

## **New Technology to Improve Safety, Efficiency for Car Owners, Railroads**

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Private fleet owners are an integral part of North America's freight railroad industry. The investment they have made in rolling stock has helped modernize the equipment fleet, enhance safety, and improve both the reliability and efficiency of the rail network. It has also permitted railroads to focus more of their limited investment dollars on improving infrastructure. The contributions of private car owners to a growing railroad industry are undeniable.

One of the primary benefits of new rolling stock introduced by railroads, private fleet owners and car leasing companies is increased capacity. New high-capacity rail cars mean fewer cars and trains are needed to carry increased freight volumes.

But like most progress, innovation in rail equipment carries with it a cost. Over time, these heavier loads have taken a toll on rail infrastructure. The industry has responded with substantial capital investment and maintenance expenditures to strengthen that infrastructure.

But maintenance and repair are only part of the solution. The industry also must use technology to predict and prevent stress where the steel wheel meets the steel rail. Our goal must become to identify and reduce stress to track caused by forces that relate to the mechanical condition of the cars that operate over the track. This is necessary to meet our safety goals as well as to improve reliability of service to our customers.

A railroad industry task force was established in 2002 to explore ways to revamp the current system of car repairs, which is focused on fixing components when they break or become excessively worn, as determined through manual inspections. The task force's favored approach has been to move toward a system that, aided by technology, offers opportunities for proactive maintenance intervention by car owners before components fail or exhibit excessive wear. To do that, railroads, car owners and contract maintenance facilities have to use available, proven technology to develop predictive maintenance strategies that identify potential safety problems and poorly performing equipment before they result in an accident or cause undue wear and damage to the infrastructure.

Wayside equipment health monitoring systems provide reliable measures of railroad performance data. That data is, in turn, a reliable predictor of equipment failure. This allows railroads and car owners to detect flaws before they become critical. These systems include truck performance detectors (TPD) that measure wheel/rail forces; trackside acoustic detection systems (TADS) which identify bearings with internal defects; and wheel impact load detectors (WILD), which identify wheels with heavy impact to the rail.

The task force has proposed that the industry utilize WILD data to initiate a pro-active wheel maintenance program. WILDs are well-established and have a proven record of reliability. Over 60 WILD sites in North America are operational and not only send an immediate notification of excessive impact to the train engineer but also send the data to a central database for archiving and further analysis. We know that a WILD impact reading of 90 kips or above means that the wheel is already beyond acceptable operating characteristics and is on the road to an eventual failure. It isn't going to heal itself. WILD, and similar technology, enables the introduction of the concept of a "window of opportunity", a period of time during which maintenance should be performed before the wheel reaches a threshold that is damaging both to railroad infrastructure and the freight car.

As a result of this initiative, it is expected that safety will be enhanced, operating efficiency will be improved and overall system costs will be reduced. Although many of those costs are now borne by the railroads, all parties that utilize the rail network will benefit from stronger infrastructure and more efficient operations.

GE Rail, which is North America's largest private fleet owner, sees value in the program, saying it "considers the Stress State initiative a positive step for the industry. Safety is a critical issue for GE and having better technology to manage safety is good. The use of trackside detectors to identify poor performing cars is a step for improved safety."

Finally, a word about the process. The AAR is very much aware of the fact that private fleet owners are a critical part of the railroad industry. That is why key AAR committees that deal with mechanical issues — including Arbitration and Rules, Equipment Engineering, Brake Systems, Cushioning & Draft Systems, Intermodal Car Performance, Specially Equipped Freight Cars, and Wheels, Axles, Bearings and Lubrication — all include representatives from private fleet owners.

In developing the stress state proposal, the task force sought to be inclusive. Numerous meetings were held that included private fleet owners, leasing companies, car builders, and component suppliers. A series of town hall type meetings was held, beginning last June, open to all stakeholders of the AAR Car Repair Billing and Interchange system: railroads, private car owners, leasing companies and contract repair companies. The stress state initiative was explained; input was sought; and concerns were discussed.

GE Rail believes the process has been inclusive, saying, "We appreciate the Town Hall process being used by the AAR, and being included in various sub teams working through detail issues. This is the type of process that helps build working relationships which is what we'd like to see more of with the railroads."

Everyone in the railroad industry benefits when new technology is used to prevent accidents. Railroads have made substantial safety progress over the past two decades, including a 68 percent reduction in the train accident rate attributable to mechanical causes. But the best way to deal with an accident is to prevent it from happening in the first place. Technology like WILD systems and a commitment to predictable maintenance will help us do that.