

This Issue Features:

- Industry News
- Calendar of Events
- New Product Information
- WHMA 2010 Conference
- Surplus and Used Machinery, Parts, Employment Opportunities



Navigating the Bumps in the Road

By Joe Tito
for Wiring Harness News

The 2010 WHMA Conference began early and on time at Orlando's Grand Cypress Resort on February 25th. Barry Fason, retired Engineering Executive with Delphi Automotive, was there to deliver the keynote speech. The title of the presentation was, "Navigating the Bumps in the Road - Starting Now". He began with his "view from 30,000 feet"; a look at what's driving the industry from past to present; then moved to his prediction for the future. Mr. Fason finished off with a rather interesting tale he called: The Saga of Company X.

Beginning with a statement most would agree with, Fason characterized the industry as being very competitive with ever tightening margins. This situation is driven by several factors, he states, among which are the costs relat-

ed to quality, ever increasing technology, enhanced safety requirements, and environmental issues. It seemed to Mr. Fason, however, that in addition to this high competition/low margin scenario, OEM's are feeling pressure to reduce emissions and increase fuel efficiency.

Fason's research showed that new vehicle feature content continues to grow, and he categorized these systems as follows:

1. Safety and Powertrain - Engine management systems, advanced airbag and braking systems, drive-by-wire
2. Comfort and Control - Advanced climate zones, voice recognition controls, power seat and steering adjustment controls
3. Driver Assistance - Heads-up displays, reverse and active park assist, lane departure and collision warning systems, night vision
4. Communication and "Infotainment" - Telecommunication, multimedia, satellite entertainment

Past, Present & Future of Connector Industry

By Joe Tito
for Wiring Harness News

David Pheteplace of Bishop and Associates Inc., a connector industry analyst firm, spoke at the 2010 WHMA Conference in Florida on February 25th. His presentation covered a history of both the connector and connector assembly industries, a snapshot of the interconnect industry, and an outlook for the near future.

Mr. Pheteplace began his presentation with a graph depicting year-to-year change in connector sales since 1982. Year 2009 closed with the steepest decline in the 27 year period, down 21.8%. Only five years posted negative growth since 1982. There is cause to be

encouraged though, as Pheteplace showed that "every time we have seen a decline in the industry, we have seen at least six years of growth." This past decade has been the toughest on the industry, containing three of those five downturn years (*figure 1 page 25*). He reminded the audience about the dot-com and telecom bubbles that facilitated the downturns in 2001 and 2002.

Although 2009 saw the biggest decline, Mr. Pheteplace informed that volume in the world connector market has grown immensely since the 1980's, from \$8.6 billion to \$44 billion in annual revenues. "That's a compound annual growth rate of 6%", he concluded. The highest growth regions were Asia Pacific

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Barry Fason, retired Engineering Executive with Delphi Automotive, delivered the keynote speech at WHMA's 2010 Annual Conference.

Industry analysts project, he indicates, that vehicle electronics will account for well over 30 percent of vehicle cost in the near future. "Our challenge is to create innovative and cost effective means to integrate these applications", Fason said.

But how did we get here? Mr. Fason took a look at how Electrical and Electronic Distribution Systems (EEDS) advanced steadily over the past 4

decades. In the 1960's the concept was 'sparse'. Heaters, turn signals, radios, and other basics were the norm, with air-conditioning "only if you lived in the south." The 1970's saw little more integration other than the advent of the 8-track and other slightly enhanced music systems. In the 1980's fuel injection

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J. Scot Sharland of the AIAG at WHMA Conference

Auto Connector, Wire and Cable Assembly Industry Challenges

J. Scot Sharland of the Automotive Industry Action Group (AIAG) rounded out the 2010 WHMA conference with his speech entitled Auto Connector, Wire and Cable Assembly Industry Challenges. He began by giving an overview of AIAG, and then described an industry model he refers to as 'co-opetition'. He proceeded with a snapshot of the North American Auto Industry, and concluded with a look at the future with some wise advice for suppliers.

AIAG, Sharland outlined, is a non-profit organization providing a forum where "retailers, automakers, suppliers, service providers, government, and academia work to drive cost and complexity from the supply chain." AIAG does this, he said, through facilitation of global standards development, and by seeking to harmonize industry business practices.



J. Scot Sharland of AIAG

As a globally recognized trade association founded in 1982, AIAG's 800 member companies represent \$850 million in annual turnover. With 31 full time staff, he continued, AIAG also enlists over 650 industry 'volunteers' including Senior

Continued on page 12

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4 The Fourth Ingredient

In the last three issues of Wiring Harness News, Paul Hogendoorn wrote about 3 of the key ingredients for survival in the manufacturing industry today: adaptability, excellence and attitude. In this issue he gives us the fourth ingredient — passion.

7 News Plugs

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

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Photovoltaic Wire, also known as PV wire, is a single-conductor wire used to connect the panels of a photovoltaic electric energy system. This Wire Wisdom reviews "What is a PV wire?" "What differentiates one PV wire from another?" and "Where is PV wire headed?"

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OVER THE WIRE

Comments, Suggestions, and Information from our readers...

Dear Readers,

This issue covers the 2010 Wiring Harness Manufacturer's Association Conference held in Orlando, Florida in February. Founded in 1993 WHMA has become the only organization exclusively serving the manufacturers of wiring harnesses, electronic cable assemblies, and cord sets, along with their suppliers and distributors.

Wiring Harness News is the official publication of the Wiring Harness Manufacturer's Association.

I would like to thank the members of WHMA for presenting me with the "Bud & Gus" award during the opening ceremony of the conference. What a wonderful surprise and a great honor and I truly thank everyone!

The July/August issue of *Wiring Harness News* will cover the 10th Annual National Electrical Wire Processing Technology Expo. The Expo has over 100 exhibitors and seminars providing pertinent information for our industry. The July/August issue will also be distributed at ATEXpo in Rosemont, Illinois.

If *Wiring Harness News* can cover a specific topic of interest to our industry, please contact me.

As always, keep those press releases coming. We would like news on new products, processes and people.

Have a wonderful summer!

Marilyn

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1 Navigating the Bumps in the Road

Barry Fason, retired engineering executive with Delphi Automotive delivered the keynote speech to 2010 WHMA Conference attendees.

1 Auto Connector Wire and Cable Assembly Industry Challenges

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1 Past, Present & Future of Connector Industry

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Over 10,000 copies of *Wiring Harness News* (ISSN 1097-0789) are distributed bi-monthly to wiring harness & cable assembly shops, cord set manufacturers, companies that process electric wire & cable (including fiber optic) for use in their own products, their suppliers and other interested parties.

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2010 Production Schedule

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|------------------------|------------------------------|---------------------------|
| July/August 2010 | June 4, 2010 | June 11, 2010 |
| September/October 2010 | August 6, 2010 | August 13, 2010 |
| November/December 2010 | October 1, 2010 | October 8, 2010 |

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The Fourth Ingredient

By Paul Hogendoorn



Paul Hogendoorn,
President OES, Inc.

George Harrison, a Dallas Mavericks' game, and a cab ride to the airport. How could these topics have anything at all to do with a column about the manufacturing industry today? The editors of this fine magazine have graciously extended me a lot of latitude over years - let's see if they let me try to put this one together!

Actually, it won't be too much of a stretch at all. In previous columns, I have written about what I believe are 3 of the key ingredients for survival in the manufacturing industry today: adaptability, excellence and attitude. The fourth ingredient, in my mind, is "passion".

Last month I was in Dallas and was watching the Maverick's play the Lakers. One of my company's divisions designs and manufactures scoreboards, and Dallas is one of "our" venues. During one break in the action, the camera spotted a couple of celebrities in attendance and put their faces on the big video board. The crowd erupted in spontaneous applause and the celebrities smiled and waved graciously. I had no idea who they were, so I leaned over and asked a colleague sitting beside me. But, since he was in my age bracket, he was equally clueless. We started polling the people

immediately around us until we got to a couple in their late teens or early twenties. "It's Beyonce and Jay Z" they said incredulously, amazed that we didn't recognize these two mega-stars.

I had heard of the names and through my kids, probably had heard some of their music too. But it wasn't "my" music, from my era - an era that I would describe as "when music mattered". I don't want to argue that music in my

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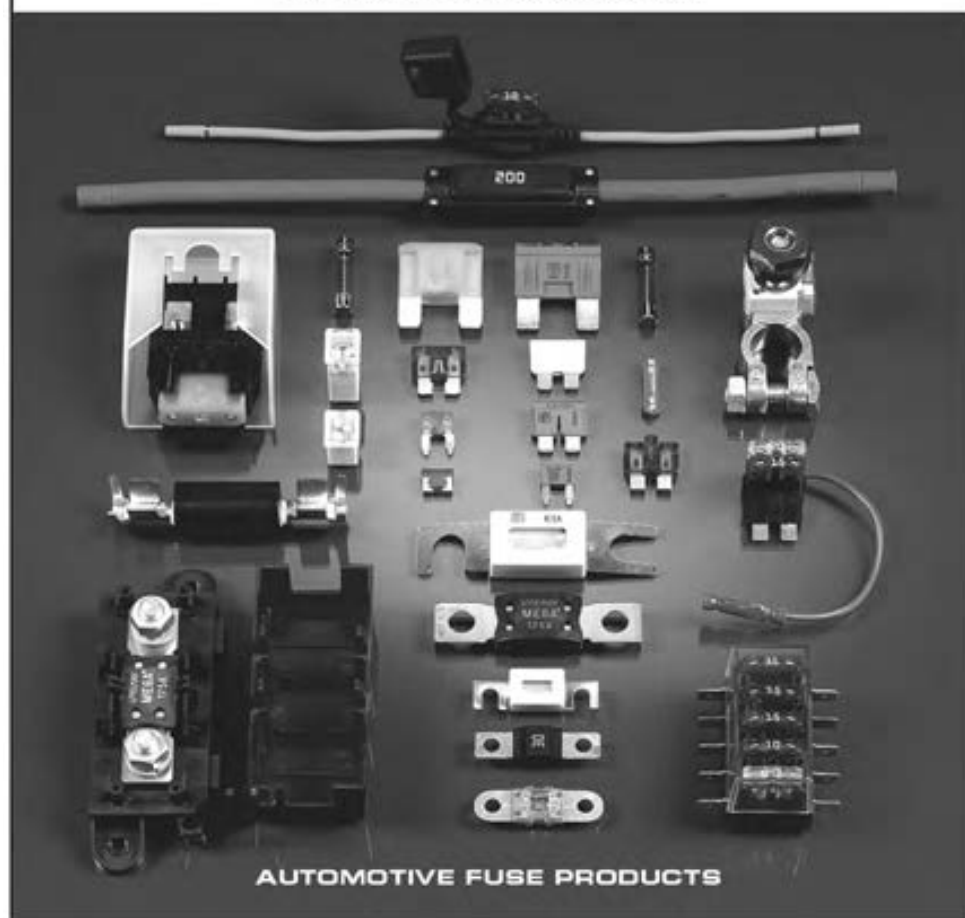
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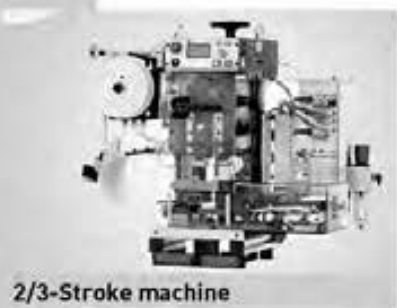
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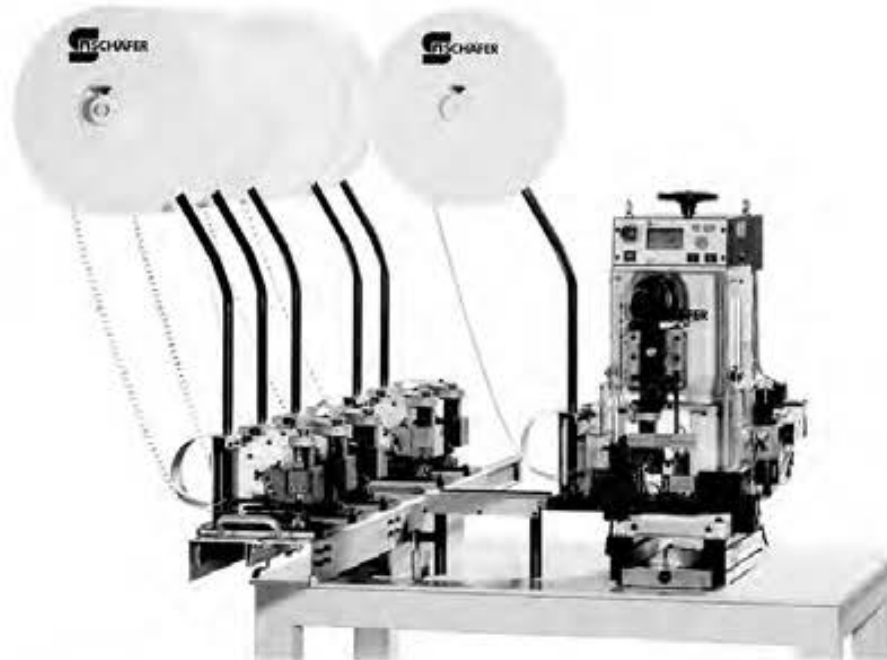
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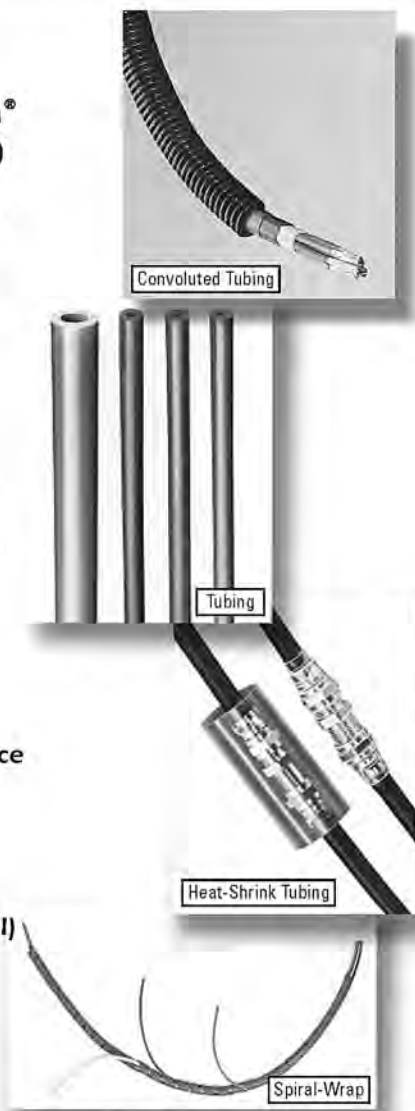
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The Fourth Ingredient

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era was the best, or most creative, or most popular, but I think I can make a strong case that music in my era - the last 60's and early 70's - mattered more than music before it or after it. The music of that day tried to actually change the world, a truly audacious objective - and in a lot of ways it did. There were all the songs about "peace" trying to stop the war in Viet Nam; about "love", trying to change society's focus from capitalism to personal enlightenment; about a new generation coming of age, with anti-establishment protest songs heralding their arrival. And then there was George Harrison's classic two-record masterpiece, drawing our attention to the poverty and misery in Bangladesh.

My colleague was in complete agreement with me. John Lennon, The Who, CCR - so many of the bands and musicians of that day had something important to say. It wasn't really their music that was trying to change the world though - it was their passion that was. Their music was their means of change, but the power that drove it was their passion to effect change. There are many today that suggest that the changes in the USSR that led to the eventual dismantling of the Iron Curtain and the

tearing down of the Berlin Wall began when the Beatles first toured Russia and a new generation had been awakened with a fresh sense of their own ideals, ambition and identity.

Today, we have many companies in need of life saving change. They are holding on by their fingernails, hoping for "the economy to turn around", or a life saving concession from their workforce, or a government guarantee or bailout. But what they really need is what I wrote about in 3 of my previous columns - an ability to adapt quickly, a focus on excellence, and an all-inclusive change in attitudes. And, they need world changing passion; a passion strong enough to change their world.

The next morning, I took the shuttle to the airport. In a casual conversation with the driver, he told me was from Bangladesh. "Do you know anything about Bangladesh?" he asked me. "Only what I know from George Harrison" I replied. "Oh, George Harrison" he says breaking into a reverent smile, "He is a true hero in my country, everyone knows about him!". He goes on to tell me that in his hometown there is a big museum dedicated solely to him, about how he drew the world's attention to that country, how the country has never been the same, and that there's a picture of his face that covers an entire wall.

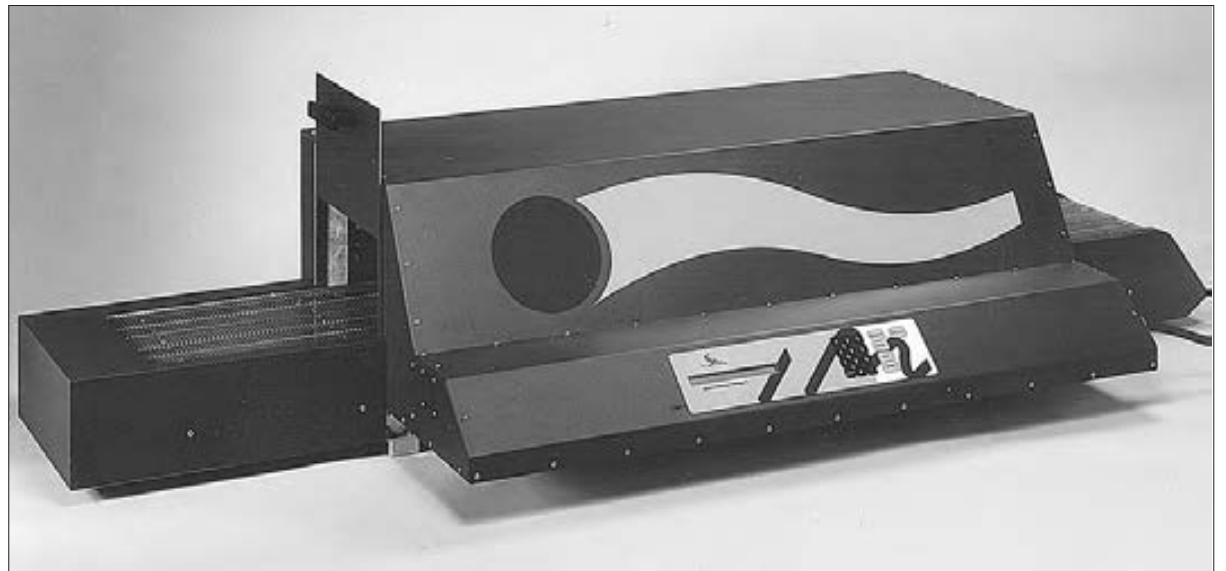
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George Harrison did change their world with his music, but it was far more than his talent for writing words and creating melodies, it was his passion and commitment for that cause.

