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"At approximately \$20,000 per new part introduction, the financial impacts to manufacturers are enormous, but still pale in comparison to the liability associated with poor part selection," said Paul Evenson, Senior Vice President, Parts Solutions, IHS. "By leveraging the IHS Fasteners eCatalog, companies can improve their selection process via time savings and accuracy, accelerate their parts research and eliminate the risk of lost production time, and still meet and exceed the high demands on strict standards conformance."

The IHS Fasteners eCatalog is available immediately.

IHS is a global provider of critical technical information, decision-support tools and related services to customers in a number of industries including energy, defense, aerospace, construction, electronics, and automotive through two operating segments, Engineering and Energy. We serve customers ranging from governments and large multinational corporations to smaller companies and technical professionals in more than 100 countries. Customers rely on IHS offerings to facilitate decision making, sup-

port key processes and improve productivity. IHS has been in business for more than 45 years and employs more than 2,300 people around the world.

About the Aerospace Industries Association (AIA – www.aia-aerospace.org)

The Aerospace Industries Association represents the nation's leading manufacturers and suppliers of civil, military, and business aircraft, helicopters, unmanned aerial vehicles, space systems, aircraft engines, missiles, materiel and related components, equipment, services, and information technology.

SPS Technologies Offers Large Diameter 8-Pitch Locknuts that Meet Military Specifications

SPS Technologies offers 8-pitch, large-diameter locknuts that meet the locking torque requirements of NASM-25027 (formerly MIL-N-25027). Developed originally for the petroleum industry, these one-piece, all-metal locknuts offer vibration-resistance without the excessive wrenching torques needed to tighten nuts with more threads per inch.

Sizes from 1" diameter to 2-1/2" diameter are available in carbon steel or corrosion-resistant austenitic steel. Cadmium plating to QQ-P-416 and silver plating per AMS 2410 are applied in the SPS in-house computer controlled plating facility. Every thread in the one-piece design carries a portion of the induced load, allowing these locknuts to offer reliability under the severe conditions experienced by heavy drilling and pumping equipment.

For additional information, contact Brian Tochtermann, Product Line Manager, SPS Technologies, 301 Highland Avenue, Jenkintown, Pennsylvania 19046, phone 215.572.3058, fax 215.572.3363, email btochtermann@spstech.com, website www.spstech.com/aero.

Fail-safe "Locking" Fasteners Ride the Rails at CSX

Locomotive, rail and maintenance of way—all reap major benefits from advanced joint fasteners that always stay put, improving safety while slashing maintenance and inspection costs.

Despite countless technological advances in other areas, industry continues to be plagued by problems that may seem mundane, yet are often devastating—joint fastener failures. In transportation, such headaches have occurred frequently throughout railroad systems, where fastener failures due to intense stresses have inflicted costly damage and disruption on locomotives, track and maintenance of way equipment.

"On the railroad, most fasteners are very prone to loosening and backing out because they are in one of the worst possible environments—holding joints that are constantly being mechanically agitated and thermally cycled," says Larry Biess, Director, CSX Transportation Advanced Engineering. "That includes locomotives, cars, track and maintenance equipment."

"What causes mechanical fasteners to loosen and shear is usually some external force, such as vibration, torsion, shock or thermal cycles," explains Bruce Bennett, President of **STAGE 8 Locking Fasteners**, San Rafael, California. "In the past, design engineers were forced to use bolts with insufficient stretch due to tight fit or other configuration problems. Once joint integrity is lost, even the most advanced and durable equipment is likely to fail."

Critical hot box application

That point is dramatized by several railroad applications. For example, on railroad tracks thermal detectors are mounted via fasteners either adjacent to or flush to the

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sides of rails at intervals of 18–22 miles. These detectors contain transducers that measure the heat in rail car bearings and wheels, and then signals the train crew whenever a *hot box* rolls by.

"These detectors perform a critical function," Biess explains. "We call them end-of-life devices. There are 950–1000 of them on our 22,000-mile rail network. The three to four optical transducers located in each are aimed so that they can 'see' excessive heat in wheels and bearings. The devices also let the train's crew know when wheel or bearing conditions are such that if they proceed any farther there could be an equipment failure and possibly a train accident."

