HeiDetect Wheel Robot
Robotic X-ray testing for cast aluminium wheels
IMPRESSIVE, HIGH-PERFORMING SYSTEMS ENGINEERING

The HeiDetect Wheel Robot wheel test facility achieves an extremely high throughput thanks to its industrial robot and is therefore ideal for inline operation in the mass production of cast aluminium wheels. Several areas of the wheel can be tested in one testing position by using a larger detector. This benefit means that the number of handling steps can be reduced, thus shortening the test time for each wheel.

**Latest X-ray technology for maximum reliability**

HeiDetect Wheel Robot is a fully automatic wheel test facility and, through the integration of the ISAR image evaluation software and the XEye detector developed by the Fraunhofer Institute for Integrated Circuits, allows almost pseudo error-free evaluation with stable image quality.

The efficient processing of images allows casting errors such as shrink holes, pores, cavities and foreign matter in the range of 3% of the radiographed wall thickness to be detected and classified. Large areas of oxide can be detected from a size of 1% of the wall thickness.

Further benefits are offered by the automatic wheel detection and by incorporating barcodes. This enables the alignment of the wheels to be specified and monitor the test results.

The HeiDetect Wheel Robot wheel test facility from Erhardt + Abt meets the latest requirements for the group of wheels and handles wheel sizes from 13” to 24”.

The ISAR evaluation software offers an ergonomic Windows-based graphic user interface via which the test parameters can be set specifically for customers. Key data can be transmitted via an existing operating data acquisition system.

Specially prepared test results are transmitted to production in real-time, thereby enabling trend analysis and continuous product quality optimization, aiming to minimize scrapping.

**Your benefit**

- Few test positions due to large detector area (400 x 200 mm)
- Permanent, stable image quality due to a degradation-free detector
- Spokes and hub can be captured with a single image
- No distortion and brightness variation, no reparametrization necessary
- Almost pseudo error-free detection thanks to state-of-the-art Fraunhofer ISAR image processing
- New wheel types can be set up within a few minutes during the test operation
- Offline remote parametrization during the operation
- A single test program for multiple systems
- Additional degree of freedom when positioning the wheels by using a 6-axis robot
- Simple maintenance of the gripper thanks to access from outside the system
- Use of a standard industrial robot for test piece handling
**TECHNICAL DATA**

**Test facility**
- Length: 4,200 mm
- Width: 2,980 mm
- Height: 2,900 mm
- Weight: approx. 12 t
- Max. test piece weight: 40 kg
- Wheel diameter: 13 to 24”
- Max. wheel width that can be tested: 15”

**Detector**
- Type: XEye 4020
- Active surface: 400 mm x 200 mm
- Pixel size: 100 μm - 400 μm

**X-ray tube**
- Manufacturer: COMET
- Tube voltage: 160 kV
- Tube performance: 600 W / 1,000 W

**Fully automatic data analysis**
- Fraunhofer ISAR

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**Reliable and efficient systems engineering**

The small installation space and full enclosure mean that incorporation into the production process is possible, even in extreme conditions in mass production. The wheel gripper is designed so that wheels with a faulty rim flange can also be tested. Further functions such as lasing and labelling can also be incorporated without any problems.

As the detector from the Fraunhofer Institute for Integrated Circuits shows an extremely low rate of degradation, a replacement will not be required for at least 10 years or so.
FIGURES AND FACTS

ABOUT HEITEC GROUP:
- Company founded in 1984
- More than 1,000 employees
- 19 sites in Germany
- 7 international sites
- Core competences: software, mechanics, electronics
- Industrial solutions from a single source
- Close to customers and industry competence
- High power of innovation due to the cooperation with partners and universities

ABOUT ERHARDT + ABT:
- Company founded in 1997
- 75 employees
- Over 400 robotic systems installed worldwide
- Complete systems from a single source (all disciplines under one roof)
- Systems delivered worldwide
- Fully developed standard solutions
- Over 3,500 m² of production and office space
- In-house test stands and simulators