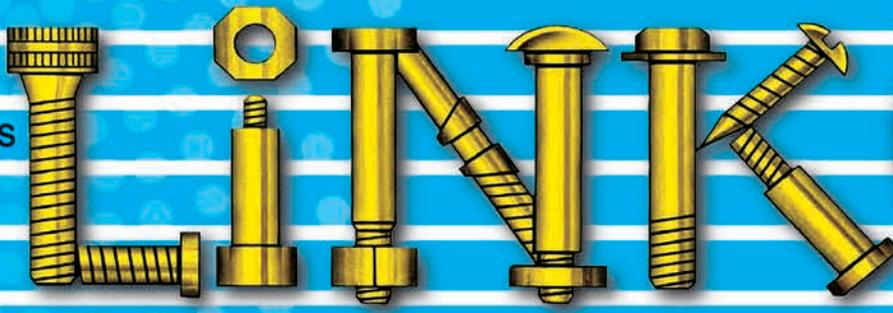


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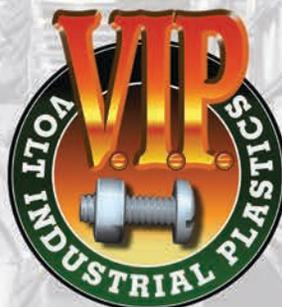
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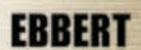


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distributor news

Distribution One takes software training seriously. As one of the leading providers of comprehensive ERP software to wholesalers and distributors, we believe that the ability to maximize productivity and make the best business decisions depend on a users' understanding of our ERP-ONE software features and functionality. As a result, we are proud to announce D1 University.

D1 University is comprised of quarterly supplemental educational sessions lead by our team of ERP experts. Whether conducted in-person at our New Jersey headquarters or via online webinar, these training sessions are open to any Distribution One customer seeking additional insight into the software at the heart of their business.

Listening to our customers' questions is our priority. Training topics are built with the goal of deepening our customers' operational knowledge. Upcoming seminars feature onsite education geared to new ERP-ONE users seeking foundational training as well as enhanced instruction for advanced users in functionality

like General Ledger and Warehouse Counts.

Ongoing software training was also a key theme at our 6th Accelerate User Conference in Las Vegas. This three-day event once again provided us the opportunity to listen, share, and fortify our customers' expertise. These valuable interactions will allow us to further expand our D1 University curriculum into the foreseeable future.

From the start, Distribution One partners with every customer to ensure a smooth transition and create a continued avenue for sharing information that initiates ideas for valuable enhancements. Our process-based ERP-ONE software training is applied directly to your business model and is offered on-site or via webinar. Our team of ERP professionals thrives on providing live US-based customer service to 8000+ users worldwide.

Distribution One stands as a partner to our customers' success.

To learn more about Distribution One's turnkey ERP-ONE software, visit www.distone.com or call us at 1-856-380-0629 to schedule a software demonstration.

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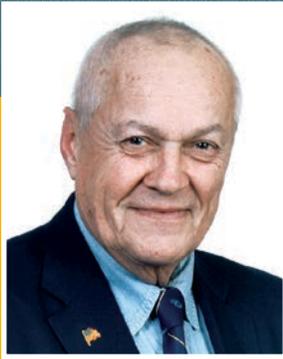
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Bengt Blendulf

Bengt Blendulf was educated in Sweden and moved to the US in 1974 to start a subsidiary for a Swedish fastener manufacturer. After working as a technical consultant on the faculty of the College of Engineering and Science at Clemson University, he established EduPro US in 1997 to teach highly rated courses in Fastening Technology in the US, Canada, Mexico, Europe and Asia. Being one of the founders, Bengt served as the chairman of ASTM F16.96 Bolting Technology from 1996 to 2006. In 2006 he received the Fred F. Weingruber award from ASTM for "his efforts to promote and develop standards for the fastener industry." In 2013 he also received IFI's Soaring Eagle Award for "significant contributions to the technological advancement of the fastener industry". Bengt is the author of an extensive lecture book, well over 110 articles and "Mechanical Fastening and Joining", a book published in 2013 by the Industrial Fasteners Institute. He can be contacted through www.edupro.us or by email bblendulf@yahoo.com.

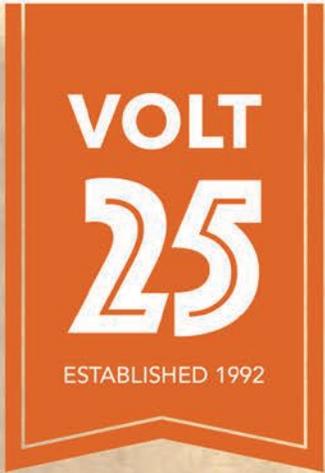
DRIVING SAFELY OR PUSHING THE LIMITS

When you put yourself behind the steering wheel of your car and look at the instrument panel, one or two instruments usually dominate your view – the speed and RPM instruments. The speedometer could be showing a range between 0 and maybe 200 miles per hour, and the RPM instrument would have a range of 0 to about 7-9000. As you start your engine and begin your journey, you get RPM readings fluctuating typically between 1000 to 2500 as your car accelerate and the gears start to engage at various speeds. Unless you are a complete road-rage maniac, and I am sure you are not, the likelihood that you will reach a highway speed of 200 MPH at 9000 RPM is rather low. Limiting influences could be the legal speed limit, road and driving conditions (pot holes, ice, etc.), visibility, other vehicles on the road, riding comfort of your passengers and many other things. Also, if you start pushing your engine at 7000-9000 RPM (you are now in the RED zone !), the heat due to the friction will get your engine temperature gage to go wild after a short while, and you will soon shop for a new engine. Well, that is after you are out of the county jail for unsafe driving or out of the hospital after a fiery and violent crash.

If we apply a similar scenario to how we are using bolted or screwed joint, we can liken the top speed to the tensile strength of the fastener, the "legal" speed to the yield strength or $R_p0.2$ and safe speed to the proofing load or S_p . Road conditions like pot holes and bumps to alternating forces in the joint, other traffic conditions as additional influences on the joint.

All of those things are among the many variables that must be considered when choosing the right fastener for the joint, the safest utilization levels of strength, the best tightening method and so on. It all must start with evaluating the all the various conditions for the joint like the magnitude of external forces, load directions, dynamics, surface conditions and friction coefficients. To know precisely the size or magnitude of an external force acting on a mechanical joint is often difficult, and we may have to use some way of estimating it. But, if we don't have, at least, some confidence in that area we are really "driving in the fog".

There are a couple of design areas where some "legal" limits have been established for reasons of public safety. One such area is the code for pressure vessels like boilers, pipes and valves. We sure don't want to be next to a valve suddenly sending superheated steam in our face or a boiler exploding from too high pressure. The codes governing this area have been created to minimize risks, and the safety factors for the bolted connections are normally very high. Other areas with "legal" limit status are the ASTM steel construction standards A325/A325M and A490/A490M for structural fasteners. They are developed to provide safe construction fasteners for bridges, steel buildings and other similar steel structures. Also in this area are safety factors of sufficient magnitude provided in the standards, together with recommended installation practices.



Work
Ethic

Do a little more than you get paid for. I'm a great believer in that—that's how you get ahead.

– Joe Volltrauer
CEO/Founder of Volt Industrial Plastics



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Laurence Claus

Laurence Claus is the President of NNI Training and Consulting, Inc. He has 25 years of experience with a medium sized automotive fastener manufacturer, holding positions including Vice President of Engineering, General Manager, Director of Quality, Director of New Business Development and Applications Engineer. In 2012 he formed NNI offering technical and business training courses as well as technical consulting, expert witness and consultation work. He can be reached at 847-867-7363 or by email: Lclaus@NNITraining.com. You can learn more about NNI at www.NNITraining.com.

WHY FASTENERS FAIL PART 1 - FUNDAMENTALS

In the early morning hours of October 30, 1990, the USS Iwo Jima, a formidable WASP class Amphibious Assault Ship, steamed from its short port call in Bahrain where several days before it had docked to receive repairs to its main boiler system. A little more than ten minutes into the redeployment, the Boiler Technician of the Watch, reported a steam leak behind Main Boiler #2. Almost immediately thereafter a jarring explosion rocked the engineering space as the main steam valve 2MS-7 blew apart sending deadly superheated (800°F) and highly pressurized (640 psi) steam throughout the confined space. Five crewmen died almost immediately and five others were to die by the end of the day making this one of the most deadly single events of Operation Desert Shield.

What happened to create such a tragedy? In short, lack of knowledge, oversight, and following established protocols allowed the Bahranian pipefitter, who was

contracted to make the repairs, to reassemble the valve bonnet using brass nuts. As soon as the superheated steam was released to flow through the valve, the laws of Physics took over and all the components of the valve soon reached the steam temperature of 800°F. Unfortunately the strength properties of many materials, including brass, diminish at elevated temperatures. This was the case in this instance and the brass nuts diminished strength capacity was unable to withstand the 640psi steam coursing through the valve. It was only a matter of time before the valve would fail and reap its deadly results.

Sadly, accidents resulting from the misapplication of fasteners are all too common. In fact, some experts project that as many as 95% of all fastener failures are the result of poor selection or improper installation. This is a sobering statistic because it illustrates the general lack of knowledge and laissez-faire attitude of most fastener users and that fewer failures than most think are the result of poor product quality. In 2015 I made a presentation where I made the following comment, "Like no other highly engineered product, the importance and criticality of the 'lowly' threaded fastener is routinely undervalued and misunderstood. No other product is used in such quantities and expected to perform at such high levels for such low cost."

Since the majority of fasteners fail for reasons other than manufacturing defects, to understand this topic one must understand the other causes of failure.



FIGURE 1: USS IWO JIMA

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of Precision*



2



5



6



9/10



8



7



4



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Joe Dysart

Joe Dysart is an Internet speaker and business consultant based in Thousand Oaks, California. A journalist for 20 years, his articles have appeared in more than 40 publications, including The New York Times and The Financial Times of London. During the past decade, his work has focused exclusively on ecommerce. Telephone: 631-256-6602; web: www.joedysart.com; email: joe@joedysart.com.

NEW ARTIFICIAL INTELLIGENCE BUSINESS TOOLS FOR FASTENER DISTRIBUTORS ARE READY-TO-RUN

While it'll be awhile before we all have an IBM Watson Supercomputer sitting atop our desks, there are a number of artificial intelligence business tools fastener distributors can use right now that will help you run smarter, faster – and ahead of the competition.

Essentially, these next generation wonders tap into artificial intelligence's ability to do a lot of the thinking and strategizing for you.

Of course, it's always your call if you want to trust an entity who's heart literally beats with all the warmth of an Intel-or-similar multi-processor.

But if you're curious about what the future of what business software will look like for fastener distributors, here's sampling of what's coming down the pike:

AI App Makers

You can start dabbling in artificial intelligence right now – and for free – with open source software like Datumbox (www.datumbox.com). Targeted to businesses with one or more programmers on staff – or an extremely brave PC power-user – Datum is an AI platform that enables you to design and build your own AI apps from scratch.

Specific tools you can create with Datumbox include:

▫ **AI Sentiment Analyzers:** These tools enable you to unleash an app on the Web, social media and similar digital locations that will see what people are saying about your company and/or products and services – and also determine if the sentiments behind those posts are positive, negative

or neutral.

▫ **AI Text Readability Analysis:** This tool can be used to ensure the marketing copy for your fastener distribution business is extremely accessible – or conversely, appeals to a more discriminating audience.

▫ **AI Gender Analysis:** Whether its soaring praise or withering criticism, this tool will enable you to determine whose behind posts about your company – a man or a woman.

Similar software includes Lexalytics (www.lexalytics.com) and Bitext (www.bitext.com).

AI Dashboard Maker

One of AI's notable characteristics is its ability to retrieve data from all corners of the Web and then package it in easy-to-understand, graphic dashboards.

▫ **Qlik** (www.qlik.com/us) for example, enables your fastener distribution business to develop AI dashboards that can monitor dozens, hundreds – or even thousands – of Web sites and/or Web properties across cyberspace, and then bring back all that data for instant analysis.

With Qlik, you'll be able to compare and contrast the performance of all your Web sites in terms of clicks, visits, purchases, successful calls-to-action, and more. The software promises to bring back associations and insights you may not have thought of to consider. Similar products include Metric Insights (www.metricinsights.com) and Tableau (www.tableau.com).



NICK BRESTOFF, FOUNDER, INTRASPEXION, MAKES AI SOFTWARE THAT CAN SNIFF-OUT LAWSUITS BEFORE THEY HAPPEN.



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MACK BROOKS EXHIBITIONS GROUP TO LAUNCH FASTENER FAIR USA IN CLEVELAND FOR 2018

Excitement is building for Fastener Fair USA 2018, America's Exhibition for the Fastener and Fixing Industry.

The inaugural show will take place April 11-12, 2018 at the Huntington Convention Center in Cleveland, OH.

The only fastener and fixing event in the USA for the full supply chain, Fastener Fair USA is the premier event bringing together manufacturers, distributors, suppliers and end users in the region's only dedicated fastener, fixing, and joining technology exhibition. The

show offers a first-hand look at the latest solutions and technology available in the marketplace, as well as top-notch educational programs developed and delivered by industry experts.

Meeting Market Demand

The Fastener Fair name is recognized around the world as the leading exhibition in industrial fastener and fixing technology, and has built a strong following with exhibitors and attendees alike. Mack Brooks Exhibitions owns and organizes eight Fastener Fairs globally as well as the well-respected Fastener + Fixing magazine. When looking at introducing Fastener Fair to the U.S. market, Mack Brooks focused on two main objectives – meeting the needs of a growing market place and providing a platform for the entire fastener supply chain.

The U.S. market for industrial fasteners continues to be strong even as the surge in demand slows following the recovery-fueled boom from 2010-2015, according to a study on Industrial Fasteners by The Freedonia Group, published in May 2016.

Overall, forecasts for GDP growth remain steady through 2020, and industrial manufacturing within the U.S.

continues to be strong. According to that same study, the U.S. market for industrial fasteners is expected to increase 2.6 percent per year to \$15.2 billion in 2020. Demand for fasteners is expected to be higher in the construction and aerospace markets.

U.S. manufacturers therefore have a need to discover the latest in fastener, fixing and joining solutions

for their product design initiatives.



Fastener Fair is the right platform for these manufacturers to find the technology they are looking for. The exhibition provides a sales, marketing and networking opportunity for the full fastener supply chain – including OEMs, distributors, wholesalers, suppliers, design engineers and purchasers.

Fastener Fair is a model that is new to the U.S. market, but one that has been successful for Mack Brooks around the world for many years.

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VOLT 25

ESTABLISHED 1992

Take a trip with us down memory lane as we recap the last 25 years.

article continues on page 18



1952

Joe Volltrauer came to the United States from Vienna, with the European work ethic that provided the foundation for the business that he eventually launched.

1956

Joe learns the trade of toolmaking, which at that time, before computers, was considered an art form. Joe drew the molds on paper, with every detail and measurement drawn out by hand. Then he would make the mold to be used in injection molding machines.

1972

Joe started his own company, JV Tool.



1976

Joe creates a partnership to open Centennial Plastics.

1990

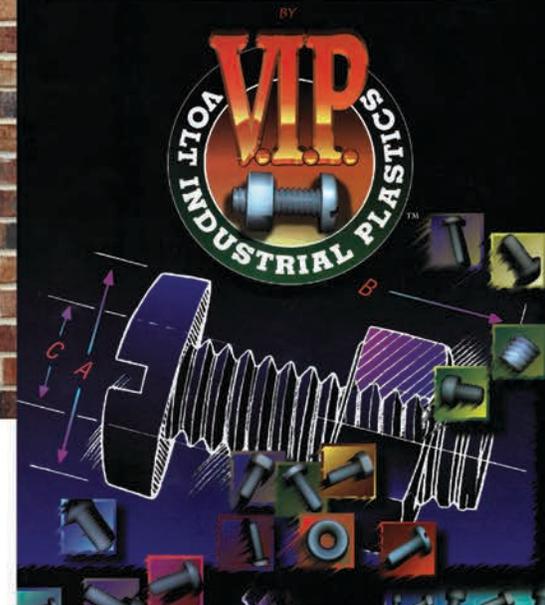
Centennial Plastics is sold.



1992

Joe starts Volt Industrial Plastics as founder and CEO.

NON-METALLIC FASTENERS



1993

Volt's very first catalog is released.

Joe & Heidi Volltrauer visit first trade show in Columbus, Ohio, the start to 25 years of building long term customer relationships.





2006

Volt celebrates 14 years in business.

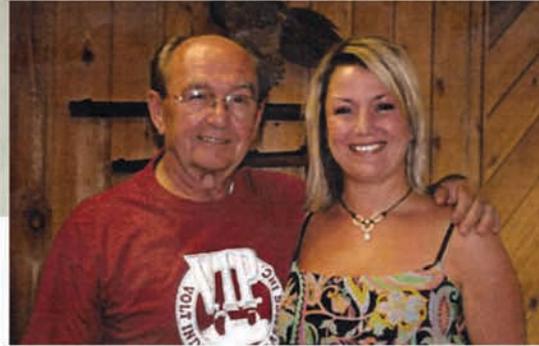


2011

Volt purchased their first 220 ton press to produce larger parts.

1999

Joe and Heidi attend a trade show in Las Vegas, Nevada.



2007

Although they didn't relocate until 2012, Volt purchased their new 65,000 square foot facility in Yellville, Arkansas, for future growth.



2003

Volt expands to a 24,000 square foot facility in Flippin, Arkansas.

2012

Due to the increase in demand, Volt relocates from their 24,000 square foot facility to the 65,000 square foot facility in Yellville, Arkansas.



2004

In regards to Volt's inventory, "We really strive to keep things on our shelves so our customers don't have to." - Heidi Volltrauer, COO/VP Marketing & Sales.

2008

Joe celebrates his 70th birthday and Volt's 16th anniversary.

2017

Volt Industrial Plastics celebrates 25 years with an inventory that is well over 100 million.

VOLT
25

ESTABLISHED 1992

MOLDING

VOLT'S FUTURE

With Hard Work & Well-Founded Beliefs



Joe Volltrauer always wanted to start a company that he would have loved to work for. After many years of perfecting his craft, learning the industry and working hard, Volltrauer founded Volt Industrial Plastics, Inc in June of 1992. Quality and customer service have been his pursuit over the last 25 years, and now VIP is one of the world industry leaders.

FRESH START

Joe was born in a small German (Danube Swabians) village in Yugoslavia in 1938. During World War II, communists came into their village and took everything away from them, including their home. He and his family were sent to concentration camps, the children separated from their parents. The children's camp was close to the adult camp, so one evening, they took a chance and escaped while the guards were preoccupied with a celebration.

They traveled at night and hid during the day, eventually ending up in Vienna. They spent the next seven years in Vienna before making the move to the United States. Joe was a young teenager when he came over to the states, and he attended an all boys school in Chicago.

Years later he would meet the woman who would be his wife in a German nightclub in Chicago. Erwine, who was also Swabian, and Joe was crazy about her. They were married in 1959, with the start of their family arriving soon after.

*article continues
on page 20*





The Business Edge

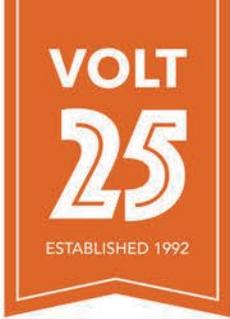
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Molding Volt's Future with Hard Work & Well-Founded Beliefs

FINDING HIS PASSION

Joe has always taken pride in providing for his family, and his work ethic was a large contributor to his ability to do so. He has always said, "Work hard and do it in such a way that you can take pride in what you do." This mantra would follow him throughout his working years, eventually becoming one of the most cherished values of his company.

A job as an apprentice tool and die maker for Acme Tool & Die in Chicago was Joe's first step towards finding his passion. During this apprenticeship, he found that he particularly loved the challenge of mold making. The late 1950s was an era well before any help from computers, so this was considered an art form of sorts. He drew the molds on a paper with every detail and measurement drawn out by hand, then making the mold to be used in injection molding machines.

In 1973, he founded JV Tool, and a couple of years later moved to Arkansas where he designed his exceptionally functional, high quality molds for manufacturers of plastic components, including plastic fastener makers in the region.

VIP'S BEGINNINGS

In 1976, Joe and his business partner opened Centennial Plastics in Yellville, AR. It flourished quickly, and the two sold it in the very early 1990s. In 1992, Joe decided he could use all of his mold and tool making expertise to efficiently produce quality plastic fasteners in his own company, so he founded Volt Industrial Plastics.

He infused the entire company with his uncompromising dedication to quality and service by sharing his knowledge – and love – of mold making.

DEDICATION TO EXCELLENCE

His willingness to put profits back into the business to buy state-of-the-art computer-aided manufacturing equipment has enabled Volt to achieve an exceptionally efficient and responsive organization. In addition, he employed people who share his dedication and his skills. As with every truly successful company, it is the people that have made the difference.

2017 has proved a growing year, with the company racing past 2016 sales. They currently produce and distribute products for a variety of industry sectors, including electronics, furniture, marine mechanics and more. They hope to continue to grow their business while keeping their family values and hard work ethic ingrained in every product they create.

article continues on page 22



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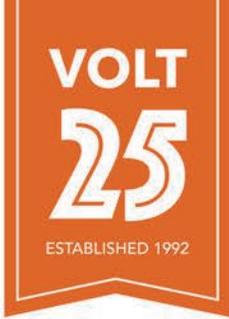
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2012



1994



GETTING TO KNOW **VOLT**

with Heidi Voltrauer,
COO/VP Marketing & Sales

What are some of Volt's new developments?

We are constantly upgrading our molding machines, and making sure all of our equipment is cutting edge. We have been adding new products weekly, keeping our website up to date as we continue to grow our inventory. We are always working on improving our lead-times, and giving all of our customers the best service...period.

Where does Volt call home?

Our current home is in Yellville, AR, but it was founded in 1992 in Flippin, AR. We are very proud to say all of our products always have and always will be manufactured in the USA. It is a challenge to keep prices low with the extra costs American companies are burdened with, but this just drives innovation. Volt has been able to keep their prices competitive through constant advancement and company-wide efficiency. We do not import any products because making everything in house gives us total control over quality and lead times.

Where is your strongest market?

The majority of our products are sold in the USA, but we have a worldwide customer base. We sell a lot in the Midwest, east coast and west coast in the USA. Recently, we have been targeting Europe a lot more, with an exclusive relationship with one company in Germany.

What makes VIP different from its competitor?

It has taken many years to build our reputation and trust with our customers, and we are very proud of that accomplishment. We treat all of our customers with the same urgency no matter the size of their company, or the amount spent with us. We also keep inventory on most catalog items, so we can offer same day shipping. If a product is not in stock we can ship it out within a matter of a few days. Volt also answers every phone call, so our customers do not have to deal with an automated system. We take great pride in all of our lead times including our custom-molding tooling, and giving our customers the knowledge that if we do not have it, we can build it. I am very proud of our company, and I truly believe we offer the best customer service in the plastic fasteners industry.

Can customers find Volt at any trade shows across the U.S.?

We really like to exhibit at the table top shows across the US including, MWFA, SFA/SEFA (NOLA), Pac-West/NFDA, and other table top shows along the way. We hated to miss the Fastener Tech this year, but we should be there in 2019. We will also plan something for the AAFS, so stay tuned for that information.

The fastener industry is so welcoming, and I can understand why they always say, "If you try to leave, they pull you back in." I love seeing all of our customers face to face at these shows, and I have made some lifelong friends along the way. (You know who you are..cheers!) See you guys at the next show!

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Guy Avellon has been in MRO and Fastener Distribution for over 30 years, in such positions Sales Engineer, Chief Engineer, Manager of Product Marketing, Product Engineering & Quality and Director of Quality & Engineering. He founded GT Technical Consultants where he performs failure analysis, lectures on fastener safety, works for law firms and designs/audits Quality systems. He is a member of SAE, is Vice Chairman of the ASTM F16 Fastener Committee, Chairman of the F16.01 Test Methods Committee and received the ASTM Award of Merit in 2005. Guy can be contacted at 847-477-5057, Email: ExpertBoltGuy@gmail.com or visit www.BoltFailure.com.

WHAT FASTENER DISTRIBUTORS NEED TO KNOW ABOUT KEEPING FASTENERS TIGHT - PART 2

In the previous article, Part 1, I stated that there was no single product that will serve the needs for vibrational resistance for all applications without having some limitations. This is why we have such a variety of products on the market. However, there is one universal product that has been around since the flood waters have receded: the lock washer.

Billions of lock washers are manufactured and sold every year. Why do we use so many of these when there is a variety of other locking devices available on the market that offer far superior performance to the venerable lock washer? Convenience, habit, easy to use or inexpensive?

As far back as 1969, the SAE (Society of Automotive Engineers) recommended against the use of helical spring lock washers with any Grade 8 (10.9) fastener and in any critical application. In the early 1980s, the specifications were removed from the SAE Handbook. Since then, there has been no automotive fastener assembled with a lock washer, especially on a Grade 8 or 10.9 fastener used in a critical application. However, specifications and testing methods can still be found in the IFI (Industrial Fasteners Institute) Handbook referencing the ANSI/ASME B18.21.1.

Originally, lock washers were manufactured from a medium-high carbon steel and heat treated to a range of 45-56 Rc. They were furnished either as treated or electroplated with zinc. However, this presented problems with hydrogen embrittlement (Figure 1). Hydrogen embrittlement is a delayed but sudden brittle fracture caused by the absorption of atomic hydrogen into the steel from the cleaning and plating processes.

Over the past several decades, lock washers have been made from a medium carbon steel heat treated up to a hardness of 45 Rc. The common practice now is to have



FIGURE 1

the lock washers mechanically plated with zinc metal flakes to minimize the potential for hydrogen embrittlement.

Since the hardnesses of the lock washers were lowered, a new problem developed with some overseas manufacturers: they were too soft. The opened part simply spread open even further when assembled (Figure 2).



FIGURE 2

The common lock washer is a helical spring. At one point in time it was referred to as a 'split washer' since the ends are open. One end is bent slightly upwards, the other end is bent slightly downwards. Both of these ends have sharp end corners from the forming operation, which may help to secure the lock washer by digging into its respective surface.



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FASTENER INDUSTRY COALITION PRODUCES FIRST FASTENER INDUSTRY SUMMIT by Vickie Lester

On June 7, 2017, immediately following the conclusion of Fastener Tech '17, nearly 100 people participated in the first Fastener Industry Summit, produced by the Fastener Industry Coalition.

The program was kicked off by Jennifer Baker Reid with an eye-opening program on "The Trump Administration and What It Means for the Fastener Industry." Ms Reid told us what we can expect from the new administration's policy proposals and campaign promises. Jennifer Baker Reid has represented the Industrial Fasteners Institute in Washington for many years, as part of the Laurin Baker Group LLC, an organization with more than 40 years of experience in government relations.



JENNIFER BAKER REID OF LAURIN BAKER GROUP LLC

A session on "Global and U.S. Industrial Fastener Market Trends" gave attendees key insights into historical demand and future forecasts for industrial fasteners by product and market, for the U.S. and the world. The program was presented by Ken Long of The Freedonia Group, which has provided trusted market research for

more than 30 years. We all know that knowledge is power, and that an uninformed member of your team can make a simple mistake that can cost your company thousands of dollars.

The next program at the June 7 Fastener Industry Summit showed us how the fastener industry is preparing for its future and current workforce.



KEN LONG OF THE FREEDONIA GROUP

Phil Johnson from the Fastener Education Foundation shared how this nonprofit charitable organization is funding programs to recruit and train fastener industry employees and prospects.



PHIL JOHNSON OF THE FASTENER EDUCATION FOUNDATION

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PHILLIPS SCREW COMPANY: THE ORIGINAL SINCE 1935

Few companies have as broad name recognition as the Phillips Screw Company. Combine this with a long a tradition of leading technological innovation in the fastener industry and it is easy to understand why the Phillips Screw Company is still the leading force in fastener innovation.

When you think of a screw, most often the first thing that comes to mind is a Phillips cross recessed screw. The name “Phillips” has been synonymous with better fastener performance since the 1930’s when the Phillips Screw Company first introduced the original cross recess improvement to industry. There were other cross recess designs around at the time, but it was the Phillips cross recess system

that caught on and became a household word. It’s inventor, Henry Phillips, was even inducted into the National Inventors Hall of Fame in 2011 (<http://www.invent.org/honor/inductees/inductee-detail/?IID=447>). Interestingly, the Phillips Screw Company wasn’t the manufacturer of these widely used fasteners. The innovative fastener breakthroughs developed at Phillips have been manufactured and sold by their global network of licensed fastener, driver tool, header tool and gage manufacturers since the beginning.

One of Phillips earliest partners was the American Screw Company, then of Providence, Rhode Island. American became a strong promoter of the new cross

recess technology developing an efficient manufacturing system. They combined this capability with a strong sales campaign that featured the new innovation prominently on packaging and in sample kits that were given to prospective users. It was the partnership with American and other prominent fastener makers that helped quickly establish the original Phillips cross

recess drive as the preferred fastener drive system for automobiles beginning with the 1936 Cadillac. By 1940 more than 85% of all screw makers were Phillips licensees.

The original Phillips cross shape went through several improvements during the period from 1935 to 1960 and ultimately became the most widely used type of

screw in industrial production, but one aspect of the design became an increasing problem for assemblers. The angled walls of the Phillips recess could act as a ramp when high levels of torque were applied to the tapered Phillips driver tip. This “cam-out” of the bit from the recess was part of Henry Phillips’ original design to help users know when to stop tightening the screw. When the person driving the screw felt the driver start to back out of the recess they knew it was as tight as it should be. Unfortunately the ability to “feel” the cam-out starting went away as power tools replaced hand assembly on the production lines so Phillips Screw Company set out to find a solution.



AN ORIGINAL PHILLIPS SCREW SAMPLE BOX ON DISPLAY AT PHILLIPS SCREW COMPANY HEADQUARTERS.

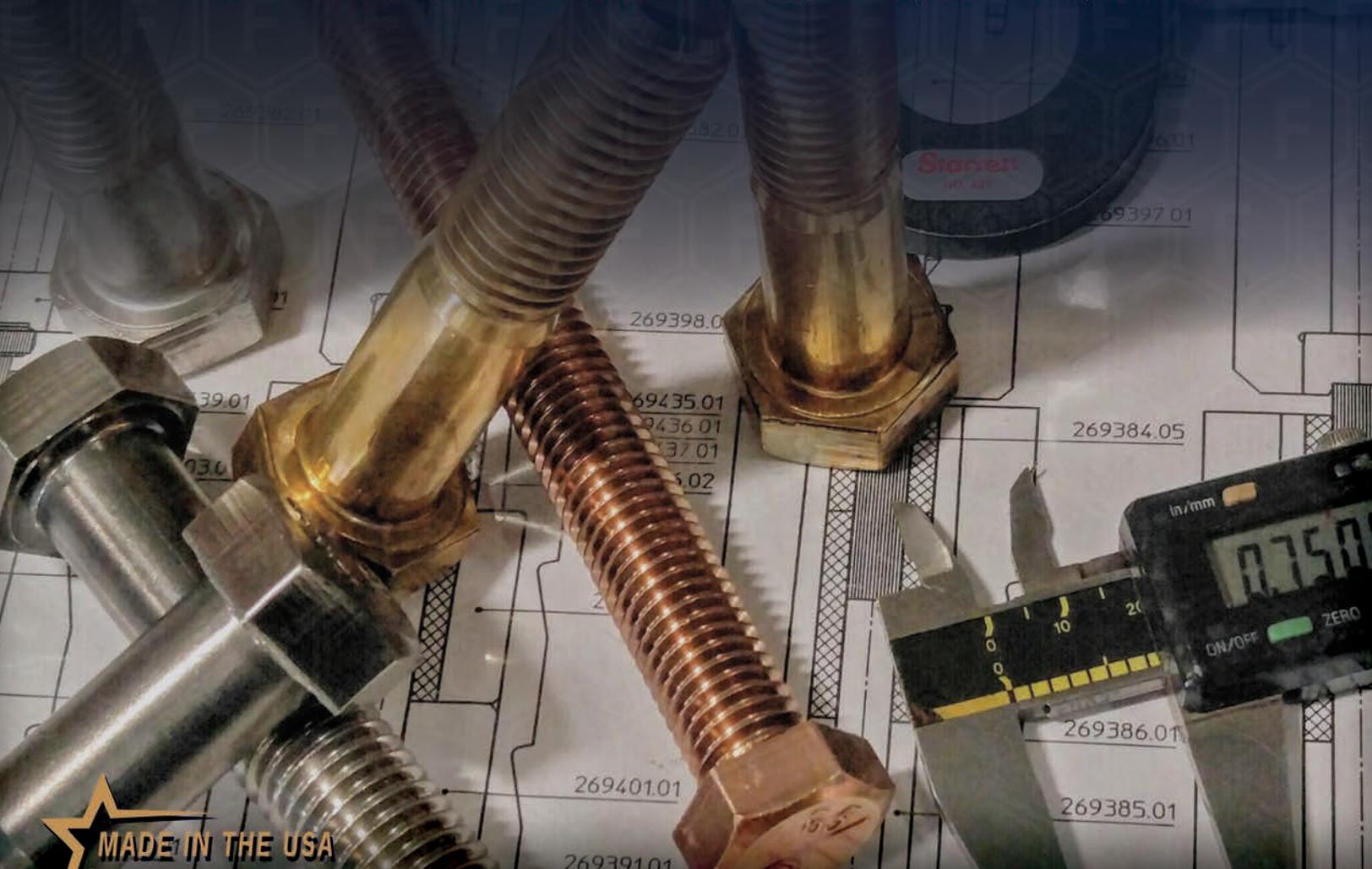
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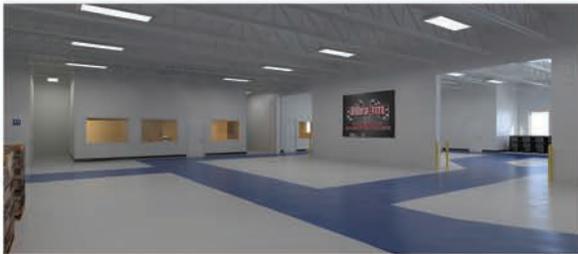
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Continuous improvement is at the core of company operations, and that extends to the team it has assembled. Spearheaded by new management additions, process management changes are helping to make ND which is already highly regarded as customer focused, even more efficient and responsive.

