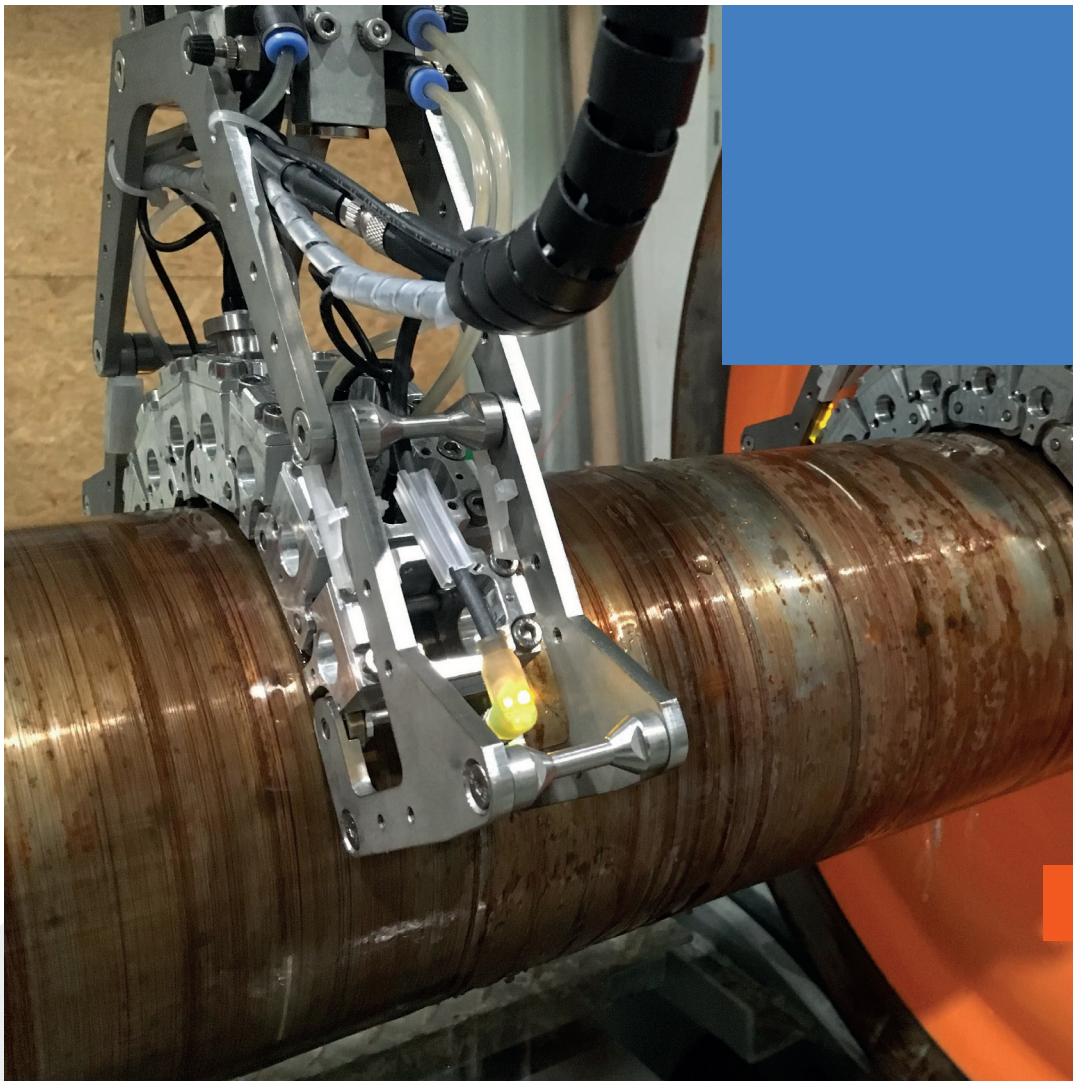


# Ultrasonic inspection solutions for railway wheels and axles



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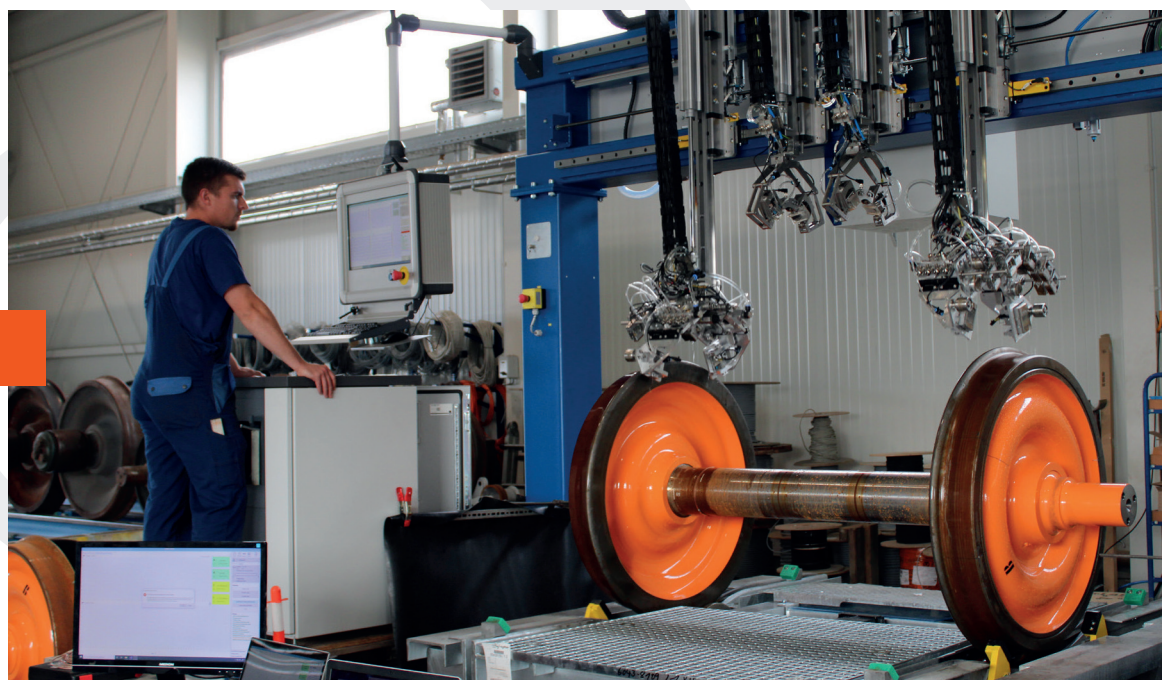
**We keep your wheels rolling**



## BIP TECHNOLOGY GMBH CONTRIBUTES TO THE SAFETY OF TRAIN TRAFFIC WITH MODERN ULTRASONIC TESTING EQUIPMENT.

We develop innovative ultrasonic testing solutions for you, designed to meet your requirements, taking into account the user and country-specific demands.

Whether hollow axles, solid axles or wheel discs - our testing systems are used worldwide. Due to the precise design, our automated processes are more reliable in terms of testing than manual processes, much faster and the results are reproducible and cannot be modified afterwards.





