



Currently, EURAILSCOUT Inspection & Analysis is Europe's largest independent inspection organisation for the infrastructure components of the track.

EURAILSCOUT Inspection & Analysis

Your reliable partner for monitoring the condition of the railway infrastructure

To ensure track safety and reliability for railway traffic, detailed knowledge of the condition of the railway infrastructure is essential. The track superstructure, the track bed, switches, rails and catenary are a complex whole, in which the individual components interact with each other.

Regular inspection and analysis of these components is a prerequisite for a situation-specific and preventive maintenance schedule. Such a maintenance schedule is a necessity prerequisite for availability and the lowering of the life cycle costs of the infrastructure components of the track.

EURAILSCOUT is headquartered in Amersfoort (the Netherlands), with branches in Berlin (Germany), Paris (France) and Bologna

(Italy). From these locations, we supply infrastructure audit services to customers throughout Europe.

We work with rail infrastructure owners and maintenance companies on the development and implementation of new concepts for track control, inspection, measurement and analysis. In this way, we contribute to assuring safety and optimising the proper operation of the railway infrastructure.

In this respect, the latest measuring systems, modern testing and measuring vehicles, mature processes and an outstanding quality management system form the basis for a team of over one hundred qualified workers. They are pleased to help you in finding solutions to your problems.

1. TRACK

We inspect more than 50,000 kilometres of track per year

In order to ensure a safe and reliable railway, track geometry measurements and image data are essential. Checking this must take place without disturbing the normal railway traffic.

EURAILSCOUT can deliver highly accurate track geometry data and high-quality video images. All data are recorded on vehicles that can reach maximum speeds of 160 km/h and so do not interfere with other train traffic. The logistical challenge of measuring the infrastructure network, without missing sections and without disturbing normal railway traffic, should not be underestimated.

Track geometry

The requirements with respect to track geometry parameters are defined in the European Standard EN13848. However, each client has different needs with regard to additional parameters and the definition thereof, caused by specific national requirements and sometimes also for historical reasons.

For the recording of the track geometry data, **EURAILSCOUT** uses a non-contact measuring system that combines optical laser measurements with an inertial measuring system. The location data are collected by means of distance calculations on the basis of the same inertial measuring system, combined with odometers and D-GPS satellite data.

The standard geometry parameters recorded are:

- Track gauge
- Vertical alignment (top)
- Horizontal alignment
- Superelevation (cant)
- Track twist with different base lengths (calculated from the cant signal)
- Gradient
- Equivalent conicity
- Cross-sectional profile

More specific parameters, such as cyclic top, cant deficiency (depending on speed), and dip angle may also be part of the



We help you keep your railway line in good condition with reliable, highly accurate track data and reduce the life cycle costs by our analysis of 'gradual deterioration'.

product. In fact, each of these parameters can be created on the basis of the standard signals.

The system can provide both inertial and chord parameters. This makes it possible to measure all track geometry parameters in accordance with a national or customer-specific standard in a single run. Wavelengths, bandwidths, and threshold values may be configured. The system is flexible and can meet the specific requirements of every customer or country.

Visual inspection (video images)

An additional way of monitoring the safety, availability and reliability of the railway is by recording image data. With line scan camera's, images are taken of the track superstructure, so that, among other things, defective sleepers and missing fasteners be detected automatically. The images from the viewpoint of the driver offer every railway worker a digital overview of the track, at any time.

Rail corrugation

The non-contact measuring system for identifying rail corrugation (short wave rail head defects) takes a measurement every 5 millimetres in order to determine rail corrugation between 10 millimetres and 1 metre on both rails. Bandwidths up to four wavelengths can be configured to evaluate different types of rail corrugation in a single run.



2. SWITCHES

We inspect 200 switches in 6 hours

Of all disruptions on the railway track in which the rail network is unavailable, 50% are caused by switches. **EURAILSCOUT** Switch Inspection & Measurement (SIM) vehicles make full, non-contact inspection and measurement of the switches possible without putting them out of service. This allows the owner of the infrastructure to observe excesses before they cause disruptions or jeopardise safety. All this with a saving on maintenance costs and efficient management of the life cycle costs.

Inspection

Line scan cameras that record high resolution images give you the best view of your track from the comfort of your own office. This allows you to visually inspect the entire switch. You can take all the time you need for the assessment or a second opinion, because there is no train waiting until the switches are taken back into service.

Measurement

A rail profile measurement system that can perform geometry measurements in accordance with EN13848, records the condition of your switches in the loaded condition. High-coverage rail profile cross-sections enable a thorough inspection to be carried out, for example on the switch blades and the frog. Quality control of the switches under operating conditions allows for accurate and reproducible safety assessments. The SIM vehicle checks your switches under everyday operating conditions.

Switch Inspection & Measurement (SIM) - Features and Arguments

- Accurate and reproducible check on the condition of the rail track and the switches
- Nobody in or near the track, no disruptions of train services
- Objective assessment of the switch quality and digital storage of data
- Loaded measurements give a realistic picture of the condition of the rail track and switches
- **EURAILSCOUT**'s data localisation works without adjustments to the track (radio frequency, or RFID, is optional)



The fastest developing measurement concept in the railway sector improves the availability of the infrastructure, offers the potential for situation-dependent maintenance, increases safety on the track and reduces life cycle costs.

