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Rolling Stock

Evident

PASAWIS: The Comprehensive Solution for Railway Wheelset Inspection

Railway wheelset inspections are vital to ensuring the safety, efficiency and reliability of rail transportation systems.

During operation, wheelsets encounter a high degree of stress, which can lead to wheel wear, fatigue cracks and misalignments that can compromise the integrity of the wheelset and cause knock-on damage to tracks and other rail infrastructure. Detecting these issues as early as possible is key to preventing accidents, derailments and other safety hazards.

Nondestructive testing (NDT) of rail wheelsets can be a time-consuming and laborious task when approached via manual conventional ultrasonic testing (UT) or phased array ultrasonic testing (PAUT) methods. This is primarily due to key components such as the axle, rim and tread being difficult to access, meaning that wheelset disassembly is sometimes necessary to complete inspections to a satisfactory standard. Following disassembly from the carriage, it can still be challenging to access key components for inspection, requiring multiple probes to be set up at various angles to gain an appropriate level of coverage. This

lengthy and cumbersome workflow can have significant financial implications, from increased railcar downtime to labour costs. Manual UT/PAUT inspection results are highly human-dependent, and as such, prone to operator errors. Furthermore, manual inspection data often lacks traceability since the data is volatile, and not always stored on a local system.

The PASAWIS (Phased Array Semi-Automated Wheelset Inspection System) is a next-generation, all-in-one solution that makes wheelset inspections substantially more efficient, faster and more reliable. Developed by Evident, in collaboration with Fraunhofer IZFP and RailMaint, this powerful testing platform meets the requirements of the VPI-EMG09 regulation for the maintenance of freight cars through the implementation of NDT.

Wheelset Inspections Made Easy

PASAWIS is a UT platform that uses a combination of the latest ultrasonic and phased array scanning technology and custom software to gain unparalleled coverage of wheelset components. In comparison to traditional UT platforms that utilise a series of single
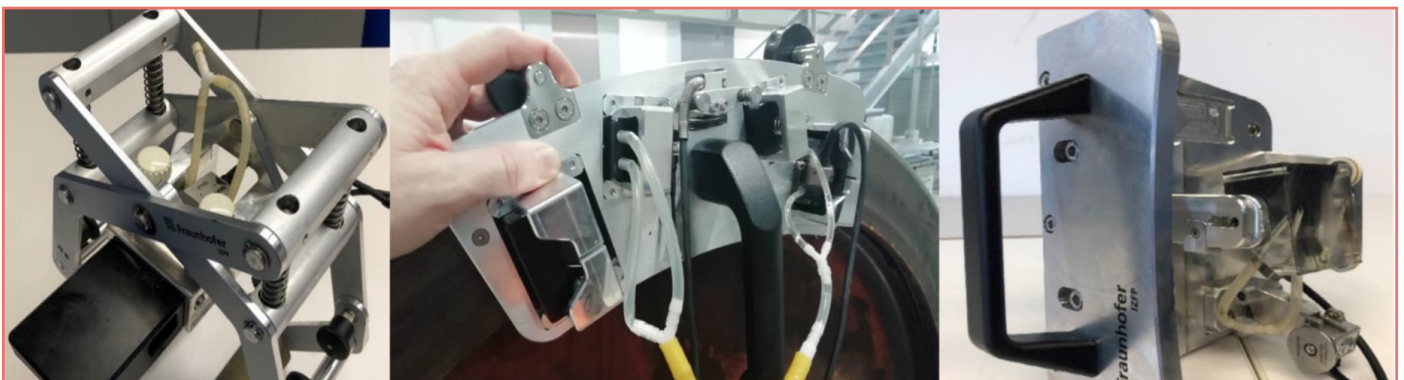
PASAWIS brings customised scanners, portability and data reporting into a compact unit
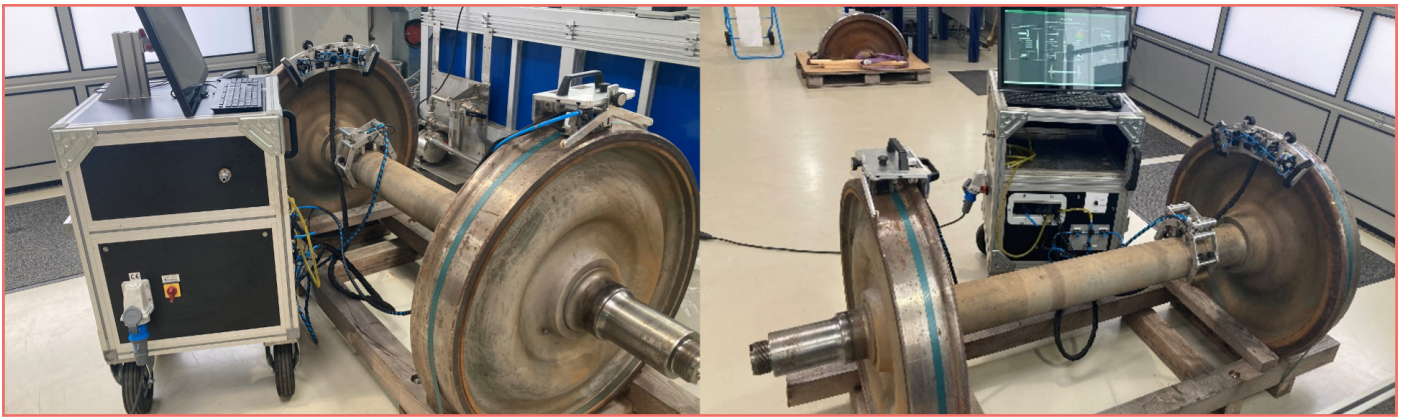
Three dedicated PAUT scanners, optimised for inspection of wheelset axle, rim and tread

