



**Strukton**  
Systems

# POSS<sup>®</sup>

On track towards greater availability



## Preventive maintenance to reduce failures

Rail transport with minimal delay. This is what today's train travellers expect. And this goal is shared by many politicians, rail infrastructure managers and rail contractors. It's certainly in their interests to minimise disruptions. One way to achieve this is by measuring and monitoring those components most susceptible to failure. This is exactly what the railway condition monitoring system POSS® does. Strukton developed this monitoring system, combining its railway maintenance experience with its technological expertise. POSS® continuously monitors points, track circuits, trains and other essential assets. It identifies deviations from the standard operation settings.

The application of POSS® for points is achieved using measuring units (data loggers). These loggers need not be installed in the points themselves, but in the interlocking room or relay cabinets. Thus no possession of the line is needed for installation. POSS® registers the power consumption of the points. If the points use more power than usual, this could be an indication of a potential problem due to e.g. a rough running blade. This is generally the start of a failure. POSS® immediately issues a warning signal or alarm. The rail infrastructure manager or maintenance engineer can then intervene and avert any disruption.

The users can access up-to-date information about POSS® via the Internet at any time and anywhere. Users can log in to the POSS® cloud.

POSS® reduces  
breakdowns  
by up to 30%







POSS® is  
non-intrusive  
and easy  
to install

## Optimising maintenance

POSS® continuously and remotely monitors the condition of essential assets in the railway infrastructure and rolling stock. It has proven to be a powerful tool to support asset management, optimise maintenance and increase the availability. POSS® allows condition-based maintenance, where repairs are only undertaken when necessary. Maintenance frequency can be reduced as a result, which leads to lower operating costs. POSS® also provides trend information from measurements for further analysis on the nature of breakdowns. This helps to assure that recurring breakdowns can be reduced to a minimum. This again leads to lower operating costs. POSS® makes it possible to check the condition and quality of objects after commissioning, maintenance and repair work. It is therefore a useful tool for quality assurance. Finally, the event data is converted into information for different user roles, from management to engineer.

In short: using POSS® for maintenance results in:

- fewer breakdowns
- lower operating costs
- increased efficiency
- higher availability
- quality assurance

## Cloud concept

POSS® is the only railway asset monitoring system in the world that uses the Internet cloud principle. All relevant information about the condition of railway objects is available in the POSS® cloud ( [www.possonline.nl](http://www.possonline.nl) ).

Authorised POSS® users can log in on their tailor-made website via the cloud. They can access the information at any time and from any place in the world. And they will be immediately notified of any deviation. Running the appropriate application enables them to distribute, analyse, report and/or present the data as required whenever and wherever they wish as long as they have a (wireless) Internet connection.

The POSS® online portal provides access to the advanced RCM software platform allowing detailed insight into the actual condition of the specific assets. The assets are presented as an integrated whole, which ensures optimal ease of use. The platform also provides products such as:

- POSS® Analyst - an analysis tool to recognise trends in rail asset quality and maintenance
- POSS® Manager - a management overview and reporting tool

### POSS® service desk

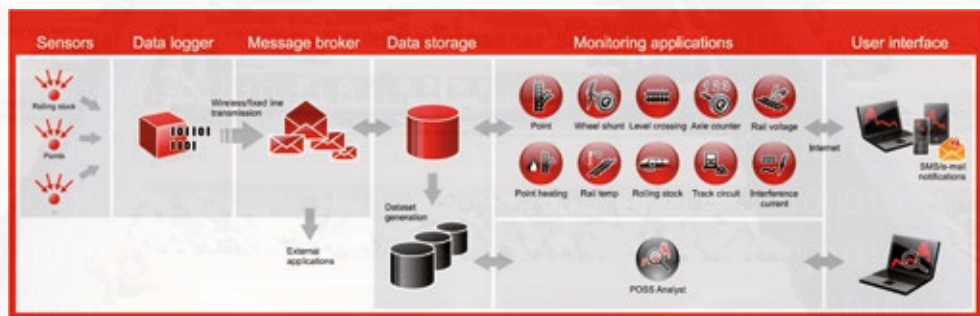
Our POSS service desk is available for the users to answer user questions. The service desk also provides for a user community sharing change requests, user demands, software extensions, etc.

POSS® is simple  
and user-friendly

Example of  
POSS® interface







No extensive IT investments are required, since POSS® users can use existing presentation layers including laptops, smart phones, tablets, etc. They only need MicroPOSS® data loggers and sensors (e.g. current clamps). The data loggers transfer data via GPRS or Ethernet (glassfiber) to the POSS® cloud. The POSS® software combines years of maintenance experience and technology to create maximum support. We are sure that users will enjoy the benefits of the advanced POSS® software in their maintenance activities.

