AUTOMATED CRACK AND STRUCTURE TESTING OF VALVES

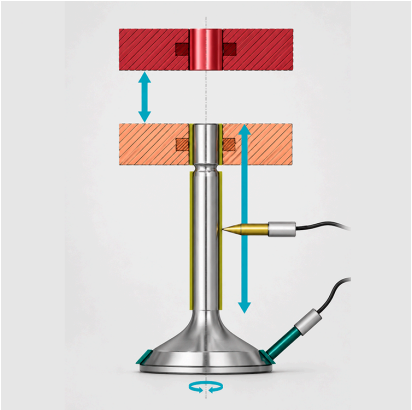
Cracks or incorrect heat treatment can cause engine valve failure. Eddy current testing reliably detects defects and verifies material properties.

THE CHALLENGE

Inlet and outlet valves are exposed to extreme thermal and mechanical loads at engine speeds and temperatures up to 1000 °C. Even minor surface cracks can lead to valve failure. In addition, the valve stem requires precise heat treatment to withstand high friction against the cam. Reliable crack and structure testing is therefore essential to ensure material integrity and long-term component performance.

THE SOLUTION

FOERSTER provides automated crack and structure testing using STATOGRAPH for surface crack detection combined with MAGNATEST modules for hardness verification. Highly sensitive probes detect longitudinal, transverse and point defects on critical valve areas. For heat treatment inspection, an additional encircling coil is applied to the valve stem. Both systems can be integrated into one automated testing solution.



THE RESULT

The combined inspection enables reliable detection of fine surface cracks and verification of the valve stem heat treatment condition within one process step. Early defect identification and integrated documentation functions support continuous quality monitoring. The solution ensures consistent material performance and stable production processes for thermally and mechanically stressed engine valves.

THE PRODUCTS

STATOGRAPH CM+ / CM

Crack testing of complex workpieces with eddy current

STATOGRAPH PROBES

Probes for non-destructive crack detection of complex components using eddy current testing

MAGNATEST PRODUCT FAMILY

Magnetic-inductive testing of metallic materials in the automotive and aviation sectors

TCL PRODUCT FAMILY

Universal, modular platform for advanced automated eddy current testing

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