element transducers, PAUT probes contain an array that accommodates multiple elements. This enables the PAUT probes to generate wide angled beams, providing a more comprehensive picture of wheelset components and increasing the probability of detecting potentially dangerous indications.

PASAWIS comes equipped with three hand-held scanners, each optimised for a different wheelset component (axle, rim, tread). These optimised PAUT scanners are designed to fit flush with each wheelset component to accelerate inspections and gain complete coverage to ensure that all relevant indications, including wear and cracks, are not missed. Supporting wheelset inspections, dedicated PASAWIS software provides a number of pre-defined inspection programmes, also optimised for each wheelset component. Integrated into the system is the software interface, a large touchscreen monitor that provides a clear visualisation of wheelset components and test data.

Another major benefit that PASAWIS provides is its high degree of mobility. The system is compact, and comes with wheels for easy manoeuvring. This highly mobile system can be deployed anywhere, and can be operated by a single person, making it suitable for almost any workshop environment.

Automated Data Storage Like Never Before

In addition to making inspections quicker and easier, PASAWIS provides robust data storage capabilities. Unlike other wheelset inspection tools, PASAWIS enables full storage of all inspection test data. Inspection parameters and test data can be automatically uploaded to cloud-based document management platforms, or instead transferred to central storage systems via USB, Wi-Fi or LAN. This enables long-term traceability and reproducibility of inspection data.

Once the inspection is complete, PASAWIS creates inspection reports with minimal input. Graphical results for each wheelset tested, e.g. A-scan, sectorial image and C-scan, as well as several key metadata such as calibration date, instrument serial number and inspector are included in the report, which comes in PDF format. Each inspection report has a unique digital signature to ensure data security.

Ready to Take Your Wheelset Inspections to the Next Level?

