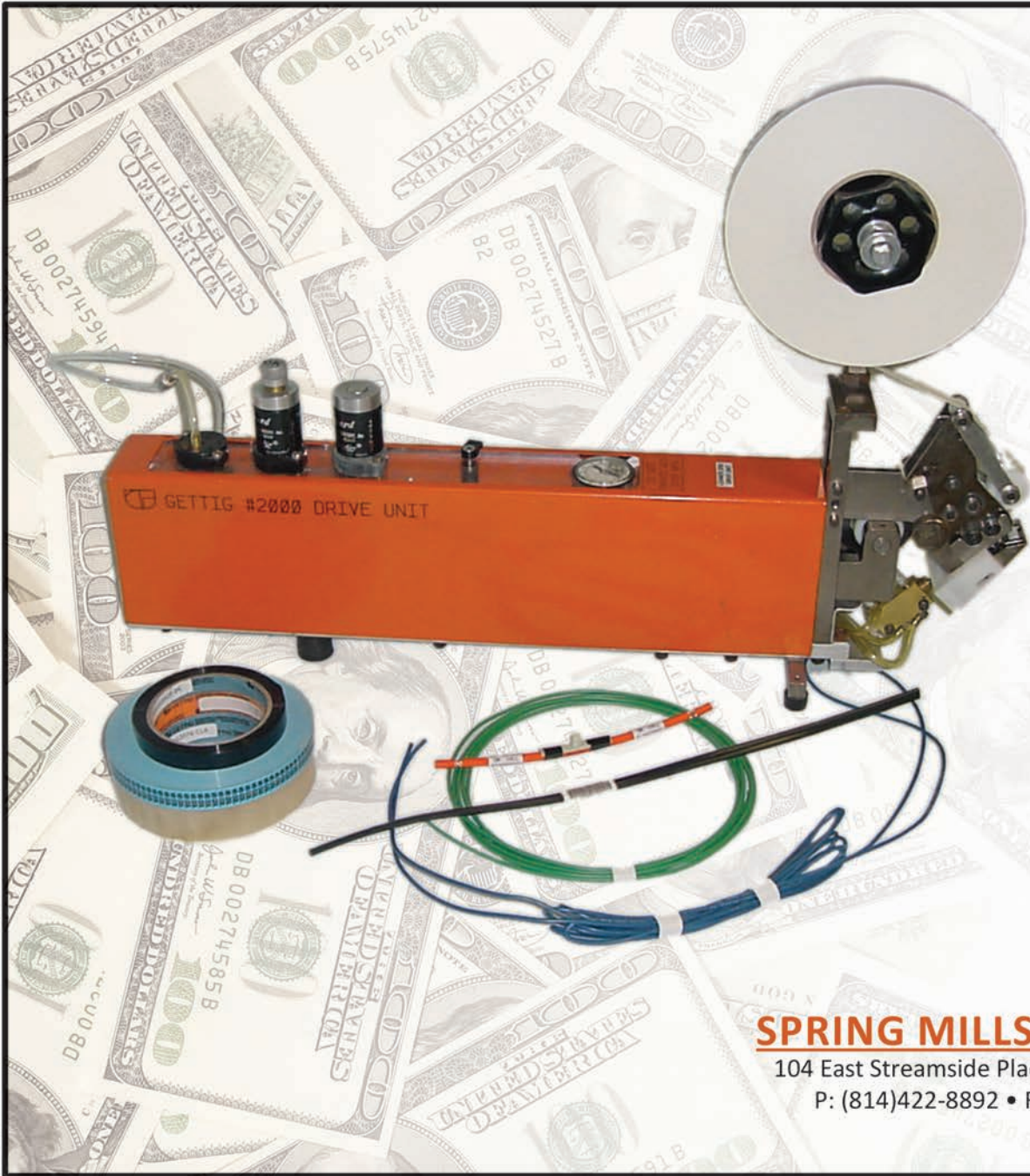
www.atlaswirecorp.com

1601 Glendale Ave
Itasca, IL 60143
(847) 678-1210
(847) 678-1281 fax
info@atlaswirecorp.com



ATLAS WIRE CORPORATION
Registered to ISO9001:2000
Certificate No. A4894

4705 S. Coach Drive
Tucson, AZ 85714
(520) 747-4500
(520) 747-5800 fax
tomatlas@worldnet.att.net



Save \$'s
Wrap A Spot Tape
Automatically

Gettig Taping Equipment measures and cuts from a roll, a piece of plain or preprinted pressure sensitive tape and wraps it around an object in about **One Second.**

Object Diameter:
1/16" to 1-1/2"

Tape Widths:
1/2" to 2"

SPRING MILLS MANUFACTURING, INC.

104 East Streamside Place • PO Box 85 • Spring Mills, PA 16875-0085
P: (814)422-8892 • F: (814)422-8011 • info@SpringMillsMfg.com

www.SpringMillsMfg.com

a Swiss company with a global reach in the electrical and optical bonding technology industry, with an annual turnover of 650 million Euros. “We ran exhaustive tests to compare this printer with machines from other manufacturers”, said Thomas Haab, Project Manag-



Leibinger’s JET Rapid keeps up with extruder speeds of up to 1,000 m/min

er at HUBER+SUHNER AG. “These tests proved that only Leibinger’s printers can achieve the speeds we require.” The printer’s automatic Sealtronic closure system, which is unique in this sector, also gives it exceptional reliability. The gutter is retracted and the nozzle is closed to create an airtight seal when the printer is not working. This prevents the ink from drying out and blocking the nozzle. As a result, there’s no need for time-consuming cleaning. And the secret behind the speed: CIJ technology “Made in Germany” But what makes this “Made in Germany” printer so efficient? It’s the continuous inkjet (CIJ) technology, which mathematicians, engineers and electricians have perfected thanks to decades

of research and testing. As a result, the printer can print at a rate impossible for the human eye to see. A minute spray nozzle in the cylinder-shaped print-head, mounted above the cable, fires 128,000 electrically charged ink drops towards the gutter every second. A high voltage field between the gutter ends changes the trajectory of the individual ink drops. The drops land on the cable as pixels, and are dry in less than a second. Information such as the manufacturer name, data matrix code and graphics appear on the cable as if painted by an invisible hand. And not just in black, yellow and blue: in a recent development, the JET Rapid can now even print easily readable, white text on black cables, by using specially pigmented inks.

The JET Rapid will be on display at wire and Tube 2018 – the foremost trade fair for the wire, cable and pipe manufacturing industries, from April 16 to 20, 2018 in Düsseldorf, Germany. In addition to its flagship CIJ printer, Leibinger will also be showcasing the JET-3up, designed for use with extruders running at up to 600 m/min. A special feature: the printer uses a pigmented silver-gray ink that produces legible text on dark and light cables and pipes alike. This all-round solution means manufacturers no longer need different printers for printing black or white text. For more information, contact Paul Leibinger GmbH & Co. KG, or Claudia Gross (Head of Marketing & Communication), Tel.: +49 7461 9286-0 Fax: +49 7461 9286-199, or Email: cgross@

leibingerGroup.com. Website: www.leibinger-group.com

Balver Zinn Group Introduces New VOC Flux

The Balver Zinn Group introduces 390-RX-HT+ a VOC flux with an organic activation system. The 390-RX-HT+ is a high reliability No-Clean flux for various soldering applications classified as ORL0 according IPC J-STD-004. This flux with high SIR values offers superior wetting performance with clear and dry residues. Among the innovative technologies at the show will be Cobar’s extensive range of wave soldering and selective soldering fluxes: • 94-SEL a high reliability Low-VOC selective soldering flux shows excellent soldering performance and is qualified by high-tech and automotive

companies in the electronics industry • 385-SEL a high-reliability selective flux designed specifically for selective soldering processes with short pre-heat and is besides that ideal for touch up applications • 95-RXN-M is a Low-VOC flux with a low solid content designed to eliminate solder balling and leaves a very low level of shiny, dry residues, preferable application in Nitrogen tunnel machine • 396-DRX-M+ is a VOC-free environmental friendly flux that exhibits powerful soldering performance combined with extremely low residues Balver Zinn is a pioneer in lead free solders and as exclusive licensee we

Continued on page 46

CABLE SUPPLIER OF CHOICE!

With Multi/Cable YOU get to choose high quality, speciality cable, and receive exceptional service, and fast turnaround at competitive pricing!

THE ADVANTAGE OF CHOICE
With off-the-shelf cable products you don't get the chance to decide on many critical features of the finished product such as: design, materials, tolerances, and manufacturing techniques.

Custom designed and manufactured cables:

- Special Constructions • Instrumentation • Control • Tray
- Thermocouple • High Temperature • Audio & Sound
- Shielded • Direct Burial • Underwater

37 Horizon Dr. Bristol, CT 06010
Tel: 860.589.9035
Fax: 860.589.7520
www.MultiCable.com
info@multicable.com





- **FREE** 24-Hour turn around on Wire Evaluation Service
- All wire processing equipment designed, engineered and manufactured in-house
- Outstanding customer service
- Affordable solutions for both small and large companies
- Nation-wide sales representatives and global distributors

Call **315-682-9176** or visit www.carpentermfg.com

SQUARE CUTS CLEAN STRIPS QUALITY SERVICE

Visit carpentermfg.com to see our entire line of wire processing equipment, including detailed specifications and videos.



110 Fairgrounds Drive • PO Box 188 • Manlius, NY 13104-0188 • P: 315.682.9176 • F: 315.682.9160 • wire@carpentermfg.com • www.carpentermfg.com

We have you covered



Your Metri-Pack connector Our ES10 CAP

Use your connector with our ES10 CAP to create a SEALED MINI FUSE HOLDER.

For harsh environments and engine compartment conditions • IMDS certified

Call (440) 871-0800 • Email sales@whiteproducts.com
www.whiteproducts.com

WHITE PRODUCTS

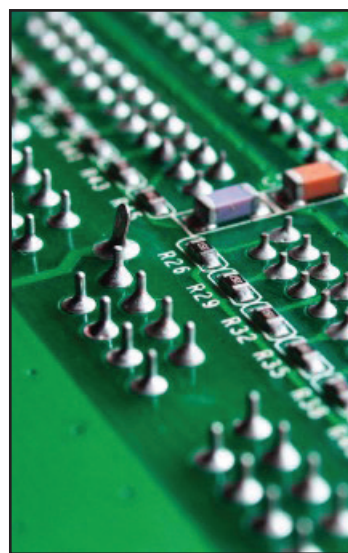
NEWS PLUGS continued



Continued from page 42

present Nihon Superiors new patented SN100CV® lead-free micro-alloyed solder. The industry standard SN100C® has been improved by the addition of bismuth which has positive effects on the reliability of the solder joints. The SN100CV® alloy offers high reliable solder joints which are recommended for high-end and automotive electronics.