For more information on ND Industries, go to www.ndindustries.com

A family owned business since 1955, ND Industries specializes in the development of innovative materials and processes which increase the safety and reliability of fastener assemblies. ND serves a global market with 13 divisions in the continental US, facilities in Taiwan, China, and Turkey, and licensees around the world. ND's core business revolves around the application of a wide variety of materials onto fasteners and assemblies to aid in functions such as locking, sealing, masking, lubricating, and noise and vibration dampening. ND also manufactures a line of bottled products under the Vibra-Tite® brand name for MRO and retail use.





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Robert Footlik

Robert B. Footlik, PE is a retired Professional Industrial Engineer. With over 50 years' experience as a Warehouse and Logistics Consultant to a wide variety of clients including Fastener Distributors, Bob has a wealth of valuable information for our industry and he is willing to share it. While Footlik & Associates is now closed, his expertise is still available to his friends and our readers. For friendly advice, a second opinion or just to start a conversation, he can be reached at robert@footlik.net.

PROMAT 2017 FOR FASTENER DISTRIBUTORS

Every odd numbered year the national materials handling and logistics show "ProMat" returns to McCormick Place in Chicago. Having attended Chicago shows for over 65 years I now have "seniority" on the show floor. That honor and \$5.00 gets me a cup of coffee, but it also provides an opportunity to review the show from your perspective. For those who missed this exposition here are some of the trends and products that may be important to you.

Faster, quieter, smarter, stronger

New materials handling equipment is rarely revolutionary. The basic pallet jack and forklift from 50 years ago externally are virtually identical to what is produced today. A modern vehicle looks more sleek and polished but functionally it is little different from its predecessor. Both will do the job of lifting and moving pallets or loads and that's where the similarity ends.

Thanks to changes in buying and delivery pallet jacks are becoming stronger and lighter to operate in the harsh environment of the external world. Better bearings, deal with rain and snow and a few models now have wheels that can traverse mud. Capacities are reduced to better suit delivery loads and this is best exemplified by P & F (www.pnfkorea.com) who exhibited a folding pallet jack without hydraulics. It lays down to be pushing into the pallet and then the handle is used as a lever to raise the load. Cheap, simple and great for relatively light loads.

Manual pallet jacks and power walkie equipment is finally being accessorized to enhance production. A number of vendors exhibited add on or integrated scales for weigh counting, along with GPS style locating systems, bar and radio frequency readers and other ways to communicate with a Warehouse Management System (WMS) in real time. This opens up some new opportunities for tracking inventory, work in process, shipped orders and productivity. It is one more link in developing individualized work standards and incentive systems. In this manner simple equipment becomes a sophisticated work tool...at an affordable cost.

Similarly powered industrial trucks of every size, shape and function are being turned into high tech workhorses. While fork scales have been available for many years they are now more accurate and rugged enough to take every day abuse. The better systems such as Rice Lake (www.ricelake.com) enables the forklift driver to weigh, transfer and collect data as one operation. The information can then be transmitted using a wireless local area network to update production and inventory record continuously. There is even onboard diagnostics to insure the accuracy of the readings and proactively alert the driver to possible misreads and required preventative maintenance. For a Fastener Distributor who is serious about ISO compliance this is a significant communications and tracking link.



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Jim Ruetz

Jim Ruetz is the Chief Executive Officer of AIS-All Integrated Solutions. He lives in Oak Creek, Wisconsin with his wife of 30 years. Jim was born with a cleft palate and understood first-hand the challenges of growing up with a disability. When he heard about CURE DUCHENNE, he decided to take care of two dreams... riding his motorcycle across the world and helping kids - which has always been important to him. "I encourage you to join me in my journey by helping to raise awareness and funds for CURE DUCHENNE," said Ruetz. For more information or to contribute see www.CureDuchenne.org.

AMERICAN FASTENER RIDER TOURS IRELAND AND SCOTLAND FOR DUCHENNE MUSCULAR DYSTROPHY

Each year when I announce my latest motorcycle trip I'm invariably asked "what's involved in planning a trip like this?"

While every trip has its own set of unique requirements, some have more than others. For instance, when planning for the 2015 "Principalities of Europe ride" I had to figure out how to ship my bike to Amsterdam and then ship it back home from Rome. Renting a bike was not an option- since no one in Europe rents motorcycles in one country and lets you drop off in another country over 1,000 miles away.

In hind sight, I would have been better off buying a new bike in Amsterdam and selling it in Rome, albeit this would have presented its own set of problems. Unique trip issues aside, most trips start with a few basic questions; **The Where & the When & the How!**

The WHERE

When I decided to make my first big tour in 2011 the "Bucket List ride" (Alaska). The subsequent trips were easy because I had decided to hit each corner of the U.S. over the next few years.

"The Forgotten East Ride" in 2012 (Wisconsin to Maine, New Brunswick, Quebec, Ontario and back)

"The Cajun Parrot Ride" in 2013 (Wisconsin to New Orleans to Key West and back)

"The Last Corner Ride" in 2014 (Wisconsin to New Orleans to San Diego and back via Denver).



After the last corner ride - the WHERE question required a little more creativity. Fortunately, being a dreamer has never been a problem for me. However, for those of you who know me, exercising restraint is another thing all together. I love having my U.S and world maps hanging on my walls and standing in front of them helps stimulates "The Where" thoughts. The problem

is there are so many great places I'd like to experience on a bike. These ride ideas were started from looking at the map.

"The Principalities of Europe Ride" in 2015 (Amsterdam to Rome including Luxemburg, Andorra, Monaco, San Marino, and Vatican City). ✓

"The National Parks Tour Ride" in 2016 (Wisconsin to Seattle including Grand Teton's, Yellow Stone, Glacier National, Banff, and Vancouver Island). ✓

"The Gaelic Turas 17 Ride" in 2017 (Ireland and Scotland)

"The Outback Ride-About" in 2018 (The Australian continent)

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ROTOR CLIP ANNOUNCES WINNERS OF THE 2017 RING-A-MAJIG CONTEST

This year's contest was the second time that Rotor Clip challenged engineering students across the nation to show off their engineering prowess and to come up with a unique device design that incorporated a set of retaining rings as the fastening method. For the 2017 contest a little twist was added to the challenge, asking students to also incorporate a functioning wave spring in their designs. The designed device had to display motion or movement in order to be considered.

We are happy to report that once again the students rose to the challenge and came up with designs that not only met the contest requirements, but also demonstrated their grasp of sound engineering principles.

The contest was held in affiliation with ATMAE, the Association of Technology, Management and Applied Engineering.

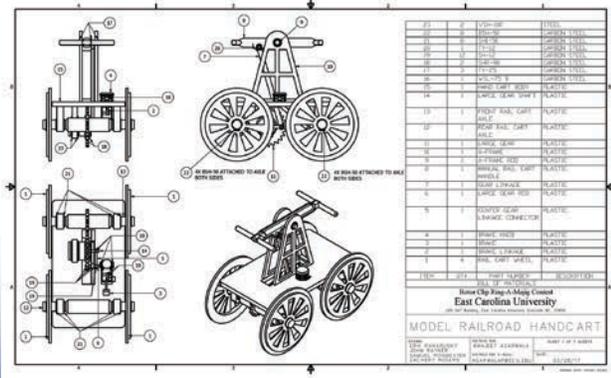
The Contest Winners

First Place

East Carolina University - Model Rail Road Hand Cart

Team Members: Erik Panarusky, Sam Poindexter, John Rayner, Zachery Rogers

Advisor: Ranjeet Agarawala

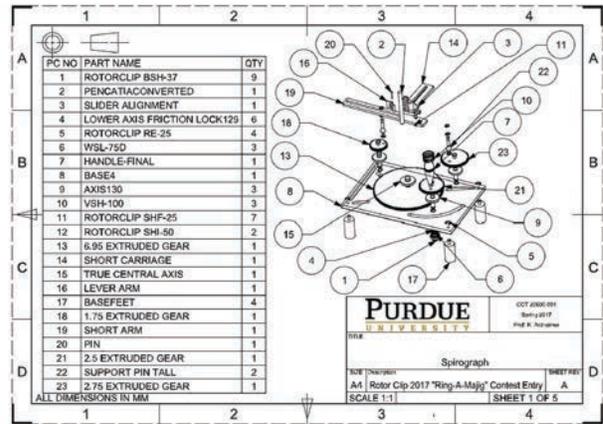


Second Place

Purdue University - Spirograph

Team Members: Paul Gemperlein, Emily Maneke, Jake Piekarski, Lexie Ritter

Advisor: Rosemary Astheimer

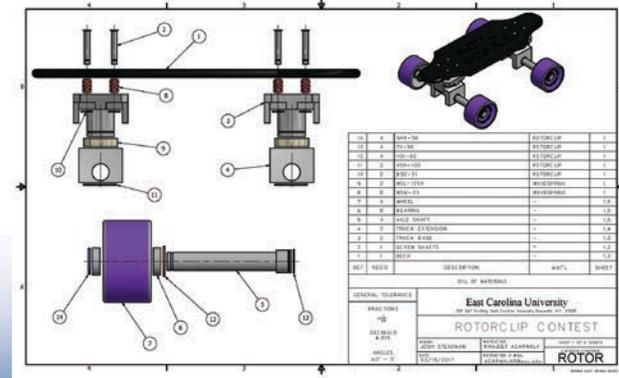


Third Place

East Carolina University - Roto Board

Team Members: Joshua Steadman, Alex Senatore, Cedric Steele II, Colby Scott

Advisor: Ranjeet Agarawala



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MARK DANCER OF CHANNELVATION, INC. NAMED FELLOW OF THE NAW

Mark Dancer, a leading authority on channel effectiveness, digital transformation and business model innovation, has been named a Fellow of the NAW Institute for Distribution Excellence, the long-range research arm of the National Association of Wholesaler-Distributors (NAW).

Mr. Dancer is founder and president of Channelvation, Inc., headquartered in Colorado Springs, Colorado. For more than 25 years, he has worked to design and optimize direct, indirect and digital channels. He works collaboratively with distribution leaders and teams to build visions, solve problems, strengthen capabilities, improve business results and increase their market leadership.

Mr. Dancer's experience includes work across global markets and commercial, industrial, services, technology, automotive, construction and other sectors. He also is a well-known speaker on channel trends to distribution industry associations and buying groups.

Mr. Dancer is the author of three NAW Institute research studies: *Getting Results From Your Digital Investments*, *Becoming a Digital Distributor: Strategies and Tools That Create Value* and *Getting the Most Out of CRM: Best Practices for Wholesaler-Distributors*.

Mr. Dancer's next project for the NAW Institute will be a Report on Digital Tools Progress and Strategic Solutions, scheduled to be released at the end of 2017.

"The NAW Institute for Distribution Excellence is

pleased to welcome Mark Dancer as a Fellow. He brings a wealth of channel knowledge and experience, and his work in digital transformation is timely and impactful. His passion for and commitment to the wholesale distribution industry makes him a natural fit as an NAW Institute Fellow," said Patricia A. Lilly, Executive Director of the NAW Institute for Distribution Excellence.



Established by the National Association of Wholesaler-Distributors (NAW) in 1967, the NAW Institute for Distribution Excellence has produced a distinguished body of work, consistent with its mission of sponsoring and disseminating research into strategic management issues affecting the wholesale distribution industry. The NAW Institute for Distribution Excellence aims to help merchant wholesaler-

distributors remain the most effective and efficient channel in distribution.

The NAW Institute established the Fellows program in 1999 to acknowledge individuals who have made and will continue to make significant intellectual contributions to the field of wholesale distribution. Other NAW Institute Fellows are: Brent R. Grover, President of Evergreen Consulting, LLC; F. Barry Lawrence, Director of the Industrial Distribution Program and the Supply Chain Systems Lab at Texas A&M University; and J. Michael Marks, Managing Partner at Indian River Consulting Group. 

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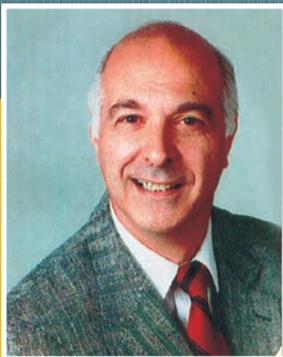
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Bart Basi

Dr. Bart A. Basi is an expert on closely-held enterprises. He is an attorney, a Certified Public Accountant, and President of The Center for Financial, Legal & Tax Planning, Inc. He is a member of the American Bar Association's Tax Committee on Closely-Held Businesses.

THE POTENTIAL TAX EFFECTS OF THE AMERICAN HEALTH CARE PLAN

115th Congress - 1st Session - H.R. 1628

It is important as business leaders and owners across the country that we understand some of the tax effects of the proposed legislation known as the American Health Care Act (AHCA). The bill has been passed by the House on May 4th, 2017. It will likely not be enacted by the Senate in its current form unless there is a shift in the views of elected officials on health care policy. This type of legislation goes substantially beyond providing adequate health care across the country and has far reaching tax implications. With that said, we do not take a position on the bill, but we are taking this opportunity to share with everyone what we know about the effect on taxes this bill could have, if enacted.

As of May 8th, 2017, the Senate has implied they are going to write an entirely different bill¹. Many senators are up for reelection next year and if the reaction to the House bill is any indicator of how the public will react, they will most likely create something different.

Individual and Employer Penalties - Under the Patient Protection and Affordable Care Act (commonly referred to as the ACA or Obamacare) there is a requirement for individuals to be insured under a health insurance contract². That is the law of the land right now. Employers are also under obligation if they have 50 or

more employees to provide them with affordable health insurance³. Under the AHCA, these obligations would be dropped and the requirement/penalty would be unapplied retroactively to January 1, 2016.

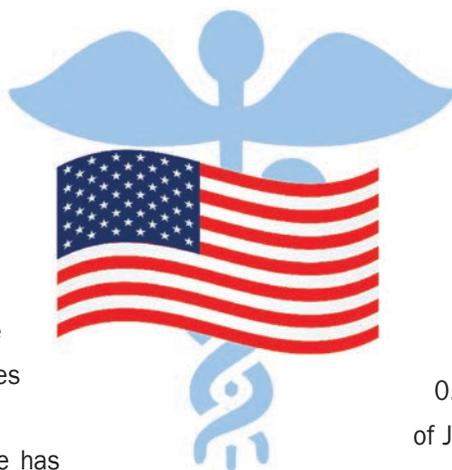
Net Investment Income Tax (NIIT) - This 3.8% tax applies to capital gains and other investment gains if the taxpayer has an income of over \$250,000. Under

the new bill, this tax would no longer apply⁴. The policy position is to encourage investment. It is likely that further reduction will happen in the capital gains tax as well. This would become effective January 1, 2018.

Additional Medicare Tax - Similar in nature to the NIIT, this is a 0.9% tax, it would also be repealed as of January 1, 2018⁵.

Excise Tax on High Dollar Health Plans - These plans are plans that exceed \$10,800 for individuals and \$29,500 for families. The tax would be paid by the insurers themselves, not the individuals. It was not due to be in place until 2020, under the AHCA that would be delayed until 2025.

Medicaid - The Medicaid expansion has been repealed⁶. Medicaid will only be available under limited circumstances. The circumstances include where a family is under 100% of the poverty level. Under the ACA, the level is 138% of poverty.



distributornews

Earnest Machine was recently recognized as an organization that has demonstrated cutting edge practices with the Smart Culture Award from Smart Business magazine. Earnest was one of 28 Northeast Ohio organizations honored by Smart Business for using company culture as a competitive advantage.

According to Kirk Zehnder, president of Earnest Machine, the company prides itself on living its core values, which drive everyone to be great at their jobs.

Those values include:

- We do what we say we will do.
- We put the customer first in our decision making process.
- We respect our customers, suppliers and one another.
- We embrace change.

And while those values define how the company operates, Zehnder noted that Earnest Machine puts a concerted effort into company culture because happy employees lead to happy customers.

For more details on Earnest Machine's Smart Culture Award, check out Smart Business Online.

For more information about Earnest Machine's products and services, contact them by telephone at 1-800-327-6378 or visit them online at: www.earnestmachine.com.

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Anthony Di Maio

Anthony E. Di Maio attended Wentworth Institute and Northeastern University. In 1962 he started working with Blind Fasteners as Vice-President of Engineering & Manufacturing for two blind rivet manufacturers. He has been Chairman of the Technical Committee of the Industrial Fasteners Institute (IFI) and is still involved in the writing of IFI specifications. In 1991, he started ADM Engineering and is working with Fastener Manufacturers developing new fasteners and special machinery. He can be reached at ADM Engineering, 6 Hermon Ave., Haverhill, MA 01832; phone and fax 978-521-0277; e-mail: tdimaio@verizon.net.

PROPER PREPARATION OF A BLIND RIVET APPLICATION

The proper preparation of a blind rivet application must be met to have the proper results regarding a secure assembly of components of the application. Aside from the proper blind rivet in the application, the following two subjects are very important to having a good blind rivet setting and a good safe and tight assembly. One is hole diameter and the other is work thickness. Even if you are using the proper diameter and alloy blind rivet, hole size and work thickness is very important.

Hole Size

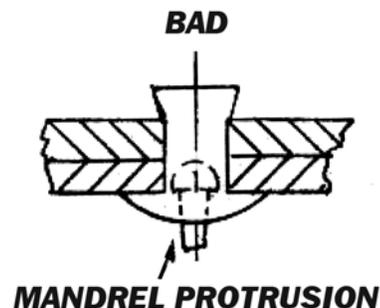
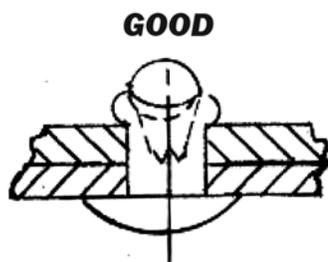
The hole diameter must be within the range recommended by the rivet manufacturer. The problem is never with the hole in the work piece being too small, because if the hole is too small, the blind rivet will not enter the hole. The problem is when the hole diameter is larger than the manufacturer's

recommendation.

Oversized hole diameters in work pieces to be blind riveted is one of the most popular reason why a user has blind rivet problems.

Oversized hole diameters in work pieces will cause the following defects to a riveted joint. When a blind rivet is placed in a oversized hole and set. The following action occurs. The mandrel head will enter the body of the blind rivet and expand the rivet barrel. Because the blind rivet is in an oversized hole, the mandrel head expands the rivet barrel against the inner wall of the oversized hole.

The mandrel head does not feel resistance because the mandrel head is not stopped by the oversized hole and the mandrel head continues to travel the entire length of the barrel and stops at the flange or head of the blind rivet.



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65th ANNUAL MWFA GOLF OUTING

by Nancy Rich

The MWFA hosted their 65th annual Golf Outing on June 8th at Chevy Chase Country Club in Wheeling, IL. To accommodate the many golfers, there was a shotgun start at 7.00am and noon. Over 150 golfers enjoyed great weather, many contests, and the awesome networking. The two shotguns allowed all golfers to lunch together.

This year's outing featured some new contests including chipping into a pool in the pond (*sponsored by South Holland Metal Finishing*) putter pong (*sponsored by Central Wire*), and Closet to the Pin on first shot where every foursome had a winner (*sponsored by Brighton-Best International*). The great support of many MWFA member companies created an event offering many contest prizes, raffle prizes and a silent auction.

Congratulations Team and Contest Winners

First Place Team

Rich Cavoto
Jason Bertone
Bob Baer
Denny Cowhey



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HOST OF THE 65TH ANNUAL MWFA GOLF OUTING**



**THE FIRST PLACED WINNERS (LEFT TO RIGHT):
RICH CAVOTO, JASON BERTONE, DENNY COWHEY AND BOB BAER**

Second Place Team

Jim Hossman
Rob Reynolds
John Wachman

Course Contest Winners

Chuck Wolf
Denny Cowhey
Casey McIlhon
Steph Brandt
Rob Reynolds
Scott Young
Dan Perez
John Paris
Joe Clark
Craig Kaliebe
Mark Klosek
Bryan Wheeler
Cliff Hauger



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Jim Truesdell

James Truesdell is President of Brauer Supply Company, a distributor of specialty fasteners, insulation, air filtration, and air conditioning with headquarters in St. Louis. Mr. Truesdell is adjunct professor at Saint Louis University and Webster University. An attorney and frequently published writer, he is the author of "Total Quality Management: Reports From the Front Lines".

TAX REFORM HOPES STILL RUNNING STRONG

Whatever one might think of President Trump's personal administrative style, or his stand on social policy, immigration, foreign relations, or a host of other issues, it is clear that business markets have reacted favorably because of two issues. One is an easing up of government regulations.

The other is the promise of comprehensive tax reform which holds out the expectation of increased funds for capital investment and growth, and increased incentive for business

owners and entrepreneurs to keep rolling the dice in hopes of greater returns. As roadblocks developed on many of the Administration's proposals such as healthcare, educational reform, and other areas, it was success in paring back business regulation and the belief that tax reform is still front and center that has continued to propel the stock market to new highs and keep business activity up and jobs comparatively plentiful.

Indeed, wholesaler-distributors and other small business players continue to push for changes to the tax system that will hopefully not only benefit business, but will stimulate growth that will help deal with the growing budget deficit via overall larger revenues. The

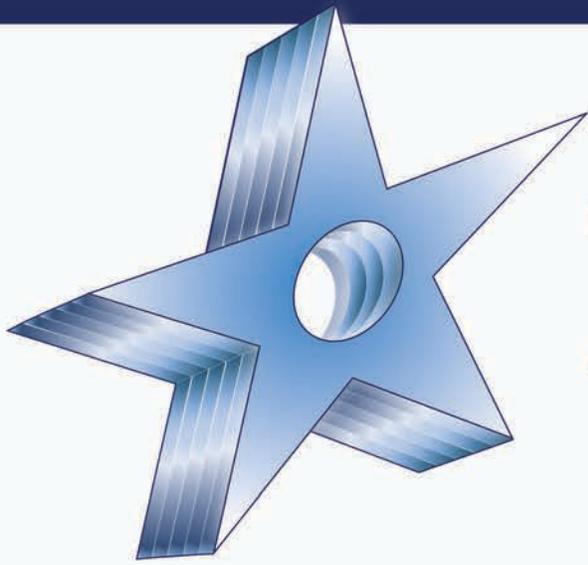
Administration has put such reform in the center of its strategy as they see it as "trumping" all else in winning the kind of support from Americans and the business community they will need as the 2018 congressional election year approaches. It seems that getting tax reform done by the end of 2017 is high priority.



So what are the plans? What do industry trade associations want and how does this line up with what the President and the majority in Congress

are proposing? Almost all seem to be calling for a simplified rate structure that would provide clarity to business planners and individual taxpayers alike. Small businesses, in particular, are looking for plans that would leave them in a competitive position in relation to the big corporations. But businesses both large and small seem united on some basic principles.

Speaking for small business, Juanita Duggan, who is president of the National Federation of Independent Business (NFIB) said "The President's proposal for rate parity would make American businesses immediately more competitive. A low, single business tax would supercharge the economy, and create an even playing field for small businesses and large corporations."



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by **JOHN WOLZ** EDITOR
 editor@globalfastenernews.com



NAUTIC PARTNERS ACQUIRES ENDRIES INTERNATIONAL IN PARTNERSHIP WITH MANAGEMENT

Nautic Partners, LLC announced an agreement to acquire, in partnership with management, Endries International, Inc. and certain Endries related affiliates from Ferguson Enterprises and its affiliates. The transaction is expected to close within 45 days.

Endries, founded in 1970 by Bob & Pat Endries in the basement of their Wisconsin home with \$5,000 capital, was acquired by Ferguson in 2005.

Endries distributes fasteners and Class-C parts to OEMs worldwide. From its headquarters in Brillion, WI and eight U.S. and international distribution centers, Endries provides 500,000 SKUs. Endries operates primarily through a VMI model, managing C-part categories for diverse industrial end market customers.

CEO Steve Endries said that “in Nautic we found a philosophy and approach that is aligned with what is core to Endries. Together, we look forward to building upon the foundation that has been established while delivering innovative value-added solutions and services to our customers.”

Nautic managing director Chris Pierce described Endries as “a very well-run company with an excellent management team and great culture. We look forward to supporting the company’s organic growth initiatives and we are particularly enthusiastic about the Pulse RFID offering. We will also work with management to pursue selective acquisitions in Endries’ fragmented market.”

Ferguson VP for industrial strategy Rob Braig termed Endries “a world-class OEM/fastener distributor and has been a valued member of the Ferguson portfolio

of companies for a number of years. We are confident that Nautic will help Endries continue to grow and provide additional opportunities for the business and its associates in the future.”

BMO Harris Bank N.A. will lead the financing. BB&T Capital Markets acted as financial advisor to Ferguson. Locke Lord LLP represented Nautic and Morgan Lewis & Bockius represented Ferguson.

Rhode Island-based Nautic is a middle-market private equity firm that focuses on three industries: healthcare, industrial products and outsourced services. Nautic has completed over 125 platform transactions throughout its 30-year history. Nautic’s strategy is to partner with management teams to accelerate the growth trajectory of its portfolio companies via add-on acquisitions and targeted operating initiatives. Nautic.com

Virginia-based Ferguson distributes residential and commercial plumbing supplies and pipe, valves and fittings in the U.S, plus HVAC/R equipment, waterworks and industrial products and services. Founded in 1953, Ferguson has sales of \$13 billion and approximately 23,000 associates in almost 1,400 locations. Ferguson and its subsidiaries serve customers in all 50 states, Puerto Rico, Mexico and the Caribbean. Ferguson is part of Wolseley Plc, which is listed on the London Stock Exchange (LSE: WOS) and on the FTSE 100 index.

For more information regarding the acquisition visit Ferguson at www.ferguson.com or Wolseley at www.wolseley.com. 

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NIFMSE RAISES THE BAR EVEN HIGHER FOR 2017, PROVING IT IS "THE" FASTENER EXPO by Courtney Harold



This Spring NIFMSE announced an expansion of their 2017 Fall Show and Expo by adding educational programming, enlarging their expo floor space, and increasing opportunities for suppliers to connect with each other by bringing back traditions from years past. Now there's even more exciting news coming to you from the biggest National Industrial Fastener show, and it proves that this is "THE" Fastener Expo that is not to be missed.

Here's a list of just some of the great opportunities you'll experience if you attend the largest Fastener Show in North America:

- ▣ 18% Growth in Qualified Buyers and 26% Growth in Overall Attendees
- ▣ Expanded Format and Addition of a Full Day Educational Track
- ▣ Whiskey Tasting & Cigar Rolling Welcome Reception at the Cabanas

- ▣ Increased Exhibit Space for Even Greater Brand Promotion and Connection
- ▣ Upgraded Rooms and Facilities as Part of a \$100 Million Renovation
- ▣ Dedicated Time for Networking and Catching up in the Exclusive NIFMSE Circle Bar
- ▣ Instant Access to and from The Strip via the Westgate Monorail Stop
- ▣ BYOD! New Exhibitors Nominate Distributors for VIP status with our Hosted Hotel
- ▣ Rising Star Program lets Attendees and Distributors nominate an employee for recognition

This year's Fall Show will take place October 17 – 19 at the Westgate Resort & Casino in Las Vegas and attendee registration officially opened June 1. Hotel rooms can also be reserved as a part of the registration process, and can include the Westgate for those who want to be closest to the action. Other options include The Venetian Las Vegas, Wynn Las Vegas, Treasure Island Hotel and Casino, and Harrah's Las Vegas.



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THE IMPACT OF CLEARANCE ON THE SHEAR PROPERTIES OF COILED SPRING PINS by Kaitlin Hill, Product Sales Manager



Coiled Spring Pins are used in thousands of applications spanning a wide range of markets. SPIROL evaluates many applications and has identified common design/manufacturing errors which reduce the strength of pinned joints. These features include, but are not limited to,

counterbores, countersinks, and gaps between mating components. These conditions introduce clearance and cause bending which reduce a pin's effective shear strength.

Coiled Spring Pins are assigned minimum double shear strength values per applicable industry specifications. Due to the Coiled Pin's dynamic nature, shear values are derived through testing instead of traditional calculation. Testing is conducted per specific criteria as outlined in the specifications such as ASME B18.8.2, ASME B18.8.3M and ISO 8749. Gages are to be hardened steel with a maximum .005" (0.13mm) clearance in the shear planes. This represents ideal conditions and ensures that the pin is in shear. As clearance conditions in assemblies depart from test parameters, the pin will fail in bending – not shear – and strength will begin to degrade. It is critical to understand how deviation from ideal shear conditions affects performance of the pinned joint because it may impact the integrity and longevity of the assembly.

A counterbore or countersink is often added between components with the intention of guiding the pin from one hole into the next. While the intent is understood, resultant gap is often unacceptable. SPIROL's Coiled Pins are designed with generous chamfers intended to facilitate alignment during installation

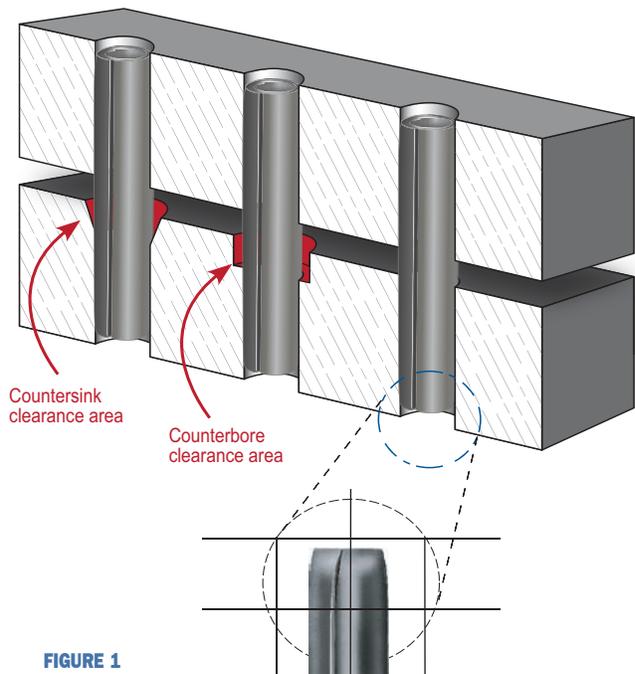


FIGURE 1

COILED SPRING PINS ARE DESIGNED TO INSTALL WITHOUT EXTRA GUIDANCE FROM COUNTERSINKS OR COUNTERBORES. THE SMOOTH, CONCENTRIC CHAMFER COMBINED WITH SQUARE, CLEAN-CUT ENDS TRANSLATES INTO TROUBLE-FREE INSTALLATION.

– therefore countersinks and counterbores are not necessary (*Figure 1*). These features, though often overlooked, introduce clearance and bending which reduce performance of the pin when loaded in shear. Reduced strength also contributes to fatigue which can lead to premature failure. While the causes of failure may be easy to identify, it is important to quantify the effects of premature failure in order to develop an understanding of their impact.

A SPIROL light duty Coiled Pin has been tested with incremental increases in shear plane clearance to better understand the magnitude of change in performance. Light duty pins were selected because they are easily installed and removed.

distributornews

The Auto Bolt Company,

a premier manufacturer of quality fasteners in Cleveland, Ohio proudly announces the purchase of a brand new Ingramatic RP420 M automatic thread roller. This machine provides us the right solution for our market needs. This includes thread rolling after heat treat of special steels, aluminum alloys and roll forming of complex shapes.

Auto Bolt continues to be a leading provider of fasteners for various industrial, distribution and original equipment markets and applications to include Truck and Trailer, Military, Construction and Agricultural equipment, as well as Automotive components.

Auto Bolt, located in Cleveland, Ohio is an independently owned manufacturer of quality fasteners since 1948. Auto Bolt specializes in offering both low and high volume performance and commercial fasteners. Auto Bolt is a leading provider of fasteners for various industrial, distribution and original equipment markets and applications to include Truck and Trailer, Military, Construction and Agricultural equipment, as well as Automotive components.

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KATO Fastening Systems,

the original inventor and manufacturer of the bi-directional Tangless® CoilThread® insert, announces the all new KATO LockOne® fastener - A Superior Locking Force.

KATO LockOne is a revolutionary lightweight, positive locking fastener designed to prevent a standard nut from loosening under vibration. Unlike nuts with nylon or locking compounds, LockOne won't come loose under vibration, and can be reused without applying any hazardous chemical compounds. LockOne is tested in accordance with NAS3350, the National Aerospace Standard for impact type vibration.

