The Cartines

- South Star Corporation
- STJ 600 Volt Cable
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- The Sound of Quality
- Classified Ads Help Wanted, Excess Inventory & Used Machinery



South Star Corp

Growing, profitable, and progressive

By Fred Noer

"I love what I do. I enjoy coming to work every day."

Based on those words by South Star Corp. owner and president Lisa Peters, you probably can imagine what kind of company she has – growing, profitable, progressive, free of debt and certified by ISO. Those attributes mean her firm is an outstanding place to work, so employee turnover is low and quality is high.

One more characteristic about Peters aligns her with her company – respect. "We treat everybody with respect," she said. "I've been very fortunate because we have good employees who do quali-

By

Pressmaster

quantity and quality of goods for trade.

According to the seventeenth century

economist Nicholas Barbon, "The quali-

ties of wares are known by their colour,

sound, smell, taste, make, or shape; [and]

every man having a good opinion of his

own faculties, it is hard to find a judge to

determine which is best." (Barbon,

1690). Hence, in Barbon's view, quality

is considered to be subjective and expe-

riential to the beholder of the goods.

n the pre-industrial era, the char-

acteristics defining an economic

transaction included both the

The Sound of Quality

ty work. We bend over backwards to please our customers."

South Star Corp. (SSC) manufactures wiring harnesses, control cabinets, cable assemblies and instrument panels. The products are used in buses, semi trucks, transformers in power substations and heavy-duty equipment such as peanut combines and air-conditioning units.

The firm, which has \$3 million in annual sales, is located in Elliston, Va., a village of 900 residents approximately 15 miles southwest of Roanoke. The SSC facility measures 25,000 square feet and was constructed new in 1998 specifically for SSC.

"We really like it here in Montgomery County because there are good people who really opened their arms to us,"



Melissa Taylor, Janice Caswell and Lisa Peters reviewing drawings.

Peters said. "They wanted our business. The employee base in the county has good, capable people."

Constructing the building is one of several highlights in SSC history. The company was started in 1976 by Peters' parents, Bob and Roma Stverak, in a two-car garage in Salem, Va. According to Peters, her father had the expertise, but her mother had the motivation.

"It was Mom's idea to do this," Peter said about her parents, both of whom are deceased. "She urged Dad to strike

out on his own. She was the driving force who said, 'Let's take the risk.'"

Bob Stverak, 45 years old at the time, had spent most of his career as an engineer at General Motors in Michigan and Chicago. Roma Stverak was 43 and had come to the United States from Lithuania at age 13 with her parents. Her background was in banking and accounting.

In that Salem garage, which housed

_ Continued on page 42

STJ 600 Volt Cable

STJ cable is a popular 600 volt high-performance, high-temperature wire that can withstand heat up to 200°C. It is the commercial equivalent of a M27500 or NEMA WC 27500 Type RC-06 wire. STJ cable is constructed to withstand the hazards of harsh applications, such as those encountered in the aerospace industry. This cable features impressive physical and electrical properties due to its strong construction created with high-quality, high-performance materials.

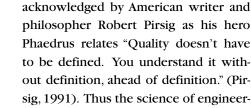
At Allied Wire & Cable, STJ is manufactured and tested on-site at its Collegeville, PA Headquarters, so no one understands the process of building this cable better. This article will explore the manufacturing process, the construction of the cable, cable testing, and custom STJ cable options.

STJ Cable Manufacturing

Standard STJ cables start with HP3 Type E (previously M16878/4) inners. The conductors are stranded silver-plated copper. The number and size of conductors vary, but most manufacturers offer a maximum of four to five, ranging in size from 26 AWG to 10 AWG. Silver-plated copper is used for its wide operating temperature range and its excellent conductivity.

The insulation of the conductors is made of extruded Polytetrafluoroethylene (PTFE, popularly referred to by its Dupont brand name, Teflon). PTFE is commonly used in high-performance cables for its great physical and dielec-

_Continued on page 16



This concept of quality was further

ing, technology, and manufacturing became important elements in providing quality goods.

Ownership and accountability to the

Ownership and accountability to the quality of goods gave birth to the trademark, a symbol exclusively identified with the commercial source or origin of the product. These marks have become

_____Continued on page 20



STJ Cable is manufactured by Allied Wire & Cable at its Collegeville, Pennsylvania headquarters.



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South Star Corp

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The Sound of Quaity

A good quality hand crimp tool does not automatically result in a good quality crimp.

STJ 600 Volt Cable

STJ cable is constructed to withstand the hazards of harsh applications such as those encountered in the aerospace industry.

The Challenge of the Decades

Paul Hogendoorn reminds us that every decade has been marked by significant changes and challenges.

News Plugs

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

Wire Wisdom

This Wire Wisdom will examine how resistance affects wire and cable.

Classified

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2010 Production Schedule

<u>Issue</u>	<u>Reservations Due Date</u>	<u>Materials Due Date</u>
March/April 2012	February 3, 2012	February 10, 2012
May June 2012	April 6, 2012	April 13, 2012
July/August 2012	June 1, 2012	June 8, 2012
September/October 2012	August 3, 2012	August 10, 2012
November/December 2012	October 5, 2012	October 12, 2012
January/February 2013	December 7, 2012	December 14, 2012

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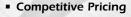


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The Challenge of the Decades

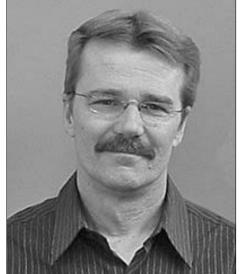
By Paul Hogendoorn

times, but, that does not give us the excuse for believing that these times are more challenging or difficult, than any other time in the last century.

The first decade saw the introduction of the automobile and the invention of the airplane. It was the birth of modern transportation devices that would expand our horizons and shrink our worlds. With modern manufacturing methods reducing costs and the emergence of the Sears Roebuck and Eaton's catalogues, it was considered the first decade of materialism and consumerism.

The next decade was mixed with optimism and tension; the rise of many great industrial companies, the founding of labour unions, a new start for a wave of new immigrants - plus all the stresses and challenges associated with all of these. And most significantly, there was WWI, the "war to end all wars".

The "Roaring 20's" introduced the world to mass production, skyscrapers, and buying on credit - three things that still mark our world today. The 30's brought with it "the great depression", with memories and values that continue



Paul Hogendoorn

to resonate through the stories of our grandparents.

The Forties brought World War II, and the Fifties were the "happy days" - the birth of the baby boomer generation. The Sixties was the "decade of love", hippies, the Viet Nam war, and a young generation that challenged the social order of the day.

In the Seventies, the maturing voice of that young generation made a lasting impact on society. Space exploration seemed to fuel the optimism that "the sky indeed was the limit". The Eighties are often described as "the 'me' generation"; a time when personal wealth, per-

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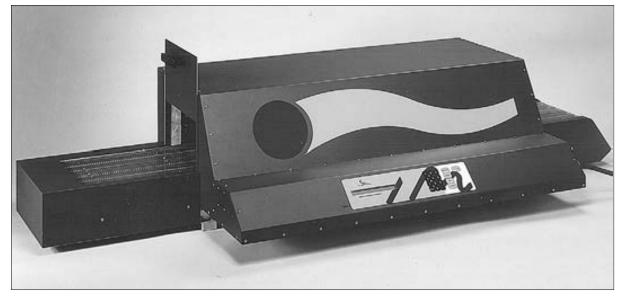
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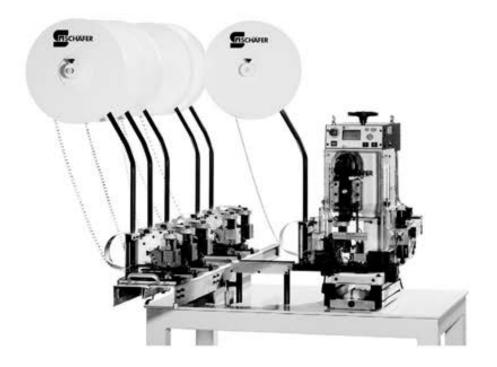








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USA

Challenge of the Decades

Continued from page 4 _

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sonal accomplishment, and personal satisfaction seemed to override the collective obiectives of the earlier decades. Cable television, MTV, video games, and even double digit inflation, are often connected as symptoms, or perhaps causes, of this shifting focus. The Nineteen Nineties were truly the electronic age, changing the way we communicate, do business, and even socialize with others.

The first decade of the new millennium has only recently ended and it's too earlier to give it a name, although some suggest "the 'I' generation". Whatever name given to it though should reflect the lost confidence of the decade; our security was shattered with the events of 911; our faith in technology challenged with the Columbia shuttle disaster; our faith in governments, churches and the economy in general, all seemed in a state of constant erosion.

So, he were are now in 2012, and once again, I started a column with the notion that we live in interesting, or changing, or challenging times. This is in fact true - the challenges before us now are no less significant that the challenge at the beginning of any other decade, they are just different. This decade is one where we sense a significant shift of world power, military might, and economic influence. In the nineties, we exported our industrial labour jobs to low cost regions, and along with it, a lot of the wealth creating capability of many people in our society. With decreasing opportunities for meaningful employment, but rapidly increasing electronic entertainment options, it is not difficult to understand the argument that

many in society are now "over stimulated but under engaged".

To me, the biggest challenge of this decade, and perhaps the answer to it as well, is engaging the cumulative strength of our nation and people. This is the same challenge that applies to our industries and companies. When people are fully engaged, in the pursuit of an outcome they have in common, great things are often achieved. However, when people are not engaged, or only somewhat engaged, and when the objective does not collect and polarize their efforts, very little is achieved.

Engaging people, whether in companies or in society, requires a compelling vision that properly addresses the challenges of the day and points steadfastly to a desired outcome, and then demonstrating values that reinforce that vision. In other words, building faith that what you are doing today will help achieve what you hope to achieve tomorrow. Uncertainty always brings with it an element of fear, but faith and hope have proven to be stronger motivators than fear.

Every decade has been marked by significant changes and challenges, but every decade also has yielded enduring and prosperous results. We can take many lessons from the past, but we must be willing to chart new courses for tomorrow, and the courses need to take into account the challenges we face today. In my opinion, the biggest challenge of this decade is engaging, and re-engaging, our people.

Paul Hogendoorn is a founding member and past-chair of the London Region Manufacturing Council. He can be reached at bogendoorn.paul@gmail.com



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IEWC acquires DAMSA Aguascalientes

IEWC Mexico has acquired DAMSA, a first class distributor of wire management products that has operated from its facilities in the state of Queretaro, Mexico since 1983. The DAMSA business systems are in the process of transitioning to IEWC's existing warehouse and distribution facilities operated in Aguascalientes and Monterrey. The integration will continue through year-end 2011

and is targeted to be complete during the first quarter of next year. DAMSA's Managing Partner, Alejandro Mayorga has elected to join IEWC Mexico as Executive Sales Coordinator for Wire Management **Products** (WMP) and will report to IEWC Mexico President, Ricardo Garcia. Mr. Mayorga states, "I look forward to the opportunity to help integrate the name brand products and services offered by DAMSA into IEWC's business model and to help expand the offering into new geographies." Many of DAMSA's sales executives will also be making the transition to IEWC Mexico. IEWC Mexico President, Ricardo Garcia suggests, "DAMSA has been an excellent supplier of several top-line wire management products to its customers for several decades and I am confident acquisition strengthen both the service offering and the productline offering that IEWC has to offer into the Mexican marketplace. I am excited about the opportunity to expand IEWC's business through the new partnerships that are born out of this acquisition."

As a result of this acquisition IEWC Mexico will be expanding its product offering to include several materials manufactured by TE Connectivity (formerly Tyco Electronics) and HellermannTyton.

IEWC's Mark Christie, Vice President - Wire Management Products shares, "IEWC is aggressively growing its product-line offering in all parts of the world. The acquisition of DAMSA represents IEWC's ongoing commitment to provide a

total interconnect solution to its OEM and Sub-Assembly customers operating in Mexico and NEWS PLUGS Latin America. IEWC's customers continue to find favor in its ability to bundle a complete package of connectors, terminals, tubing, sleeving, engineered fastening solutions and identification products." IEWC Mexico represents a major trading area for IEWC. In addition to its local headquarters in Aguascalientes, IEWC Mexico also operates a distribution center in Monterrey. Together these two locations help to round out IEWC's global network of 16 facilities operating across 4 continents and 7 countries. For more information about IEWC's business activities in Mexico, please contact Ricardo Garcia, President, IEWC Mexico at +52-449-922-1200.

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Continued on page 10



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

Conductor Resistance

The Wire Wisdom "Conductors - The Electron Superhighway" discussed different size conductors and the reasons for their existence. One of the principal reasons for having different size conductors is due to resistance. Resistance is defined as the opposition to the flow of electrical current through a conductor. It's important to point out that conductivity and resistivity (the property that determines final resistance) are inversely proportional. The more conductive something is, the less resistance it will have. This Wire Wisdom will examine how resistance affects wire and cable.

All objects have resistance

The best conductors in the world, excluding superconductors, have some resistance. Even though most people believe gold is the best conductor because of its common use in high-end consumer products, it is actually silver (gold is used on these products because it does not corrode easily and can be left untreated on a shelf for months or years). Electricity can flow through nonmetals as well (e.g., wood, plastic, rubber and glass), but resistance is much lower in metals such as silver and gold. Even though gold and silver have low resistances, they are too expensive in most cases to be applied in any form other than plating.

Copper is the most common conductor

In the late 1700s, copper was found to be a more cost-effective option than silver. Its low resistance, wide availability and relative low cost launched it to the top of the preferred conductor charts. The amount of copper products consumed in the USA last year could make a 12 AWG wire long enough to make 140 round trips to the moon.1

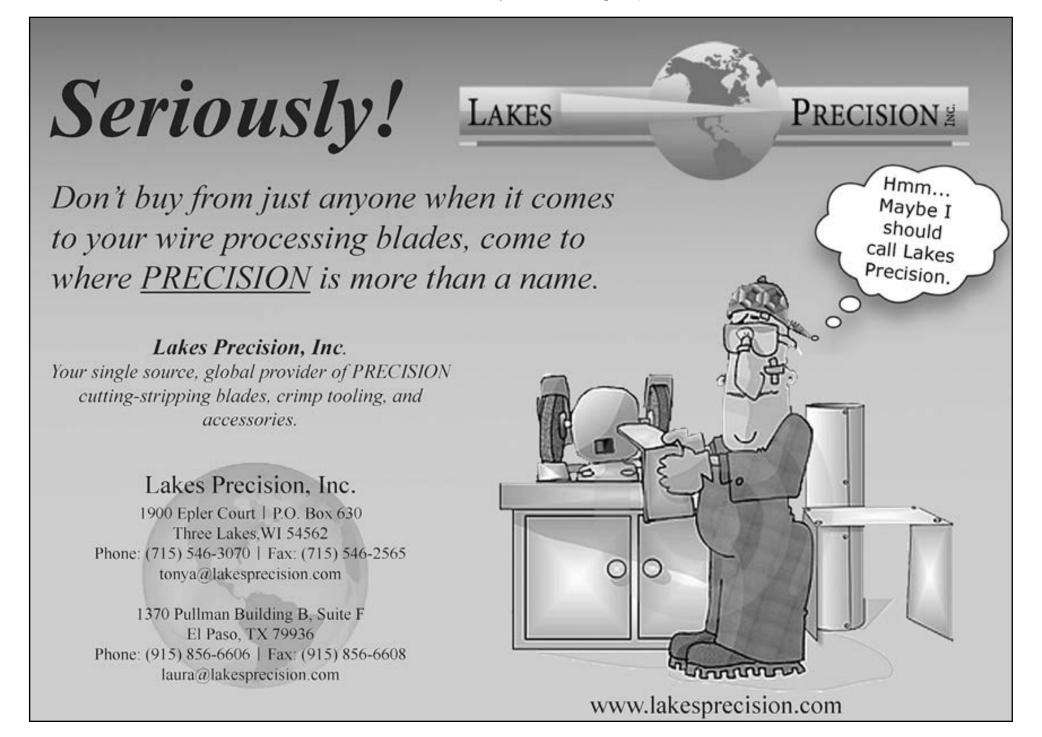
Aluminum

Aluminum is another widely used material to conduct electricity. With conductivity 62 percent of copper, it has a slightly higher resistance than gold but with a relatively low weight, given its level of resistance. It is also cheaper than copper: it is currently less than copper on a pound-for-pound basis. However, more conductor volume is required than copper, which means it is not as ideal for small applications with space constraints.

