



Shape and Functionality Perfected

ZEISS Industrial Quality Solutions for Alloy Wheels



Seeing beyond

ZEISS Industrial Quality Solutions
for Alloy Wheels

Quality Assurance

along the entire process chain

The process chain during the production of alloy wheels comprises a number of steps that have a significant effect on the quality and safety of the end product.

Since alloy wheels are first and foremost structural components, they need to withstand all forces occurring between the vehicle and the road. To guarantee the high quality and safety of the alloy wheels, ensuring a continuous and especially consistent detection of defects during the entire production cycle is a decisive factor. For the reliable detection of both internal defects and superficial deviations from the CAD, ZEISS offers a range of solutions.



Inspecting wheels at full speed

ZEISS BOSELLO WRE thunder is a high-speed inline system for the 2D X-ray inspection of alloy wheels that enables the quick detection of defects within the production cycle. The system ensures the reliable inspection of all wheels produced while detecting and evaluating critical defects in accordance with the specified requirements.



Perfect Integration into the Production Environment

ZEISS BOSELLO WRE thunder is designed for continuous operation in the production cycle and enables the reliable and automated inspection of all wheels produced. Perfectly matched parts enable the quick and safe transport of workpieces, reduce vibrations and attain a high accuracy at short scanning times.

Save space

ZEISS BOSELLO WRE thunder enables you to inspect wheels in the smallest of spaces on your shop floor. Due to its small footprint of only 6 m², you save valuable space.

Automated checks

The automatic classification and inspection with the proprietary ADR software ensures a reliable quality assurance for highest-quality wheels. Non-compliant workpieces will be automatically rejected.

Save time

The continuous operation of the system and the quick exchange of workpieces in less than 2.5 seconds enable a fast inline inspection. This also applies when inspecting wheels of varying sizes.

Safe inspections

The individually and motor-driven rollers enable a quick 360° rotation of the wheels while safely securing them during inspection. Due to the extremely robust multiple chain conveyor, even heavy and large wheels can be safely inspected.

Quality Assurance for Alloy Wheels

along the entire production process

Each processing step in the production of alloy wheels increases the cost per workpiece – regardless whether it is forged or cast. Thus, immediately detecting geometrical deviations and defects is essential in order to step into the production process at an early stage.

1

Materials testing

2

Mold making (die)

3

Raw casting

4

Finished part



Materials testing

To detect defects in the casting or forging process at an early stage, microstructures are selected and inspected at random for quality assurance purposes. The speed of solidification and non-homogeneous microstructures affect the future functionality of the material just as grain sizes, pores, infiltrations and phases, which are all inspected. Undetected material defects can have an impact on the stability and durability of the wheels and, in the worst case, cause failures and damages.

Added value with ZEISS

- The comprehensive range of microscopy products covers light, digital, electron and X-ray microscopy
- ZEISS ZEN core as a single software solution for imaging, analysis and data connectivity in the materials laboratory

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Mold making (die)

Inspecting casting molds as well as forging dies and forming stages for deviations from the CAD and for geometrical defects is of vital importance for cast aluminum wheels. Deviations can affect the accuracy and consistency of the product which could lead to product errors and safety concerns. A careful analysis is essential for manufacturing a reliable and safe final product.