These hot box detectors are subjected to the extreme vibration of passing trains as well as severe thermal cycles from weather. And when standard or even nylok-type fasteners are used to mount them, those fasteners eventually work loose and lose their aim. "If you lose your aim, the detector is not really doing its job—it's not a sentinel," says Biess. "So there is always that opportunity that if a detector is not functioning properly that we might miss a critical problem on a critical car."

Heavy vibrations up front

The extensive joint fastener maintenance required by heavy vibrations and thermal cycles is time-consuming and potentially expensive. When maintenance-intensive fastener applications are overlooked, the consequences can be even more costly.

For example, the exhaust manifolds on CSX locomotives are attached to heavy-weight GE or ElectroMotive Diesel engines. Those mighty power plants plus the locomotives themselves are continually vibrating and causing the manifold fasteners to loosen and back out of their mounts.

"In effect, the exhaust manifold is a big pipe assembly that is located above the engine, which is vibrating mechanically and going through many heating and cooling cycles," says Biess. "And so you really can't use standard locking fasteners. They have to be re-torqued constantly."

If the proper torque is not maintained on exhaust manifold bolts, the manifold will leak exhaust gases, a Federal Railroad Administration defect that will take a \$2 million locomotive out of service—just for want of an effective locking fastener.

The fail-safe fastener

To eliminate problems such as these, STAGE 8 developed the only active mechanical locking fastener. Available in several models, it is designed to stop joint failure and production downtime by preventing thread loosening from even starting.

STAGE 8's patented GrooveLok™ fastener locking system acts like a small wrench locked onto a bolt head. This locking retainer is braced against a nearby abutment (e.g., frame, casting or protrusion), thereby locking a bolt or nut in place.

If there's no abutment to brace against to stop loosening, a bridge type or strap retainer can fit over two or three bolts, locking

them together, or a retainer can be bent over an edge or frame. For counter-bored applications, the locking fastener system incorporates a secondary counter-bore, a milled slot adjacent to the main counter-bore, into which a locking retainer (i.e. "wrench handle") is fixed. Once installed, fasteners never need to be re-tightened because loosening never has a chance to start.

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Versatile, secure and cost saving

The STAGE 8 system retrofits existing components, is fully reusable, and has been used in items as small as eyeglass screws and as large as needed for holding generator propellers in a hydroelectric dam. To date, the system has no reported failures in over 10,000,000 installations, ranging from industrial, mining, construction, manufacturing, automotive, and miles-deep oilfield drilling assemblies.

When it comes to fasteners and many other "commodity" items that may be engineered into a product, cost is always a consideration—or should be. Yet, savvy engineers also evaluate cost-performance benefits of components that can make their products better, safer and less expensive to operate. Even though slightly more expensive, the use of specialized fasteners could result in major savings through prevention of premature failures and related service

cost. In addition, considering an active mechanical design, like GrooveLok, could eliminate the cost associated with fastener inspection.

For more info on STAGE 8's patented and trademarked GrooveLok™ technology and products, visit www.stage8.com; email info@stage8.com; call 800.843.7836; fax 415.485.0552; or write to Stage 8 Locking Fasteners, Inc. at 64 Louise St., San Rafael, California 94901. Stage 8 is celebrating 20 years of zero failures.

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Accurate Mfg. Products Receives New CNC

Accurate Manufactured Products Group, Indianapolis, Indiana, has just taken delivery of a brand new CNC Swiss Lathe—the Star SB-16. This six-axis, double spindle Swiss CNC Lathe is equipped with a Genius 120 magazine bar feed.

The new Star was brought in to increase in-house production capacity on Accurates' complete line of replacement tips and styli for dial test indicators, drop dial indicator contacts, and their wide line of probes and styli for all coordinate measuring machines.

Accurate can furnish from stock, replacement parts for all standard indicators, and "Renishaw" type styli and probes. The new lathe allows the affordable production of small lot (as small as 1 unit), special tips. Turnaround time is cut tremendously, and the quality of parts off the machine is superb.

For more information on Accurates' large line of accessories and parts for measuring tools, please call or email Andy Grunwald at 317.472.9000 x105, andy@ampg.com, and request our free catalog. ■

American Fastener Journal encourages submission of items for consideration and for use in **Fastener News**. Send items to *American Fastener Journal*, P.O. Box 6191, Carefree, Arizona 85377, or email mmcguire@fastenerjournal.com.

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