Passion is what makes you go on when logic tells you to stop. Passion is what makes you deaf to unbelievers and blind to distractions. A good idea may attract people to your cause for a quick look- and-see, but passion is what keeps

them there. Passion is what makes your efforts powerful beyond simple strength; it's the critical ingredient needed to change a world.

Paul Hogendoorn is president of OES, Inc. and chair of the London Region Manufacturing Council (not to mention a big fan of classic rock!) He can be reached at phogendoorn@oes-inc.com.

NEWS PLUGS

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Navigating the Bumps in the Road

Continued from page 1

and electronic ignition came along, and anti-lock brakes and airbags were beginning to emerge. In the 1990's, Fason continued, the industry began to see such things as heated seats and climate control. This past decade highlighted high-end music systems, USB ports, integrated navigation, rear seat entertainment - the list goes on and continues to grow."

A huge challenge to the OEM's and system developers moving forward is driver overload, said Fason. He asserted that overload becomes a larger factor and as more systems are introduced, and developing management systems to "simplify the driving experience" will be necessary.

According to industry insiders Mr. Fason cited, the overall trend at the OEM level is cost reduction (of course) along with weight and size reduction. "What that means to our industry", Fason says, "is the overall move towards cable and component miniaturization." The trend to reduce wire gauge means that wire in the 22 to 30 gauge range is used in many applications today. Mr. Fason asserted that the "estimated theoretical weight saving through gauge reduction is

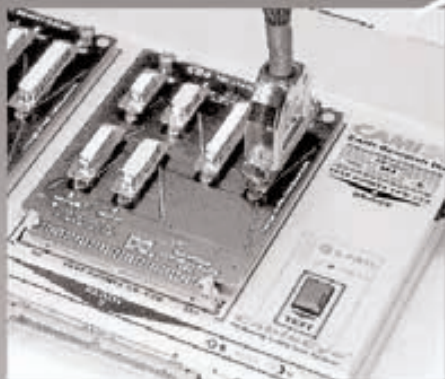
between one to six Kg per vehicle." The average wire gauge used in vehicle electrical components is likely to reduce by 20% for 2015 and 30% by 2018, Fason noted.

In addition to wire gauge size, states Fason, cable core technology is also developing. As copper prices rise, the use of copper alloy, copper-clad aluminum, aluminum, and aluminum alloy wire are all increasing in importance. Hybrid and electric vehicles provide added challenges, Fason continued, in that their complex electrical distribution systems allow for a wide range of wire gauge usage within one vehicle.

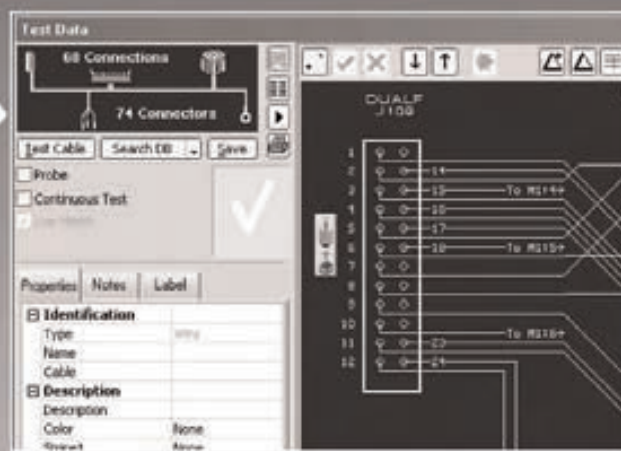
Auto Market Trends and Recovery:

Auto manufacturing worldwide peaked in 2007 according to Fason, with 73 million cars produced. Citing numbers from the Center for Automotive Studies, US vehicle sales in 2009 were 10.4 million units; the lowest since 1982. Fason said the same study projected 2010 sales of 12.4 million units, but he expressed doubts in meeting that goal. Expanding on these trends, some analysts Mr. Fason pointed to indicate that emerging markets (BRIC) will account for 30% of worldwide vehicle sales by 2014. As manufacturers strive to

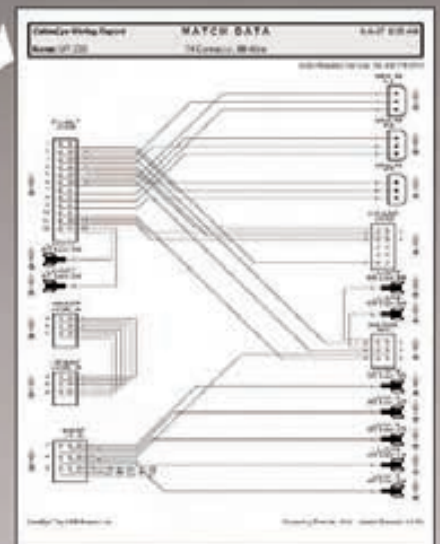
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meet lower vehicle costs, though, Fason asserts that OEM's will continue to pressure suppliers to provide lower costs without sacrificing quality.

To sum industry trends, Mr. Fason stressed that the two key factors to competitive success for automotive wire harness manufacturers are: technical innovation and preparedness. He stated "Suppliers who successfully design and develop new technologies allowing for size, weight, and cost savings; while incorporating improved and more efficient manufacturing processes; will likely have a competitive advantage."

Mr. Fason then shifted his attention to the recovery of the automotive industry stating that the economic downturn manifested itself on the auto industry in three ways. First was industry over-capacity. He informed that "the global automotive industry has the capacity to produce over 86 million vehicles, and perhaps more." High inventory levels and low profitability are the other two major results of the downturn, he added.

The recovery, as Fason sees it, will depend on increased demand for smaller fuel efficient cars, increased consumer confidence, and the strength of emerging markets. Alternate powertrain technology will be an important issue through recovery, Fason says, with hydrogen fuel cell technology and the proliferation of hybrid and electric vehicles. "Being a wire harness supplier in this market is challenging to say the least", he thinks. But to the extent that the automotive supplier can be innovative, proactive, flexible, and react to market trends; "they will have the best opportunity to be successful."

with the story of a "fictitious" company whose woes were not meant to portray "any relation to any company, living or dead"

"Company X was once a leading vehicle wiring component manufacturer that was part of a large OEM and subsequently spun off. Cost pressure from OEM's increased, and constricting contract prices dramatically eroded operating income. Core expertise became lost or ignored at Company X with a heavier emphasis on micro-management, and new levels of managerial experts to 'fix' the problems. Problems weren't fixed, and were so severe that in the end, even bankruptcy may not provide enough breathing room to make a fresh start."

"Many problems were at the root of Company X's troubles. The most compelling among them was the poor price/quality ratio. This meant the lack of adequate price required to support the expected level of quality, service and delivery, while also providing an acceptable level of quality. A mind set ensued that emphasized 'winning the business' then implementing relevant cost cutting measures and fixes to meet target operating incomes. Another root was the fact that the new management had limited or no wiring experience, and separate business segments were established resulting in layered management and general confusion. The sense of interdependency between core business units was lost. Excessive analysis led to cost-cutting, business case manipulation, and endless meetings. Good tools like 6-Sigma and Lean Manufacturing were manipulated leading to overdesign and over complication."

The Saga of Company X:

Mr. Fason wrapped up his comments

Continued on page 10

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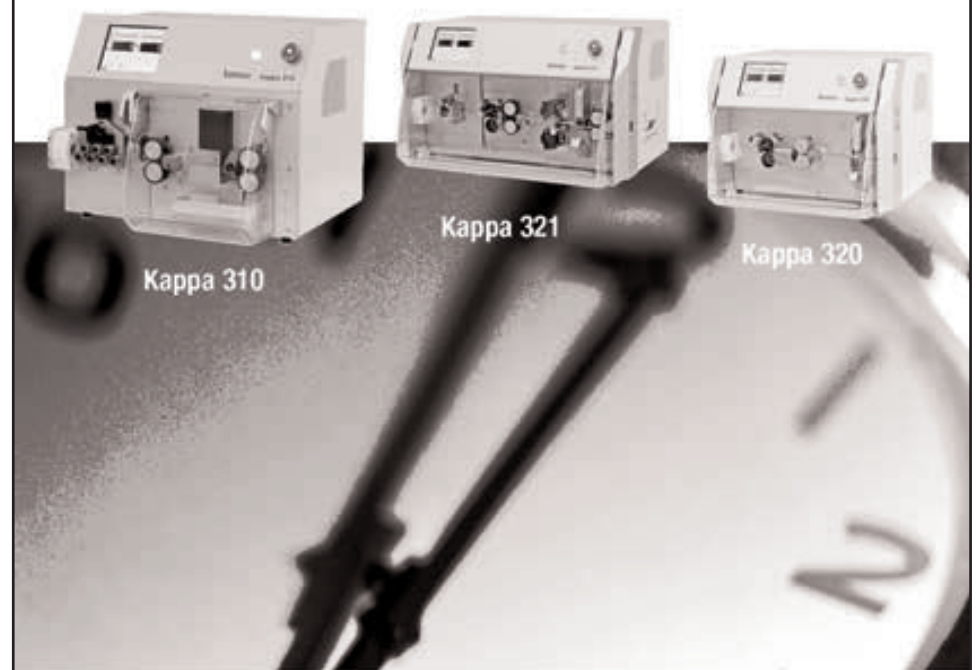
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Navigating the Bumps in the Road

Continued from page 9

"Another root of the problem at Company X, was the race to implement the 'next best thing'. Core expertise was ignored in favor of Outside 'elite' advice, and these advisors were given total control. More complexity bred more confusion. Fear of job loss clouded rational thought."

Mr. Fason then outlined the lessons to be learned, and the pitfalls to avoid from the Saga of Company X. First, the old adage "People are Our Best Asset" is true, he said, and should be the core business model. Company X had lost sight of this and along with that, Fason contended, their innovative edge. They forgot that the core product had been electrical systems; not cable, components or harnesses. Company X "became a build-to-print supplier run by financial analysts". The same commitment to support was required, but at commodity pricing.

The final lesson from Mr. Fason's story was that "wiring harness leaders must develop the confidence in their processes, products, people, and strengths needed to address and prevent further price erosion. This will eventually lead back to the ability to achieve positive margins."

Some interesting questions followed the speech. Most notable from the audience was the following: "With an attempt by the OEM's to 'commodify' our process, how do we keep the purchasing 'hit men' at bay?" Fason answered with a warning not to let OEM's push suppliers into non-profitability, and that in some cases, "walking away from the business might be a prudent strategy." Short of this strategy, another member of the audience suggested opening the books to show the customer the true costs of quality. The Audience member further noted that "as the only ones trading in our stock" we as suppliers need to take the broader look to understand how this low profit business fits into our future strategy.

Barry Fason really struck a nerve with the Saga of Company X by pointing out that overall; the strategy of the OEM can't be to put the supplier out of business. A private interaction with Mr. Fason, seemed to further the notion that supplier must educate the OEM on the value brought to the table; versus the price alone.

Barry Fason is a self-employed Engineering and Management Consultant. Mr. Fason is a retired Director of Process Engineering for Delphi Packard's Mexico operations.

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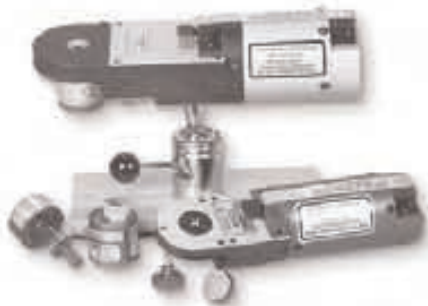
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J. Scot Sharland of the AIAG at WHMA Conference

Continued from page 1 _____

Purchasing Executives 'on loan' from the Big Three US manufacturers. The association's income stream, he noted, stems from training, publications, events, grants, membership dues, and industry certifications. "You don't have to be a member in order to utilize resources", reminds Sharland, as AIAG products and seminars are available to any company wishing to access them.

The current board of directors at AIAG, Sharland showed, has mem-

bers from the US Big Three along with executives from Honda, Nissan, and Toyota. In addition, he noted, board members hail from off-road OEM's like Caterpillar and Navistar; with supplier members from companies like Eaton, Delphi, Lear, IMB and Infor.

"AIAG provides industry stakeholders a legal (safe from anti-trust issues) and professional infrastructure that allows them to work collaboratively on common business practices." Another important charter of the organization, Sharland outlined, is providing an industry

voice and presence at international standards organizations. As such, he said, AIAG tries to make sure that the unique requirements of the industry, and its verticals, are represented when standards are developed.

Mr. Sharland then turned to the notion of 'co-opetition' which is his proposed model where competitors create value in the supply chain. He adapted this term from a book by Adam Brandenburger and Barry Nalebuff who describe it as revolutionary mindset that combines competition and cooperation.

The traditional view of this at AIAG has been reactive, with competing technologies and systems creating redundancies and waste in the supply chain, he said. The industry then strived for co-opetition through AIAG to reduce these redundancies. In the advanced proactive view of co-opetition Sharland outlined, AIAG identifies emerging issues that will drive future industry communication. This results in cost savings by allowing "supply chain companies to compete on a level playing field without non-value company specific legacy investments" (redundancies).

Moving on to a look at the North American Auto Industry, Mr. Sharland shared a view of the business strategy as "Do whatever you have to do to hang on - 2010 can't (be) as bad as 2009." "But don't delude yourself", he warned, "prepare for an equally difficult year", and added, "Cash For Clunkers really spiked the automotive take rate in 2009." A December 2009 J.D. Powers forecast for US light vehicles showed sales at 11.5 million units. A revised version posted in January 2010 showed that number to be 10.6 million units. To this variance Sharland replied that forecasts "tend to vaporize a million units every couple of months as they dial in their forecasts a little tighter." Some forecasts Mr. Sharland has seen present a "hockey stick" upward trend in the coming years. He sees that as optimistic. "The reality", he notes, "is that whether

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the market comes back to 11, 12, or 13 million; it is not growth compared to where we were three to four years ago." In addition, the share shift will continue to move away from the Big Three. He added that a good outlook is "plan for the worst, and you won't be disappointed; the only thing you control is your attitude."

More J.D. Power information showed that the sale of light trucks and SUVs will continue to be strong relative to passenger cars. Contrary to some beliefs, this does not represent a conspiracy on the part of automakers, he said. Americans genuinely like those vehicles. If not, he added, "then why does Porsche make an SUV?" Government pressure and possibly higher oil prices, he counters, will continue to pressure the industry towards smaller and more fuel efficient cars. The important thing here, says Sharland, is that the profit on light trucks and SUVs are much higher so "if you lose 200 thousand units of F150s, you'd better sell a lot more Taurus's to offset the margins."

Mr. Sharland showed that the larger part of the growth share will be in China and Central/ Eastern Europe. This growth and will focus on the C segment, he said, with broad-based C and D segment share shift in the US if there are increasing regulatory drivers. "I'll tell you why that impacts your business", he said, "Unit volume growth in the industry is not going to be in North America." The focus in the North American auto industry, he continued, will be on share shift, and not the organic growth that will come in China and India. Assembly production in the US, he noted, will continue to shift away from the Midwest and towards the Southeast and Southwest.

This share shift to China and India will change the manufacturing footprint alignment. OEM's, he showed, tend to follow the demand; and the suppliers tend to follow the OEMs. He warns that as suppliers set up shop in these countries they must have the "know-how and

know-who" to get the job done. In China for example, he revealed that there are a lot of young people who "don't know what they don't know", so training is important. He added that savvy suppliers will "need to have locals on the ground that can help develop staff as expeditiously as possible."

Suppliers must also be aware, he warns, of legislative or protectionist barriers to local economies. One such legislative hurdle he noted was the Compulsory Certification in China, whose charter is to analyze processes and products to ensure against any detriment to the local environment and general safety.

Fair analysis should also be given in choosing off shore production via joint venture or alliances; versus Greenfield development. "If you can find the right people to align yourself with", joint venture is the better model. "Then you can leverage each other's resources and assets" he said. Stressing customer diversification he advised against building a plant to serve one customer. Volume is never guaranteed, he warned, and you risk being stuck with the overhead. Mr. Sharland stressed a more holistic approach saying "be there to participate in the growth of the local market, not just one customer's growth."

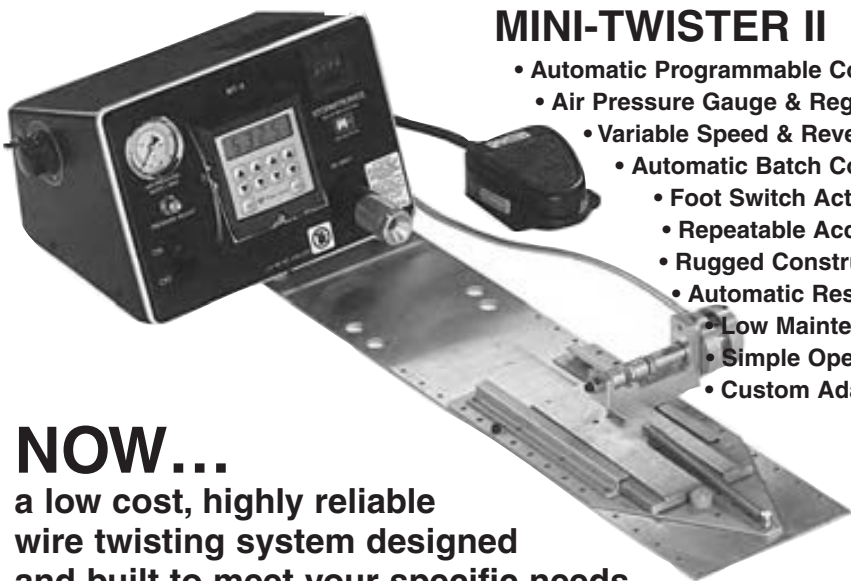
Completing his analysis of offshore production, Mr. Sharland emphasized the importance of protecting intellectual property when dealing with OEM's or local suppliers. He reminded the audience that there is little respect for IP in some countries and that a patent "is only as good as the money you want to throw out there to protect it."