## Easy maintenance

### Ultrasonic testing of wheels on the stationary train



#### The mobile ultrasonic testing system

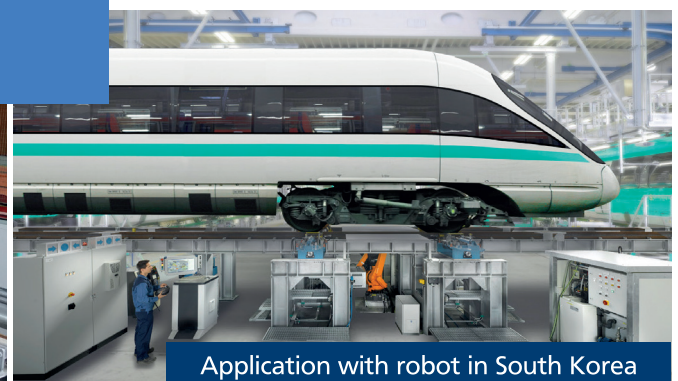
is installed in an existing workshop pit or on the raised track. After positioning by the operator under the wheelset, the automatic ultrasonic test is carried out. The data with the report is stored and can be traced back at any time.

The system has been especially designed to find laminations under the tread and volume defects. Optional adjustments of the probe combination such as defects on the running surface (transverse cracks).