KATO LockOne is FOD-Free and can be easily substituted into



existing designs. Installation is simple, load the LockOne into a standard 12 point socket, insert the nut, and tighten.

With KATO LockOne you save on assembly cost and eliminate the need for expensive replacement nuts!

For more information contact KATO Fastening Systems at 11864 Fishing Point Dr, Newport News, VA 23606. Tel: 757-873-8980, Email: sales@katofastening.com, or please visit them online at www.katofastening.com.

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AT ACE BOLT & SCREW, THE CUSTOMER IS KING

Long History of Service

Founded in 1969, Ace Bolt & Screw Co., Inc. has been serving the mid-south area for over 48 years. They have two locations: their flagship location is centrally located in Jackson, Mississippi; and their branch store is in Tupelo, Mississippi. Their Tupelo location will be celebrating the 10th anniversary of its grand opening in July 2017. Their future plans are to grow even more throughout the Southeast. Ace Bolt prides itself on continuing to grow and learn in this ever-changing industry.

Old School in a Good Way

We recently interviewed owners Randy and Mike Clark; Randy, said, "Despite, the drastic industry-wide changes in the last 48 years, we pride ourselves in being "old school" when it comes to customer service. Ace Bolt's goal is to give each customer the same amount of attention as we did in back 1969. We strive to use our sales team's 190 years of combined service to our customer's advantage. Our salesmen work to provide our customers with high quality, yet affordable products. Through recent advancements in technology, we have been able to provide even greater service to our customers."

High Tech - High Touch

Kayla Clark, Randy's daughter and the Accounting Director for the company, added; "We are dedicated to using technology to make our customers' buying experience as simple and convenient as possible. Currently we are working on a total revamp of our website, which will provide a better display of the range of products we offer to our customers. In the near future



THE TOOL SELECTION AT ACE BOLT

customers that prefer to order products online will be able to do so through our website."

Another way that they have simplified the buying experience for their customers is through different types of inventory management programs. One of these examples is Vendor Managed Inventory (VMI). Through VMI they are able to directly manage their customer's inventory and deliver stock to them as needed. This helps to ensure the plant never has to shut down while someone goes across town to get parts.

Vending Machines

Kayla said "Another great inventory management system we offer our customers is vending machines. We use 1sourcevend to provide these. With the 1sourcevend vending machine, our customers are able to cut their expenses by placing employee supplies such as gloves, safety glasses, tools, etc. into a vending machine. Their employees will either use a code or swipe a card each time they need something, this lets our customer understand how much of these products each employee uses. It greatly reduces supply waste and significantly reduces costs for the employer."

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THE SKY'S THE LIMIT FOR STAFDA'S AUSTIN CONVENTION & TRADE SHOW by Catherine Usher

The Specialty Tools & Fasteners Distributors Association (STAFDA) has a power-packed agenda set for its 41st Annual Convention & Trade Show in Austin, Texas, November 12-14. The three-day program will be full of innovative ideas, products, and events.

The Convention features Educational Workshops providing insight and interaction with top-notch business speakers. Morning topics range from "Winning Back Customers" to "Reviving the Work Ethic" to "Feedback with Impact," and "Smart Teams." A Targeted Workshop in the afternoon focuses on "The Evolving World of Sales," while Tuesday morning's "Economic Outlook" has become a must-see event. Two new events, the Young Professionals Luncheon and Speed Interviewing, focus on the industry's upcoming generation.

Sunday evening's Opening Block Party, both inside and outside Austin City Limits (ACL), will be a high-energy event! Part of 2nd Street outside ACL will be closed for STAFDA attendees to take advantage of street dining from food trucks ranging from tacos, BBQ, and local favorites. The adjacent W Hotel will fire up their patio grills to serve-up flank steak, brisket, and more. Known as the "Live Music Capital of the World," some of Austin's best entertainers will rock the house. The Minor Mishap Marching Band, The Bob Schneider Band, and Tameca Jones, bring a variety of musical talents to the scene.

Monday morning's General Session provides a distributor state-of-the-industry report from STAFDA

president Tom Leahy, Vice President – Supplier Relationship Development, Border Construction Specialties, Phoenix, AZ, and the manufacturers' viewpoint from Joe Smith, President and CEO, Metabo Power Tools North America, West Chester, PA. Multi-Emy-

nominated actor, screenwriter, director, producer, and author John Ratzenberger will address the power of domestic manufacturing and profile innovative businesses. Well known as Cliff Claven on Cheers, Hamm the Piggybank in the Toy Story movies, and Mack the Truck in the Cars films, Ratzenberger is listed as the sixth most successful

actor of all time in terms of box office receipts due to his impressive volume of work.

STAFDA's Trade Show is an exhibit hall full of opportunities to find new products, show specials, and valuable networking contacts. With more than 35 different product categories represented, distributor decision makers can speak one-to-one with Association peers. The Tech Pavilion and Consultants Pavilion also offer business solutions in the form of the latest software, e-solutions, advice, and discounts. The Trade Show runs from Noon until 6:00 p.m. Monday, November 13, and from 10:30 a.m. until 4:00 p.m. on Tuesday, November 14.

STAFDA offers other activities and events as well. Visit www.stafda.org and click on the Annual Convention tab to view the full agenda. Only members may attend. For more information, please contact Catherine Usher, Member Services Director, cusher@stafda.org or 262/784-4774. 



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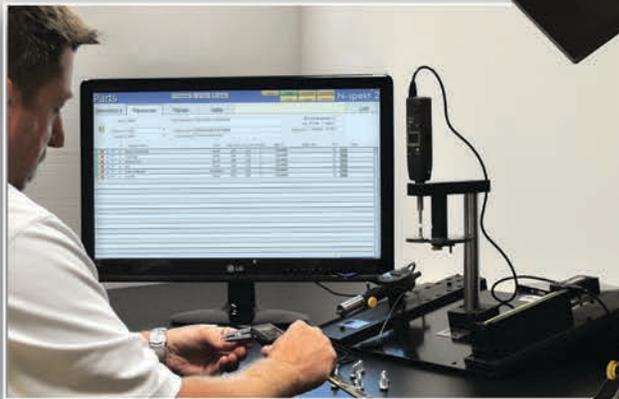
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distributornews

Innovative Components

Inc has recently added seven new injection molding machines to both expand capacity and modernize its fleet. Additionally, four more new machines will arrive over the next four months. The majority of the machines are Nissei brand vertical injection molding presses. Several are also equipped with robots. Company president Mike O'Connor states "This is consistent with our long-standing strategy of utilizing the best equipment in our market segment to achieve top efficiencies. Our continuous reinvestment in the business allows us to deliver great prices, top quality, and excellent lead times to our customers."

Innovative Components, Inc. is an ISO 9001:2008 Certified Manufacturer of Plastic Knobs and Handles, Wire Rope Lanyard Assemblies, Positive Locking Pins, and Quick Release Hardware. The 24 year old company operates plants in Schaumburg, IL USA and Cartago, Costa Rica. You'll receive high-production parts at import prices with domestic lead times.

For more information, about Innovative Components Inc.'s products and services, contact them at 050 National Parkway, Schaumburg, IL 60173. Tel: 847-885-9050, Fax: 847-885-9005, Email: Sales@knobsources.com or visit at www.knobsources.com.



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KEY BELLEVILLES INC. OF ALLEGHENY TOWNSHIP CELEBRATES 50 SUCCESSFUL YEARS by Kim Leonard

Key Bellevilles Inc. has built its 50-year history on one product used in many things — from the mechanical shark in “Jaws” to space shuttles.

“I saw that there was a potential for it,” founder and President Robert J. Key, 83, said of the belleville disc spring, which the Allegheny Township company makes and stocks in more than 10,000 sizes.

In the early days of the business, Key — then also a New Kensington attorney — honed his salesmanship skills as he flew his single-engine Cessna 182 airplane in search of customers.

“I traveled with that plane from Alaska to Mexico, and from Nova Scotia to Puerto Rico,” he recalled. “I would see three to five companies a day.”

Family-operated Key Bellevilles designs and makes bellevilles, cone-shaped steel discs that can be stacked together to absorb force.

“Picture a dinner plate upside down, and cut a hole in the center. Press it flat. That’s the description I got when I went to buy the company,” Key said.

No Layoffs in 45 Years

There currently are 77 employees, and, while that number is down slightly from a few years ago because of automation, the company hasn’t had a layoff in 45

years, he said. Key Bellevilles is considered the largest manufacturer of bellevilles worldwide, Key said, with customers throughout the United States and in 56 other countries. The company doesn’t disclose revenue.

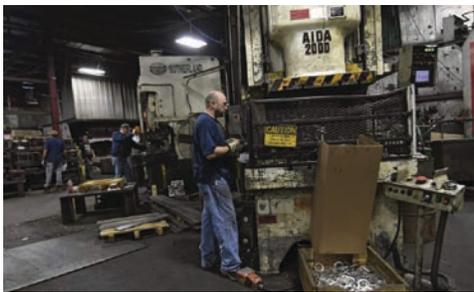
Engineering, stamping, machining and heat treating are done at the plant off Route 356, said Key’s brother, Philip, 58, vice president of operations.

With warehouse space added in 2013, the company can stock more than 35 million bellevilles, ready to be shipped out, and it keeps a large supply of steel used to make discs.

“It’s amazing how much raw material inventory he keeps,” said Russ Buckbinder, a retired founding partner in Fastener Tool & Supply of Solon, Ohio. “Bob Key told me many times that was his thing — rather than having cash, he had the inventory, and it worked well for him.”

Fastener Tool & Supply buys million-piece quantities of bellevilles from Key’s company then sells them, 100,000 at a time, to a large valves and fittings manufacturer, Buckbinder said.

Eloy Sedillo of Houston-based National Oilwell Varco, which sells oil and gas industry equipment, said he’s visited Key’s plant and doesn’t worry about products arriving on time. “When I place an order, it comes,” said Sedillo, who works in procurement at National Oilwell.





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RUNNING A MARATHON IS JUST LIKE RUNNING A BUSINESS! by Char Cooper

Every so often we at LINK Magazine are touched by a story of one of those in "our world" and include it in an issue for motivation, inspiration, or just to bring a smile to the face of our readers. The story of Char Cooper crossing the finish line in the 2017 Boston Marathon is sure to do just that. Char, founder of Cable Tie Express, a Master Distributor of cable ties and wire management products since 1995 not only ran the 26.2 miles at age 66, but finished 7th in her age group, marking her as one of the fastest "women of a certain age" in the world. Join us as we race along with Char on April 17, 2017!

Never in my wildest dreams did I ever think that a few months in 1995 would be the start line for such a fantastic journey – in business, sport, and life. Never did I think that my first half marathon and my first purchase order for Cable Tie Express would propel me 22 years later to the 26.2 mile mark in Boston and a sense of accomplishment at building a successful industrial distribution company.

As I pen this article, I realize that where I am today is a great blend of, "Woo hoo - I did it!" and, "I sure couldn't have gotten there myself." How do I capture and share the thrill, the excitement, and the gratitude of all that Marathon Monday and my Cable Tie Express experience has brought to my life, cherishing all of those – family, friends, employees, customers, and suppliers - who have been a part of my story?

Hop aboard the bus with me for the long drive to Hopkinton where I later approach the start line in 70 degree heat with 25,000+ other athletes, repeating my mantra "rely on your training" over and over. The years



CHAR COOPER, FOUNDER OF CABLE TIE EXPRESS COMPLETES THE 2017 BOSTON MARATHON

of focused training, of running intervals mile after mile, week after week, of proper nutrition, and of development of a race plan for Boston that would, hopefully, pay off that day in spite of countless variables that are in play for runners, changing temperatures, humidity levels, injury, concerns about rest, hydration, and calories for a good run. Oh, how closely that mirrors a journey in business!

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Joe Saks founded the company in Mt. Vernon, New York, on the principle that every customer matters; large and small.



In 2017, PCC is celebrating its 55th anniversary under the leadership of Mr. Saks' daughter Susan Lenz – and guided by the same belief that every customer and every order is important; be it 5,000 pieces, or 5 pieces.

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- ▣ Bolted Joint Analysis
- ▣ Steel Specifications and Steel Making
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Students not technically proficient with fasteners benefit by learning the basic background to understand

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All our programs utilize instructors who are recognized industry experts. Many serve on the various consensus standards organizations and fastener technical committees that develop the fastener specifications that are taught in our classes.

Don't forget the gift of education is a great value-add to offer to your customers as well. FTI can create trade-specific, fastener-related classes for the industries you sell to, such as Fluid Sealing, Flanges, Gaskets, Valves, Structural Steel and Aerospace to name a few. Are your employees trained properly to buy, inspect, warehouse and sell fasteners sold to these end-users? Please contact us to develop a class for you.

Our scheduled, in-person fastener product training classes continue to be a staple for FTI with record level registrations. Classes this summer include "Fastener Specifications & Terminology" (CFS Class) on June 14th in La Mirada, CA. Followed by "The Bolted Joint" in La Mirada, CA on July 1st. FTI will be bringing "Fastener Basics" to Denver, CO on July 13th.

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Corporation

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After 10 years working for a prominent Domestic Locknut manufacturer & 15+ years for a respected stocking Locknut importer, Glen Brin, along with his wife, Darlene, started DarLoc Corporation. Now 11 years later, DarLoc Corporation has experienced 20%+ growth, each and every year. Brin recognized a void in the "back of the catalog," Miniature & Clinch, Self-Locking Nylon insert & All-Metal locknut markets. "Many competitors advertise stock, but end-up quoting 10-12 weeks domestic or even 20-22 weeks, from overseas, for these types of locking nuts." "We stock them & when required, offer new production in 4-6 weeks."

Darloc's product line includes "1660" Miniature Hex (from #0-#4), "LH1660" All-Metal, Miniature Hex (from #2-#6), "NM107, 408, 2234" Reduced Hex (from #4-1/4"), "ND" Spline (from #8-1/2"), "NCFMA" Miniature Clinch Flush Mounting (from #2-#10), "LHCFM" All-Metal

Miniature Clinch Flush Mounting (#2-1/4"), "NKCFM" Miniature Clinch Flush Mounting, with Nylon Cap (#2-#10), and "NC" Clinch (#4-5/16"). Most patterns are available in Steel, Stainless, Brass, & Aluminum. Metric sizes are also available. Plating may include, zinc, zinc yellow, cadmium, cadmium yellow, cadmium olive drab, & cadmium with molybdenum film lube. Chemical, Physical, & Plating Certifications are available.

DarLoc Corporation has evolved into a leading stocking supplier of the highest quality, specialty niche product line of Miniature and Clinch Self-Locking Nylon Insert and All-Metal Locknuts. We supply at competitive "commodity-like" prices, within our customer's delivery requirements.

New patterns of locknuts are continuously added to our product line & ship from our Long Grove, Illinois warehouse. We look forward to supplying your specialty locknut needs.

BUSINESS FOCUS ARTICLE

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MOUNTING CLINCH NUT
2-56 thru 10-32 to 350°F.**LHCFM**MINIATURE FLUSH MOUNTING
CLINCH ALL-METAL NUT
2-56 thru 1/4-28 to 450°F for steel, and
800°F for A286 stainless.**NKCFM**MINIATURE CLINCH, FLUSH,
MOUNTING NYLON CAP
2-56 thru 10-32 to 350°F**NC**STANDARD CLINCH
4-40 thru 5/16 to 250°F**ND**SPLINE
8-32 thru 1/2-20 to 250°F**NM107, NM408, TEE 2032,
NM2234, M2297**
REDUCED DIMENSION HEX
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PWFA FALL CONFERENCE IN WHISTLER, BRITISH COLUMBIA AUGUST 23-26, 2017 by Vickie Lester



Learn How To Avoid Risk When Importing and Exporting Fasteners

Are you purchasing fasteners from manufacturers outside of the United States? Are you exporting fasteners? What do you really need to know before signing or shipping the order? Are you in compliance with the new ISO standard on risk management? Danielle Riggs will educate you on your liabilities and risks. Topics will include:

- Regulations
- Customs processes
- Non-U.S. partners
- Product knowledge
- Pitfalls
- Jurisdiction, enforcement and control

Danielle Riggs is Director of International Trade Compliance with Wurth Industry North America.

Fastener Lessons NOT Learned

Distributors, suppliers, end users, and manufacturers are making some of the same mistakes that were made 20 years ago. Carmen Vertullo will get us up to speed on

some of these important issues. Topics will include:

- Hydrogen embrittlement issues are on the increase and shouldn't be at this point
- Flagrant violations of the Fastener Quality Act – what's up?
- The importance of lot control and traceability has lessened - should be automatic and universal
- If joint design principles are misapplied, who's to blame?
- New plating standards are not understood
- How to safely provide technical help to end users?

Carmen Vertullo is founder of The Carver FACT Center, a San Diego-based consulting, engineering and training company specializing in fasteners and bolted joints, www.carverfact.com

Lunch with Ignite Presentations

Ignite! These are five-minute presentations, accompanied by 20 slides. Presenters use their five minutes to talk about something they're passionate about. The objective is to educate and entertain.

If you want to Ignite, contact jchristensen@pac-west.org. We'll help you put it together!

Business Owners Roundtables and Business Executives Roundtables

Two different sessions: one for business owners and one for your company's key executives. At this conference, instead of the large forums, we'll have roundtables to allow for smaller group discussions, making input easier. You can submit topics for discussion in advance to jchristensen@pac-west.org, or jump in during the session.

Things to do Today!

- ~~Delivery truck repair~~
- ~~Hire sales rep for no~~
- ~~meet with bank~~
- Find new stainless vendor
 - How can we better track
- Follow up on quality issue at
 - How did it get this far?
- Productivity review, how do I get this info out of our system?
 - Sales/purchasing
 - Warehouse
- Internet update
 - B2B, is this feasible for us?
 - Cost?
- Is our old system worth it?



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BRIGHTON-BEST INTERNATIONAL

BBI ANNOUNCES UPCOMING FASTENERS 102 TRAINING SEMINARS FOR 2017

Brighton-Best International, Inc. is excited to announce our upcoming Fasteners 102 Training Seminars for 2017. It is with great pleasure that we continue our initiative aimed towards training and educating those in our Industry. We are offering a valuable program with industry wide applications, speakers who are experts in their field, and topics which can assist in growing one's knowledge for the company they work for.

A healthy industry is one that is vibrant, growing, and one that constantly introduces new ideas and new people into it. It is one that fosters a competitive spirit, while maintaining respect for one's competitors, and understanding what is good for the industry is good for all of us. As an industry we need to face the challenges that are presented. It is our hope that our partners in distribution will take advantage of this valuable program BBI is offering and we look forward to seeing everyone there.

For dates and locations please visit www.brightonbest.com/events.



In Other News...

BBI Proferred is proud to sponsor Miss Fix It NYC, a vocational trade school helping trades women do home repairs by empowering women to do their own home maintenance. That could mean anything from hanging shelves, to getting their security deposit back by doing easy repairs, to training women to be able to manage a cost-effective renovation efficiently.

Visit www.missfixitNYC.com for more information about classes, membership, workshops, jobs, or even if you need help on a project of your own!!



BBI Proferred would like to "High Five" Nora Hluz, Jessie Portillo, Christine Lechowicz, Gerardo Castellanos & Jef Hren. The High Five award recognizes Brighton-Best International (BBI) employees who come up with new game changing ideas across all BBI departments. Our employees are what makes BBI the BEST.

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Located in Northern Illinois, MSI has always strived to be the best. To do that, our team of dedicated Regional Sales Managers are available to support you and your team as a true Business Resource, rather than just another number in the Rolodex. We do not rely on an outside sales agency to support our distributor partners. Our team is invested in this product line only, and are able to not only train your employees, but support your sales staff in the field, at your customer. This field support is crucial, as in most cases, we are able to spot other opportunities that may have been overlooked.

Consistent product of the highest quality standards,

coupled with excellent dedicated support, makes for a winning combination! Whether you are just getting into this product space, or looking to improve your current supply chain, give MSI Products a shot to show the difference is real.

MSI was founded by the employees of a former pipe, valve and fitting distributor. It was our vision to build an organization dedicated to providing customers worldwide with a single supplier of high quality piping products available in different materials.

Coupled with our diversified product mix, MSI was determined to offer secondary and tertiary services to increase our service capabilities. With our custom capabilities we seldom turn down opportunities to work together with customers on that "special" or "unique" item. Our customers soon realized they could reduce their current supplier base while increasing their productivity and enjoying the flexibility and cost savings we provided daily.

Our tradition of providing the finest quality products while delivering the greatest value to our customer remains our highest priority. It is our mission to work diligently toward developing and maintaining enthusiastically satisfied customers all of the time by exceeding their expectations repeatedly. Our business has and will continue to be built one relationship at a time. 



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SFA/SEFA JOINT CONFERENCE A SUCCESS

by John Elsner

The Southwestern Fastener Association and the Southeastern Fastener Association held their joint Spring Conference in New Orleans, Louisiana April 19 – 21, 2017 at the Astor Crowne Plaza Hotel.

The conference kicked off with a welcome reception on Wednesday evening and was followed by a golf tournament on Thursday morning with 51 players. The tournament was played at English Turn Golf Club, home of many PGA tournaments, was won by the team from XL Screw Co. that consisted of Bobby Fail, Wayne Wishnew, Amy Sachs Eten and Jake Davis. They recorded a score of 12 under par 60. The next closest group was 8 under at 64 and included Kyle Miller, Hayden Gaston, Patrick Wert and Mike Robinson. Closest to the pin was Wayne Wishnew and longest drive was stroked by Josh Ballard, Sems and Specials.

A full morning of Business Meetings and education programming preceded the table top expo on Friday morning. William Strauss, of economic research department at the Chicago Federal Reserve Board of Chicago, predicted that the GDP currently expand to 2% and would remain at that level for the coming year. He also predicted that unemployment would remain low. A panel discussion on Prospecting: Marketing, Selling and Buying followed Strauss. Panelist included Anthony Crawl, Martin Fastening Solution, Pam Berry, Advance Components, Chuck Smith, AZ Lifting Hardware, Rodney Holmes, Birmingham Fastener and Kris Palmer, Delta Fastener. The panel was moderated by Terry Windham, President of SEFA. The majority of the discussion revolved around cold calling and the effectiveness of this selling method in the age of the internet. Smith commented that politicians know it takes seven touches with a voter to get them to come their way and cold calling is stall a touch and he doesn't expect to walk away with an order on the first call. Crawl commented that he seeks to speak to the highest



person in the company he can see and Holmes stated that 20% of new customers come from cold calling. Palmer commented that sales calls are more difficult because so much business is handled by email today. Berry noted that Internet marketing requires constant updating and effective use of key words to get Google ratings. She also stated that Advance Components hired an intern to help them know what is going on in the digital world. The conference concluded Friday afternoon with over 50 vendors in the expo.

Coming off a successful Joint Spring Conference with the Southeast Fastener Association, the SFA Board of Directors have turned their attention to planning the 2017 Fall Dinner meetings. The first dinner meeting will be held in the DFW, Texas area on September 12, 2017. The Houston meeting is scheduled for October 3, 2017. Specific locations for each meeting will be announced in the Summer Newsletter.

Dates for the 2018 Spring Conference and Expo have also been established. Add May 2 – 4, 2018 to your calendar for 2018 Spring Expo. The 2018 event will be held in Dallas/Fort Worth, the specific facility will be announced in the Summer Newsletter. 

distributornews

Bolt Expo is celebrating our 10th year as your fastener solution!

Established in 2007, Bolt Expo, LLC had a vision of becoming a full line fastener distributor with one goal in mind—serving the customer. Since that time, we have established ourselves as a premier source of fasteners, from our 11,000 square foot warehouse.

On behalf of all of us here at Bolt Expo, thank you! It has been an honor serving our customers each day, and we look forward to many years of continued service!

The relationships we've developed with both our customers and suppliers have helped us become a full line fastener distributor in the competitive Atlanta market. Going forward, our mission statement remains the same: Provide top quality products at affordable prices by utilizing our 30+ years of industry expertise, and by streamlining the ordering process for customer ease and efficiency.

Remember, whether the order is \$10 dollars or \$10,000, we will provide the superior service in an expedited time frame that you deserve.

For more information, contact Bolt Expo LLC at 5952 Peachtree Industrial Blvd, Suite # 11, Norcross, GA 30071 Tel: 770-368-0442, Fax: 770-368-8963 request an online quote at www.boltexpo.com or join us on Facebook!

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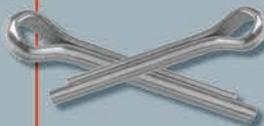
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ASME B18.8.4M	MS16562
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grooved pins

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FBI ADDRESSES MWFA: CYBER THEFT-AN ISSUE THAT NEEDS TO BE TAKEN SERIOUSLY by Nancy Rich

Byron Franz, Special Agent of the Federal Bureau of Investigation (FBI) who has worked on national security matters for over 20 years met with MWFA members, on April 6th, to discuss Cyber Theft. Cyber Theft is a serious issue, especially for companies. Company businesses have been compromised due to their records being stolen through cyber theft. Thieves acquiring information may share with other companies whether local or overseas, they may also hold the information ransom.

There is an issue with information being stolen and given to overseas companies. Companies must institute reasonable measure to protect against risks for the government to be able help them in the event of a cyber theft. Cyber attacks are happening every day. It is an unseen hit in cyber space, unlike a crime on the streets that is witnessed. One click can take out a corporate network.

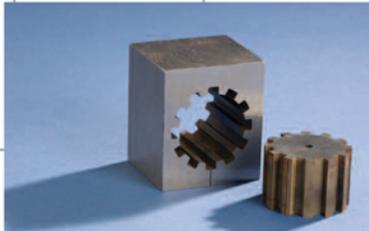
Computers with webcam should not have their



webcams exposed. Information can be taken right off the desk through the webcam. You close your windows and lock your doors at night but do you lock your cyber doors? Auto updates and full scans are important. It's amazing that companies spend more in coffee than IT protection. There are third party providers of security but usually free services get you nothing leaving the IT fortress unsafe. Many companies are only 15% secure.

Advanced Persistent Threat (APT) is an issue. (APT) is a network attack in which an unauthorized person gains access to a network and stays there undetected for a long period of time. The intention of an APT attack is to steal data rather than to cause damage to the network or organization. Other countries can "phish" creating bait to steal information. They can learn about a victim by watching keystrokes.

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NEFDA 29th ANNUAL SCHOLARSHIP GOLF OUTING: THE PERFECT DAY FOR FUN & NETWORKING by Nancy Rich

Nearly 80 golfers gathered on June 1st at Oak Ridge Golf Club in MA. The New England golf course provided a great day of fun and catching up with industry friends. Star Stainless sponsored a \$20,000 hole in one prize; unfortunately they were not able to award it to anyone. There was better luck for golfers on the "Double Your Money" hole where hitting the green doubled their bet. Several golfers put forth their best drives and were able to collect.

A couple of rain showers didn't stop the outing from moving along allowing golfers to finish in a few hours and enjoy an open bar before dinner.

The NEFDA Board took time to thank Jack Conte for all his hard work with the Golf Outing for the last 13 years. He has done an outstanding job and been instrumental in many improvements but will be stepping down from chairing the Golf Outing. They thanked Jack by presenting him with an awesome putter. Joel Koppe (Metric & Multistandard) and Dan Ward (Distribution One) will co-chair the Golf Outing for 2018.

Congratulations To Our Golf Winners

First Place Team - Gross Score

Wayne Wishnew - XL Screw

Kevin Quinn - Fontana/LEP

Skip Maxfield and AJ Gallo - NEFCO

First Place Team - Net Score

Mario Morgardo, Ed Breck, Mike Londergan and

Chris Damore - Atlantic Fasteners

Second Place Team - Gross Score

Jack Conte and Dave Monti - Fall River Mfg.

Gary Coar - Distributor's Link

Joel Roseman - Arnold Industries

Second Place Team - Net Score

Nick Zacpal and Anthony Manno - American Pride

Fasteners

Nick Panasian - ND Industries



Other Winners Included Pam Cinanni of Spirol International who swept all four women's contests. Men's contest winners Included:

Closest to the Line

Steve Boush - Hardware Specialty

Longest Drive in Fairway

Mike Londergan - Atlantic Fasteners

Closest to the Pin

Dave Monti - Fall River Mfg.

Closest to the Pin

Mike Londergan - Atlantic Fasteners

After dinner, the many great raffle prizes were presented. Fall River was gracious enough to donate several raffle prizes including a large screen TV.

We Thank Our Gift Donors

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NEFDA 29th ANNUAL SCHOLARSHIP GOLF OUTING OAK RIDGE GOLF CLUB, MA - JUNE 1, 2017



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distributornews

Bay Supply, a Division of Bay Fastening Systems, Inc announced that it has become a Master Stocking Distributor of the FAR line of fasteners and tools for the Eastern United States.

FAR is a leading world manufacturer of blind rivets and tools, blind rivet nuts and tools and riveting control systems. The company began operations in 1957 and has its main manufacturing plant in Bologna, Italy and warehouse facility in Milan, Italy.

Michael Eichinger, COO of BaySupply.com commented, "We are pleased to have been appointed as one of FAR's master stocking distributors in the United States. Their state-of-the-art and extremely high quality rivets, tools and control systems are well known and respected throughout the fastener industry. Currently some of our repair technicians are traveling to the FAR factory to receive training to establish Bay as an authorized repair center."

For more information contact Michael Eichinger, COO of Bay Fastening Systems at 30 Banfi Plaza North, Farmingdale, NY 11735. Tel: 516-294-4100, email: info@baysupply.com or at www.baysupply.com.

OBITUARY

Robert Rundle
1933-2017



Robert Rundle, the founder of R.W. Rundle Associates Incorporated, passed away May 4th, 2017 after a short illness. He was 83.

Bob was born in Forty Fort, PA and grew up in Elmira, NY. Following a stint in the Army and graduation from Lycoming College (Williamsport PA), Bob began his professional career working in the factory of the Nylok Company (division of USM) in 1958. Promotions moved him from the factory to inside sales & outside sales, then to Detroit Michigan as Nylok's Automotive Sales Manager, and finally back to Paramus, NJ where he served as Assistant National Sales Manager and National Sales Manager.

In December 1974, Bob began R.W. Rundle Associates Incorporated with three principals and a firm belief in what made a successful manufacturer's representative. Over the next 37 years until his retirement in 2011, Bob never lost that belief as he grew his company into one that represented some of the finest manufacturers in the United States.

Outside of being with his family and playing/watching/coaching baseball, Bob was never happier than when he was on road making sales calls and getting to spend time with his customers. He loved working with them on their applications, but more importantly hearing about their families and their lives. As his son Robert, who joined the company in 1992 and took over as President after Bob retired said, "Dad always believed in going out and making sales call. It was his ability to really get to know his principals and his customers on a personal level that made him the great representative that he was."

Bob is survived by his wife of 49 years Susan, his children Robert, Elizabeth and Matthew, six grandchildren and his sister Jean Buckley. A funeral service was held on Thursday, May 11th at the Ridgewood United Methodist Church (Ridgewood NJ) where Bob was a member for 60 years.

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HURLEY STARTS TRADE SHOW CONSULTING BUSINESS

Susan Hurley has formed Hurley Consulting after 23 years with the National Industrial Fastener & Mill Supply Expo. Hurley started as an administrative assistant with Bannister & Associates in 1994. She was promoted to Executive Director/Trade Show General Manager in 2005.

When Emerald Expositions acquired NIFMSE in 2015, Hurley became Show Director. Hurley holds the CEM designation – Certified in Exhibition Management.

Jim Bannister recalled that Hurley started as an assistant to then show manager Gloria Crase. “When Gloria retired, Susan became only the second show manager – later “Expo” manager – we ever had under the Bannister & Associates/McGuire Fasteners 35-year ownership,” Bannister told GlobalFastenerNews.com. “Susan literally ran the Expo for Mike (McGuire) and I, handling every aspect from accounting to promotion,

exhibit space/directory advertising/sponsorship sales, conference program and special event planning, registration, day-to-day operations, and onsite management. Susan knew everyone, and everyone knew Susan.”

“So much was our affection for and appreciation of Susan that Mike McGuire and I insisted that she be part of the deal when we agreed to sell the Expo to Emerald Expositions in November 2015,” Bannister added.

With Hurley Consulting she is offering trade show management roles from managing and sales of exhibits, sponsorships and advertising to floor management.

Hurley Consulting is located at 10813 Pleasant Valley Rd., Frazeyburg, OH 43822. Tel: 740 403-9198. Email: shurl60@yahoo.com 

BUSINESS FOCUS ARTICLE

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ITR ADDRESSES MFDA by Kellie Nirmaier, Kanebidge Corp.

The MFDA held its annual Economic Forecast meeting on May 11th, at the picturesque Chart House located in Weehawkin, NJ. The meeting was attended by approximately 35 members, who enjoyed some networking, and cocktails prior to the guest speaker Connor Lokar of ITR and also enjoyed the wonderful view of the New York City skyline backdrop over the water.

Mr. Lokar's presentation was followed by a question and answer period, where members of the MFDA got to present their concerns and have their questions answered regarding the upcoming years with industry specific questions on manufacturing, as well as all around subjects.

MFDA New Members

The MFDA is pleased to add these companies to their membership:

Bodycote

Hillsborough, NJ

Raw Products Corp.

