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How Can Parts Manufacturers Speed Up Quality Assurance Processes During Production? by Jerry Atkinson

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Eddy current testing (ET) is a tried and true method for detecting flaws, such as cracks, laps and pin holes in safety-critical automotive parts. Yet in the real world, scanning these parts can disrupt or slow down the production process. Scanning by hand is also less accurate since the distance between the scanner and the part may vary.And interpretation of the data is subjective and sometimes difficult.

The automotive industry currently faces several challenges in product quality verification. First, how can human error be eliminated? For instance when a hand-held ET device is used, operator error can occur. Furthermore, there is the risk that results can be misread. How can automated quality verification of safety-critical automotive parts, such as metal bearings and spindles, be performed more accurately and without interruption of flow?

A new solution for this problem is now available, a flexible test platform that utilized robotics for the eddy current testing (ET) and ultrasonic testing (UT) of metal bearings and spindles.An innovative new test machine utilizing non-destructive testing (including options for eddy current, ultrasonic, and vision systems) has been developed and is now being used in automotive plants.Central to the robotic ET machine is a rugged, reliable multi-channel ET instrument with a wide frequency, a high signal-to-noise ratio, and easy-to-interpret graphics on a flat-panel screen. It also offers (I/O) capability, USB and Ethernet connectivity, and three discrete alarm gates. The machine also automatically self-calibrates.

The unit hasa compact footprint. It is installed inline or alongside an existing conveyor belt. It can be programmed to test a variety of parts including spindles and bearings. A robotic arm lifts the part from the conveyer belt and brings it into the test machine where it held by a chuck that rotates, while another robotic arm manipulates the eddy current probe. This robotic ET solution ensures that the eddy current probe remains precisely the same distance from the partâ€™s surface, so that test results are accurate. This machine can be configured with an ultrasonic or vision system as well if it fits the testing requirements.The machine will separate rejected parts from those that have been verified. Verified parts are returned to the conveyor belt and rejected parts go onto another conveyor. The machine can be continually reprogrammed to accommodate new part designs.

Automotive plants and original equipment manufacturers (OEMs) are now implementing this new solution in the quality verification of spindles and bearings during the production process. The result? Product verification is faster and more reliable. Process flow is not interrupted. And the chance of human error is greatly diminished.

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