Thanks to its low clearance profile, the SIM can be pushed or pulled by one locomotive, thereby making quick shunting between the normal train traffic possible. This enables **EURAILSCOUT** to inspect and record 200 switches (straight and diverging switch drives) in and around Amsterdam Central Station in six hours.



3. RAIL

We inspect more than 100,000 kilometres of rail per year

Since the early seventies of the last century – at that time still under the name of Nederlandse Spoorwegen – we have been successful in providing services in the field of basic safety inspection of rails. In 1976, we had already started with the internal inspection of rails without interference from railway traffic. We did this with our inspection vehicle UST 76, which quickly gained fame in Europe.

Ultrasonic transducers in combination with improved guidance of the sensors on the rail make internal examination of the rails possible, in all safety-relevant parts of the rail profile of rails and switches, with the exception of the frog and the tongue (blade) of the switch. The ultrasonic examination detects internal defects in the web and head of the rail on the running side of the rail. We also record images of the rail head, web and foot at “gauge corner” with a resolution of 0.5x0.5mm.

Our measuring trains carry out ultrasonic measurements between normal train runs at speeds of up to 70 km / h. The ultrasonic measuring systems are annually certified in accordance with EN 16729-1.

Eddy current

The trains that are equipped with 16-channel eddy current systems can inspect the entire running surface of the rail. This enables **EURAILSCOUT** to detect not only head checks (open cracks on the rail surface) in the inside edge of the rail, but also other rail surface defects due to fatigue from contact with rolling stock (rolling contact fatigue, RCF). The inspection area meets the new expanded inspection area as described in EN16729-2. This provides a better understanding of the current condition of the surface of the rails.

Manual measurement

EURAILSCOUT also provides manual ultrasound and eddy current measurement services related to the inspection of the rails or for verifying potential defects detected by a measurement train. Our specialists are trained and experienced in working according to the requirements defined by the customer.



We assure you a safe track and help you to reduce life cycle costs. We provide comprehensive track inspection with ultrasonic, eddy current and visual inspection, or a combination of these three.

Our qualified employees ensure consistently high quality thanks to continuous further education and have required certification levels of ultrasonic testing methods, eddy current and visual inspection in accordance with EN 9712 and/or ASNT.



4. OVERHEAD LINE

We inspect overhead lines with a speed up to 160 km/h

The **EURAILSCOUT** measurement trains can carry out a full survey of overhead lines with speeds of up to 160 km/h. The various trains are equipped with innovative measurement and diagnosis technologies for many aspects of the inspection of overhead lines.

Measurement of the position and height

Contact-free laser systems scan the height and horizontal position of up to eight contact wires with automatic corrections for the rolling motion of the train, which is measured separately.

Measurement of the contact force, acceleration and wire range

EURAILSCOUT has a system for measuring the contact force between the contact wire and the pantograph.

The measurement system measures the vertical contact force between the pantograph and the contact wire and the vertical acceleration of the pantograph in accordance with EN 50317 and EN 50368. This can be used to detect incidental differences in force and acceleration. These differences cause increased wear of the contact wire and are therefore undesirable. Contact sensors detect the contact wire stagger within the range of the pantograph.

Contact wire wear measurement

Cameras make a continuous, non-contact survey of the contact wire to assess wire wear. The images are used to determine the width of the wear surface of the contact wires in order to enable subsequent calculation of the wire thickness of each contact wire. Images are recorded and stored every 5 mm.

Position of the catenary poles

The positions of the catenary poles along the rail track are automatically recognised by laser systems and stored together with the measurement and inspection data. The positions are displayed with the measurement results.



The current inspection and analysis of the catenary system at normal and high speeds guarantees safe and trouble-free train traffic.

Video inspection

The visual recording of the catenary system is made with high-resolution cameras. An image is recorded every 1.5 m, so that the images can be used alongside the measurement data in the quality assessment. At night, infrared images are recorded.



5. SIGNALLING

We inspect safety using ERTMS, GSM-R and ATP measurements

Inspection of train safety, Euro-balises and ERTMS

- Using special sensors and software on our trains, **EURAILSCOUT** can check information relating to train safety, such as ATB or other track circuits.
- ERTMS Euro-balises, but also other types of balises, are measured and stored for further analysis.

Any deviations in the signal or message are reported, but can also be compared with previous measurements so as to prevent outages and increase availability and reliability. All the above measurements can be carried out simultaneously with other measurements (track geometry measurements, catenary measurements or ultrasound measurements) with a view to cost savings and better rail traffic management.

GSM-R monitoring

The closed GSM-R network was specifically designed and built for the railways. Currently, the system is used for telephone calls between the driver and the traffic controller/signalman. This network plays an important role in the new European safety system ERTMS, as more and more data applications are possible via this system, such as the transfer of timetables. The periodic monitoring of this communications system can ensure that infrastructure operators are able to maintain the required signal quality of the GSM-R network.

EURAILSCOUT specialises in measuring the radio coverage and signal strength of the GSM-R train radio network. The radio coverage and reception quality of digital train radio (GSM-R) is measured at speeds of up to 140 km/h. These measurements play an increasingly important role in the improvement of the new European GSM-R train radio system.

ATB monitoring

The ATB-EG system is a train control system, which allows rail traffic to run at high speeds if given permission. Any errors, deviations or absence of the ATB signal may cause undue delay or even complete cessation of rail traffic. Regular monitoring of the quality of the ATB signal provides early detection of potential problems before they can interfere with regular rail traffic.



The communication link between the trains and the traffic control centre is vital for keeping trains running safely and on time.

