STRUCTURE TESTING OF ALUMINIUM COMPONENTS WITH EDDY CURRENT

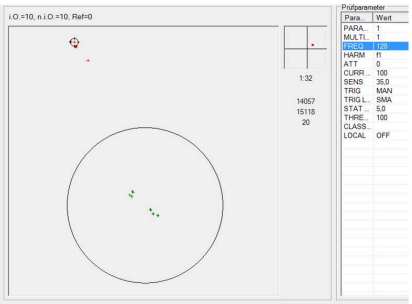
Missing heat treatment can lead to stress cracks and component failure. Eddy current testing reliably identifies non-heat-treated aluminium parts inline.

THE CHALLENGE

Aluminium components are widely used in automotive applications to reduce weight and fuel consumption. After hardening, heat treatment is required to prevent stress cracking. Non-heat-treated parts must be detected early to avoid downstream failures. As heat-treated and non-heat-treated components differ significantly in electrical conductivity, reliable non-destructive structure testing is essential for continuous quality and process assurance.

THE SOLUTION

FOERSTER performs inline eddy current structure testing using the MAGNATEST TCL system in combination with a static probe. The probe is positioned perpendicular to the test area and evaluates the heat treatment condition based on conductivity differences compared to reference values. The inspection process is fully automated and directly integrated into the production line, enabling immediate evaluation and sorting.



THE RESULT

At a test frequency of 128 Hz, heat-treated and non-heat-treated aluminium components can be clearly separated. Typical conductivity values of approximately 17 MS/m for heat-treated and 24 MS/m for non-heat-treated parts enable reliable differentiation. Automated sorting combined with comprehensive documentation functions ensures consistent product quality and stable process control.

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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