Headquartered in Germany, the Balver Zinn Group has



390-RX-HT+ a VOC Flux

facilities in the United States, Europe and distributors in all major areas of

the world. Balver Zinn – Cobar product range includes: solder bar, solder wire, solder flux, gel flux, cleaner, solder paste and miscellaneous service and soldering products. For information about the company's complete range of solder materials, visit www.balverzinn.com or www.cobar.com

Tesa Tape, Inc. Acquires Functional Coatings, Inc.

Functional Coatings, Inc., based in Newburyport, Mass., is to become a wholly owned affiliate of tesa tape inc., North America.

The move will allow the tesa Group, a global market leader in numerous industries, to strengthen its market position in the industry.

"The innovative adhesive tape and sealing products from Functional Coatings, Inc. are the perfect addition to our existing tesa product range in the building supply segment," said Paul Sullivan, President and Regional Manager of tesa tape, inc. "This will help us tap into the full potential of this resurgent segment in North America."

Founded in 1989 by Robert Lynch, Functional Coatings has grown to 80 employees. Ownership currently belongs to second generation family members Stephen and David Lynch, as well as General Manager Gerald Fortier.

The company is known primarily for VOC-free adhesive tapes on a butyl hybrid basis. The thick, easily processed high-performance tapes offer various advantages over VOC-emitting methods such as bitumen or asphalt solutions. In addition, the company has a broad spectrum of solutions for fast, reliable processing – even at low and high temperatures.

"Functional Coatings, Inc. looks forward to the opportunity to contribute our unique knowledge and expertise and achieve even stronger growth in the future," said owner Stephen Lynch. "We found a strong partner with tesa as they are a global leading manufacturer of technical adhesive tapes and self-adhesive solutions."

Digital Servo Ultrasonic Metal Welders

- *Dynamic Force and Amplitude Control™*
- *Industry leading missing volume detection*
- *Consistently accurate high volume production*
- *Digital servo motor increases reliability & repeatability over pneumatic alternatives*

Servo Wire Splicers

US-3020WS2 & US-3020WS2-H

- 3.0 kW welding power, 20kHz
- 0.26mm² - 38mm² CSA range
- Heavy duty upgrade to 60mm²
- Detects missing strands under 3% CSA & single strands from 0.13mm² wires



0.39mm²

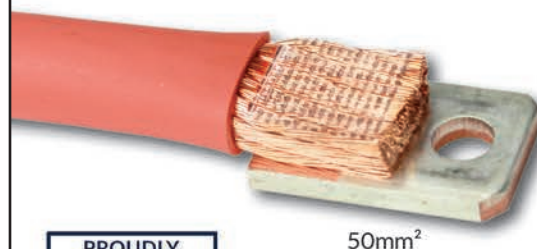


50mm²

Servo Wire Terminators

US-3020SRT & US-3020SRT-H

- Meets all requirements of USCAR-38
- Only 3.0 kW welding power required
- Ring termination up to 28mm² Copper
- Heavy duty upgrade to 60mm² Copper, 95mm² Aluminum cables
- Detects missing strands under 3% CSA & single missing 0.35mm² wires



50mm²



10.85mm²



www.tech-sonic.us

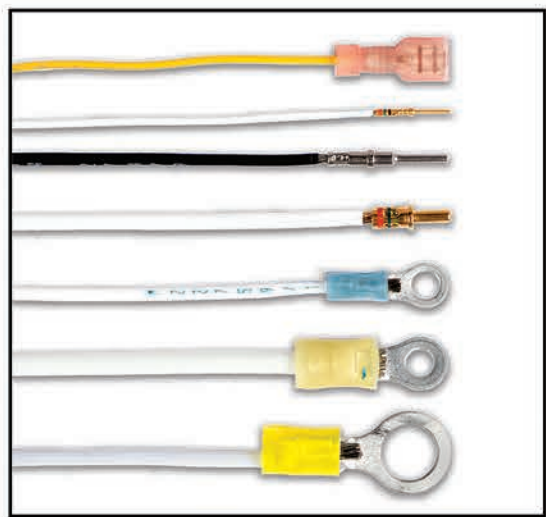
TS TECH-SONIC
ULTRASONIC METAL WELDING

Wire Prep, Wire Termination, and Connector Assembly Tooling



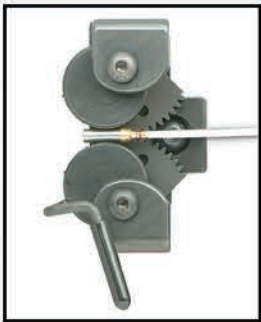
NEW MPT-250C

Upgraded Motorized Wire Crimp Pull Tester to Verify Wire Terminations



The MPT-250C is a Motorized Tensile Wire Crimp Pull Tester used to test a crimp contact's or terminal's tensile strength. The unit has a range of 2.5 lbf to 250 lbf and a full color LCD touchscreen interface. Includes data capture capability for exporting test data to a PC via USB or RS-232. The MPT-250C meets UL, ISO, SAE, MIL, and ASTM tensile test requirements.

- 2 Test Types: "Pull to Fail" and "Force Hold"
- Data Capture (measures continuous and peak force values)
- Force Measurement Accuracy: +/- 0.5% Full Scale
- Pull Rate Speeds: 1 to 10 inches per minute (inch / min)
- Accomodates Most 10 AWG - 26 AWG Wire
- Includes Cam-Type Grip & Heavy Duty Lockdown Upper Grip
- Additional Grips and Custom Grips are available



15-3202C (Included)
Cam Grip
Standard Contact Grip
Terminal Lugs,
Machined Contacts



15-3314 (Optional)
Mini-Vise Grip
Optional Contact Grip
Miniature Contacts



15-3087C (Optional)
Slotted Wheel Grip
Optional Contact Grip
Terminal Lugs,
Machined Contacts



DMC TOOLS®
The Wire Stops Here.



DANIELS MANUFACTURING CORPORATION
526 THORPE RD, ORLANDO, FL 32824

(407) 855-6161
WWW.DMCTOOLS.COM



**Test Continuity,
Display Work
Instructions,
Specify Test
Parameters,
Test High
Voltage
Isolation**

- 500 Points Per Second
- PC-Based Simplicity
- Test Wire Harnesses & Backplanes
- Audio/Visual Work Instructions
- Store Test Results

SERIES
90

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

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



Cablescan
A EUBANKS COMPANY

www.cablescan.com

NEWS PLUGS continued

IWCS Announces New Senior Operations Manager

IWCS, Inc., producer of the International Cable & Connectivity Symposium, announces the selection of Michelle Melsop, CMP, CEM, as senior operations manager. She will be learning the intricacies of IWCS by working with Patricia Hudak until year end, at which time Hudak, who has held the position for 25 years, will be retiring.

Melsop comes to the position from the Plastics Industry Association where she was senior manager of conferences and logistics, orchestrating over 15 conferences of various sizes per year. Prior to that she was manager of events at the Telecommunications Industry Association (TIA). She obtained her certification in exhibition management (CEM) in 2012 and certified meeting planner (CMP) in 2013 and maintains them both. "Michelle brings 10 years of association meeting and event planning experience to the position and will be a great addition to the team," said Dave Kiddoo, IWCS executive director. "With the overlap of the two managers, Pat and Michelle, we expect the transition to be smooth and provide for very strong and successful future for IWCS," he continued.

Melsop began the IWCS position in March by observing the operation of the second annual UL and IWCS International Cable & Connectivity Symposium in Shanghai, China, which she will be instrumental in organizing for 2019 and beyond. Michelle also contributed to the recent IWCS symposium committee meeting in April, where over 30 individuals from as many companies and several countries met to establish the program for the IWCS 2018 conference in Providence, Rhode Island.

"I was very impressed with both the conference in China and the process of paper selection in the development of an outstanding program for the IWCS 2018 conference," said Melsop. "I'm very excited to join the team," she added, "and will work hard to continue the strong legacy of noteworthy customer service and conference support that Pat Hudak has pro-



Michelle Melsop

vided for IWCS over the past 25 years ".

The IWCS 2018 International Cable & Connectivity Symposium will be held in Providence, Rhode Island, on October 14-17, 2018. IWCS organizes the International Cable & Connectivity Symposium as the premier technology forum for the exchange of information about product, material and process innovation for cabling and connectivity solutions and for the development of industry professionals through education and scholarships. For more information, visit www.iwcs.org.

The IWCS International Cable & Connectivity Symposium is the premier venue for new technologies in cable and connectivity products, processes and applications. For over 67 years, the IWCS Symposium has been the leading worldwide conference for peer reviewed papers and presentations on technologies and trends in cable and connectivity for the communications, data, electronics, power, industrial, automotive and aerospace industries.

The IWCS Symposium Committee generates an extremely high caliber program for each year's conference,

with over 100 papers and presentations in 20 compelling sessions over three full days. The International Cable & Connectivity Symposium is an opportunity to explore discussions on topical issues, learn about new technologies and network with global industry colleagues.

Headquarters: IWCS, Inc. 644 Shrewsbury Commons Ave. PMB #250, Shrewsbury, PA 17361 USA. For further information, visit the IWCS website www.iwcs.org or contact David B. Kiddoo, CEO, at dkiddoo@iwcs.org.

Profiling??

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

WIRING HARNESS NEWS
Serving the Electric Wire and Cable Processor

APPLICATORS / CRIMPING PRESSES / TOOLING

Mini
Left to Right

Mini (Power Drive II)

Mini (2 Post) Air
Left to Right

Med. Duty Air
End Feed
Quick Change Tool Pack

Med. Duty Slide
Quick Change Tool Pack

Heavy Duty Slide
Quick Change Tool Pack

ODYSSEY TOOL

1 Applicator Base, Many Terminals
Run mylar strip, plastic carrier, double or single carrier - *all in the same base!*

Quick Change Tool Packs
Change Over in 5 Minutes or Less!
Reduced Cost and Down Time!

ODYSSEY CRIMPING PRESSES

2.2 Ton

4 Ton

8 Ton

20 Ton

For details visit our website, or contact a sales representative.

See More @ WWW.ODYSSEYTOOL.COM

Phone:(586)-468-6696
Fax:(586)-468-8422

NEWS PLUGS continued



Omni Cable Promotes Vicki Allin to Director of Territory Sales

Omni Cable, headquartered in West Chester, PA, announces the promotion of Vicki Allin to Director of Territory Sales.