How does resistance affect your product?

Resistance is the opposition to the flow of electrical current, more specifically, nonvarying current (i.e., direct current(DC)). Impedance is the opposition to the flow of varying current (i.e., alternating current (AC)). These two are sometimes used interchangeably by the novice, and for many applications, they have the same results. In fact, they share a common unit: the ohm.

Because ohms represent the amount of



resistance a wire or cable will have, it is generally desired to keep the number of ohms as low as possible. The primary reason for this is efficiency. In most applications, a lower resistance means less power is converted to heat and lost to the surrounding environment and more of the supplied power gets to its intended destination. It also means that the wire and cable will run cooler and the power source can be smaller for a given load. Because heat can cause catastrophic failure or shorten the life of a wire or cable, it's good to minimize the amount of heat generated by resistance in the wire. Because electrical power is generally expensive to generate, in renewable energy applications, by portable generators or by your alternator, it's always desirable to optimize the conservation of power in the conduc-

How do I minimize resistance?

Other than choosing an efficient material, such as copper, there are a couple of simple things that can be done to reduce the resistance of a conductor. Conductors have lower resistance at lower temperatures. Keeping a conductor cool will help keep the resistance lower and reduce the amount of power lost to conductor heating. Installing a conductor in location with cooling airflow will help make it more efficient because it'll keep the resistance lower (it will also help prevent premature aging of the insulation and jacket materials).

The simpler approach yet might be to simply choose a larger conductor. In

applications where the product will be used continuously, the larger conductor can often pay for itself. The payback period for the increase in cost of a larger conductor can be as short as three months under the right circumstances.2 The larger conductor will have a lower resistance due to the increased volume of conductive material. Because resistance is determined by the material and the material's volume resistivity (resistance per unit volume), the more volume of material you have, the lower the resistance will be. Think of it like an interstate highway: the more lanes you have, the less resistance you will have at rush hour.

Resistance is an important component of a wire or cable's electrical characteristics. Resistance values for common conductor sizes are published in a wide variety of industry literature, including the Anixter Technical Handbook. These values are typically based on 20° C and will be different at different temperatures.

Note: resistance also affects the ampacity and voltage-drop of a conductor as well. Those topics are discussed in more specific detail in other Wire Wisdoms.

- ¹ Copper Facts. Electrical. Copper Development Association. Web 20 Dec. 2011. http://www.copper.org/education/c-facts/c-electrical.html
- ² One Wire Size Up Means Big Savings. Copper Development Association. Web. 19 Dec. 2011. http://www.copper.org/applications/electrical/engergy/onesizeup.html









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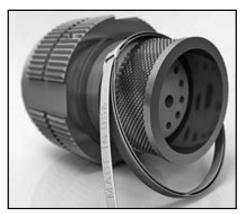
NEWS PLUGS continued



Continued from page 7 _

transportation. Any situation where space is limited and/or weight is an issue, these connectors will assist in conforming to those constraints. This style of connector is a cost effective solution by removing the need for a backshell on the connector and fewer parts means less cost.

Spacecraft has been building and distributing electrical connectors for nearly



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For more information, please contact Spacecraft Components Corp. at 702-851-7600, www.spacecraft.com, techinfo@ spacecraft.com or salesinfo@space craft.com, 3040 Clayton Street, North Las Vegas, NV 89032.

Breyden Products Acquires Saylor Products

Breyden Products, Inc. of Columbia City, IN has purchased Saylor Products Corp of Grand Rapids, OH. Breyden manufactures a complete line of Mil spec lacing tapes and cords, tapes and overbraiding yarns used in the wire harnessing industry, and lacing tapes, cords, and ropes used in the manufacture of electrical motors and transformers. Breyden has achieved tremendous growth over the past five years, taking advantage of a strong distributor base and the acquisition of Gudebrod Inc., a competitor based in Pottstown, PA.

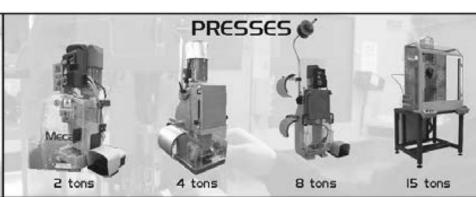
"Our market portfolio focuses on wire harnessing products, sales of which are driven by military and transportation expenditures, and electrical apparatus products, which are driven by housing development and capital equipment purchases," says Michael Zuber, Breyden's VP of Sales, "Our recent acquisitions have broadened our product base and have proven to be a natural fit with our existing distributors."

Founded by the three Saylor brothers in 1901, Saylor Products has a long history of innovation and success. The manufacturer started as a venture to develop a strong, versatile insulation for residential wiring, but soon expanded to meeting similar needs for a range of diverse industries, including the automotive industry.

Saylor Products is unique among manufacturers in its use of textile looms to produce a tubular material, which differs from tradition sleeving by maintaining its tubular shape when weight is applied. As







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Circular Ioom from Saylor Products

materials have improved, Saylor's loomed textiles have become nearly crush-proof, providing both protection and flexibility. Customers that prefer the look and feel of the old materials will still be able to purchase products manufactured on the classic loom.

"The acquisition by Breyden will allow Saylor to improve on its foundation and take the company in a new direction," says Saylor GM Greg Westhoven, "Saylor's products and experience complement Breyden's focus on the wire harnessing industry. Our two product lines combined will allow current and future customers a fuller range of choices for their wire protection needs."

Saylor's 30,000 square foot manufacturing facility in Grand Rapids, OH will continue operation with all current employees. For further information visit www.saylorproducts.com

Good judgment comes from experience, and a lot of that comes from bad judgment.

~ Will Rogers



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- Multiple communication interfaces including USB, Ethernet or Parallel.
- Easier material loading design for 15 second change-outs.

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- Marks can be handled immediately after printing and meet print adherence requirements of SAE-AS5942.
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- Continuous materials design dramatically reduces waste.
- High tensile strength aluminum frame can components provide years of use in high volume operations.
- Sumitomo Electric Interconnect Products, Inc. backs our product with 1 year full service.

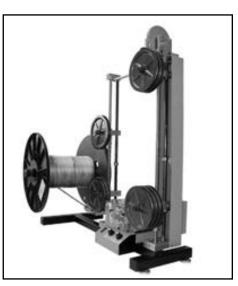
For a demonstration of the SumiMark IV 300 DPI Marking System, contact your Sumitomo Electric Interconnect Products, Inc. distributor or call us at 760.689.8947 or email kbland@seipusa.com

NEWS PLUGS continued



Model APF100 Auto Prefeeder from **Eraser Company**

Eraser's Model APF100 Auto Prefeeder and Wire Payout machine is designed for wire sizes .030" -.312"OD (.762mmø -7.9mmø) dependent upon material condition. The unit can be used with any Eraser brand wire and tubing cutter or cut & strip machine. Model APF 100 prevents material overruns when used with intermittent feed machines. The maximum drive speed is 100 inches per second. Free-standing and weighing 55lbs (24.95Kg), the unit will accommodate reels up to 18" (457.2mm) in diameter and 12" (304.8 mm) in width.



Eraser Model APF100 Auto Prefeeder and Wire Payout Machine

The Eraser Company, Inc., celebrating its 100th anniversary in business, manufactures a wide range of industrial products including wire, cable and tubing cutters, wire and cable strippers, wire twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and fybRglass® erasers. The company is ISO 9001:2008 certified. The company offers Free E.S.P. (Eraser Sample Program). Send a 10-20 foot sample of your material and Eraser will recommend the best solution for your processing needs from its line of more than 200 products. For unique processing needs, Eraser will custom design a solution for you. For more information on Eraser's entire product line visit www.eraser.com or call 315-454-3237.

TE Connectivity Expands VPX Line with VITA 67 RF Modules

New VITA 67 RF modules from TE Connectivity (TE) enhance the ability to add RF capabilities in VITA 46 VPX board-toboard connections. The modules, available with four or eight positions, accept SMPM coaxial contacts available for a wide range of flexible and semi-rigid cable on the daughtercard and preloaded board-mount SMPM contacts on the backplane. The modular design allows application-specific configurations with high contact counts in VPX systems. The RF modules are compatible with VITA 65 OpenVPX specification, which defines standard profiles for various configurations at the chassis, backplane, slot, and module levels.

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TR201 Series

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ShinMay

TR202 Series

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Stylish body with white and stainless steel color. Single end twisting/tinning and crimping can be changeable with quick change (TR202S). Lead-free tinning can be also processed.

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

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Designed for high-reliability, high-density aerospace and defense applications, VITA 67 modules meet the vibration, environmental, and corrosion resistance requirements of VITA 47. The modules provide a convenient and standardized microwave interface to meet the needs of C4ISR applications such as ground base stations and communication systems, land and sea anti-ballistic signal processing, avionics and ground-based radar systems, and electronic countermeasures.

Contacts are on a 0.240-inch centerline to maintain high channel-to-channel isolation, while jacks are float-mounted to maintain a positive RF ground. The modules offer a contact float of 0.079 inch, radial misalignment of ± 0.010 inch, and a contact antistubbing feature to allow reliable blindmating.

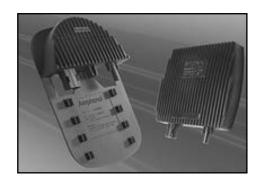
VITA 67 modules are part of the growing family of VPX modules from TE, including VITA 46 MULTIGIG RT2 connectors, VITA 62 power modules, and VITA 66 optical modules. The RF modules can also be used with other emerging high-speed connector systems such as the Fortis Zd system for next-generation VITA 72 applications.

For more information on TE's VITA 67 RF modules, contact the Product Information Center at (800) 522-6752. Follow us on Twitter for all the latest product news @TEConnectivity, and on Facebook, TEConnectivity.

Fortis Zd, MULTIGIG, TE Connectivity and the TE Connectivity (logo) are trademarks of the TE Connectivity Ltd. family of companies.

New Plug-and-Play Junction Box from Amphenol Provides Versatility, Modularity

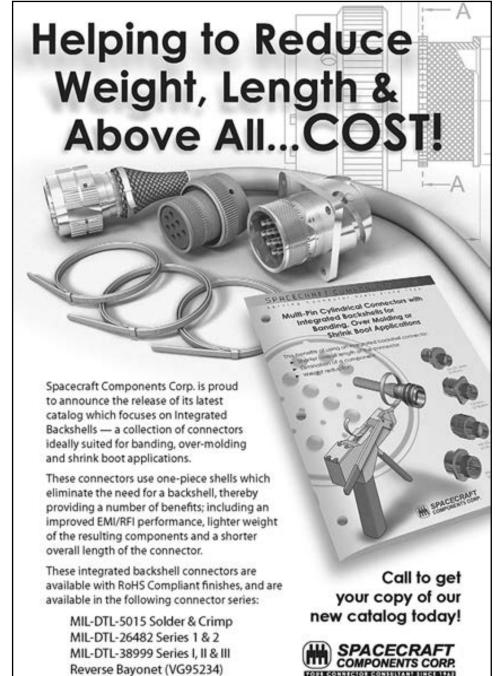
Amphenol Industrial, a global leader in interconnect systems, introduces the versatile and economical ModLink junction box. This modular plug-and-play system allows manufacturers, distributors, installers and owners/operators to insert 'smart' modules as needed at any time onto the back of solar panels. Apart from the smart module, no additional components are needed to upgrade the system and no components need to be discarded.



ModLink Junction Box from Amphenol Industrial

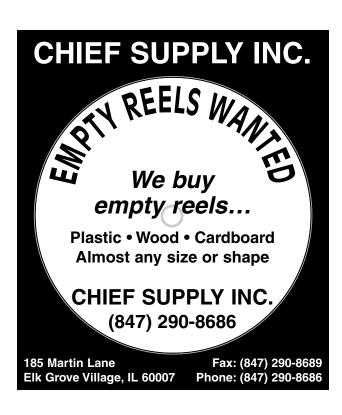
Designed to allow PV module manufacturers to introduce smart junction box technology at no additional cost or logistical effort, the ModLink junction box base has built-in industry standard connections that allow a direct connection between panels using jumper cables available in various standard lengths. The ModLink base can accept a range of smart modules such as DC/DC converters/optimizers,

__Continued on page 14



For more information, go to





NEWS PLUGS continued

Continued from page 13 _

micro-inverters or monitoring modules.

Comprised of a base unit that is thermally separated, yet firmly attached to the back sheet of the PV panel, Amphenol's ModLink base includes protective diodes and built-in connectors ready to be used as a basic junction box. Upgrades can be made at any time to the box by simply disconnecting the connectors, snapping in the smart module and reconnecting the connectors. Similarly, smart modules can be exchanged or removed at any time

with minimal interruption to solar installation.

The ModLink modular junction box provides an ideal solution for all solar partners. It allows panel OEMs the ability to offer brand neutral smart technology at minimal cost, distributors the ability to simplify stock while providing a wide variety of options to customers, installers a fast and simple installation process utilizing the latest technology and owners and operators the ability to upgrade panels at anytime with the latest technology available.

The cost of the base unit is comparable with a conventional junction box and is available with customized options to fit a variety of applications. For more information, visit www.amphenol-industrial.com or e-mail energy@amphenol-aio.com

Free Process Defect Clinic at IPC APEX EXPO 2012

Manufacturing and quality engineers looking for solutions to process challenges will find answers at the NPL Process Defect Database Clinic at IPC APEX EXPO®, February 28-March 1, 2012, at the San Diego Convention Center. Organized by IPC and the National Physical Laboratory (NPL), the free clinic will be held in the exhibit hall to assist event attendees with assembly and soldering process problems, RoHS compliance issues, solderability concerns, field failures and other process-related issues. IPC APEX EXPO registrants may bring board assemblies for examination or process problems for discussion and walk away with solutions.

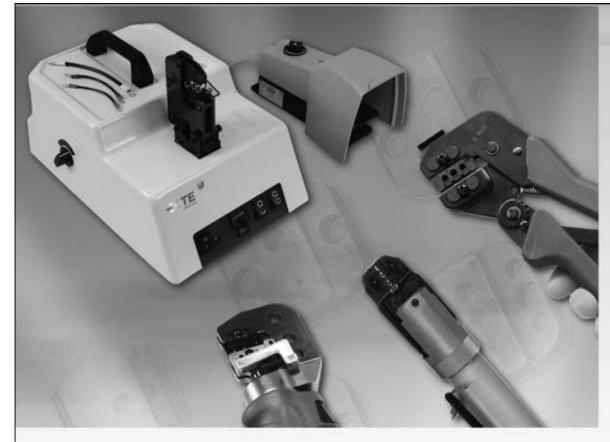
With the assistance of inspection equipment, the NPL Clinic will assist attendees in understanding their

process problems and offer guidance and suggested solutions. "Defects are too often erroneously attributed to a particular process," says industry guru Bob Willis. "If the true cause of failure is not determined, the defect will return. If you can turn a defect on and off — then voilà — you know you've found the real culprit."

New this year, mini seminars led by Willis and NPL staff will be held in the booth. "How to ..." sessions on conducting dye and pry on area array packages, testing boards for outgassing, testing component solderability, and monitoring PCB solderability in production will augment the learning experience; and in many cases, experts will reveal how these can be done for little or no cost.

Willis and Christopher Hunt, Ph.D., principal research scientist, NPL, will also present a free BUZZ session in the afternoon of February 28. Tin Whiskers, Delamination, Copper Dissolution, CAF, Coating Adhesion will cover some of the most interesting and innovative research work conducted at NPL in the last couple of years and participants will receive copies of any of the NPL research reports free of charge.

Gearing up for IPC APEX EXPO, Willis will host a free one-hour webinar, Soldering and Assembly Defects -Causes and Cures, on January 12, 2012 at 12:00 pm Central time. He will share manufacturing challenges, helpful solutions and ways to investigate root causes, including how to use the NPL process defect database to solve process problems 24/7. To register, visit www.ipc.org/defectswebinar.