Another major factor Sharland sees in the road ahead for the industry; is the consolidation of suppliers, platforms, and engines. OEM's, he warns, are continuing to trim the number of suppliers. The remaining suppliers will have a larger strategic footprint. A key to financial

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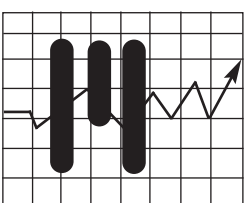


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J. Scot Sharland of the AIAG at WHMA Conference

Continued from page 13

viability at the OEM level is the reduction of platforms, he said. By 2014, he showed, 70% of GM and Ford vehicles in North America will be built on global platforms (versus 2009 with GM at 10% and Ford at 6%). He continued revealing that by 2014, 100% of Toyota and Hyundai production will be on global platforms; with 97% integration at Nissan-Renault. He contends

this could lead to fewer differences in the harnesses being used. Conversely, said Sharland, consolidation in engine platforms may actually lead to more harness opportunities as manufacturers use gadgetry to "muscle-up" smaller engines in order to provide enhanced performance.

Volume shift to emerging countries will also increase the complexity of Quality Management Services. In the near term, he informs,

challenges will arise in reconciling differences in ISO/TS 16949 standards versus those of Japan and developing nations. AIAG, he noted, is "focusing on harmonization of these core tools" by developing global alliances with CAA, JAMA, VDA and other standards groups.

Mr. Sharland pointed to several concerns with respect to cost management in the North American market. Economic conditions may force some suppliers to make tough decisions, he said, and walk away from low or no profit business. He also pointed out that currency exposure is a major concern when thinking globally. Suppliers, he explains, "need a plan for local production in case the local currency flips", as did the Euro. Terms and conditions, he warned, can eat away at margins and must be fully analyzed on a risk management basis. Also, he instructed, quotes should contain stipulations to mitigate the cost of price-volatile materials like copper and precious metals.

Good news for the wire harness industry, Sharland states, could be the proliferation of PHEV (plug-in hybrid) and BEV (battery electric) vehicles; as they will undoubtedly spawn a new species of wiring assemblies for batteries, motors, and controls. He adds that across platforms, vehicle electronic content and complexity will continue to increase unabated with developments in telematics, infotainment, and the aforementioned powertrain muscle-ups.

In summation of his presentation, Mr. Sharland stressed that the key to sustainability as a supplier to the automotive industry, is the ability to react quickly to change while questioning the logic. He ended with one of his favorite quotes: "Just because you've always done it that way doesn't mean it's not incredibly stupid."

J. Scot Sharland is with the Automotive Industry Action Group. AIAG is a not-for-profit automotive industry advocate group. www.aiag.org.

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reasons, the dual-layer PV wires are typically more costly than their comparable single-layer counterparts. However, the higher cost may be warranted by some users who are looking for the longest life possible from their PV wire. It's important to note that according to the 2008 NEC, PV wire is one of only three approved wiring methods for ungrounded photovoltaic sources. However, now that PV wire is becoming more available, it is rare that an alternative is needed.

Where is PV wire headed?

As the solar industry evolves, the applications and

resulting wiring requirements are expected to change as well. Recent changes to the UL Subject have included the optional addition of a direct burial listing for the wires. Previous changes included an increase in conductor size from a 2 AWG to the current 4/0 AWG. With new players seemingly added to the PV wire market every day, products are meeting more and more standards and multirated products seem to be the most common direction. The ultimate product is likely one that will satisfy domestic and international standards while being easy to work with and competitively priced.

With regard to the stan-

dards, staying up to date on the latest developments can be difficult. Anixter is actively involved in voting on many standards and tracks high-profile developments on UL 4703. Check the Anixter website² for the latest information about such wire and cable industry developments.

¹<http://www.ulstandards.com>
"Subject 4703, Outline for Investigation for Photovoltaic Wire"

²<http://www.anixter.com/AX/ECOM/US.NSF/HomePage?OpenForm&Division=DivTab5>



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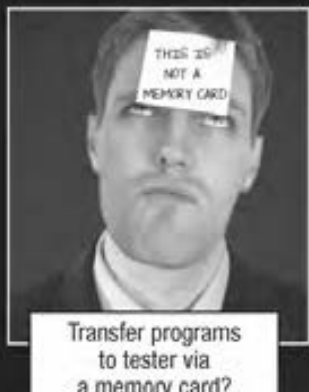
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Pages 51-52

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NEWS PLUGS continued



Continued from page 7

Power-interrupt Safety Reset requiring an "off-on" reset after a power failure, if the heat gun was left last in the "Hot" position.

The Proheat LCD Programmable Heat Gun's full-featured design makes it ideal for demanding applications in the aerospace, automotive, electronic, laboratory and general industrial workplace, including heating temperature sensitive materials, bending, forming and welding plastics, applying/removing decals, curing resins, drying filler, soldering and desoldering, shrinking tubing



Master Appliance PH-1500 LCD Control Panel

and others where heat and air flow control is needed.

For convenient storage and transport, Master offers its new Model PH-1500K Proheat LCD Programmable Heat Gun Kit which includes the PH-1500 heat gun, five specialty attachments and a durable storage & carrying case. For international use, Master also offers each of the above

model types in a CE Certified 230 Volt version in various power cord configurations.

Made in the USA, the new Proheat LCD Programmable Heat Gun and Heat Gun Kit are available only from authorized Master Appliance Distributors. For more information on our Proheat® Series and the name of your local distributor, contact Master Appliance Corp. at (800) 558-9413, e-mail sales@masterappliance.com or visit Master's web site at www.masterappliance.com.



PSA Thermal Transfer Printed Labels from Tyco Electronics.

PSA, Thermal Transfer Printed Labels for Wire and Cable Identification

Tyco Electronics introduces new EET G4 woven nylon, Pressure-Sensitive Adhesive (PSA) acrylic labels for thermal transfer printers.

The labels are suitable for wire, harness and cable identification labeling as well as applications with irregular contours, or that have low surface energy.

The industrial, instrumentation, consumer electronics, commercial and building markets will benefit from these labels as they are available in multiple sizes to fit a wide range of wire, harness and cable dimensions.

For wire and cable applications, the labels can be applied in a "flag" or "wrap-around" format. Additionally, the EET G4 labels easily conform to the flexible nature of flat-ribbon cables without causing peeling or delamination.

The product line has passed the Mark Permanence test (MIL-STD-202; method 215) and Eraser Rub test (MIL-M-81531), indicating that the labels have exceptional resistance to abrasion and alcohol-based solvents, such as Iso-propyl alcohol, when printed using the recommended thermal transfer ink ribbon.

For further information on the EET G4 labels, contact Tyco Electronics' Product Information Center at <http://www.tycoelectronics.com/help>.

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NEWS PLUGS continued



Gardtec Green Fan Cord

Gardtec Incorporated, a manufacturer of electronic cooling fan accessories, has just released the most innovative product in the AC tubeaxial cooling fan market in 30 years.

The Gardtec Green Fan Cord is the industries first thermostatically controlled fan cord. This simple new device, allows AC fans to turn on/off as system ambient temperature calls for additional cooling. The fan cord will turn on cooling fans as ambient temperatures reach the upper 80'sF, then turn off cooling fans as temper-



Gardtec Green Fan Cord

atures return to the lower 80's.

The normal operational cost for a single AC cooling fan is \$25 - \$40 yearly. Typical applications call for cooling 55-60 hours weekly, effectively allowing fans to be in the off position for 200 plus hours weekly. The Return on Investment cost is less

than 60 months. Additionally, fan life is extended, noise levels reduced and service needs significantly reduced.

The Gardtec Green Fan Cord requires no additional wiring, PC boards, or mounting of controls, everything is built into a single fan cord assembly, ready to plug and go.

For additional information or a free brochure and sample request visit www.gardtechinc.com or call (262) 634-5560.

Bisco Industries, Inc. Receives Silver Boeing Performance Excellence Award

The Boeing Company presented a 2009 Boeing Performance Excellence Award to Bisco Industries, Inc.

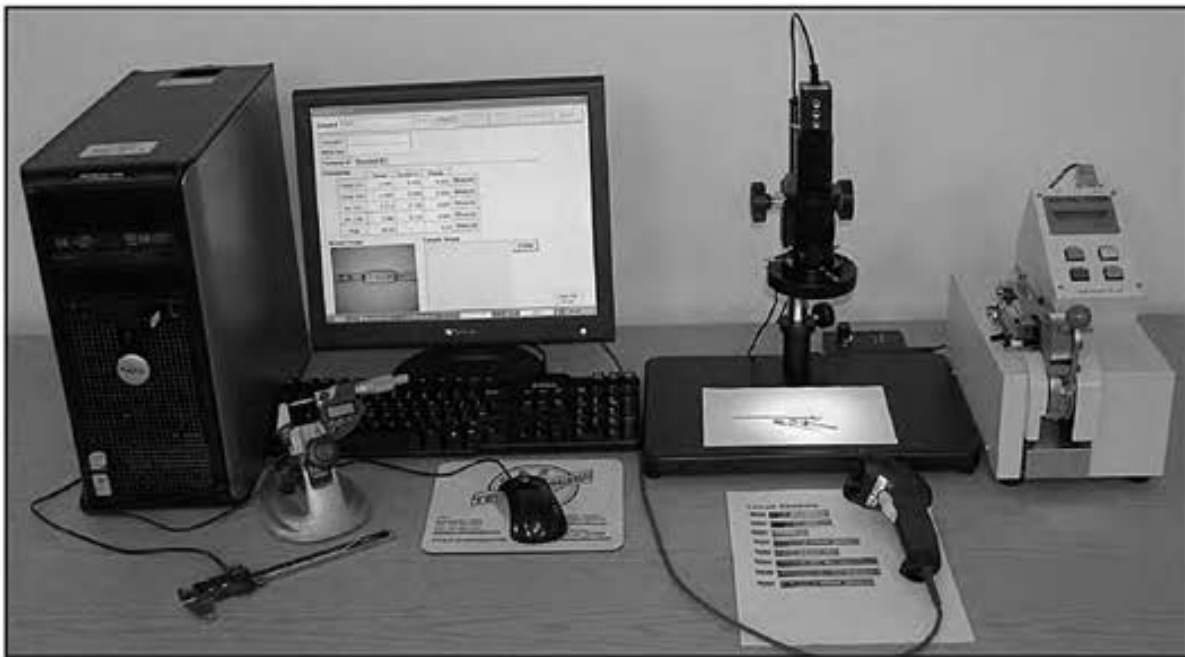
The Boeing Company issues the award annually to recognize suppliers who have achieved superior performance. Bisco Industries, Inc. maintained a minimum Silver composite performance rating each month of the 12-month performance period, from Oct. 1, 2008, to Sept. 30, 2009.

This year Boeing recognized 486 suppliers who achieved either a Gold or Silver level Boeing Performance Excellence Award. Bisco Industries, Inc. is among 348 suppliers to receive the Silver level of recognition.

"This is our third year in a row receiving the BPEA award, and Bisco Industries is one of the few companies to continue to achieve the award year after year. This definitely reflects positively on how we do business." – Ed Canales, Sales

Crimp Inspection System

PC based system with bar code scanner, micrometer, caliper, pull tester, microscope and USB camera



First the operator scans the circuit number, his worker number and the machine number. The target crimp specs and master image are recovered from the hard drive and displayed. Using current production samples the operator measures the conductor and insulation crimp heights and widths. The operator measures the pull force. The operator captures an image, either cross section or terminal image. When finished the data is stored in Excel.

Set Up Master ver 1.07

Circuit # WXYZ Hold Release Report Chart Report Sdata Master Maintenance Quit

| Terminal #1 | Terminal #2 |
|------------------|------------------------------------|
| Dimension | |
| Cond. CH | 0.033 0.002 0.034 Measure |
| Cond. CW | 0.070 0.002 0.071 Measure |
| Ins. CH | 0.080 0.005 0.080 Measure |
| Ins. CW | 0.088 0.005 0.088 Measure |
| Pull | 20.00 --- 31.18 Measure |

Master Image Sample Image Shutter

Save into Excel



Scan the circuit number, operator number and machine number



Measure conductor and insulation crimp heights



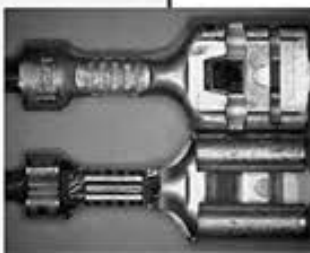
Measure conductor and insulation crimp widths



Measure pull force



Capture cross section image or terminal image



cross section images or terminal images can be captured

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

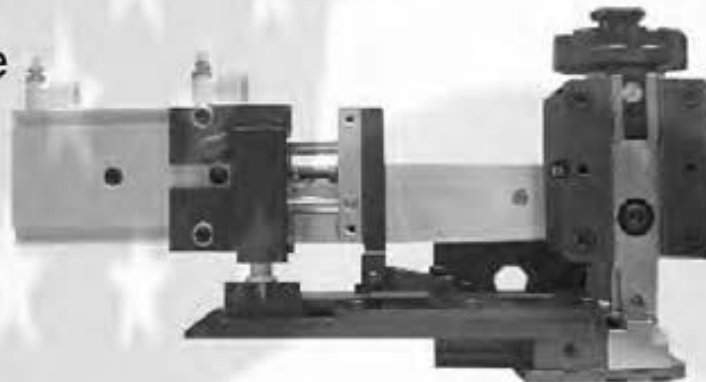


Model 1700

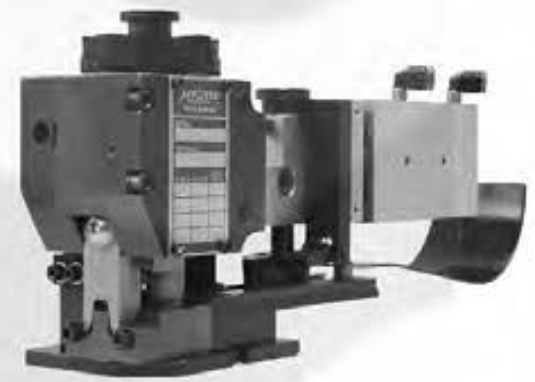


Model 2000

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

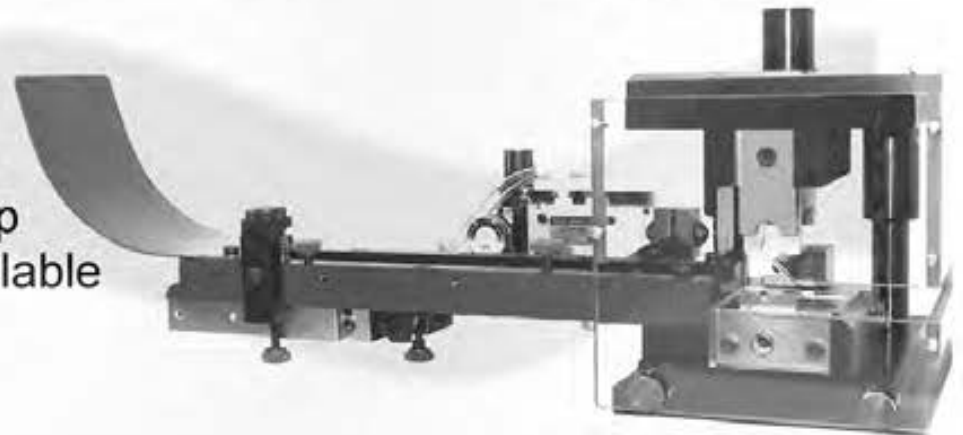


Model 1500



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

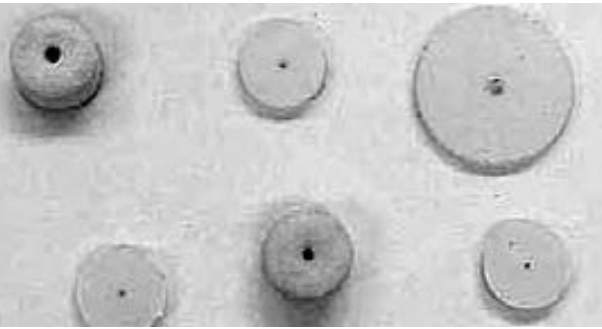
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NEWS PLUGS *continued*



Continued from page 20

Since 1973, Bisco Industries, Inc. has been a global distributor of electronic components, fasteners, and distribution services used in the production of equipment and products. Bisco Industries, Inc. has thirty-seven facilities and six distribution centers located throughout the United States and Canada. They primarily serve the aerospace, telecommunication, computer, medical, fabrication, circuit board, electronic, airline, government, and marine industries. Bisco Industries, Inc. works hard to

maintain their excellent relationship with Boeing and upholds over a 99% quality and on-time delivery rating.

Robert M. Rayner Accepts Industrial Insulation Group, LLC Board Appointment

Industrial Insulation Group, LLC (IIG), a leading manufacturer of insulation products for industrial and commercial markets worldwide, announced that Robert M. Rayner has agreed to join the board of directors. Mr. Rayner brings extensive experience and a proven track record to the IIG board from the building materials and distribution industry.

Philippe Delouvrier, Chairman and CEO of Industrial Insulation Group remarks, "Bob's thorough understanding of domestic and international business, coupled with his

extensive experience in building materials and construction, provides a knowledgeable voice for our growing company. We are very excited and pleased to have such an experienced person join our IIG family."

Mr. Rayner was President and CEO of Specialty Products & Insulation (SPI), an Evercore portfolio company, from 2004 through 2009. He led the successful development of this prominent distributor of insulation and architectural products with 70 locations in North America, culminating in a sale to Superior Plus/Winroc in September of 2009. Prior to joining SPI, Mr. Rayner was President and Chief Operating Officer of Essroc Corp., a major producer and distributor of cement and other construction materials. He was Chairman of

the Board of the Portland Cement Association in 2001. Prior to his 12 years at Essroc, Mr. Rayner held various positions around the globe in finance, treasury and international business at PepsiCo Inc. after initiating his career as a civil engineer in the U.K. and Middle East.