Alternatively, there is also an automatic solution available, in which the movement of the system on the track and the infeed of the search units are automated. This more expensive system is used for highly frequented depots.



The stationary underfloor inspection system is installed in a pit and inspects the wheels directly on the train fully automatically against damage such as cracks or volume defects. After positioning the train, one or both axles of the bogie are automatically lifted and turned, depending on the version. The search unit carriers with the ultrasonic search units are automatically positioned on the running end faces of the wheel and the inspection begins.



The testing equipment of the systems can be flexibly adapted depending on customer requirements. The detection of defects on the inner face or running aid of ultrasound supplemented by eddy current testing is just as possible as a combination of conventional phased array testing technology.

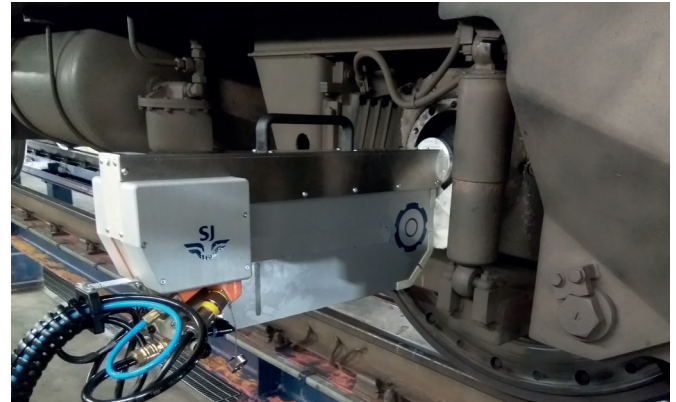


## Mobile use on the train or in the workshop

### The „most flexible“ mobile ultrasonic hollow axle inspection system

has been especially developed for railway and service providers for ultrasonic testing where mobility and the level of investment are important. It can be used either directly on the vehicles or on separate wheelsets. This makes this system the **lightest** alternative compared with other mobile inspection systems.

With the ultrasonic detection method the axle can be checked regarding transvers and longitudinal cracks and volume defect.



Mobile hollow shaft testing machine in Sweden



Can be transported by car



This manual ultrasonic full axle testing system can be used flexibly as an automated manual testing device on installed and removed wheel sets.

A hoist or elaborate test bench is not required. The manual handling is perfectly complemented by the fully automatic data acquisition, evaluation and the test data and protocol storage.





## Heavy maintenance On the removed wheel set

The **ultrasonic testing system with immersion technology** is used for automatic ultrasonic testing in wheel set workshops with high throughput of smallest volume defects or at manufacturers of wheels or axles. High inspection speeds can be achieved in a water bath and with phased array technology.

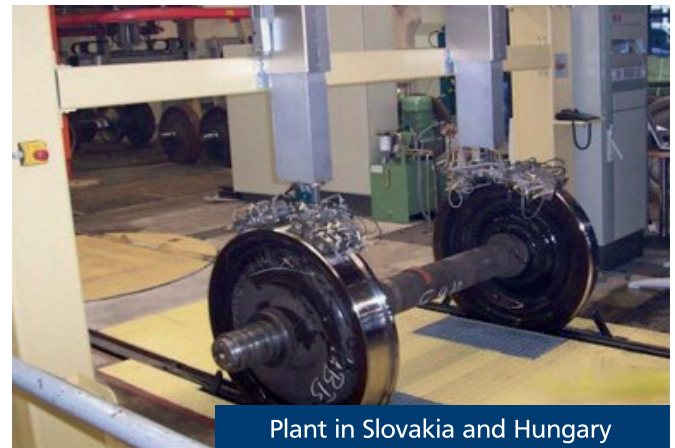
bip also offers a solution for axles only.



Plant in Australia

The **automatic ultrasonic wheel inspection system** can perform as an automatic ultrasonic test on the wheel tyre. It is used on wheel sets integrated in a production line.

Our standard is based on the regulations of VPI09, Deutsche Bahn RIL 907.02.and 907.04. Other standards can also be realized. The system itself complies with the norms of EN 1326.