Sayreville, NJ

MFDA Calendar of Events

September 16th - Cocktail Party

Crystal Springs

September 17th - Golf Outing

Wild Turkey Golf Course

October 26th - Social Outing

December 7th - Toys for Tots Holiday Party

ASSOCIATION ARTICLE

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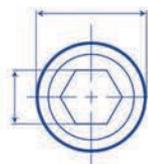
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distributornews

Innovative Components

Inc has recently converted to IQMS EnterpriseIQ ERP software. The software is utilized for all aspects of the company, but is particularly valuable to the management of the manufacturing operations. All of the machines and work stations in the plants are interconnected via the software. The software updates the schedule and inventory each time a part is manufactured.

Jerry Campos, Operations Manager, states "Now, I am able to see every movement of every machine in both factories in real time. We are able to predict to the minute when jobs will begin and end. We have experienced a decrease in scrap, coupled with improvements in throughput and labor utilization." Not only is the software helping to reduce costs and improve quality, the company is also able to satisfy customer expedites and change orders more easily due to greater flexibility and more exact information in the manufacturing schedule.

Innovative Components, Inc. is an ISO 9001:2008 Certified Manufacturer of Plastic Knobs and Handles, Wire Rope Lanyard Assemblies, Positive Locking Pins, and Quick Release Hardware.

For more information, contact Innovative Components Inc. by Telephone: 847-885-9050, by Fax: 847-885-9005, by Email: Sales@knobsources.com or visit them online at www.knobsources.com.

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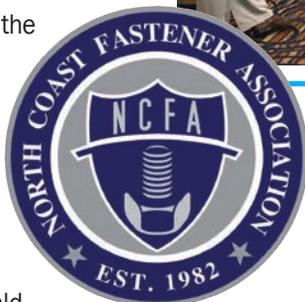
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NCFA'S 9th ANNUAL DISTRIBUTOR SOCIAL - CLEVELAND'S PREMIER NETWORKING EVENT!

by Lisa Graham

This year's North Coast Fastener Association (NCFA) Distributor Social once again saw a record number of attendees. If you don't know about the NCFA Distributor Social, you are missing out on a premier networking opportunity. The NCFA Distributor Social is a networking event where suppliers and distributor get to spend time together networking in a casual atmosphere.

This year prior to the Distributor Social, the NCFA had guests in from Emerald Expositions, Macks Brooks Expositions and Cuyahoga Community College's Vice President of Manufacturing with the Workforce, Community & Economic Development Division, Alicia Booker. Representatives from Emerald Expositions, the new show operator of the National Industrial Fastener and Mill Supply Expo held in Las Vegas each year in October, discussed some of the new twists and turns they have made to the show this year. The show location has been moved to the Las Vegas Convention Center. They also gave some insight to some



of the events that will be taking place during the show. Representatives from Macks Brooks Expositions addressed the upcoming Fastener Fair USA Show scheduled

for April 11-12, 2018 in Cleveland, OH. Macks

Brooks operates several shows including Fastener Fair Stuttgart and Fastener Fair Mexico. The Fastener Fair advertises as an event aimed at bringing together manufacturers, distributors, suppliers and end users.

We were pleased to offer our guests in cooperation with the Young Fastener Professionals (YFP) Cuyahoga Community College's Vice President of Manufacturing with the Workforce, Community & Economic Development Division, Alicia Booker. Alicia gave an overview of their new "workforce training center on wheels." Their 53 foot-long retrofitted trailer houses an instructional classroom space with a whiteboard and video system, as well as a versatile lab for hands-on training. The mobile trailer was created in response to the training needs of local manufacturers. It was onsite for touring prior to and during the Distributor Social.



Event photos supplied by Fastener News Desk

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NFDA AND YFP PARTNER TO PRODUCE LEADERSHIP ACADEMY by Vickie Lester



To thrive in the future, the fastener industry needs to develop and support the next generation of leaders. Therefore, the National Fastener Distributors Association (NFDA) and Young Fastener Professionals (YFP) are partnering to foster the industry's future leaders.

The NFDA/YFP Leadership Academy will take place November 2-3, 2017, at the Crowne Plaza Chicago O'Hare Hotel and Conference Center in Rosemont, IL.

We are pleased to bring to the event Shelly Alcorn, a futurist and thought-leader, who will facilitate a collaborative and highly interactive experience for Leadership Academy participants. Discussion topics may include:

- ▣ What are the most pressing issues that young professionals face in their careers?
- ▣ What will the workplace of the future look like and what skills will I need to thrive?
- ▣ How do I obtain these skills?
- ▣ What career development programs, products, and resources can associations like NFDA and YFP provide that would be most valuable to young professionals?
- ▣ What are the communication challenges in the workplace and what positive strategies can be used?
- ▣ What emotional intelligence is required to persuade others effectively and to participate in decision-making?

The biggest opportunities for younger professionals are to establish relationships early in their career, to continue learning (post-formal education), and to be

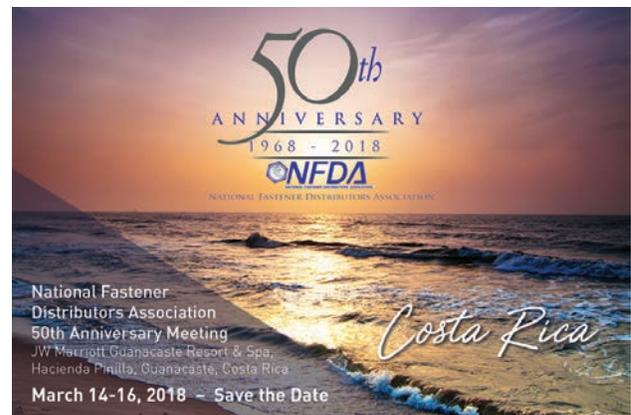
involved in advancing their industry. The NFDA and YFP Leadership Academy will engage professionals from all generations, to ensure a pipeline of future leaders.

This program is limited to 36 participants and priority will be given to NFDA and YFP members.

For more information visit www.nfda-fastener.org or www.youngfastenerprofessionals.com

50th Anniversary Celebration Planned

2018 marks NFDA's 50th anniversary, and we will celebrate in style March 14-16, 2018 at the J. W. Marriott Resort and Spa in Guanacaste, Costa Rica.



You'd be surprised how easy it is to travel to Costa Rica, with flights to Liberia's Daniel Oduber Quirós International Airport from most major U.S. cities on most major U.S. carriers. Not only is it easy, but it's very affordable, often less expensive than flying in the U.S. coast to coast.

Check the NFDA website for more details.

ESPS® Returns in 2018

Executive Sales Planning Sessions® return in 2018, in conjunction with the NFDA Annual Meeting, June 5-6, at the Embassy Suites Magnificent Mile in Chicago, IL.

For more information about NFDA and its activities, visit www.nfda-fastener.org or call 714-484-7858. 

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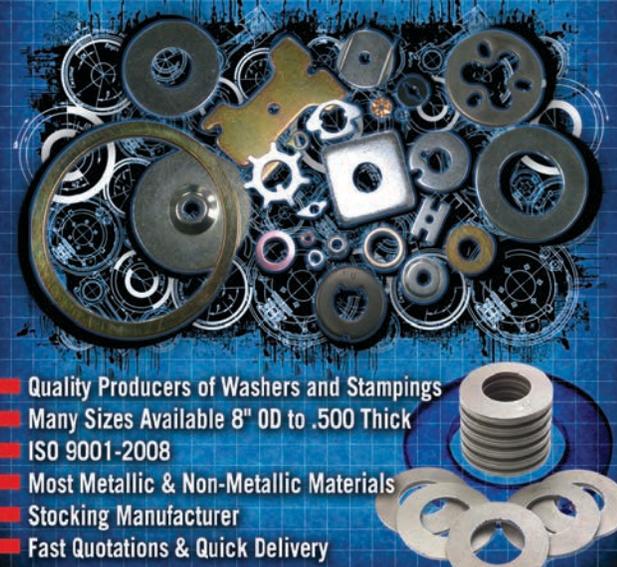
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Bay Supply, a Division of Bay Fastening Systems, Inc. announced that it will begin to distribute the Craftline Storage Systems line of standard and custom storage solutions. Craftline is a division of Platt & LaBonia Company, LLC, North Haven, Conn.

Craftline Storage Systems, www.craftline.us is a leader in providing high quality metal cabinets, cases, displays and parts storage systems for the fastener, automotive, tool and industrial markets. Small or large, standard or custom, modular or complete Craftline manufactures their cabinets and storage systems in a 130,000 sq. ft. facility in North Haven, Conn.

Michael Eichinger, COO of BaySupply.com commented, "Often when I talk to our customers they ask if we can recommend a supplier of cabinets to house their fasteners and tools. We went into the marketplace to identify the best source for these products and it was Craftline. They were the industry leader with many years of experience and an abundance of positive testimonials. Instead of just recommending a supplier we decided to distribute the Craftline quality products.

Bay Fastening Systems is a leading, international distributor of rivets, Huck bolts, threaded and coil inserts and aerospace MS/NAS rivet nuts. Authorized brands include Stanley, Huck, POP, Avdel, Sherex, Marson, Gesipa, AVK, Atlas/Penn, Champion and more. Recently it launched the world's largest e-commerce engineered fastener web portal www.baysupply.com. It features hundreds of thousand fasteners and combinations, a complete line of tools, full technical information, and installation systems. Bay has a factory authorized repair division.

Craftman Storage Systems, a unit of Platt & LaBonia Company, LLC manufactures high quality metal cabinets, compartment boxes, tip-out trays, drawer racks and systems, for retail and industrial use. Its storage systems and modular cabinets come in a wide variety of standard sizes and they are more than willing to customize any design to accommodate the customer's needs.

For more information contact Michael Eichinger, COO, Bay Fastening Systems at 30 Banfi Plaza North, Farmingdale, NY 11735. Tel: 516-294-4100, email: info@baysupply.com or at www.baysupply.com.

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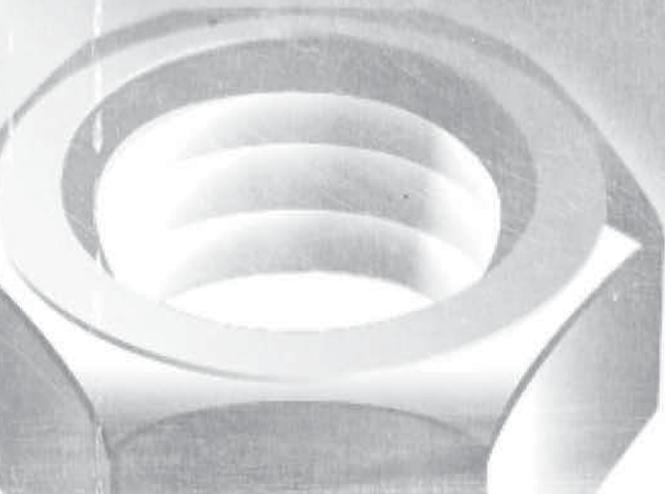
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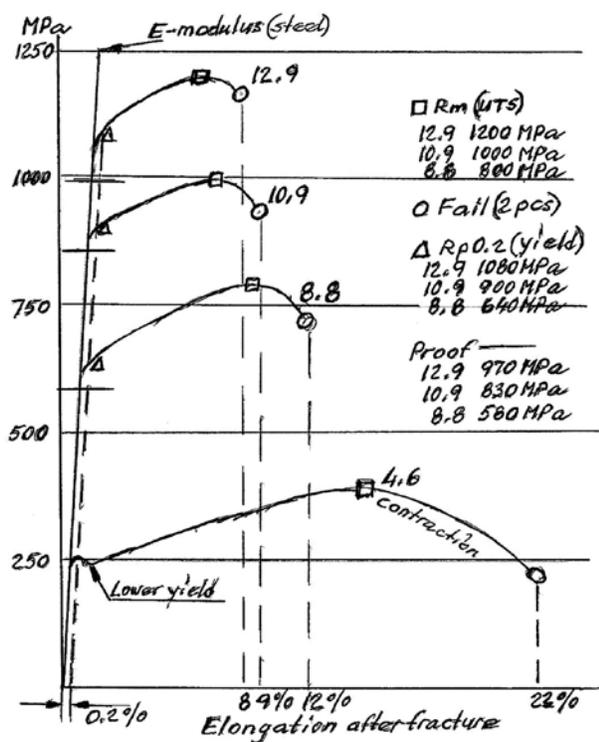
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BENGT BLENDULF DRIVING SAFELY OR PUSHING THE LIMITS from page 8

But, for most mechanical designs there are no specific code standards and designers must use some general standards for properties (ISO, SAE, ASTM, etc.) to find their way to the best and safest designs. To use the tensile strength level as a basis for a design is like driving the 200 MPH, where there is no, or very limited, room for error. In the following graph I have put together some relative curves representing the various stress levels for the most common fastener classes and grades.

MECHANICAL PROPERTIES



This graph is based on what is often referred to as a Stress-Strain diagram. I realize that I have put a lot of additional information on the graph, but if you follow the text and the graph together it should explain the events taking place when we put loads on fasteners.

On the Y-axis (vertical) we have the stress levels (or force influence), and on the X-axis (horizontal) the strain or stretching caused by the applied stress. The straight line marked as E-modulus (same as Young's modulus) indicates the elastic stretching of a body of steel (in our case a fastener) when subjected to a force or stress. This

modulus is the same for all carbon or alloy steels used in fasteners of different strength. The line here represents the modulus at room temperature and will tilt to the right or left if temperatures are outside the "normal" design range. For design temperatures between -40°C to +120°C (-40°F to 250°F) this one will suffice. As long as applied loads are to the left of this line, a fastener will be returning to its original length when we remove the stress or force. In this elastic sector stress and strain are proportional.

If we put more stress on the fastener (going to the right of the line) we are putting it into the "plastic" range and there will be a permanent elongation. A low strength fastener class like 4.6 (about Grade 2) will "give up" before 8.8 (Grade 5), 10.9 (Grade 8) and 12.9 (Alloy). Since 4.6 is not heat treated by means of quench and temper, they are relatively soft (low carbon) and when the stress is too high the curve goes from linear to non-linear. This event is relatively easy to detect and usually show an up-and-down curve as indicated in the graph. From the "lower yield stress" point the continuing stretching requires a relatively smaller addition of force. We are now in the "plastic" zone and the stretching is permanent. When the maximum tensile load is reached (Rm or UTS) the fastener diameter will show a contraction or necking-down. The cross section in the necked-down area are now becoming smaller and smaller and will require less and less force to elongate the fastener to the point of finally fracture in two pieces. We notice from the length of the curve that a low grade fastener does not just suddenly snap off at Rm, but can continue to elongate quite a bit before finally breaking. In our "driving" analogy we can compare that to simply driving slow and have plenty of time to react to problems ahead. Going to the next levels of strength (8.8, 10.9 and 12.9) we notice that the curves are taking different paths. There is now a "window" where the curves are going from linear to non-linear with no distinct yielding point(s). In modern terms we call "yielding or yield point" of high strength fasteners Proof stress or Rp0.2. This is the level where we can measure a permanent elongation of 0.2 %. Below that "yielding window" we find the term Stress under proofing load or Sp which is approximately 90 % of Rp0.2.

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D	D	D	D	K	G	D	N	M	H	A	A
P	F	C	A	P	H	F	I	A	G	E	L
S	E	R	S	C	E	N	G	S	R	S	L
D	A	N	D	W	G	C	H	D	P	C	O
P	S	S	G	O	R	D	K	A	L	A	W
D	O	V	E	U	S	O	R	E	A	N	R
L	I	A	U	Q	I	R	N	C	R	A	E
C	H	H	E	R	O	N	T	V	K	R	N
V	B	E	G	W	R	O	B	I	N	Y	C

BIRDS

In the grid opposite there are twenty answers that fit the category named above. Circle each answer that you find and list it in the space provided below. An example is given to get you started.

- | | |
|----------------------|-----------|
| 1. DOVE _____ | 11. _____ |
| 2. _____ | 12. _____ |
| 3. _____ | 13. _____ |
| 4. _____ | 14. _____ |
| 5. _____ | 15. _____ |
| 6. _____ | 16. _____ |
| 7. _____ | 17. _____ |
| 8. _____ | 18. _____ |
| 9. _____ | 19. _____ |
| 10. _____ | 20. _____ |

Essentially fastener failures can be broken down into the follow general categories:

- [1]** Poor fastener selection for the application
 - Fastener is not strong enough to withstand service loading
 - a) Designer chooses the wrong material for its service environment
- [2]** Loss of tension during operation:
 - a) Joint relaxation
 - b) Joint creep
 - c) Thermal expansion and contraction
- [3]** Fastener is not properly pre-loaded or installed
- [4]** Manufacturing flaws or surface discontinuities exist on parts
- [5]** Abuse and misuse

The Bolted Joint

Prior to exploring each of these in greater detail, it is important to review the basic functioning of the bolted joint. The bolt is designed to act as a stiff spring. As the bolt is stretched it compresses the material clamped in-between. As the bolt stretch increases, so does this clamping load that is generated. This results in greater resistance to the joint either being pulled apart in tension or the layers of clamped material sliding relative to one another in shear. A universally

accepted fastener engineering rule-of-thumb is that a properly tensioned joint seldom comes loose.

To illustrate this in a practical way, consider Figure 2. Place your thumb, index, and middle fingers together as illustrated in the upper left box of the figure. Now take and wrap a standard, heavy-duty rubber band twice around these fingers or until the rubber band is snug, as illustrated in the upper right box of the figure. Attempt to separate your fingers and observe the level of resistance to this effort (lower left box). Once you have completed this part of the exercise, make one additional wrap of the rubber band as shown in the lower right box. Again, attempt to separate your fingers and observe the effort required to perform this action.

If you have conducted this exercise properly, you should have clearly observed that the effort required to separate your fingers with the third wrap of the rubber band in-place is significantly greater than with only two wraps. The same is true for a bolted joint. The more tension that is generated in the joint, the more difficult it becomes to separate or break the joint loose. This behavior is true whether the joint is a tension joint (where the service load is trying to pull the joint apart) or a friction-slip joint (where joint tension generates friction between the clamped surfaces so that they cannot move relative to one another.)

From this exercise one comes to understand in

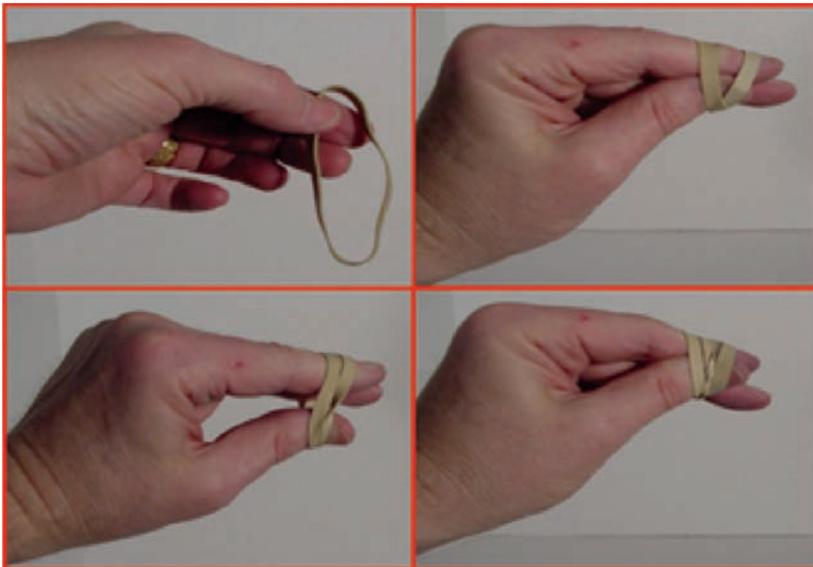


FIGURE 2: BOLT TENSION ILLUSTRATION

a practical way why tension in the joint is so important. Without the proper level of tension the joint will be vulnerable to loads acting upon it, especially shear and dynamic loads.

To take advantage of this, design engineers must understand the stresses that will or could act on their system and design the fastened joints accordingly. In addition to having the right number of joints, size of fasteners, and safety factor, the designer must also make choices regarding the strength of the bolt.

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JOE DYSART NEW ARTIFICIAL INTELLIGENCE BUSINESS TOOLS FOR FASTENER DISTRIBUTORS ARE READY-TO-RUN *from page 12*

AI Self-Designing Websites

Grim fact: Not all of us are Da Vinci's in the making. Fortunately, with **Grid** (<https://thegrid.io>) – an online service that will auto-design a Web site for fastener distributors – that doesn't matter any more when it comes to designing your online business presence.

With Grid, you simply upload the content you want on your Web site – text, images and video – and the service does the rest, placing everything just where it's supposed to go. Once all your components are in place, you also have the ability to tweak the resulting design. You can get an in-depth look at how Grid works with its introductory video (56 minutes) on YouTube. A similar online service is Wix (www.wix.com).

AI Call Center Matchmaker

Any fastener distribution business exec who has winced listening to a call center rep clashing with a customer will want to look into **Affiniti** (www.affiniti.com).

Designed to find 'birds-of-a-feather' personality matches between your call center reps and your customers, Affiniti processes more than one billion calculations-a-second in its never-ending quest to sniff out the personality of anyone who happens to be calling your business.

Essentially, the AI software works by retrieving, storing and analyzing psychographic and demographic data on customers across the U.S., which it sources from the world's identity data brokers, including Allant, Axiom, Experian, Facebook, LinkedIn and Targus.

Specific data Affiniti is incessantly gobbling includes income level, credit card usage, profession, gender, telecommunication usage patterns, responsiveness to marketing, political persuasion and travel habits. Most likely, it also knows if your toenails need trimming.

Meanwhile, Affiniti analyzes the other side of the equation - the personalities of the call center reps at your fastener distribution business – by studying how your reps interact with customers over a 60-90 day period, and by crunching data from a 20-minute survey that you can administer to your call center reps when they're first hired.

The result: In a perfect world, you get a match made in bits-and-bytes heaven that hopefully will result in a better customer service experience and perhaps heavier sales.

AI Early Warning Lawsuit Alerter

When it comes to lawsuits, the only thing better than an attorney who strikes sheer terror in the opposition is one who can scope-out potential lawsuits before they happen – and steer you clear of any trouble.

That's the premise behind **Intraspexion** (www.intraspexion.com), ingenious lawsuit-prevention software developed by seasoned attorney Nick Brestoff.

Intraspexion works by relentlessly analyzing every single email your employees send or receive from the outside world, and then studying those emails for telltale signs of trouble ahead.

As soon as it finds a email it believes could be the start of an impending lawsuit, it instantly alerts your attorney or in-house counsel, requesting human intervention.

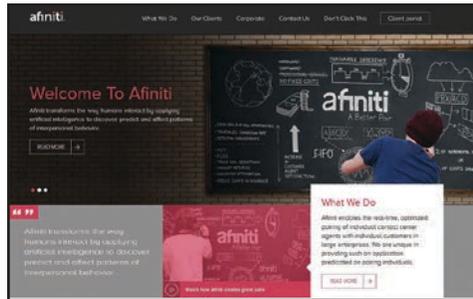
According to the company's founder, Nick Brestoff, Intraspexion's accuracy had been verified by a third party source at 99%.

Interestingly, Intraspexion Brestoff's Intraspexion is built on **Google TensorFlow** (www.tensorflow.org) – a free, open source, deep learning software developed by researchers and engineers on the Google Brain Team.

"TensorFlow is quickly becoming a viable option for companies interested in deploying deep learning," says Rajat Monga, engineering leader, TensorFlow at Google.

Currently, the software – which is being pilot-tested by a New York Stock Exchange level company – is only programmed to analyze employee emails for potential employee discrimination suits, simply because those suits are among the most common.

But Brestoff says he can easily rework his code for fastener distributors to do the same kind of monitoring for breach-of-contact suits, fraud suits and more than 150 other categories of lawsuits that businesses must dodge every day. 



ABOVE: AFFINITI USES AI TO FIND PERSONALITY MATCHES BETWEEN CALL CENTER REPS AND CUSTOMERS.

BELOW: TO SPUR AI INNOVATION, GOOGLE IS OFFERING SELECT AI RESEARCHERS FREE CLOUD ACCESS TO ITS MACHINE LEARNING COMPUTERS.



SEFA / SFA TABLETOP SHOW NEW ORLEANS, LA - APRIL 21, 2017





“The idea to bring Fastener Fair to the U.S. market originated within the fastener industry,” said Melissa Magestro, Executive Vice President of Mack Brook Exhibitions, Inc. “There is an increased need to find new technologies and suppliers in the U.S., and fastener OEMs and distributors are looking for a platform to showcase their solutions. We are bringing the Fastener Fair experience to the heart of the Midwest manufacturing region.”

Success So Far

Since the announcement, Fastener Fair USA has received positive response from many in the industry. In fact, Mack Brooks Exhibitions already increased the amount of space needed at the Huntington Convention Center, expanding into a larger hall that is 40,000 net sq. ft. from the original anticipated 25,000 net sq. ft.

In addition, Fastener Fair USA is already garnering industry support from association and media partners like Women in the Fastener Industry (WIFI) and *Distributor's Link Magazine*.

Many companies already committed to exhibit at the show in 2018 hoping to get their products and solutions in front of more U.S. customers. Many companies like Intools, Carlos Salvi, Brighton Best International, Rotor Clip, Dorken MKS-System, TR Fastening, SACMA, Buckyeye Fasteners, Vogelsang Fastener Solutions, Aluminum Fasteners, Wrentham Tool, and the Phillips Screw Company already committed to exhibit at the show in 2018.

Why Attend Fastener Fair USA?

Fastener Fair USA 2018 anticipates being the meeting place for fastener professionals, conveniently located in the heart of the Midwest manufacturing region. So far,

feedback from potential exhibitors and attendees show excitement around these show features.

The Latest Technology and Solutions All in One Place

The show organizers want to make it easy for attendees to discover and connect with manufacturers of industrial fastener, fixing, and joining solutions, leading to collaborations to solve their product design business challenges. No matter where you are in the supply chain, you'll appreciate seeing the latest technologies, innovations, and solutions for your business all in one place.

Convenient Location

“We have received so much positive feedback about the convenient location of the show,” said Jessica Boweak, Exhibition Manager for Fastener Fair USA. “We want to make the event as accessible as possible for automotive, aerospace, construction, and other industrial design engineers and purchasers, so Cleveland makes a lot of sense.”

Educational Sessions

Fastener Fair USA offers a unique opportunity to get the latest industry information, forecasts, and technical education with keynote sessions and breakouts. Show organizers are identifying and scheduling daily educational sessions led by industry experts that focus on industry developments and solutions applicable to the core visitor segments – fastener and fixing end-users, distributors and wholesalers. “We plan to offer broad ranging educational sessions for all levels of experience, industry focus, and visitor segments,” Magestro said.





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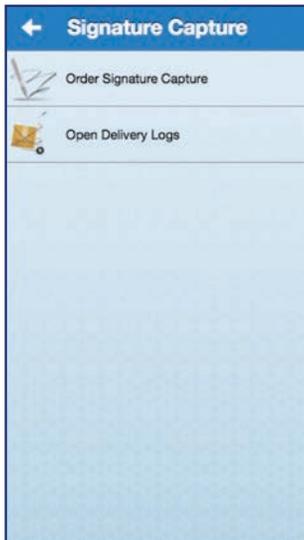
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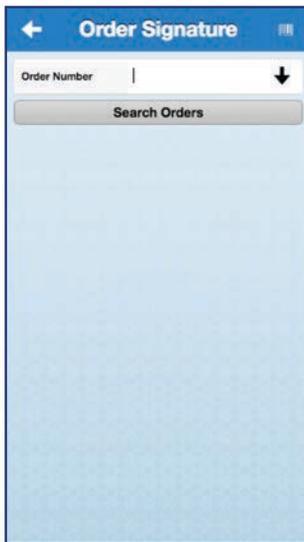
ONLINE SIGNATURE CAPTURE



OFFLINE SIGNATURE CAPTURE

Order Signature Capture

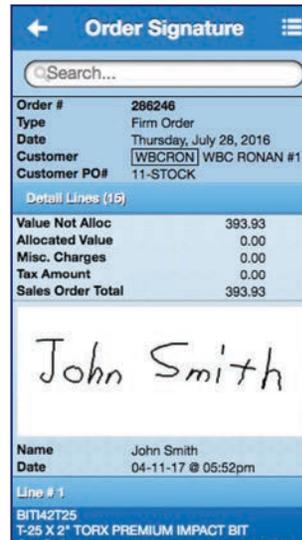
The Order Signature Capture screen allows you to lookup order information and capture a signature from your customer. This is used for random salesperson deliveries, Counter Sales or Will Call Orders. You simply enter an order number and tap the "Search Orders" button.



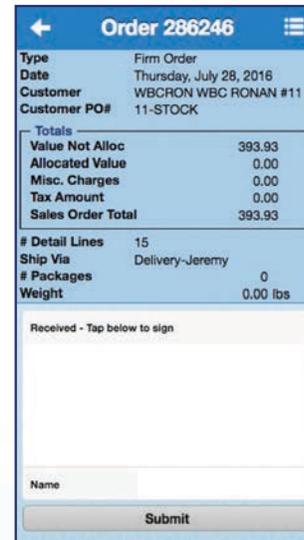
Once an order has been selected you will be presented with the basic order information.

If you already have a signature for the order, you will see the order information, including signature and detail

lines. You can tap any of the detail lines to view detailed information on that product.



If you **do not** already have a signature for the order, you will see the basic order information, as well as a blank place for the signature.



Once your customer has given you their signature you to tap the 'Save' button to save the signature. To complete the signature capture process, enter the customer's name in the "Name" box, and tap the "Submit" button. Some signatures are just not legible, as you may imagine.

distributornews

DDI System, a leading ERP software provider for wholesale distributors, released Inform ERP Version 21.0.17, with significant new features for Wholesale Distributors.

Innovative developments include Customer Engagement Management tools, Mobile Responsive eCommerce Solutions, Consolidated Invoicing for Backorders, Sales Order Multi-Warehouse Split and Customer Ready QuickOrder - Vendor Managed Inventory Apps. Inform ERP adds a full mobile selling suite, including orders, quotes, customer sales history and an intuitive CRM activity scheduling workflow. These latest tools enable distributors to gain a better understanding of their business performance, optimize inventory control and empower sales teams with the CRM information they need to excel. Version 17 includes:

- ▣ Customer Engagement Management
- ▣ Mobile Responsive eCommerce App
- ▣ Field Sales Order App
- ▣ Contact Analysis & Instant Pivot Capabilities
- ▣ Smartphone Vendor Managed Inventory App
- ▣ WMS for Showrooms & Sales Counters
- ▣ Warehouse Order Spawn Feature
- ▣ Sales Order Multi-Warehouse Split

Inform's enhanced feature set brings significant value to wholesale distributors, enabling them to outperform the competition with an end-to-end ERP solution focused on customer needs. "The DDI System team uses their distribution expertise and customer-centric focus to provide a superior user experience. By constantly encouraging customer feedback and vigorously testing product enhancements, DDI drives independent distributors to succeed and win against larger, digital competition," says Chief Operating Officer Barbara Jagoe, DDI System.

DDI's Inform software combines everyday operational benefits in accounting, inventory, sales, purchasing and pricing with the latest sales driving tools such as cloud connectivity, mobile apps, CRM, real-time e-commerce and more.

Distributors can see the benefits of Inform at www.ddisys.com or by calling DDI for a product demonstration or more information at (Toll-Free) 1-877-599-4334.

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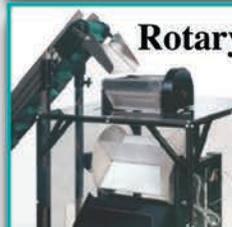
Parts Counting/Bagging System



- ▣ Vibratory parts counter
- ▣ Piece Count
- ▣ Quick and Accurate

Bulk Count/Weigh Bagging System

- ▣ Vibratory Parts Counter
- ▣ Check-Weigh Scale
- ▣ Net-Weigh Counting Scale



Rotary Check/Weigh Scale

- ▣ Fast Check/Weighing
- ▣ Exceptional accuracy
- ▣ Flips to accept or reject bin

Bags!

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When tightening either the bolt head or the nut against the lock washer, the open and sprung ends are compressed against the joint surface creating a flat washer. The proposed function is for the pointed corners to dig into the joint surface and the bolt head, or nut, to prevent counter rotation. Some will also say that it is the slight twist in the forming of the lock washer that will produce enough counter rotational force to prevent loosening.

The problem is, a lock washer does not work for all fasteners, in all applications.

It is our basic perception that when we use the word 'lock' it implies a certain amount of permanency. Once used, we no longer have to worry about it. In reality, a lock washer does not improve nor increase a fastener's ability to maintain preload nor will it prevent preload from being lost in all applications.

Springs flex. If compressed, it will produce a force in the opposite direction. This is the reaction of a coiled spring. A helical spring of but one revolution acts a little different. If the washer is compressed on a load cell, the graphed spring rate is in the shape of an 'S' curve. This means that when it is fully compressed, there is little to no backwards force as the preload applied to the fastener takes precedence. As the preload decreases, the split ends of the lock washer open and the backwards force increases. This is the point where the 'locking effect' takes place. Continuing through the 'S' curve, there is also a point where it decreases again, much like drawing on a compound bow, then increases again.

For this 'locking effect' to take place, the preload of the fastener and joint must be diminished. This loss will enable the ends of the lock washer to open sufficiently to produce a counter rotational force against the joint and fastener. For this to occur, something went wrong.

So, what we are now saying is, for a lock washer to work properly, the fastener was not properly tightened when installed or the preload was lost due to severe vibrations and excessive loads for the type of fastener used.