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- Hand tools combine ease of use with reliability and precision.
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For all your application tooling needs, contact Heilind Electronics or visit www.heilind.com/rpages/gatd

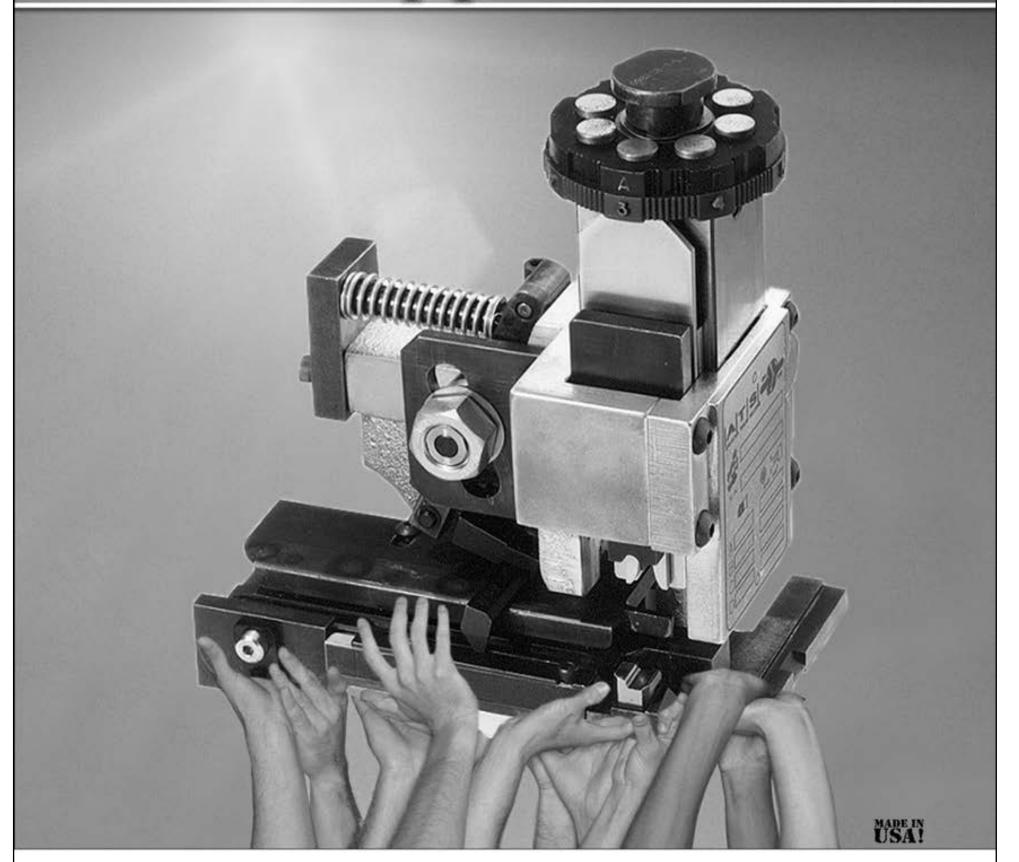


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STJ 600 Volt Cable

Continued from page 1 __

tric properties, which will be discussed further in the jacketing portion of the manufacturing process. The thickness of the applied insulation depends on the gauge of conductors used in the cable. Conductors follow the standard color code of 1: white, 2: black, 3: red, 4: green, 5: yellow, 6: blue.

Next, the cable is sent to the braider. Here, a round silver-plated copper braid shield is applied with a minimum of 85% coverage. The braid shield provides signal protection for the cable as well as additional mechanical strength. Nickelplated braid is also available.

Finally, the cable goes to the doubleheaded taper where a minimum of two contra helically wrapped PTFE tape layers are applied. Once the cable is wrapped, it goes to the oven to be heat sintered. This process is used to create high quality, rigid cables with uniform jacketing and great electrical properties. The PTFE tape jacket allows for the cable's impressive temperature range, and its resistance to acids, alkalis, moisture, solvents, fungus, and flame. Once the PTFE is sintered it also offers moderate abrasion resistance.

STJ Cable Testing

STJ cables produced by Allied undergo cable testing on-site.



The braider applies a silver-plated copper shield to standard STJ cable.

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The double-headed taper machine wraps the cable with at least two layers of PTFE tape.



Allied Wire and Cable tests its cable in-house. Here, the cable undergoes hipot testing.

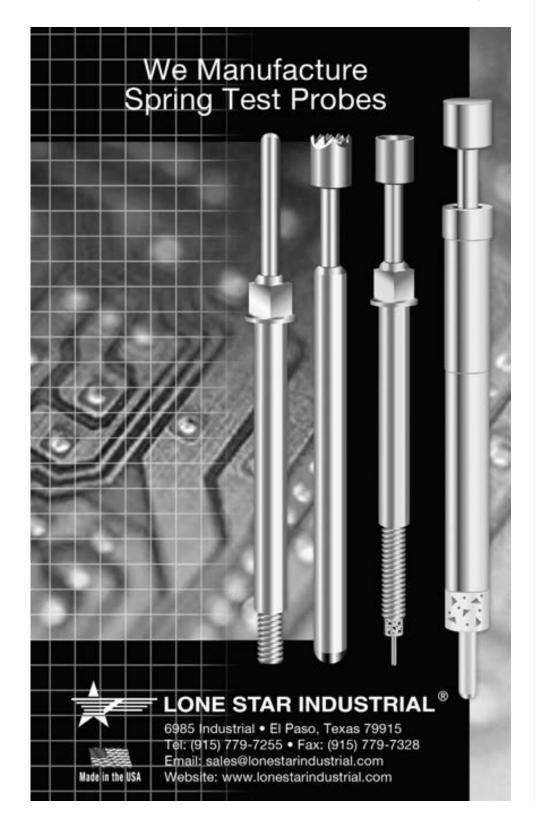
An important part of cable testing is the Hipot test, also known as the Dielectric Withstanding Voltage (DWV) test. In this test, electricity is applied to the cable, between its current-carrying conductors and its shielding, to make sure there are no faults with the cable's construction or performance. The voltage used for testing is much higher than the

rated voltage of the cable. As the electricity is sent through the cable, the hipot tester tracks the amount of leakage current (the current that flows through the cable's insulation). This test is used for several reasons. First, it tests the quality of the cable's insulation to ensure that it is sufficiently safe for use. It is also used to detect gaps between the currentcarrying conductors and the ground wire, which are potentially dangerous construction flaws. Many safety and standards organizations require this

Other testing for STJ cable includes freezing the cable and

heating the cable to extreme temperatures to test performance and durability. Cold bend testing is performed at -55°C. Heat aging tests reach 285°C. Environmental testing is important in determining the ability of the cable to withstand harsh environments.

___Continued on page 18





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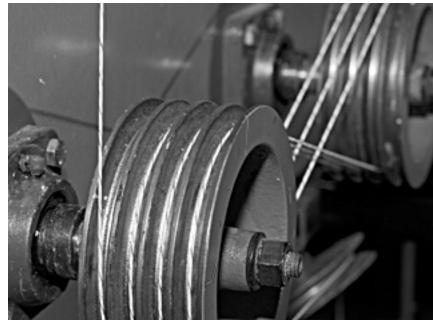
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STJ 600 Volt Cable



Cable may be striped for easy identification. Custom STJ can even be constructed with striped inners.

Continued from page 17 _____

Custom STJ Cables

Although many manufacturers only offer standard STJ cable options, Allied is known for its value-added and custom cable services, which carry over to its STJ cable products. Common custom options include changes to jacket color and color code. STJ can even be made with striped inners. The number of conductors may also be changed. While most manufacturers offer a maximum of four to five conductors, Allied has the ability to manufacture STJ cables with significantly more. The maximum number of conductors depends on the gauge size.

With custom-built cables, even the most basic elements of the cable's construction can be altered. While STJ cables commonly use HP3 Type E (M16878/4) cable inners, Type EE (M16878/5) or Type ET (M16878/6) inners may also be used if they are better suited to a particular application.

It is simple and easy for customers to receive the benefits of custom STI cable, thanks to on-site production and testing. Customers can purchase STJ cable that is built specifically to meet the needs of their application. Because Allied manufactures the cable itself, low order minimums are available at just 250 feet, and cable can be produced up to 25% faster than competitors. Generally, a custom STJ cable can be produced in just three to four weeks.

For more information on STJ cable, or to place an order with Allied, visit the AWC online catalog at http://www.awcwire.com.

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If you're manufacturing wire harnesses, rest assured Thermosleeve probably offers a tubing to meet your requirements. Our products are certified under the following standards: ROHS, AMS-DTL-23053/4/5, SAE-AS81531, MIL-STD-202 whether your primary focus is automotive, communications, construction, electrical, electronic, energy...Thermosleeve has got you covered.

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NEWS PLUGS continued



Zeus Launches German Language **Version of its Corporate Website**

Zeus, Inc., a global leader in material science and high performance polymer extrusions, announces the launch of offering its entire corporate website in German as part of its commitment to reach new markets and enhance accessibility to its product offerings worldwide.

The German translation is the latest show of global range by the company. Prior to this launch, Zeus already offered general company information on its site in German, French, Chinese, Spanish and Italian. It also

has a catalog available in several languages, international facilities and offices, bilingual representatives and modified customer support hours to better accommodate partners outside of the U.S.

"Offering our website in German is one of the ways we are enhancing our reach and convenience for our partners and prospective clients across the globe," said Alan Andrews, Senior Vice President of Global Sales and Marketing. "The ultimate goal is to provide world-class services and accessibility that is always innovating, improving and expanding."

Equipped with all the same enhancements as the English version, the new German Zeus website is available by clicking the language icon at the top right corner of the company's homepage.

The website continues to be a resource for comprehensive information on Zeus products as well as its analytical, research and development services.

Zeus, Inc. is headquartered in Orangeburg, SC USA. Zeus is a world leader in material science and the production of high performance polymer tubing used in demanding applications; operating multiple facilities in North America and internationally.

Zeus products and services are used by companies in medical, automotive, electrical, fluid handling, aerospace, and mechanical markets. For more information, visit www.zeusinc .com.

Amphenol's HelioLug First UL 2703 Certified Grounding **Component for Solar Installations**

Amphenol Industrial, a global leader in interconnect systems, introduces the HelioLug, the first grounding lug that meets the solar industry's specific UL 2703 certification. The new lug is used by solar integrators, installers and EPC firms for grounding solar modules in residential, com-



HelioLug UL 2703 Certified **Grounding Component for Solar Installations**

mercial and utility solar projects.

The affordable HelioLug is easy to install and simplifies grounding requirements. The included stainless steel mounting hardware, also UL 2703 certified, allows the lug to be used to ground the rack as well as the PV module. Each row of PV modules in an installation must have a ground wire attached to the rack. Other lugs require additional holes to be drilled or prevent the grounding of racks completely. The new HelioLug eliminates all these installation obstacles completely, lowering installation and maintenance costs.

Made from durable tin-plated copper that prevents galvanic corrosion and protects the copper from oxidizing, the HelioLug provides low contact resistance and high conduc-

_Continued on page 25

WIRE HARNESS ASSEMBLY STATIONS

Designed for the ergonomic assembly of wire harnesses

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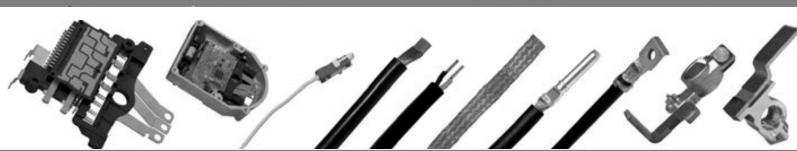


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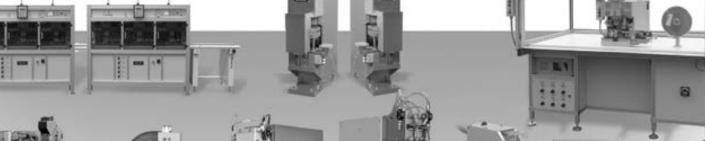


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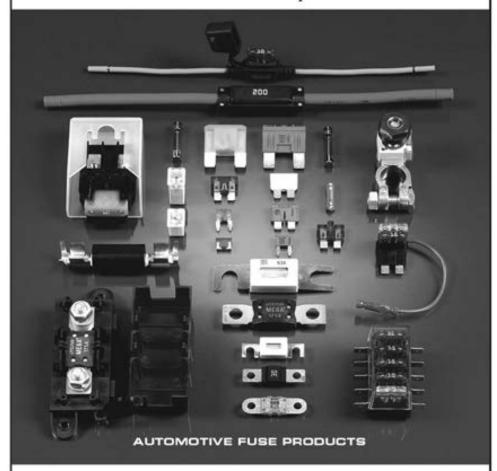
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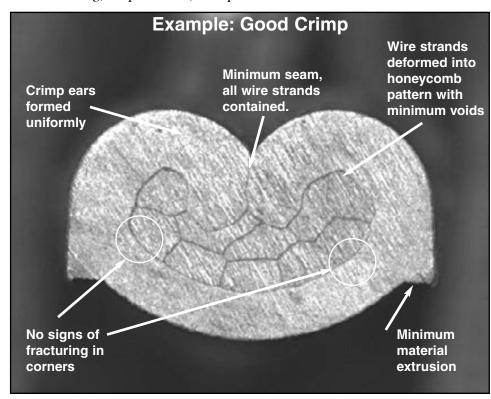
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The Sound of Quality

Continued from page 1

more than just mechanisms to trace origin however; they have become a source of pride for the registrant - in essence the first "mechanism" of quality assurance. Made in Sweden has become a phrase synonymous with quality. A strong culture of innovation propelled Sweden to the forefront of technological development, thanks in part to a rich supply of raw materials in combination with the pioneering inventions such as the ball bearing, the pacemaker, the zipper, and the adjustable wrench, just to name a few. Many Swedish companies have a long history of ambitious research and development programs; which seems to indicate their incredible thirst for knowledge. From the late 1800's (Ericsson) to today (Skype); Swedish engineering, innovation, and quality have saved our lives, reduced our fuel consumption, and improved our ability to communicate in a global world.

Continued on page 22









Crimping Applicators

Applitek and all of it's 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.

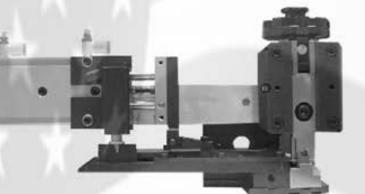


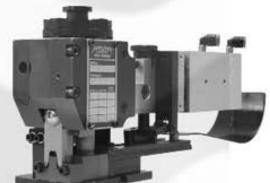


Model 1700

Model 2000

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

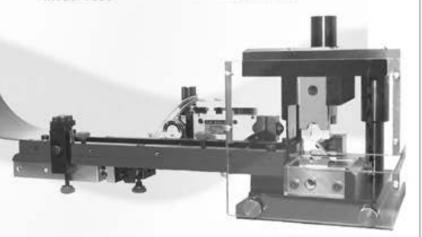




Model 1500

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. <u>It's our only business.</u>

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



The Sound of Quality

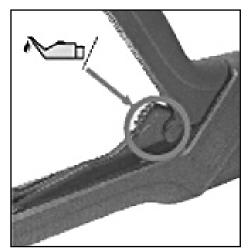
Continued from page 20 _

Pressmaster® tools have embraced those same Swedish cultures of innovation and quality for over 30 years, providing a strong and successful relationship with some of the world's leading connector manufacturers and distributors.

Characteristics for Obtaining Quality Crimps for Optimum Performance

A good quality hand crimp tool does not automatically result in a good quality crimp. Perhaps the most critical characteristic of a quality crimp is the design of the crimp tooling itself, specifically the crimper and anvil. Proper crimping involves deformation and flow of the metal surfaces of the electrical connector to the wire strands. Variations in connector design, raw material, thickness, and plating all play a vital role in developing the crimp die design in order to ensure consistent performance integrity with every crimp. With proper calculation of compression ratio and reduction of cross sectional area (a balanced distortion of the wire strands and the metal terminal), the optimum combination of tensile strength, mechanical stability, and electrical conductivity are achieved.