As Director of Territory Sales, Allin provides the strategic direction and oversees the performance of the company's outside sales team. She is responsible for training and developing the outside sales team to generate new prospects and exceed sales goals.

"I am thrilled to accept this new role at Omni Cable as Director of Territory

Sales. I look forward to working with our Territory Sales Managers to utilize all their talents to achieve and exceed our company's growth initiatives" said Allin.



Vicki Allin

Allin joined Omni Cable in 2001 and has over 30 years of industry experience. Prior to Director of Territory Sales, Allin was the Territory Sales Manager for the St. Louis branch.

"Vicki is an excellent fit for this position because of her years of outside sales experience, knowledge of the industry and Omni Cable, and relationships with customers and co-workers," said Mark Serafino, Omni Cable's Central Regional Vice President. "Vicki has shown a willingness and ability to share her industry knowledge with her co-workers since her first day with Omni Cable; she is respected in the industry and among her colleagues," he added.

Vicki Allin can be reached at vallin@omnicable.com.

For more information about Omni Cable, please visit omnicable.com.

Fast and Reliable Connections for Power Electronics

RICHMOND, VA — Weidmuller announces the expansion of their line of OMNIMATE® Power Printed Circuit Board (PCB) terminals with the new OMNIMATE® Power LUF and LUFS 10.00. Both terminal designs feature Weidmuller's PUSH IN connection system for wiring solid, stranded or ferruled wires from 18...6AWG— with ease and low force— to help prevent potential damage to expensive circuit boards. Select versions of these new Weidmuller terminals are UL/CSA rated for use up to 61A and 600V according to UL1059, meeting the requirements for high power applications that include drive controllers and photovoltaic converters.

The new OMNIMATE® Power LUF and LUFS 10.00 PCB terminals offer a range of options from clamping activation to wire insertion orientation. The LUF 90-degree orientation terminal is available in 1- to 12-pole versions with a tool free actuating lever above each clamp for quick and easy clamp opening. The LUFS is available in both 90- and 180-degree orientation in 1-pole to 12-pole versions, and feature a screwdriver push button to open each clamp. When the lever or button is released, the clamp automatically closes on the cable to ensure a reliable connection. Easily accessible diagnostic testing points and a redundant pin design for increased stability on the PCB eliminate the need for an additional fixing flange and increase system integrity.

Several versions of the LUF and LUFS 10.00 are UL/CSA rated for up to 61A and 600V according to UL 1059, making them suitable for use in high power applications such as drive controllers and photovoltaic inverters. This rating applies to terminal versions with 2 or 3 pins in alternating positions per pole. These provide the creepage distances required to maintain a higher amp rating. OMNIMATE® Power LUF and LUFS terminals with 4 or 6 pins in alignment per pole are rated for up to 58A and 300V due to reduced clearance distance between poles. Specific



M500 Fully Automatic Wire Processing Machine



Schaefer Megomat's M500 Series Fully Automatic Wire Processing Machine provides the 3 things your company values most. Durability, flexibility and affordability. With 4 process stations, high quality materials, small footprint and economical price point, your company can't afford to use anything else!

Schaefer Megomat USA, Inc.
W233 N2830 Roundy Circle W.
Pewaukee, WI 53072, USA
Phone: (262) 524-1100
Fax: (262) 524-1133
pewaukee@schaefer.biz
www.schaefer.biz

Mecal BY STARN



Need a Better Solution?

WE BELIEVE

CUSTOMER **TRAINING**
CUSTOMER **EDUCATION**
CUSTOMER **SUPPORT**

with a **GREAT**
Choice of Equipment
is the
ANSWER!



MRS



FERRULE



MK



FMK



MSEP/F



MRFSJ1



MSEP/S



MSC



MSES



BUS BAR



P200



P120



P080



P040



P107C



TT



LMP



FMP



EVS



EVF



MRFP



MRSPJ8



MRF



MRSP



MECAL BY STARN
20524 Blooming Valley Road | Meadville, PA 16335
814.724.1057 x 122 | mecalbystarn.com



Follow us on



MANUFACTURER AND DISTRIBUTOR OF MECAL
PRODUCTS IN THE U.S. & CANADA

OEM APPROVED APPLICATOR PROVIDER FOR **santec** TERMINALS.

An In-depth Look at Schleuniger's S. University eLearning Platform

By Joe Tito
Wiring Harness News

Marc Lussier is Head of Group Technical Services at Schleuniger, Inc. Marc has been with the company for 24 years and was the driving force in the creation of S.University, Schleuniger's new online training platform. WHN chatted with Marc just prior to last month's EWPT Expo in Milwaukee to tell us more about S. University.

Wiring Harness News: Tell us about your involvement in the creation of S. University.

Marc: I came up with the concept in January 2013 realizing that we needed to train people all over the world on more than 125 products as well as many topics in wire processing. We started the university with online training in-house back in 2014, but the program did not have a distinct identity.

Our industry has seen significant increases in technology and complex-



ity requiring training for everyone. While live training is always best, trav-

el and trainer costs make live training logistically and financially challenging. So my thoughts went toward eLearning (self-paced online courses) and web training (live web training with an instructor) using an online university platform.

WHN: Why do you think Schleuniger is poised to bring this particular training to market?

Marc: Schleuniger has the largest breadth of products in the industry and we deal with thousands of applications. Many of our technical staff have been in the industry for 20-30 years and are truly wire processing experts, so the challenge was to get their experience into course material.

We started by creating material to train our global employees, then expanded it to our distributors and partners and now we have launched S.University for everyone (launched at EWPT). Since it's creation we have created a new department in NH to add content. The manager has 20+ years in wire processing and then we hired eLearning course creation experts.

S.University resides in a LMS (Learning Management System) and therefore is a true on-line university system. We can track users, achievements and provide certifications. Eventually we hope the industry will use S.University to on-board their new employees as well as train

HEILIND

Performance. Trust. Innovation.

Heat Shrink Tubing

Heat shrink tubing is a valued option for insulation, protection, and sealing.



- Wide range of sizes and types offered in various shrink ratios
- From full spools to non-standard cut lengths
- Provides excellent electrical insulation
- Withstands high temperatures, chemical exposure
- Protect against mechanical damage, cuts and abrasions
- Seals to keep moisture out



AUTHORIZED DISTRIBUTOR

800.400.7041
www.heilind.com

TE Connectivity and TE connectivity (logo) are trademarks

their existing employees. We have 2 courses specifically designed to certify people in the basics of wire processing. One course on wire and cable basics that has 2 modules and one course on wire processing basics that has 6 modules. Together they cover all the main topics of our industry at a basic level. Terminology, equipment, processes, concepts and definitions. At the end is an optional test and if the user passes, they will receive a certification. Employers can use this course to ensure their employees have a base level understanding of wire processing.

The wire processing basic training isn't going to take someone off the street and make an expert out of them in a day. But there's a huge need for folks to get a general understanding of the terminology, materials, and the process in general. They

shouldn't be learning the basics from the operator standing next to them, because that's just going to lead to scrap, confusion, and inefficiency.

WHN: Can you tell us more about the platform and how it works?

Marc: S.University is much more as well. We can arrange a private, live web training in 2 hour blocks on a variety of topics. We cover cutting, stripping, crimping, crimp quality, crimp force monitoring (CFM), Cut, Strip & Terminate (CST) processing, software programming, pre- and post-processing, and more. We will also arrange custom sessions specific to the needs of a customer and can web train an individual or a conference room full of employees including live Q&A with our experts. As always, we can visit your facility or you can come to ours if you prefer in-person.

WHN: Can you tell us specifically what you announced in Milwaukee at EWPT Expo?

Marc: What we announced in Milwaukee is our S.University Store (www.schleunigeruniversity.com). It's on a Shopify platform, but the look and feel is all Schleuniger. We now have a catalog of our training options: eLearning, Live online or even factory/field training and seminars. For a limited time we are offering Wire and Cable Foundations (eLearning, 2 modules) for free so that people can try it out. The site and eLearning courses are initially in English, but this is a global tool and additional language courses and storefronts are being developed. We will initially offer some sessions with our colleagues from USA, Mexico, Canada, Switzerland, Germany, China and Japan. We can also work with our many global partners to arrange training in a variety of languages.

WHN: What else about S. University would you like to share with our readers?

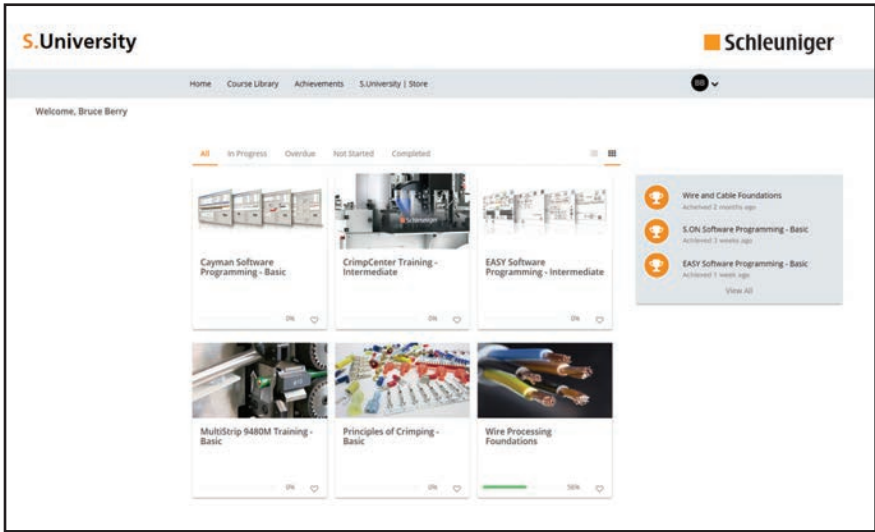
Marc: When I started, most machines were knob adjusted. There were numerical controls, but not a lot of programming. Now you are talking about wirelist processing and smart detect options, so the complexity of

even a small benchtop has stepped up several levels in the last 20 years. Add to that the thousands and thousands of applications in our industry, and the timing couldn't be better.

Bottom line, after using S.University to train our global team and with the significant increase in training requests, we are now offering our expertise to anyone that wants to learn the complexities of our industry. Our customers have asked about reducing scrap, keeping up with crimp quality standards, reducing employee impacts with software controls, and more. All of these points require training and we are offering training to cover any questions.

I believe that eLearning will change our industry training platform. Our next eLearning courses will cover several of our programming options including S.On, our Cut & Strip programming, Cayman, our more powerful Cut & Strip external software, and EASY, our CST software. After that we will create courses on many of the topics listed on the S.University Store that are currently available as 'Live, Online'. I have spoken to some industry leaders and they are very excited about the future of training on S.University.

