A typical application: Alloy mix up of valve seat rings

Valve seat rings must be tested for use of correct material before they are mounted in the cylinder head. Otherwise geometrically identical rings but of different alloys can be mounted. For instance, motors which run with natural gas versus gasoline require rings of different alloy. In case of mixing up of the alloys, the motor will fail.

ibg offers for this application different solutions, starting with semi-automatic solutions up to an automatic test station integrated into automatic assembly machines.

Valve seat ring in rectangular coil.

ibg has now completed the test instruments of the “digital” series and has been successful on the market for several months with the instruments eddyliner® “digital” as well as eddyvisor® “digital” for both crack detection and structure test.

Response so far is overwhelming and fortifies our philosophy to develop the best instruments and test systems for our customers all over the world.

Developing test instruments on the one hand while developing applications for them on the other have made the ibg companies the trend-setter in the eddy current component testing market. For example, the existence of the new Preventive Multi-Filter Technology for crack detection has made it possible to detect grinding burn reliably and robustly in automated systems that test 100% of parts for grinder burn.

And now the newly developed simultaneous harmonics analysis in structure test enables new chances regarding test speed and test reliability. This new ibg Test Patterns informs you on further applications. Our offices and sales partners will be glad to assist you.

Regards,
Bill Buschur

The analysis of those harmonics gives a much more detailed insight into the magnetic features of the test part and thus more precise information on the structure.
Thus it works out that by using harmonics material differences are now detected which have been hitherto undetected by using the fundamental wave. The harmonic analysis is already active in eddyliner®S digital and eddyvisor®S digital in the standard setup and is displayed as bargraph diagram.

The 3rd and 5th harmonic are viewed as default, other combinations may also be set.

Typical applications for harmonic analysis include testing for surface hardness, case depth and detection of soft areas on the surface. Too shallow case depth and too low surface hardness typically provide very good signals for evaluation with harmonic analysis.

Testing of piston rods for surface defects

Piston rods mounted in shock absorbers can have cracks due to their complex production process with several heat treatment steps and grinding processes. More and more manufacturers are replacing the unreliable and cost intensive visual inspection by much more efficient and effective automated eddy current test.

ibg offers suitable solutions fitting the production process. Usually, piston rods are tested by means of a rotating head eddyscan®H, the test part is moved through the rotating head where a probe disk with test probes rotates. Throughput of up to 800 mm/sec. is possible.

The “classical” method is also applied, where the test part is rotated and a probe scans the surface for surface-open defects. This alternative method has been integrated directly into grinder or super finisher systems.

Both of these methods, rotating probe or rotating test part, can provide a reliable test of the critical part surface areas.

Test systems are designed as per customer specific requirements and can be integrated into existing production lines.