

Ovality inspection on brake pipes using vision4A

For the highly accurate measurement of the roundness of the ends of brake pipes in production with short cycle times, only a precise and versatile vision system is able to fulfill the required rapid data acquisition with the associated evaluation. In this regard the diameter measurement of individual pipes, as normally carried out in the industry through the center of the circle, is nowhere near sufficient. For reliable quality assessment the deviation of the actually existing circular geometry must be dimensionally acquired over the complete 360° circle.



To achieve this the section of pipe to be inspected is automatically cycled and fed such that two cameras arranged axially opposed with telecentric objectives can each inspect a pipe end. The assessment takes place in a compact industrial PC using vision4A software.

The pass/fail results are passed via integrated I/O cards to higher level systems, to sorting equipment and to the operator.

Measurement system requirements

- Radius, roundness, concentricity, minimum and maximum wall thickness
- Measurement range: Diam. max. 25 mm
- Accuracy: $\pm 0.02\text{mm}$
- Cycle time: Up to 100 parts per minute
- Digital inputs and outputs
- Simple operation by the workers

Ambient conditions

- Production environment

Fields of application

- Pipe measurement, liner measurement,
- disk inspection

Reasons for the system selection

- non-contacting and wear-free measurement
- short cycle time
- versatile system for varying requirements
- support with setup, configuration and start-up operation
- rugged industrial technology



Application

Decisive advantages

- Measurement of circle instead of diameter
- Subpixel accuracy due to exact calibration
- Latest software and hardware technology
- Simple handling and operation
- Sorting of an adjustable large number of components after restarting the system
- Request for calibration after an adjustable number of measurements
- Online logging of measurement data
- Statistical display of the measurements
- Deviation display along the circumference

Special features

The versatile software includes extensive possibilities for the easy management of job-order data through to emergency operation management where an alarm signal is given via the digital outputs after an adjustable number of consecutive failed parts.

Principle