Mr. Rayner holds a civil engineering degree from Bristol University, England, and an MBA in Finance and International Business from the London Business School.

About Industrial Insulation Group, LLC: Industrial Insulation Group, LLC is a Calsilite/Johns Manville joint venture. IIG manufactures Thermo-12® Gold calcium silicate pipe and block insulation, Super Firetemp® fireproofing board, Sproule WR-1200® perlite pipe and block insulation, MinWool 1200® and MPT® mineral fiber pipe and board insulation, MinWool® commercial sound attenuation batts, saffing and curtainwall insulations, and a variety of associated accessory products. The IIG website can be viewed at www.iig-llc.com.



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

ECO-MAX FEATURES:

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



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

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

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Calendar of Events
Page 53



From left to right: Bob Baumann, Jeff Lemanski of Marsh Electronics, Norm Cole of Eaton, and Jim Banovich of Marsh Electronics.

Marsh Electronics Recognized for Performance Excellence

Marsh Electronics, Inc. received Distributor of the Year awards from Cleveland-based Eaton Corporation and Cherry Products (a division of ZF Electronics Corporation) of Pleasant Prairie, Wis. Marsh Electronics was chosen from among both companies' domestic, regional and local distributors based on its 2009 sales and service performance.

"We are truly honored to receive this recognition," stated Jim Banovich, VP of sales and marketing, Marsh Electronics. "All of the employees at our different branch locations should be credited for their hard work and dedication."

According to Banovich, in addition to stocking product for Eaton and Cherry Products and their customers, Marsh Electronics offers inventory replenishment, stocks non-cancelable/non-returnable product, and works in conjunction with each company's sale force to develop new customer contacts and specify products.

"We chose Marsh for this distinction based on the dedication of their entire team toward promoting, marketing and selling our product line," explained Tim Soulis, distribution sales and marketing

manager at ZF Electronics. "We have a long-term relationship with Marsh, and they excel at supporting our products and helping grow sales year after year."

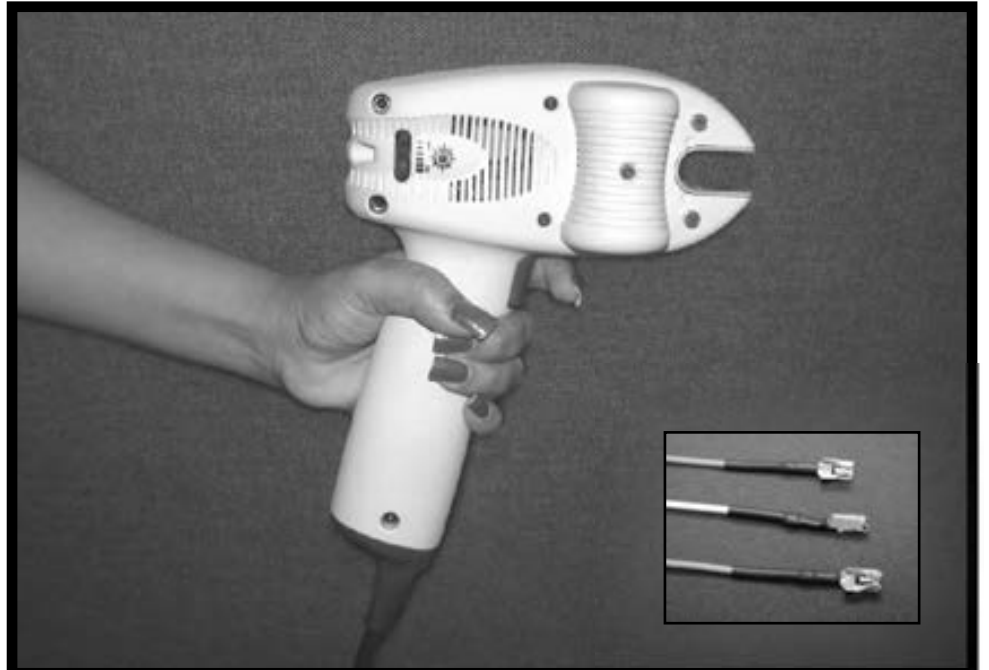
"Eaton has a longstanding relationship with Marsh Electronics," said Sara Hazen, marketing manager, Eaton Corporation. "The award recognizes Marsh's performance, support, and achievements."

Marsh Electronics was recognized by Eaton in January, and will be presented with the Cherry Product's award at the Electronic Distribution Show (ED) in Las Vegas in May.

For more information on Marsh Electronics, Inc. and its products, call (800) 236-8327 or visit: www.marshelectronics.com.

Marsh Electronics, Inc. is a broad-line stocking distributor offering electronic components from leading manufacturers of passive, electromechanical, and power semi-conductor products. Marsh stocks inventory tailored to its customers' needs and provides customized management programs to fulfill electronic component requirements.

Continued on page 24



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

*polyolefin, 5" length

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

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

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



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

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NEWS PLUGS continued



Continued from page 23

Cherry is a brand of ZF Electronics Corporation, manufacturer of computer keyboards, standard and custom electrical switches, sensors and controls for the worldwide automotive, computer and consumer/commercial OEM markets. ZF Electronics operates offices and factories in Germany, England, France, Australia, Czech Republic, Mexico, Hong Kong and the United States.

Eaton's electrical business is a global leader in power distribution, power quality, control and industrial

automation products and services. Eaton's global electrical product lines, including Cutler-Hammer®, Moeller®, Powerware®, Holec®, MEM®, Santak®, and MGE Office Protection Systems™, provide customer-driven PowerChain Management® solutions to serve the power system needs of the data center, industrial, institutional, government, utility, commercial, residential and OEM markets worldwide.

Ark-Plas Products becomes ISO 9001:2008 CERTIFIED

Ark-Plas Products, Inc. is continuing to improve quality processes in plastics manufacturing by becoming ISO 9001:2008 certified.

ABS Quality Evaluations, Inc. performed a thorough quality audit covering Ark-Plas' procedures from



Ark-Plas 9001:2008 Certified

Order Entry to Molding to Shipping. The quality system presented for evaluation detailed procedures designed to allow each employee to "add value to work processes," and Ark-Plas to continue being "the lowest cost producer without sacrificing quality."

Ark-Plas Products, Inc was presented with Certificate # 34249 stating Ark-Plas "has been assessed by ABS Quality Evaluations, Inc. and found to be in compliance with the requirements set forth by: ISO 9001:2008."

Ark-Plas Products manufactures miniature plastic fittings, tubing and accessories. For further information or free samples of any products and a product catalog contact Ark-Plas® Products, Inc., 165 Industry Lane, Flippin, AR 72634. Phone (870) 453-2343 or Fax (870) 453-2567. Visit www.ark-plas.com or E-mail info@ark-plas.com.

Alpha Wire Unveils Series XM Flexible Control Cable

New Series XM flexible control cable from Alpha Wire provides continuous-duty flexing in a robust PVC-jacketed cable. A new PVC formulation enables continuous flexing in strenuous applications such as high-speed pick-and-place robotic systems, automated material handling equipment, conveyors, and transfer shuttles.

"Although tougher, PVC has traditionally not been considered good candidate for continuous flex applications. However, Series XM's specially formulated PVC jacket handles flexing without cracking or degradation in industrial applications," said Konstantin Khitrik, Product Manager at Alpha Wire. "Even better, the new jacket is more cost-effective, meaning our customers get higher performance from a smaller investment."

Available in conductor sizes from 18 AWG to 8 AWG and up to 65 conductors, oil- and sunlight-resist-

3M™ Thermal Roll Printer TRP-303 High Quality Compact Printer



The 3M™ Thermal Roll Printer TRP-303 is specifically designed to print on continuous reels of heat shrink wire markers. The durable double-walled clam shell is coupled with a compact size to ensure the printer can be utilized in congested, industrial workspaces. The Thermal Roll Printer TRP-303 can be purchased with a full cutter or a partial cutter (which can maintain the order of sequential marks). The software included with the printer has the same look and feel as WYSIWYG ("what you see is what you get") programs with the capability to create bar codes and graphics with alphanumeric characters. Ethernet, USB 2.0, Serial and Parallel interfaces are standard.



System Components

- Printer Unit
- CD with Labeling & Driver Software
- Quick Installation Guide
- Power Cord & Ribbon Take-Up Core
- Thermal Roll Printer Black Ribbon
- USB Interface Cable
- External Media Stand
- Full or Partial Cutter
- Auto Switching Supply

Heat Shrinkable Marker Sleeve Specification

- 3:1 shrink ratio
- Minimum shrink temperature 100°C (212°F)
- Meets the material requirements of SAE-AMS-DTL-23053 / 5
- Marker permanence per SAE-AS81531 and MIL-STD-202 Method 215k when used with 3M Thermal Roll Printer Black Ribbon RBN-BLK series
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Continued on page 33

Past, Present & Future of Connector Industry

Continued from page 1

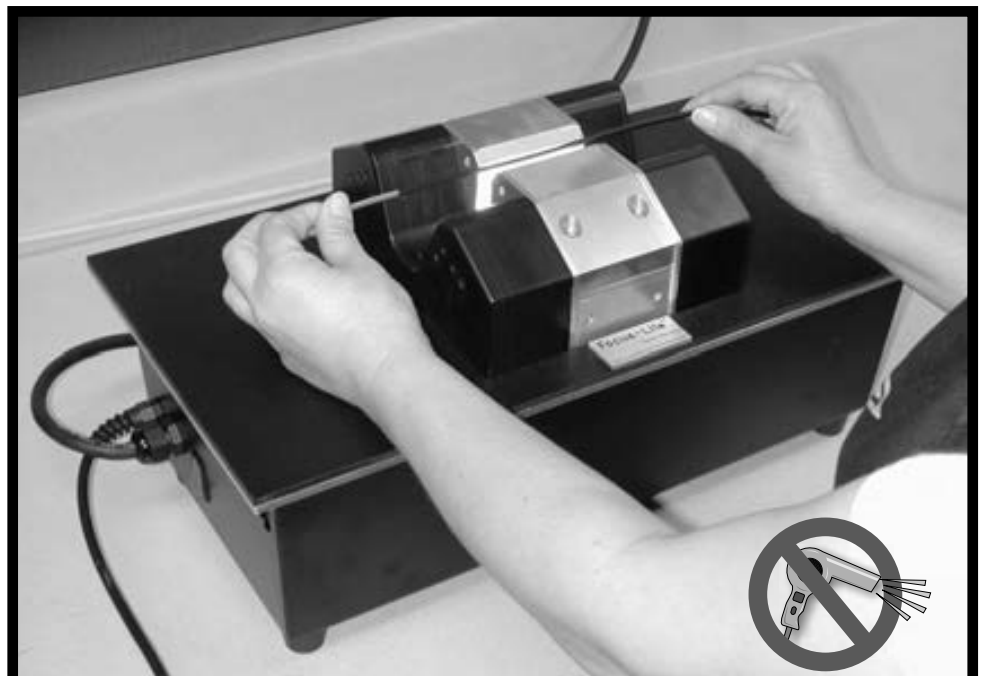
ic, up 12.6% and China, up 27% over that same period, he asserted, was due to western companies who sought offshore manufacturing to help drive down production costs.

The big change in the connector industry over the last 20 years, Pheteplace claims, has been the shifting of the three major connector sales channels: distribution, contract manufacturer, and OEM. His chart (figure 2 page 28) showed that the trend has been

away from OEM's and towards contract manufacturers, with distributor consumption remaining largely unchanged. Mr. Pheteplace remarked that, as a result of cost pressures from the OEM's, the margins of contract manufacturers languishes around 2%, with the margins of distributors at about 4%.

High profitability has long been a characteristic of the connector industry, Pheteplace claimed. Over the past 30 years, the industry has enjoyed net incomes between 8% and 10%. "As the

Continued on page 28



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

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

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

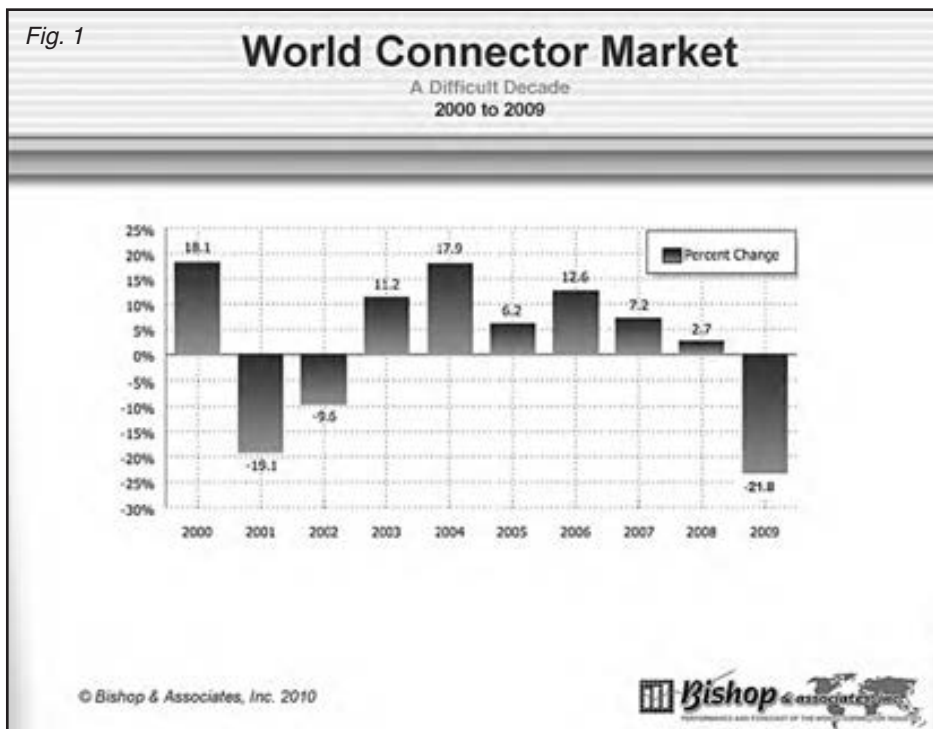
Here's why it works: Dual Quartz Halogen bulbs are focused to direct all of the usable radiant energy to the cable/wire diameter covered by shrink tube. This allows for 10 times the average energy expended by the bulbs to be delivered to the target zone. What you will see is an amazing difference in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

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Past, Present & Future of Connector Industry

Continued from page 25

manufacturing costs have gone up, the industry has driven down SG&A (selling, general and administrative) costs to maintain that margin." In fact, he added, only a few categories are more profitable than the connector industry; among them pharmaceuticals, medical devices, software, and defense. "That's why people want to own connector

companies." In fact, he continued, there were 270 acquisitions in the connector industry since 1990. In the 1990's, companies specializing in telecom and computer peripherals were the "darlings of the industry", and current favor is on those firms in the mil/aero and medical device fields.

The world connector market is comprised of over 1000 companies with half of those residing in the US, Taiwan, and China.

Putting this into the perspective of the wire harness industry, Pheteplace added that "when you look at the number of cable assembly manufacturers worldwide, you are probably looking at two to three times the number of connector manufacturers."

So how do 1000 connector companies survive, he asked? They specialize and find niche markets. Pheteplace showed information depicting connector market leaders by several categories, among them: region, end-user equipment sector, and product category. As the market is split in various fashions, he indicates that few companies dominate this "niche rich environment." In fact, AMP/Tyco is the only name that appears in the top ten across categories over the past several years. The names change, he points out, as you look at the market through differing lenses.

To illustrate the drivers of today's acquisition strategy within the connector industry, Pheteplace discussed the Small Box\Large Box rule. If the elec-

Continued on page 28

Fig. 2

World Connector Market Sales Channels

| | 1990 | 1995 | 2000 | 2008 |
|--------------|--------|--------|--------|--------|
| Distribution | 20.0% | 21.3% | 21.9% | 22.8% |
| Contract Mfg | 7.5% | 15.0% | 24.9% | 28.3% |
| OEM | 72.5% | 63.7% | 53.2% | 48.9% |
| Total | 100.0% | 100.0% | 100.0% | 100.0% |

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Past, Present & Future of Connector Industry

Continued from page 27

ronic product is contained within a cabinet (box) that is small enough to be carried by a person, and is mass produced in large volumes, the environment is characterized by:

- Off-Shore Manufacturing
- High Volume/Low Mix
- More Standardization and More Competition
- Interconnect (is) Higher Percent of Equipment Value
- More Price Pressure and Lower Margins

Where an electronic product within a cabinet (box) is too large for a person to carry, just the opposite tends to be true. For this reason, Pheteplace concludes, where there is further consolidation in the industry, those companies involved in the "big box" electronic sector will be more attractive to acquisition.

Moving to a discussion of the world cable assembly market, Mr. Pheteplace described it is a \$117.6 billion industry, which is about 2.7 percent of the \$4.4 trillion electronics industry. The total industry annual compound growth rate was 9.2% from 2003 to 2008. Regionally categorized, growth rates were: 2.6% for North America, 9.9% for Europe,

21.7% for China, and 10.3% for Asia Pacific.

His overview of the world interconnect market between 2003 and 2008 showed a growing, highly profitable industry with a large total available market. The market, he continued, was characterized by financially strong leaders mining niche opportunities in a vast array of 2nd and 3rd tier companies. These factors, he concluded, are the reasons the connector industry has been able to attract capital.

Cue to 2009, and Pheteplace depicted a more sobering scenario. The downturn started in October of 2008 with a 21% decline in connector orders. This bottomed in January 2009 with a 50% decline. Last year, he continued, was the biggest decline in connector sales in 30 years; with five consecutive months where sales demands declined by 30%. The decline in sales began to ease in August but continued through December 2009. The total decline was 21.8%, he stated, representing \$9.5 billion.