Visit SchleunigerUniversity.com for more information.



Harber Industrials, Inc

www.harberconnect.com

Independent Stocking Distributor

specializing in

Electronic Interconnecting

Materials

since 1947.

Standard Cable Connectors

Ribbon Cable Connectors

D-Subminiature

I/O Connectors

Headers, Housing & Contacts

Circular Plastic Connectors & Accessories

Pins & Sockets

Ultra Fast Receptacles & Tabs

Terminals

Splices

Superseal 1.5

Large Inventory - Same Day Shipping!

Competitive Pricing!

phone: 708-594-7744

fax: 708-594-7761

email: info@harberconnect.com

www.harberconnect.com

team worked with the skilled staff at DIT-MCO to create the right level of integration to their tools. Passing pin, connector and netlist information necessary for the machine to generate test files.

“In collaboration with Zuken we hope to greatly simplify the process for DIT-MCO customers of creating test programs utilizing an Automatic Program Generator (APG) that takes the output straightaway from Zuken’s Harness Builder for E3.series to create DIT-MCO test programs.” - Brent Stringham -Director of Sales, Marketing & Service

About DIT-MCO

Additional Features

DIT-MCO wiring analyzers are synonymous with quality in the electrical cable and wiring harness world. From military/aerospace and defense industries to trains, race cars and



DIT-MCO model 2650 modular wiring analyzer expandable from 500 to 100,000 test points.

communications, DIT-MCO analyzers have long been counted on to provide the most stringent testing of wired assemblies.

Another integration unique to Harness Builder for E3.series is splice barcode naming. This is particularly useful for directly selecting from an ultrasonic library of splicing models and should prove to be a time saver

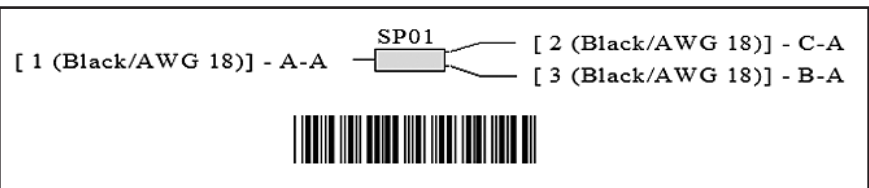


Figure 4 - Barcode Naming for ultrasonic library.

for companies using ultrasonic welders (see Figure 4).

“It was exciting and challenging to manipulate apparent manufacturing quoting tool to be used in all sections of the engineering and manufacturing process - from the initial quoting stage right through to the final output on a formboard 1:1 drawing that can be printed directly from the application.” - Paul Harvell - Director of E3.series Product

Harness Builder for E3.series 2018

Zuken studied a great deal of feedback from harness manufacturers in the development of the new release. There was a general realization that the harness manufacturing teams might not necessarily have the same skill sets as the engineering companies (OEMs) that were designing the products. It’s also likely that they might not be afforded the time to learn and train for the complicated interfaces. For these reasons, emphasis was placed on ease of use. The tool was created with concise easy-to-locate functions with pictures and videos available for on-line help.

That, coupled with Zuken’s hotline support and online user community make for a quick startup with a short learning curve.

The software does not require the harness manufacturer to create a schematic in order to create a harness. It does, however, offer a schematic that is dynamically created from the harness after it has been drawn. The single object technology of E3.series makes it flexible enough for a design engineer or a harness manufacturer to detail the same drawing sets and be confident that all views of those drawing sets are updated automatically. For example, when a connector is added on a schematic, it will also be present on the formboard. If a wire is added into the harness, it will appear in the schematic. This single object approach means that the BOM and detailed wire cutting information are always in synch.

Harness Builder for E3.series was designed and developed by Director of E3.series Product, Paul Harvell and his team at Zuken USA based in Westford MA.

More information on this Windows-based application can be sourced from Zuken at www.zukenusa.com



DIT-MCO 2650’s modular design facilitates distributed placement of modules around an aircraft, allowing for much shorter adapter cables.

Subscribe to Wiring Harness News

www.wiringharnessnews.com

ShinMaywa

Creating Solution Advantages "Gentle to the wire and Operators"

TRD401 Series

New Generation Wire Terminating Machine with Great Variety of Advanced Functions (24-14 AWG)

Excellent precision and quality in wire measuring and crimping. Thanks to the combination of automatic wire changer and manual applicator changer, change over time has reduced to 1/6th!

TRD510 Series

High Performance Wire Terminating Machine for Medium Wire Gauges 26-18 AWG

Single end, both ends 3-module seal insertion can be processed.

TRD510WPSA/TRD510WPA

TRD301 Series

To meet Comprehensive Range of wire Processing Requirement (24-14 AWG)

High processing capability and more stable processing precision.

Single end, both ends seal insertion can be processed by TRD301WPSA/ TRD301WPSB/TRD301WPA

THR204

Single end Tinning Terminating Machine with High Precision Twisting and Tinning Unit for Medium Wire Gauges 28-16 AWG

Newly developed twisting and tinning unit is equipped with the servo motor, for achieving higher processing capability and quality of tin finishing.

ShinMaywa automatic wire terminating machine guarantees high quality not only in automotive industries but in household appliances. Halogen free wires can be processed by above all series.

ShinMaywa

Brighten Your Future

●ShinMaywa (America), Ltd.

10737 Gateway West, Suite 240 El Paso, Texas 79935, U.S.A

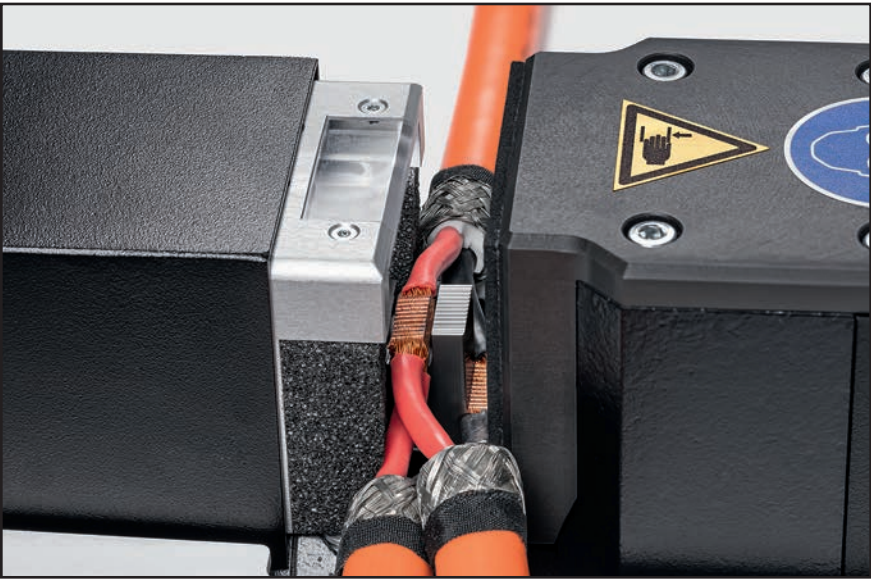
TEL : +1-915-594-9862 FAX : +1-915-594-9866

E-mail : info@shinmaywaamerica.com

HP : <http://www.shinmaywa.co.jp/america/>

Splicing of Multi-conductors and Twisted Wires

Continued on from page 36



Teslo®splice welding system.

Technically and economically impressive

Ultrasonic welding is a form of cold friction welding that joins parts together by vibrating them against each other at high mechanical frequency. The parts are clamped together while a vibrating tool called a horn transfers ultrasonic energy to the joint interface. The vibrations are parallel to the weld surfaces. The process is fast and environmentally friendly because it does not require additives such as adhesive, solder or other consumables. The process is reliable and secure as the welding process can be configured using just a few parameters and 100% quality

control monitoring of variables such as time, compaction, and power.

Today's trend towards miniaturization applies to cables and connections too. The housing that protects the connections should be as small as possible so they require as little installation room as possible. This means the wires length out of the conductor and the stripped cable ends become ever shorter. While, previously, loose wire lengths of 6 to 8cm were considered standard, today 4cm is becoming ever more common or even only 3 cm is desired. The same applies to welding twisted cables. To avoid faults the untwisted loose ends should be as short as possible. These conditions create a chal-

lenge for loading the wires and conduct the splicing process.

Everything is smaller and the tools adapt to suit

Telsonic AG has now acted and developed special tools for its standard Telos®Splice ultrasonic welding systems. The standard tooling, consisting of sonotrode, anvil and anvil plate was modified in such a way that even short loose cables and short untwisted cable ends can be welded together easily, and fast. This new method is already proven in production environment, e.g. with high-voltage cables. In a case Three cables each with two wires spliced in a 2 by 1, the total connection is 70 mm including the splice. This represents a more practical alternative to the more cumbersome crimping processes. There are other advantages when twisted cables are welded, e.g. for CANopen applications: the cables should remain twisted here up to around 40 mm in front of the connection. Figure 3 shows an example. Here, two pairs of wires twisted around one another are joined; like-colored wire strands are welded. The cable cross section here is typically between 0.25 mm2 and 2.5 mm2. The wire strands are stripped to a length of approx. 16mm, the untwisted wire strand in front of the connection is approx. 40 mm long.

User-friendly

Easy and fast tooling change-over make the machine versatile for standard wire splicing, multi-conductor cable and twisted wires.

HEILIND


Performance. Trust. Innovation.

TE Connectivity's Raychem INSTALITE Molded Boots



**Advanced Materials Science Drives up to 30% Weight Savings . . .
Reduces Installation Time with High-Performance Heat-Shrink
Shape Memory Boots**

- 20% to 30% lighter than standard 25 parts
- Optimized interior geometry speeds installation time
- -75°C to 150°C temperature range



AUTHORIZED DISTRIBUTOR

800.400.7041
www.heilind.com

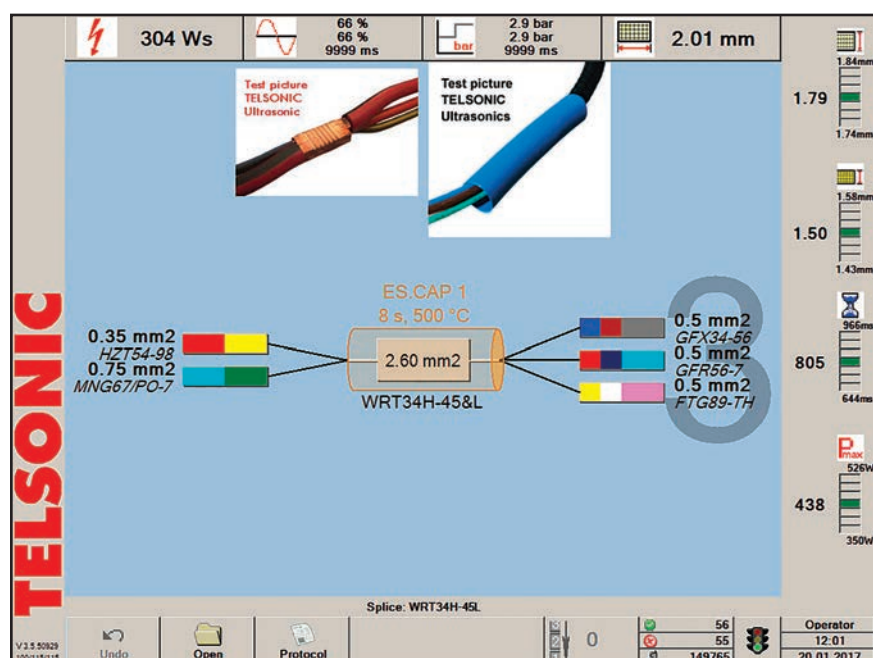
INSTALITE, TE Connectivity and TE connectivity (logo) are trademarks



Figure 3 - Welded connection on a twisted bus cable.