Applying Hooke's Law, a joint losing 0.001" per inch of joint thickness, will essentially lose around 30,000 psi of clamp load. If a high strength fastener was used, such as a Grade 8 or 10.9 cap screw, such a loss of clamp load will promote fatigue stress failure of the fastener.

When some of the preload is lost, the ends of the lock washer separate to produce the 'locking effect' against the joint and fastener. During the normal service life of the

joint, external loads cycle on and off and possibly at varying frequencies. When this occurs, the joint and lock washer must absorb the service loads in a series of compressions and relaxations. Much like the continual flexing of a coat hanger wire, metal fatigue causes a fracture in the hardened lock washer.

Once fractured, the lock washer falls from between the fastener and the joint without any warning causing a loose fastener. The bolt is free to vibrate out of a tapped hole or the nut is free to vibrate off because we only used a standard free spinning nut. Now the joint becomes disassembled.

Figure 3 is a fractured lock washer that was used with a 1½" diameter bolt. This obviously did not prevent joint loosening. Realistically, if you cannot properly tighten any fastener over 1" in diameter, a lock washer isn't ever going to keep the connection from coming apart.



FIGURE 3

Therefore, in one respect, if the bolt was properly tightened and the joint designed so there was no loss of preload, there would be no need for a lock washer or even a lock nut.

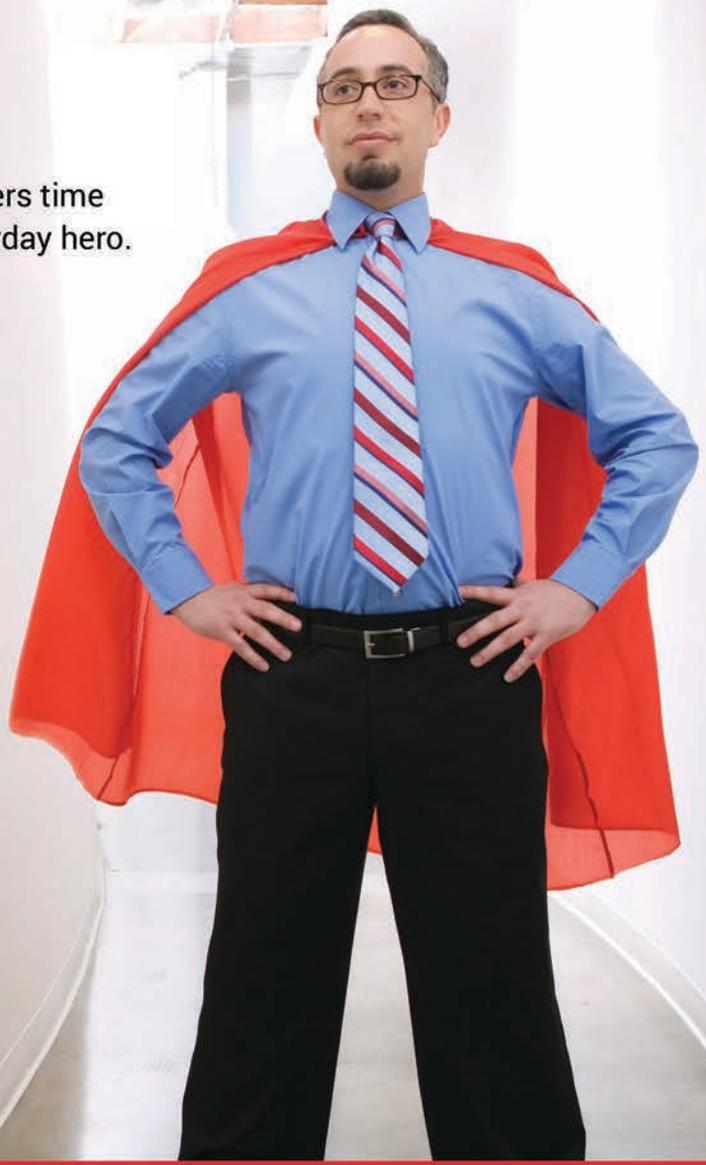
When lock washers were originally made, we did not have the high strength fasteners or high de-mand loads required of the equipment in today's world. They were originally designed for smaller and lower strength fasteners. There are times when a joint is soft and may deform under the pressure of tightening to reduce the preload of the fastener. These are the type of applications where the lock washer was intended for use.

Always give the customer what they ask for; but if the fasteners are over ¾" in diameter and are Grade 8 or 10.9, suggest using hardened flat washers and a lock nut instead.

My rule of thumb: if it did not come from the factory with a lock washer, do not add one. It was left off for a reason. ⚙️

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FIC FASTENER INDUSTRY COALITION PRODUCES FIRST FASTENER INDUSTRY SUMMIT *from page 28*

Laurence Claus and Jo Morris educated the audience on why education and training make a difference in customer relations and your company's bottom line and shared the breadth of education available (in person and online) from the Fastener Training Institute.



LAURENCE CLAUS AND JO MORRIS OF THE FASTENER TRAINING INSTITUTE

Bernie Luecke and the team from Rock Valley College told an inspiring story about the Cold Forming Training Center that is training people for the skills necessary to enter the cold heading environment at an entry level position with a solid foundation of shop math, blueprint interpretation, metrology, and cold heading setup/operation skills.



BERNIE LUECKE OF ROCK VALLEY COLLEGE

To support this unique industry training program, the Fastener Education Foundation presented a \$25,000 donation to Rock Valley College.

The summit concluded with an energetic program titled "The 1.2% Factor: How One Small Change Leads to Large Results." Many managers agree that the effectiveness of their organizations would be at least doubled if they could discover how to tap the unrealized potential in their human capital. Bob Davies, international best-selling author and performance coach, showed us how.



AUTHOR AND COACH BOB DAVIES (LEFT) WITH BOB BAER OF AIC (RIGHT)

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PHILLIPS SCREW COMPANY THE ORIGINAL SINCE 1935 from page 30



THE ORION SPACE CRAFT USES THE MORTORQ SPIRAL DRIVE SYSTEM FOR ASSEMBLY.

As early as the 1950's Phillips had been working to create a partnership with its licensees to develop solutions to emerging fastener challenges. The growing aerospace industry had new challenges as the joining of light-weight materials like aluminum took place and it was this innovative partnership that developed solutions for these airborne challenges. A solution was needed that provided improved torque transfer without the problem of cam-out and still be shallow enough to be put in the thin screw heads used to join thin sheets of aluminum to the aircraft structure. The result was the TORQ-SET® offset cruciform and TRI-WING® three winged recess designs that had several unique features. These straight walled recess designs eliminated the cam-out problem and improved torque transmission for efficient fastener removal during servicing but were too costly to be used on everyday screws. As a result, Phillips began in earnest to try to solve the problem of cam-out of the Phillips cross recess design.

More partnerships were formed with Phillips licensees to meet this challenge. By combining design features developed by Phillips, American Screw Company, and other licensees the new POZIDRIV® cruciform drive system was developed. The negatively drafted driving walls of the recess solved the problem of cam-out while the square center of the recess forced material out to fill the new wing shape. These features combined with the unique starburst head design that also served to assure better recess shape the new design quickly gained broad acceptance. In North America the new system became

a way for automakers and the new computer and printer makers led by Hewlett-Packard to easily differentiate their inch based screws from metric based screws. Screw made to the inch system of measurement would have Phillips recesses while those that were sized with metric dimensions would have POZIDRIV recesses. The starburst head of the POZIDRIV recess made it easy to quickly see whether the screw was inch or metric and know how it should be measured and replaced if needed.

The challenge remained to try to prevent cam-out while maintaining compatibility with all of the Phillips screw drivers already in tool boxes around the world. To address this Phillips Screw Company pioneered the development of anti-cam-out technology with the ACR® ribbed drive systems and has continued to improve these systems to the levels present in the PHILLIPS II® high performance cruciform drive system that provides end users with a system compatible with common Phillips cross driver bits but optimized when installed with the PHILLIPS II bit using the unique angled tapered ribs for maximum performance.

To meet the needs of consumers for trouble free fastening solutions Phillips developed a drive system that is compatible with most driver tools found in home owners tool boxes. The PHILLIPS SQUARE-DRIV® combination drive system has a proven recess design that is compatible with plain Phillips cross bits, POZIDRIV cruciform bits, square bits popular in Canada, and with the made to match PHILLIPS SQUARE-DRIV bit that provides the best performance possible.



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Almost every forklift manufacturer has this technology available for their vehicle, either built in at the factory or added as an aftermarket feature. Given the minimal initial expense of these features and the potential saving in downtime and correcting errors it is foolish to replace your older equipment with a base model vehicle. How much is it worth to your operation to be able to identify a problem or abusive operator before things spin out of control? Even without a real time WMS most of the information can be periodically downloaded to a laptop or cell phone and analyzed on a daily basis. The same accelerometers that monitor the mechanicals also monitor the driver. If the truck hits something solid there will be no question about who did it and using RFID technology the load that was on the forks can be checked for hidden damage before your customer files a claim.

Taking this to a higher level many vendors exhibited semi and fully autonomous vehicles. The first one that I can remember was Mac Barret's 1956 Oldsmobile convertible that would follow the oil stains on the highway. At this show robotics was front and center. The simplest systems provide a way for the vehicle to get from point A to point B without an onboard driver. A higher level of automation enables the load to be picked up and dropped without human intervention and using "machine vision" this can be performed anywhere in the building or in a highway trailer. By sensing the exact locations of empty and full spaces pallets can be transported and stored strictly under the direction of the WMS and implemented by on board sensors and computers. As self-driving automobile hardware and software is implemented prices and features will filter down to the considerably simpler warehouse environment. It's a trend to watch for productivity improvement and cost reduction.

Automatic Storage and Retrieval (AS/R) equipment has been at materials handling shows since around 1960. This show was no exception, but the equipment has gained sophistication while becoming more adaptable. The concept is to bring the materials to the worker instead of sending a person and their equipment throughout the warehouse. Fixed cost is still relatively high and flexibility somewhat limited. A major focus is now on optimizing storage location algorithms to add efficiency at minimal additional expense. A few of the more sophisticated WMS even have a built in program to support this. For Fastener Distributors with a structured environment there is merit in

at least considering these systems, but adding an active counter, unstructured rush orders and other complications might dictate the decision process. It is also tough to lay off equipment in a recession.

One of the biggest changes to this show is the sound level. Even 20 years ago things went click, clack, bang and an occasional boom. Mobile equipment and stationary conveyors are far quieter than ever before. Specialty plastics, better bearings and quieter motors have cut the decibel level tremendously. It is possible to walk past a booth and not even notice that something is running. Take a moment the next time you are in the warehouse to stand still and listen. High sound levels and distinctive equipment are now on the endangered species list. Any new equipment should be evaluated by this new criterion.

Storage Equipment Evolves Slowly

Usually I walk into a booth and ask, "What's new and different?" If the reply is along the lines of "We have added a new color." It's time to move down the aisle. For the most part this show was no different but the answers came in a multitude of International accents. Foreign vendors have found that commodity products with high density and long procurement lead times such as shelving opens the door to the US market. For pallet racks that are shipped unassembled the price of steel is balanced against the expense of ocean freight. Things are still stacked against domestic manufacturers unless they have invested heavily in robotic and semi-automatic equipment. There were no really new designs in this product line.

There were many vendors showing plastic bins, totes, pallets and pallet boxes. Most of this was as familiar as other storage equipment. Plastic formulations and forming methods are evolving to meet fire safety and durability goals but externally it's strictly color availability. One exception was Drader Manufacturing of Canada (www.drader.com) who exhibited a line of narrow (approx. 6" wide x 8" high) plastic bins sized to fit the width and depth of pallet racking, up to 48". For those with fairly light, small products that might be comingled with larger related items this solution has a lot of potential. It would work even better if the shelving and pallet rack manufacturers got their act together to create new sub dividable storage products that will take full advantage of this flexibility.

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The WHEN

Once the where question is settled - the When question is close behind. The obvious considerations of work, family, and social conflicts must be balanced against the fact that you will be on a motorcycle and will be exposed to the environment. Timing decisions resulting from the WHEN question have consequences to be sure. On last years, "National Parks Tour ride" because of work and personal schedules, I would start my ride in mid-June and end by late June which meant it was going to be a close call as to whether "The ride to the Sun" in Glacier National Park road would be open (Snow) when I was going to be on it. Turned out I missed the opening by 4 days which meant instead of riding 20 miles through the most beautiful part of Glacier National (the Ride to the Sun) into Canada. I had to ride 3 hours out of the way in 45-degree rain. I knew this could happen but there wasn't time later in the summer that would work. The side benefit was that the parks were not nearly as busy as they are in July and August. Moral of the story is that the "When question" can have both positive and negative consequences. Considerations for traffic, wildlife, temperatures, road conditions, events, and hotel availability should all be considered as part of both your When questions and Route questions.

The HOW or Route Decisions

After the when & where are settled the route decisions start in earnest. As you can imagine there are a million ways to slice the "route" carrot up. 2015's Principalities of Europe (here to fore referred to as the "POE" trip). The "where?" was a Continent, which is

not very specific. I typically have some theme/rhyme or reason to my trips. On the POE, I wanted to hit as many of the Principalities/city states in Europe as I could, so my route was governed somewhat by the location of the principalities. I chose Amsterdam as my starting point because it is a cool city and contains one of my favorite of favorite Irish pubs - Hoopman's Irish pub and because Amsterdam is also an easy one day's ride from Luxemburg (my first Principality).

I will admit, I have never laid out an initial route and didn't change it at some point. As you start to get into the details you often hit some reality checks along the way. This happens both in the planning phase, as well as, during the trip itself. The initial route for the "Cajun - Parrot" ride was to be Wisconsin to New Orleans - to Key West - to Yardley Pennsylvania (via the East coast) then back to Wisconsin. However, problems with my bike required me to come back to New Orleans to drop off a rental. Thus, I had to eliminate the entire east coast portion of the trip. As I mentioned earlier, the fun part

of planning the "where and route" parts of trip planning is to stand in front of my wall map and let my imagination go. Almost immediately my mind starts trying to write checks that my time allotment can't cash! Last years "National Parks Tour" originally included stops at Mt. St. Helens, Mt. Hood, and the Great Salt Lake. Once I tracked the mileage and time required to include these stops the trip would have exceeded 7,600 miles. Heck Alaska was only 7,000 miles. The good part of excluding those stops is that I can make it part of a future trip that covers the entire west coast, thereby conquering yet another "Where question"!!



GENERAL FIELD IS IN BRITISH COLUMBIA FROM THE "ALASKA BUCKET LIST RIDE"



SAN MARINO IN ITALY LOOKING BACK DOWN OVER THE APENNINE MTS.

distributornews

UNICORP Electronic Hardware is proud to announce the hiring of our new manufacturer's representative, Craig Cooper of Westerra Marketing. His territory will include Oregon, Washington, Idaho, British Columbia, and Alberta. We want to welcome Craig to the Unicorp sales team!

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ROTOR CLIP WINNERS OF THE 2017 RING-A-MAJIG CONTEST *from page 38*

Cash prizes will be awarded as follows: 1st place: \$500 (USD) to each team member; 2nd place: \$250 (USD) to each team member; 3rd place: \$125 (USD) to each team member.

Rotor Clip is also hosting the 1st place team at their Somerset, NJ Headquarters where the team will have the chance to tour our facilities and meet the contest judges. Additionally, the team will be present at Rotor Clip's booth at this year's Atlantic Design and Manufacturing Show - New York in June to show and discuss their design with visitors.

Through its affiliation with ATMAE, Rotor Clip's goal is to support education in STEAM (Science, Technology, Engineering, Arts, and Math) through programs that expose students to "real world" situations and encourage

them to pursue careers in manufacturing.

Four degreed mechanical engineers from Rotor Clip served as judges for the contest. They viewed the five finalist's presentations and selected the top three winners.

Their selections were based on the following criteria: originality and creativity; application of sound engineering principles as they apply to retaining rings; complexity and functionality of the design; quality of the design presentation.

Congratulations to the winning teams and thank you to all students and advisors who participated in this year's contest.

Rotor Clip will be holding a 2018 "Ring-A-Majig" contest. Details will be released this fall. 

ROTOR CLIP COMPANY INC.

BART BASI THE POTENTIAL TAX EFFECTS OF THE AMERICAN HEALTH CARE PLAN *from page 42*

Medical Device Excise Tax - A tax was supposed to go into effect January 1, 2016 for qualified medical equipment. The tax is 2.5% and is now delayed until after the 2017 tax year. The AHCA would repeal the tax entirely⁷. While there is plenty of thought on it, the Medical Device Excise Tax may never make it into effect because it is so unpopular, nobody wants it.

Excise Tax on Tanning Services - This is a 10% tax on tanning services. What's interesting is that the number of excise tax filers did not go up as expected. In fact, the IRS was expecting at least 500,000 new excise tax filers, yet only 20% of that ever materialized. The bill repeals the tax⁸.

Health Insurance Provider Fee - This is a fee imposed on health insurance providers, but has been delayed until 2018. The AHCA repeals this fee⁹.

It is also important to note that the current state of the AHCA would allow separate pooling of those with preexisting conditions. Under an amendment an

exemption was in place for Congress regarding this, but that has been closed.

Conclusion

This information is current as of May 8th, 2017. However, if it were to be enacted, it is important to know these proposed revisions, and any changes that may be made. It is apparent that regardless of how the current health care law is modified, it is going to have a tax impact on individuals and businesses across the U.S. The Center routinely advises on these matters, as well as business succession and valuations of companies. If you have questions, please call us at 618-997-3436. 

¹ www.cbsnews.com/videos/senate-to-craft-its-own-health-care-bill/

² H.R. 1682 115-52 Section 205

³ H.R. 1682 115-52 Section 206

⁴ H.R. 1682 115-52 Section 251

⁵ H.R. 1682 115-52 Section 214

⁶ H.R. 1682 115-52 Section 111-112

⁷ H.R. 1682 115-52 Section 211

⁸ H.R. 1682 115-52 Section 231

⁹ H.R. 1682 115-52 Section 241



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CONGRATULATIONS TO SEFA'S SCHOLARSHIP WINNERS by Nancy Rich

The Worthy Recipients

At the Spring Conference, 2017 SEFA Scholarship winners were announced:

\$4,000 Slater Jones Memorial Scholarship

Caroline Parker sponsored by Vulcan Threaded Products

We thank the Slater Jones Family for funding this scholarship which will continue for the next few years. Their generosity during a tragic time is greatly appreciated.

\$2,500 SEFA Scholarship

Jacob Neugebauer sponsored by Cigar City Fasteners

\$1,500 SEFA Scholarships

David Harrison sponsored by Falcon Fastening Solutions

Allie Mouton sponsored by Drillco Cutting Tools

Laramie Grace Fincher sponsored by Fastener Supply Co.

\$1,000 Em Web Memorial Scholarship

Brandon Hess sponsored by Millard Wire & Strip Co.

\$1,000 Gilchrist Foundation Scholarship

Abigail Paskey sponsored by Ken Forging Inc.

Companies Join SEFA

SEFA is pleased to announce these additions to their membership:

Diversified Metals, Inc.

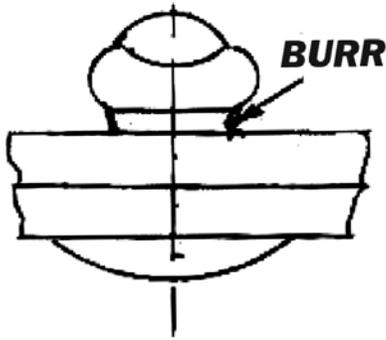
Monson, MA

M&M Construction Supply, LLC

Rainbow City, AL

Unique Industries Inc.

Calera, AL 



When the mandrel head travels the length of the rivet barrel and stops at the flange of the blind rivet, the short mandrel length under the mandrel head will extend outside the flange of the set blind rivet. This condition is called “mandrel protrusion” and is very dangerous if a person’s hand contacts the protruding mandrel.

The clamping force of the set blind rivet is never reached because there was no clamp load applied to the work pieces that are riveted. The blind rivet expanded in a radial direction, rather than a downward clamping force. This poorly riveted assembly will not have good shear and tensile values of the riveted components.

occur on the upset side of the work where the blind rivet upsets against the work piece. When a blind rivet is set and the upset side of the blind rivet is set against a burr, the burr will cut into the blind rivet upset and crack the upset side of the blind rivet. This condition gives a very poor tensile strength to the application because the upset side of the blind rivet is cracked or fractured by the burr at the circumference of the hole in the work piece.

Work Thickness

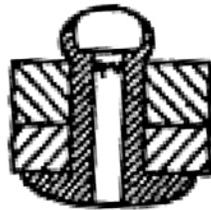
The correct blind rivet grip range must be used when components are to be riveted together and you must know what the total thickness of your blind rivet application.

If you use a blind rivet that is “too long” for your application, you will have a very long upset side of the set blind rivet.

If you use a blind rivet that is “too short” you will have a very short upset side of the set blind rivet and the mandrel head will not be captured in the upset side of the set blind rivet.



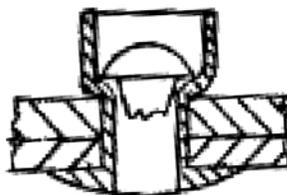
TOO SHORT



CORRECT LENGTH

Both of these conditions are not acceptable in blind riveting and must be avoided by just knowing the total thickness of your components to be riveted and select the correct grip range blind rivet. ☺

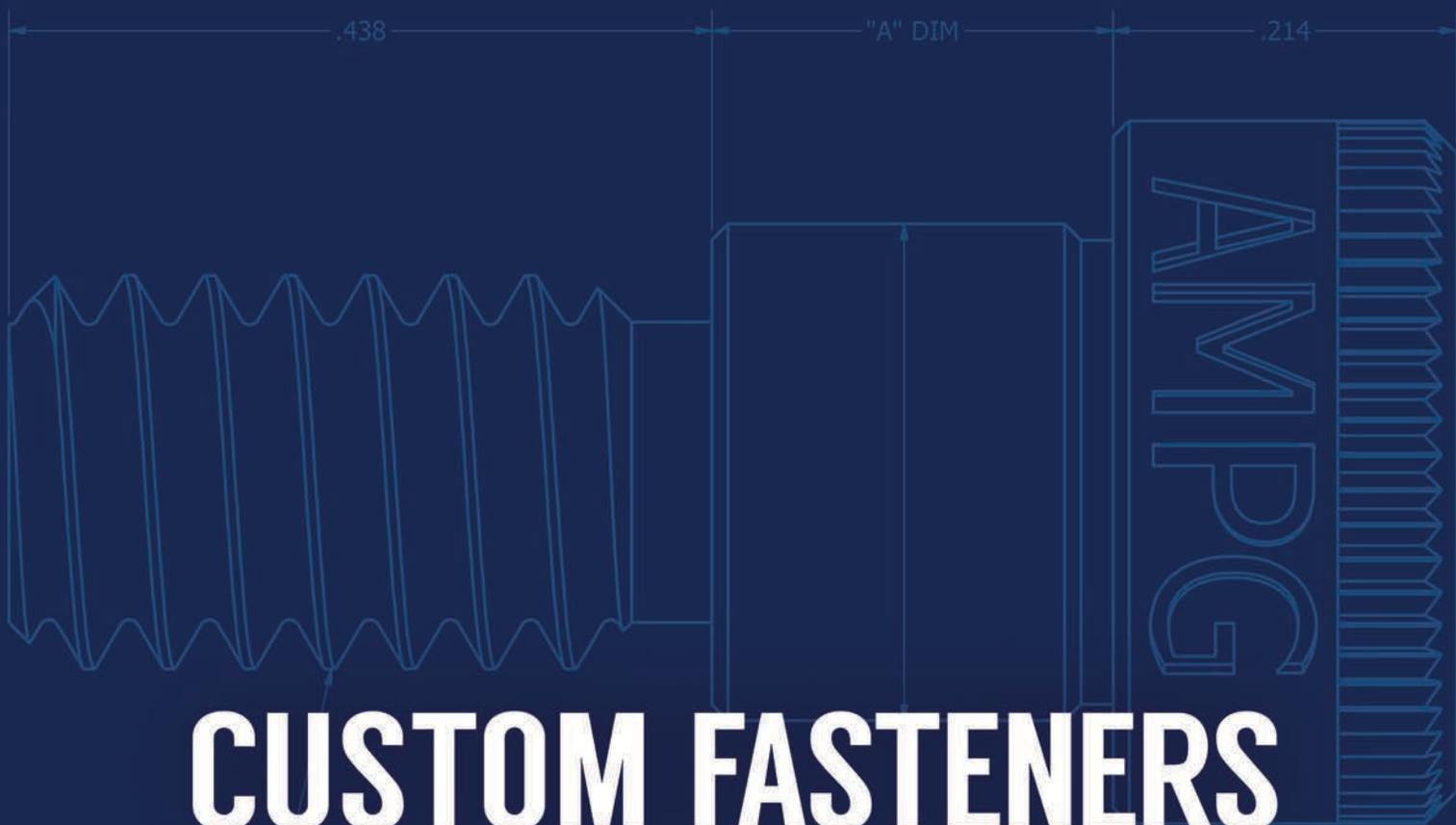
Another condition that the hole in a work piece must have for a good blind riveted joint is, no burrs in the hole. Burrs are formed by using a dull drill or dull hole punching tooling. More burrs



TOO LONG



CORRECT LENGTH



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The Golf Outing was a very successful event, which provides funds towards industry education and college scholarships.

MWFA appreciates the time and efforts put forth by the Golf Committee: Rich Cavoto (chairman), Wayne Wishnew, Brian Christianson, Bob O'Brien, Matt Delawder, and Ross Shepard.

With this being a very popular event in the industry, mark your calendars now to join MWFA June 5th for the 2018 MWFA Golf Outing. 



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At the beginning of May the Trump Administration released its tax reform proposal which parallels the plan already out from the Republican majority in the House of Representatives which Speaker Paul Ryan and his cohorts labeled the “Better Way” plan. It seems likely that some merging of the two plans could be very likely by late summer.

The National Association of Wholesaler-Distributors said in a report that the chances for meaningful tax reform are greater now than they have been in decades. The National Association of Manufacturers echoed this and called for a strong and permanent research and development incentive and strong capital cost recovery rules. The U.S. Chamber of Commerce introduced their “Principles for Tax Reform” which are generally consistent, with some variations, with the other business associations’ proposals.

Key Elements Being Discussed

- A lower corporate tax rate, with the House proposal targeting 20 per cent
- Top individual tax rates at 33 per cent
- Separating business pass-through income from regular individual rates and capping that at 25%
- Full first year expensing of capital investments
- Retention of LIFO (last in, first out inventory treatment)
- Elimination of business interest expense

- Border adjustable, destination-based cash flow taxes to encourage domestic business growth
- Easing the effect of the Alternative Minimum Tax on middle income filers who have fallen into this category due to the effects of inflation over the years.
- Transition rules to allow businesses to adjust to elimination of some special tax breaks given up in return for the lower rates

On top of these specific proposals there is a call for reducing the information and statistical material which small businesses are required to send to the IRS. This would lessen the instances in which 1099’s and other filings are required.

No doubt opposition will arise from those who see this as too heavily tilted toward business. But if we intend to keep on the upswing with increased employment opportunities and inducements to entrepreneurs to try their luck at starting businesses this is where we must begin. Tax reform cannot help individual taxpayers who do not have meaningful and well paid employment. Such jobs can only come about in an environment which is supportive of business. Funds are going to be needed to support the investment in infrastructure spending for which the President is calling. Tax cuts without serious incentives for overall revenue growth will not generate the additional revenues needed to get held of the growing government debt. Comprehensive reform which stokes the engine of business growth seems like the only real solution to our budget limitations and the needs of our society no matter which side of the political aisle a person is on or where they stand in the debate on economic inequality. The resources can only come from a growing economy and flourishing private businesses. A workable tax reform which creates that is the only plausible solution. 🍷

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NIFSME RAISES THE BAR EVEN HIGHER FOR 2017, PROVING IT IS "THE" FASTENER EXPO from page 54



If you're thinking of becoming an exhibitor, space is running out quickly. You won't want to miss out on your opportunity to exhibit alongside heavyweights **Brighton Best, Lindstrom, Stelfast, INxSQL** and **Industrial Rivet & Fastener Co.**

We are happy to announce our exhibiting newcomers to The Fastener Show **Chemetail, Valbruna Stainless, Whitford Worldwide, PPG, Sacma Group** and **Campbell Hausfeld.**

There's even a newly added VIP Attendee Acquisition team, and they've secured these leading companies at NIFSME already **Grainger, Wesco, Fastenal, HD Supply** and **MSC Industrial Supply.**

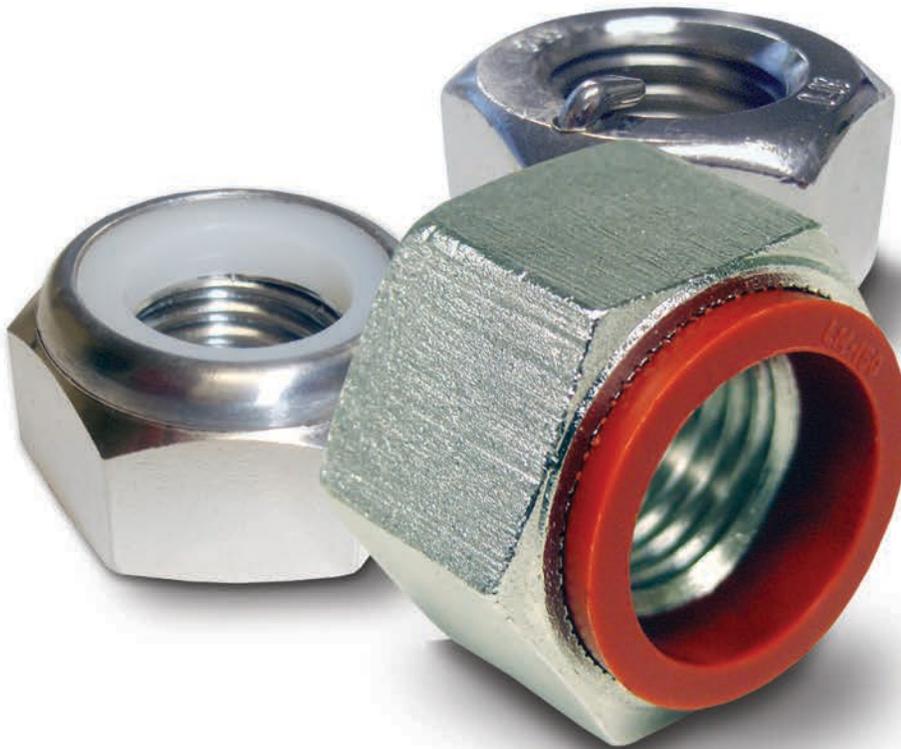
In addition to a great group of 5,100+ attendees, a brand new state of the art facility, and all the customs and traditions you've come to expect from the largest fastener show, NIFSME has three BIG announcements coming out next month, as soon as organizers have confirmed all the details. For now, all they can say is that they are pulling out all the stops to make this the biggest and the best business getaway of the year.

"The new format for this year's show isn't just good for attendees, it's really great for the industry as a whole. With suppliers wanting to enter the international scene, it's more important than ever that we provide the tools necessary for them to remain competitive on a global scale. This year we're bringing that burning issue to the forefront," says Karalynn Sprouse, EVP for Emerald Expositions, the company responsible for organizing the annual event.

For more information about how to attend, visit fastenershow.com. For exhibitor booth availability, email morgan.wilson@emeraldexpo.com. 



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SPIROL THE IMPACT OF CLEARANCE ON THE SHEAR PROPERTIES OF COILED SPRING PINS *from page 56*

The selected pin is a standard CLDP .250 x 2.500 LBK, or light duty, high carbon steel Coiled Pin with 'dry to the touch' corrosion inhibiting oil finish. This pin provides sufficient length to allow testing with various clearances.

A standard square ASME B18.8.2 shear block (Figure 2) was used with an Instron Model 3384 for all testing. Two different size washers with an average thickness of .072" (1.83mm) and .120" (3.05mm) were used to increase the spacer distance, and the shear block plunger was centered between the support fixtures. As previously stated, the maximum distance between the shear planes should be .005" (0.13mm) to avoid bending of the pin.



LIGHT DUTY COILED PIN

imperative to review both the fracture surfaces of the failed pins as well as the actual host components into which the pins were installed. It is not uncommon for the host components to have features not specified on the drawing that introduce clearance. The root cause can accurately be determined only when reviewing all components in the application.

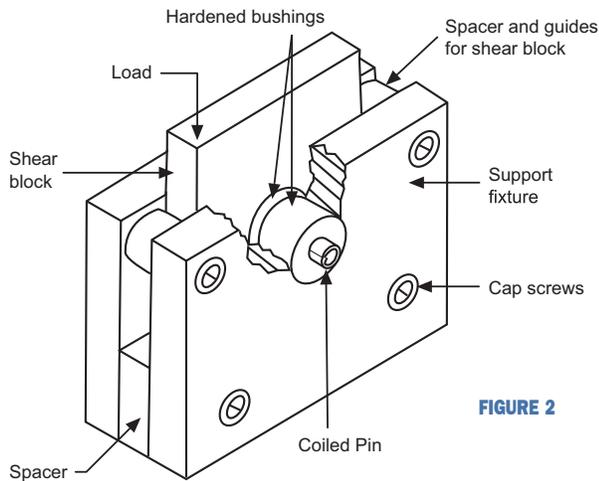


FIGURE 2

TYPICAL PIN SHEAR TEST FIXTURE PER ASME B18.8.2

Visually there is a significant difference between pins failing in bending as opposed to shear. As shown in Figure 3A, pins failing in shear demonstrate fracture in one plane. While the coils are deformed, they appear flat with the outside collapsing in one direction. Figure 3B shows a pin tested with a .120" (3.05mm) gap. In this image, bending clearly occurred as visible from the curvature leading to the fracture surface.

