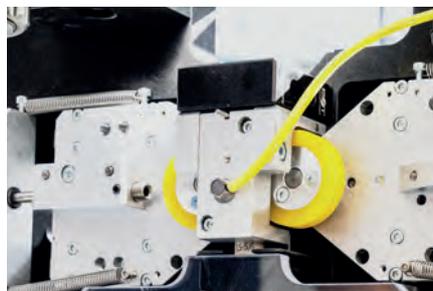


Inspection system for cylindrical rollers

Crack detection and multifrequency sorting test for cylindrical parts



Inspection system for small cylindrical rollers

The inspection system for cylindrical pins has a modular structure and is set up according to customer requirements specifically with numerous extra functions. Crack detection is carried out on the flow of parts by an EC15 Eddy Current rotor. The microstructure inspection takes place immediately after the crack detection. The camera inspection is carried out with a high-resolution color line scan camera and the NeuroCheck evaluation software.

Description of the inspection system

The inspection system is suitable for 3 shift operation, owing to its very robust construction with a steel base frame.

The system meets requirements such as high-speed throughput and a high flexibility regarding the range of parts. The running direction of the system and of the flow of parts is from top to bottom.

The feeding system with a position monitoring device transports the parts in the flow with a trigger.

Feeding system

The parts are fed as bulk material via a vibrating conveyor with a conveyor belt bunker. Then they flow out in one row from a hose into the first testing station. The parts are automatically separated.





Camera inspection of the outside surface

The lateral outside surface is inspected with a high resolution color line scan camera with LED lighting. The parts are inspected in the flow, evaluation is carried out on the computer. The special camera software recognizes the tiniest flaws automatically, according to the inspection parameters. Reject is automatically discarded in the optic sorting station.

Eddy Current crack detection

An EC15 rotor with an adjustable RDE rotating head carries out the inspection. The flow of parts is completely scanned by Eddy Currents while it is moving through the system. The tiniest cracks are indicated via the ELOTEST PL600 Eddy Current test instrument. The parts with cracks are automatically rejected in the down-stream sorting station. The calibration with reference parts is also automated.

Eddy Current multifrequency sorting test

The parts are inspected by sorting coils in an exterior comparison test by means of the ELOTEST PL600 Eddy Current test instrument, which is also used for crack detection. The FastSort evaluation software evaluates the recorded data in multifrequency operation with 8 different test frequencies. The flow of parts is led through the coil, controlled by impulse. Any reject is automatically discarded in the down-stream sorting station and statistically recorded.

Sorting station

The inspection system is provided with a total of three sorting gates. Reject is discarded into separate containers, good parts are moved on to the outlet and deposited as bulk material.

Technical data

RANGE OF PARTS

- ▷ cylindrical pins, hardened, ground, cleaned
- ▷ OD: 2.5 mm –14 mm (different OD on request)
- ▷ length: approx. 7 - 40 mm

CYCLE TIME

- ▷ approx. 180 parts/min. for 3 parts per package (< 20 mm length)
- ▷ approx. 120 parts/min. for 2 parts per package (< 30 mm length)
- ▷ approx. 60 parts/min. for 1 part per package (< 30 mm length), depending on the diameter and length of the parts
- ▷ change-over time: approx. 15 min.

ROHMANN EDDY CURRENT INSPECTION TECHNOLOGY

- ▷ ELOTEST PL600, two-channel for crack detection and multifrequency sorting tests – FastSort
- ▷ Rotor EC15 with adjustable RDE rotating heads, RPM approx. 30001/min
- ▷ 2 ULAS-6 H-1301.04.1 test coils, exterior comparison test
- ▷ crack size reference flaw: 50 µm x 50 µm x 1.5mm
- ▷ calibration cycle with reference part: automatic

SORTING WITH STATISTICS

- ▷ good parts
- ▷ reject optics
- ▷ reject Eddy Current cracks
- ▷ reject Eddy current microstructure

CAMERA

- ▷ line camera, 4096 pixels/line
- ▷ resolution approx. 25 µm
- ▷ inspection of the lateral surface
- ▷ flaw characteristics: grinding marks, taperings, rust, flaws on the edges, flaws on the surface, grinding spirals, pressure or impact marks, scratches and grooves
- ▷ software – NeuroCheck

LIGHTING

- ▷ LED line lighting with an integrated lens (blue)
- ▷ LED spot lighting 2 pcs. (red)

INSTALLATION SURFACE/DIMENSIONS

- ▷ approx. 900 mm x 1,200 mm

OPTIONS

- ▷ front inspection
- ▷ different range of parts
- ▷ feeding system with a conveyor belt bunker and a vibrating conveyor
- ▷ automatic packing