Aluminum and copper-to-aluminum combinations can be welded with the same machine. The Telos®Splice machine can reliably weld stranded wire splices with a cross-section of 0.26 mm² to 40 mm². Making splices sequentially is also possible. The ultrasonic generator with a power of 3.6 kW works at a frequency of 20 kHz. With its touchscreen operation and clear structure, the menu-

driven software enables efficient set-up and work. A splice editor makes it possible to create new configurations quickly. The self-explanatory control software with touchscreen operation and clear organization also ensures efficient work. The prescribed quality control simplifies quality tolerance windows, which are set for all welding results in set-up mode. Upper and lower threshold values can be set for splice height, welding time as well as maximum output. An alarm is triggered if these values are exceeded or under run. Statistical analysis, automatic calibration, maintenance menu for maintenance work, reference mode and an ultrasonic test mode extend its functions.



Menu-driven, self-explanatory control software with touchscreen operation.

M-EXPO Wire Processing Technology is being held in the “Wiring Harness Capital of the World”

October 10-12, 2018
Cuatro Siglos Convention Center
Calzada del Rio #8989
Ciudad Juárez, Chihuahua Mexico
expo-mro.com/M-EXPO



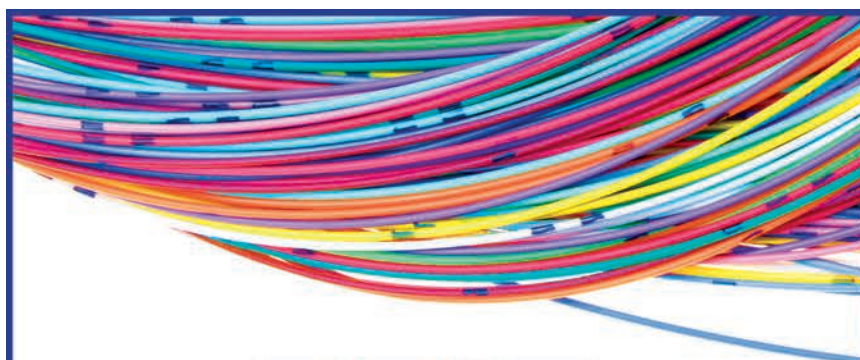
This is M-EXPO's 2nd year but from this year forward it has been decided to dedicate the EXPO to Wire Processing Technology. (This EXPO is co-located with EXPO-MRO.) This decision was initiated as a response to the interest of exhibitors/attendees who participated in previous EXPO-MRO shows. They expressed interest in a more focused and exclusive show for the wire and cable processing industries. There currently are no exhibitions of this type in the El Paso/Juárez region despite being held in the State of Chihuahua, aka “the Wiring Harness Capital of the World!”

The El Paso/Juárez region is comprised of the largest manufacturing centers in the world. In Juárez alone, there are over 300,000 manufacturing jobs and more than 300 maquiladoras and over 25% of these companies are in the Wire Harness or related industry. It is M-EXPO's goal to introduce large CMs and OEMs with suppliers of wire processing technology, equipment and tooling for the Aerospace, Agriculture, Appliances, Automotive, Marine, Medical, Military and many more.

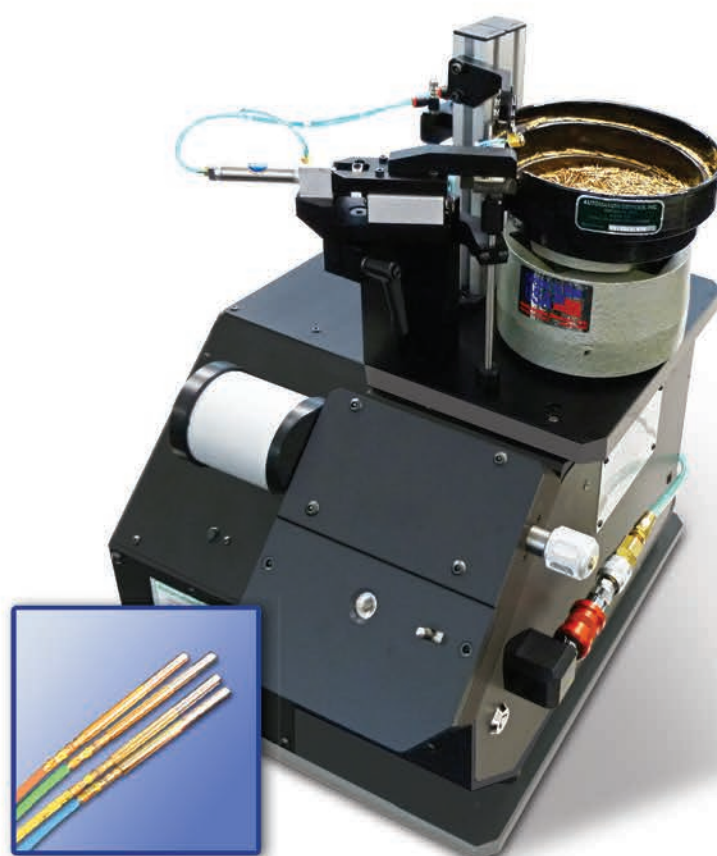
If you're looking to expand into the Northern Mexico's Wire Processing Industry, this is the opportunity to showcase your latest wire and cable processing equipment, tools, materials and technologies. M-EXPO gives you the opportunity to exhibit to qualified decision makers of International firms and national businesses. They are in search of suppliers to share their latest technology and equipment with them to assist in improving their processes and overall competitiveness.

If you're looking to find the latest in Wire Processing Technologies, you do not want to miss this EXPO. Within these three days, M-EXPO attendees will have access to the latest equipment, tools, materials, and technologies in the wire and cable industry. Some of the exhibitors who have already committed are Schleuniger, Komax, HellermanTyton, Panduit and more.

Contact Ricardo Aguirre at 915-304-4291 or everythingpostal@gmail.com or visit our website at <https://expo-mro.com/m-expo.html> for more information.



BEST. CRIMPER. EVER.



Tri-Star Technologies' demonstrated track record of over 1000 systems sold globally now culminates in the remarkable next generation X Series Automatic Contact Crimper.

- **Fully automatic.** No foot pedal, wire triggered operation.
- **Fast.** Up to 1,800 crimps an hour.
- **Mil-Spec approved.** Meets Mil-C-22520/7.
- **Versatile.** Accepts 16-26 AWG wire.
- **Compact.** Fits into small spaces.
- **Built-in quality controls.**
- **Dual bowl option.** Easy switch between pins & sockets.

TAC X Series

Automatic Contact Crimper
Now even better.

 **Tri-Star Technologies**
A Carlisle Company

Contact us at:

www.tri-star-technologies.com

Roger.Lewin@carlisleit.com • 917-972-4133



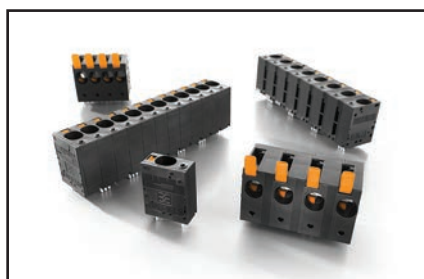
NEWS PLUGS *continued*

Continued from page 50

ratings for the commercial (B), general industrial (C) and industrial device groups (D) are provided in Weidmuller supporting materials to assist customers in the product specification and selection process.

The new OMNIMATE® Power LUF and LUFs 10.00 terminals are now available from Weidmuller. Please visit the Device Connection Technology page under Products at www.weidmuller.com for more information.

Weidmuller supports customers



Weidmuller's New OMNIMATE® Power LUF and LUFs 10.00 PCB Terminals provide a fast and reliable connection for high voltage applications.

and partners around the world with products, solutions and services in the industrial environment of power, signal and data. The company develops innovative, sustainable and useful solutions that set standards in Industrial Connectivity today and continu-

ally work toward providing solutions for the technology challenges of tomorrow. The Weidmuller Group owns manufacturing plants, sales companies and representatives in more than 80 countries.

For more information, contact a team member at (800) 849-9343 or visit them on the web at www.weidmuller.com

Heilind Grows HARTING Line with Han-Modular Connector System

Heilind Electronics, a leading distributor of electronic components, announces it has strengthened its HARTING line of connector and cabling solutions, network components and RFID systems with the HARTING Han-Modular series of connectors. The Han-Modular connector system allows

for multiple connectors in one industrial housing.

The Han-Modular is designed for combining different transmission media — power, signal and data — into one connector. The multifaceted system of inserts, contacts, hoods and housings, frames and accessories work together to fulfill a versatile range of application requirements. Customers can choose from over 100 different modules, which are suitable for many different transmission media and cover various termination techniques.

"Our customers are continually looking for customizable solutions for their designs. The wide spectrum of HARTING Han-Modular connectors we distribute provides them with a high degree of connectivity and manufacturing flexibility," said Thomas Eder, Supplier Business Manager, Heilind Electronics.

Key benefits of the Han-Modular series include space savings, low maintenance, design flexibility and future-proofing modular connector designs.

Visit Heilind's website for more information about HARTING Han-Modular Connectors.

Heilind Electronics, Inc. (www.heilind.com) is a leading distributor of connectors, relays, sensors, switches, thermal management and circuit protection products, terminal blocks, wire and cable, wiring accessories and insulation and identification products.