Additionally, the fracture surface is not along one plane but exhibits failure differently at each coil. It is

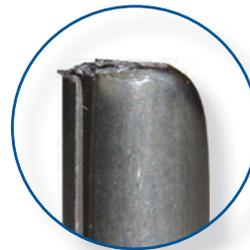


FIGURE 3A

THE FRACTURE SURFACE OF A COILED PIN IN SHEAR SHOWS FAILURE IN A SINGLE PLANE



FIGURE 3B

THE COILED PIN IN BENDING HAS CURVATURE ON THE OUTSIDE LAYER AND A MULTI-PLANAR FRACTURE SURFACE

Thirty samples of each condition were tested and the summary of results is shown in Table 1. Data aligns with the theory that clearance reduces maximum force at fracture. An interesting observation was the smaller change in force occurring between .072" (1.83mm) and .120" (3.05mm). Force required to fracture the pin dropped 18% or around 800 lbs. (3.6 kN) when increasing clearance from .005" (0.13mm) to .072" (1.83mm), but further increasing gap to .120" (3.05mm) resulted in an additional reduction of approximately 150 lbs. (0.7 kN) totaling a 22% change.

TABLE 1: SUMMARY DATA OF FORCE (IN LBS.) AT FAILURE FROM 30 TEST SAMPLES OF CLDP .250 X 2.500 LBK

	.005" Clearance (Shear)	.072" Clearance	.120" Clearance
Mean	4,257.64	3,475.44	3,312.54
Min	4,029.39	3,340.20	3,211.69
Max	4,548.73	3,583.60	3,395.75
St. Dev	125.77	56.21	45.94

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distributornews

Bay Supply, a Division of Bay Fastening Systems, Inc. announced that it will begin to distribute the Champion Cutting Tool Corp. line of products. Including cutting tools and drill presses used in the conjunction of fasteners.

Champion Cutting Tool Corp, founded in 1897 manufactures an extensive line of cutting tools and drills. Popular brands include Brute Platinum, Champion, Proline and RotoBrute. Headquartered in Rockville Centre, New York, Champion serves many markets including steel fabrication, manufacturing, construction, plumbing, HVAC, welding and electrical.

Michael Eichinger, COO of BaySupply.Com commented, "We thought our parent company, Bay Fastening Systems, begun in 1962 history was impressive and then we found Champion, making fine quality cutting tools that complimented our line of product offerings and twice our age. We are pleased to join our histories and outstanding reputations to bring our customers of engineered fasteners and tools the finest products and service".

Lowell D. Frey, President of Champion Cutting Tool Corp said, "Over the years our headquarters were only a few miles apart and we watched each other grow. I am now pleased to have Bay distribute our fine line of products. Our customers have always been their customers and their customers ours. Both of our exceptionally long histories attest to the integrity of product and service we deliver."

Bay Fastening Systems is a leading, international distributor of rivets, Huck bolts, threaded and coil inserts and aerospace MS/NAS rivet nuts. Authorized brands include Stanley, Huck, POP, Avdel, Sherex, Marson, Gesipa, AVK, Atlas/Penn, Champion and more. Recently it launched the world's largest e-commerce engineered fastener web portal featuring hundreds of thousand fasteners and combinations, a complete line of tools, full technical information, and installation systems. Bay has a factory authorized repair division.

Champion Cutting Tool Corp, serves all 50 U.S. States, Canada, Central and South America - with cutters, drills, counter sinks, point taps, reamers, end mills drill presses and more.

For more information contact Michael Eichinger, COO of Bay Fastening Systems at 30 Banfi Plaza North, Farmingdale, NY 11735. Tel: 516-294-4100, email: info@baysupply.com or at www.baysupply.com.

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						9	1	8

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SOLUTION ON PAGE 171



ACE BOLT & SCREW CO INC AT ACE BOLT & SCREW, THE CUSTOMER IS KING from page 58

Automatic Bagging

Randy pointed out, “Reducing waste and keeping costs as low as possible is very important to us. We aim to pass on our savings to our customers, so that they can receive the highest quality products at the lowest cost possible. One of the ways we are able to do that is through the help of machinery. With our Autobag AB180 Bagging System, we are able to cut the amount of time it takes to count, bag, and label the parts we sell. The system is able to fill up to 10 bags per minute so our customers benefit greatly by receiving their bagged parts or kits in a timelier fashion.”

The Business Edge™

Randy is pretty excited about The Business Edge™ - he exclaimed, “One of the biggest steps we’ve taken with implementing new technology is the change of our computer system. In November of 2012, we made the switch to The Business Edge™. Over the last 5 years we have reaped many benefits by having a more updated and technologically advanced computer system. The Business Edge™ has allowed us to use today’s technology to our advantage and given us the tools to serve our customers even better. Systems like VMI weren’t possible until we switched. The scanners we use for our VMI customers have greatly boosted our speed and efficiency which is a huge benefit to our customers that implement the system. We basically never make a mistake because we scan the exact bin that we need to replenish. We are also able to furnish our customers with more information than ever before with the usage reports we are able to run with The Business Edge™.”

Simplifying Processes

He said, “The Business Edge™ allows us to deal with processes that we struggled with before. One of those struggles was the lack of traceability of our

products. With The Business Edge™, we are now able to trace products from the time we create a PO all the way through creating a customer’s invoice easier than ever before. Another great tool that The Business Edge™ has provided us with that simplifies sales processes is the feature to calculate all cost on a product. The benefit of easily adding freight costs to our products allows us to ensure that we are correctly charging our customers based on the true cost for their parts.”

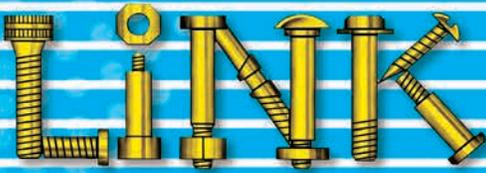
Purchasing Improvements

“From a purchasing standpoint, the technology used today with The Business Edge™ is very beneficial. The ability to access information and order online through the members of the The Fastener Supply Chain Network™ has been particularly helpful. Being able to order online from Brighton Best or Kanebridge cuts our lead time dramatically. We are able to see what parts Brighton, Kanebridge and XL Screw have on hand and where exactly they come from faster than ever before. Our customers benefit greatly by getting either their domestic or imported parts as quickly as possible. Our purchasing team is able to minimize mistakes and capitalize on time saved. This enables us to make sure that our customers are able to get the product they want at the most cost effective price.”

Multi-Branch Inventory Management

“Another cost saving technique is that The Business Edge™ provides is the ease of being able to move our inventory through the warehouse as easily as possible. One of the major concerns of having more than one branch is the complexity of transferring inventory from one branch to another. The Business Edge™ is able to eliminate that concern completely. This allows us to focus on catering to our customers and growing our business.”

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Lawyer to Manufacturer

Key was a partner in a New Kensington law firm in 1967 when a cousin, George Key, who worked for Union Spring Corp. in that city, brought two of that company's executives to see him.

The men asked Key to find a company they could buy, then add belleilles as a production line, because leaders at their company weren't interested, he said.

He arranged for them to buy the Ohio Springs Specialty division of Handy and Harman in Cleveland, and intended to buy a third of the business for \$100,000.

But his two prospective partners backed out, Key said, and he dipped into savings and stock earnings to come up with \$300,000.

Key and his cousin worked in Ohio for two years, setting up a belleille production line there.

Key Belleilles then moved to its current site, part of a 750-acre tract that industrialist Andrew Carnegie, and later Allegheny Ludlum Corp., once owned.

Key had worked with a later purchaser of that property in 1965, and invested his fee and \$15,000 to buy 100 wooded acres.

He borrowed \$100,000, and he and his father, Robert C. Key, a local home builder, built a plant in six weeks and opened it in 1969.

Key said his company made regular springs for a while, and became a distributor for another brand before making and selling its own belleille products exclusively.



Major Corporations Become Customers

One important customer was found close to home. Key approached Alcoa Corp., then with thousands of workers in New Kensington, and was invited to talk with engineers at the company's downtown Pittsburgh headquarters.

Someone asked, " 'Can you make this for 91 cents?' and I said 'Yeah.' That's how we got our first order, and we're still doing business with them," Key said, "We got into Caterpillar. We got into Alcoa. We got into GE.

"I met a lot of people who wanted to give a young person a chance."

Belleilles were supplied to a New Jersey company for work on NASA's shuttle and have been used in other space technology, Key said.

The discs are made "from the size of a dime to 3 feet in diameter and 3 inches thick" so that a million pounds of force would be needed to deflect it, he said.

In addition to Philip Key, Key Belleilles' staff includes Robert Key's brother Richard, a retired banker in Phoenix who is the chief financial officer; wife Patty, corporate secretary; daughter Kathy Brown and her son, Steve; granddaughter Jennifer Downard and her cousin Billy Key, who is George Key's grandson.

Key's office sports harness racing murals. He raises standardbred horses, and said he has about 100 horses racing now, plus 50 broodmares. 



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- 1** Volt's doors open on June 1, 1992, which was Joe's 54th birthday. He says the company was a gift to himself.
- 2** Volt was born from Joe's tool & die company, JV Tool, that he started in 1972.
- 3** Volt has 65 total employees, nearly 20 of them have been with the company for more than 10 years.
- 4** Volt houses well over 100 million parts in stock.
- 5** Volt's facility is over 65,000 square feet.
- 6** Volt can build certain tools promptly in 1-2 days, and house inventory for same day shipping.
- 7** Volt is family owned, operated & family oriented.
- 8** Volt has a real person answer every phone call, nothing is automated.

9 Volt celebrates everyone's birthday once a month with a cookout and cake for lunch.

10 Volt's most long-term employee, Jesse Patterson (toolroom manager), has been with the Volt family for over 40 years, starting at JV Tool.



11 Volt has a company pet, or canine ambassador, Sophia Volltrauer.

12 Volt is located in a small town in Arkansas, but sells all over the world.

13 Volt has a gym in the facility for their employees.



14 Volt recently celebrated it's 25th anniversary with a fun, Vegas themed party for all employees.

15 Volt derives from Volltrauer.

16 Volt's first website went live in December of 1998.

17 Volt products are 100% American made.

18 Joe is German, but loves scotch.

19 Volt has a 30 acre shooting range.

20 Volt's first trade show was in 1993 at the Columbus show in Ohio.

21 Joe Loves M&M's with his picture.



22 Heidi was 22 when she started working at Volt.

23 Volt employees receive a day off with a \$100 check for their birthday.

24 Volt got its first fax machine in 1994.

25 Volt is located in the most beautiful part of Arkansas, called the Ozarks.

voltplastics.com



VOLT INDUSTRIAL PLASTICS 25th ANNIVERSARY RIVER ROCK INN, MOUNTAIN HOME, AR - JUNE 6, 2017



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by **JOHN WOLZ** EDITOR editor@globalfastenernews.com

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LAWSON PRODUCTS POISED TO GROW FASTENER REVENUE

Lawson Products received media attention this week when the MRO consumables company CEO Michael DeCata rang the Nasdaq Stock Market closing bell on May 31. About 20 Lawson Products employees joined DeCata in the ceremony, one of many activities commemorating the company's 65th anniversary.

Like many industrial companies, Lawson Products had a humble beginning. "Our founder, Sidney L. Port, started the business selling industrial fasteners out of a small Chicago storefront, just wanting to provide for his family and help others do the same," DeCata stated in a press release.

More than six decades later, the company that Port founded is thriving. And although Lawson Products has expanded beyond nuts and bolts, fasteners still make up

21% of overall revenue. And they're more profitable than many other products the company provides, DeCata told *GlobalFastenerNews.com*.

"More profitable, in part because most of our fastener line is engineered to a higher spec," DeCata told *GlobalFastenerNews.com* in a phone interview.

DeCata said his company is looking to grow its fastener revenue through acquisitions and added sales representatives. "About 30% of the customer base of Lawson' Products most recent acquisition were "Mom and Pop" OEMs needing fasteners," he said.

And the company continues to add sales reps, all of whom spend a week in Chicago for fastener training.

"As a mechanical engineer, I used to take fasteners for granted," DeCata said. "Now I don't." 

BUSINESS FOCUS ARTICLE

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CABLE TIE EXPRESS RUNNING A MARATHON IS JUST LIKE RUNNING A BUSINESS! *from page 66*

Whether an owner, employee, or customer, there are days that begin with our goals in clear focus but end as new circumstances demand a shift in strategy, a better understanding of customer needs, or a nimble response to changes in the market. Just as in racing, the key is being prepared and “relying on our training” With a commitment to face the changing forces that come our way.

Fast forward to Mile 12 when runners begin hearing the roar of the Wellesley girls as they cheer on each runner midway through the race...deafening, maybe; inspiring, absolutely! Certainly this draws a comparison to having those in our business journey who support and fuel us as we seek to gain momentum in our career path and businesses.

A few miles later, there's the right turn at the Newtown Fire Station, the landmark, that signals the 4 hills looming in the distance, the last of which is “Heartbreak Hill.” Finally, one foot in front of the

other, it's “up and over” Heartbreak, evidence of the strength similar to persevering in our business journeys. Facing all head on and once over, there is the oasis of a downhill with six more miles to cover ahead. It's ON and I can do it!

Still charging ahead, I reach the enormous CITGO sign near Mile 25 which finally leads to the left turn onto Boylston Street for that glorious .2 of the 26.2 miles. I see the finish line, the chute, the timing clock! My heart is bursting with gratitude in being here, in being blessed with amazing people in my personal and business lives, in having the good health to run hard and strong. That's when I knew I had it – tired but summoning one last burst of energy to soar over the finish line! Crossing that stripe of blue and yellow, I realized that every finish line – whether in business or life - is also a start line, fueled by the journey and what the miles behind have taught us, and energized with a heartfelt desire to continue to grow and experience and learn and live life to its fullest. 

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CABLE TIE EXPRESS

JO MORRIS FASTENER TRAINING IS COMING TO YOU WITH CUSTOM FASTENER PRODUCT TRAINING PROGRAMS *from page 68*

Our next CFS weeklong class will be held August 14-18, 2017 in Chicago, IL. Hosted by the Mid-West Fastener Association, students will tour Semblex, SWD and SSG Msi Testing Lab. This Certified Fastener Specialist, CFS, class is our most popular program and is sure to fill quickly. Class space is limited so please register soon.

Webinars continue to grow with the Fastener Training Institute, we love that students from around the world join us every month to learn about something in fasteners. Our monthly webinars will remain on the third Friday of every month.

This Summer's Presentations**July 21 @ 11am PST**

Physical Testing for Suppliers

August 11 @ 11am PST

Fastener Tightening Strategies

September 22 @ 11am PST

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For more information about Fastener Training Institute classes email info@FastenerTraining.org or call 562.473.5373. Also, please check our website for the complete 2017 calendar, www.FastenerTraining.org.

The Fastener Training Institute's core purpose is to enhance fastener use, reliability and safety. 

CROSSWORD PUZZLE

IT'S TRIPLETS!

ACROSS

1. The Ugly Duckling, in reality
5. Deck crew boss, for short
9. Not well
12. Pinta, for one
16. White-tailed bird
17. Rhythmic dance
19. "¡Comprendo!"
20. Window covering
21. Threesome
24. Role on "Cheers"
25. Sweet liqueur
26. Long, wimpy cry of fright
27. More forward
28. Actor Scott
29. Stylish
30. Taurus
31. Goes around
34. Small-headed monkey
35. Cooking fat
36. WWII naval transport
39. Threesome
43. Easy stride
44. Yew or yucca
45. Controversial arts org.
46. Merchandise for Sale ad letters
47. Dumbbell
48. Ella and elle
49. Threesome
54. Trauma ctrs.
55. Asian nation
56. Girl in "The Little Rascals"
57. Lofty principles
58. Part of a hostess' plans
59. Actress Mazar & her namesakes
60. Wake up
61. Grant, McKinley or Harding
64. Evil one
65. Portrayer of 24 Across
66. Heat unit, for short
69. Threesome
72. Lowly laborer
73. ___-garde
74. Inlet
75. Sec. of Defense McNamara's monogram
76. Raid victims
77. Is greedy
78. Threesome
84. 1 of 4 in a deck
85. Little
86. Fleming & Hunter
87. Not as difficult
88. Wharf
89. Felt hat
90. Aftershave brand
91. Next to

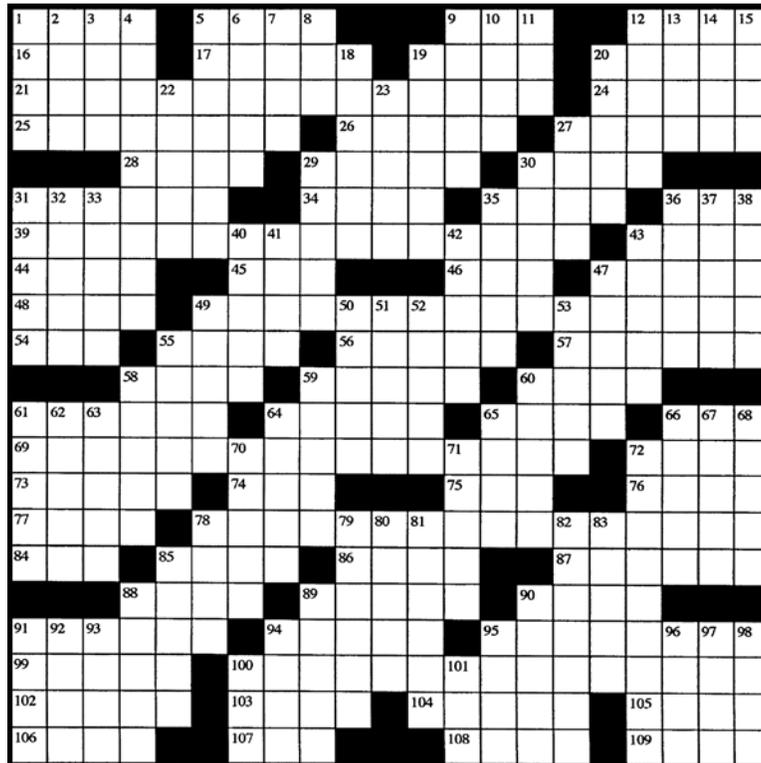
94. Late Israeli Prime Minister Meir
95. Refuse ___; remain in denial about
99. Make right
100. Threesome
102. William Bendix role
103. Steals from
104. Cone-shaped structure
105. Roarer
106. Vega or Polaris
107. Linear measures: abbr.
108. Monster's lake
109. Unconvincing

DOWN

1. Toxin antidotes
2. Songbird
3. "The King ___"
4. Up-to-date details
5. ___ Isles
6. ___ lunch; nutty
7. Pintail duck
8. Clippers' org.
9. Bit of land
10. Cancer of the blood: abbr.
11. Marvin, for one
12. "As ye sow, so ___..."
13. Difficult
14. Lounging
15. Juicy fruit
18. Lacking vigor
19. Portugal's location
20. Reprimand

22. Ledger, for one
23. Taxes' partner, in phrase
27. Cover up
29. Entree choice
30. Twirled item
31. Man-cloth connection
32. Seen less often
33. Coffin platforms
35. Mediterranean coast nation
36. Judy Garland's middle child
37. Thread holder
38. Takes care of
40. "Shame ___!"
41. Bics
42. Bread tray items
43. Recluse
47. TV and newspapers
49. "___ bet?"
50. Water-retention problem
51. Rich bigwig
52. Like saltwater
53. Bad check writer
55. Bounded
58. Complains
59. Prevent from doing something
60. Sea World performer
61. ___, Nebraska
62. Devastation
63. Picture
64. Cow farm

65. Save from peril: abbr.
66. 1974 film about a dog
67. From head ___
68. Al or Bobby
70. Hoax
71. City in France
72. Visits
78. Scalp problem
79. Gives in
80. ___ Gras
81. Like a short play
82. Loses color for the second time
83. Spring lock
85. Nightcap
88. Café
89. A and H followers
90. Top ratings
91. Taverns
92. Discharge
93. Actress Ward
94. Favorable
95. Record
96. Assam silkworm
97. School dance
98. ___ Daly
100. Endeavor
101. Mattel doll introduced in 1961



PWFA PWFA FALL CONFERENCE IN WHISTLER, BRITISH COLUMBIA AUGUST 23-26, 2017 from page 70

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Bob Nugent is a senior consultant with MAP (Management Action Programs), a business consultancy that specializes in developing solid executable corporate strategies. Bob has worked with large and small organizations in multiple industries for more than 15 years and has done extensive work applying these predictive analytic tools with great results for countless clients.

More Conference Information

We have some great social events planned for the Whistler conference, including golf, a gondola peak-to-peak experience, and a tasting tour of Whistler Village eateries for the spouses.

More information can be found at www.pac-west.org 

PACIFIC-WEST FASTENER ASSOCIATION

BRIGHTON-BEST BBI ANNOUNCES UPCOMING FASTENERS 102 TRAINING SEMINARS FOR 2017 from page 72

Congratulations to Mr. Bill Davis, whom was hired recently as product development/sales representative at Brighton Best International. Bill looks forward to the new opportunity with BBI and helping the company continue to grow. He resides with his wife and kids in Rocky River, Ohio and can be reached at bdavis@brightonbest.com



BBI has received several requests to partner closer with distribution by offering more choices in the stainless fastener arena. In response, BBI is very PLEASED to announce an EXPANSION of STAINLESS SMALL SCREW products. The addition of 18 new 410, 18-8 and 316 STAINLESS small screw families increases the total family count to 32. Check us out for STAINLESS MACHINE SCREWS – STAINLESS SELF-TAPPING SCREWS

– STAINLESS SELF-DRILLING SCREWS



Jay Gillette Branch Manager of BBI-Atlanta has now added Product Manager for Sockets/Metrics to his current duties. Mr. Gillette is currently based out of the Atlanta location and can be reached at jgillette@brightonbest.com



Congratulations to BBI's Educational Coordinator Christine Lechowicz for becoming a Certified Fastener Specialist from the Fastener Training Institute.

Finally, BBI's Minnesota location has moved to 21010 Commerce Blvd., Suite B Rogers, MN 55374 for more information about the move, you make contact Jason Branca at minnesota@brightonbest.com. 

distributornews

Nelson® Fastener Systems, the pioneer of critical fastener systems technology and engineered components worldwide, has appointed Gerry Feltmate and Al Zerbini to lead managerial positions at Specialty Bar Products™ Greenville, SC/ Blairsville, PA as well as TOG Manufacturing® in North Adams, MA.

Mr. Feltmate has assumed the position of General Manager for the 3 facilities. He is a graduate of McKeesport Technical Institute from the Engineering Department and had held various engineering and managerial roles with Union Switch, Bethlehem Steel and GE Transportation. For the past 12 years, Mr. Feltmate has held supervisory roles with increasing responsibilities while working at Specialty Bar Products.

Mr. Zerbini has taken on the role of Financial Director for the 3 facilities. He has held positions consisting of Operations Accounting, Financial Analysis and Controller. Previous employers include F. B. Leopold and the 'Greensburg Tribune'. Mr. Zerbini has a BSBA in Accounting Management from the University of Pittsburgh.

Feltmate and Zerbini will work to establish centers of excellence to drive performance and growth at these business units.

Nelson Fastener Systems is pleased to have these two fine individuals advance within the organization and wish them success in their future with Nelson.

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MWFA FBI ADDRESSES MWFA: CYBER THEFT-AN ISSUE THAT NEEDS TO BE TAKEN SERIOUSLY *from page 78*

Cyber theft is not just a business issue but also a personal issue. Families need to protect themselves also. Close cameras and computers when not in use, compress files (it removes information), turn off Internet switch on computers, close ports not necessary for home or business. Showing locations on what is posted on the internet can lead a kidnapper to a child is one example of the dangers to families.

To reduce risks companies can send out test emails to see if employees open them. Zipping files introduces viruses. Suspicious emails or attachments should never be opened. Beware of Spear phishing, which is an email-spoofing attack that targets a specific organization or individual, seeking unauthorized access to sensitive information. Spear-phishing attempts are not typically initiated by random hackers, but are more likely to be conducted by perpetrators out for financial gain, trade secrets or information.

There are also Drive bys which go to a website, hit and redirect information compromising it. Ransom wares

will get your information and then ask for money to not send it out. Yes, your computer info can be held ransom.

It is safest for companies/individuals to assume compromise and have cyber insurance. There is intrusion detection software and Remote Desktop Protocol (RDP) which should be implemented. Use longer passwords for more safety. Phones can also be used to extract information. We could defeat this issue by going back to typewriters but that is hardly going to happen in today's world. It is important to have an Intrusion Response Plan.

It is important to take all safety measures possible as a cyber theft can be very costly as well as kill a business.

MWFA Welcomes New Members

ITW Shakeproof Industrial Products

Broadview, IL

Wafios Machinery Corp.

Branford, CT

MWFA Scheduled Upcoming Events

August 14th-18th

Fastener Training Week

Belvedere Banquets, Elk Grove, IL

September 14th

Print Reading Seminar

Dinner Meeting, Minnesota

October 5th

Education Seminar

November 9th

Scholarship Awards, Elections Dinner Meeting

Belvedere Banquets, Elk Grove, IL

December 14th

Holiday Party

Medinah Banquets, Addison, IL 



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Thank you also to Star Stainless Screw for also donating towels for the golfers and the hole contest prizes! It is the great participation and generosity of the members that makes this event such a success.

Attendees were great in purchasing mulligans and raffle tickets allowing the association to collect funds for additional scholarships. This annual event always creates excitement among the members and great support. We thank everyone who participated in the success of the 2017 NEFDA Scholarship Golf Outing.

The 2018 Scholarship Golf Outing will be on June 7th.

2017 NEFDA Calendar of Events

Fall (TBD) - Dinner Meeting

December 6th - Holiday Bowling Party

Foxwoods Resort & Casino

New Members to the NEFDA

NEFDA is pleased to welcome the following new members:

Callahan Inc.

R.W. Rundle Associates, Inc. 

NEFDA 29th ANNUAL SCHOLARSHIP GOLF OUTING OAK RIDGE GOLF CLUB, MA - JUNE 1, 2017



WOMEN IN THE FASTENER INDUSTRY

PO Box 242, Northvale, NJ 07647

EMAIL events@fastenerwomen.com WEB www.fastenerwomen.com

WOMEN IN THE FASTENER INDUSTRY ANNOUNCES NEW SPEAKER FOR NIFMSE



“Working with the World” is the title of the presentation by Lanie Denslow, author, speaker and trusted advisor on how culture shapes business practices and business protocol around the world.

Her presentation at the National Industrial Fastener & Mill Supply Expo on October 17, 2017 is in conjunction with WIFI’s Fall annual meeting. The event that is open to members and non-members, both male and female.

In today’s global business environment technical expertise isn’t sufficient to create success. One must also be able to build effective relationships. That process is complicated when we engage with clients, partners, suppliers from around the world. Their backgrounds, cultures and approach to doing business may vary from ours. When those differences aren’t understood mistakes and missed opportunities can result. This presentation will expand attendee’s ability to recognize cultural differences and how they may occur in business activities.

At the conclusion of this interactive program participants will be aware of:

- The key characteristics of cultural groups found around the world

- Why taking time to share a meal may be more valuable than time spent reviewing a contract
- Three points to consider when selecting a business gift
- The subtle messages of a handshake and other greetings
- How differing views of views of time and styles of communication can create critical misunderstandings



Lanie Denslow is the author of *World Wise: What to Know Before You Go* and co-author of *Working With Americans*, both internationally recognized for their practical insights regarding how culture influences business.

As the Founder of World Wise Intercultural Training & Resources, Lanie has conducted seminars for global business leaders and organizations throughout the United States and in Germany, England, China and Russia.

Lanie is the immediate President of Protocol & Diplomacy International, and holds both an M.B.A. and Masters of International Business Degree from Pepperdine University.

Visit www.fastenerwomen.com and follow WIFI on social media for the most up to date information about WIFI’s upcoming events and opportunities. 



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NCFA NCFA'S 9th ANNUAL DISTRIBUTOR SOCIAL - CLEVELAND'S PREMIER NETWORKING EVENT! *from page 88*

Visitors from multiple states came to Cleveland for the event and it continues to attract people from every level of management. The NCFA Distributor Social continues to attract a nice mixture of decision makers and people who work in the trenches day in and day out. It is a great place for suppliers to visit with distributor personnel from owners to salespeople to buyer and expeditors to people in sourcing.

We appreciate all of the support from our supplier sponsors for making this event possible. A special

“thank you” to the bar sponsors, including Brighton-Best Intl, who sponsored the entire outdoor bar area. “Thank you” to Emerald Expositions for donating a Coach Purse and Tequila set to raffle out to raise \$ for the NCFA Scholarship Fund. “Thank you” to Macks Brooks, Tri-C and Emerald Expositions for taking the time to speak to our group. A huge “thank you” to all of our guests for making this year’s Distributor Social another suc-cess!! Although a confirmed date has not been set for 2018, you can be sure your NCFA Executive Board is working hard to make it better than ever!

NCFA Screw Open Golf Outing

Mark your calendars for our next event, the NCFA Screw Open Golf Outing on September 7th. This event is open to non-members and you don’t need a complete foursome to play. Individual golfers will be accepted. Additional information will be posted to our website www.ncfaonline.com as the date approaches. 

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Applying this load S_p to a fastener must result in no change in the original length. In daily “fastener slang” the term Proof load is often used which could be confused with Proof stress/Rp0.2.

If we compare the curves for 8.8 (Grade 5), 10.9 (Grade 8) and 12.9 (Alloy), they develop in a similar way, but we notice two distinct differences. First, the curves get shorter the higher up in strength we go. That means that the elongation gets smaller with stronger fastener classes. Secondly, there is a much quicker path to fracture – giving us limited time for reaction. So, the real question would then be - how much of the fastener strength should we use?

I mentioned initially some variables associated with adjusting our driving to the traffic conditions. We must do the same when designing bolted or screwed joints. But, how do we go about doing that? In the textbooks used in engineering classes at our universities, some authors make suggestions like – use 75 % or yield – use 75 % of proof – use 80 % of yield – and so on. These numbers may or may not (most likely scenario) be what will make a bolted joint work properly. It is just some guess work by people who probably never held a wrench in their hand. We can compare that simplified approach to driving 55 mph (legally) on a very icy and curvy highway in heavy fog, no head lights and with worn tires.

By the way, most modern joint design actually start out at S_p (about 90 % of Rp0.2), but with a very tight control and quantification of important variables. The following are some of the variables we must consider, they are not listed in order of importance which will change depending on the joint.

- [1] Joint geometry and materials
- [2] Accuracy of tightening tools
- [3] Loads directions (axial, shear or comb.)
- [4] Load losses due to joint relaxation
- [5] Torsional stresses when tightening
- [6] Fastener choices (types, strength)
- [7] Temperatures in service
- [8] Fatigue or endurance limits
- [9] Corrosion

Let's take a brief look at some of these points:

Joint Geometry and Materials

This should always be the starting point for joint design. If we are using a Socket Head Screw to assemble parts of aluminium (Al), we may not be able to use more than 20-25 % of the fastener capacity. If we follow the text book suggestions of 75 % or more, it would be like putting an elephant foot on a cheese cake. Not a good start! Instead, we should always look at the ratio between the clamping parts and the clamped parts in terms of stiffness. A good rule of thumb is to have the joint stiff and the fastener flexible. That will give us a predictable trip down the road and will likely prevent too much of load losses in service.

Tightening Tools and Accuracy

Even with the most accurate and sophisticated (also most expensive) tightening methods like yield point control, ultrasonic measurements and strain gages we will still have a tension scatter of about +/- 5-12 %. A well calibrated torque wrench will result in about +/- 20 % scatter in tension. That would give us a tightening factor of 1.5 (ratio between +20 % and -20 %) which is pretty much what most modern assemblies would be tightened at. Avoid using torque charts, unless you have made the chart yourself with real numbers for thread friction, bearing area friction, bearing area size, thread pitch and preload force.

Load Losses Due to Joint Relaxation

All bolted/screwed joints will see some relaxation (= load losses) after they are assembled and up into service. How much depend on factors like number of interfaces, surface conditions (coarse or smooth) and force directions. A well designed steel joint could still have a short-term relaxation (loss of clamp load) of 10-15 %.

Torsional Stresses

When we tighten a bolt/screw in the nut or blind hole, the friction between the internal and external threads will cause the fastener to twist slightly. This twisting introduces a torsional stress in the fastener which is lowering its capacity to carry axial loads.

distributornews

Sherex Fastening Solutions, a global leader in engineered fasteners, tooling, and automation, is pleased to announce the launch of a new wedge locking washer product line.

"The TEC Series product line adds another fastening solution to our portfolio, continuing our 35 year tradition of developing innovative, lowest total installed cost fastening solutions for our valued customers," says President Adam Pratt, "TEC Series washers are a high quality, high performance, cost-effective solution to the challenge of securing joints that experience severe vibration and load."

