

3D weld inspection

100% inline weld inspection of steel wheels

The task

On a production line, wheels consisting of two parts, the wheel rim and the hub are welded together using the MIG-welding



measurement during a rotation

process. Vitronic's weld inspection system VIRO^{wsi} inspects the weld seams in a station incorporated into an automated production line for the following criteria: missing welds, weld length,

weld height, pores, pearls and burnt-in or edge notches.

Benefit

Parts that are essential to safety, such as vehicle wheels, demand a 100% reliable quality inspection. Day-to-day quality standards achieved by visual inspection must be replaced by standardized 100% quality. VIRO^{wsi} ensures that only parts with perfect weld seams are delivered. The manufacturing process is more reliable at the same time. With the aid of statistics for trend analysis, the inspection system provides indications of

latent quality problems at an early stage, before products have to be rejected. In addition to quality improvements in the product, the use of VIRO^{wsi} in a 100% inline inspection can also bring about reductions in production costs by means of the high level of automation.

Implementation

The 3D measurement of the surface of the welds is performed by a 2000 Hz light-stripe sensor in 1.5 seconds while the wheel is being rotated. The processing of the data in the evaluation computer starts even while data is still being recorded. For purposes of long-term process control and quality supervision, the measurement values are archived. An Ok / not Ok signal is also generated to ensure that faulty wheels are taken out of the manufacturing process. Several inspection programs are available for different wheel types, which are administered by the system itself and loaded as required for the wheel type to be checked.

Technical data

Hardware/ Interface: Ethernet-LAN (TCP/IP)
I/O-interface, opto-isolated

Sensor

Type: 2000 Hz light-stripe sensor
Separation: Approx. 20 mm
Data transmission: Fiber-optic cable

Image acquisition speed: Approx. 800 mm/s

Scan

Width: Approx. 30 mm
Depth: Approx. 40 mm

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