Plant in Slovakia and Hungary

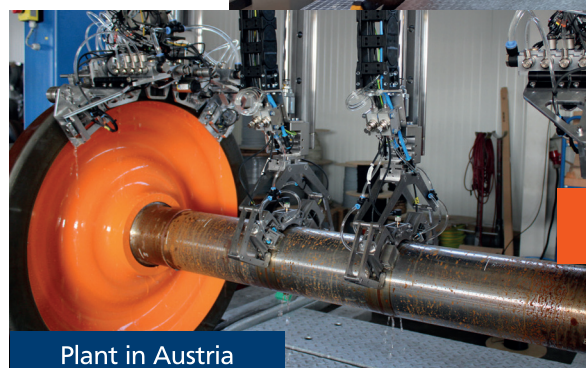
The **ultrasonic solid axle test stand** can automatically detect transverse cracks on the wheelset. The system is programmable for different wheelsets and is used in wheelset workshops. A fast testing time can be achieved by using several lances.



Combined plant for DB Cargo



Combined test systems of solid axles and wheel discs as well as eddy current testing with one machine are also possible.



Plant in Austria



## bip Ultrasonic - Software



The ultrasonic testing systems from bip technology GmbH are all equipped with specially developed software.

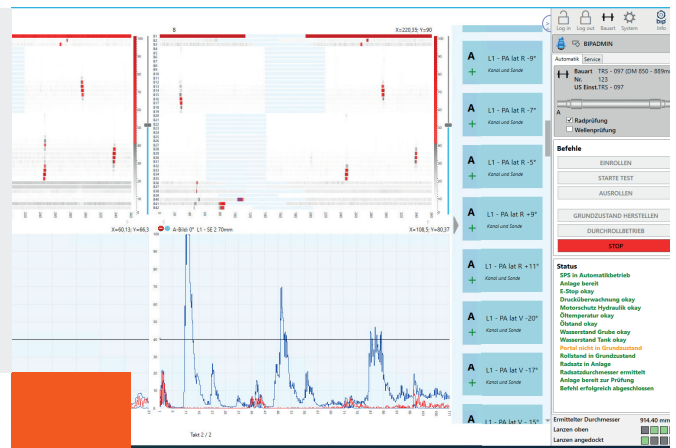
User-friendly masks enable efficient error messages and are displayed and saved in the log file.

Error messages are displayed and saved in the log file.



The bip ultrasonic software has a unique display for controlling and setting up the various components and processes. For each testing task, the end user can independently prepare a specific inspection procedure after our training, which can be called up during the daily inspection work.

Individual settings for displaying defects can be defined by the operator. For example, selecting the colours of the amplitude echo of each of the A, B and C scans in the Palette Colour Set Editor. The results of the ultrasonic test are displayed graphically. The most important data are summarised in the header of the test report to ensure repeatability.



		<b>Wheels inspection UT ET</b> DB Cargo Polska S.A.	
Datum	21.10.2020 07:19:08	RS-Typ	TRS - 097 (DM 850 - 889mm)
Prüfer	BIPADMIN	ID	123
Prüfaufsicht		Seite	(A) A-B (B)
Ergebnis	Nicht Ok	Einstellungen	TRS 097 - Rad
Kommentar:	Auswertung mit markierten Fehlern		
US Daten	VW_RAD_21.10.2020_07-13_123_TRS_097_DM_850_889mm.vwr		