For this reason, the repeatability of the crimp tooling is crucial. A second characteristic of a good quality crimp



tool is a means to ensure proper and consistent crimp forming, regardless of operator strength, fatigue, or tool wear. A mechanism for ensuring dies are fully seated and the optimum crimp deformation has been achieved is the ratchet and pawl system. Designed for one direction only, the spring-loaded pawl presses against the "steps" of the ratchet wheel preventing backup of the tool handle until the full cycle of the crimping dies has been completed. Pressmaster® development engineers have spent many hours perfecting the ratchet system to ensure a high performance, consistent quality crimp. Internal components are precision machined to control tolerances, and surfaces are treated to reduce friction in the linkage. With

_Continued on page 24

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- Low Maintenance
- Long Life / Rugged Design

THEIRS 13 SECONDS



- Excessive noise and heat
- > Operator fatigue
- Inconsistent shrinking
- > No control
- Uses up to 1500 watts (always on)
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The Focus-Lite™, by Judco Manufacturing, Inc., is the solution to the outdated heat gun. You can say goodbye to the high labor cost, excessive heat, and inefficiency. The Focus-Lite™ reduces the time necessary to shrink most types of heat shrink tubing. It also improves the process control and overall quality of your shrink operation.

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

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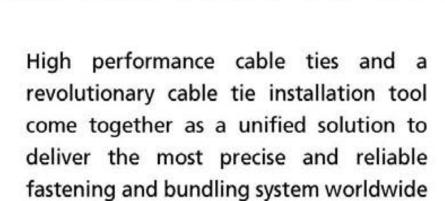
The Focus-Lite™ is equipped with an adjustable timer for repeatable shrinking, time after time. It also has a dimmer switch that controls the power for sensitive components. Choose from 1", 2.5", 8", & 15.5" models. Any length of shrink tube can be processed in each machine, with the shrink time the same for all lengths. The Focus-Lite™ will improve both the quality and consistency of your shrink operation. Visit our website at www.judco.net and Focus-in on the savings.

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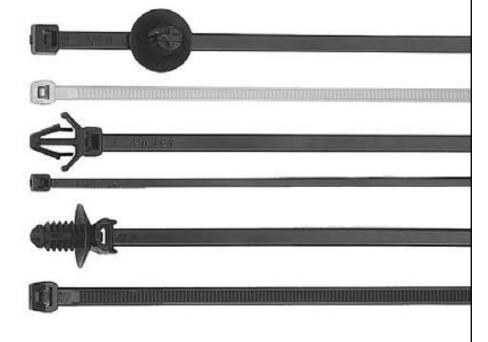
ERGONOMICS

HellermannTyton's EVO 7 offers the most ergonomic cable tie installation tool in the market. Period. Comfort and operability are combined in one revolutionary tool.

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At the heart of the EVO 7 lies patent-pending Tension/Lock/Cut (TLC) technology; the unbeatable ability to accurately and consistently cut a cable tie flush at the exact tension specified without any operator strain.

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HellermannTyton is globally recognized for manufacturing a full line of high quality cable ties and fastening systems. Manufactured in the USA, the EVO 7 cable tie tool and HellermannTyton's cable ties together produce bundling and fastening systems of unparalleled quality. Learn more about HellermannTyton at:

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The Sound of Quality

Continued from page 22_

every click of the ratchet, you hear the "sound of quality" in a Pressmaster® crimp tool. As an additional safety measure, the tooling is designed with an emergency ratchet release override feature as a method for clearing a jammed terminal or to readjust the terminal in the crimp nest prior to completing the crimp cycle.

Handle force, mechanical advantage, and ergonomics are also key characteristics of a good quality crimp tool. Apart from sight and hearing, the hand represents a very important means of contact with the environment, and contributes significantly to a person's ability to carry out daily tasks. Pressmaster® have developed a number of patented solutions in their tools that ensure efficiency, consistency, safety, and ease-of-use. Mechanical advantage is the ratio between the load (crimp force) and the effort (handle force) for any given lever. The lever design incorporated by Pressmaster® tools allows small efforts to overcome large loads. To ensure repeatability in the crimp, every tool is calibrated at the factory and set to a specific handle force to achieve proper crimp height requirements.



Low handle force, coupled with the optimum design features for ergonomics and comfort reduces the risk of workplace injuries and cumulative trauma disorders; while increasing overall productivity. Designing for ergonomics is more than "cosmetic styling." Ergonomic hand tool design considers both the mechanical performance of the

tool and its demands on the tool operator. A good quality crimp tool might include all of the key characteristics previously mentioned in this article; however if the operator becomes fatigued, the likelihood of producing consistent quality crimps is minimal. Pressmaster® crimp tools are designed with the optimum grip diameter for both men and women, as well as for either right-handed or lefthanded operation. The tools are light weight and designed with well balanced center-of-gravity to facilitate handling and reduce fatigue. The material selection and shape of the handles are designed to reduce the coefficients of friction and to distribute the forces evenly across the palm and fingers.

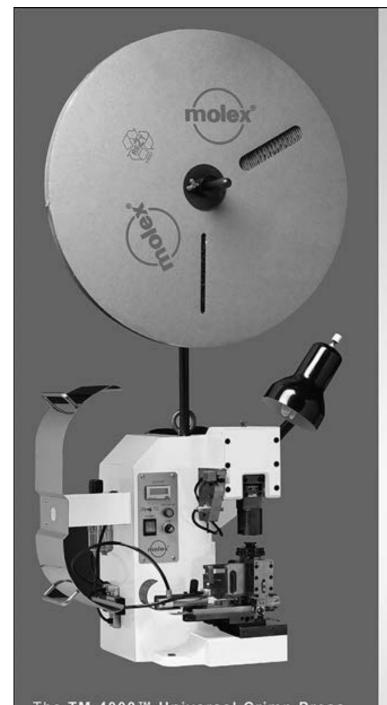
Maintaining the high engineering standards of most products Made in Sweden has been a long standing philosophy and culture of Pressmaster®. For our complete line of hand crimping and stripping tools offering a combination of quality, performance, ease-of-use, and cost effectiveness please visit website www.pressmaster.com.

References:

Barbon, Nicholas. "A Discourse of Trade", Political Economy Archives, 1690

Dooley, Kevin. "The Paradigms of Quality: The Evolution and Revolution in the History of the Discipline", Arizona State University, 2000

Pirsig, Robert. Lila. Bantam Books, 1991



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

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Features and Benefits of the TM-4000™ Universal Crimp Press Include:

- · Provides 3.5 tons (31 kN) of crimp force
- Accepts any Molex applicator and most industrystandard applicators
- Can be used with Molex Tape Module (64016-2000)
- Meets OSHA safety and noise requirements and is CE approved
- Two safety interlock switches attached to the guard prevent press from cycling if guard is open during operation

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

Features and Benefits of the Tape Terminal Crimp Module Include:

- Quick-change modular tooling accepts all existing ATP-201 and ATP-301 die sets
- Used in Molex TM-3000™ and TM-4000™ presses, which accept Molex applicators and most industry standard applicators
- Independent adjustment of insulation crimp height provides flexibility for various wire insulation thicknesses
- Quick tool changeover from die set to die set for increased productivity



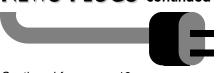
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NEWS PLUGS continued



Continued from page 19

tivity to make it the most reliable way to ground solar panels. Its open-face design allows simple, quick lay-in without breaking or cutting the conductor. An included star washer penetrates aluminum annodization of the module frame and racks, which is necessary for establishing grounding contact. The HelioLug can accommodate 4 -12 AWG bare copper wire. According to both UL and NEC requirements all solar modules must be grounded. UL 2703 is a new solar grounding specification that covers rack mounting systems and clamp devices intended for use with

photovoltaic module systems with a maximum system voltage of 1000 V. These requirements also ground/bonding paths, mechanical strength and suitability of materials.

For more information, visit www.amphenolindustrial.com or e-mail energy@amphenol-aio.com.

SEA Wire and Cable Announces Promotion of Marty Clark

SEA Wire & Cable, Inc., a leading Military/Aerospace Wire and Cable distributor, announces the promotion of Marty Clark to President and Chief Operating Officer (COO). Marty will be responsible for the strategic direction and daily operations for SEA.

"Through his leadership and vision as General Manager, Marty's ability, commitment and value have proven to be a key component in SEA's success over the years. Now Marty is providing that critical role in succession planning that is so important to any business and I have every confidence that Marty will continue to boost SEA to higher levels for years to come" said Bob Wills, CEO of SEA.

Marty Clark joined SEA in 1988 where he quickly advanced from an entry level warehouse position to Sales, IT management, and Operations management prior to becoming General Manager for the last seven years. He earned a BS in Accounting in 1992. Within the Huntsville community, Marty also serves as the Director of Coaching and General Manager for the most celebrated premier soccer club in North Alabama - the Huntsville Futbol Club.

SEA Wire and Cable, Inc. of Madison, Alabama was founded in 1970. For more than 41 years, SEA Wire and Cable, Inc. has been a full stocking supplier of military/aerospace wire, cable and related harnessing products. SEA is a provider of vendor managed inventory programs, logistical management, and value added services. SEA is also an ISO 9001:2000 and AS9100 Rev C certified company and registered with

SEA specializes in supplying wire, cable, tubing, termination sleeves, cable ties, EMI/RFI backshells, and other cable assemblies for the most demanding electronic applications. To provide fast service and to meet a wide range of client needs, the company currently stocks over 11,000 items and 50 million feet of wire in its modern 80,000-square-foot facility.

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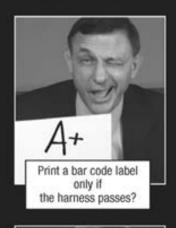
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NEWS PLUGS continued



Eraser Model L1 Bench Wire Stripper Provides Quick, Easy Strip

Eraser's Model L1 Bench Wire Stripper removes film insulations including enamel, Formvar, ML, armored poly-thermaleze, epoxy and more from round wires 29AWG to 13AWG. A high-speed rotating insert strips insulation from the surface of the wire. Close-up stripping is possible flush to a coil body or bobbin. Model L1 can also be used for other applications such as deflashing wires, cleaning legs of electronic components and cleaning pins on transformers and coils. The unit may also be used to clean round pins on transformers, wire wrap sockets, DIP sockets and relay sockets. The L1 can also remove oxidation, flashing, epoxy, and even contaminated solder.

The Eraser Company, Inc., celebrating its 100th anniversary in business, manufactures a wide range of industrial products including wire, cable and tubing cutters, wire and cable strippers, wire twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and fybRglass® erasers. The company is ISO



Eraser Model L1 Bench Wire Stripper

9001:2008 certified. The company offers Free E.S.P. (Eraser Sample Program). Send a 10-20 foot sample of your material and Eraser will recommend the best solution for your processing needs from its line of more than 200 products. For unique processing needs, Eraser will custom design a solution for you. For more information on Eraser's entire product line visit www.eraser.com or call 315-454-3237.

TE Connectivity Launches New Hermetically Sealed Contactor

The KILOVAC EV100 contactor from TE Connectivity (TE) offers hermetically sealed construction for safe operation in explosive or harsh environments.

Rated for 100 A at 600 Vdc, the contactor uses an inert gas in the contact chamber and an epoxysealed resin case to provide longterm reliability. Contacts will not oxidize or become contaminated during long periods of nonoperation. Isolation of 8 kVdc across the open contacts permits use for high-voltage isolation.

The compact package, available in a bottom-mount configuration occupying less than 4 cubic inches and weighing only 4.4 oz, is not position sensitive, which allows flexible application.

The contactor features a coil economizer to reduce power consumption, with a coil operating voltage range of 9 to 36 Vdc. Standard coil termination is 15-inch flying leads. Contact configuration is SPST-NO-DM (Form

Designed in accordance with AS 9100 requirements, EV100 contactors are suited for ground power applications in aerospace as well as industrial and commercial power distribution, circuit isolation, automotive battery switching, and backup.

Other applications include inverter control and battery switching in alternative energy applications such as wind and solar power.

For more information on TE's KILOVAC EV100 contactor, contact the Product Information Center at (800) 522-6752. Follow us on Twitter for all the latest product news @TEConnectivity, and on Facebook, TEConnectivity.

www.susolssolutions.com



New Level of Opportunities With SBA HUBZone Certification

esignation as a "HUB-Zone certified small business concern (SBC)" has been awarded to The Wire Shop Inc. of Fort Valley, Georgia, a leading custom contract manufacturer of wire harnesses and custom cable assemblies by the federal Small Business Administration (SBA). This specialized certification is awarded only to those unique businesses that meet a set of specific employment criteria set by SBA to guarantee that federal contracting and employment opportunities are available in underutilized and underemployed regions.

"The Wire Shop has grown over

the years through smart investments, hard work, and by utilizing the strengths and talents of the Fort Valley region," said Terry Davis, president of The Wire Shop. "HUBZone certification now means we can pursue newer and bigger projects with other industrial partners doing work throughout the world. Those opportunities can translate into more jobs for our community. If companies are doing business with the U.S. government and need our products, we're ready to put people to work."

The SBA's HUBZone **Empowerment Contract**ing program started in 1997. It encourages economic development in historically underutilized business zones - "HUB-Zones" - by providing access to more Federal contracting opportunities. The program is designed to stimulate economic development and creates jobs in urban and rural communities by providing Federal contracting preferences to small HUBZone certified businesses. These preferences go to small businesses that obtain HUBZone certification in part by employing staff that live in a HUBZone.The company must also maintain a "principal office" in one of these specially designated areas.

To qualify for the program The Wire Shop had to meet all of the following criteria: a) be located in a "historically underutilized business zone" (HUB-Zone); b) be owned and controlled by one or more American citizens; and c) at least 35 percent of its employees must reside in a HUBZone community.

The Wire Shop's SBA HUBZone designation means Federal program managers, contracting officers, and contracting specialists will have an opportunity to purchase more components from the company. The result: more jobs for the Fort Valley region. Similarly, The Wire Shop will have new opportunities to partner with larger companies that are required to work with HUBZone companies (such as defense and machinery contractors), which sell products to the government.

The Wire Shop also will be included in the listing of qualified HUBZone SBCs at http://dsbs.sba.gov/dsbs/search/dsp_searchhubzone.cfm.

"This is a great opportunity for our company to work at a whole new level of national and international business," said Davis. "And our success means success for our friends and neighbors at home."

The Wire Shop, Inc. was founded in 1991 to provide wire harness assemblies to one of the largest manufacturers of school and transit buses. The Wire Shop is a preferred supplier to many of the leading names in heating and air conditioning, recreational and utility vehicles, telecom, healthcare, and military applications.

For further information visit www.thewireshopinc.com.



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IPC APEX EXPO 2012 Technical Conference

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eaturing new research and innovations in printed board design and manufacturing, electronics assembly and test, the IPC APEX EXPO® technical conference will be held at the San Diego Convention Center, February 28-March 1, 2012. Industry experts from around the world will present more than 100 papers in technical areas including lead-free alloys and reliability, high temperature laminates and counterfeit components as well as a new track on printed electronics.

Respected as the most selective in the electronics manufacturing industry, the IPC APEX EXPO technical conference provides a venue for the dissemination of practicable, ground-breaking research. "The Technical Review Committee has done a great job in identifying the very best of all the abstract submissions ... much of which details true industry advancements and reveals some very insightful data," says IPC Technical Conference Director Greg Munie, Ph.D. "This will help companies make better decisions about the materials and processes they use and inform them about rapid changes and opportunities in areas like printed electronics."

Over three days, 38 technical sessions will be presented. The latest advances in the areas of lead-free alloys (especially proliferation and testing) and reliability; high temperature laminates; halogen-free and how to deal with it; counterfeit components and large BGA reliability will be covered. The topics of surface finishes, test, voiding, printing, and signal integrity have multiple sessions due to the wealth of new information available.

New this year, a special track of three technical sessions on printed electronics will highlight advanced materials, emerging technologies and manufacturing processes for printed electronics as well as the standards development initiatives underway in the areas of base materials, additive materials, design and final assembly.

In addition to all the valuable content, Munie affirms, "One of the great advantages of IPC APEX EXPO is the chance to network and find solutions from multiple levels of the supply chain."