The cable assembly industry, he furthered, declined by 26%; or \$30 billion. The largest decline was in the automotive sector which lost over a third of its market value, or \$11 billion. About the

Continued on page 30

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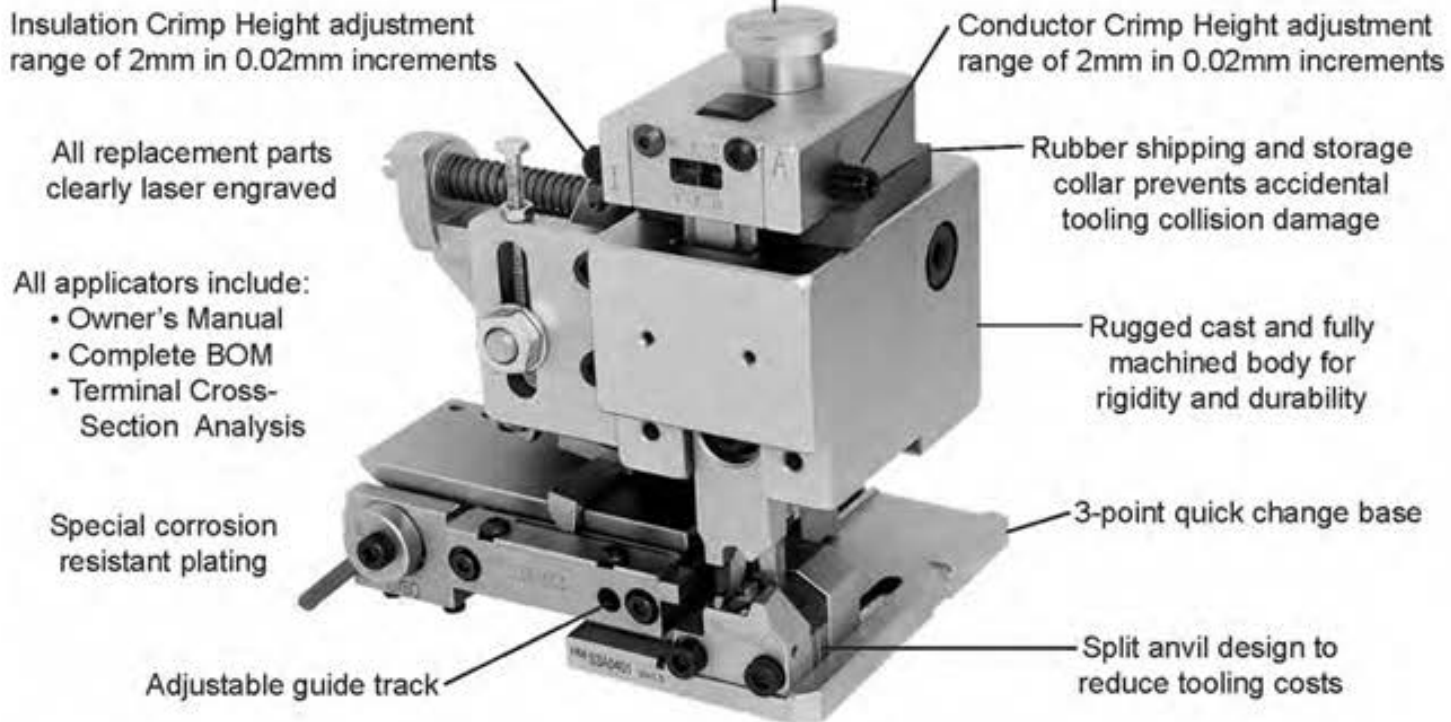


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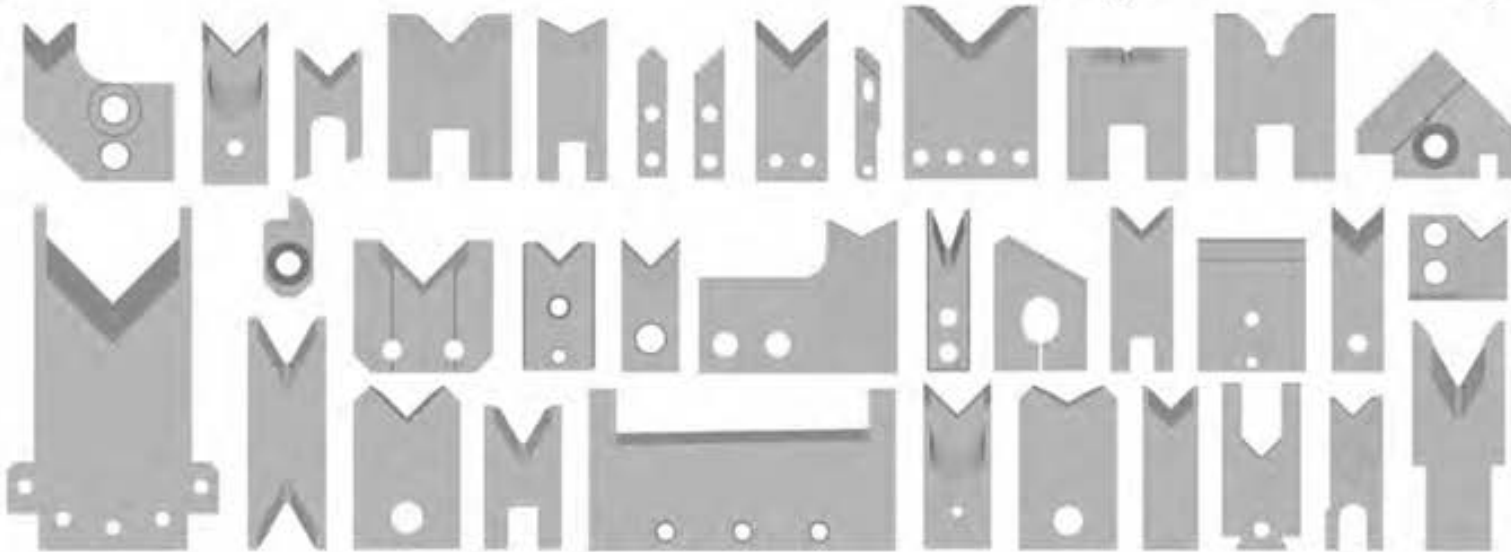
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Continued from page 27

best thing Mr. Pheteplace had to say about 2009 was that "it is over."

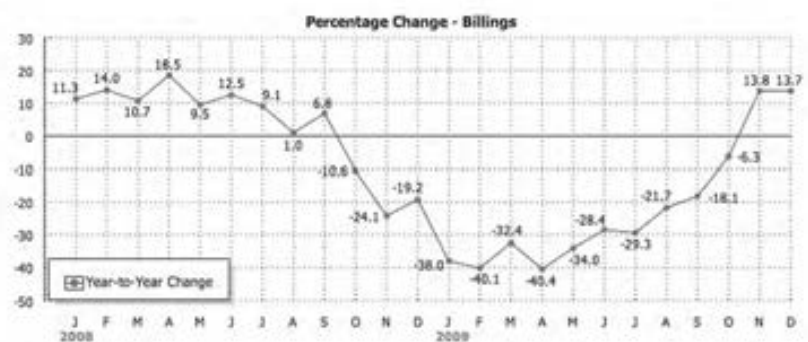
There were some bright notes on the Horizon that Mr. Pheteplace pointed to; mostly that industry confidence is on the rise. He noted that the interconnect industry book-to-bill ratio was above 1.0 with the percentage change in billings on the rise (figure 3 below). The semi-

conductor industry, which he noted closely tracks the connector market, saw six consecutive months of sequential growth. Overall, he added, most major economies are technically out of recession, with high but seemingly stabilized unemployment.

Most encouraging was a graph that Pheteplace showed that plotted both the decline in the interconnect market volume during 2000/2001 and the 2009

Fig. 3

World Interconnect Market Percent Change in Billings Improving



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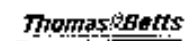
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decline. The graph showed an amazing similarity in the demand curves, and if one could extrapolate a forecast based on the last decline, things should trend upward moving forward.

In fact, Mr. Pheteplace's information showed the connector assembly industry is forecasted to increase worldwide by 11.3% in 2010. Broken down by region, increases are projected at: 5.9% in North America, 8.2% in Europe, 8.1% in Japan, 23.3% in China, and 12.9% in the Asia Pacific. "Looking at the tea leaves", Pheteplace predicted US GDP growth at 2% for 2010, with world GDP also showing growth. Interest rates should remain low and Tyco, Molex, and Amphenol all posted 2009 Q4 improvements. The stock market is up and Pheteplace reminded the audience that this is usually a precursor to growth. Wall Street, he added, has upgraded many electronic firms in recent weeks. The automotive industry is showing signs of life, and the telecommunications and mobile wireless markets are also improving, he noted.

But there are, he points out, some "coffee grinds", or things that could interrupt future economic growth. Sovereign credit defaults in Europe and high deficits in Western economies coupled with any world GDP decline could

be signs of trouble. Stagnation in unemployment or the US housing market could also be troublesome for recovery, Pheteplace warned.

In conclusion, Pheteplace asserted, "it is inconceivable that there won't be some sales growth in 2010", and notes that sales in Q1 are already beating those of Q4 of 2009. This growth, he continued, will be modest and shifted towards the latter half of the year. Regionalization and cost pressures, he warned, will continue to shift sales to China and the Asia Pacific.

In discussions following the presentation, Mr. Pheteplace continued this line of thought by reminding the audience that loaded labor rates in China are currently at \$1.00 per hour with Mexico at about \$6.25 and the US at \$25.00 per hour. As in the past, he noted, "Where you have standardization, you will see more automation, off-shore manufacturing, and continuing decline in profits."

David Pheteplace is the Managing Director of the Cable Assembly Division of Bishop & Associates, Inc. Bishop & Associates, Inc. is a market research firm specializing in the global electronic connector market. www.bishopinc.com

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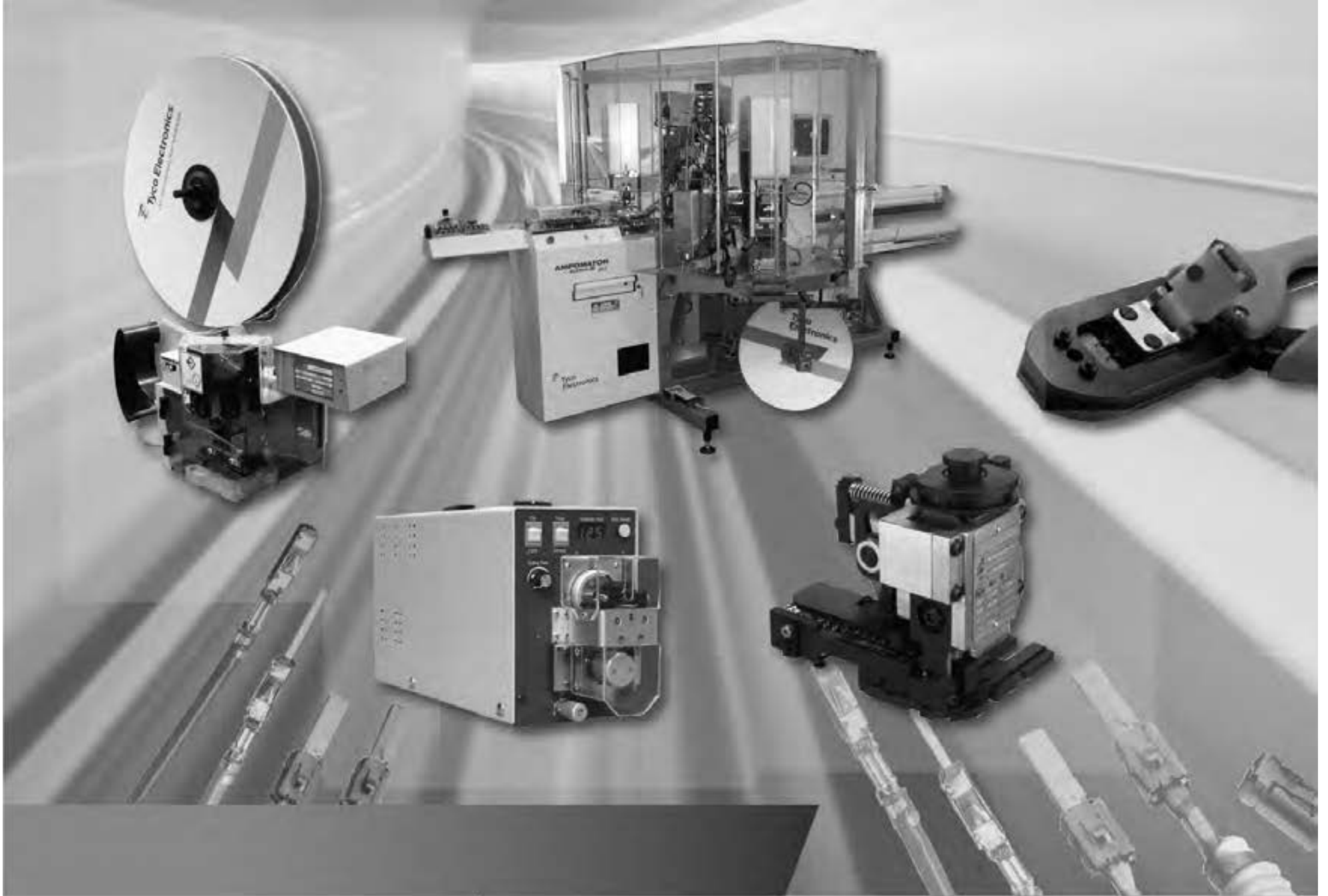
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The Verizon Supplier Excellence Awards recognize companies that support Verizon's commitment to continuous improvement of quality and customer service through a passion for excellence. Criteria for winning include quality of service, year over year growth, a commitment to supplier diversity, meeting and exceeding performance metrics, providing cost management solutions and excellent customer service. Verizon recognized 11 companies in 11 categories.

"We are grateful to Verizon for recognizing our products, services and customer service with this award and look forward to continuing a relationship that offers new and innovative strategies as well as the lowest total cost of ownership solutions," says Gregg Stewart, Custom Cable general manager. Stewart adds that Custom Cable has consistently provided

its clients with value pricing, cost-effective production and innovative design.

Custom Cable has a strategic relationship with Draka Communications Americas (<http://www.DrakaAmericas.com>) to support Verizon with high quality products that offer rapid and reliable turnaround time. Currently, Custom Cable is working with Draka on MDU (multi-dwelling unit) solutions as a preferred assembly partner, constructing connectorized cable assemblies using Draka's superior bend insensitive fiber cable, including BendBrightXS and BendBright Elite.

"Delivering the best customer experience is a top priority for Verizon, so we expect the highest quality service from our vendors, which keeps us focused on the business of serving our customers," said Mariano Legaz, Verizon vice president - supply chain services.

"Custom Cable Industries is among 11 vendors that have received a 2009 Verizon Supplier Excellence Award for delivering advanced products and services and for consistently demonstrating a commitment to excellence."

Custom Cable has recently implemented web-based catalogs for clients and expansion of its geographic footprint and distribution model with a new distribution facility in California.

Committed to quality, the company has also earned TL9000:2008 and ISO 9001:2008 quality certifications. In January 2010, ComVest Capital, LLC (<http://www.comvest.com>) acquired a 51 percent ownership stake in HWI Technologies, LLC, the parent of Custom Cable Industries, Inc. "ComVest has pledged its total support for Custom Cable and its optical fiber product growth plans," says Gary Jaggard, ComVest Capital managing director. "We are dedicated to building industry-leading companies and believe that Custom Cable has the team and commitment to achieve that position."

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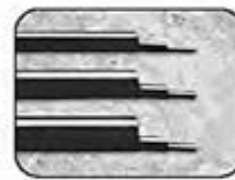
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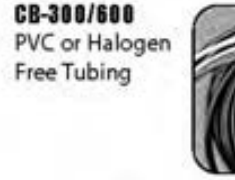
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NEWS PLUGS continued



BURNDY® Announces the Appointment of Warren B. Jenkins to the Position of VP of Sales

BURNDY®, a leading manufacturer and provider of connector solutions to the industrial, energy, construction, telecom-

munication, petrochemical, data center, and transportation industries, announces the appointment of Warren B. Jenkins to the position of Vice President of Sales for the BURNDY US Sales Organization.

Warren brings with him strong experience in sales management and strategic planning throughout a seventeen-year career in the Electrical industry. Prior to re-joining BURNDY, Warren spend time at Ideal Industrial and, most recently, at Cop-

per Crouse-Hinds, where he held the position of Regional Vice President, servicing the Commercial, Industrial and OEM market segments. He was also previously employed by BURNDY as the Central Regional Sales Manager from 1998 to 2006 and in a variety of sales territory positions prior to his promotion into management.



Warren B. Jenkins
Vice President of Sales BURNDY®

Warren graduated from Texas A&M with a BS in Industrial Distribution from the College of Engineering in College Station, Texas.

For additional information, contact us at 47 E. Industrial Park Drive, Manchester, New Hampshire, 03109, call Customer Service at 1-800-346-4175, or visit our website at www.BURNDY.com.

Mel Parrish Elected to Chair IPC's Top Standards Development Leadership Committee

IPC — Association Connecting Electronics Industries® announces the election of Mel Parrish, FSO and director of training materials, STI Electronics Inc., to chair the IPC Technical Activities Executive Committee (TAEC) for a two-year term. Elected to the position by the chairs and co-chairs of all IPC standards groups, Parrish took over the helm of IPC's top standards development oversight committee from Leo Lam-

bert of EPTAC Corporation, during the TAEC meeting at IPC APEX EXPO™ 2010, on April 6 in Las Vegas.

"I'm greatly honored to be selected to serve as the TAEC Chair and I certainly have some very large shoes to fill with those that have served in the past," said Parrish. "Our standards and industry forums fill a more significant role today than ever, especially with the globalization of our industry. Looking forward, I would encourage every effort to continue our progress as a cooperative forum for our diverse industry segments for the common good of the industry. I'm certain there will be challenges that we can overcome together. It's all about the people that contribute for the benefit of the industry."

No stranger to IPC volunteer work, Parrish has been active in IPC technical committees for more than 23 years. He chairs the IPC Product Assurance General Committee, responsible for oversight of documents such as IPC-A-600, IPC-A-620 and IPC-A-610. Parrish has been a member of the TAEC and Committee Chairman Council (CCC) for more than 10 years, and has been a past recipient of the IPC President's Award in recognition of his leadership and technical contributions.

After retiring from his work as an electronics curriculum designer for the Air Force, Parrish continued to work with standards development and training as president of Manufacturing Technology Training Center (MTTC) and worked with the Navy at China Lake during the generation of WS-6536 through MIL-STD-2000. In addition to his IPC Master Instructor status for IPC-A-610, IPC-A-620, J-STD-001, Parrish has previous DoD certifications for WS-6536, DoD-STD-2000 and MIL-STD-2000.