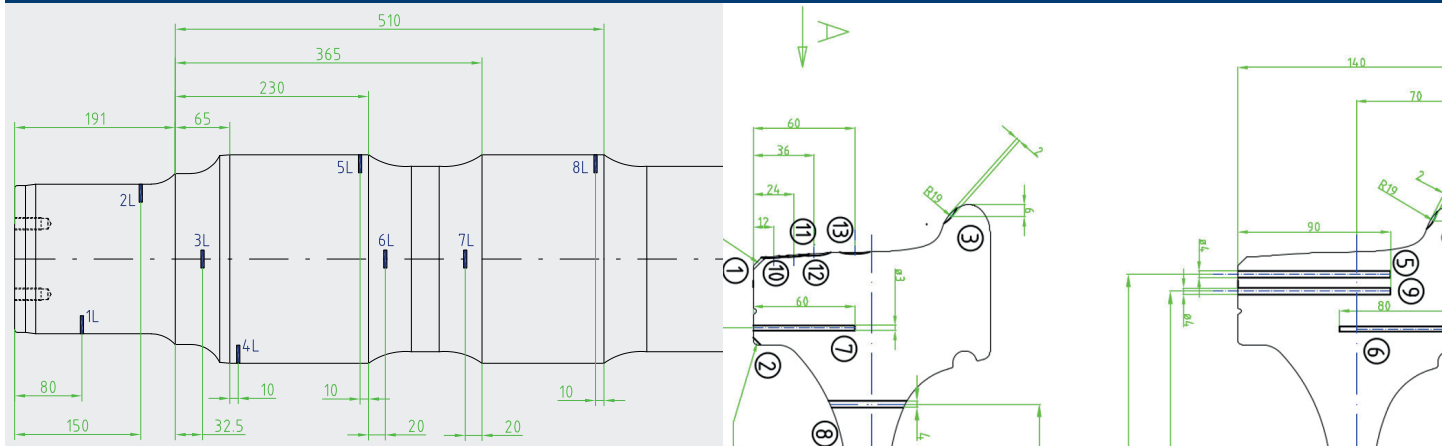
The test data are stored in pdf format and the raw data as XML or text file, either on the PC of the plant or in the network, and is thus 100% retrievable. Connections via OPC interface make the ultrasonic testing system from bip a „smart“ solution.



Our system enables to check wheel set damages manually, semi- or fully automatic, whereby data acquisition is always fully automatic. These damages can include finest cracks in the structure, volume defects, defects in the tread, wheel rim profile or material fatigue.

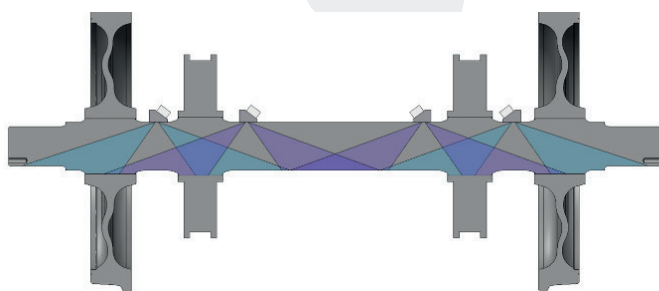
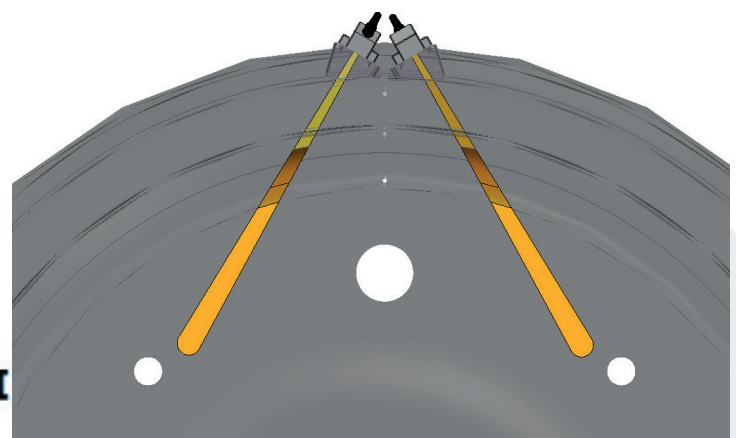
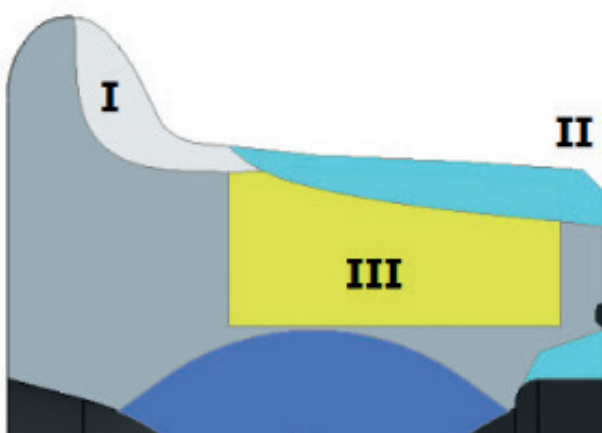
Due to the output of A, B, C or TD images, the test results are clearly readable. Protocols and raw data can be stored and are thus traceable.

