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MRX
TECHNOLOGIES
A Siemens Business

Surface Crack Measurement

Accurate measurement for condition-based maintenance of rails and wheels

Rails and wheels are the foundation for every rail operator's success. High loads and traffic volumes lead to wear, surface cracking, rolling contact fatigue (RCF), radial cracks and hidden defects. To ensure safe rail transportation and minimize unplanned downtime, rails and wheels must be machined on a regular basis. Until now, it was difficult to identify the best time for such maintenance tasks. If maintenance occurs too frequently, both availability and productivity suffer and material is wasted but if the interval is extended too far, operational safety is at risk and asset deterioration rate increases. Here, Surface Crack Measurement comes to the rescue.

Surface Crack Measurement (SCM) is a contactless technology for monitoring the status of rails and wheels. It enables condition-based maintenance and replaces the less accurate time- and mileage-based calculations. SCM offers significant advantages over eddy-current measurement. For instance, no assumptions about crack angles are required. It can also be used to inspect areas where ultrasonic sensing is blinded by surface defects. Where other technologies require highly skilled operators to interpret the readings, SCM needs only minimal operator training and reports an objective, quantitative crack depth, telling you exactly how many millimeters or inches of material to remove from rails or wheels.

Our service – your benefits

- Increased operational safety for infrastructure and fleet
- Immediate, precise feedback
- Extended rail and wheel lifetime
- Less unplanned downtime
- Stored data for trend analysis

Our SCM products are tested according to:

- EN 61000-6-4:2007 Electromagnetic compatibility (EMC) – Part 6-4: Generic standards – emission standard for industrial environments (as required in EN 50121-4:2015 Clause 5 Emissions limits for apparatus)
- Walking stick is certified by DB Netz AG according DB RIL 821.2007V03-36

In addition all SCM products are CE marked.

The right solution for every environment

To make the search for surface cracks and other material defects as efficient as possible, SCM has been adapted for various applications. Along with three devices to analyze rails, we have a hand-held unit for examining wheels. The range enables measurements at a variety of speeds and levels of portability.



Responsible care for network health

Inspecting and maintaining a whole rail network is a large task that entails significant effort and costs. SCM Rail reduces this overhead while supplying far more precise status analysis than is possible with visual inspection alone.

After repeated surveys over a few months have created a database for trend analysis, SCM can identify network hotspots. Based on this information, we provide detailed recommendations: You'll know which parts of the network should be regularly monitored (e.g. using a walking stick or our hand-held unit) and how often the rest of the network needs to be surveyed.

We can even tell the difference between aluminothermic (AT) welds, flash butt welds and plated joints and can give a highly accurate location of these welds in addition to locating outliers and recommending specific welds for further inspection. All this leads to optimized maintenance with minimal downtimes and maximum network availability.



Vehicle-mounted system for surface crack measurement of rails

The vehicle-mounted system was developed especially for the efficient inspection of longer rail sections. Mounted on a service vehicle, trailer or trolley, the system scans both rails at up to 40 km/h (~25 mph) – perfect for periodic surveys of network health. Additionally, we offer measuring as a service, using MRX owned and operated vehicles, so that you can concentrate completely on your core business.

Your benefits

- Scans both rails simultaneously, for faster data acquisition
- Can be installed on various types of rolling stock
- Available both as a purchase solution and as a service

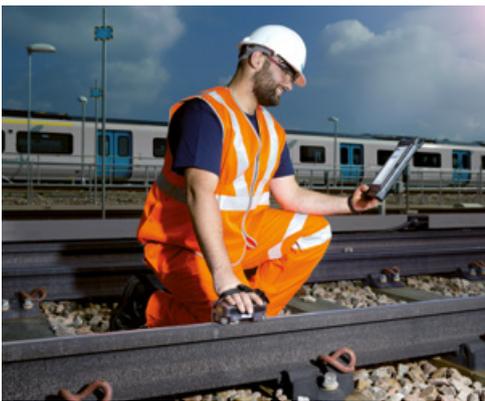


Walking stick for surface crack measurement of rails

For medium distances, small maintenance windows or limited track access (e.g. in underground networks) we have developed the walking stick. It is ready to scan in less than a minute and can be removed from the rail within seconds. Rails can be scanned at up to 5 km/h (~3 mph).