The IPC APEX EXPO Technical Review Committee is composed of Jasbir Bath, Christopher Associates Inc.; Beverley Christian, Ph.D., Research In

Motion Ltd.; R. Wayne Johnson, Ph.D., Auburn University; Gary Ferrari, CID+, FTG Circuits; Patricia Goldman, P.J. Goldman Consulting; Carol Handwerker, Sc.D., Purdue University; Russell Nowland, Alcatel-Lucent; Alan Rae, Ph.D., TPF Enterprises LLC; and Dr. Munie.

To view all 38 sessions as well as the technical papers and their presenters, visit www.IPCAPEX-EXPO.org/conference.

Special savings of 20 percent off the technical conference or other feebased show events is available through January 28, 2012.

To register or for more information on all the activities taking place at IPC APEX EXPO, including standards development meetings, professional development courses, executive management meetings and the largest exhibition in North America for printed board design and manufacturing, electronics assembly and test. visit



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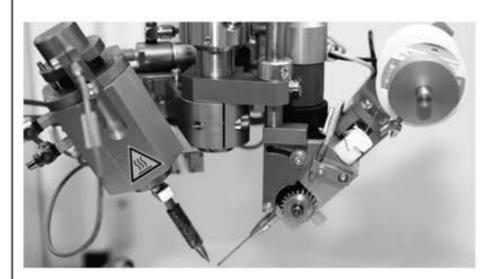




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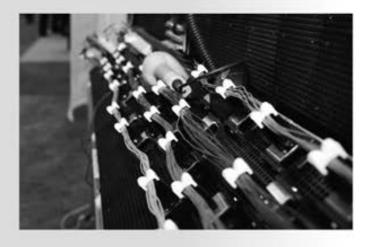
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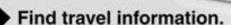




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Electrical Manufacturing & Coil Winding Expo

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NEWS PLUGS continued



Norwood Marking Systems Appoints Bhavin Davé as Business Unit Manager

Norwood Marking Systems announces the appointment of Bhavin Davé to the position of Business Unit Manager, overseeing the operations of Norwood Marking Systems, Allen Coding Systems and Kingsley Machine Company in the U.S., Canada and Latin America. Davé is responsible for leading strategies that bring the companies' world-class coding and marking equipment and consumables to customers in the food, pharmaceutical, medical device, personal care, chemical, electronics, aerospace, military and other industrial markets.

"Bhavin is a results-driven professional with a track record of operational excellence," said Juan López, General Manager of the ITW Coding & Marking Group. "The skills and experiences he brings to his new position will help define, focus and support the companies' business objectives. He is well qualified to take this leadership role."

Davé is an accomplished manager with more than 10 years of international experience in project management, operations, finance, product quality, R&D and plant engineering. Most recently, he was Multi-Channel Operations Manager and PMO Manager with Sears Holdings Corporation. Previously, he worked for Kimberly Clark Corporation as a Capital Projects Engineer. Davé earned an MBA from DePaul University in Chicago and holds a bachelor's

degree in electrical engineering.

"I am excited to join the ITW family of companies and work with Norwood, Allen and Kingsley to achieve new levels of business performance," said Davé. "These companies hold well-earned positions as technology leaders in their respective markets and I believe there are tremendous opportunities to leverage their positions into future growth."

Norwood Marking Systems, a division of Illinois Tool Works, is joined by sister



Bhavin Davé ITW Norwood Marking Systems

companies, Allen Coding Systems, ac codiergeräte gmbh and Kingsley Machine Company to offer a wide range of marking and coding systems. The companies design and manufacture innovative thermal transfer printers including custom traversing systems, hot stamp imprinters as well as ink and embossing printers that code and mark for a variety of industrial markets worldwide. For further information visit www.itwnorwood.com

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See You At The 2012 Electrical Wire Processing Technology Expo - BOOTH 1619







The CT4 Coastelmatic Pneumatic Tool Holder

The CT4 Coastelmatic hand tool holder is a device that uses air to activate spring retracted hand tools. The CT4 Coastelmatic is a great low cost alternative to automatic crimping, stripping, and cutting machines. The CT4 Coastelmatic can be set up to work crimpers, strippers and cutters. The patent pending tool holder in the applicator securely holds all tools in place, allowing the operator to use his hands freely. This new and improved cylinder delivers 10% more power through dual activation for tough jobs. Each unit is pre-assembled, tested and ready for use.

Call NOW for details!



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NEWS PLUGS continued



Peter Augsten Changes Company Name to "IEWC"

Peter Augsten Wire & Cable has officially changed its name to IEWC Germany GmbH, effective January 3rd 2012. Peter Augsten opened its doors in 1981 as a distributor of wire and cable products servicing automotive, switchboard, portable power, control, signal and tray cable markets in Germany.

IEWC acquired the business in 2008 and subsequently expanded to a new, LEED Certified, 20,000 square foot, state of the art distribution center in Frankfurt, Germany, which now serves as the company's EMEA (Europe, Middle East, Africa) headquarters. Paul Bryant, Chief Commercial Officer of IEWC Corporate, stated, "EMEA's Managing Director, Cory McFarlane, has worked closely with Oliver Heberling, Managing Director for Peter Augsten, as well as other employees in EMEA and IEWC corporate to develop an aggressive growth strategy. This new strategy will be better served by the new name - IEWC Germany GmbH."

It brings the European business entity into greater alignment with the company's corporate brand identity, which focuses on being a global solutions provider to OEM's and Sub-Assemblers around the world. All current Peter Augsten employees and positions will be retained through this change. With strong partnerships with suppliers such as Alpha Wire, Belden, Champlain Cable, General Cable, RSCC and many others, EMEA represents an immense global trading area for IEWC. In addition to its headquarters in Frankfurt, Germany, the company also has a distribution center near Bristol, United Kingdom.

IEWC is a premier global supplier of wire, cable and wire management products, with warehouses strategically located around the world. For more information about IEWC please visit www.iewc.com

L-com Wins Outstanding Achievement Award in Website Development

L-com Connectivity Products, a global leader in the manufacture of wired and wireless connectivity products, today announced that it has been awarded Outstanding Achievement in Website Development by the Interactive Media AwardsTM for its ecommerce web site. The honor recognizes that the web site met and surpassed the basic standards of excellence that comprise the web's most professional work. The site was honored specifically for excellence in Computer Hardware.

The judging consisted of various criteria, including design, usability,

innovation in technical features, standards compliance and content. In order to win this award level, the site had to meet strict guidelines in each area - an achievement only a fraction of sites in the IMA competition earn each quarter. Among the winners this year are companies such as Accenture, Microsoft, NASCAR, National Grid, Samsung, Walt Disney Parks & Resorts Online, and Warner Bros.

Jim Corcoran, Sr. Web Designer at L-com Connectivity Products, said, "It's an honor to have our team's work recognized by the Interactive Media Awards. We feel strongly that our website is a world-class example of how wired and wireless connectivity equipment can be researched and purchased. This award also pushes us to continue making improvements to our website."

L-com, a global leader in the manufacture of wired and wireless connectivity products, offers a wide range of solutions and unmatched customer service for the electronics and data communications industries. The company's product portfolio includes cable assemblies, connectors, adapters, computer networking components, and custom products, as well as the Hyperlink line of wireless products. Trusted for more than 25 years, L-com, Inc. is headquartered in North Andover, Mass., and is ISO 9001: 2008-certified. For more information, visit: http://www.L-com.com



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CrimpCenter 36 Economic & Efficient

Equipped with reliable high precision technology, the CrimpCenter 36 features a compact modular design offering space for up to 6 processing stations. Various configuration possibilities allow for a variety of applications to be processed. Dynamic and powerful servo drives combined with an intelligent control system provide high output rates to meet the most demanding production schedules. The touch screen user interface and guick-change mechanisms make programming and set-up fast and simple. The CrimpCenter 36 - cost effective machine suited for any production environment.



To Be Precise.

A Superior Wire Harness Begins With the Selection of Quality Tooling



With 60 years of industry experience, Daniels Manufacturing Corporation is the leading manufacturer of Mil-Qualified Crimp Termination Tools and Insertion/Removal Tools. DMC also supplies BETA Backshell Torque Tools and ALPHATRON Wire Crimp Pull Testers. DMC products are used on virtually every defense system, aircraft program, land or sea transport system, and space exploration program.

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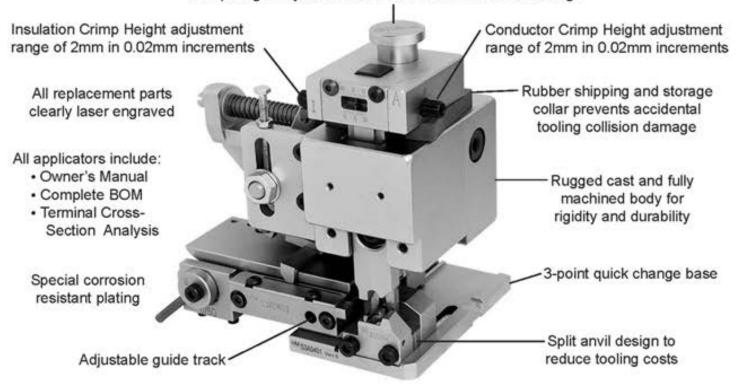
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Mechtrix is proud to offer the full line of THB Mechanical and Air-feed Applicators. With more than 20 years of tooling experience utilizing our Mechtrix CrimpCADD® design and analysis software, Mechtrix can design and supply you with the perfect solution to even your most difficult wire terminating projects. Ask us about our special reduced pricing on spare tooling with your initial order.

> Innovative wedge adjustment design provides positive, precise, tool-less crimp height adjustment with visual confirmation of settings



Mechtrix Stripping Blades

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

- Amp/Tyco Artos
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- Kirsten Kodera
- Kut-Rite/Weix
- Schäfer/Megomat Schleuniger
- Tekuwa/Dorema Toyojamco/JAM

- Eubanks
- KMI
- Komax
- Makfil 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. These machines include:

- Wire Prefeeding Equipment
- · Heavy Duty Benchtop Wire Stripping Machine
- Automatic & Manual Center Stripping Machines
- Terminal Carrier Strip Cut-off Devices
- Terminal Paper Winding Machines
- Terminal Applicators & Crimping Presses







Mechtrix Corporation W147 N9461 Held Drive Menomonee Falls, WI 53051 Tel (262) 255-6555 Fax (262) 255-2628

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NEWS PLUGS continued



Flat Festoon Cables for Extreme Temperature Applications

Cicoil's Festoon Cables are designed for continuous flexing and extreme temperature applications (-65°C to +260°C). Ideal in overhead crane, gantry and material handling systems, these UV resistant cables are an excellent alternative to PVC and Neoprene jacketed flat cables that do not provide reliability in severe environment and harsh weather conditions.

Cicoil's exclusive crystal-clear silicone encapsulation is tear-resistant, needs no external "armor" or conduit for protection, and will not deform or wear during a lifetime of more than 10 million cycles, even under tight bending radius and high

speed flexing conditions. Unlike most other flat festoon cables, Cicoil's unique silicone extruded cables are unaffected when exposed to flames (UL 94 V-0), extreme heat, ice, snow, salt water, acid rain, coarse sand, shock, vibration, sunlight and most chemicals. For applications that require abrasion and adhesion resistance, Cicoil offers antifriction coating options by request.

Cicoil's proprietary extrusion process allows multiple conductors to be placed in a flat cable, precisely controlling the spacing of the wires, the jacket thickness and the overall cable shape. The flat construction allows for stacking multiple cables where space is at a premium.

Standard "off the shelf" Festoon Cables (4 AWG to 28 AWG) are available from stock and custom designs incorporating shielded wires or signal pairs, tubing for air or fluid transfer, and Cicoil's patented Strip Mount™ fastening strip are available with minimum lead times.

Cicoil's Festoon Cables are UL Recognized, CE Conforming, RoHS Compliant and are manufactured in an automated, climate controlled environment.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over fifty years. The company's unique silicone coated flat cables provide high flexibility, extremely long life, and they can withstand temperature extremes from -65 degrees to +260 degrees Celsius. Cicoil's cables are used in thousands of demanding applications;

including aircraft fuel control cells, semiconductor automation, and the Space Shuttle. Cicoil designs and manufactures its cable and cable assemblies in an automated facility in Valencia, California. Cicoil's quality assurance system is certified to the ISO 9001 (AS9100) standard.

Visit www.cicoil.com for more information, or call 661-295-1295 to speak to an application engineer.

PVA's PVA2000 Selective Coating System to be Featured at InterNepcon Japan

PVA is partnering with Alpha Electronics Corporation for the 41st InterNepcon Japan. Featured in the Alpha Electronics booth, East 31-36, will be the PVA2000 Selective Coating System, showcasing its expert coating capabilities. While the full PVA product line encompasses selective coating, surface mount adhesives, auto-

mated dispensing, meter mix dispensing, manual dispensing and custom automation, the equipment demoed at the show will target coating applications for Japan's electronics market.

The PVA2000 Selective Coating System administers a clean, efficient process for applying conformal coatings while eliminating labor-intensive masking operations. It is a flexible robotic platform that features a robust overhead three-axis motion platform suitable for inline or batch operation.

In addition, an optional, patented servo-controlled four-axis motion platform, featuring valve tilt and rotate, is available for more complex coating and dispensing processes. The PVA2000 can be configured with any combination of spray and dispense valves for process optimization

During InterNepcon Japan, 18-20 Janu-

ary, 2012, delegates from PVA and Alpha Electronics will be available to answer your questions regarding the PVA2000 System, as well as any general dispensing application questions.

PVA is a global supplier of conformal coating systems and innovative fluid dispensing solutions that remain at the fore-front of motion and application technology. PVA's customer driven solutions are utilized worldwide in industries ranging from solar, semiconductor packaging, printed circuit board assembly, medical device manufacturing, and consumer electronics. Throughout the changing global manufacturing landscape, PVA remains committed to providing our customers with exceptional products and industry-leading global support.

For further information on PVA products visit www.pva.net.



Sonobond ultrasonic welders can handle even your toughest wire welding challenges.

We'll prove it with free sample welds.

Our ultrasonic welders are quality engineered to take on the most difficult metal welding applications. Consider these heavy-weight advantages that only Sonobond can offer...



- The ability to confidently handle the widest spectrum of welds — including tin-coated wires and terminals, as well as aluminum, copper, nickel alloys, precious metals, and dissimilar metals.
- Fast, easy tooling changes that take only a minute or less and require no calibration.
- Tough, durable Taper Lock tips with the staying power to provide up to 100,000 welds. You also save money because you replace just the tips—not the entire horn.
- The capacity to perform spot welds, wire-to-terminal welds, and wire-to-wire welds (with cross-sectional areas up to 100 sq. mm.)—all in a single pulse.
- Welding modes by time, energy, or distance.

The Sonobond Advantage

Tests show that ultrasonic welding is less expensive and more reliable than resistance welding. And Sonobond technology helps you be RoHS-compliant, unlike conventional soldering.

Sonobond uses a unique, patented Wedge Reed bonding system that combines high vibratory force and low amplitude coupling to deliver precise rsults every time. Our units are made in the USA and require only minimal operator training. Sonobond also goes the distance by providing the very finest technical support and customer service—before, during, and after installation.





Put Us to the Test

We are so confident that our welders can deliver a quick one-two punch to your toughest application that we encourage you to put us to the test.

Just supply us with your metal components. We'll weld them in our Applications Lab, show you the results, and recommend the unit that's best for your specific product. There's no cost or obligation.



When it comes to reliable metal welding, you want the champion in your corner. So contact us today. Discover how Sonobond can put over 50 years of expertise to work for you.

