Case Study – Water Pump Shaft Inspection

Equipment: InSite HT, Eddy Current Probes, Fixtures

Customer Problem

A major automotive component manufacturer wanted to validate the heat treatment at specific locations on their water pump shafts. These locations required specific hardness, but a softer material was required in other areas of the shaft. The manufacturer wanted to inspect 100% of their parts, which included multiple diameters and multiple lengths of water pump shafts.

The Solution

The testing station contained three independent eddy current encircling coils which provided the ability to test in three specific areas. A second set of eddy current coils with a known good shaft was used as an external reference.

The sorting mechanism was built to handle the multiple lengths and diameter of parts. Heat treated water pump shafts would be metered into the top of the eddy current coil fixture and stopped momentarily. If the part was found to be acceptable by the multi-frequency test instrument (24 data channels/8 frequencies x 3 coils), it would be released into a "good parts" bin. Rejected parts would sort into a reject bin. Testing rates were approximately 40 parts per minute. If multiple rejects were discovered to occur in a row, the eddy current instrument was capable of raising an alarm notifying plant operators that there could be an upstream process issue.

The eddy current testing solution allowed this automotive component manufacturer to inspect 100% of their water pump shafts in very specific locations, at production line rates. As the test fixture was capable of testing numerous diameters and lengths of shafts, the manufacturer was able to save shop floor space and inspection costs while ensuring the product met heat treat process specifications.

For more information visit our website at www.criterionndt.com or call Criterion NDT at 253-929-8800.

Figure 1 - Water Pump Shafts and Eddy Current Coils

Figure 2 – In-line Sorting Station for Water Pump Shafts