System for eddy current crack detection on cylindrical parts using ELOTTEST PL500

**Throughput rate:**
10 parts/second, maximum conveyor speed 100 mm/s, optionally faster.

**Spectrum of parts:**
Standard $1.5 \text{ mm} < \varnothing < 5 \text{ mm}$, $5 < l < 30 \text{ mm}$, optionally longer and up to $\varnothing 10 \text{ mm}$

**Typical defect specification:**
Longitudinal cracks $0.05 \text{ mm}$ deep $\times$ $0.05 \text{ mm}$ wide $\times$ $3.0 \text{ mm}$ long

The parts are fed in the line, e.g. using a vibratory feeder. The line of parts is clamped between drive wheels and brake wheels and thereby precisely and evenly fed through the rotating head. The overlaying of the rotational movement of the probes and the progressive advance of the line of parts monitored by encoders create a screw-shaped test track on the test pieces. This allows their lateral surfaces to be scanned for surface defects without gaps or contact. After the brake rolls, the test pieces separate from the line and fall individually into the subsequent sorting switch which sorts to BAD (defective) in its home position and is monitored in both its GOOD (non-defective) as well as BAD position. The switch will only be actively switched to the GOOD position if there is a positive evaluation of all of the monitored parameters and the test result is OK. The good parts are counted and fed into a monitored container as bulk goods. When 90% of the adjustable target number of pieces is reached, the operator receives an advance warning on the panel and signal light. The systems stops when the target number of pieces is reached. The system can also be equipped with an optional container changer. Even at full testing speed, defective (BAD) parts will be fed individually into a monitored container as bulk goods. The number of defective parts is recorded and an advance warning is given when 90% of the preset target number of pieces is reached in this case as well. It is possible to switch the containers without stopping the system. The system will stop if one or more of the containers are missing.

It is typically possible to modify the system to other diameters in less than 15 minutes. The tools and interchangeable parts are clearly organized and stored in the integrated drawer cabinet. All of the system’s movements and functions are monitored and can be controlled using the color panel. Part types and their specific parameters can be saved in the control system and selected on the panel for fast part-type adjustment. Error messages are displayed on the panel in clear text along with measures for resolving them. The system is designed for unmanned operation. The constructive measures and the careful selection of the components used minimized the amount of servicing required while simultaneously providing the maximum service life.