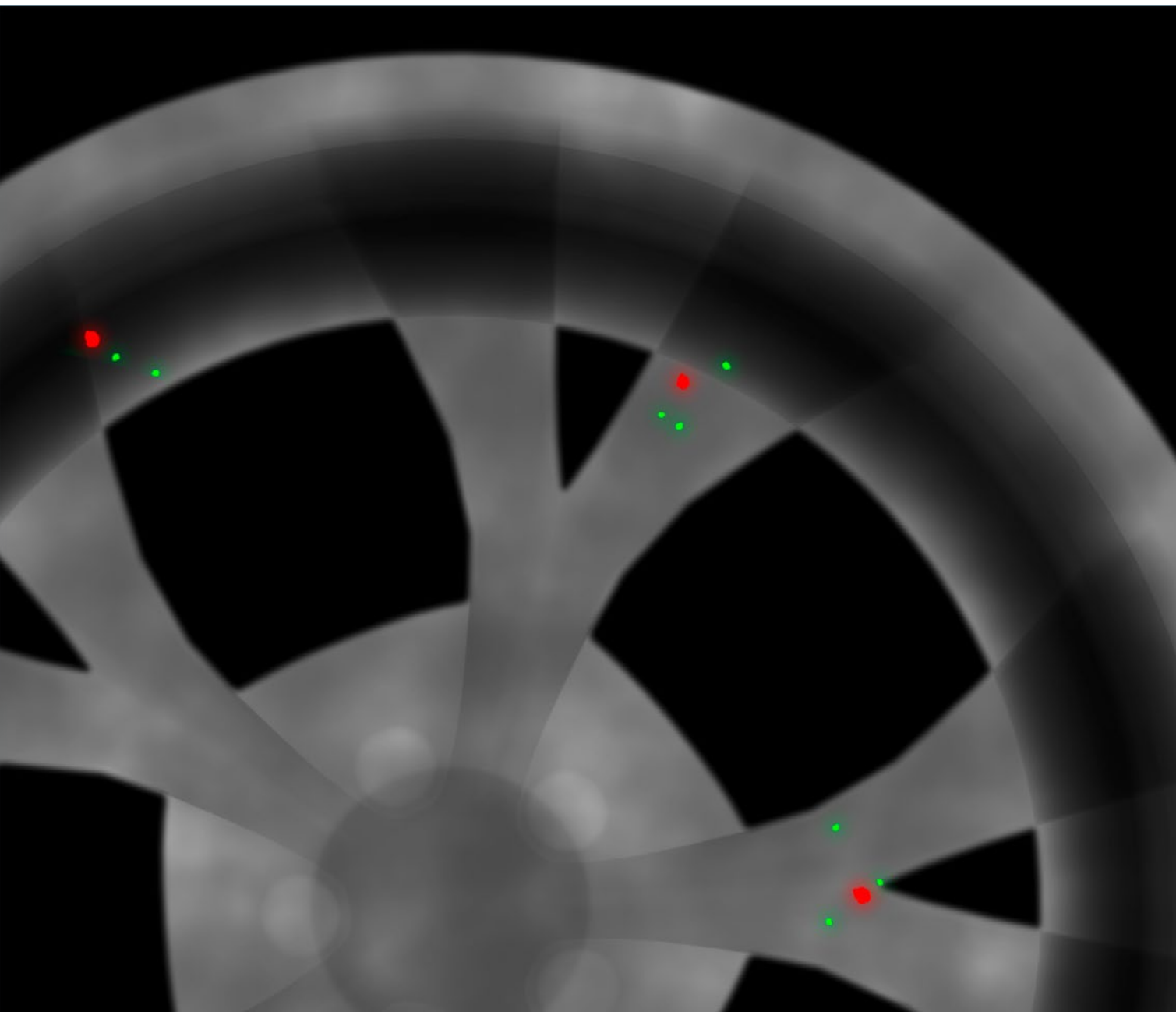
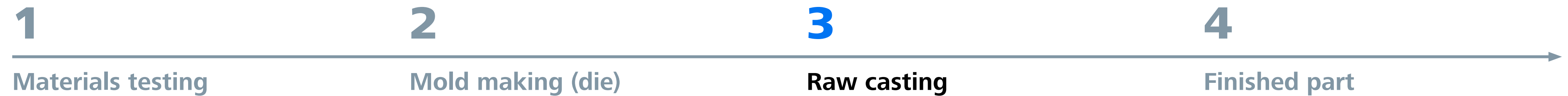
Added value with ZEISS

- Targeted correction of dies with the help of optical 3D metrology
- Assembly analysis of mold halves, core clearance and sliders as well as continuous wear control with the ZEISS INSPECT inspection software

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Raw casting

The first article inspection can be carried out based on the measurement plan, the CAD model or the PMI data set. No area of the part remains unchecked. In the production control during series, automated, production-related and mobile measuring cells reduce scrap and rework time. The detection of internal defects indicates whether a wheel can be further processed or has to be scrapped.

Added value with ZEISS

- Optical surface measurement on the raw casting in the optical measuring machine to optimize CNC machining
- Analysis of shrinkage, warpage and shrinkage allowance as well as wall thickness based on highly precise 3D measuring data
- Automated detection of internal defects such as shrinkage cavity, infiltrations or porosity with the ZEISS BOSELLO WRE thunder 2D X-ray solution

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Before leaving the shop floor, aluminum wheels must be inspected for precision and accuracy to make sure that they conform to the required specifications. Each deviation from these standards can affect the safety and performance of a vehicle. Moreover, the final inspection contributes to monitoring and improving production processes to ensure the highest quality and safety standards.

Added value with ZEISS

- Final analysis of the total geometry and roundness by means of coordinate measuring technology
- Tactile sensors measure the contour of the rim well and check the position of the pitch circle diameter in relation to the wheel hub

Quality Control Solutions

ZEISS systems ensure quality control along the entire production process – from analyzing the source material to optimizing the die or forming stages to the final inspection of the finished part according to the applicable specifications and standards. The measuring results are consolidated in a tech-agnostic reporting and quality data management software and directly linked to decisions on the shop floor. Thus, you can efficiently track your production quality and make holistic, well-founded decisions.



ZEISS Axio Imager 2

Open microscope system for automated materials research



ZEISS ScanBox Series 5

Production-integrated inspection of complex parts



ZEISS BOSELLO

2D X-ray inspection on the shop floor



ZEISS CONTURA

Coordinate measuring system with tactile and optical sensors

You Need More Information?

Do you have questions about ZEISS BOSELLO
WRE thunder or about our quality assurance
solutions for alloy wheels in general?
Our experts are happy to help you.





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