Complementing his expertise in electronics manufacturing, Parrish has more than 30 years of experience in workforce development, skills standards, curriculum design and development, and management for electronic technology and production disciplines.

For more information about IPC visit www.ipc.org.

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Established in 1976 with the aim of supplying the wire harness industry with the best crimping equipment available, in less than 30 years Mecal has reached and kept a respected position at the top of its market. Their products are extensively used by the automotive, communication and IT industry, and wherever a high quality connection is called for. Situated in the middle of the most industrially developed part of Italy, Mecal operates out of its fully owned 54,000 sq. ft. plant, employing 100 skilled and motivated young people and has a very modern and rational production structure.

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Established in 1945, Starn Tool soon became a leader in supplying the automotive industry with progressive stamping dies and spare parts along with the building and assembly of applicator bodies for one of the world's largest terminal manufacturers. It was this experience that Mecal was looking for to form a partnership in the United States. Through this partnership, Starn Tool and Mecal by Starn are providing world class applicators and spare tooling for the wire harness industry.

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NEWS PLUGS continued

**Mouser Appoints Supplier Marketing Director for Europe**

Mouser Electronics, Inc., known for its rapid introduction of the newest products, today announced that Graham Maggs has been named Supplier Marketing Director for Europe.

Graham Maggs is stepping into this

"Mouser's strength and focus on new product development and its ongoing excellence in customer service were major contributing factors in joining the Mouser team" stated Maggs. "I look forward to making a positive contribution to the Mouser team and driving further our focus in Europe".

Graham has held numerous positions within Bourns over the last 25 years; the last four years in the position of Director Distributor Sales Europe, where he is highly regarded. He was a key member of the Bourns senior management team, provid-

ing vital leadership and innovative programs in the European arena. Maggs extensive experience across the supply chain with multinational teams gives him a unique insight into the needs of the rapidly growing, global Mouser Electronics.

Known for its focus on design engineers with its broad product line, unsurpassed customer service, advanced on-line catalog and innovative product marketing, Mouser continuously offers customers the newest products and latest technologies for their new design projects.



Graham Maggs, Mouser Electronics

Mouser Electronics' website with interactive online catalog is updated daily and searches over 5 million products to locate over a million part numbers available for easy online purchase. Plus, it houses downloadable data sheets, supplier-specific reference designs, application notes, technical design information and engineering tools.

Mouser Electronics, Inc. is an electronic component distributor, focused on the rapid introduction of new products and technologies to electronic design engineers. Mouser.com features more than a million products online from more than 400 manufacturers. Mouser publishes multiple catalogs per year providing designers with up-to-date data on the components now available for the next generation of electronic devices. Mouser ships globally to over 270,000 customers in 170 countries from its 432,000 sq. ft. state-of-the-art facility in Mansfield, Texas.

For more information, visit www.mouser.com.

RIDGID® Launches "2010 Reputation Roadshow" with Stops Throughout U.S. and Canada

The RIDGID® Reputation Roadshow kicked off its third season in March and runs through the end of September 2010 with stops in 34 cities throughout the U.S. and Canada.

This year's events feature new RIDGID tools and technologies including RIDGID-Connect™, an online business tool that allows trade professionals to securely share, store and simplify information for a project via a laptop computer or smart phone.

The latest in the RIDGID SeeSnake® Upgrade line of products will be on display as well, giving tradesmen at each stop the chance to experience and demo the new RIDGID technologies.

Solutions for seal processing

You do have choices

When it comes to fully automatic seal applicators, you have a few to choose from. Your choices have just grown as Schaefer GmbH has introduced a new seal module or SSM for fully automatic wire process machines.

Your benefits

One of the many benefits of the SSM is it will work with seal kits that you may already own. The seal size range for the standard track in the Schaefer unit is the widest in the industry. Its narrow construction saves space on your machine table, allowing for a wider variety of other modules. The SSM is designed to achieve maximum process speeds while minimizing space requirements.

Wide range is standard

The new SSM unit can handle seals in a wider range of sizes and shapes. It is user friendly and will process seals with diameters up to 10 mm and 9 mm in length in its standard configuration. This includes many hard shell seal applications. Optional settings are available for large seals with diameters up to 17 mm and 16 mm lengths. The SSM has many other cost savings options available as well.

Visit us

Stop by the Schaefer Group Booth 1111 and let one of our Sales Techs show you the many benefits you will get from the new SSM seal module and the SSK seal kits.

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Attendees will be given sneak peeks at upcoming product launches.

Lunch is served at every show and a model from the well-known RIDGID calendar is present to sign autographs.

"We have some exciting new tools to show off at this year's Reputation Roadshow," said Wyatt Kilmartin, director, RIDGID branding. "The Roadshow is an opportunity for trade professionals to come out and have some fun and also learn about new products that can drive efficiencies and ultimately, increase their bottom lines. The 2010 Reputation Roadshow promises to be the best yet!"

This year the Roadshow will be making

stops in Fort Worth, Texas (March 16), Phoenix, Ariz. (March 24), Atlanta (March 25), Van Nuys, Calif. (April 6), Garden Grove, Calif. (April 7), Jacksonville, Fla. (April 7), Fresno, Calif. (April 14), San Jose, Calif. (April 15), Portland, Ore. (April 22), Spokane, Wash. (April 28), Springdale, Ariz. (April 29), Calgary, Alberta (May 12), Richmond, Va. (May 13), Durham, N.C. (May 18), Aurora, Colo. (May 19), Raleigh, N.C. (May 19), Charlotte, N.C. (May 20), Baltimore (May 26), Beltsville, Md. (May 27), Addison, Ill. (June 9), Philadelphia (June 9), West Allis, Wis. (June 10), Marlborough, Mass. (June 16), Dayton, Ohio (June 21), Indianapolis

(June 21), Wilmington, Del. (June 22), Edison, N.J. (June 23), Detroit (July 14), Quebec City (August 17), Montreal (August 18), Columbus, Ohio (September 2), Louisville, Ky. (September 6), Newport News, Va. (September 15) and Nashville, Tenn. (September 29).

The RIDGID Reputation Roadshow can be followed on RIDGID social media sites including Facebook, Twitter and YouTube.

For more information on the 2010 Reputation Roadshow, visit the Web site at www.RIDGID.com/Tools/Roadshow-2010



The RIDGID® Reputation Roadshow kicked off its third season in March and runs through the end of September 2010

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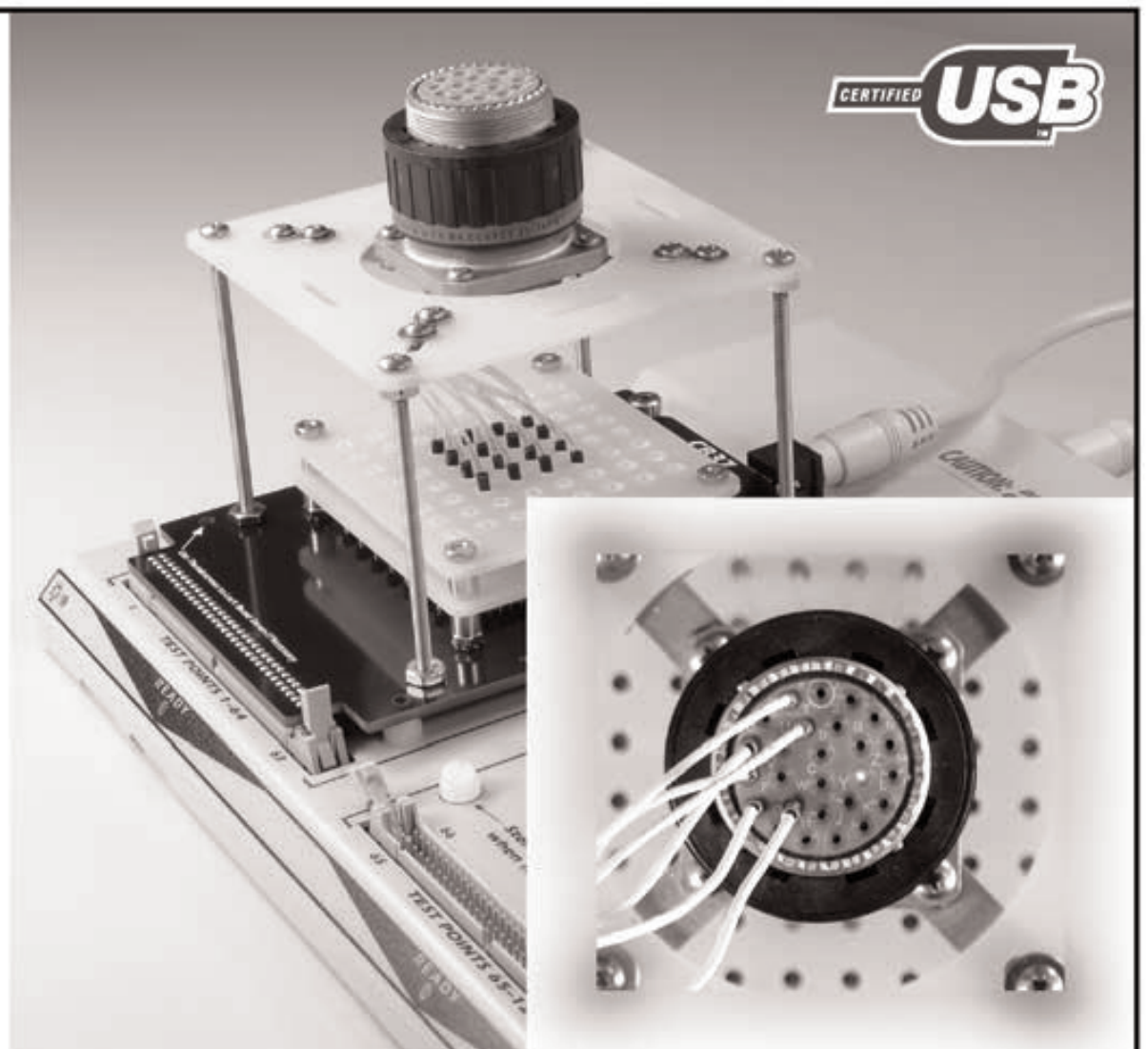
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Use this new, patented system to **double** your productivity* when assembling circular and rectangular connectors. The Light Director™ system uses light fibers driven by super-bright LED lamps to individually illuminate target cavities in the connector being assembled. When you enter the wire code printed on unconnected wires or touch a wire terminated at the other end, software turns on the appropriate fiber, thereby causing a bright, flashing light to project from inside the target cavity guiding you to the proper insertion point. Correct insertion is confirmed by the elimination of light from that location, whereas insertion into an incorrect cavity leaves the flashing light visible.

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- 1 - Scan wire code OR touch unconnected wire with probe or finger.
- 2 - Target cavity begins to flash. Computer also reads pin number in natural voice.
- 3 - Insert and lock pin in place. Light blocked to confirm insertion.

*Field testing has shown a doubling of assembly speed while practically eliminating errors. Reduced worker fatigue using the Light Director permits more consistent production output throughout the work day.

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NEWS PLUGS continued

Anixter Launches Nationwide Seminar Series to Help Data Centers Improve Efficiency, Security and Sustainability

Anixter is pleased to announce the launch of its 2010 Seminar Series, Solving the Data Center Optimization Puzzle: Infrastructure, Security and Sustainability. In today's challenging economic environment, data centers can struggle to maintain performance while addressing new business opportunities. In response, Anixter pulled together some of the leading resources from the data center and networking industries to help the next generation of data centers cap-

ture and implement emerging technologies in three fast-growing, highly evolving market segments.

Now in its 10th year, Anixter's Seminar Series continues to address the latest standards and technologies in the data center, security, telecommunications and sustainability fields to help end-users, and contractors/integrators draw insight from a variety of perspectives to understand emerging trends, capture new opportunities and avoid risk.

As data center technologies and challenges have evolved, so has the format and presentation of Anixter's Seminar Series. An innovative video presentation focusing on data center optimization will be broadcast in movie theaters in 11 cities in the U.S. and Canada. In addition to Anixter's technical experts, the presentation will feature interviews from represen-

tatives for the Telecommunications Industry Association (TIA), the Environmental Protection Agency (EPA), the Green Grid and the Institute of Electrical & Electronics Engineers (IEEE). In addition to the video presentation and live panel, attendees will have the opportunity to interact with leading infrastructure and security manufacturers.

Speakers from IBM, the TIA, the IEEE and Security Technology Executive magazine will participate in the live panel. Many industry-leading manufacturers will also be present for networking. Topics covered in the presentation and live panel will be those that are most pressing to contractors, integrators, end-users, architects, consultants and engineers—from sustainability and the green movement to physical security and data center infrastructure. Attendees will have the opportunity to earn a BICSI continuing education credit.

As part of today's news, Anixter is also announcing that all attendees will receive a complimentary copy of a Gartner research paper entitled "Newer Power and Cooling Technologies are Making Inroads in the Data Center, but More can be Done." The report examines the latest data center trends and issues surrounding power and cooling in the data center.

Dates include Dallas, TX (May 13); Indianapolis, IN (June 24); Toronto, ON (June 24); Des Moines, IA (July 22); Cheshire, CT (August 5); Philadelphia, PA (August 26); Detroit, MI (September 23); Cleveland, OH (October 14); Seattle, WA (October 28); and Charlotte, NC (November 4).

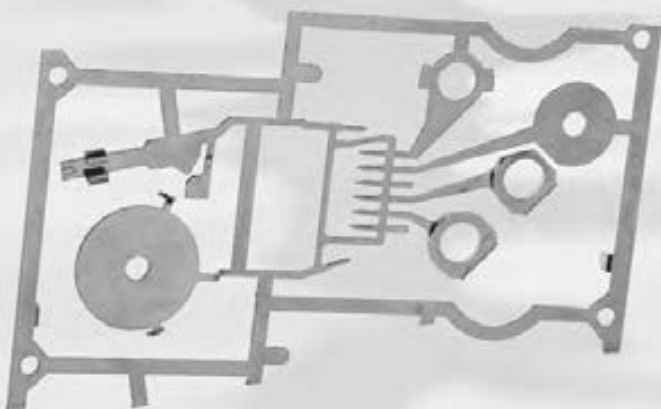
To register for Anixter's 2010 Seminar Series: Solving the Data Center Optimization Puzzle, visit anixter.com/events or call 1.800.ANIXTER. Anixter International is a leading global distributor of communications products, electrical and electronic wire and cable, fasteners and other small parts.

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Founded in 1957 and headquartered near Chicago, Anixter trades on The New York Stock Exchange under the symbol AXE.

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ETCO bails out a customer with a supplier problem.



A supplier of an electronic component for a major automobile manufacturer went out of business leaving the automaker with no ISO/TS 16949 supplier. While the automobile company was able to get the die for the part during the supplier's bankruptcy, the tool package & documentation was lost.

At the automakers request, ETCO took the die and reverse engineered the tool package & process. Once that was achieved, ETCO was able to start producing the part quickly and efficiently, helping the manufacturer out of a tight spot on very short timing.

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If you have a problem or a need for a custom product solution call Sean Dunn at 401.467.2400 X 103 or e-mail him at sdunn@etco.com. He'll assemble a team of ETCO engineers to address your problem.



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NEWS PLUGS *continued*



Norwood Marking Systems Celebrates 50 Years of Innovation

Norwood Marking Systems announces the celebration of its 50th anniversary. Since Eugene Norwood established the company in 1960, Norwood Marking Systems has built an outstanding reputation. It is recognized worldwide for high-quality thermal transfer and hot stamp printing equipment.

Norwood's technology leadership began with the introduction of the world's first hot stamp imprinter for the food industry. Today, the company designs and manufactures a range of thermal transfer printers and

hot stamp printers for coding and marking a wide variety of packages containing foods, pharmaceuticals, nutraceuticals, medical devices, chemicals, tobacco and other products.

"When Eugene Norwood founded the business 50 years ago, his vision was that package coding could be used to isolate product problems and minimize loss. It was a new idea at the time," explained Larry Kulik, General Manager of Norwood Marking Systems. "Of course, the benefits of package coding are now well accepted and the technology is widely adopted. Norwood continues to innovate with printers that maximize production flexibility, increase throughput, ease operation and reduce costs."

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

by sister 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.



Bench Glo-Ring Heat Tool

Eraser Offers Bench Glo-Ring® Heat Tool

Eraser's Bench Glo-Ring® Heat Tool is ideal for many applications including heat shrinking, plastic tube bending, soldering, adhesive curing, solder pre-forms, butt welding and more. The Bench Glo-Ring® incorporate quartz encapsulated heating elements which open and close to encircle work pieces with instant radiant heat at temperatures up to 1500°F (815°C). No R.F. interference is generated with the Bench Glo-Ring®, thus it is suitable for use in clean rooms and testing areas. The Glo-Ring® is an excellent alternative to heat guns. It uses less electrical energy, does not blow hot air, and is simple to maintain. The unit has a solid state heat control for shrinking heat shrink tubing and other applications. Heating elements open and close around the work piece by activating the electrical foot switch. Quartz elements are protected by guards for safety and to prevent accidental damage. All four element sizes are interchangeable in the holders.

The Eraser Company, Inc., celebrating its 99th 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 9001:2000 certified.

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Finally, a lightweight tool that delivers the power required for crimping! The small head offers incredible flexibility and the ability to reach into tight spaces. As an added convenience, the crimping head can be rotated to nearly any angle, allowing the operator to identify the most comfortable position for the job.

Despite the lightweight of the power unit, the tool can produce over 200 10 AWG crimps between charges. This is made possible through a ten ounce, 10.8 Volt Lithium-Ion battery that can re-charge in only 25 minutes, thereby giving plenty of time for production.

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The ultra-thin iLW's surface mount technology and high luminescence Gallium Arsenide LED allows it to retrofit existing applications or to be used in conjunction with unlighted connectors. The iLW is MINI standard but also is available for Sub-Micro 8mm, Sub-Micro 9.4mm, DIN 43650 Form "A"/ISO 4400, and EN 175301-803:2000 retrofits. It is NEMA 4 and IP 65 dust tight and water resistant and is not polarity dependent. Designed to "sandwich" between the connector and the coil, the iLW can be installed several times without degrading the contact surfaces and operates in an ambient temperature range of -20° to +90°C.

Complete specifications can be found at www.canfieldconnector.com.