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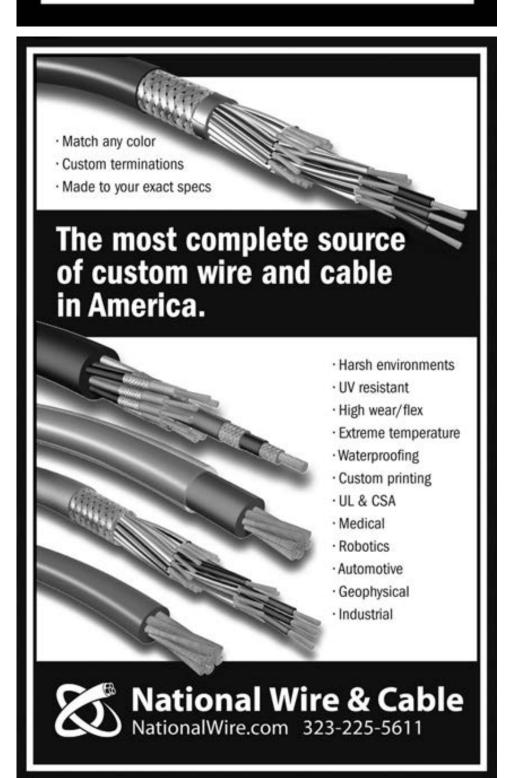
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NEWS PLUGS continued



CAPRIS 50-100, Laser Wire Marking System

The CAPRIS 50-100 laser wire marking system, has hit the big 250 mark following receipt of an order from Boeing Aviation Services, Shanghai, China.

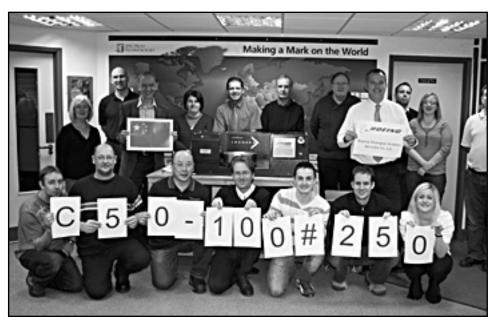
Introduced in 2003 as the original entry-level bench-top laser wire marking system is used in MRO, avionics and low volume manufacturing of aerospace and defence electrical wire harnesses.

CAPRIS 50-100 serial number 250 shipped to Boeing's heavy maintenance facility in Shanghai at Pudong airport. In total Spectrum has now supplied over

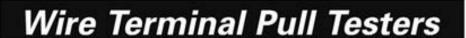
700 laser wire markers to over 40 coun-

Dr Peter Dickinson, Spectrum's CEO said "We are delighted that our number one customer over time, Boeing, has placed this order and will be the recipient of our 250th CAPRIS 50-100. The CAPRIS 50-100 was envisaged as the world's first bench top wire marker and as a low cost system to facilitate low volume users replace hot stamp wire markers which were found to be causing damage to thinner wall aerospace wires. Demand for these systems has been very firm this year and it is pleasing to reach this landmark number of 250."

For further information contact Spectrum Technologies PLC, Western Avenue, Bridgend, CF31 3RT, UK. Phone ++44 (0)1656 655 437 or Fax ++44 (0)1656 655 920. Visit www.spectrumtech.com



Spectrum employees celebrate the sale of the CAPRIS 50-100 - serial #250 model laser wire marking system.



Motorized WTTM-110/220

Automatic Simplicity...Set the adjustable pull speed, load the wire and close the protective cover. The test runs automatically with the peak "pull-off" force stored on the display

Two motorized models offer

- 7 selectable pull speeds from 1 inch per min (25 mm per min)
- to 10 inches per min (250 mm per min).
- 2 capacities: 100 lb/50 Kg/500 N for wire sizes AWG 12 to 28 and 220 lb/100Kg/1000N for wire sizes AWG 8 to 28

Manual WTT-110

The WTT-110 is easy to use: Simply insert the wire into the appropriate slot in the terminal fixture (12 slots accommodate a wide range of sizes). Select the Peak-Hold or Continuous Measurement mode via the keypad. Then rotate the easy-glide lever clockwise, clamping the wire and creating a consistent, repeatable pull force with minimal effort.



Fast, Accurate, Repeatable and Very Easy To Use

CHECK-LINE'S® WTT Wire Terminal Pull Testers accurately measure the pull-off force on soldered and soderless wire terminals. These all in one solutions don't require additional grips, fixtures or accessories.

- Current force and breaking force appear on the digital display.
- Conforms to all international test standards: MIL, UL, SAE, DIN, IEC, BS and EN.
- Operates on AC power or built-in rechargeable battery (adapter/charger supplied).
- · RS-232 and analog outputs available for data transfer.



Rotating fixture has slots of

different widths to hold

For more information, contact Andrew Kaner, Product Manager, at 1-800-645-4330, 1-516-295-4399 (fax)

www.checkline.com



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.

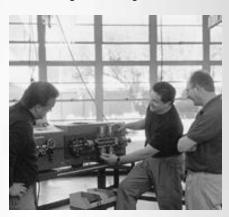
Customers report something unusual too: Mando's "can-do" attitude.

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.

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NEWS PLUGS continued



The Sentral Group Expands Manufacturing Capabilities and Locations with Acquisition of Junction City Wire Harness

The Sentral Group has acquired Junction City Wire Harness in Junction City, Kansas, to further enhance its manufacturing capabilities and locations. Junction City is a leading supplier of wire harnesses into the specialty vehicle market, including trucks, buses, and recreational vehicles.

The acquisition gives Sentral a second manufacturing location and an additional 85,000 square feet of manufacturing and office space.

"We have been actively looking to add another facility to help serve the needs of our global customers," stated Sentral president Bill Schlitz.

"We have also been evaluating the specialty vehicle market for some time. Junction City is the perfect combination of both. They have great abilities, product knowledge, and most importantly, people. They also have outstanding relationships with many of the premier companies in that industry. I could not have imagined a better fit."

When asked if the facility and equipment would be moved to the company's Lincolnshire, IL headquarters, Schlitz replied "we absolutely intend to keep that facility open and right where it is. The whole point of this process is to expand geographically while adding new customer markets. It is our intention to support that facility in every way and grow it as much as we can."

The Sentral Group now boasts over

125,000 square feet of manufacturing space in the United States, and over 200 full-time employees. Sentral Assemblies is a manufacturer of custom wire harnesses, cable assemblies, tubing assemblies and electro-mechanical assemblies. Since its founding in 1990, the company has grown to be one of the largest privately owned cable assembly companies in the U.S. The company has a strong balance sheet and an excellent growth record.

For further information visit www.sentral.com.

Micro Plastics, Inc. Introduces a New "Pin and Keeper"

This Micro Plastics SIGN FASTENER is designed for rapid assembly and disassembly of a sign or other panel to its support structure. The reusable fastener was designed to fit a hole diameter of 5/16" to 3/8" (8mm to 9.5mm), the sign fastener



Micro Plastics' Sign Fasteners

can be used to fasten two pieces together with total panel thickness from 1" to 1.64" (25.4mm to 41.6mm). Simply squeeze the keeper together and slide onto the pin, then release the keeper. Molded from impact resistant and UV stabilized nylon 6/6, the sign fastener is designed for weather in outdoor applications.

Micro Plastics' manufactures millions upon millions of fasteners daily. They offer over 20,000 items and maintain an inven-

tory of over 250 million parts.

See our full line catalog #39for a complete line of nylon fasteners that are available. FREE samples are available upon request.

Visit http://www.micro plastics .com

Silicone Encased Cables Provide Absolute Reliability in Military Robotic Applications

Cicoil's highly flexible and durable flat silicone cables are designed for use on Unmanned Ground Based Military Robotic Vehicles that require absolute reliability in Mission Critical and Extreme Environment Conditions. Unlike bulky and stiffer round cables, Cicoil's flat silicone cables provide space and weight savings, enhanced flexibility, greater current carrying capacity, reduced skewing effects and better electrical characteristics.

Cicoil utilizes a process of encapsulating conductors in silicone that renders them unaffected by exposure to severe vibration, Gforces, shaking motion, abrasion, water, coarse sand, extreme temperatures $(-65^{\circ}C \text{ to } +260^{\circ}C)$, flames and harsh weather conditions. Cicoil's specialized silicone jacket functions as a shock absorbing material, completely surrounding and supporting each individual component. Unlike PVC, Polyurethane or Teflon jacketed cables, Cicoil cable does not require a clamping system because the conductors can not creep out of the silicone encasing them.

Each Cicoil cable can incorporate a variety of elements including power



Features

- Programmable servo motors
- Less maintenance
- High-quality components
- Up to two stations on each side
 WireStar® 2.5 user interface
- Versatile machine setup
- Two-ton terminal presses.

Efficient Lead Preparation

The Primo XLT offers value with a smaller footprint in a fully automatic wire processing machine. All automatic setup motions are servo motor controlled for precise wire feeding and positioning. Two process stations per side are available to perform a variety of operations including seal x seal. Two-ton terminal presses and 2m collection conveyor are standard. Other presses and collection systems are available.

Stripping and Twisting Machine

ST215

Features and Capabilities

- Rotating head with 4-blade system
- Wire size range: 0.08 2.0 mm [12 40 AWG]
- Stripping length up to 13 mm (0.5 in)
- Adjustable diameter feed rate
- Sensor activated start cycle
- Optional foot pedal activated start cycle
- Especially for Coax Cable
- · Air nozzle for insulation blow out



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Schaefer Technologies, LLC 751 N. Raddant Road

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Schaefer Megomat USA, Inc.

10767 Gateway Blvd, W - Ste. 510 El Paso, TX 79935 USA Phone: +1 915-598-3037 Fax: +1 915-598-5374 Email: etpaso@schaefer.biz Web: www.schaefer.biz conductors, shielded single conductors & signal pairs for superior EMI/RFI suppression, video and coax conductors, and other design elements like Cicoil's patented StripMount™ fastening strip, all in a single compact cable design. Cables are available in continuous lengths, cut to order, or as assemblies, complete with connectors of your choice, 100% tested and inspected.

Cicoil now has thousands of cable assemblies operating in the most demanding military/aerospace applications, such as missile gimbal & guidance systems, commercial aviation fuel control systems, fighter aircraft precision navigation & targeting systems, ground vehicle mounted combat systems and space vehicle flight control & communication systems. All these applications are mission-critical, requiring Cicoil cable assemblies to perform flawlessly during exposure to harsh operating conditions.

Cicoil's UL Recognized, RoHS Compliant & CE Conforming cables are manufactured in an automated, climate controlled environment. In addition, Cicoil offers anti-friction coating options and custom shaped cable designs by request.

Cicoil has been a leader in designing and manufacturing high performance cable assemblies for over fifty years. The company's unique silicon coated flat cables provide high flexibility, extremely long life, and they can withstand temperature extremes from -65 degrees to +260 degrees Celsius. Cicoil's cables are used in thousands of demanding applications; including aircraft fuel control cells, semiconductor automation, and the Space Shuttle. Cicoil designs and manufactures its cable and cable assemblies in an automated facility in Valencia, California . Cicoil's quality assurance system is certified to the ISO 9001 (AS9100) standard

Visit www.cicoil.com for more information, or call 661-295-1295 to speak to an application engineer.

Breaking Down Language Barriers: IPC-T-50J Now Available

Want to get a handle on commonly used electronics industry acronyms and terminology? Look no further than the definitive resource, IPC-T-50J, Terms and Definitions for Interconnecting and Packaging Electronic Circuits. Recently released by IPC - Association Connecting Electronics Industries®, the J revision of IPC-T-50 contains nearly 400 new or revised terms, including

terminology for chip scale and area array packaging, cable and wire harness technology, semiconductor packaging, assembly processing, moisture sensitive components and microvia technology.

"The terms and definitions within the standard are written to provide clarity of detail, so that a reader utilizing English as a second language can understand the subtleties of the meaning of each term," says Mike Green, engineer, Lockheed Martin Space Systems, and co-chair of the IPC 2-30 Terms and Definitions Committee.

Of the revision process itself, Green says the document undergoes regular review, "IPC-T-50 is the one IPC document that is scrutinized one definition at a time." The committee meets through web-based conferencing every other week as well as face-to-face twice a year, with input from an international audience, including the International Electrotechnical Commission,

Japan Electronics Packaging and Circuits Association and European Institute of Printed Circuits.

"If you're looking to take the mystery out of haloing, head on pillow, mousebites, pad cratering, moisture/reflow sensitivity classification and other terms and acronyms that the electronics industry commonly uses, then IPC-T-50 is the document to reference," says John Perry, IPC technical projects manager and staff liaison to the committee.

For sharp-eyed users of the older version of the document, IPC-T-50H, Perry confirms that neither the committee nor IPC has lost its sense of the use of the alphabet for document revision control, "An 'I' could have easily been confused with 'L' or the number '1,' even more so when people call out the document within internal procurement documentation and make an error." He also warns, that

when the time comes, not to look for the revision "O" which could be confused with the numeral zero.

IPC members may request a free single-user download of IPC-T-50J by sending an e-mail to MemberTechRequests@ipc.org within 90 days of the document's publication date. After that date, IPC members may purchase the standard for \$46. The nonmember price is \$93. For more information or to purchase IPC-T-50J, visit www.ipc.org/T-50j.







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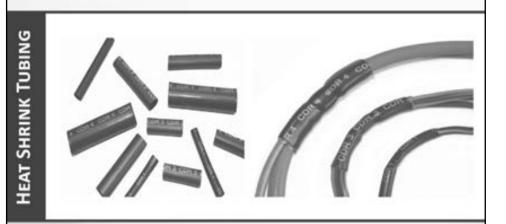
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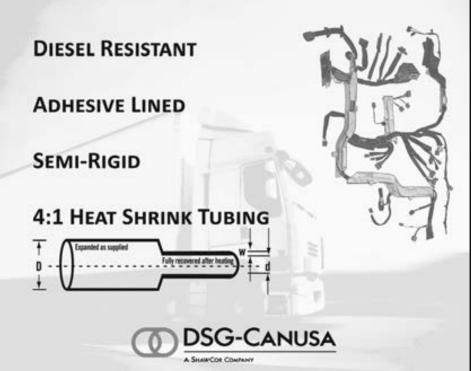
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South Star Corp

Continued from page 1

the business till 1982, the Stveraks made wiring harnesses and discrete wires by hand. The couple bought a cut-and-strip machine and a terminating machine and slowly built the business, which was started without outside financing and without partners.

Growth in the early 1980s necessitated two moves to rented buildings and the addition of employees. In 1985 a building was purchased in Roanoke County, and the structure was expanded in the office and production areas.

Peters, who worked at SSC periodically while attending James Madison University in Harrisonburg, Va., returned to the business in February 1989. She graduated from the university in 1983 and then worked a short time in management for Radio Shack. She was hired in 1984 at a poultry-processing company as the assistant human resources director and worked there four years.

In 2004, a year after her mother's death, Peters became company president, and her father was CEO. Peters gained controlling interest in the company in 2009, and later that year her



Ashley Conner and Ronnie Hawkins operating the cut and strip machines.

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David Brown and Janis Crenshaw testing a control cabinet.

father died. She is the sole owner today.

In her role as president, Peters takes care of human resources, sales and accounts payable and receivable. She is assisted by office manager Melissa Taylor and plant manager Janice Caswell, who has been at SSC since 1987, starting as an assembler before advancing to supervisor.

"The three of us keep things running," Peters said. "We have easy access to meet with each other. We go over the scheduling and do all the buying."

Other key managers are: Ashley Connor, cut-and-strip department; Chad Basham, quality assurance; Sandy Maxey, one major customer, a school-bus manufacturer; Donna Alley, all other customers; David Brown, transformer cabinets; Ronnie Hawkins, maintenance; William Starkey, warehouse; Marshall Thomas, deliveries. All do hands-on

work, too.

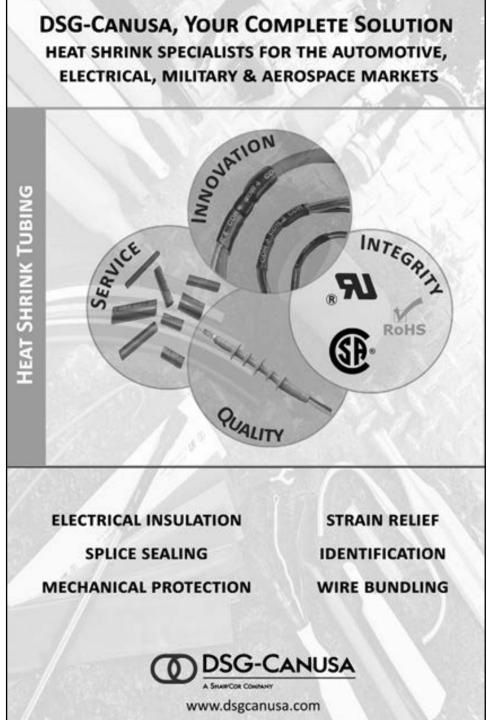
Fifteen other people fill out the SSC staff for a total of 26, all of whom work on one shift. At its peak in 2007-08 the firm had 70 employees. Economic decline reduced that number. So did improved productivity due to lean manufacturing and better organization, Peters stated.