### Open system

POSS® is non-intrusive, simple, user-friendly, reliable, low-cost, easy to install and flexible. It is a completely open system. This means that POSS® can be linked to any system, irrespective of the supplier or object to be monitored. Data inputs may also be added from other sources including inspection trains or maintenance management systems. POSS® can be easily expanded at a later stage when new measurement options are launched. It is also possible to link POSS® to existing business information systems.

### Standardisation

POSS® meets all modern railway requirements. It complies with the highest electromagnetic compatibility (EMC) standards in its category, and is therefore ideal for all rail applications. The software has been developed with the latest technologies. Our hardware has been developed and manufactured in our own facilities. It complies with the highest quality standards.

## POSS® applications

### POSS® for rail infrastructure assets

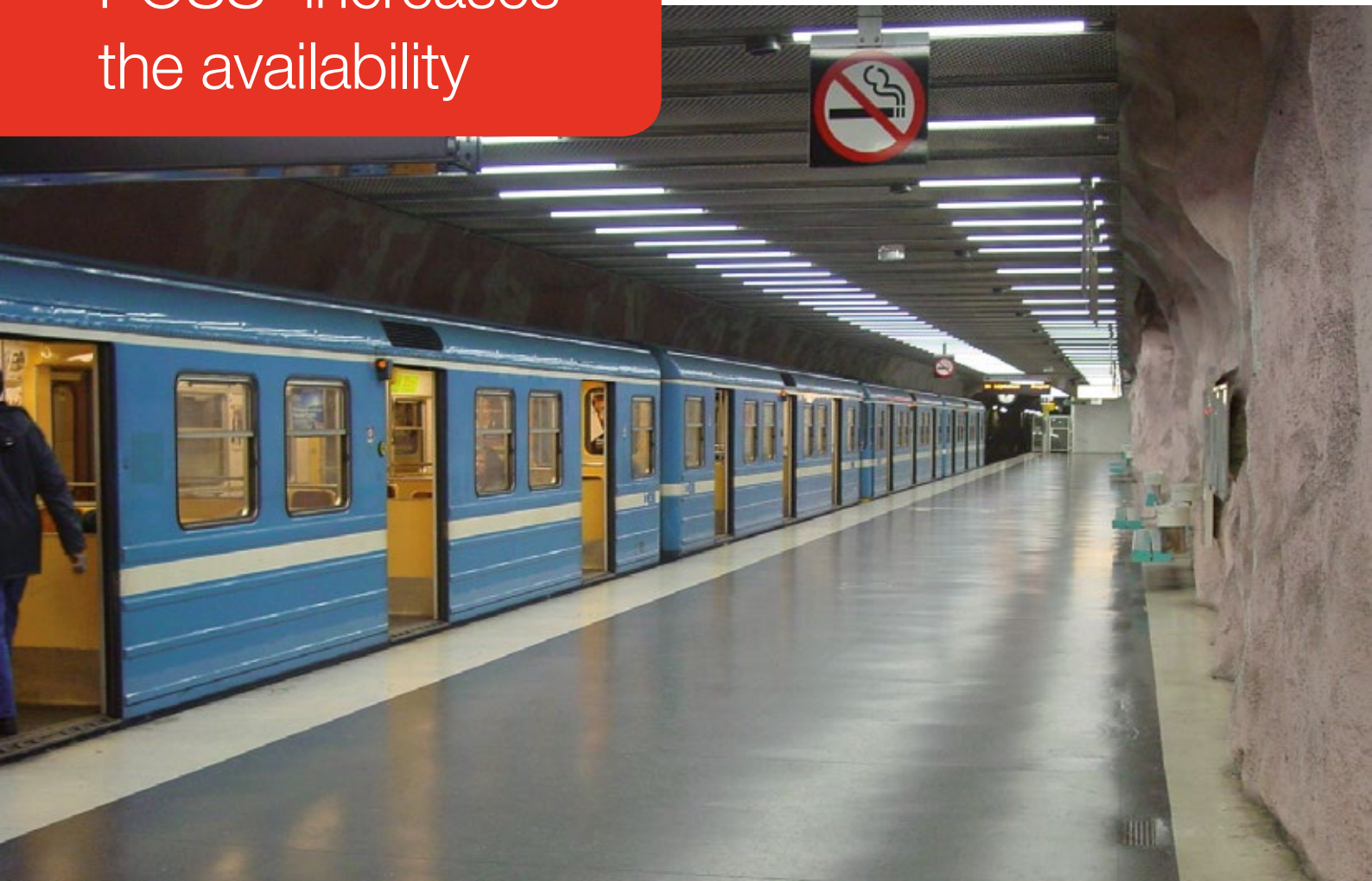
Worldwide, POSS® monitors a diverse and varied set of railway infrastructure elements and provides railway managers and maintenance companies with the right information to prevent unplanned blockage of track access. Equipment most susceptible to breakdown includes:

#### Points

The performance capability of a point machine is directly related to the amount of power needed for the engine to reverse the points. Deviations in current consumption indicate a potential problem. Special POSS® measuring units (data loggers) monitor the current and phase angle if necessary. The data from the measuring units can be presented in graphs giving a detailed picture of the errors for each individual phase of point reversal. Alarms can be generated for each individual phase of the point reversal process as well.

The complete galvanic isolation in operating both DC or AC point drives is a characteristic feature. There is no electrical connection between POSS® and the signalling system, which avoids acceptance problems. Installation is quick and easy, with no requirement of any track possession. Many customers install the data loggers themselves.

POSS® increases  
the availability







### Track-circuits

Measuring the current of the track relay provides two sources of information: the condition of the track-circuit and the quality of the axle shunt. The latter parameter is becoming more important due to the introduction of light rail rolling stock.

### Level crossings

POSS® assures the reliable and safe operation of level crossings based on the following applications:

- Statistics. By checking the operating relay of the level crossings, POSS® generates statistical data including closing time, percentage of closing time during the day, number of passing trains, etc.
- Intelligent video monitoring. Cameras featuring image recognition check the time it takes for the barriers to close, the operation of warning lights and the overall integrity of the level crossing site.

### Additionally, POSS® can also be used for monitoring:

- Points heating
- Axle counters
- Train detection
- Rail temperature
- Compensation joints
- Weather conditions

## POSS® for rolling stock

POSS® is an important tool for fleet maintenance. It is a checkpoint for the train and helps rail operators and rolling stock maintenance companies to improve their maintenance process.

### On board

A great deal of information about the actual performance status of train equipment is only revealed once the train is in the maintenance facility. Depending on the on-board train diagnosis system, POSS® supports the transfer of all essential asset information online. It does so via a specially developed hardware data logger or via specific supplier-independent ICT protocols. This enables the workshop to monitor train performance via the Internet. POSS® also enables rolling stock maintenance companies to schedule repairs and thus increase train availability. And it can be used for analysing failures and systems to improve train reliability.

### Wayside

POSS® wayside monitors train objects through wayside sensors and protects the railway infrastructure from being damaged by trains. POSS® wayside has several modules:

- Axle weight. Warns against axle overload, which is very important for cargo trains
- Wheel quality. Checks flats and wheel distortion. The system not only detects flats, but also measures the location and exact size of the flat in mm
- Pantograph. Avoids catenary breakdown due to broken pantograph failure
- Hotbox. Detects overheated wheel bearings and overheated brake discs