Molex Introduces High Performance LC2+ Metallic Optical Connector For Harsh Environments

Molex Incorporated announced the release of the new LC2+ optical interconnect product line. The latest offering by Molex for high-density harsh environment optical applications, the LC2+ optical interconnect is a metal connector body and latch version of the popular LC connector system. It provides an enhanced latch retention system and a specific high temperature strain relief boot that works in conjunction with the latest high temperature enhanced performance (EP) aerospace grade fiber optic cables and seal-

ing features to protect from moisture propagation going through the connector to expensive active devices.

"Molex's LC2+ connectors have a ruggedized, all-metal-connector housing making them ideal for use in industries that



Molex's LC2+ Connectors

operate under harsh conditions, including industrial, military, medical, aviation and aerospace," said Mark Matuszewski, product manager, Molex. "The LC2+ connector's unique features make further improvements by providing a high-performance discrete fiber solution intended for use in the most rigorous operating environments such as high temperature, severe shock and vibration as well as exposure to high moisture situations."

The LC2+ system is fully compatible with all LC form factor connectors, adapters, active devices and tooling. The optical simplex and duplex connectors are available for multi-mode, single mode and APC applications. In addition, the LC2+ interconnects from Molex can incorporate Polymicro Technologies' large core specialty fibers, giving optical system designers a complete solution to connect

large core optical fibers used for data, sensing and optical power transmission. Visit www.molex.com/product/lc2+.html.

Twitter: <http://twitter.com/MolexConnectors> or YouTube: <http://www.youtube.com/MolexConnectors>.

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EIS Wire & Cable Celebrates 100 Year "Centennial" Anniversary

EIS Wire & Cable, a privately owned manufacturer of custom, bulk wire & cable products, is celebrating 100 years in business this year. Founded in 1910 as Holyoke Covered Wire Company, this milestone appears even more significant given the factors of globalization, economic instability and geopolitical turbulence that have accelerated throughout the company's history, peaking in recent years.

The perseverance and adaptability of the company have helped it endure changes in ownership, the creation and obsolescence of technologies and the emergence of intense global competition in the marketplace.

"EIS would not have persisted and prospered over the past 100 years were it not for the innovative spirit, professionalism and commitment of its employees which, throughout its history, have been residents of Western Massachusetts," said Nick Mocerri, EIS President and Partner of the Providence Capital Group which has owned the company since 1998. Interestingly, recent years have seen EIS fuse the distinctly Ameri-

can history and values that have sustained it with cutting edge, internationally recognized management principles such as the LEAN Manufacturing, "continuous improvement" System.

"Rule number 1 at EIS is Put the Customer 1st. Giving the customer what they want, when they want it, is the cornerstone that we've built this business on and the driving force behind our longevity" said Roy St. Andre, Executive Vice President and General Manager.

In 8 years since initiating LEAN management practices, EIS has implemented the value-added services that have made it a "manufacturing partner" to the OEM customers it supplies in diverse markets that range from Pro Audio to Consumer Electronics, Medical, Industrial & the US Dept. of Defense.

EIS operates out of a 125,000 sq. ft. facility based in South Hadley, MA and specializes in manufacturing custom designed, bulk cable products - from single conductor hook-up wire to complex multi conductor & composite cables. Value-added services include the industry's shortest lead-times on custom

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NEWS PLUGS continued



Dow Introduces First Bio-based Plasticizers For Wire and Cable Applications

Dow Wire & Cable, a business unit of The Dow Chemical Company ("Dow"), has signaled a groundbreaking advance in sustainable chemistry by launching DOW

ECOLIBRIUM™ Bio-Based Plasticizers, a new family of phthalate-free plasticizers for use in wire insulation and jacketing that are made from nearly 100% renewable feedstocks. The use of DOW ECOLIBRIUM Bio-Based Plasticizers in PVC compounds for wire applications can help cable-makers and original equipment manufacturers (OEMs) reduce greenhouse gas emissions by up to 40% if used instead of traditional PVC plasticizers. The new plasticizers were developed to meet growing demand for more sustainable options in

wiring applications such as personal electronics and appliance wiring, residential and commercial building wiring, communications and data cabling, and automotive wiring.

"We are very excited about the commercial launch of DOW ECOLIBRIUM Bio-Based Plasticizers and our ability to help cable-makers use sustainable technology to differentiate their offerings in key industries," said Jonathan Penrice, global marketing director for Dow Wire & Cable. "Our excitement stems from the use of nearly 100% renewable feedstock in the chemistry of these products and from the outcome of field trials conducted with a select group of customers. The field trials demonstrated that the new plasticizers exhibit the same performance and feel as incumbent PVC plasticizers while meeting all regulatory requirements for flame resistance."

Penrice added: "DOW ECOLIBRIUM™ Bio-Based Plasticizers are truly a breakthrough for the wire and cable industry but their introduction here is just the tip of the iceberg -- in time they will also open up differentiation opportunities for OEMs in other industries that use PVC compounds."

Dow Wire & Cable will license select cable makers to commercialize DOW ECOLIBRIUM Bio-Based Plasticizers consistent with its Dow Inside program. Cable manufacturers in the Dow Inside program are supported by Dow Wire & Cable's forward-thinking technology, versatile products and enhanced services, backed by the strength of a creative and responsive supplier that can help offer a competitive edge in a demanding industry.

DOW ECOLIBRIUM Bio-Based Plasticizers offer specific benefits in terms of processing, electrical and temperature performance, and end-use for low and high temperature wiring applications in several key wire and cable market segments:

- Personal Electronics and Appliances – Wires jacketed with material that includes DOW ECOLIBRIUM can achieve an outstanding balance of flame retar-

dance, flexibility and heat performance. In wiring for personal electronics the use of DOW ECOLIBRIUM™ can deliver on global OEM requirements for heat deformation resistance, flexibility and electrical performance.

- Building & Construction – DOW ECOLIBRIUM Bio-Based Plasticizers are phthalate- and lead-free, offering safe building wire options for end-users. By virtue of being bio-based, their production can also provide opportunities for cable-makers and building industry end-users to achieve carbon credits and, in the USA, certification by the U.S. Green Building Council's LEED (Leadership in Energy and Environmental Design) Rating Systems. The new products are also effective in data communications delivery applications.

- Automotive – Wires used for the transmission of power and data inside passenger and commercial vehicles that are jacketed with material that includes DOW ECOLIBRIUM™ Bio-based Plasticizers can provide an environmentally-friendly solution that exhibits requirements for heat resistance and ease of installation.

The introduction of DOW ECOLIBRIUM Bio-Based Plasticizers provides another example of Dow's commitment to deliver sustainable chemistry as part of its 2015 Sustainability Goals. Sustainable chemistry is a "cradle-to-cradle" concept that drives Dow to adopt a lifecycle view of its products, processes and product uses in order to provide value and solutions for its customers while enhancing the quality of life for current and future generations.

More information about DOW ECOLIBRIUM Bio-based Plasticizers and Dow Inside is available at www.dowwireand-cable.com.

Dow Wire & Cable, a business unit of The Dow Chemical Company ("Dow"), is a leading global provider of products, technology, solutions and expertise that sets industry standards for reliability, longevity, efficiency, ease of installation and protection that the industry can count on in the transmission, distribution and consumption of power, voice and data.

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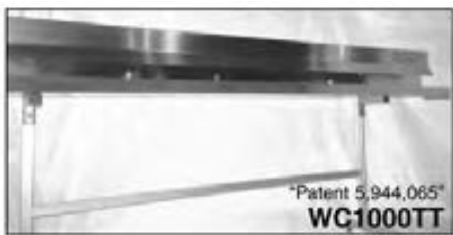
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NEWS PLUGS continued



IPC Releases PCB Industry Results for March 2010

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

Rigid PCB shipments were up 19.6 percent while bookings increased 38.4 percent in March 2010 from March 2009. Year to date, rigid PCB shipments were up 9.2 percent and bookings have grown 31.9 percent. Compared to the previous month, rigid PCB shipments increased 23.5 percent and rigid bookings increased 28.2 percent. The book-to-bill ratio for the North American rigid PCB industry in March 2010 grew to 1.10.

Flexible circuit shipments in March 2010 were down 1.3 percent, but bookings were up 18.9 percent compared to March 2009. Year to date, flexible circuit shipments were down 2.4 percent and bookings were up 7.1 percent. Compared to the previous month, flexible circuit shipments went up 27.3 percent and flex bookings rose by 98.8 percent. The North American flexible circuit book-to-bill ratio improved to 0.98.

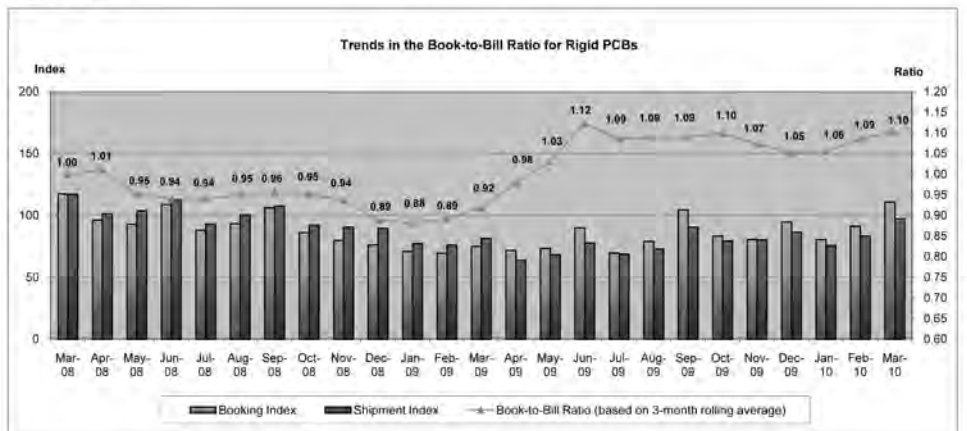
For rigid PCBs and flexible circuits com-

bined, industry shipments in March 2010 increased 17.7 percent from March 2009, as orders booked increased 36.8 percent from March 2009. Year to date, combined industry shipments were up 8.3 percent and bookings were up 29.9 percent. Compared to the previous month, combined industry shipments for March 2010 increased 23.8 percent and bookings went up 31.6 percent. The combined (rigid and flex) industry book-to-bill ratio in March 2010 increased to 1.09.

"In the March data, we can really see the recovery in full swing," said IPC President & CEO Denny McGuirk. "Rigid PCB bookings grew in double digits and continued to grow faster than shipments, which has kept the book-to-bill ratio strongly positive for the past 10 consecutive months. Both rigid PCBs and flexible circuits are gaining strength."

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 90 percent of the current PCB industry in North America, according to IPC's World



Note: The index is based on year-on-year growth rates to reflect long-term trends. It may not always appear consistent with the month-to-month changes in the data.

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PCB Production and Laminate Market 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 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 March 2010, 85 percent of total PCB shipments reported were domestically produced. Domestic production accounted for 85 percent of rigid PCB and 80 percent of flexible circuit shipments in

March by IPC's survey participants. These numbers are significantly affected by the mix of companies in IPC's survey sample, which changed slightly in January, but will remain 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 flex circuits. In March, the flexible circuit manufacturers in IPC's survey sample indicated that bare circuits accounted for about 56 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.

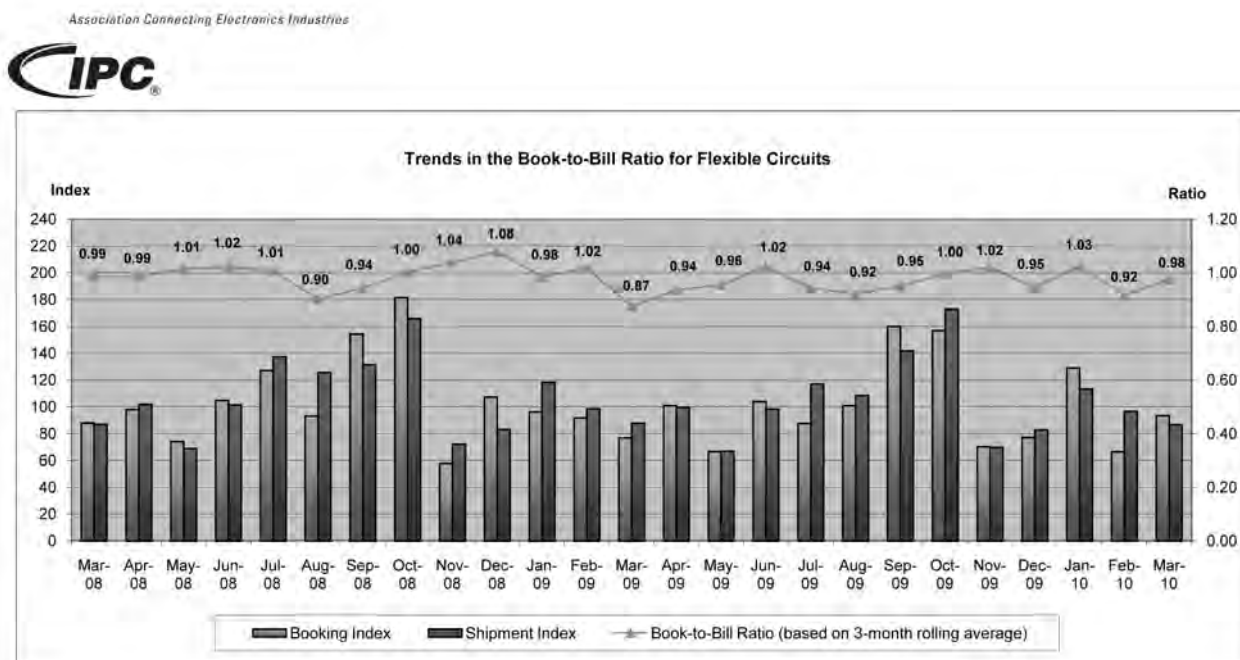
Interpreting the Data

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. 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 three consecutive months or more 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.

The information in IPC's monthly PCB industry statistics is based on data provid-

ed 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.

IPC (www.IPC.org) is a global trade association based in Bannockburn, Ill., dedicated to the competitive excellence and financial success of its 2,700 member companies representing all facets of the electronics industry, including design, printed board manufacturing, electronics assembly and test. IPC maintains offices in Taos, N.M.; Arlington, Va.; Garden Grove, Calif.; Stockholm, Sweden; Moscow, Russia; and Shanghai and Shenzhen, China.



Note: The index is based on year-on-year growth rates to reflect long-term trends. It may not always appear consistent with the month-to-month changes in the data.

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Ph: 616-846-3410, Fx 616-846-9779
E-mail: mbwilson@assem-tech.com
Web: www.assem-tech.com

ASSEM-tech Inc., has been supplying high quality solutions to our customers since 1985. We supply a wide variety of assemblies to a number of different markets including: Aerospace, Appliance, Automotive, Recreational Vehicles as well as commercial and industrial applications. Our primary focus is on wiring harnesses, box/panel builds and electrical sub-assemblies. Please contact us for a quote on your next project.

**AVIONICS & SYSTEMS
INTEGRATION GROUP LLC (ASIG)**
10 Collins Industrial Place, Suite 3B
Mauumelle, AR 72113
Federal Contract Agency CAGE Code: 4BY25
Service Disabled Veteran Owned (SDVO)
Ph: 866-890-2744
E-mail: info@asigllc.com
Web: www.asigllc.com

ASIG performs integration engineering, certification & program management, installation kit fabrication and assembly of structural components, wire and cable harness assemblies and the installation of Communications, Navigation, Situational Awareness and Air Traffic Management equipment for aircraft & other air vehicles. Additionally ASIG performs research and development of emerging technologies in support of aircraft operations, maintenance, modification and repair for civil, commercial, government and foreign flight departments.

BOBO ENGINEERING, INC.
248 N. Main Street
Arab, AL 35016
Ph: 256-586-8333, Fx 256-586-1544
E-mail: Robert@Boboengineering.com
Web: www.Boboengineering.com

Bobo Engineering was founded in 1977. Our goal is to provide customers with "defect-free" products at a competitive price in a timely manner. The result is a company with over 30 years of experience in the wiring harness/cable assembly business. Bobo Engineering is Woman-Owned, Small Business and Hubzone Certified.

CABLEMASTER CORPORATION
W134 N5272 Campbell Drive
Menomonee Falls, WI 53051
Ph: 262-783-3000, Fx 262-783-3015
Web: www.cablemaster.net
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CableMaster is a Distributor of specialty wire and cable. We also manufacture cord-sets, harnesses, and assemblies with our partners in China. CableMaster supplies quality products at a competitive price, with Just-In-Time delivery from our Menomonee Falls, Wisconsin Facility. Our relationships and expertise allows CableMaster to be your local China sourcing liaison.

CESAR-SCOTT, INC.
4731 Ripley Dr, Suite B, El Paso, TX 79922
Ph: 915-543-3212, Fx 915-543-3213
E-mail: csmail@cesar-scott.com
Web: www.cesar-scott.com

Cesar-Scott, Inc. is a sales and marketing company. It was founded in 1988. The company is divided into three business units; manufacturing, distribution and representation. Cesar-Scott manufactures wire harnesses and cable assemblies for the appliance and automotive industries. Cesar-Scott sells and distributes electronic components, wire, and heat shrink tubing. We are a minority enterprise and members of the Greater El Paso Chamber of Commerce.

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INTEGRATED SOLUTIONS, INC.**
2122 E. Birchwood Ave, Cudahy, WI 53110
PH: 1-877-CORDS88, Fx: 414-482-0220
E-mail: sales@connstek.com
Web: www.connstek.com

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Fx: 410-265-1646
E-mail: sales@controlcable.com
Web: www.controlcable.com

Control Cable is a small, veteran owned business with over 30 years experience in wire harnesses, cable assemblies and structured wiring systems. Capabilities include custom integration of assemblies into customer's products. We provide solutions, reliability and cost effective innovations to OEMs, LAN/WAN users and the premise wiring markets.

DELTA GROUP ELECTRONICS, INC.
395 Gus Hipp Blvd. Rockledge, FL 32955
PH: 321-631-0799 Fx: 321-633-5262
E-mail: floridasales@deltagroupinc.com
Web: www.deltagroupinc.com

Delta Group Electronics, Inc. is a full service, ISO 9001:2000 certified electronics manufacturing services company offering cost effective, high quality, build-to-print manufacturing from prototype to volume production. Our wide range of services includes cable and harness assembly, box build, circuit card assembly, materials management, functional test, purchasing, J-I-T delivery, testing and repair, and system integration.

