

Automated Track Inspections

Automated Track Inspection (ATI) technologies use lasers and cameras mounted onto locomotives and rail cars to inspect track as a train moves across the network, with the advantage of measuring track performance under the force of a loaded train. The data is then collected and analyzed by employees who can schedule necessary maintenance.

ATI enables railroads to inspect hundreds of thousands of track miles each year, and to do it with more accuracy, consistency, and frequency than visual inspections. Despite its safety advantages, the U.S. Federal Railroad Administration (FRA) has impeded the advancement of ATI by denying or delaying several test programs underway at different railroads. The safety regulator should instead modernize its regulatory approach to ATI and similar technologies to encourage safety advances.

In Brief

Data demonstrate that ATI, in combination with reduced visual track inspections, increases rail safety. FRA should modernize its approach to regulations on ATI and other technologies that enhance safety.

Background

Currently, railroads are required to perform visual track inspections—an FRA regulation that has been in place for over 50 years despite countless advances in rail technology. Visual inspections involve a track inspector, either on foot or in a truck called a hi-rail vehicle, looking at railroad tracks and using handheld measuring tools.

In the era of self-driving trucks and drone delivery, railroads are seeking to expand their testing of ATI in combination with reduced visual inspections. Class I railroads began requesting permission from the FRA to implement these test programs on certain routes in 2018 and railroads including BNSF, Norfolk Southern, CSX, Union Pacific, Canadian Pacific, and Canadian National received approvals. The results from these programs showed a reduction in geometry defects on main track and other positive safety improvements. In some instances, there have been over 90% fewer unprotected defects that require remedial actions under FRA regulations.

Why It Matters

ATI's promising outcomes have wide-ranging potential, from speeding up safety inspections to safeguarding employees to improving rail network efficiency and capacity. This technology helps detect track defects with more accuracy, consistency and frequency than do visual inspections, leading to faster remediation. The speed and reliability of ATI reduces the need for visual track inspections that can halt or slow traffic, improving throughput and leading to fewer blocked crossings. ATI also means that track inspectors have less exposure to risk. FRA data shows that reportable accidents involving hi-rail vehicles occur regularly, specifically at highway-rail grade crossings with motor vehicles.

Unfortunately, the FRA is currently blocking the expansion of ATI. Since 2021, the agency has let one test program expire, delayed another request to move to the next test phase, and even denied a request to continue an expired program and a request to expand on an existing waiver. These matters are currently pending.

