

**RAIL INFRASTRUCTURE MEASUREMENT SYSTEMS**

# **Autonomous rail monitoring with BRD**

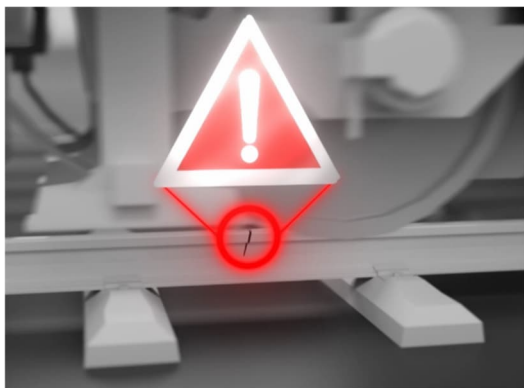
Siemens' advanced automated rail inspection measurement systems empower rail maintainers to address, prevent, and reduce rail wear and damage – for improved protection of rolling stock assets. Designed for durability and accuracy in harsh and remote environments, our Broken Rail Detection system is a train-mounted, self-contained unit suited for commuter vehicles and freight cars.

**SIEMENS**

## PRODUCT OVERVIEW

# Broken Rail Detection

Our Broken Rail Detection system offers superior rail coverage and near-real time monitoring for the detection of broken rails.

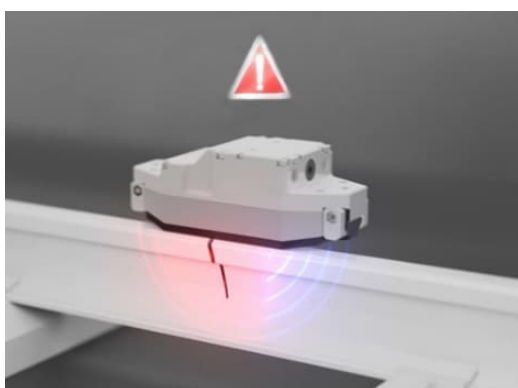


**Figure 1** Demonstrative alert of broken rail being detected.

## Rail Damage, Discontinuities, and Breaks

The monitoring and maintenance of railway tracks is an essential aspect of maintaining and protecting rolling stock interests. Improving the identification of rail damage, discontinuities, and breaks allows rail maintainers to prevent issues such as service interruptions and derailments.

To achieve this goal, rail maintainers require a tested, durable solution that offers constant track monitoring to prevent such events from occurring – exactly the solution BRD offers.



**Figure 2** BRD detecting and alerting to a broken rail.

## Detecting Broken Rails

Each train is equipped with a pair of BRD units featuring magnetic sensors and components for power, location and navigation, and wireless communication. The system continuously scans the tracks for discontinuities, with collected data sent to the Back Office System (BOS). The BOS then alerts following trains to any discontinuities, capable of reliable detection of transverse breaks as small as 1 mm in width – at speeds of up to 80km per hour. Data is processed seconds after detection, indicating the break location, and triggering rapid alerts to signalling systems and following trains.

## Interlock Diversion

If configured, the control centre may also use alerts as indications to interlocks to block the respective damaged line, diverting following trains away from the rail break. This reduces the risk of damage to oncoming rolling stock, further damage to rails, or train derailment.



**Figure 3** Broken rail alerting control center to use rail interlock to divert following trains for damage prevention.

## REAL BENEFITS

# Monitoring Rail Damage

By implementing our Broken Rail Detection solution, rail maintainers can better monitor, predict and address rail damage before further harm occurs – without wasting valuable time, resources, or materials.

## Proven Solutions

Rigorously tested in a variety of environments, our systems are designed to withstand a range of environments and weather conditions, continuously monitoring rails to detect rail wear, damage, and breaks. With over 5.5 million kilometres of rail measured by our BRD solutions globally, railways can rely on our systems to provide superior coverage and near-real time monitoring for broken rail.

## Data Accuracy and Analysis

With systems finely calibrated to detect mere millimetres of wear, advanced measurement accuracy and repeatability, our products provide results that you can rely on. This data is collated into reports customized to your rolling stock parameters, meaning each system is uniquely calibrated for your fleet.

## Ease-of-Integration

Rail maintainers introducing our solution to their railways can integrate the BRD into their existing signalling and maintenance solutions. Capable of running on revenue-generating trains, BRD can be either self-powered or vehicle-powered – making it well-suited for remote railways with little electrical infrastructure available.

## Improved Safety Outcomes

Empowered by BRD, rail maintenance teams can implement optimised inspection intervals, reducing the need and frequency of on-track maintenance and inspection personnel. This leads to measured benefits such as overhead, risk, and expenditure reductions for rail stakeholders.

## Versatility Across Rail Defects

Our BRD solution can detect a range of rail defects, including transverse breaks under compression, transverse breaks under tension, vertical split heads with bulk material loss, and horizontal split heads. Our technology fits on revenue and non-revenue generating rolling stock, functioning on vehicles up to 80 km in speed.

## Centralized Data Management

Our Back Office System aligns all location and detection data, centralizing the decision-making process. The BOS allows changes to the track map to be made in one place and can offer rail maintenance teams the benefit of integration with operator train controls or signalling systems.



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