Your benefits

- Maximum flexibility
- Maximum track availability for regular traffic



Hand-held unit for surface crack measurement of rails

It's not always about measuring kilometers or miles of rail. When welding, for instance, it's essential to reliably rule out surface defects near the weld site. Our hand-held unit is designed to inspect very short sections, consistently and reliably. As the lightest, most portable product of its kind available today, this unit gives you greater flexibility – and can be easily converted for use as a wheel measurement device.

Your benefits

- Smallest device on the market
- Light in weight: best portability
- Easy to convert for use on wheels, and vice versa



Keeping your wheels running smoothly



Hand-held unit for surface crack measurement of wheels

The hand-held unit allows for an easy, accurate and repeatable measurement of RCF and its depth. It also saves a great deal of time. The hand-held device, designed for use in a workshop, simply and efficiently inspects the surface of each wheel. The manual sensor head rolls on the wheel tread to detect and quantify the extent of surface cracking. Unlike the usual visual inspections, the hand-held unit creates a damage map showing the exact position and severity of any damage. This way, rail operators no longer have to rely on rough estimates – they know whether or not a wheel needs to be machined, and how much material needs to be removed.

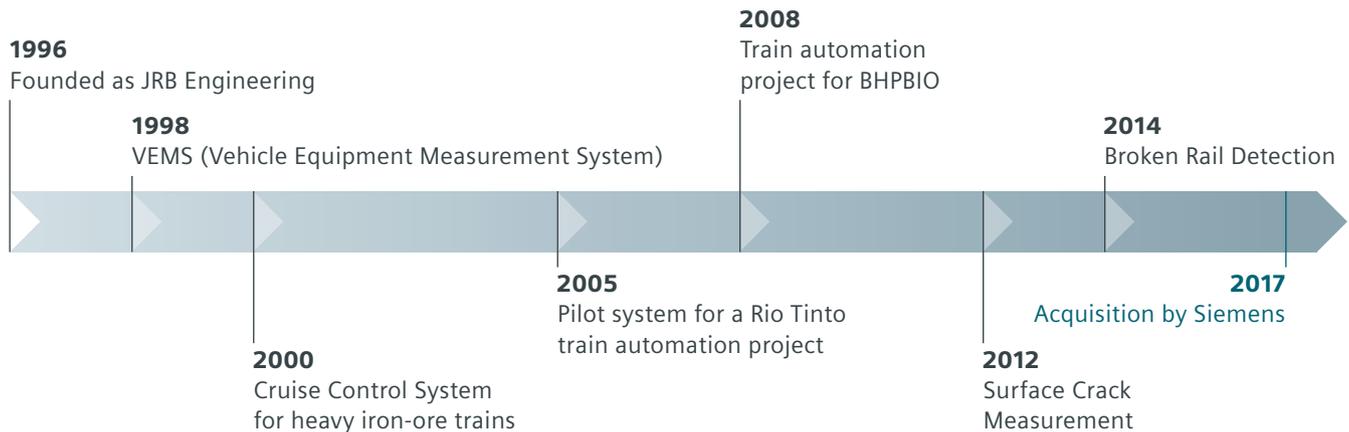
Your benefits

- Increased availability due to more predictable maintenance
- More precise results than with visual inspection
- Extended wheel lifetime due to optimized machining
- Easy to convert for use on rails, and vice versa

About MRX

MRX Technologies is an engineering organization, primarily active in the railway sector. With its highly motivated team of engineers and experienced specialists, MRX has offered services for manufacturers and operators of rail systems since 1996. The company's comprehensive portfolio includes measuring systems for digitalized condition monitoring of rolling stock and rail infrastructures, and inspection systems for rail networks. Drawing on years of expertise, MRX provides new sources of measurement data that can be evaluated to benefit rail operators – helping them optimize maintenance, increase availability and reduce costs.

At the leading edge for over 20 years



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Siemens Ltd Head Office
885 Mountain Highway
Bayswater, Victoria 3153
Australia

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