Cicoil Offers Halogen-free Designs

Cicoil, the provider of high performance flexible flat cables now offers halogen-free designs for applications that require non-toxic, corrosive free and environmentally friendly cables. Free of harmful halogenated compounds, such as astatine, bromine, iodine, fluorine and chlorine, Cicoil's cables also meet the Air Cleanliness Requirements of ISO 146441 and exceed the outgassing requirements of ASTM E595.

Typically, electrical cables manufactured with PVC, Neoprene and Fluoropolymers require the addition of halogens to make them flame retardant and to withstand high temperatures. However, when cables containing halogens are burned, toxic fumes and acidic gases (when bonded with hydrogen) are pro-

HEILIND

Performance. Trust. Innovation.

Wraptor A6500 Wire Marking System

Improve productivity and enhance the quality of wire identification by printing and applying labels in five seconds or less.



BRADY
WHEN PERFORMANCE MATTERS MOST™

800.400.7041
www.heilind.com

Buy Now

duced, which sear the eyes, nose, mouth and throat to cause severe respiratory damage, disorientation and even death.

Fortunately, Cicoil's proprietary Flexx-Sil™ jacketing material contains zero halogens, no additives and by nature are flame retardant (HFFR), so they are the safer alternative to those cables manufactured with harmful halogens. Due to its unique mixture of materials, the ultra-pure Flexx-Sil™ does not ignite easily, and if ignited, will not produce black smoke or toxic gas during combustion. In addition, Cicoil's crystal-clear, non-corrosive jacket does not contain color additives, plasticizers or CFC's, which are typically found in most cable jacketing materials.

Cicoil's Halogen-Free jacketing material has a temperature rating of -65°C to +260°C, and passes UL/CSA VW-1, FT 1 & FT 2, UL 94V-0 flammability testing and FAA burn testing. In addition, all cables are Class 1 Clean Room Rated and are manufactured in an automated, climate controlled environment.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over sixty 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. Visit www.cicoil.com for more information.

TM-3000 Universal Semi-Automatic Crimp Press System

The TM-3000 Universal Crimp Press System: Delivers an effective method of applying a wide range of side-feed and rear-feed terminals to pre-stripped discrete wire or cable. This press system accepts Molex Mini-Mac and



TM-4000 Universal Crimp Press

FineAdjust applicators and uses most industry-standard applicators, which reduces tooling costs and provides design flexibility. The direct-drive, split-cycle press accepts Molex air-feed applicators that process terminals mounted on Mylar tape.

TM-4000 Universal Crimp Press System: The only industry-standard, bench-top press on the market that terminates large lug products up to 4 AWG, the Molex TM-4000 Universal Crimp Press applies a wide range of side- and rear-feed terminals to heavy gauge wires. It accepts the most common industry-standard applicators and any Molex applicator, including air-feed applicators that process terminals mounted on Mylar tape.

Tape-Terminal Crimp Modules (Tape Base Unit): Provides an effective method of applying a wide range of side-feed, tape-mounted terminals to pre-stripped discrete wire from 4 to 30 AWG. The crimp module operates only in the TM-4000 and TM-3000 Universal Presses and uses quick-change modular tooling, which accepts all existing ATP-201 and ATP-301 die sets, reducing tooling investment.

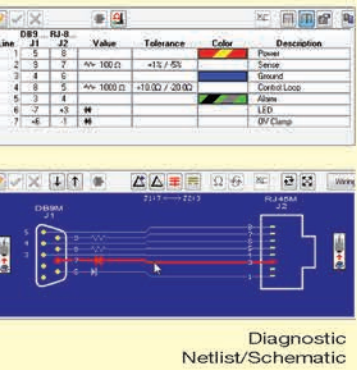
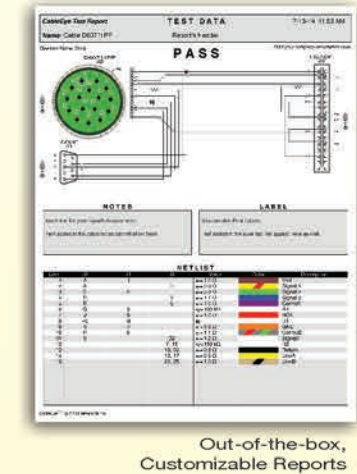
For application tooling support from Molex, please call 402.458.TOOL (8665), e-mail applicationtooling@molex.com, or visit <http://www.connector.com/solutions/ewppte/>.

Why You Should Upgrade to a CableEye® Tester...

Setting the screen language is only one way in which the flexible, intuitive CableEye cable and harness test system adapts to meet your needs.

- If you want a clear, simple operator interface for production workers, it's easy!
- If you need measurement data in a report showing resistances, voltages, and leakage current, we can provide this, automatically.
- If you need reliable, fast diagnostic tools to find intermittent connections, locate shorts, opens, or miswires, our live graphic wiring display makes this a snap.
- If you want to automate a test procedure to ensure consistency, our built-in scripting with operator prompts does the job.
- If you need to protect your stored cable data from inadvertent erasure or tampering, set each operator's log-in privilege as needed.
- If you require your system to be Future-Proof, you will like that we do not use embedded computers or screens.
- If you prefer to readily share files and fixtures between different models, our common software platform makes that a cinch.
- If you insist on reliable hardware and rock-solid support, we insist on that too. Here's what others have to say:

camiresearch.com/testimonials



Output Options	Example
Ready, Pass & Fail Signals	Tower Light, LEDs, Audible Tone
Trigger Test Signal	Foot pedal, remote control
Relay Control	Lock & Release Latches, Diverter Gates
Printing	Reports & Labels
Speech	Guided Assembly
GUI	Schematic, Netlist
Export Files	csv, xml, Excel, Archival Data-Logging

Automation-Ready

**1 Yr Renewable Warranty
Free Tech Support!**

Experience CableEye's impact on your productivity first-hand:

Try a Free Demo Unit Today!

Still servicing testers over 20 years old!

CableEye®
CAMI Research Inc.

+1 978-266-2655 | sales@camiresearch.com

©CableEye is a registered trademark of CAMI Research Inc.

Stapla Direct Factory Service and Support

We're Here For You

- One on One Technical Phone Support
- Email Support
- Next Day Standard Parts and Tooling
- Factory Repair and Refurbishment
- Quick Turn around Time
- Onsite Training and Repair
- Spanish Speaking Technical Support

Stapla Ultrasonics Corporation
A Global Leader in Ultrasonic Metal Welding
+1 978 658 9400
www.staplaultrasonics.com
contact us at service@staplausa.com

Wire-to-Wire Success Once Again at the Electrical Wire Processing Technology Expo

After the show, Jay Partington, President of Expo Productions, Inc., the producer of the Expo, said "We were encouraged by the reports of manufacturers that the industry is

FreePoint™

Technologies Inc.

Connecting Your Machines & Connecting Your People!

**Smart
DEVICES**

**Cloud Storage
& DATA ANALYTICS**

**Engagement
TECHNOLOGIES**

226.663.2289

www.getfreepoint.com

doing so well. Some exhibitors reported a 33% increase in sales.”

Hospitality

Whether you’re a long-time exhibitor, or a first-time visitor to the show, the crew at EPI Shows and the staff at The Wisconsin Center do their best to make you feel like family. Special thanks to the following hospitality sponsors:

- Assembly Magazine - Exhibitor ‘Beer-N-Brats’ Party
- Wisconsin Center - Wednesday Exhibitor Breakfast
- WHMA - Wednesday and Thursday Lobby Coffee
- Komax - Wednesday Morning Break and After Hours VIP Party
- KM-USA - Wednesday After Hours VIP Party
- Schafer - Wednesday Afternoon Break
- TE Connectivity - Thursday Bloody Mary Bar
- Schleuniger - Wednesday Morning Mimosa Bar, Thursday Morning Break
- OES Technologies - Thursday Afternoon Break
- CK Technologies - Charging Stations

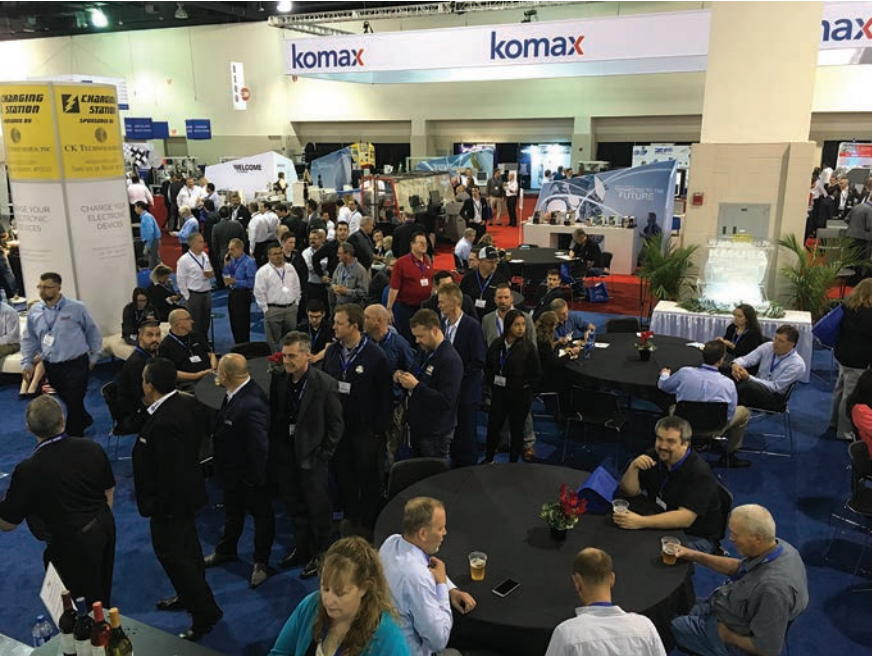
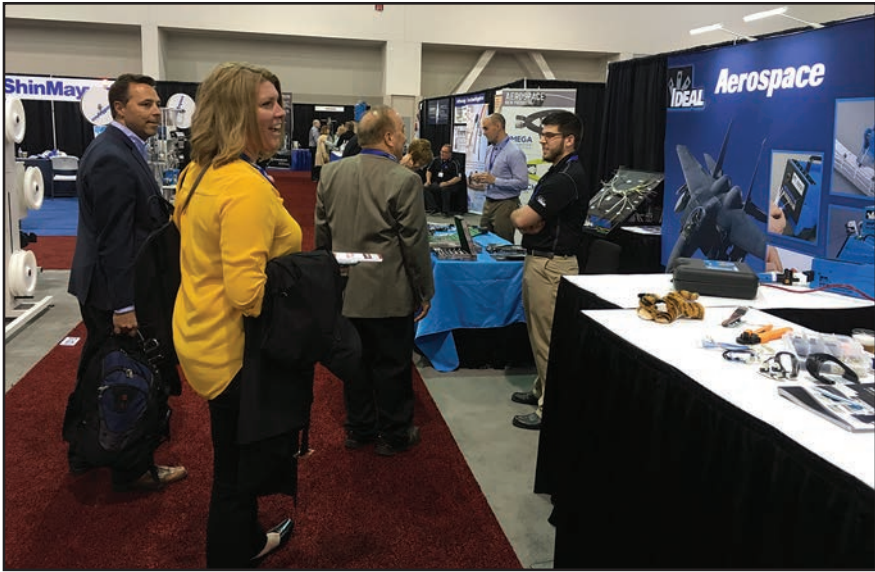
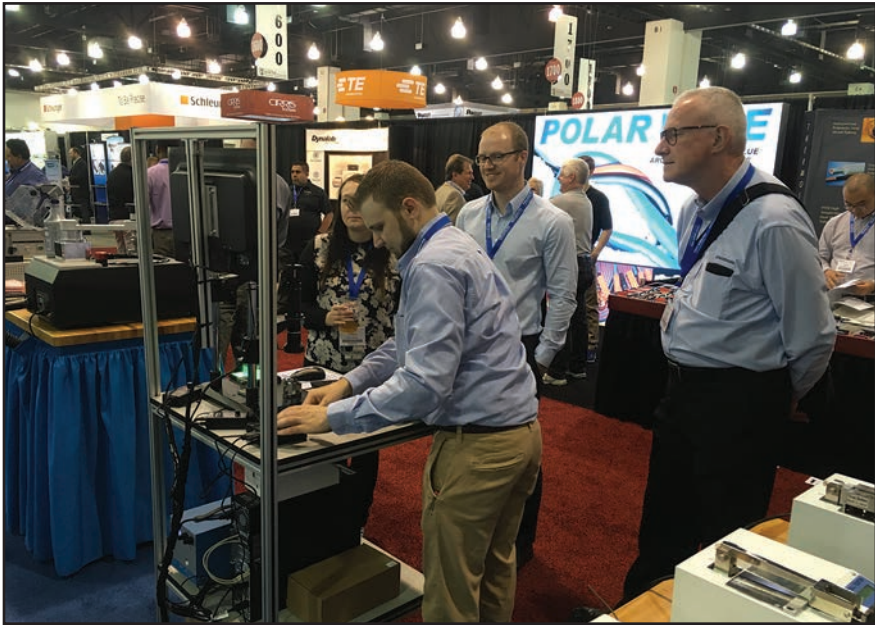
Wire & Cable Technology - Seminar Room.