POSS® is a supplier-independent tool for fleet maintenance







## In summary, POSS® provides for:

### The POSS® Movie:

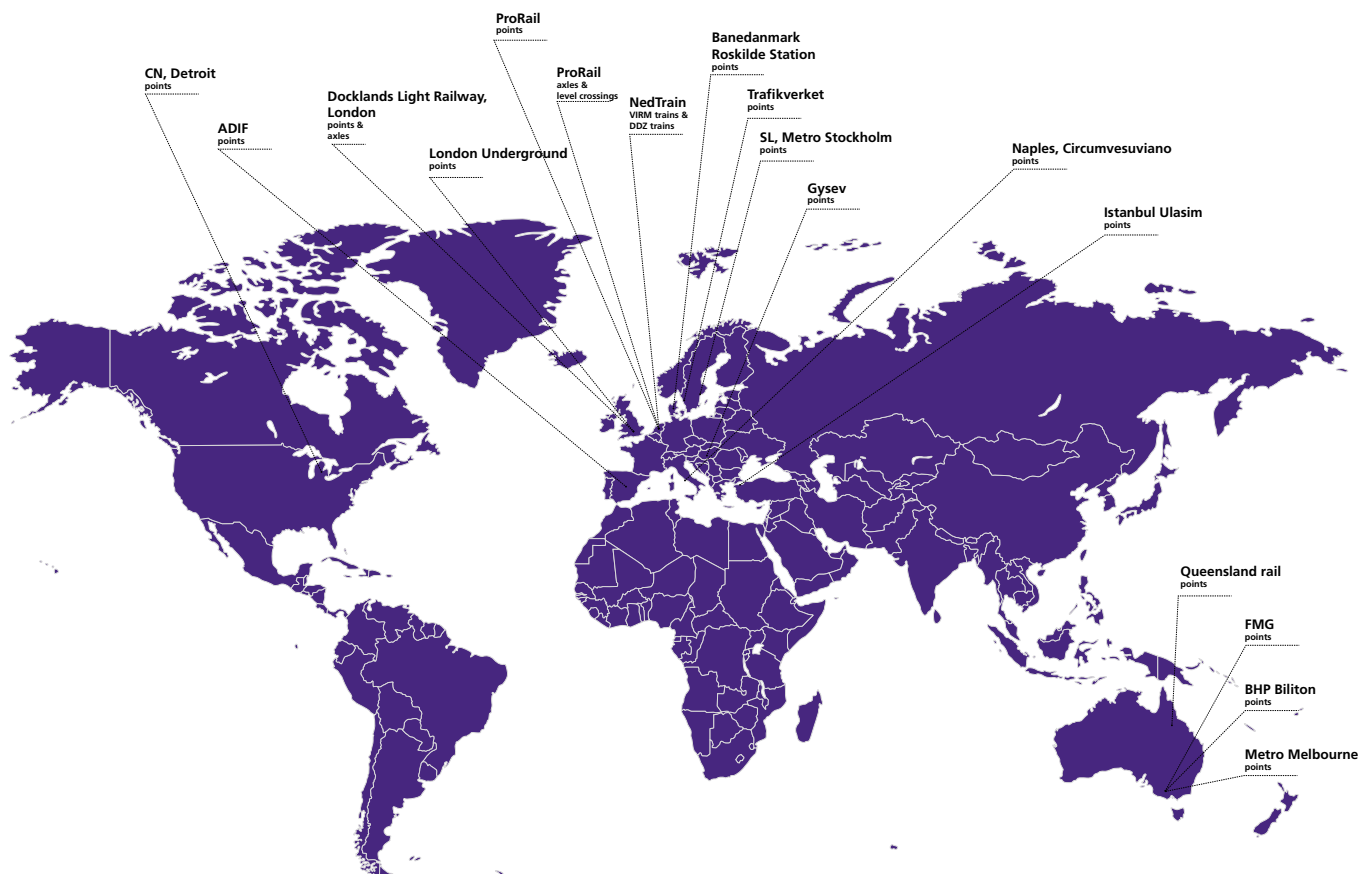


- Quick insight into the condition of essential assets due to easy installation
- Greater availability due to fewer breakdowns and swifter breakdown repair
- The possibility to create an improved maintenance process in order to reduce costs
- 24/7 availability of monitoring data in the cloud
- One web interface for monitoring all essential railway and rolling stock objects

## Consultancy

In addition to delivering a power solution. The professional consultants of our POSS® team can support you with:

- Embedding POSS® in your business process
- Organising training sessions in the use of POSS® for your employees
- Setting up fault catalogues



## POSS® references

Over 6,500 assets have been connected to POSS® worldwide. Strukton is the largest supplier of railway condition monitoring equipment. Examples of railways successfully using POSS® include:

Customer	Country	Railway Line	POSS®
ProRail	Netherlands		1,750 points
Serco	United Kingdom	Docklands Light Railways	138 points
			31 axle counters
SL Stockholm	Sweden	Metro system of Stockholm	300 points
Queensland railways	Australia	Heavy mine railways	75 points
London Underground	United Kingdom	Metro of London	93 points
Trafikverket	Sweden	Göteborg region	16 points

More projects:







**James Delaney, S&T manager at Serco Docklands**

*“POSS® has assisted diagnosis and prevented several failures, including 2 potential faults during the Olympics. POSS® enables our team to maintain the equipment before it fails.”*

## Strukton Systems

POSS® is the Dutch abbreviation of Preventive Maintenance and Fault Diagnosis System Strukton (in Dutch: *Preventief Onderhoud- en Storingsdiagnosesysteem Strukton*). Strukton developed the POSS® system to optimally perform its maintenance contracts. The aim: contribute to optimally reliable, available, maintainable and safe railways. Strukton developed POSS® by combining its international railway maintenance experience with its technological expertise.

Strukton Systems is an electrical engineering specialist. It is an all-round international contractor with in-house engineering and consultancy. Involvement and solid project management are key words in Strukton Systems' business philosophy.

Strukton Systems forms part of Strukton Rail, a full-service provider of rail systems in Europe. Strukton Rail designs, builds and installs custom-made technologies, which have proven to contribute to the safety, reliability and sustainability of railways, rolling stock and electro-technical infrastructures. All efforts are aimed at making railway transport more attractive and competitive.

Would you like to know more about POSS®? Don't hesitate to contact us.  
We will be happy to explain the possibilities in person.



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