"We're fortunate to have good people who care about their work, their jobs and the company," Peters said. "A lot of people like working here because it is a small company. We're very understanding when they have to miss days to take care of children or elderly parents."

Better employee and company performance has resulted from being certified ISO 9001:2008 last July, concluding a process that began in October 2010.

_Continued on page 44







South Star Corp

Continued from page 43

Peters pointed out that SSC pursued the quality-management system certification to help her business grow and meet a requirement of many customers.

"I would urge other companies to get

certified," Peters said. "It's helping us in continuous improvement. Now everybody tries to be as efficient as possible and do everything in a cost-efficient manner. ISO has made us communicate better between departments and work toward the same goal." Suggestions for





Sandy Maxey and Donna Alley assembling wiring harnesses.

making processes better and easier are implemented.

All employees are cross-trained in all aspects of producing harnesses, cables and cabinets. Staff members can be moved to jobs as needed. Such versatility is significant in handling rush orders.

The SSC product mix consists of 65 percent custom cabinets and 35 percent wiring harnesses and cable assemblies. Everything is built to customers' drawings, as SSC does no engineering. The cabinet business has grown dramatically in the last 10 years. "They are a good niche for us," Peters said.

The smallest and simplest cabinet is 12x16x6 inches and has one door and a small number of components and wires. The largest and most complex cabinet, with double doors and internal panels, is

72x72x20 inches and has multiple components and up to 1,000 wires. The most expensive cabinet costs \$20,000.

Harnesses and cables range from a single wire with a terminal costing less than \$5 to a cluster of wires 50 feet long with 50-60 breakouts that serve components in a cabinet. Quantities are between 10 and 100, but no minimum is mandated by SSC.

SSC processes are based on ISO procedures, and the paperwork for each job moves with it. Work is performed on Eubanks and Komax cutting-and-stripping machines and 30 different terminating presses from Delphi Packard, TE Conductivity and Panduit.

Materials, parts and components from SSC's 50 suppliers are checked upon arrival. Depending on specifications, in-

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process and continuity tests are done, and final inspections are made on every product. Quality numbers average 2.5 percent in-house defects and .05 percent after shipment.

Shipping on some products may occur the same day as manufacturing. However, Peters said lead and delivery times vary due to product complexity, production run and availability of mate-

"As a small company, if changes need to be made we can react quickly. We have less lead time than others," said Peters, noting that SSC keeps materials on hand for making products but does not build ahead. "We make good products that people can rely on, and customers praise us."

The products are made for 20 customers, which are primarily OEMs. Some are big, but most are small that have been with SSC many years. Most of the

customers are on the East Coast, with others throughout the United States.

Word-of-mouth advertising has served SSC well, so it has no sales staff and no formal marketing and promotion program. Peters and Caswell call on potential customers as needed. Some of them have been companies bringing production back from China and Mexico because of problems with cost, customs, quality and communication.

Peters enters 2012 with high anticipation, since she would like her company to grow 20 percent and begin approaching again the record year in 2004 of \$4 million in sales. "The economy has affected us, but we've been very fortunate to weather the economic changes and still be thriving, growing and making money," she said. "We're doing a better job with fewer employ-

Cost containment is one of Peters'

most significant challenges. "Profit levels were not as good in 2011 because people want price reductions, the cost of materials increases, and health-care insurance goes up," she said.

As with all businesses, supplier relationships never have been more important at SSC, which has had some local suppliers 20 years. "If we do enough business with our suppliers, they give us a longer time to pay and a two-percent

price reduction," Peters said. "We've stayed with some of them because they've helped us out by keeping things

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Lois Williams and Penny Altice terminating wires.





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NEWS PLUGS continued



Alpha Wire Launches German-language Website

Alpha Wire has unveiled a German version of its AlphaWire.com website designed to reach an increasingly diversified customer base. German-speaking

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customers are now able to access all existing website functions, including product filters, data sheet searches, sample requests, and product brochure downloads, in a more user-friendly manner.

"The German marketplace represents an incredibly diverse and expansive engineering and manufacturing community," said Martin Hidegh, Regional Sales Manager for Germany, Austria, and Switzerland. "In order to ensure Alpha Wire is continuing to provide the best level of support possible for our customers and distributors around the world, we felt it was critical to offer all of the benefits of Alpha Wire's website in German. Customers will be able to quickly find product information, data sheets, free samples and more all from AlphaWire.com."

AlphaWire.com contains multiple product filter and search capabilities for unparalleled ease-of-use. Combined with its "Online Tools" functions and "Engineer's Room," AlphaWire.com is a full-service website that supports all Alpha products. Alpha Wire expects to launch Portuguese- and French-language versions of its website and marketing collateral in

the near future.

To access the German-language version of Alpha Wire's website, simply visit www.alphawire.com and select "German" from the language drop-down box.

INDUSTRIAL INFO-TAINMENT

Eraser's Model DCF 2/3 Magnet and Enamel Wire Stripper

Eraser's Model DCF 2/3 Magnet & Enamel Wire Stripper will strip round magnet and enamel wires with any type of film insulation including; Formvar, nylon, polythermaleze and varnish. The model DCF2/3



Model DCF 2/3 Magnet & Enamel Wire Stripper

strips 32 – 12 AWG wire and is available in

two versions, the AR4301 strip 2-1/2" in length and the AR4300 can strip infinite lengths. Both models come with a removable length stop which is used when shorter strip lengths are needed. The variable speed power unit controls the speed. Insulation is cleanly removed but the wire conductor is not damaged. This tool is ideal for the production and repair stripping of armatures, coils, chokes, transformers, relays, solenoids and more.

The Eraser Company, Inc., celebrating its 101st anniversary in business, manufactures a wide range of industrial products including wire, cable and tubing cutters, wire and cable strippers, twisters, wire brush wheels, dereelers, infrared heating equipment, measuring tools, and fybRglass® erasers. The company is ISO 9001:2008 certified. The company offers Free E.S.P. (Eraser Sample Program). Send a 10-20 foot sample of your material and Eraser will recommend the best solution for your processing needs from its line of more than 200 products. For unique processing needs, Eraser will custom design a solution for you. For more information on Eraser's entire product line visit www.eraser.com or call 315-454-3237.

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electronic systems, subsystems, RF, and secure systems for defense, aerospace, and commercial applications, announced the availability of Firewall Connectors from its Spectrum Control line of military circular connectors.



Firewall Connectors

Firewall connectors are highly reliable and designed to prevent fire or spark from penetrating through a sealed bulkhead.

"We have combined our expertise in military circular connectors with our own structural ceramics incorporating firewall features to make these bulkhead connectors an ideal choice for high performance aircraft, aircraft engines, and military ships," said Larry Howanitz, Vice President, Spectrum Control Business Unit of API Technologies. "Moreover, since we manufacture our own materials and packaging, we can offer competitive pricing and delivery times -- all while guaranteeing the quality and service customers expect from API Technologies."

The API Spectrum Control Firewall Connector Series is capable of operating up to 260°C/500°F and is available in accordance with various military specifications including MIL-DTL-38999, MIL-DTL-83723, and MIL-DTL-5015, among others. Firewall Connectors are also available with custom

features and configurations to meet individual customer specifications.

For more information about this new line of Firewall Connectors, or any of the API Spectrum Control product line, please visit www.apitech.com/spectrum-control, or contact API's Fairview, PA location at (814) 474-1571.

The Spectrum Control product line offers filters and interconnects, advanced ceramics, specialty connectors & harnessing, power filters, and film modules.

API Technologies designs, develops and manufactures electronic systems, subsystems, RF and secure solutions for technically demanding defense, aerospace and commercial applications. API Technologies' customers include many leading Fortune 500 companies. API Technologies trades on the NASDAQ under the symbol ATNY. For further information, please visit the Company website at www.apitechnologies.com.

Right-angle DVI-D Cables Allow Tight-Space Connectivity

L-com, Inc., a global leader in the manufacture of wired and wireless connectivity products, now carries both DVI-D single link and dual link right-angle cable assemblies. The new assemblies are designed to allow DVI-D connection to be made even in small spaces, such as behind a TV or monitor.

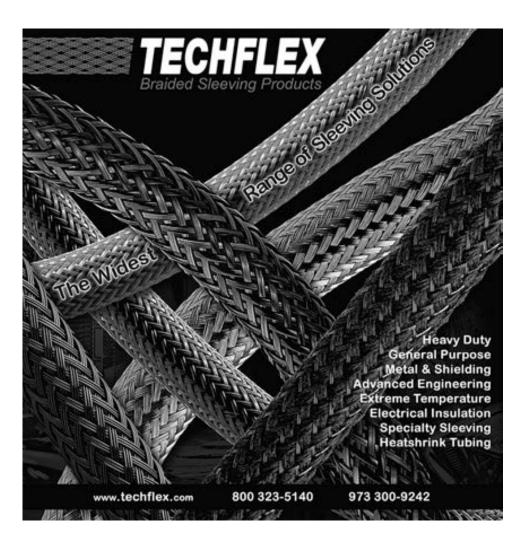
"This design started out as a custom product for one of our customers," said Pete McNeil, product manager. "We liked the idea so much we wanted to make it a standard product so customers can buy it off-the-shelf."

They are designed with a right-angle

connector on one end and a standard DVI-D connector on the other end. They are stocked in lengths from as little as one foot to as much as five meters in length.

L-com, a global leader in the manufacture of wired and wireless connectivity products, offers a wide range of solutions and unmatched customer service for the electronics and data communications industries.

The company's product portfolio includes cable assemblies, connectors, adapters, computer networking components, and custom products, as well as the Hyperlink line of wireless products. Trusted for more than 25 years, L-com, Inc. is headquartered in North Andover, Mass., and is ISO 9001: 2008-certified. For more information, please visit: http://www.L-com.com/





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IPC Releases PCB Industry Results for October 2011

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

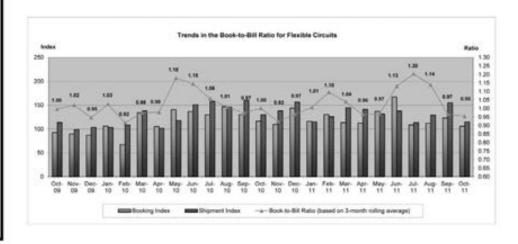
Rigid PCB shipments were down 9.4 percent and bookings were up 1.0 percent in October 2011 from October 2010. Year to date, rigid PCB shipments decreased 1.3 percent and bookings declined 9.8 percent. Compared to the previous month, rigid PCB shipments decreased 10.3 percent and rigid bookings registered zero percent growth. The book-to-bill ratio for the North American rigid PCB industry in October 2011 remained just below parity at 0.99.

Flexible circuit shipments in October 2011 were down 11.3 percent and bookings declined 10.3 percent compared to October 2010. Year to date, flexible circuit shipments increased 0.3 percent and

bookings increased 1.7 percent. Compared to the previous month, flexible circuit shipments decreased 25.8 percent and flex bookings were down 14.3 percent. The North American flexible circuit book-to-bill ratio in October 2011 declined to 0.95.

For rigid PCBs and flexible circuits combined, industry shipments in October 2011 decreased 9.6 percent from October 2010, as orders booked decreased 0.1 percent from October 2010. Year to date, combined industry shipments were down 1.1 percent and bookings were down 8.8 percent. Compared to the previous month, combined industry shipments for October 2011 decreased 11.9 percent and bookings decreased 1.4 percent. The combined (rigid and flex) industry book-to-bill ratio in October 2011 remained at 0.99.

"North American PCB sales are down



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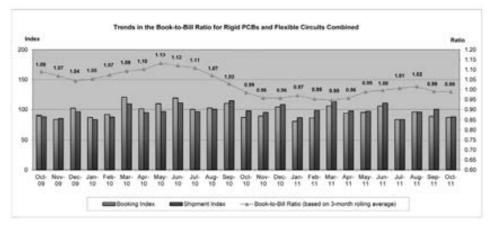
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from the previous month, but this is a normal seasonal pattern," said Sharon Starr, IPC market research director. "The good news is that rigid PCB orders are holding steady," she added.

The book-to-bill ratios are calculated by dividing the value of orders booked over the past three months by the value of sales billed during the same period from companies in IPC's survey sample. A ratio of more than 1.00 suggests that current demand is ahead of supply, which is a positive indicator for sales growth over the next two to three months.

Book-to-bill ratios and growth rates for rigid PCBs and flexible circuits combined are heavily affected by the rigid PCB segment. Rigid PCBs represent an estimated 89 percent of the current PCB industry in North America, according to IPC's World PCB Production Report.

The Role of Domestic Production

IPC's monthly survey of the North American PCB industry tracks bookings and shipments from U.S. and Canadian facilities, which provide indicators of regional

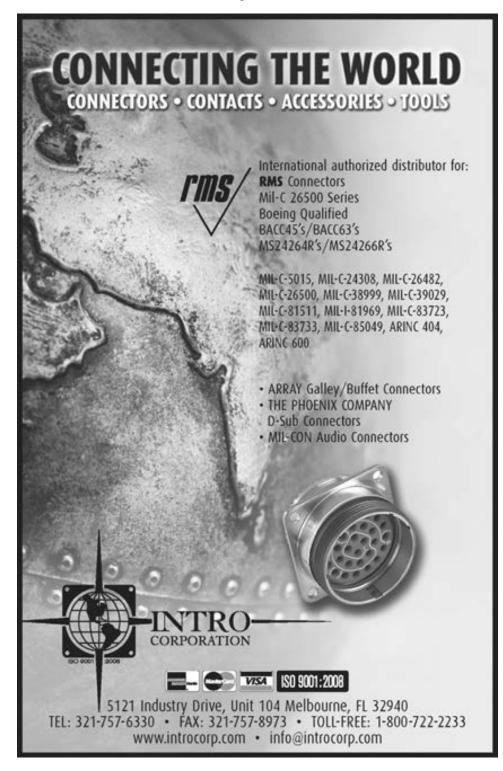
Innovators in Wire Processing

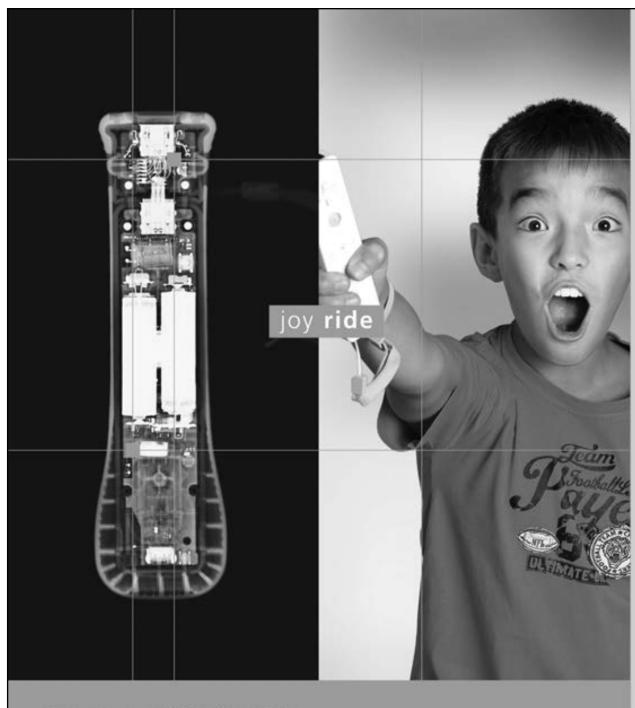
demand. These numbers do not measure U.S. and Canadian PCB production. To track regional production trends, IPC asks survey participants for the percent of their reported shipments that were produced domestically (i.e., in the USA or Canada). In October 2011, 83 percent of total PCB shipments reported were domestically Domestic produced. production accounted for 83 percent of rigid PCB and 79 percent of flexible circuit shipments in October by IPC's survey participants. These numbers are significantly affected by the mix of companies in IPC's survey sample, which change slightly in January, but are kept constant through the remainder of the year.