As always, we at **Wiring Harness News** were proud to present the After Hours VIP Party, Attendee Bags, Business Lounge, Directory, Lanyards, Wi-Fi, Massage Area, Thursday Exhibitor Breakfast and Move-Out Refreshments. An added feature at this year’s show was the Craft Brew Sampling at the **WHN** booth. Visitors had the opportunity to sample several Wisconsin Craft Brews. We are hoping to make this a yearly tradition.

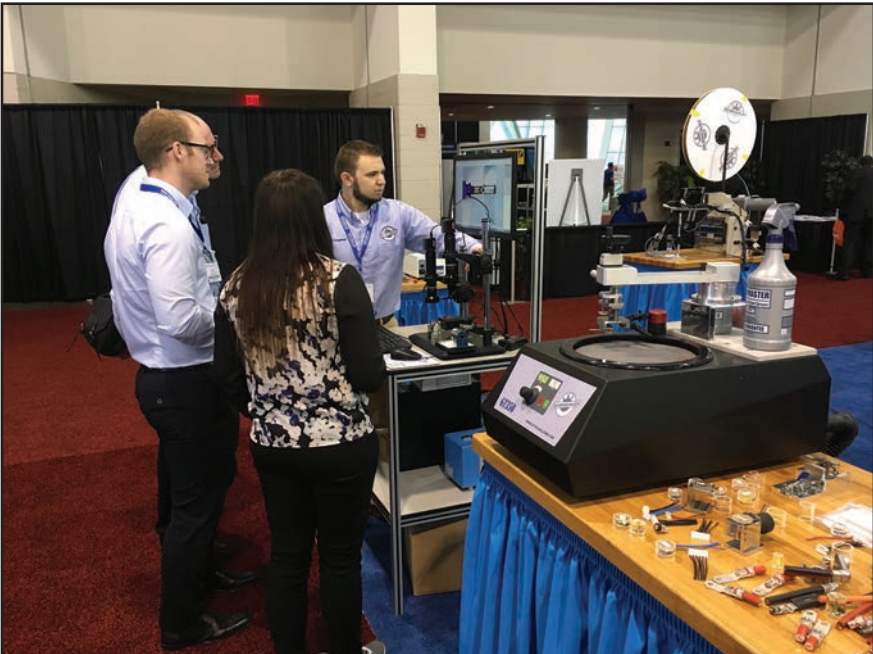
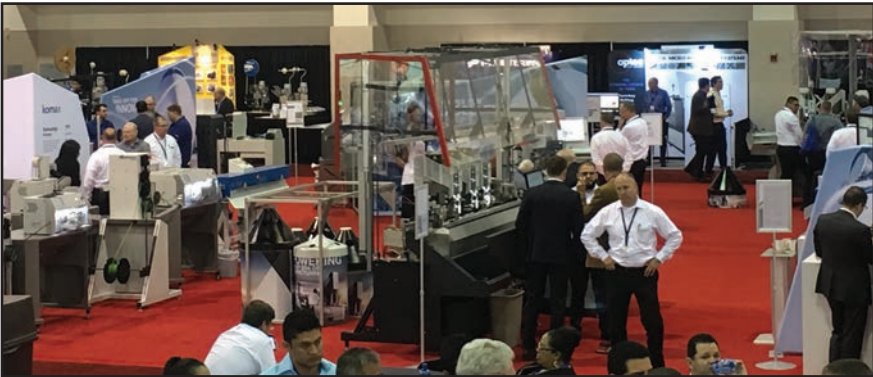
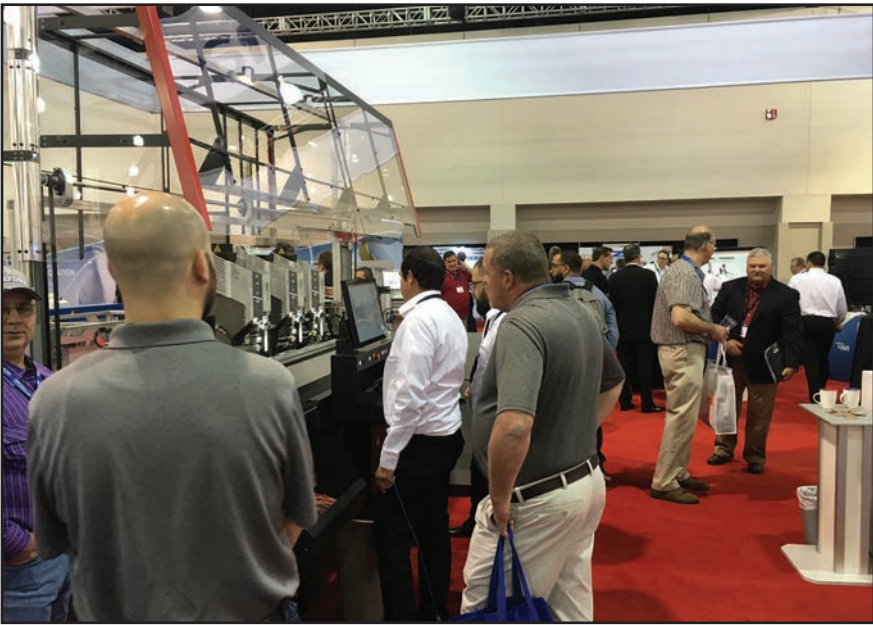
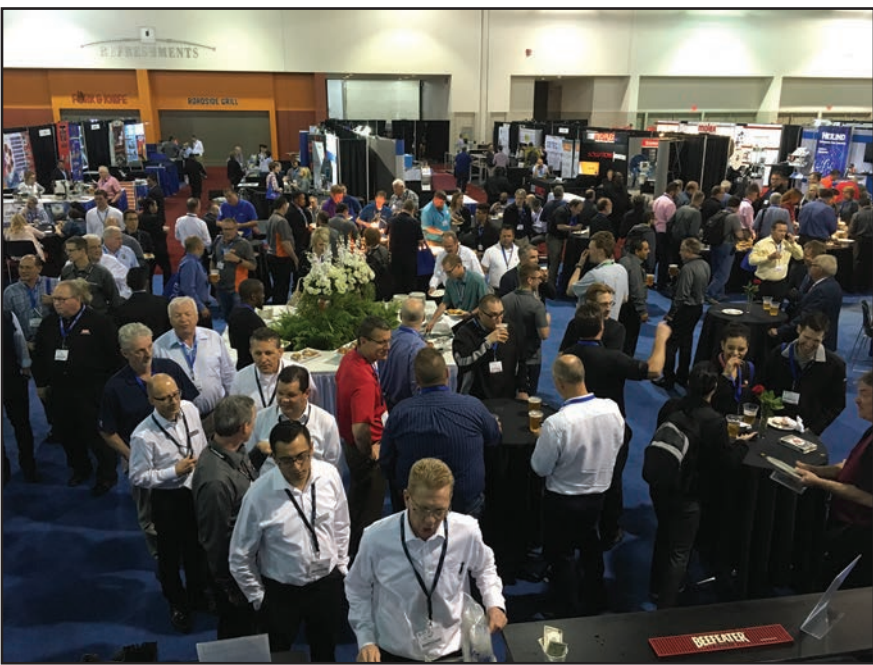
The Most Important Metric

It’s beer that made Milwaukee famous. What could be a more accurate metric to the show’s continued success than the number of kegs poured? This year, visitors consumed 22 kegs of Milwaukee’s finest brew. EWPT is a fun atmosphere and a critical show to the industry.

If you would like to exhibit next year, don’t hesitate. Space has sold out the past several years. **Contact Cheryl Luck at cheryl@epishows.com.**



See more photo coverage of EWPT on page 62



CLASSIFIEDS

BEFORE YOU SELECT A BROKER OR M&A FIRM
TO SELL YOUR WIRE HARNESS COMPANY,
USE THIS TEST.

- Q. How many wire harness companies have you sold?
A. _____
- Q. What's your track record (closing percentage)?
A. _____
- Q. How many sell assignments do you take on at one time?
A. _____
- Q. Have you ever owned and operated a wire harness company?
A. _____

We've sold dozens of wire harness companies, never failing to meet or exceed an owner's expectations.

