



## Case Study – Ball Bearing Hardness Test

Test Type: Heat Treat Verification

### Customer Issue

A manufacturer of Precision Ball Bearings needed an alternative way to verify the proper heat treatment processing of their product. The existing bounce test method was not providing the type of evaluation desired for the higher quality product being produced. The risk of one improperly hardened ball passing through presented a chance of failure in the precision assemblies using these bearings. The challenge of identifying and implementing a more consistent evaluation method was an important product quality improvement opportunity, which the manufacturer chose to pursue.

### The Solution

After proof of feasibility was established for the material structure sort and part rate requirements, multiple eddy current test systems were developed and approved for installation to perform in-line inspections on a variety of bearing diameters. The eddy current test instrument and custom encircling coil (shown in Figure 1) were integrated into a custom material handling system. Figure 2 shows the bearing balls feeding into the material handling entry chute.

The system included custom size tooling for each product diameter. High speed, pneumatically controlled gating enabled the manufacturer to test at over five parts per second, eliminating a potential bottleneck. Eddy current test fixtures were designed for adaptation to existing crack test stations and then installed on multiple lines in the manufacturer's facility. The test instrument's teach mode provided the ability to quickly create new test setups on new batches of products when necessary. The creative and robust system design was developed to perform in an environment where operating 24x7 was required.

Multi-frequency test instruments such as the [InSite HT](#) are capable of performing this type of testing.

For more information visit our website at [www.criterionndt.com](http://www.criterionndt.com) or call Criterion NDT at 253-929-8800.

**Equipment:** The [InSite HT](#), Custom Eddy Current Probe and Product Tooling

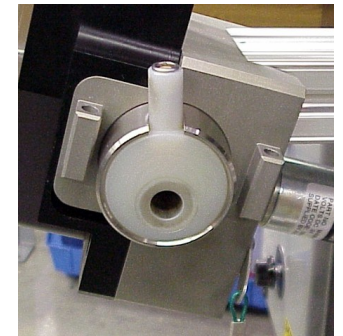


Figure 1 –Eddy current probe



Figure 2 - Eddy current ball bearing test fixture

