Protective measures

Suppliers are upping the R&D ante to develop longer-lasting, yet affordable products that prevent cargo or component damage

BY JEFF STAHL, MANAGING EDITOR

It’s a long-running love affair that hasn’t lost much passion. North American railroads love three-piece trucks, which have been a rail-car component for decades.

So much so, vibration control and cushioning device suppliers are having had a hard time convincing roads to purchase newly developed (though higher-priced) products designed to provide a smoother ride and prevent cargo damage by controlling car-body roll, pitch and bounce or minimizing truck hunting.

Several years ago, Transportation Technology Center Inc. tested a more sophisticated car suspension system, but railroads determined it was too expensive, says Jeff Weisbeck, engineering manager for Enidine Inc., which acquired Vibratech Rail Products’ vibration-control products in 2003.

“We’re now at the happy medium of attacking vibration at the component level,” he says.

KONI North America, which supplies shock absorbers and hydraulic yaw dampers, has tested several vibration control products in Europe that are applicable in North America, including continuously variable damping (CVD). Tested on European high-speed passenger railroads, CVD provides better train stability yet retains ride comfort, says KONI General Manager Jim Vance.

“We’re ready to provide products if the North American rail industry moves away from traditional three-piece trucks and toward higher operating speeds,” he says, adding that North American trains typically reach speeds of 65 mph or 70 mph only for short stretches. “There are some people in the industry that want to make improvements, but it’s a matter of a willingness to invest.”

Until more North American roads are willing to look past the price tag, suppliers expect to continue upgrading a number of vibration control and cushioning products already in the marketplace. They’ll also remain in R&D mode to develop new ones, including products designed to protect C&S equipment.

SEEKING WIDER ACCEPTANCE

KONI, which has supplied yaw dampers to the U.S. rail industry the past 15 years and offered damper/spring combinations for tight-space applications since 2004, recently began developing a prototype Frequency Selective Damping (FSD) shock absorber for a European rail application. KONI has marketed the FSD model — which is designed to automatically adjust to road conditions, and improve stability and control — to the North American automotive industry the past 14 months.

“It can control both roll and pitch without adding frequency,” says Vance.

At Enidine, a wire rope isolator initially designed for the defense industry garnered “strange looks” two years ago when the company introduced the product to the rail industry at Railway Systems Supplier Inc.’s annual conference in Nashville, Tenn., says Market Manager-Rail Products Jim Mohn. Now, MTA New York City Transit is using the isolator — a strand of aircraft-grade wire cable welded between two metal bars — on elevated structures to prevent vibration damage to signal equipment.

“It de-couples a sensitive electronic box from an elevated structure and harmful vibration,” says Mohn.

Enidine also is working with Class I and transit-rail agencies to solve individual vibration problems. For example, a Class I’s radio boxes on swing bridges failed on a monthly basis. Enidine provided an isolator that’s helping extend the boxes’ service life, says Mohn, adding that the company also is combining products, such as wire mesh and an elastomer, to solve specific problems.

Meanwhile, Amsted Rail’s ASF-Keystone Inc. subsidiary is attempting to provide hydraulic end-of-car cushioning devices that meet specific cars’ needs for controlling in-train forces.

A standard cushion unit “tuned” for a 100-ton box car shouldn’t be used on a lightweight flat car carrying an airplane fuselage or a heavy-duty flat car hauling military equipment, says John Deppen, manager of product engineering for ASF-Keystone, which also supplies Twin-Pack® draft systems designed to reduce weight, slack and coupler forces.
"While it is essential that our products be designed to meet all applicable AAR standards and recommended practices, we’re finding that these requirements oftentimes don’t agree with today’s operating environment,” he says. "It’s critical that we work with our customers to understand their service environment.”

MARKET ACTIVITY

Recently, ASF-Keystone has been developing “active draft” end-of-car cushion devices featuring a combination of hydraulics and elastomers. Because trains are getting longer and heavier, cushion devices need to minimize travel and provide higher preload to control in-train forces, says Deppen.

“These active draft units are designed to offer cushioning protection in buffer impact and draft [pull] in all conditions — startup, braking, etc.,” he says. "While not widely used yet, those customers with very sensitive lading, such as coil steel, are successfully equipping cars with these types of products.”

A. Stucki Co. also is upgrading its product line — which includes constant-contact and long-travel constant-contact side bearings, and hydraulic stabilizers — to meet market demands.

A hydraulic stabilizer supplier since 1968, the company recently introduced Gold Series and Platinum Series stabilizers featuring new sealing technology designed to extend product life and reduce maintenance costs. A side bearing supplier for more than 95 years, the firm now offers long-travel side bearings featuring fewer parts and interchangeability between models to reduce inventories and eliminate mix-ups at car repair shops, and new polymer technology to enhance low-temperature performance and extend product life, says A. Stucki VP of Sales and Marketing Jeff Vodar.

The company also has developed products to comply with recent Association of American Railroads (AAR) rule changes, which mandate that all new freight cars, existing tank and flat cars be equipped with constant-contact side bearings to control truck hunting.

"Recent AAR rule changes have shifted the demand for side bearing components from older styles and replacement parts to the newer long-travel upgrade kits and models,” says Vodar. "It also created a new market for 'low profile' constant-contact upgrade kits for existing tank-car conversions.”

During the past few years, A. Stucki also has developed drop-in retrofit kits for most applications regardless of the car builder or when the car was manufactured, says Vodar. A recently introduced drop-in retrofit kit can convert A. Stucki’s 690RL constant-contact side bearing to long travel.

Seven years ago, railroads’ demand for side bearings lasting 1 million miles prompted A. Stucki to develop the SSB® Shear Side Bearing, which offers improved preload retention, says Vodar.

"Today, the company is trying to meet railroads’ preventative maintenance demands by investing in R&D to develop more products that eliminate or control car-body roll, reduce vertical forces from transferring into the car body, protect cargo, and reduce wheel shelling and spalling, he says.

Miner Enterprises Inc. is trying to expand and upgrade its product line, too. A side bearing supplier since the early 1980s, Miner continues to improve constant-contact side bearings’ material and spring technology to extend service life well past 1 million miles and prevent truck hunting, says Manager of Product Engineering Bill O’Donnell.

"We need to make our bearings’ life cycle match the major car maintenance cycle of our customers,” he says.

IN FOR THE LONG HAUL

For the past two years, Miner has focused on developing long-travel designs to retrofit existing side bearings.

"Customers can leave components on a car and drop in our designs,” says O’Donnell.

At Sachs of North America, a line of dampers and shock absorbers the company has marketed to North American railroads since 1996 hasn’t changed much the past few years. Similar to its competitors, the supplier has been trying to convince North American roads to move away from three-piece trucks and toward more innovative vibration control products, says Sales and Engineering Manager for Railway Dampers Thomas Balg.

"In Europe, railroads use hydraulic shocks on freight cars to increase velocity, but speed is lower here,” says Balg. "Durability and price are the big things here, and we’re working to meet those demands.”

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