

Wheel Profile Monitor



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Wheel management is of key importance to cost-effective rolling stock maintenance. Wheels are among the more expensive items to maintain and replace. The Track IQ Wheel Profile Monitor (WPM) is a track mounted machine vision system that not only measures individual wheel parameters but also performs measurements on the entire wheelset for each axle of the train.

The Track IQ WPM consists of a set of high precision cameras and associated high speed strobe lighting mounted to track infrastructure.

The cameras and strobe lights are synchronised to produce quality infrastructure images every time at speeds ranging from 10 to in excess of 160kph.

Captured images are automatically analysed using complex machine vision algorithms, which results in very accurate measurements. The images are also stored for reference, in case it is necessary to check the wheel manually.

The WPM is configurable to various levels of precision depending on customer specific requirements.

More advanced Wheel Profile Monitor configurations add additional cameras to provide increased parameter measurements and a higher accuracy of the data.

Track IQ can discuss a configuration of the WPM that best suits your maintenance practices and wheel management strategy.

WPM system benefits include:

Bi-directional monitoring

Flexible track installation window (as traffic permits)

Trending database

Suitable for electrified environment

Integrated Alarms/Alerts

Self cleaning system operation

No track modifications required for installation

Suitable for standard track structure

Interfaced with maintenance management systems

Modular components reducing installation and maintenance times

Auto compensation for track modulus variations

Improved monitoring and wheel wear maintenance

Track IQ

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Through the use of the Track IQ FleetONE database, processed data and images can be viewed either by train or by vehicle and statistical information viewed by date. Graphical functionality shows historical analysis of component wear over time with search capabilities configurable to user requirements.

Critical alarms provided by the WPM can be integrated into respective Train Control Systems to enable WPM data to automatically deliver actionable information to the railroad maintenance team if required.

As the WPM system measures every single wheel with reference to its location on a particular vehicle, trending of parameters is used to predict wear time and calculate wheel wear rate.

The images of each individual wheel can be reviewed to determine when a defect started to occur. In a typical system, images are stored for three months and the data for up to two years. The length of time images and data are kept can be extended by using larger storage media.

WPM Parameter Measurements

Flange Height/Width

Hollowing

Rim Thickness

Back to Back

Wheel Diameter

Vertical Flange Assessment

Multi-pass Entire Wheel Geometry

Wheel Head Profile Geometry