## Example drawings for reference shafts and wheels



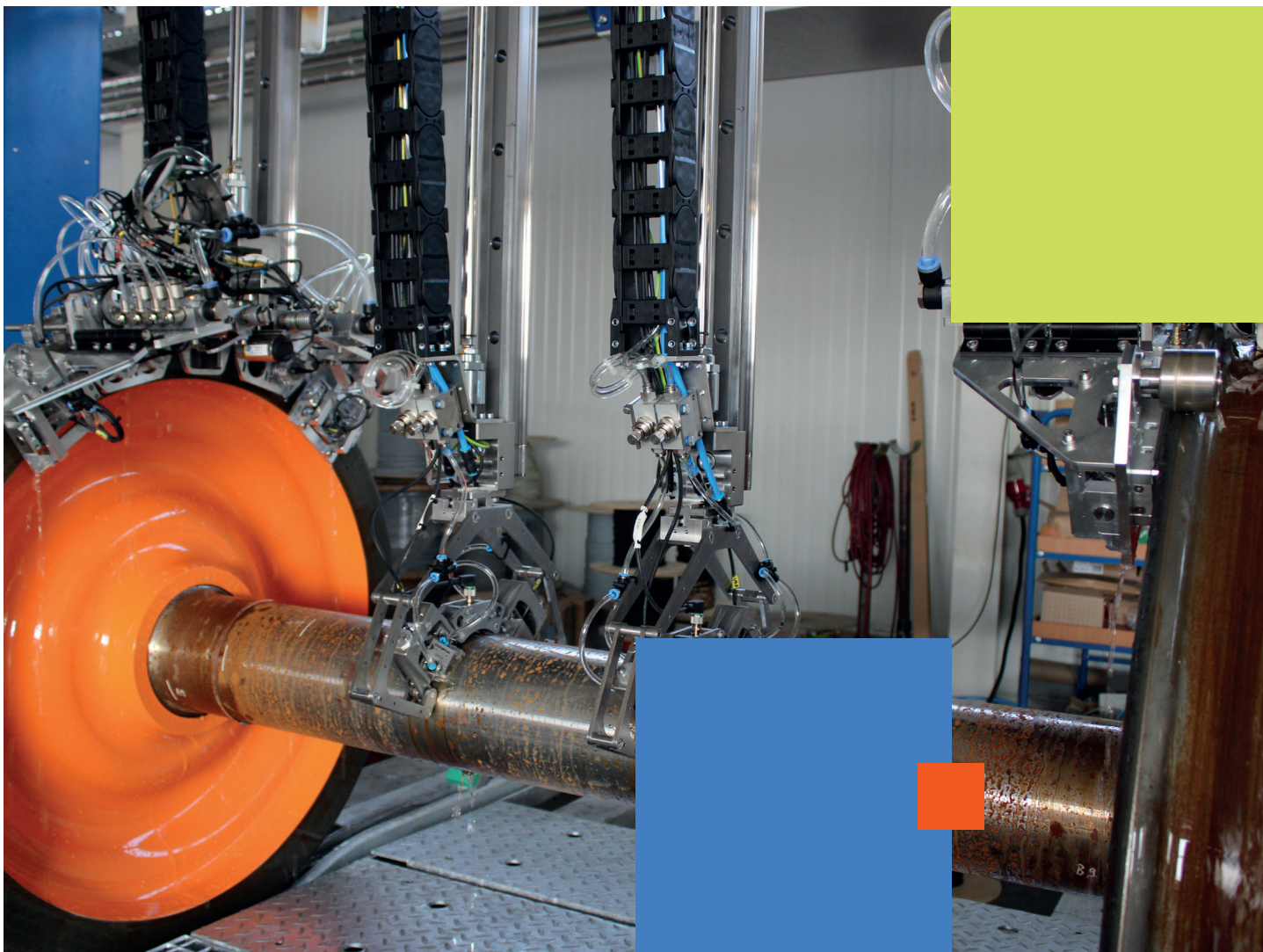
Certified reference shafts or wheels with incorporated errors are used as a benchmark for permissible errors and for daily functional testing of the systems.

## Possible test areas on the wheel and in the web area



## Test area on the axle





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