SURFACE INSPECTION OF VALVE SPRING WIRE WITH SPECIAL GEOMETRIES

Surface defects in valve spring wire can cause spring failure and engine damage. Eddy current testing reliably detects defects, even on special geometries.

THE CHALLENGE

Valve spring wire is safety-critical in automotive engines, as surface defects can cause spring failure and engine damage. Increasing performance requirements demand high-quality material. Modern valve spring wires feature special geometries such as oval, egg or lemon shapes. These non-circular profiles create varying distances between the wire surface and the sensor, posing significant challenges for reliable and sensitive surface inspection.

THE SOLUTION

FOERSTER applies eddy current testing using CIRCOGRAPH combined with a DEFECTOMAT channel to inspect valve spring wire with special geometries. Rotating CIRCOGRAPH probes detect longitudinal defects, while DEFECTOMAT identifies transverse and point defects. A dedicated calibration process compensates for geometry-related distance variations, ensuring stable signal evaluation. Customer-specific through-type coils further enhance sensitivity.

THE RESULT

The solution enables reliable detection of surface defects from depths as low as 70 µm, despite varying sensor distances. Distance compensation and adapted coil design ensure high detection probability for longitudinal, transverse and point defects. Automated, non-destructive testing guarantees consistent product quality of valve spring wire while maintaining high process stability and economic efficiency.

FOERSTER

DEFECTOMAT PRODUCT FAMILY

Non-destructive eddy current testing of long products such as tubes, rods, wire, and profiles

CIRCOGRAPH PRODUCT FAMILY

Contactless eddy current inspection for reliable detection of longitudinal surface defects on bright products

foerstergroup.com

The FOERSTER Group is represented by subsidiaries and representatives in over 60 countries worldwide. You can find a complete overview on our website.

Headquarters
Institut Dr. Foerster GmbH & Co. KG

In Laisen 70
72766 Reutlingen
Germany

+49 7121 140 0
info@foerstergroup.com

© Copyright 2026 – Copyright notice: All contents of this work, in particular texts, photographs and graphics, are protected by copyright. Unless explicitly stated otherwise, the copyright lies with Institut Dr. Foerster GmbH & Co. KG. Please contact us if you wish to use any part of this work.

Generated: 2026-10-26 02:59:24