

# Targeted measurement and analysis

The train density is rising. Safety requirements are becoming ever tighter. The pressure for maximum availability and reliability is high. These are reasons for Strukton Rail to search constantly for improved and innovative maintenance methods.

Among these methods are integrated inspections, measurements and online infrastructure monitoring. The data obtained are analysed and used in maintenance models, which enable a better match between the maintenance to be planned and performed and the state of the infrastructure. As a result, the incidence of breakdowns and function recovery times are brought down, and costs are saved.

## Measurements on the open track

On the open track, Strukton Rail uses the Eurailsout UFM 120, a multifunctional survey and inspection unit that measures track geometry, rail profile and overhead wiring, and also makes digital recordings of the rail surface and the track surroundings. The exact location is established by GPS position fixing.



All stored measurement data are processed in IRISsys, an integrated analysis and assessment tool for the inspection and measurement data.

The results obtained enable us to control the maintenance process better. Which maintenance activity should use which type of machine. A clear understanding of the progress of the track quality is gained by referring to historical measurement data. Trend analyses provide a firm basis for long-term maintenance and renewal plans.

## Safe running

Strukton Rail uses the latest measurement trolleys for inspecting points on the main line, sidings and junctions.



Superelevation, distortion tolerance, track gauge and clearance of both the open blade and the frog, are measured accurately. Depending on the setting, this happens fully automatically every cm, or every 2.5 cm. If desired, the track worker can manually augment the basic data, which is provided in digital form.

After reading the measurement data into an inspection database, the quality and position of the points is presented in the form of a diagram. Analysis reveals any violations of tolerances, and maintenance recommendations are generated accordingly.

Strukton Rail now also uses recently-developed video inspection techniques.

*Digital points inspection*

Remotely-controlled video cameras inspect points, scrutinizing them from various angles (see the leaflet on permanent camera inspection).

*Video inspection of points with the VST-05*

Points inspection, in particular on main lines (because of the higher speeds).



*Mobile video inspection unit*

For inspecting the track for headchecks and other defects, in particular at junctions.



These systems have the advantage of objective measurement, with digital recording and reporting, a higher safety level and higher quality inspection. What is more, inspections are possible in the gaps in the train service at any time of the day, and no service interruption is needed.

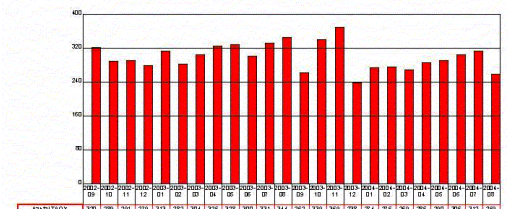
**Monitoring of electrical facilities**

The electrical facilities are checked regularly with a view to guaranteeing track safety. A technique that is being used increasingly often is continuous monitoring with Strukton's POSS preventive maintenance and breakdown diagnostic system. The system may be used on points, crossings, insulated track, power supplies and other items .

The data stored in POSS is analysed for later use in improving maintenance and ensuring a timely response to imminent breakdowns.

**Effective problem analysis**

With the objective of reducing the number of service-disrupting disturbances, all breakdowns are followed by a problem analysis. The aim is to identify repetitive breakdowns and to devise a satisfactory solution for them.



The breakdown recording system known as SOS is an efficient tool, which captures all the relevant data of the breakdown. The time, form of failure, cause, condition, identification of the affected component and location of the object are recorded following a FMECA risk analysis of the system concerned. SOS provides a clear overall view of the breakdowns that occur, service-disrupting disturbances, response times and times to restore function. Qualitative maintenance analyses also enable data to be recovered from the database that are related in widely varying ways, thereby revealing breakdown trends and causes.