To focus thoroughly on each assignment, we never take on more than one or two deals at a time.

We understand the wire harness business inside and out. Our CEO, who owned and ran a highly successful harness company, has extensive experience as a buyer and seller.

Give us a call to ask us a question that's been on your mind ... and make it a tough one.

Phone (913) 660 8039 or Email lms@blvcapital.com



Blue Valley Capital llc
Merger & Acquisition Services

BRAIDERS WANTED

ALL SIZES, TYPES, OR QUANTITIES.
ANY CONDITION

Call: Tony Ross, Hamilton Products
Voice: 607-674-2030
Fax: 607-674-9367
E-mail: t_ross@iwgbwd.com

SALES REPRESENTATIVE AVAILABLE
FOR WIRE HARNESS / CABLE ASSEMBLY

Well established "hands on" personable individual with a very strong industry knowledge and proven experienced professional contract Sales/ Marketing Representative for; Electrical Wire Harness, Electronic Cable Assembly along with Value Added product applications. My objective is seeking a long term business relationship with your organization that is presently challenged with future additional sales growth in your company's new business development efforts within the various marketplaces.

Please submit your company's interest of requirements, whereby we can mutually explore and strategies these great business opportunities confidentially to:

Wiring Harness News
PO Box 669
Schererville, IN 46375
Attn: Classified Ad #13263

Serving the Electric Wire and Cable Processor

WIRING HARNESS NEWS

Voice of the Industry

WWW.WIRINGHARNESSNEWS.COM

ONLINE & PRINT

➔ ONLY publication dedicated to Wiring Harness Industry

➔ Impactful articles on process improvement, standards, industry trends, and more

➔ New product updates

➔ OEM's, Tier 1&2 Manufacturers

CLASSIFIEDS

Quick Change Wire Straighteners



Available now at:

J2XSYSTEMS.COM

CASH FOR SCRAP WIRE & CABLE

Chicago Surplus & Recycling Inc
262-862-2517

PO Box 161 • 11304 260th Ave • Trevor, WI 53179-0161

crimptools.com

"Specializing in Crimp Tool Needs"

Authorized Distributor For:

Pico Corp, Burndy, Rennsteig Tools,
Thomas and Betts, Sargent

Many Other Manufacturers:

Amp/Tyco, Daniels, Astro, Raychem, Kings,
Molex, Panduit, and many more

Stocking: Same Day Shipping

AMP Hand Tools 1000's
Hydraulic Crimpers/Crimp Heads and Dies
Pneumatic Crimpers
Hand Crimp Tools & Positioners
Install & Removal Tools
Raychem Heating Tools AA400, IR550, IR1759

**ALWAYS LOOKING TO
BUY EXCESS INVENTORY**

Dakota Electronics Inc.

512-852-8119

sales@crimptools.com

RLO - Consulting

for the Wire Harness Industry

- Strategic Market Planning
- Lean Initiatives
- Overall Equipment Efficiency
- Standards & Qualifications
- Lead-Time Reduction
- Quality Improvement

With over 35 years in this industry, I can help you identify markets you're missing, streamline your facility, and show you how to get quality products out the door!

Randy Olson (503) 320-9040
rlo4242@gmail.com

"The Slicker Stripper, Quicker Shipper"

CMS TECHNOLOGY, INC.

"SPECIALIZING IN AMP/TYCO EQUIPMENT & PARTS"

FOR SALE

WIRE CRIMPING & WIRE PROCESSING EQUIPMENT--PARTS--APPLICATORS

AMP K PRESS PARTS--NEW-REMANUFACTURED-USED
NEW TOOLING FOR AMP/TYCO/MOLEX APPLICATORS
NEW PARTS FOR AMP/TYCO MACHINES
COMMON PARTS FOR AMP HDM APPLICATORS

WE WILL REPAIR YOUR APPLICATOR IN OUR SHOP

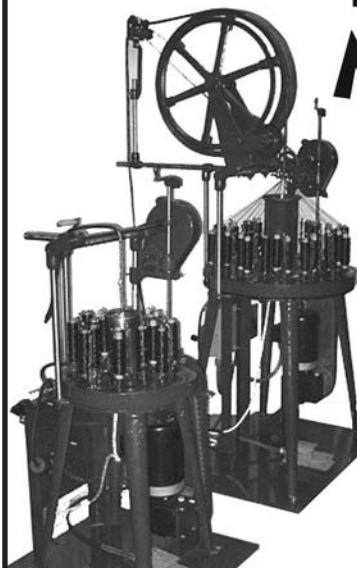
SEE OUR WEBSITE FOR COMPLETE LISTINGS & PHOTOS

www.cmstechnologyinc.com

jddavis@cmstechnologyinc.com

Phone: 336-853-7435

GLADDING BRAIDING MACHINES



We Build, Buy & Sell Harness Braiders

We also supply braider
bobbins wound with material.

Products and Services

- Braids; Wire and Textile
- Bobbin Winding
- Harness, Overbraiding, & Shielding
- Buss Wire

Visit www.gladdingbraid.com

(315) 653-7211

THE **BAT+T**ERY SHOW
NORTH AMERICA 2018



September 11-13, 2018 | Novi, MI , USA
Suburban Collection Showplace



365578_BAT18

The Battery Show Exhibition & Conference is a showcase of advanced battery technology for electric & hybrid vehicles, utility & renewable energy support, portable electronics, medical technology, military and telecommunications.



Use promo code **Wire** for free expo registration
thebatteryshow.com/wire

ADVERTISERS DIRECTORY

Aerospace Wire & Cable	31	FreePoint Technologies Inc.....	36-60	Odyssey Tool.....	49
American Hakko	33	FTZ	3	OES Inc.....	8
Anixter	32	Fuses Unlimited	6	PEI Genesis.....	27
Applitek Technologies Corp	39	Hamilton Products, Inc	29	Phoenix Contact.....	37
Artos Engineering Company.....	2	Harber Industrials Inc	53	Power & Signal Group.....	16
Atkins & Pearce	25	Heilind Electronics	10, 24, 42, 52, 56, 58	Pro-Line	22
Atlas	44	HellermannTyton	26	Schaefer Technologies LLC.....	5
Battery Show.....	65	Imada, Inc	23	Schaefer Megomat USA Inc.	50
Cablescon	48	Industrial Wire & Cable Corp.....	4	Schleuniger Inc	34-35
CAMI Research, Inc	4-59	INSCO/Insulation Supply	40	ShinMaywa	55
Carpenter Mfg. Co., Inc	45	James Monroe Wire	13	Spring Mills Manufacturing.....	44
Chief Supply Inc.	42	Judco Manufacturing Inc.	32-33	Stapla Ultrasonics	17-59
Cirris Systems Corp.....	7	Kingsley Machines.....	28	Strunk Connect Automated Solutions Inc.....	22
Commission Brokers Inc.....	21	Komax Wire	9, 68	TE Connectivity	67
Composite & Wire Machinery, Inc	3	Lakes Precision Inc	38	Techflex.....	54
Daniels Manufacturing Corp.....	47	LTL Tooling & Assembly	60	Tech-Sonic	46
Dynalab Test Systems	28	Mark-10.....	11	Telsonic Solutions.....	30
East Penn Manufacturing Co, Inc.	16	Mecalbi	8	Thermosleeve	18
ECC.....	18	Mecal by Starn	51	Tri Star Technologies	19-57
EIC Wipers.....	24	Mechtrix Corporation.....	43	TTI	21, 23, 25, 27, 29, 31
Electrical Products Sales.....	15	Mello Company Inc., The	3	Wardwell Braiding	41
Eraser Company, The.....	36	Mentor Graphics	14	Waytek, Inc.	15
Etco Inc.	12	Multi/Cable Corp.	45	White Products.....	46
Eubanks.....	20	Nu-Tech, US	6	Xuron Corp	38

Subscribe to Wiring Harness News

www.wiringharnessnews.com

The yearly subscription rate is:

Digital Only (World-Wide) = \$30

Print and Digital (US) = \$39

Print and Digital (Canada & Mexico) = \$54

Print and Digital (International) = \$64



UNIQA-PRO Single Crimp Wire Processor

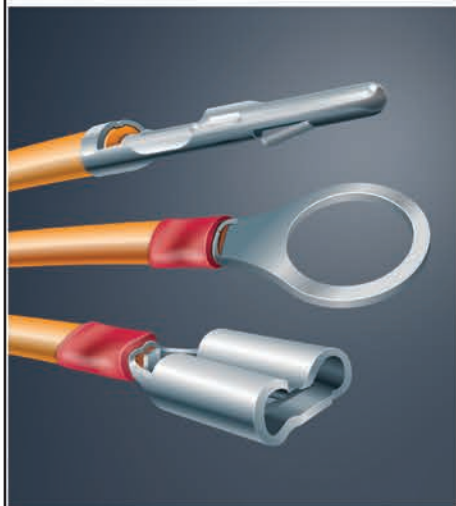
AT-300 Electric Benchtop Terminator

Insertion/Extraction Tools

OCEAN Applicators

Model G II Terminator

A FULL LINEUP BUILT TO BOOST YOUR PROFIT POTENTIAL



Ramp up efficiency with a full line of equipment designed to enhance productivity and satisfy your budgetary needs. From our highly affordable AT-300 electric benchtop terminator and reliable, semi-automatic model G II terminator, to the versatile, fully-automated UNIQA-PRO single crimp wire processor, we have the right equipment for every stage of your business.

As the industry's only single ended wire processor, the UNIQA-PRO saves on labor costs by measuring, cutting, stripping both ends, and crimping one end of a wire lead—all in a single machine. With a 20% smaller footprint compared to typical double-ended lead makers, the UNIQA-PRO ramps up throughput approximately 4X more than standard wire prep and benchtop machines. Plus, a user-friendly PC control allows operators to easily monitor system performance.

To learn more about the right TE tooling for your needs, contact us at 717-810-2082 or ToolingSales@te.com

EVERY CONNECTION COUNTS

© 2016 TE Connectivity Ltd. family of companies. All Rights Reserved TE Connectivity, TE connectivity (logo) and OCEAN are trademarks.



RAZOR-SHARP PRECISION



40
YEARS
CUTTING
EDGE

MIRA 340 wire stripper

The programmable Mira 340 is designed for universal use while maintaining maximum precision.

It is perfect for processing wires and insulation material with demanding requirements. The Mira 340 is fitted with a rotary head with 4X-blades and offers unique functions designed to reduce production time and increase quality. Thanks to sequential processing, multi-conductor cables and multi-layer insulation material can be processed quickly, thereby saving time and increasing productivity.

komax
komaxwire.com