Sherex's March 2016 acquisition of Disc-Lock International, the originator of wedge locking technology, laid the foundation for the development of the TEC Series product line. Sherex leveraged its world-class R&D team, global manufacturing capabilities, and seasoned technical sales professionals, to build off of the Disc-Lock technology to develop this new product line.

This launch is the first step in a multi-year development program, and comes from a technical team with over 100 years combined experience in the development and sale of wedge-locking technology.

TEC Series washers were tested extensively on Junker vibration machines throughout the development process, and consistently protected joints under severe vibration and load. "We are thrilled to report that TEC Series washers meet or exceed the performance of current offerings in the marketplace," says Pratt.

TEC Series washers will be stocked in strategic locations throughout North America to provide short lead times to customers.

TEC Series washers are available in standard and large outer diameter styles in carbon steel and stainless steel, in sizes from M3 (#5) through M72 (3"). Sherex's engineering and technical sales team is available to custom design products with special dimensions, materials, and coatings.



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Sherex Fastening Solutions is a global manufacturer with a unique market approach in engineered fastening solutions. We combine fasteners, tooling, and automation to deliver the best solution at the lowest total installed cost. Sherex manufactures products for the Automotive, Aerospace and Defense, Agriculture and Construction Equipment, General Industrial, and Heavy Truck markets.

With locations in the USA, Mexico, and Taiwan, Sherex products are manufactured to the highest quality standards in accordance with TS16949 and AS9100 certifications and ISO 9001:2008 accreditation. Sherex Fastening Solutions leverages engineering capabilities to meet customer specific needs and provides exceptional customer service and support throughout the sale.

For additional information on any of the Sherex brand fasteners, tools, and automation please contact Sherex at 1-866-474-3739 or visit our website at www.sherex.com.

As Figure 3 illustrates, as bolt strength increases, the ability to stretch the bolt and thus achieve greater joint tension also increases. Unfortunately increasing bolt strength does not come without a price, and, as Figure 3 illustrates, as the bolts/screws become stronger they also become more brittle. This relationship adds an additional level of complexity as it often forces special care to be taken during installation to prevent fracture during installation.

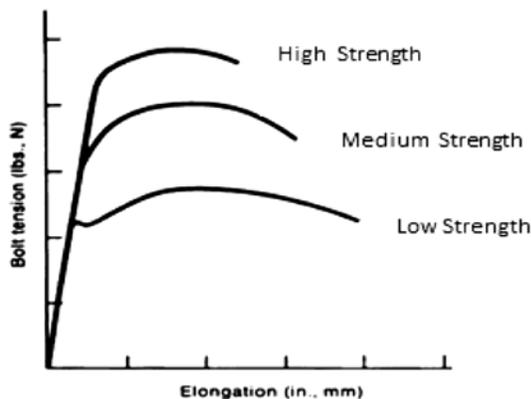


FIGURE 3: BOLT STRENGTH VERSUS ACHIEVED TENSION

In fact, many fastener failures occur for this very reason. If the bolt/screw is overtightened, in other words is tightened past its yield point (where the bolt/screw starts to permanently stretch) it is vulnerable to an overload failure and the bolt/screw breaking. On the other side of the coin, if bolts/screws are under tightened the joint may not have sufficient tension to overcome applied service stresses and becomes vulnerable to progressive failures such as fatigue.

In all probability, anyone that has ever tinkered around their house or garage has learned these lessons the hard way. Our natural inclination is that “tighter must be better” and so we give the bolt/screw one final twist with the wrench only to come away surprised that we are now staring at two bolt/screw pieces. An often tragic example of this phenomenon can be attributed to wheel separations from large trucks. In 1992 the National Safety Transportation Board (NSTB) conducted a study of wheel separations in the US from large trucks

and trailers. They found that there are between 750 and 1000 of these events every year, or somewhere between two to three per day. Their study went on to conclude that the vast majority of these separations could be attributed to improper tightening of the wheel fasteners. Interestingly because of the physics of the forces acting on the wheel studs and nuts, when the wheel is loose, the left side nuts spin off while the right side studs eventually succumb to reverse bending fatigue and break. In either instance, the results can be catastrophic when a loose wheel results in or contributes to an accident, such as one that recently occurred on an Illinois highway when a truck swerved to avoid the separated wheel from another truck, losing control, and resulting in a deadly, multiple vehicle accident.

Fundamentals of Metals

Now that we understand the basic concepts of a bolted joint and how a properly tensioned joint averts failures, let’s turn our attention to the materials fasteners are made from and gain a basic understanding how failure occurs. Materials fall into three broad categories, metals, ceramics, and polymers. From everyday experience, we possess an innate knowledge about certain material behaviors. For example we appreciate concepts like “glass is brittle” and will shatter when a stone is thrown through a window or “steel is tough” and can be made into a hammer which can strike a nail without shattering or denting the hammer head.

Although it may be hard to envision, the properties of different materials are determined at their molecular level. The atoms in metals are the quintessential team player and share their outer electrons with one another forming a sort of “electron cloud”. This is known as the Metallic Bond. This “sharing” allows the atoms to arrange themselves in regular patterns and to move easily from one location to another when a stress is applied. This behavior explains why metals are generally ductile and malleable and can be formed into many different and intricate shapes.



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The OEM market for fasteners and fixings is robust and their needs are unique so the event organizers want to make it easy for OEM buyers to discover and connect with the right suppliers. The show will also offer exclusive, technical education sessions specifically for OEM end users and their product design challenges.

In fact, Fastener Fair USA is currently inviting industry professionals to submit their proposals to participate as a speaker in our educational sessions.

For more information on speaking, visit www.fastenerfair.com/usa

Networking

Connecting and collaborating with other professionals in your industry is one of the best parts of face-to-face events, and Mack Brooks recognizes how important networking opportunities are for the fastener and fixing industry. They have recently announced the welcome reception on April 11th will take place at the Rock and Roll Hall of Fame. "This networking party promises to be a great event for manufacturers, distributors and end-users to connect with one another at one of Cleveland's most popular attractions," said Boveak.

Who should attend?

Mechanical engineers, product designers, purchasers and R&D personnel from the following industrial sectors will find value at Fastener Fair USA:

- ▣ Automotive
- ▣ Aerospace
- ▣ Agriculture and construction equipment OEMs
- ▣ Home appliances
- ▣ Consumer electronics
- ▣ Furniture
- ▣ Wind power
- ▣ Oil and gas
- ▣ Power transmission/hydraulic/pneumatic
- ▣ On-and-off highway equipment

The show provides them with a unique opportunity to collaborate with exhibitors on solutions for their business as well as get the latest industry information, forecasts, and technical education through keynote sessions and breakouts.

Since the show is designed to offer something to everyone in the fastener and fixing supply chain, distributors and wholesalers won't want to miss this inaugural 2-day event either.

Why Exhibit?

The show provides a unique opportunity for exhibitors to meet with new and existing customers, find distributors or wholesalers, identify engineering opportunities including OEM buyers looking for fastener and fixing solutions, and network with fastener and fixing industry professionals throughout the entire supply chain.

Over 200 exhibitors from around the world are expected to participate in the inaugural Fastener Fair USA 2018. The main product categories that exhibitors represent include:

- ▣ Industrial fasteners and fixings
- ▣ Construction fixings
- ▣ Assembly and installation systems
- ▣ Fastener manufacturing technology
- ▣ Storage, distribution and factory equipment
- ▣ Information, communication and services
- ▣ Fastener Production Machinery plus Tool & Die and Supplies

In addition, Fastener Fair show management has a track record of working hard for their exhibitors. They execute a targeted marketing plan designed to bring the most qualified visitors to the event, using tactics such as direct mail, e-marketing, digital and print advertising, and relationships with key media and association partners. Their goal is to bring qualified customers to their exhibitors' booths for a superior ROI on their trade show marketing. They also plan to offer exclusive, technical education sessions to make Fastener Fair USA their top trade show of the year, giving you access to unique customer interactions.

Specifically, Fastener Fair USA will help you promote your brand and products with:

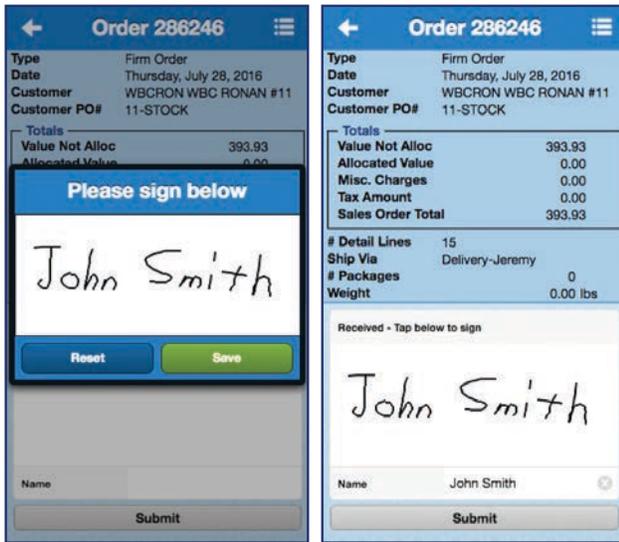
- ▣ Online marketing opportunities that give exhibitors exposure before the show even starts;
- ▣ Education that helps prepare exhibitor staff for a successful Fastener Fair USA;
- ▣ Lead retrieval services to qualify prospects quickly and easily during the show to close the sale after the event.

To learn more about Fastener Fair USA visit www.fastenerfair.com/usa or call 1-866-899-4728. 

PWFA AFTER HOURS EVENT - SUNNYVALE, CO FAULTLINE BREWING COMPANY - APRIL 27, 2017



COMPUTER INSIGHTS INC. HOW CONNECTED ARE YOU? from page 102



Your customer's signature data has been uploaded and is now available in The Business Edge.™ Edge

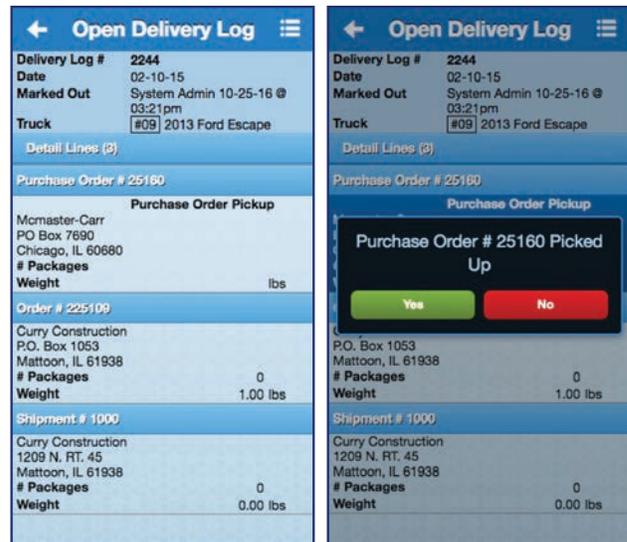
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The online version of 'Open Delivery Logs' enables delivery drivers to capture customer signatures in real-time to The Business Edge™ using their device's internet connection.

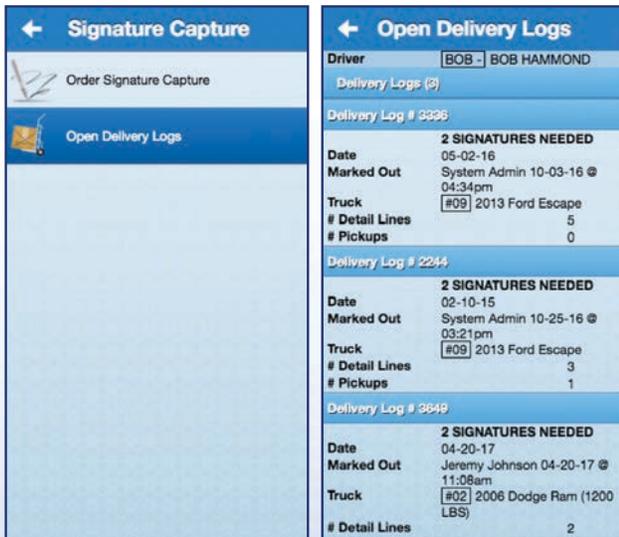
To view a list of delivery logs, you tap the 'Open Delivery Logs' menu item. The 'Open Delivery Logs' screen shows you who the delivery driver is and lists all the open delivery logs. You can see summary information for each log including how many signatures and pickups are needed for each log, as well as what delivery truck to use.

To view more details on a delivery log, you can tap the delivery log item on the 'Open Delivery Logs' screen. The 'Open Delivery Log' screen displays a list of all the deliveries for this log. To collect signatures or mark an order as picked up you tap the delivery log item in the list.

The system can also be used to confirm pickups of Purchase Orders, Processing Purchase Orders or Customer Returns. If the delivery log item is a pickup, you will be prompted to confirm that you are picking up.



If you tap an item which requires a signature, you will be prompted to collect a signature. To collect a signature, you will tap the signature area and a box will appear asking you to 'Please sign below.'



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FIC FASTENER INDUSTRY COALITION PRODUCES FIRST FASTENER INDUSTRY SUMMIT *from page 106***Friends of Fastener Industry Summit**

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- ▣ Rick Rudolph Associates
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- ▣ XL Screw Corporation

The Fastener Industry Coalition is an association made up of regional and national fastener associations concerned with the distribution, manufacture and importation of fasteners as well as services to the fastener industry. Its mission is to provide support and resources to participating fastener industry associations, to help improve efficiency, effectiveness and membership value.

FIC Members Include

- ▣ Fastener Training Institute
- ▣ Industrial Fasteners Institute
- ▣ Metropolitan Fastener Distributors Association
- ▣ Mid-Atlantic Fastener Association
- ▣ Midwest Fastener Association
- ▣ National Fastener Distributors Association
- ▣ New England Fastener Distributors Association
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- ▣ Southwestern Fastener Association
- ▣ Women in the Fastener Industry
- ▣ Young Fastener Professionals

For more information about FIC and its members or FIC news and events, visit them online at www.fastenercoalition.org. 

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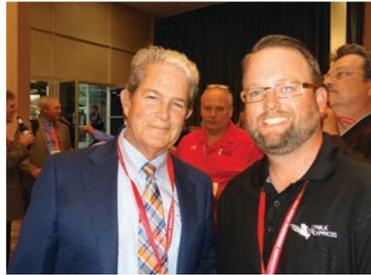
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FASTENER TECH '17 - ALL INDUSTRY RECEPTION ROSEMONT, CHICAGO IL - JUNE 6, 2017



PHILLIPS SCREW COMPANY THE ORIGINAL SINCE 1935 from page 108

Integrated into this unique system are the optimized anti-cam-out design combined with the flexibility to use five different driver tools giving service personnel the ability to do repairs with a wide array of tools yet providing manufacturers with a robust system that speeds their assembly process while eliminating cam-out damage and scrap.

Phillips has continued to be at the forefront of fastener innovation and has accelerated that pace in recent years. New developments in the materials and technologies used to manufacture aircraft, space craft, industrial machinery, and automobiles have presented an ever growing array of challenges and requirements for efficient assembly. To meet these new challenges Phillips has added state of the art solid modeling capability combined with 3D printing to bring innovative designs to completion at a rapid pace. Even with this new capability Phillips still takes its development cues

from its end users and partners. When the United States Air Force needed a superior fastener they found a solution through a Small Business Innovation Research (SBIR) project with a specialized engineering firm. That firm was great at developing a conceptual solution but its partnership with Phillips Screw Company was the path to creating a viable mass market product that became the MORTORQ® spiral drive system family of fasteners.

Phillips was able to partner with the engineering firm and rapidly bring their idea to the final product phase. The resulting MORTORQ spiral drive fastening system has gained wide usage in the aerospace world ranging from missiles, to the Orion spacecraft, to the Boeing 787 and the Rolls-Royce engines that power it along with many other successful platforms. But that wasn't enough for this innovative fastening concept. Through additional research and development the team at Phillips has been able to partner with end users in the automotive and

industrial markets to develop a high strength version that meets their demands for high torque transfer capability with exceptionally long tool life on the production line. The next generation MORTORQ Super high strength spiral drive has been used on transmissions, engines and seat assemblies by major auto makers to cut costs and improve their assembly operations.

For eight decades the Phillips Screw Company had been focused on the drive system in the head of a screw, but the unique capability of the MORTORQ concept was too good to limit to just internal drive systems. Phillips

decided to move beyond their traditional zone of expertise and look at externally wrenched bolts. The resulting External MORTORQ Super bolt design is the solution that end users have been seeking to provide a lighter weight alternative to the traditional hex and 12 point bolts. The new low profile head design saves weight while providing a larger engagement area between the socket and bolt



STATE OF THE ART 3D PRINTING HELPED PHILLIPS DEVELOP THE EXTERNAL MORTORQ SUPER BOLTS AND SOCKETS THAT PROVIDE ULTIMATE TORQUE WITH LOWERED IN PLACE WEIGHT.

head giving more efficient torque transfer without the potential for bolt head deformation and damage. This new technology provides Phillips licensed partners with an unequalled capability to meet their customer's toughest fastening challenges while reducing product weight.

Throughout its history Phillips has relied on its partners, both licensees and end users, to bring them the toughest fastening challenges that together they have solved. Since 1935 the original developers of the Phillips screw have committed to supporting their partners with the most technologically advanced fastening systems combined with a global quality control system that assures that the complete fastening system will perform as specified. Phillips continues to work for the benefit of its partners through standardization efforts with SAE, NASC, ASD-STAN and ISO that assure that there are multiple sources for the best fastening solutions for the toughest fastening challenges. 

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ROBERT FOOTLIK PROMAT 2017 FOR FASTENER DISTRIBUTORS *from page 110*

One area that is evolving at a faster rate is automated locker/shelf solutions. You might have seen some of these products at STAFDA or other trade shows and they are worth another look. The concept is to create vending machine type access for industrial products. A lockable space of any dimension can be controlled by a cyber lock, pass card or biometrics with orders or products that can be accessed 24/7. On a construction site this could be a standalone machine for common fasteners or multiple units in a sea land cargo container distributing both products and orders. On the factory floor perishable tooling and other consumables can be located and controlled at the point of use. At ProMat 2017 Apex Supply Technologies (www.ApexSupplyChain.com) demonstrated how to make their bins smarter using cloud based technology. If your business manages on premise inventory these are solutions worth considering.

Humans as Robots

At the 1978 Materials Handling Show Motorola demonstrated their new "RDX 2000" hand held walkie-talkie and computer terminal. It was fairly good for voice communication, but not as good as a cell phone. For data entry and exchange it was a failure. There was nothing to communicate with and limited bandwidth to do it. This was clearly an idea way ahead of its time.

This year's show featured a wealth of devices that essentially turn the warehouse staff into mobile extensions of the WMS programs and applications. Data collection devices using bar codes, RFID and 2-dimensional codes are now rugged, versatile and increasingly common. All rely on the dedication and responsible action of people to actually properly use the equipment. In other words the hardware is useless at best and disruptive at worst without a training program and operational planning to insure that what is entered is accurate and relevant.

In support of this several WMS programs come with educational materials and trainers to insure that every user is informed, educated and on board with the systems. The equipment has also evolved to include lighter batteries and ergonomic designs, for example Janam Technologies (www.janam.com). Limitations of distance, lighting and other environmental conditions have been addressed with better labeling for shelving, pallet racks and floors. At least half a dozen firms exhibited

magnetic, adhesive and placard labels that can be read by both machines and men.

The current pinnacle of man/machine interface is voice directed real time communication. This is no longer a new technology and it has become increasingly more common and affordable. Lucas Systems (www.lucasware.com) has been at many shows and retains their independence by using equipment from multiple vendors to communicate with a wide variety of WMS programs. Their main competitor Vocollect is now owned by Honeywell (www.vocollectvoice.com) and offers their own proprietary line of equipment designed for operation with several WMS providers.

Things that Caught My Eye

For those who ship a wide variety of product sizes making your own corrugated packaging can save money on carton inventory and shipping costs. There are several companies that have offered this equipment over the years Packsize International exhibited (www.packsize.com) but the problem is that with a variety of packaging carton sealing becomes problematic. "Boxsizer" by Tension Packaging and Automation (www.tension.com) uses sensors to detect the actual amount of empty space in a carton and then adjusts itself to cut, crease, fold and seal the flaps. It is an excellent example of spillover between ProMat 2017 and the collocated Automate 2017 Show. More on this exposition below.

Some years ago an exhibitor showed a storage system that must have been invented while leaning back and staring at the ceiling. Picture the grid system ceiling over your head with the ceiling tile removed. Assuming that the grid is strong enough a load that passes through the void could be held by supports above the ceiling. Auto Store (www.autostore.com) had a working model of such a system at the show. It uses a cart and scissors lift to elevate the loads and stack them above the grid. Each load can then lift the one above, leaving the floor open below. Clever system, but it comes with some limitations that I explored with a friend who is a Civil Engineer specializing in seismic conditions.

He did an analysis and found that the system could be stable up to around 20' of actual storage. This is dependent upon the type of loads, humidity and other conditions, and the probability of an earthquake.

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JIM RUETZ AMERICAN FASTENER RIDER TOURS IRELAND/SCOTLAND FOR DUCHENNE MUSCULAR DYSTROPHY *from page 112*

While I believe my BMW 1600 touring bike is probably amongst the most comfortable touring bikes made. I try to limit my 500+ mile days to early or late in the trip. Those who have ridden out to Sturgis for the bike rally know that riding through Southern Minnesota and Southern South Dakota (until you get to rapid city) are about as exciting as kissing your sister (you are going through the motions but it is no big deal)! Last year the first day was 780 miles and the second 505 miles after that the miles per day dropped significantly as I began hitting the national parks. It wasn't until I started the swing home from Seattle that I put on some more 700+ days.

What a contrast the 6,500 miles resulting from last years combined "National Parks Tour" and the ride to "Louisville" compared to this years "Gaelic Turas ride" which will include two countries but cover only a total of 1,500 miles.

For this year's route, I solicited some help from the company I'm renting my bike from "Celtic Rider" near Dublin, Ireland. Unlike the "POE" ride in Europe a couple years back, I will be able to rent in Ireland since I'll be returning the bike to where I rented it. Celtic Rider came highly recommended by several of my Irish friends. Celtic Rider is setting me up with a BMW 1200 with the same luggage set my bike has so I'll be able to easily plan my weight distribution and what I can bring on the plane.

Route Planning – IRELAND & SCOTLAND

I have been to Ireland a couple times before but always riding atop 4 wheels with a driver. On my first trip, my friend Kevin and I spent 4 days on a side trip in Ireland with our wives. Kevin was the pilot and I was the navigator. The second trip was an 8-day family trip through the southern and western half of Ireland. My friend Mark introduced me to a business associate of his -Owen O'Keeffe who helped me find first class hotels

along my intended route, as well as, sight-seeing stops along the way. Owen also introduced us to Colm Dunlea (his cousin). Colm was our driver for the trip and did such a great job of it he decided to come out of retirement and become a tour driver professionally. Last year Colm drove my wife, daughter, sister-in-law and niece, around southern Ireland. Colm has become a permanent member of the O'Ruetz family.

The first 5 days of the trip will be focused on visiting friends in Ireland and attending "Race week" in Galway. I plan to see the Kennedy's (friends from Hong Kong), The Dunlea's, and the Caulfield's (friends from Galway).

The rest of the trip planning I will be covering virgin territory seeing the northern half of Ireland, Northern Ireland, and Scotland for the first time. Celtic Rider offers some

recommended cities and sights on their website which I used as a basis for my trip planning. I will admit it seems odd to be planning 60-150 mile days instead of my typical 300-700+ mile days. The owner of Celtic Rider reminded me that a 100-mile day on Irish roads is probably comparable to a 300+ mile ride in the U.S. Mind you I'm not complaining, the more time I have for visiting sights the better. I'll be staying overnight in at least 7 Irish cities and 7 Scottish cities and passing through several others.

I will book some hotels in advance for most nights because August is a big tourist time for US and European travelers. This is especially true for the more popular hotels like The Old Course Hotel at St. Andrews. Even planning 6 months in advance I've had problems getting into some hotels. Moral of the story booking sooner is better than later!

Besides the WHERE, WHEN and HOW mechanics of planning a long-distance Motorcycle trip there's a bunch of other suggestions that I have that fall into the comfort & safety areas of the trip. I'll save these for another installment down the road.



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JIM RUETZ AMERICAN FASTENER RIDER TOURS IRELAND/SCOTLAND FOR DUCHENNE MUSCULAR DYSTROPHY from page 166

The Most Important Part

I've have been blessed with two healthy children, a wonderful wife, and the opportunity to experience the trips I've taken. Going back to the "Bucket List ride" (Alaska) in 2011, every other year, I've dedicated my ride to fighting Duchenne Muscular Dystrophy by working with the Cureduchenne team. Many of the contributions have come from the generous people in the fastener industry in the US/Canada, as well as, Taiwan and Europe. I would like to thank Leo Coar – editor & owner of Link Magazine for his gracious support of the Duchenne rides. Besides being a donor, Leo contributes space in the magazine to help get the word out. I would also like to give a shout out to the 400+ people that follow my blogs and who have donated to all or some of the rides. A large portion of the donations have come from the

fastener and industrial distributors/manufacturers. Your donations are a testament to the size of the hearts that our industry has.

To donate directly to this year's ride on the Cureduchenne sight, go to www.cureduchenne.org. If you would like to receive my blog during the "Jim's Gaelic Turas 17" ride this year send me your email and I'll add you to the blog list on Travelpod.com.

I'd also like to recognize Tim O'Keeffe for his guidance and suggestions via bike selections and gear recommendations on my early rides. Tim and I road part of the "Bucket List Ride" together and have done a number of other shorter but no less fun rides together over the years. If you have any questions please feel free to contact me and I'll try to pay forward the help Tim has given me. Thanks and safe riding! 🍷

SPIROL THE IMPACT OF CLEARANCE ON THE SHEAR PROPERTIES OF COILED SPRING PINS *from page 124*

This phenomenon is explained using general material principles. When evaluating stress-strain behavior, the flexural or bend strength is commonly used to describe brittle ceramics, but it is defined as the stress at fracture due to bending forces. It is a property that is tested through three – or four – point bend testing, which is done in a transverse bend with single or dual loads and underlying supports positioned at a predetermined distance (L). The bend testing models are a simplified representation of a pin with a shear block.

Transition from shear to bending occurs rapidly when clearance exceeds the recommended maximum of .005” (0.13mm). Commensurately, data indicates that the greatest change in strength occurs with minimal deviation from ideal shear conditions. As clearance increases between assembled components, strength continues to be negatively impacted, but the magnitude of change is not as substantial. In this case with a CLDP .250 x 2.250 LBK, an 18% reduction in force was observed by increasing the clearance from .005” (0.13mm) to .072” (1.83mm).

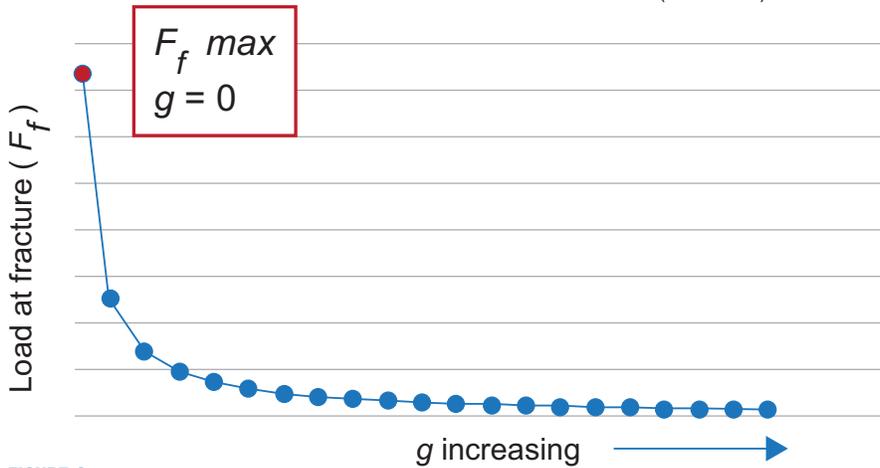


FIGURE 4
THERE IS A NEGATIVE INVERSE RELATIONSHIP BETWEEN THE GAP AND LOAD AT FRACTURE

The flexural or bending stress equation is:

$$\sigma_{fs} = \frac{F_f L}{\pi R^3}$$

where F_f is the load at fracture, R is the radius of the pin, and L is the distance between supports. As clearance is added symmetrically to increase the distance between

support points, L changes to L+2g with g being the added clearance distance on one side. Using the known values, Figure 4 shows the impact of g on the force.

$\sigma = \text{Stress}$	$\frac{F}{A} = \frac{Mc}{I}$
M = Maximum Bending Moment	$\frac{FL}{4}$
c = distance from center specimen to outer surface	R
I = moment of inertia of cross section	$\frac{\pi R^4}{4}$

Conclusion

Overall it is a common misconception that counterbores or countersinks will improve insertion of the pin and have minimal impact on the strength of the pinned joint. The swaged chamfer on the Coiled Pin directs the pin into the next hole, even when some degree of misalignment exists between

the holes, eliminating the need for a counterbore or countersink.

Data demonstrates a significant drop in strength of the pin when a small gap is added between shear planes. Using bend strength and principles of three – or four – point bending it is clear that increasing clearance has a negative effect on the load necessary to fracture the parts. When designing new or reevaluating current applications, it is important to minimize space between components to optimize the shear properties of the pin and maximize the useful life of the assembly.

Engage SPIROL's Application Engineers early in the design stage of your next project! 

¹ Callister, William D., "Stress-Strain Behavior" in Materials science and Engineering: An Introduction, 7th ed. New York: Wiley, 2007 pp 447-448

distributornews

The DPA Buying Group is pleased to welcome twelve new distributor members to its industrial products division.

1st Choice Fasteners & Tools, Inc. (Odessa, FL)
Carbide Processors, Inc. (Tacoma, WA)
Discount Steel (Minneapolis, MN headquarters)
Fastener Express, Inc. (Lakeville, MN)
Forte Fasteners, Inc. dba Dayton Nut & Bolt
 (Centerville, OH)
Janning Welding & Supply LLC (Elk City, OK)
Lubker Distribution (West Chester, PA)
MBY & Sons, Inc. dba Universal Supplies Associates (Brooklyn, NY)
PBW Distributor (Porterville, CA)
Service Industrial Supply (Dothan, AL)
Trade & Industrial Supply, Inc. (Lawrenceburg, IN)
TVS Distributors, Inc. dba TTS Products
 (Los Angeles, CA)
Western Ag & Industrial, Inc. (Madera, CA)
Wright Brothers Industrial Supply (Hollister, CA)

DPA also recently added eleven new preferred suppliers:

ABC Hammers, Inc. (Westchester, IL)
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Bondhus Corp. (Monticello, MN)
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Eagle Manufacturing Company (Wellsburg, WV)
Knipex Tools LP (Buffalo Grove, IL)
Motus Logistics (Milwaukee, WI)
Prime Wire & Cable, Inc. (City of Industry, CA)
TPI Corporation (Johnson City, TN)
Waterloo Industries (Sedalia, MO)
Zip-Up Products, LLC (Chatham, NJ)

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ACE BOLT & SCREW CO INC AT ACE BOLT & SCREW, THE CUSTOMER IS KING from page 128

Wireless Warehouse

Mike said they are not done with expanding their technology. He said, "We expect to simplify things even more in the coming year by adding The Business Edge's™ wireless warehouse. With the wireless warehouse, we are able to cut down on mistakes even more. A simple scan in our warehouse will cut down on paper while also ensuring that the wrong parts are never pulled and given to our customers."

Customer Service Is The Core

"Thankfully, the people at The Business Edge™ value customer service as much as Ace Bolt does. Anytime we have a question with our system or an issue with how something is working, we are immediately able to get someone on the phone. They ensure that everything we need to best serve our customers is readily available to us. The Business Edge™ is constantly upgrading their system to better support their customers."

Keep Growing

Randy summed it up, "While a lot of things have changed over the past 48 years, we will continue to grow in this ever-changing world with customer service as our number one priority."

More Information

Ace Bolt & Screw Co, Inc can be reached at 530 Julianne St Jackson, MS 39201-2533 or 506 Daybrite Drive, Tupelo, MS 38801. Contact John Micheal Clark, Sr. (President) or Randal Clark Jr. (Vice President) by telephone at 601-355-3448, fax: 601-355-7100, eMail: jacksonsales@acebolt.net or tupelosales@acebolt.net or visit them online at www.acebolt.net.

