Crack detection of gear switch forks with 1-channel eddydector®

Crack specification: (longitudinal to the main axis)

- depth: 0.700mm
- width: 0.100mm
- length: 3.000mm

Test Time: 8.0 seconds per part

Cycle time: max. 450 parts per hour

General view of the test system with good and bad parts outlet.
Part to be tested in test position.
The crack detection probe with a ceramic layer scans the test area with oscillating movement.

The paint marking option for tested parts is shown here.
Crack detection with eddy current on components was - up to now - limited to rotation-symmetrical parts due to the necessary relative motion between crack detection probe and test part. This relative motion in automated systems is only easy to design and to realise for rotation-symmetrical parts. Either the test part or the test probe rotates.

These pre-conditions are completely different for crack testing on gear switch forks. The cast parts must be tested for cracks at the area of highest stress. The customer's requirements were automation of crack detection in order to replace the labour-expensive and insecure magnetic particle inspection. ibg complied with these requirements and developed an automatic test system with a new test concept.

The parts are fed by means of a gripper to the test system where the part is positioned in the test station. Here, the zone to be tested is scanned with a contacting test probe. A ceramic layer protects the probe from wear. During testing the probe transmits the test signals to the eddydector® instrument which was calibrated with a defined artificial crack. After the test, each part is paint-marked depending on the test result and discharged either to the OK or NOK chutes. To guarantee a consistent and faultless test a master part is fed into the system at programmable time intervals.

To guarantee correct function of the test system a master part is fed into the system at programmable time intervals.
The test parts are transported through the system on prisms which are fixed to a belt.