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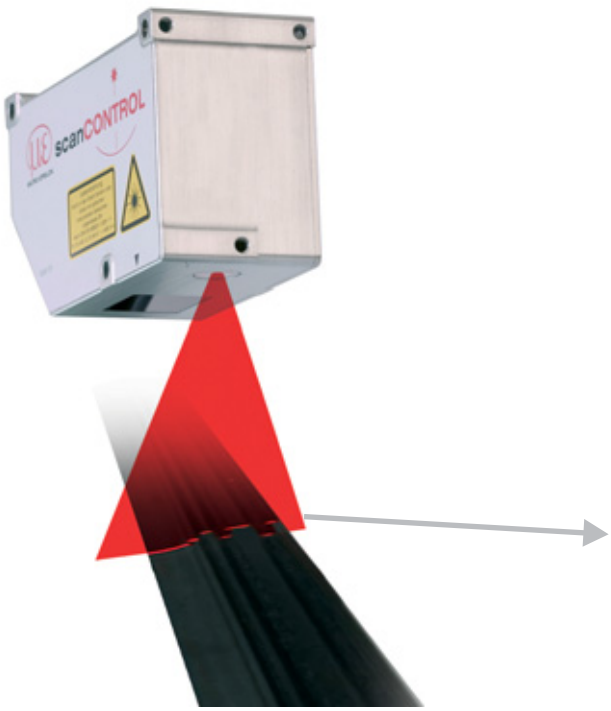
In-line inspection of wiper blade rubbers

Wiper blade rubbers are extruded in a production plant and inspected in the endless state by the measurement system. Here, two different measurement techniques are applied:

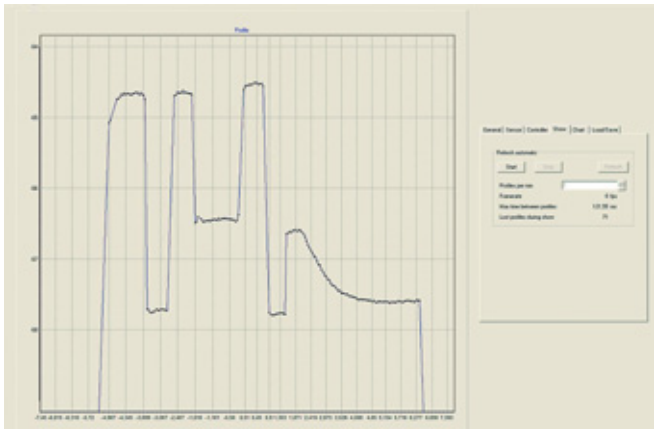
- laser-optical line scanner LLT2800-25
- CCD camera

In the first step the material cross-sectional shape of the wiper blade rubber is acquired by laser line scanners, one on the upper side and one on the bottom side of the material. Due to the opposing arrangement of the two laser line scanners and the synchronization of the measurements, the determination of the material thickness occurs at the defined measuring points on the cross-sectional shape. The data evaluation and visualization occurs on an industrial PC and outputs a warning if the limits are exceeded.

In the second step the wiper blade rubber is inspected for defined material faults by one camera system on the upper side and one on the bottom side of the material. Principal features of a defect, which are used to assess the passed and failed ranges, are geometrical changes to the material surface caused by dimples or bubbles. In this respect the criteria applied refer to the relative deviation, the local contrast and the variance of intensity of the reflected light from the defect location for differentiation from the normal surface quality of the inspected part. The area of the defect is available as a geometrical parameter for the classification of defects.



Laser line on wiper blade rubber



Visualized shape

Application

Measurement system requirements

Measurement range: 25 mm

Product surface temperature: up to 50°C

Accuracy: 0.1 mm

Ambient conditionsn

- Temperature: 15 ... 35 °C
- Medium: Air

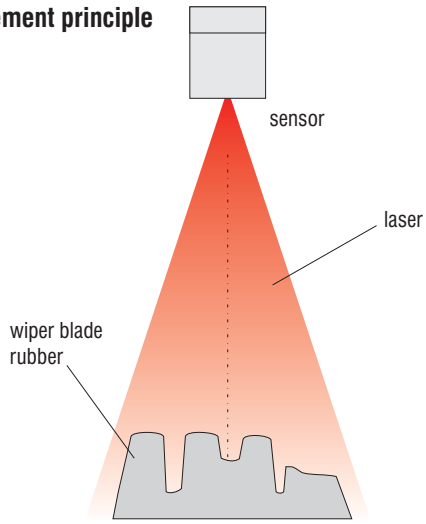
System setup for scanCONTROL

- scanCONTROL 2800-25
- ICONNECT configuration software

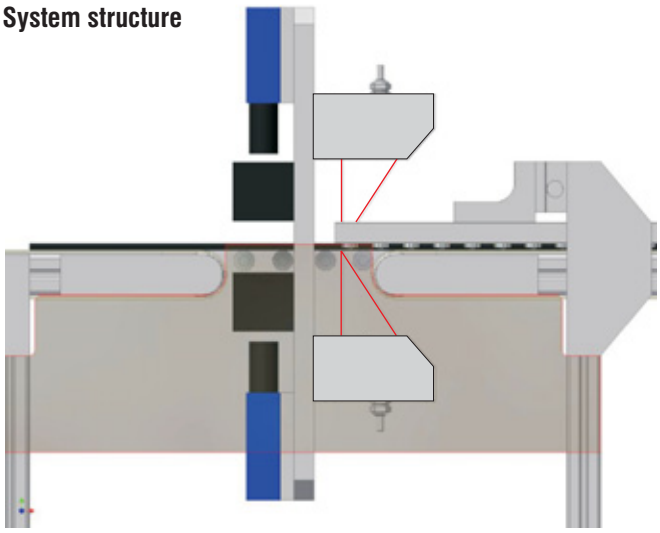
Reasons for the system selection

- Control of the production
- Marking of fault locations for automatically cutting out
- Material thickness measurement in-line
- Detection of dimples/fault locations

Measurement principle



System structure



MICRO-EPSILON

A member of micro-epsilon group.

Koenigbacher Str. 15
94496 Ortenburg / Germany

Tel.: 0 85 42/1 68-0
Fax: 0 85 42/1 68 90

info@micro-epsilon.com
www.micro-epsilon.com

Certified DIN EN ISO 9001 : 2000
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