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SUDOKU

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3	4	1	2	9	8	6	7	5
8	7	9	5	6	1	4	2	3
2	1	3	9	8	6	5	4	7
9	8	4	1	5	7	3	6	2
7	6	5	4	2	3	9	1	8



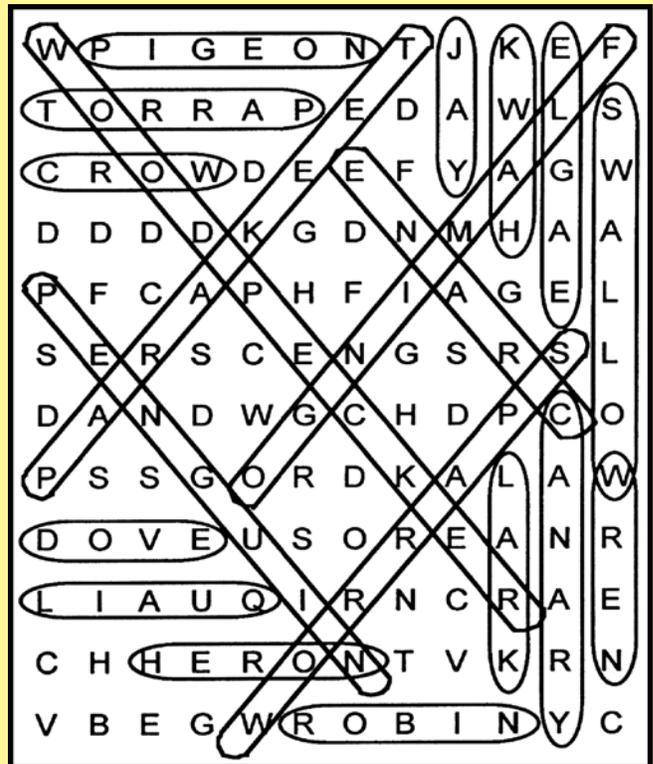
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| 7. Hawk | 17. Sparrow |
| 8. Heron | 18. Swallow |
| 9. Jay | 19. Woodpecker |
| 10. Lark | 20. Wren |



Even with very effective lubricants like MoS₂, waxes or graphite the windup factor could be around 1.2. That means that if we have a Grade 5 bolt 1/2UNC x L with a Sp of 12 100 lbf we must divide that number by 1.2 and design with an adjusted Sp of 10 080 lbf. We are now using 83 % of the bolt capacity. If the threads are dry, it will bring the torsional factor to about 1.4 and we are now down to 8643 lbf or 71 %A. And we still have other “bumps” on the road to consider.

Fatigue and Endurance Limits

If we are driving hour after hour and not taking any breaks, we might fall asleep behind the wheel due to fatigue. That could be a very quick and rude awakening being embedded into something like a big tree (if we were lucky and survived). A threaded fastener can also be “tired” after being abused by dynamic forces over some extended time span. If there is a very small crack at a highly stressed point, like in the thread root area, the crack could grow over time due to fluctuating loads. The problem here is that we have no real indication of the ongoing crack propagation until it is too late and the fastener snaps. If we design with a relatively small additional external force going to the fastener we should be able to avoid these kinds of problems.

The other points listed above can be equally important and have to be considered. In my 2-day engineering class “Fastening Technology and Bolted/Screwed Joint Design” I teach my students how to deal with all those variables in order to navigate the often winding road toward safe joint designs.

Mechanical Properties

The four fastener classes in the graph have all specific purposes to meet, both technically and economically. The least expensive choices would, of course, be the low carbon, non-heat treated grades or classes. Many mechanical devices may not need any higher strength due to low external loads on the joints. Surface pressure limits on light alloys (Al and Mg) may also well match up with the lower loads available from

Grade 2 and ISO 4.6. We can also apply zinc protection both by electrolytic plating and hot-dip galvanizing without having to be concerned about hydrogen embrittlement or zinc brittleness.

The most versatile group is, in my opinion, property class 8.8 (Grade 5). By using medium carbon or low carbon martensitic (boron alloyed) steels, heat treated, we can double the strength compared to the lower strength groups. As you can see in the graph, the elongation is still relatively generous (12 %) and it is possible to detect a beginning tension loss by noticing a loosening of the joint. We would then have sufficient time to react before things fall apart. The hardness range is HRC 22-32 for 8.8, for Grade 5 HRC 23-34 or 25-34 depending on size. This means that hydrogen embrittlement is not an issue for these strength groups. We can zinc plate with electrolysis and hot-dip galvanizing without problems. Class 8.8 is the most common high strength fastener class worldwide and is very easy to find on the fastener market.

The stretching curve for 10.9 (US Grade 8) is getting much shorter, the hardness range is HRC 32-39, and we now must watch electro plating carefully to avoid hydrogen failures. To protect these fasteners from corrosion we should also consider the new engineering class coatings. Since coatings are typically a dip-spin-bake application, no water based electrolyte is used and thus no hydrogen in the production process. 10.9 fasteners are suitable for highly stressed joints where very tight control of assembly and maintenance can be performed.

Class 12.9 or alloy series (ASTM A574) is a class primarily used for Socket Screws. These fasteners were originally intended to be used only in machine tools were also the joint materials were made of very high strength steels. Since machine tools (dies, punches, forming dies, etc.) are normally in-door equipment, the high strength fasteners are relatively well protected by the ever present oil in the machine shops. It is not a corrosive environment anyway. In our quest for lighter and stronger designs and higher safety factors it is tempting for designers to put these high strength fasteners even in places where corrosion can be a problem.

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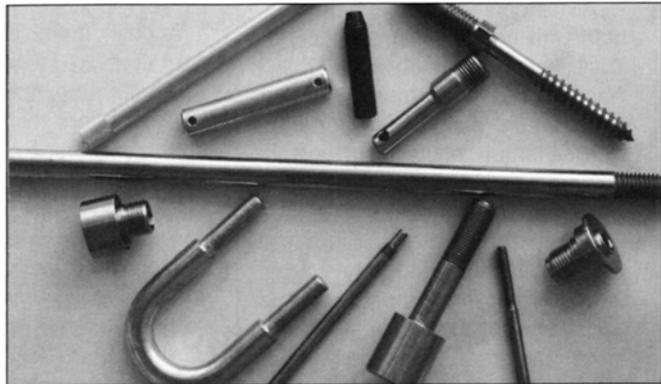
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Ductile Versus Brittle

When we start to characterize how individual materials are prone to fracture, we speak of the "Fracture Toughness" which is often defined by the fracture behavior. In other words, we expect specific materials under specific conditions to fail in either a ductile or brittle fashion. When a failure has occurred, this is one of the first things that an analyst tries to determine because it helps point them to the root cause of the failure.

Figure 4 illustrates three different conditions, a very ductile, a semi-ductile, and a brittle failure. Ductile failures can primarily be characterized by undergoing plastic deformation prior to fracture. A part that is undergoing significant plastic deformation will exhibit an area where the cross section begins to thin down and the area starts to stretch in length. This is known as "necking" and is an important clue that a part failed in a ductile fashion. Materials that exhibit a high degree of ductility will neck down to a very small cross section before fracturing. When examining a ductile fracture, in addition to evidence of necking, the gross fracture may exhibit a cup and cone appearance and when viewed under a microscope will exhibit a dimpled or cratered appearance. With respect to fasteners, as strength increases ductility will begin to decrease and parts will fail more like the semi-ductile example in Figure 4. It is important to remember, however, that even though

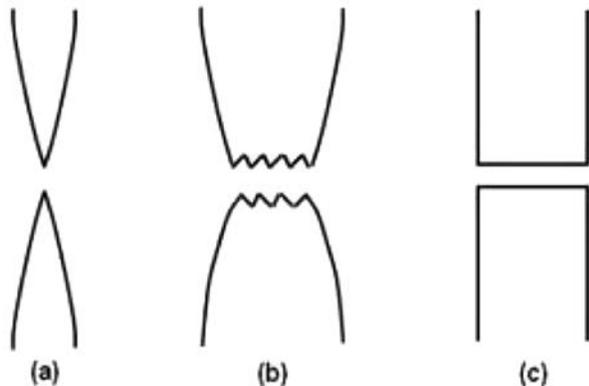


FIGURE 4: (A) VERY DUCTILE, (B) SEMI-DUCTILE, (C) BRITTLE

higher strength fasteners may be more brittle than lower strength fasteners, they are still ductile and must be able to elastically stretch to successfully fulfil their purpose.

The other type of failure is a brittle fracture. There is little or no yielding prior to fracture. The gross view of a brittle fracture is one of a flat or smooth surface and when viewed microscopically appears to be cleaved or cut as if a knife sliced through it. There are two types of brittle failure, cleavage and intergranular. Consider a brick wall, a cleavage failure is like a crack running indiscriminately through the wall, cutting through both bricks and mortar joints. An intergranular failure is like a crack that follows the mortar joints. In metals the behavior is analogous with cleavage (also known as Trans Granular) indiscriminately passing through metal grains and grain boundaries. Intergranular failures, on the other hand, are always at just the grain boundaries.

Although we recognize that certain everyday materials, for example glass or putty, are characterized by the brittle or ductile behavior we are accustomed to experiencing with them in service, a variety of different factors can influence how a material may actually fracture. Common factors which play a role in whether a part fails in a ductile or brittle fashion include temperature, rate of loading, geometry, size, and strength.

Anyone that has ever lived in a cold climate has likely experienced how the cold temperature makes certain things much more brittle and prone to fracture at the slightest induced stress. Take for example a standard plastic wash bucket, if left outside on a very cold day, it only takes a little stress exerted by the handle to break the lip of the bucket.

Similarly, the rate of loading can have a significant impact on whether a material fails in a ductile or brittle fashion. High rates of loading tend to influence a part towards breaking in a brittle fashion. For this reason, certain fasteners and other components in automobiles must be carefully designed so that they do not fail in a brittle manner if the automobile is in an accident.

FASTENER TECH '17 - ALL INDUSTRY RECEPTION ROSEMONT, CHICAGO IL - JUNE 6, 2017

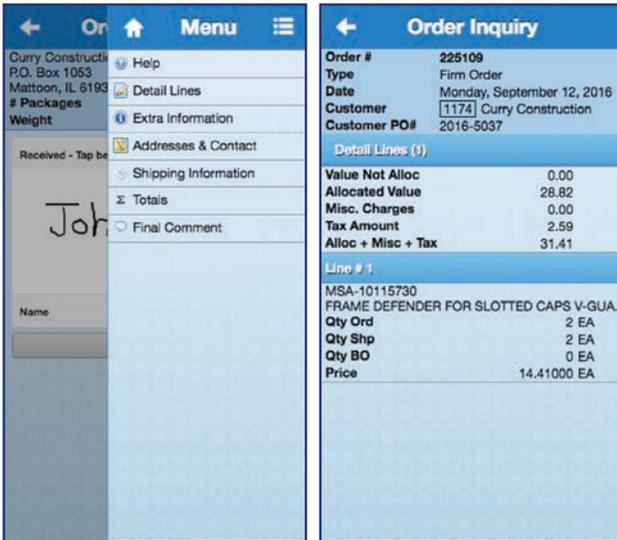


COMPUTER INSIGHTS INC. HOW CONNECTED ARE YOU? from page 158

Once your customer has given you their signature you tap the 'Save' button to save the signature. To complete the signature capture process, enter the customer's name in the "Name" box and tap the "Submit" button.

Your customer's signature data has been uploaded and is now available in The Business Edge.™

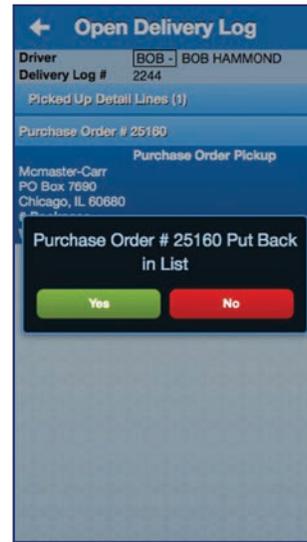
To view additional information about an order or shipment tap the menu icon in the upper right hand corner of the app, and then tap one of the items in the menu. Below we have tapped the 'Detail Lines' item to display what items are being delivered to this customer.



You also have the option to view a list of the signed/picked up detail lines by tapping the menu icon in the upper right hand corner on the 'Open Delivery Log' screen, and then tapping either 'Signed Detail Lines' or 'Picked Up Detail Lines'. You will then be presented with a list of items which have been picked up or delivered, including the customer's signature.

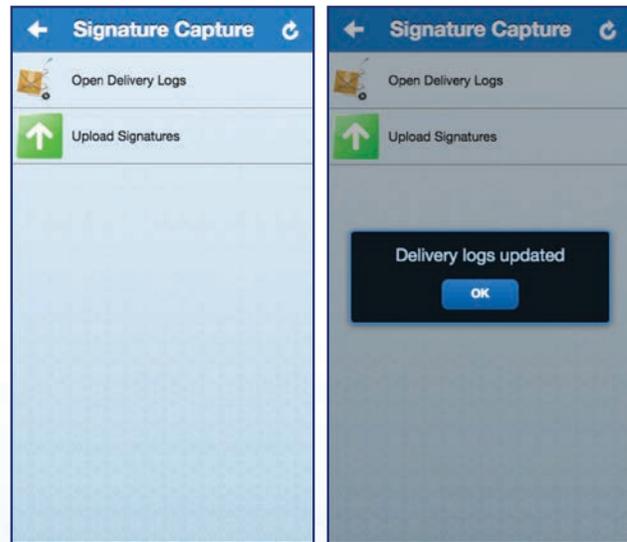
If for some reason you need to remove a customer's signature or put a pickup back in the list, you can tap on any item in the 'Signed Detail Lines' or 'Picked Up Detail Lines' screens. You will then be prompted to confirm the

action and if you tap 'Yes' the item will go back into the delivery log.



Open Delivery Logs (Offline)

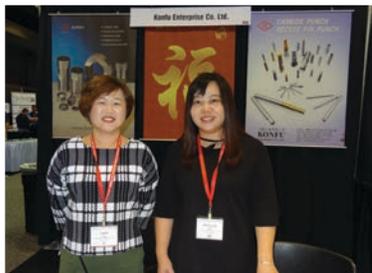
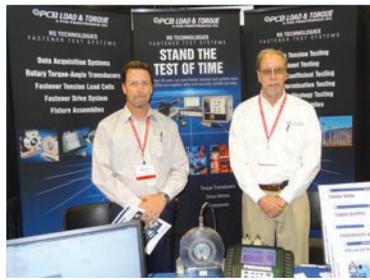
The system will also work in an offline mode. The offline version of 'Open Delivery Logs' allows delivery drivers to capture customer signatures and pickups without the need for an internet connection.



Before you can start using the offline 'Open Delivery Logs' functionality, you will first need to have an active internet connection on your mobile device in order to sync the delivery log information from The Business Edge™ to the TBE Mobile™ app.

FASTENER TECH '17

ROSEMONT, CHICAGO IL - JUNE 5-7, 2017



ROBERT FOOTLIK PROMAT 2017 FOR FASTENER DISTRIBUTORS *from page 164*

While the structure might be capable of absorbing the extreme loading he would not certify that the loads would be stable. A few of these systems have been built and it will be interesting to watch how they evolve.

In the mid 1950's the first automatic shift transmissions for forklifts were introduced at the MH show. A salesman pointed at a 10 year old me and said, "Hey kid show them how easy it is to drive." This was pre-liability and political correctness. Today almost no one gives the keys to a kid and hands them a button that reads, "I got the feel from behind the wheel." The almost part comes from Forklift Simulator (www.forkliftsimulator.com) that did indeed hand out virtual forklift keys to non-drivers. Their "suite of exercises" takes an operator through a number of scenarios to safely demonstrate how to deal with common hazards. This is a great idea for new and veteran forklift drivers.

Facilities Were Not Ignored

Several vendors showed LED warehouse lighting fixtures that can replace 400 Watt metal halide lamps with easily controllable 6 tube fluorescent style fixtures. Even without occupancy sensors the energy saving can pay for the upgrade in a year. Add sensors and turn off the lights when no one is around and the savings go to 100% of current power consumption. At \$.10/kilowatt hour that's \$.0468 per fixture per hour which adds up very fast. As mentioned in the last article this is a relatively simple technology to add with a high Return on Investment.

Air movement is important for keeping people comfortable and productive. That's a given. But, controlling humidity and temperature is also increasingly critical for maintaining production standards and equipment. Heating, cooling, fans and other equipment was shown in many booths. It's something easily ignored in many warehouses unless conditions have become so extreme that morale is affected. Going through an exposition is an excellent reminder that environmental problems are best dealt with before they become critical.

What's Next?

Drones are in the news and featured in several booths. They mostly fell into two categories, indoors and outdoors. Using a drone in the building does not require

any license or special equipment. The question is why would you want to do it? As the onboard electronics have become increasingly more capable the data and telemetry can allow a fixed base computer to take on more responsibilities. A simple example would be an inventory of empty pallet spaces. A drone programmed to fly through all the aisles would transmit camera images to the computer and visual recognition programming can use this for taking inventory without human intervention. Adding RFID chips or labels to all the pallets and/or cartons is the next logical step and this is almost reality. Potentially this is a great way to find lost inventory, tools and people.

Outdoors Amazon, Uber and others are looking at drone delivery as the next way to cut distribution time and expense. While larger drones were evident at the show the reality is that this technology has some huge hurdles to overcome and most of the problems are regulatory. A toy drone that weighs less than .55 pounds can be legally flown with some restrictions by a 13 year old. If the weight is up to 55 pounds, including the load, the restrictions fall under FAA Part 107 which requires an unmanned aircraft license, limits the effective maximum height to 400' and precludes operations within 5 miles of an airport. This is a rapidly changing environment for the FAA and there are many players with vested interests feeding them input. Drones are, however, also under the regulation of Homeland Security and this is going to be the real problem. How does one keep the really bad guys from dropping a 400' high, 55 pound weight with rapidly spinning propellers on a crowded street...even without potential explosives?

Automate 2017

For an engineer, model railroader, RC plane enthusiast, etc. the collocated Automate robotics show is a virtual candy store. Bigger/smaller, stronger/lighter, smarter/dumber equipment was absolutely fascinating to watch in operation. Particularly memorable were three robotic arms programmed to juggle in a variety of simple and cross patterns without dropping a ball. Using machine vision to counter the inevitable small deviations due to miniscule variables in the balls and environment enabled this equipment to perform their act for hours.

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BENGT BLENDULF DRIVING SAFELY OR PUSHING THE LIMITS *from page 178*

The hardness range is HRC 39-44 for 12.9 which is a very critical level where stress corrosion cracking, SCC, can break these high strength fasteners if they are not protected. All it takes is a local corrosion attack where high stresses are present. With continuing exposure to corrosion agents combined with high stress, the point attack will quickly spread inward into the steel and eventually cause a sudden cracking.

We must know what we are getting into when going above the 8.8/Grade 5 level. Much more care and control must be exercised using 10.9 and particularly 12.9. Some people have the very bad idea that if an 8.8 or Grade 5 fastener break in the field, we should replace it with 10.9 or Grade 8. This approach can be dangerous since we might change the failure mode to other, more expensive places in the design. A common breaking problem is usually caused by improper installation if the fastener, maybe using an impact wrench when a

calibrated torque wrench should be used. A skilled designer would match up the joint parts with the right size and strength of the fastener. If we start to second-guess the designer by altering the strength without knowing the original intentions we can cause more problems than just a broken bolt. I would not dream of putting myself in a race car and enter INDI 500 without knowing what I am up against!

An old friend of mine once put the strength question like this:

"You can tighten a Grade 5 bolt and then sit next to the joint and have a cup of coffee. If you have a Grade 8, put your hard hat and safety goggles on and walk away after tightening. With an alloy bolt you have your hard hat, safety goggles, gloves, jogging shoes, tighten the bolt and just run like h#&& away!"

Well, that might be a little over the top....but not too much. 

BENGT BLENDULF**ROBERT FOOTLIK PROMAT 2017 FOR FASTENER DISTRIBUTORS** *from page 180*

Machine vision and visual recognition are the two trends to watch. There were some relatively simple forays into robotic mobility for warehouse work demonstrated but nothing ready for prime time applications. My opinion is that this will first be successfully applied to palletizing cartons received in a truck or sea land container. With a confined space and relatively simple parameters and coordinates the technologies and needs are almost at convergence.

For Fastener Distributors it's a matter of watching the developments. But for Fastener Manufacturers there are some exciting, cost effective and highly desirable robotic applications. Watch for and attend manufacturing expositions to stay on top of this technology. The cost and quality benefits are real and affordable.

Want More Information?

The Association for Advancing Automation (www.A3automate.org) has a number of technical conferences coming up this year and The Vision Show for robotics and

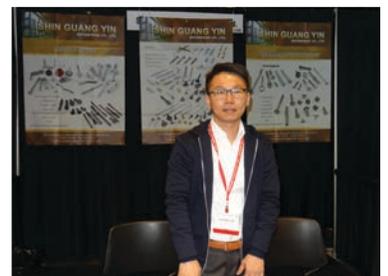
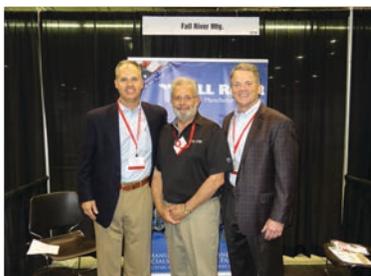
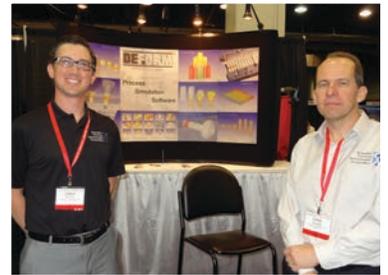
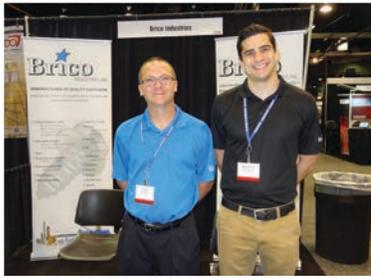
machine vision in Boston, April 10-12, 2018.

MHI (www.mhia.org), also known as the Materials Handling Institute, participates in or sponsors technical, educational and other programs all over the world. This organization is the best place to contact for information that will help guide operational decisions. While ProMat will not be back in Chicago until 2019 there is a smaller exposition Modex 2018 planned for Atlanta, April 9-12, 2018.

If you visit the MHI website be sure to click on their calendar of industry events and also take a look at the America Logistics Aid Network (www.ALANaid.org) that is a spin off from this organization. ALAN mobilizes and coordinates voluntary logistics networks and providers in the event of an emergency. Trucks, drivers, forklifts, pallets and other logistics are vital to helping people and communities devastated by fire, flood, tornados and other disasters. This is an organization that you could be proud to support and they may need the products, equipment and services you can provide. They too were at ProMat 2017. 

ROBERT FOOTLIK

FASTENER TECH '17 ROSEMONT, CHICAGO IL - JUNE 5-7, 2017



Tension, Shear, Torsion and Complex Loading

When a fastener fails and an investigation into the Root Cause ensues, one of the things that the analyst may investigate is how the part was stressed. Parts that have been stressed in a certain way will yield clues based on the fracture appearance. Figure 5 illustrates what fractures in pure tension look like. If the fracture is ductile in nature, it will exhibit necking and either a flat or shear (approximate 45°) fracture face. If it is brittle, it will exhibit no necking and a flat fracture face. In a shear failure the stress is applied perpendicular to the fastener axis. Therefore the cross section is cleaved whether the material is ductile or brittle. Closer examination of the fracture surface will be required to determine if it failed in a brittle or ductile fashion. Figure 6 illustrates the fracture surface in torsion (when a part is being twisted). The fracture surface may be counterintuitive to some, with a ductile fracture showing no deformation and a

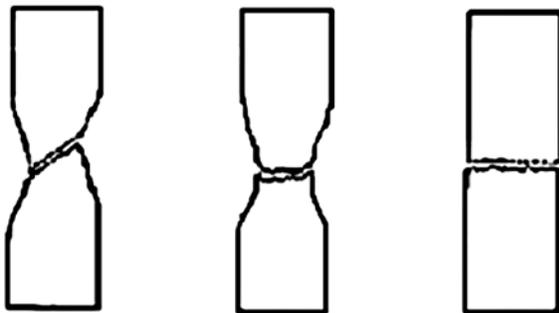


FIGURE 5: PURE TENSION FAILURES (LEFT) SHEAR FACE DUCTILE, (MIDDLE) FLAT FACE DUCTILE, (RIGHT) BRITTLE

DUCTILE TORSION FAILURE



BRITTLE TORSION FAILURE



FIGURE 6: PURE TORSION FAILURE

flat fracture surface. A brittle material will exhibit spiral cracking.

Many fasteners are not stressed in these simple ways. They actually experience some form of combined loading. Perhaps the simplest example of this would be bending where the outside of the bow is stressed in tension and the inside of the bow in compression. In any event, complex loading scenarios are much more difficult to predict or understand after failure, and should be avoided whenever possible.

Fracture Toughness

What makes a material prone to fracture? The search for an answer to this question marked the beginning of a new science known as Fracture Mechanics. It started in the early 1900's with a scientist by the name of A.A. Griffith who was studying the effect of flaws in glass. From his work, engineers and scientists started to learn that they could measure the stress intensity at the tip of a sharp notch in a piece of material and that this stress intensity would eventually reach a critical value where catastrophic failure occurs. This critical value is now known as the Fracture Toughness.

Although Fracture Mechanics is a complicated science, we can take away a couple of basic concepts. Consider for a moment a perfect glass rod. If we took each end in our hands and bent it downwards, although it would eventually break, it would take a great deal of effort. If we take the same rod, however, and place a small notch in the top and then repeat our experiment, we find that it takes little effort to break it. If we repeat the second half of the experiment using a copper rod instead of a glass one, we would find that the copper rod could likely be bent into a u-shape without fracturing.

This simple experiment illustrates the principle of Fracture Toughness. The glass rod exhibited no deformation while the copper rod had a large plastic deformation. We would conclude that the glass rod has low Fracture Toughness and the copper rod has high Fracture Toughness.

Expounding on this example we learn another principle. If we assume that the rods and notches are identical. This means that equivalent loads will produce identical stresses at the notch tip. We discovered, however, that only one broke in a catastrophic brittle failure. From this observation we learn that failure due to a stress concentrator (e.g. a notch) exhibits dependence on the Fracture Toughness of the material. We also see that the stress concentration is dependent on the geometry of the flaw and the component, but not on material properties.

These concepts are important for critical fasteners, especially ones that might be vulnerable to fatigue failure in service. For these, designers and manufacturers alike expend a great deal of care in making sure that defects, cracks, scratches, and other stress concentrations where a failure can initiate are not present.

Toughness

When we think about properties that we value in materials and specifically fasteners, we normally think first about strength. Strength, which is the material's ability to resist failure when exposed to applied stress, is, of course, an extremely important property. As parts get stronger they also get more brittle and we recognize that strength is no good without toughness. To be able to perform properly certain parts must also possess toughness, which can be defined as the energy required to fracture the material. Take for example a hammer, the head must possess a great deal of strength. However, if it is so strong that it is brittle and shatters with the first strike of a nail, it is practically worthless. In the same way, fasteners must be strong but they must also be tough.

Toughness is influenced by strain rate, temperature, and notch effects. It is for these reasons that fasteners that must perform in certain applications, such as sub-zero or cryogenic temperatures, often require special materials and testing to assure that sufficient toughness is available at these operating temperatures. Toughness is usually categorized as either impact, notch, or fracture

toughness. Although each is a slightly different measure, all will essentially provide an indication of how likely a part will be to crack.

Perhaps one of the most notorious examples of how toughness may have played a role in a catastrophic fastener failure is on the RMS Titanic. Everyone is familiar with the tragic story of the Titanic. The White Star Line billed this extravagant and extraordinary luxury liner as "unsinkable", yet on its maiden voyage it hit an iceberg in the North Atlantic and sank.

It was long held that the iceberg tore a long gash in the side of the Titanic causing it to sink. However when exploration commenced in 1985, it was discovered that there were long splits in the hull seams but no long gash. Subsequently, some of the hull steel and 48 rivets would be recovered and tested by a metallurgist, Tim Foecke, from NIST. He would discover that many of the wrought iron rivets (used in the bow and stern sections of the ship) were made of inferior iron that contained a high level of slag from the melting process. Foecke theorized that the inferior iron in combination with the North Atlantic's icy brine water temperature lowered the toughness of the wrought iron rivets so that when the Titanic struck the iceberg, the resulting stresses of impact broke the rivets and opened up seams in the hull. These multiple breaches overwhelmed the ship and resulted in her sinking very quickly. If this theory is accurate, (there certainly were other contributing factors that played a role in the tragedy), much of the blame rests with the rivets lacking sufficient toughness.

Summary

This introduction provides the background and fundamentals needed to understand why and how fasteners fail. In segment two of this series we will explore mechanical failures including overload, fatigue and creep. In segment three we will explore corrosion mechanisms and hydrogen embrittlement. In the concluding segment we will look at how fastener manufacturing defects and processes can affect fastener failure. 

COMPUTER INSIGHTS INC. **HOW CONNECTED ARE YOU?** from page 176

This would normally happen in the morning when an Internet connection is assured.

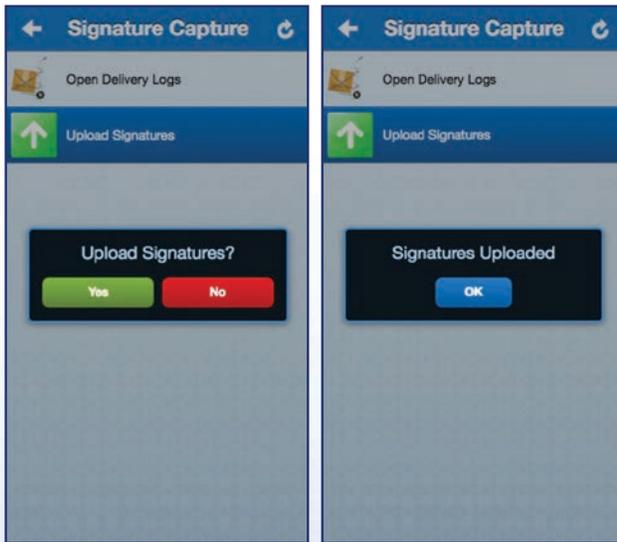
To sync the delivery logs, tap the refresh icon in the upper right hand corner of the 'Signature Capture' screen. The mobile device will display 'Loading...' until the sync is complete, at which point you will see a message indicating that the delivery logs have been updated.

The rest of the system works the same in the offline mode.

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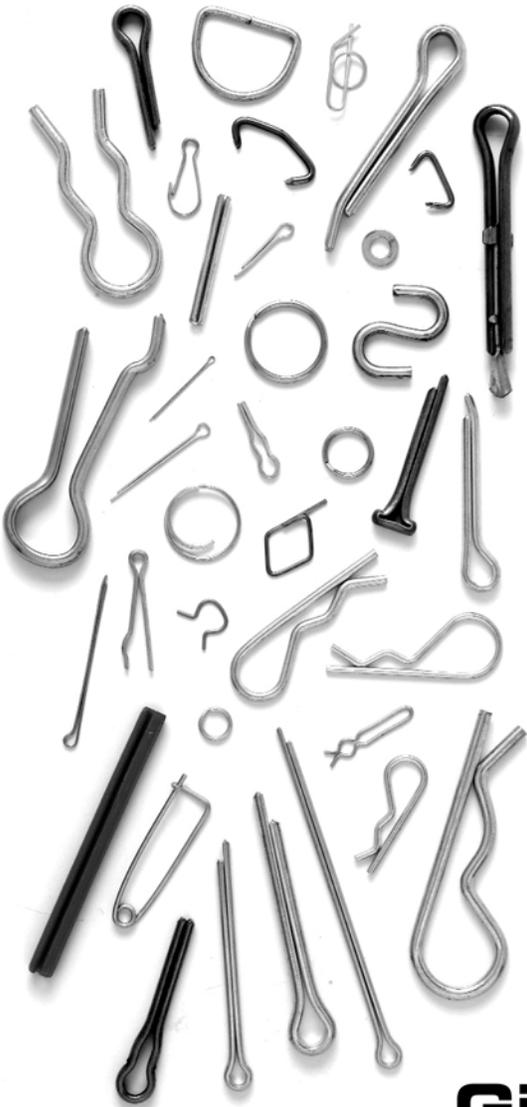
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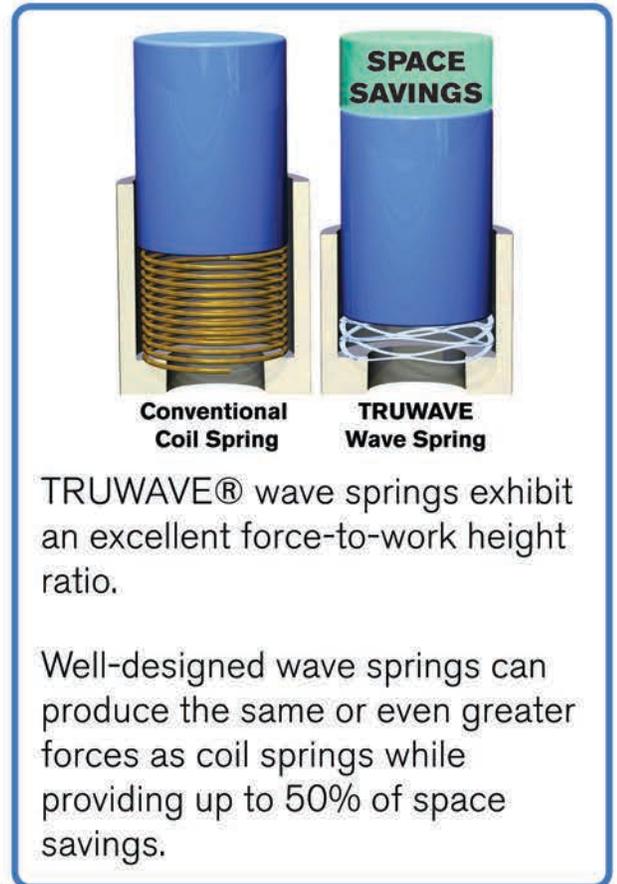
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