Bare Circuits versus Assembly

Flexible circuit sales typically include value-added services such as assembly, in addition to the bare flexible circuits. In October, the flexible circuit manufacturers in IPC's survey sample indicated that bare

Continued on page 51





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- Verify contacts are "locked-in" with force sensing
- · No mating cables or connectors



IPC Releases PCB Industry Results for October 2011

Continued from page 49

circuits accounted for about 60 percent of their shipment value reported for the month. Assembly and other services make up a large and growing segment of flexible circuit producers' businesses. This figure is also sensitive to changes in the survey sample, which may occur at the beginning of each calendar year.

Interpreting the Data

Year-on-year and year-to-date growth rates provide the most meaningful view of industry growth. Month-to-month comparisons should be made with caution as they may reflect cyclical effects and short-term volatility. Because bookings tend to be more volatile than shipments, changes in the book-to-bill ratios from month to month may not be significant unless a trend of more than three consecutive months is apparent. It is also important to consider changes in bookings and shipments to understand what is driving changes in the book-to-bill ratio.

*Prices expire March 31, 2012

The information in IPC's monthly PCB industry statistics is based on data provided by a representative sample of both rigid and flexible PCB manufacturers in the USA and Canada. IPC publishes the PCB Book-to-Bill Ratio and the PCB Statistical Program Report each month. Statistics for the previous month are not available until the last week of the following month.

shipments have different baselines, they cannot be used to calculate the ratios accurately.

As a member-driven organization and leading source for industry standards, training, market research and public policy advocacy, IPC supports programs to meet

the needs of an estimated \$2.02 trillion global electronics industry. IPC maintains additional offices in Taos, N.M.; Arlington, Va.; Stockholm, Sweden; Moscow, Russia; Bangalore, India; and Shanghai, Shenzhen and Beijing, China.

Visit www.ipc.org.

Notes:

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

The index numbers are calculated by multiplying the index number from last month by the month-to-month growth rates reported by the current sample of

companies in the statistical program. The baselines, set at 100, are based on the average monthly data for the year 2007.

2. The book-to-bill ratios are calculated using actual volume data and not the index numbers. Because bookings and



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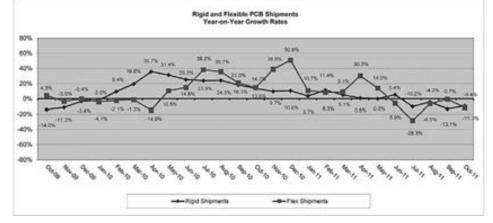
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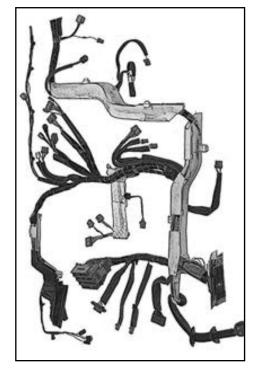
NEWS PLUGS continued



DSG-Canusa Offers Cold Shrink Medium Voltage Joints

CSJ 10 & 20 Series cold cable shrink joints are rated 5-15kV and designed for single core, XLP and EPR extruded dielectric, metallic tape, wire, bare and jacketed concentric neutral shielded power cables. These joints use silicone rubber insulating materials to provide excellent high and low temperature performance for long service life. Th design incudes thixotropic sealants to ensure maximum protection against moisture ingress. CSJ 10 & 20 Series joints feature geometric stress cones and stress control sealant for exceptional electrical performance nd are qualified to the requirements of IEEE-404-2000 cable accessory standards.





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- Geometric stress cone & stress controlling sealant
- Rated to IEEE-404-2000

CSJ 10 & 20 Series joints cover a cable range from #2 AWG to 1000kcmil. The one piece joint is designed for a quick, easy and cost effective installation. The ripcord of the CSJ unwinds easily to facilitate quick removal of the core.

In addition to a standard heat shrink tubing product line, DSG-Canusa also provides solutions that are designed specifically for the demanding requirements of wire harnesses. From insulation of ground connections and splices to longitudinal water sealing of cable harnesses, DSG-Canusa delivers tailor-made products for

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For more information on DSG-Canusa's medium voltage product family please visit http://dsgcanusa.com/products/product_mediumvoltage.htm or email: electrical_utility @dsgcanusa.com.

In addition to a standard heat shrink product line, DSG-Canusa also provides solutions that are designed specifically for the demanding requirements of wire harnesses. From insulation of ground connections and splices to longitudinal water sealing of cable harnesses, DSG-Canusa delivers tailor-made high quality products.

Crimped and ultrasonically welded parallel and end splices often require longitudinal water proof sealing as well as high resistance against thermal, chemical and mechanical influences.

One example of DSG-Canusa,'s wire harness product offering is DERAY® Splicemelt, a heat shrinkable sleeve with an inner thermoplastic adhesive designed specifically for these types of splices. During the shrink process DERAY® Splicemelt's hot melt adhesive flows into all the voids within the area to be sealed, resulting in a corrosion nd waterproof seal. DERAY® Splicemelt can be used in continuous production, due to its simple and fast installation.

For more information on all of DSG-Canusa's wire harness solutions visit http://dsgcanusa.com/ applications/app_ automotive.htm.

New Brochure features New WAGO ProServe® Updates

A new brochure highlights updates to WAGO Corporation's ProServe® Design,

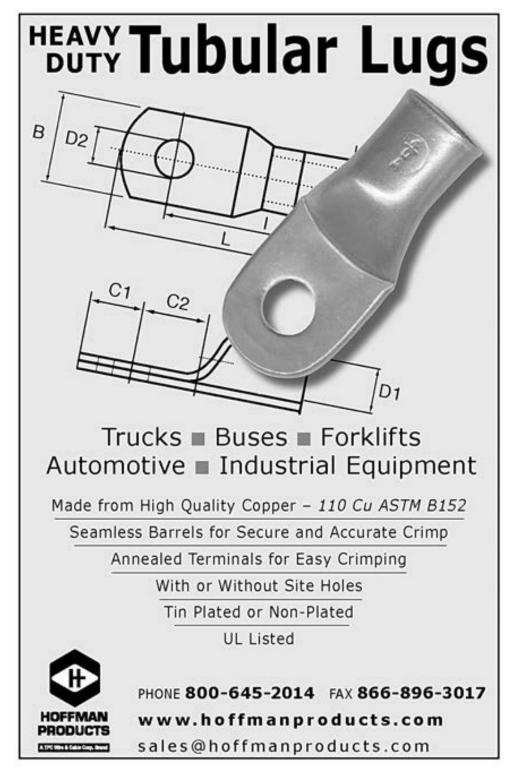
Assembly and Marking suite. ProServe® consists of free professional-grade software, as well as plotters/printers that combine design and engineering tasks with WAGO's 25,000 products to create assemblies. Revisions include new 6.0 software that utilizes a high-performance SQL server database, and expanded marking/design conveniences, e.g., AutoSave and SAP export options.

The brochure outlines how ProServe® smartDESIGNER and productLOCATOR functions navigate WAGO's Electronic Interface, Terminal Block, Interconnect and Automation catalogs. It also details the generation of part lists, creation of drawings and 3D presentation of parts/assemblies. Also explained are ProServe® smartSCRIPT and smartMARKING functions for the WAGO-I/O-SYSTEM and terminal blocks. ProServe® is compatible with industry-standard CAD/CAE systems and supports 18 languages for multinational projects.

2012 revisions to ProServe® hardware include expanding compatibility with prominent hand-held printers and renaming existing WAGO printers. The 3M(tm) PL300 joins the DYMO® RHINO 6000 hand-held printer in accommodating WAGO-exclusive 11mm-wide marking strips for TOPJOB®S lighting connectors and DIN-rail mount terminal blocks. The ProServe® TP-343 printer has been renamed TTP-345 Thermal Transfer Printer.

For additional information, download a PDF of the ProServe® brochure at http://wago.us/downloads/ProServe_Brochure.pdf or contact WAGO at 1-800-DIN-RAIL or info.us@wago.com.





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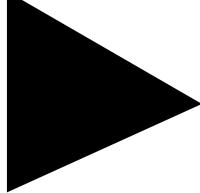
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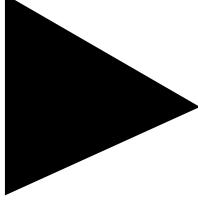
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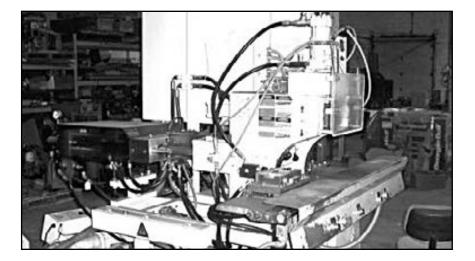
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Automotive News World Congress January 10-12, 2012

Detroit Marriott Renaissance Center Electronics New England Washington, DC

World Congress attendees receive a pass to visit the auto show on Thursday, January 12, before it opens to the public. This past January, more than 800 people came to the Detroit Marriott Renaissance Center for the annual Automotive News World Conthis year. 2012 promises to be even better. For further information visit listing of the seminars available visit www.canontradeshows.com. www.autonews.com.

DesignCon 2012

January 30 - February 2, 2012

Santa Clara Convention Center Santa Clara, California

DesignCon is a premier educational conference and technology exhibition for semiconductor and electronic design engineers. At DesignCon, engineers talk to engineers to find practical solutions to the challenging problems they share in design and verification. DesignCon emphasizes education and peer-to-peer sharing among practicing engineers, creating a unique atmosphere for learning about state-of-the-art EDS 2012 design methodologies and technologies. Individuals presenting papers at DesignCon will join an elite group offering leading-edge case studies, technology innovations, practical techniques, design tips and application overviews. For further information visit www.DesignCon.com.

APEC 2012 February 5-9, 2012

Disney Coronado Springs Resort Lake Buena Vista, Florida

APEC 2012 continues the long-standing tradition of addressing issues of immediate and long-term interest to the practicing power electronics engineer. Outstanding technical content is provided at one of the lowest registration costs of any IEEE conference. For further information visit www.apec-conf.org

MD&M West

Anaheim Convention Center Anaheim, California February 13-16, 2012

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

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

Swan Resort Orlando, Florida

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

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San Diego Convention Center **February 28-March 12, 2011** San Diego, California

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

Westec 2012 March 27-29, 2012

Los Angeles Convention Center Los Angeles, California

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

NPE 2012 April 1-5, 2012

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Del Mar Fairgrounds Del Mar, California

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May 8-10, 2012

The Cosmopolitan Las Vegas, California

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SMT Hybrid Packaging 2012 May 8-10, 2012

Exhibition Centre Nuremberg Nuremberg, Germany

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National Electrical Wire Processing

Technology Expo May 9-10, 2012

Frontier Airlines Center Milwaukee, Wisconsin

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Atlantic Design & Manufacturing 2012 **Pennsylvania Convention Center** May 22-24, 2012 Philadelphia, Pennsylvania

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Semicon West 2012

July 10-12, 2012 San Francisco, California

With many new manufacturing technologies coming to market (including vertical transistors, 3D IC, advanced materials, 450mm, and EUV) and with the continued Orange County Convention Center growth of emerging and adjacent microelectronics markets (including high-bright-Orlando, Florida ness LEDs, MEMS, power semiconductors, and flexible electronics), 2012 is already Join the celebration as SPI: The Plastics Industry Trade Association marks its 75th shaping up to be an important year for the global microelectronics supply chain. For further information visit http://MDMminn.com

Electronica 2012 October 20-23, 2012

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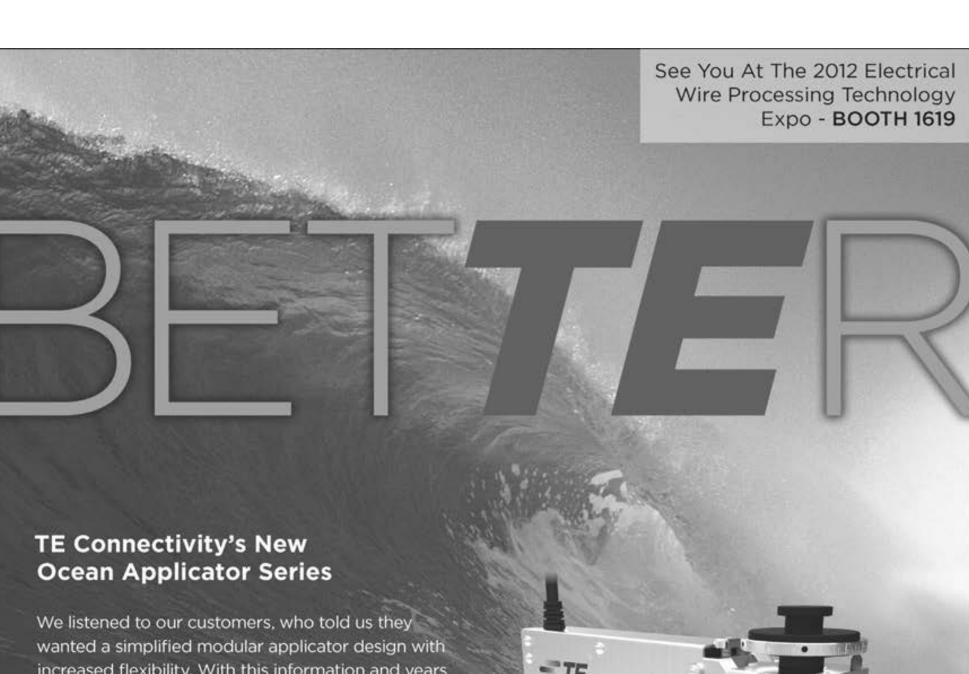
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NOVEMBER/DECEMBER



We listened to our customers, who told us they wanted a simplified modular applicator design with increased flexibility. With this information and years of development, our engineers designed a state of the art applicator with easy adjustments, design consistency and global standardization, which in turn provides you with the benefits and quality you've come to expect from TE Connectivity.

TE's Ocean applicators are designed to be backward compatible to run all common terminators and leadmakers. It can also be upgraded to run on servo intelligent machines.

Learn more at tooling.te.com/ocean.asp









Call your TE Connectivity sales professional at 888-777-5917 or 1-717-810-2080 for a demonstration of TE's Ocean Applicator Series and see how your manufacturing can improve with its use.



EVERY CONNECTION COUNTS

TE Connectivity's only obligations are those stated in TE's General Terms and Conditions of Business (http://www.te.com/aboutus/tandc.asp) TE expressly disclaims any implied warranty regarding the information contained herein, including, but not limited to, the implied warranties of merchantability or fitness for a particular purpose.

You don't have to be BIG to act S.M.A.R.T.

THE WAY TO MAKE IT | SMARTER



S.M.A.R.T. as in:

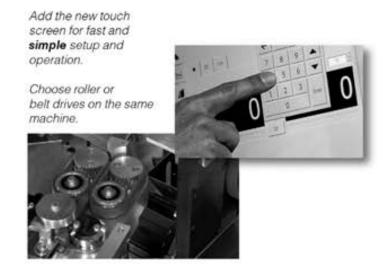
Simple,

Maintenance Friendly,

Affordable,

Reliable and

Top Quality



Like other Komax crimp-to-crimp machines, the new Gamma 263 offers well-know, **reliable** processes... but in a much smaller footprint.

Designed for one and two-sided crimping and one-sided seal loading, the new Gamma 263 is compact in size only, offering big features like:

- integrated quality monitoring systems and crimp force analysis (CFA/CFA+)
- a second integrated encoder for maximum accuracy of stripping and wire lengths
- an optional WPCS (Wire Processing Communication Standard) interface allowing Komax machines to be networked and easily integrated into existing production processes.

The new Gamma 263 is very **affordable** when it comes to delivering high output for the money.

Introducing the very S.M.A.R.T. Gamma 263. www.komaxusa.com