DIVERSIFIED COMPANIES, INC.
8260 Arthur Street N.E. Suite C
Minneapolis, MN. 55432
PH: 763-784-9600, Fx 763-784-9595
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6210 Castor Ave, Philadelphia, PA 19149
PH: 215-288-2774, Fx: 215-288-6631
Web: www.eghcomponents.com

Founded in 1999 Egh Components Inc. is a full service manufacturer of wire harness and cable assemblies. Our capabilities are automated wire processing, terminal application, wire stamping, ultrasonic welding, injection molding, and various other small assemblies and tooling. We offer many valued services including engineering assistance on site, courteous customer service, competitive prices and quality craftsmanship.

ELECTREX INC.
6 North Walnut, Hutchinson, KS 67501
PH: 1-800-319-3676, Fx: 620-669-3740
E-mail: rhood@electrexinc.com
Web: www.electrexinc.com

Founded in 1977, Electrex is dedicated to providing value added electrical components and engineering services to customers desiring integrity, innovation and excellence in a partnership relationship. Some of our services include: Wire Stamping, Ultrasonic Welding, Braiding, Electrical Testing, Engineering, Wiring Harnesses (Simple & Complex), Battery Cables and Panels.

EVERGREEN SALES
1010 W University Ave, Suite 211
St. Paul, MN 55104
PH: 651-222-2558
E-mail: jennifer@evergreensales.com
Web: www.evergreensales.com

Evergreen Sales is a manufacturer specializing in wire processing and insert molding of wire and cable assemblies. We automatically cut, strip, solder, tin, terminate, connectors, etc. Our facility is cost effective and GMP (medical) compliant. Our goal is quality assemblies shipped on time.

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187 Industrial Park Drive
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PH: 607-772-1201, Fx: 607-772-1012
E-mail: cfaciszewski@harrisasm.com
Web: www.harrisasm.com

Harris Assembly Group is a contract manufacturer that builds to customer prints, Cable/Wire Harness, Electro-Mechanical, Mechanical, and sub assemblies. We are a full turn key supplier certified to ISO 9001:2008 and UL recognized. Our market areas include commercial, industrial, automotive and military. Our buying power allows us to pass on great savings, when purchasing material for programs. We have been serving the OEM electronics industry for over 29 successful years.

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High Tech Connections supplies a myriad of precision quality, standard and custom-manufactured interconnect designs for the electronic and electrical OEM marketplace. AC/DC power cords, electronic and power retractile (coiled) cords, molded cable assemblies and custom wire harnesses/component sub-assemblies, made to customer specifications. Low minimums usually apply. Contact us today!

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PH: 763-788-8395, Fx: 763-789-4400
E-mail: jzappa@metroassemblies.com
Web: www.metroassemblies.com

Since 1971 Metro Assemblies has specialized in high to medium volume insert molded wire assemblies. We provide everything from quick turns in our prototype shop and product design services through to high volume high quantity custom molded connectors. We provide EKG, ECG & TENS wires for Medical diagnostics as well as hook-up & assembly leads for appliances, custom audio lead sets and molded assemblies for the automotive industry. Our state-of-the-industry equipment assures high quality and competitive pricing.

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6086 Stewart Ave., Fremont, CA 94538
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E-mail: sales@micro-a.com
Web: www.micro-a.com

Micro Accessories Inc. is celebrating 20 years of manufacturing cable assemblies for the computer, medical, defense and entertainment industries. We specialize in quick turnarounds and in manufacturing to customer specifications. Micro Accessories Inc. manufactures high quality, durable and competitively priced cables and wire harnesses. We have local and offshore pricing. We also serve OEM manufacturers in a variety of industries complying with ISO. Micro Accessories Inc. is USA-owned and our customer service staff is courteous and friendly.

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E-mail: sales@northernindustrial.com
Web: www.northernindustrial.com

Northern Industrial Services, Inc. is a full service contract manufacturer specializing in custom manufactured cables and harness assemblies in prototype thru production quantities. Entering our 50th year of service, NIS is a veteran owned small business that manufacturers and tests all assemblies to clients specifications ensuring quality parts, on time at the best total value.

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Positronic is a manufacturer of high reliability power, D-subminiature, circular and rectangular connectors. Positronic has manufacturing locations in North America, Asia, and Europe. As a value-added service, Positronic offers our cable assembly capabilities to connector customers.

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E-mail: info@prodam.ca
Web: www.prodam.ca

Prodam is a recognized leader in the wire harness manufacturing industry, in Quebec and throughout Canada. As an OEM, for 15+ years of a large variety of wire harnesses for various Home Appliance Manufacturers, Specialized Automotive Equipment manufacturers and general Industrial Manufacturers, Prodam has manufactured high quality, precision-made, durable and competitively priced wire harnesses for clients ranging from stoves to furnaces, lighting equipment and HVAC manufacturers to small industrial appliances, from sport equipment to saunas and hot-tubs. For top quality, precision harnesses, delivered on time all the time.

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Web: www.rpcmfg.com

RPC Manufacturing Solutions in Denver, CO. is contract manufacturer specializing in box-builds, panel assembly, wire harnesses, custom cables, component modifications, power cords and electro-mechanical assembly services. RPC serves OEM manufacturers in a variety of industries including: Aerospace, Medical Equipment, Gaming, Telecom, High-Tech, Automotive, Agricultural Equipment, Measurement Instruments, Control Devices and Electrical Equipment Manufacturers of all types. RPC complies with standards for IPC/WHMA A-620, ISO & FDA in addition to being UL registered and qualified for NASA ground support projects.

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Web: www.tim-co.com

TIM-CO/CAL-F has served the Aerospace, Defense, Computer, Telecommunications and Industrial industries since 1960 with on-time delivery. We are ISO 9001:2000 compliant. TIM-CO is an authorized value-added distributor of electronic and electrical connectors (commercial and military), passive and electro mechanical components. CAL-RF manufacturer's and

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Web: www.tennesseewire.com

Founded in 1998, Tennessee Wire Technologies is a new company, but with old roots in the Wiring Harness Industry. Our key employees and department supervisors have more than 150 years experience in the development and manufacture of wiring assemblies for both appliance and automotive customers. We are also well versed in custom panel assemblies. Our business is built on quality and customer service and we pride ourselves on keeping our facility and all equipment in top condition. We offer many value-added services including on site engineering assistance and 100% continuity testing of assemblies.

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Termination Plus supplies solutions for all your wiring needs. We specialize in the manufacturing of cable assemblies, wire harness and electro-mechanical assemblies, per customer specifications for the broadcast, medical, industrial, automation, instrumentation and telecom industries. We are UL recognized.

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1175 Alexander Court
Cary, IL 60013
PH: 847-516-8080 Fx: 847-516-0747
E-mail: sales@thermtrol.com
Web: www.thermtrol.com

Thermtrol MGI Global LLC is a TS16949 Certified manufacturer of custom wire harness & cable assemblies with notable competencies in insert/over molding. The company is currently serving that automotive, agricultural equipment and appliance industries among others. For high volume/high labor content manufacturing, the company features the services of its six-year old wholly owned sister company, Thermtrol (VSIP) Co. of HCMC, Vietnam. Thermtrol is genuinely interested to explore strategic opportunities with industry partners.

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830 South State Road 25
Logansport, IN 46947
PH: 800-451-9557, Fx: 574-722-5723
E-mail: tmminfo@tmmorrismfg.com
Web: www.tmmorris.com

T.M. Morris, established in 1965, designs and produces custom harnesses and cable assemblies. Supplying the automotive, appliance, medical and electronics industries. We employ state of the industry techniques to assure that the harness or assembly will be proven to be flawless in both quality and durability. We are registered to the ISO/TS 16949 standard.

UNLIMITED SERVICES
170 Evergreen Rd, Oconto, WI 54153
PH: 920-834-4418, Fx 920-834-4828

Unlimited serves 12 Volt mobile applications for wiring harnesses and control panels focusing on the Heavy Truck, Off-Road, and Agricultural equipment industries. With the addition of Trans World Connections, Unlimited can serve industrial customers with a broad variety of custom cable assemblies using its extensive insert molding capabilities. Its Mexican plant offers large volume products at competitive prices.

USA HARNESS, INC
1201 E Coke Rd, Winnsboro, TX 75494
PH: 903-342-3767, Fx: 903-342-3772
Web: www.usaharness.com

Providing harnesses and electronic control systems for transportation, construction and specialized industries worldwide with industry leading service and support. Our three facilities, combined 99,000 sq. ft. utilize plastic injection molding machines, automated wire pulling, terminal application presses, ultrasonic splicing and digital testing equipment. We feature the patented USA-Plus system capable of accommodating 10 circuits.

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1812 Nelwood Dr.
Columbia, MO 65202
PH: 573-474-8514, Fx: 573-474-6421
E-mail: jkorte@wmico.com
Web: www.wmico.com

WMI, established in 1983, is a full service contract manufacturer with a diverse line of products, including simple to complex custom wire harness and cable assemblies. Our company is competitive in both the domestic and international markets due to our low prices, experience in manufacturing, attention to detail, and dedication to quality. Please visit us on the web for more information and try our quick and convenient bidding process.

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3817 Spinnaker Court, Fremont, CA 94538
PH: 510-226-7588, Fx: 510-226-7588
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Web: www.winsusa.com

Winstronics has been providing design and manufacture solution globally to our partner since 1982. Our ISO 9000, ISO 14000, UL and CSA certified facilities specialize in production ranging from cable, connector, wireharness assembly, plastic injection molding, PC Board assembly, sheet metal, to full box build.

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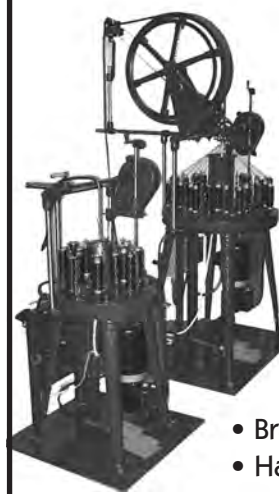
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60th ECTC 2010 June 1-4, 2010

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The technical program contains papers covering leading edge developments and technical innovations across the packaging spectrum. Topics include advanced packaging, modeling and simulation, optoelectronics, interconnections, materials and processing, applied reliability, assembly and manufacturing technology, components and RF, and emerging technologies. Both poster and presentation formats are used. Special papers presented at the ECTC will be awarded the Intel Best Student Paper Award and best and outstanding paper awards. *For further information contact www.ectc.net.*

Paris Las Vegas Hotel
Las Vegas, Nevada

Avionic, Fiber-Optics and Photonics Conference 2010 September 21-23, 2010

The aerospace industry has made great strides in recent years deploying fiber optics and photonics technology on commercial and military platforms. This trend will continue to grow as avionics fiber optic system architectures, networking schemes, and components evolve and mature. In parallel with data and video transmission, photonics technology for analog/RF, flight control, free-space communication, and vehicle monitoring applications will have an increasing role in future aerospace platforms. This application-oriented conference will provide a common international forum for leaders, researchers, engineers, technicians, logisticians, manufacturers, and instructors to convene and discuss all aspects of severe environment fiber optic component, systems, reliability, maintainability, producibility and supportability technology, and its future direction. *For information see www.photonicsconferences.org.*

Denver Marriott Tech Center
Denver, Colorado

RSTechED June 6 - 11, 2010

Think of RSTechED as an advanced education in manufacturing and production. Only RSTechED serves up a curriculum this broad, with specific sessions appealing to users and managers at all levels within an organization. The event provides a highly interactive classroom-style environment set up for people working in manufacturing, process, and OEM industries. Hear from subject matter experts as they share their experiences and discuss current and emerging technologies. *For more information visit www.rockwellautomation.com/events/rsteched.*

JW Marriott
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Assembly Technology Expo September 28-30, 2010

Stay at the forefront and remain competitive with the latest technical training for manufacturing professionals. The ATExpo Conference gives you the knowledge you need to make your assembly process work better from design to end-of-line packaging. Attending Assembly Technology Expo helps you keep pace with global competition with innovative products and ideas that make your process faster, better, and less costly. *For further information visit www.atexpo.com.*

Donald E Stephens Convention Center
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New York, New York

CWIEME Chicago October 26-28, 2010

The organizers of the world's largest coil winding trade show in the world are pleased to invite you to attend the CWIEME Chicago 2010 Exhibition and Conference. The US manufacturing market in the world after the EU and when combined with Canada, Mexico, Central and South America will offer exhibitors an exceptional opportunity to showcase their products and services. *See www.coilwindingexpo.com.*

Donald E Stephens Convention Center
Rosemont, IL

Design Automaton Conference June 13-18, 2010

The Design Automation Conference (DAC) is the premier event for the design of electronic circuits and systems and for EDA and silicon solutions. Now in its 47th year, DAC features a wide array of technical presentations, as well as more than 200 of the leading electronics design suppliers in a colorful, well-attended trade show that, literally, attracts stakeholders from around the world. *See www2.dac.com.*

Anaheim Convention Center
Anaheim, California

Electrical Manufacturing and Coil Winding Expo 2010 October 18-20, 2010

A technical conference with presentations from Industry Leaders related to the design and manufacturing technologies of transformers, permanent magnets, AC/DC motors, electrical coils and components. This new 6 in 1 event will attract hundreds of professionals from the electrical manufacturing industry. *For further information visit www.emcw.org.*

Gaylord Convention Center
Dallas, Texas

POF WORLD WEST 2010 June 14-17, 2010

One of the main focal points of POFWORLD WEST 2010 will be "POF in Short-Distance Applications". There is a growing need for high-speed, low-cost interconnects in a wide range of applications, including supercomputers, data centers, storage area networks, home networks, terminal devices, in-box, box-to-box, rack-to-rack, and on circuit boards, to name only a few. These applications are from a few centimeters to 100 meters. Short distance applications have found their way into automobiles, with over 70 models of automobiles and over 55 million optical nodes on the road in Europe and Asia. This has resulted in economies of scale, allowing POF to reach its low-cost potential. This same technology will soon find its way into short-distance interconnects in industrial, consumer, medical, computer, and aerospace fields. *For further information contact www.pofworld.com/west10/.*

Santa Clara Convention Center
Santa Clara, California

Electronics West February 8-10, 2011

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Anaheim Convention Center
Anaheim, California

Wiring Harness Manufacturer's Conference (WHMA) March 2-4, 2011

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 suppliers' technology exhibits. *For further information visit www.whma.org or call (952) 253-6085.*

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marilynmagowan@yahoo.com**

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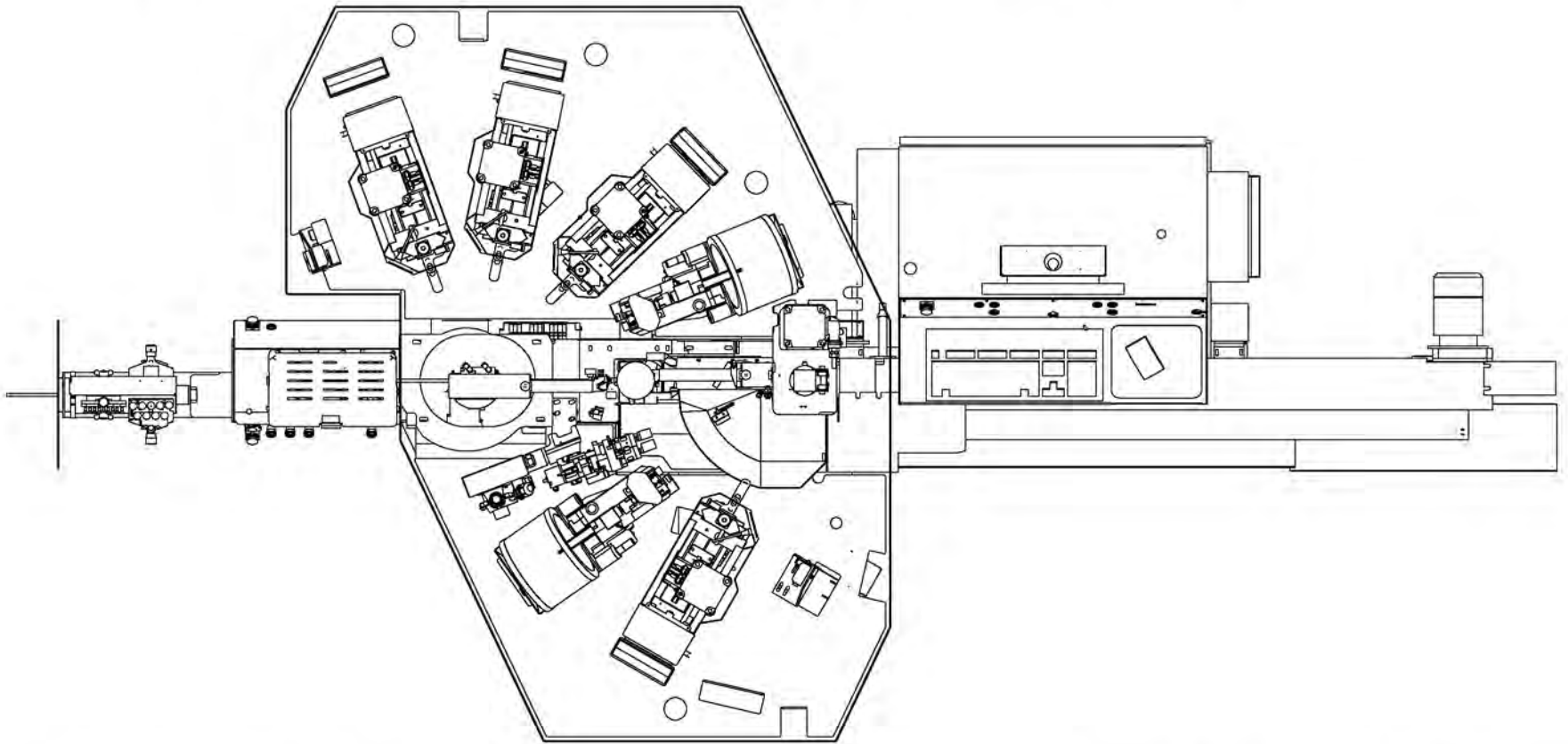
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