Developed by trusted partners with decades of industry experience, PASAWIS is the comprehensive solution for wheelset inspections. With the latest PAUT technology, optimised scanners, high portability and robust data storage and security, PASAWIS can help to reduce the time and costs associated with wheelset inspections, while providing a more comprehensive picture of wheelset health versus other manual scanning methods with the human factor on inspection results limited to a minimum.
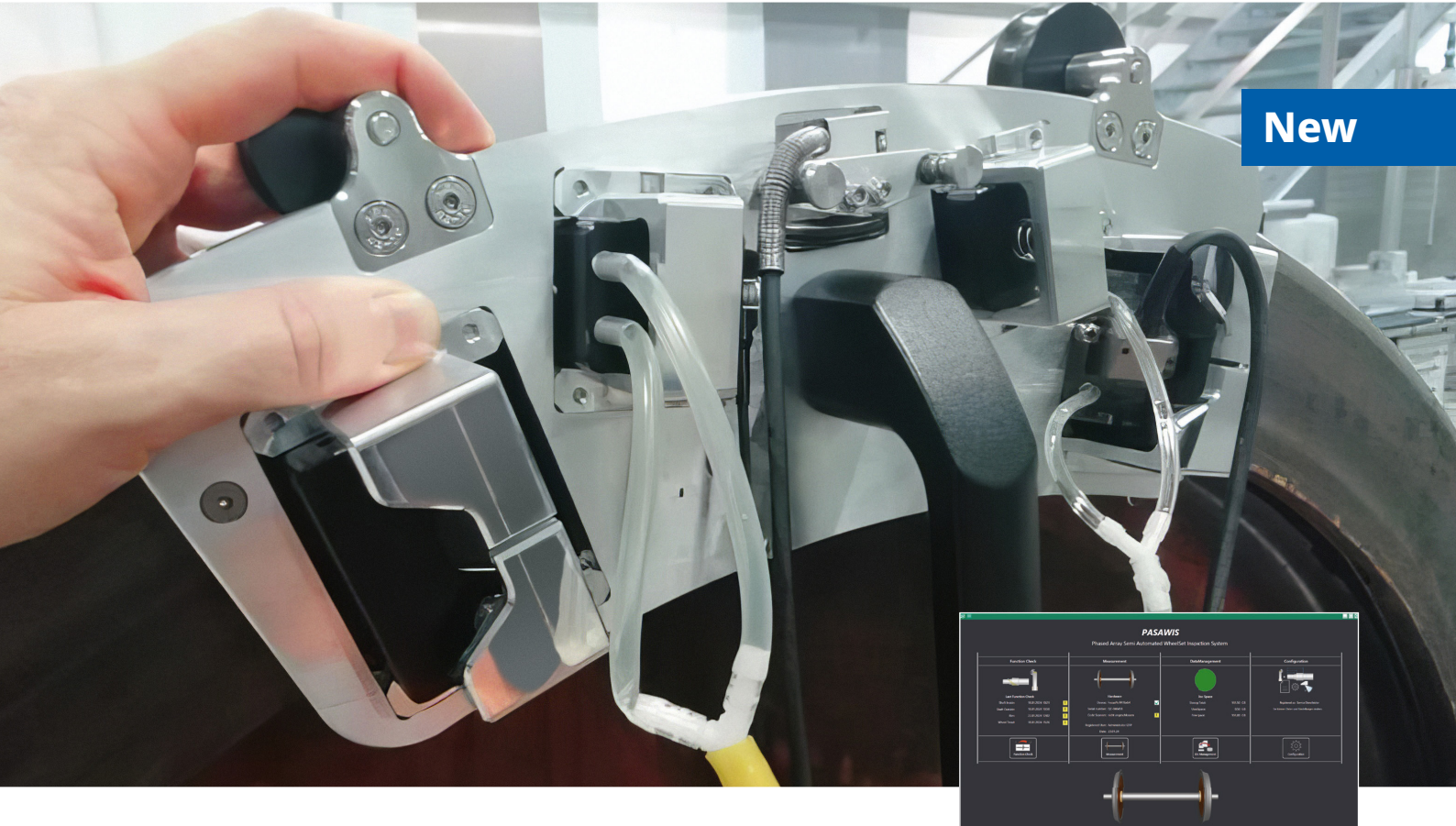
**Want to find out more? Contact our expert team today!**

EVIDENT

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Railway Wheelset Inspections Made Easy
PASAWIS

New

Phased Array Semi-Automated Wheelset Inspection System

Get outstanding coverage of wheelset components for faster, more efficient inspections with the Evident PASAWIS system. Developed in collaboration with Fraunhofer IZFP and RailMaint, this powerful testing platform combines the latest ultrasonic and phased array scanning technology with dedicated software—meeting the VPI-EMG09 regulation for NDT maintenance. With a complete step-by-step workflow, the software guides you through the inspection procedure from functional check to results and report creation.
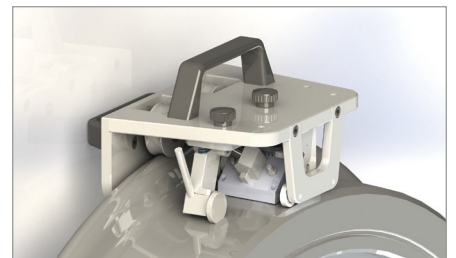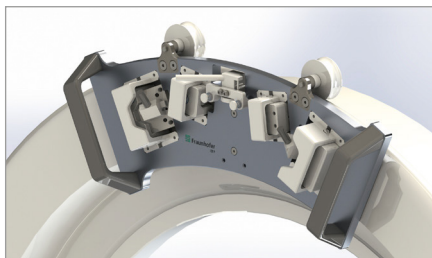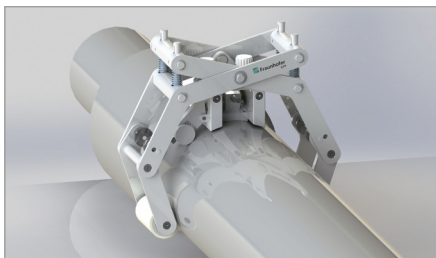
Three dedicated phased array ultrasonic testing (PAUT) scanners, optimized for the inspection of the wheelset axle, rim, and tread.

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