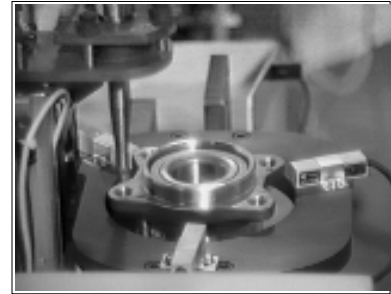


Wheel Hub Bearing Internal Thread Inspection and Sorting

App Note 1005



Reduction of PPMs

100% In-Line Process
Monitoring

Defect-Free Threads

Integration into Existing
Automated Line

Capacitive Sensor Technology

Inductive Sensor Technology

Additional Applications Notes
Available

Situation

A leading producer of automotive wheel hub bearings needed to assure that four (4) threaded stud holes in a wheel hub was 100% free from thread defects. The four (4) threaded holes are not equally spaced along a bolt hole circle. Each hub was to be inspected in a fully automated machine placed in-line.

Solution

Automation Innovation coupled their proprietary Signature Analysis based Process Monitoring System to their Patent Pending Capacitive Thread Probes and created a fully automated machine which queues, inspects and sorts wheel hubs. All four (4) holes in each hub were inspected within the line's 12 second cycle time.

The automated system utilized a collet which rotated and picked up the hub from the proceeding station and placed it into the fingers of a gripper mounted on a rotary table. The hub was then clamped and rotated in a registration move utilizing proximity sensors to locate the threaded hole designated as hole number one. At this time a capacitive probe was moved in and out of the hole to inspect for any defects. The hub was rotated to each of the three (3) remaining

holes and inspected in the same manner.

The signature analysis controller checked the signature obtained for each threaded hole and determines the quality of the threads. If all four (4) threaded holes are good, the hub was placed onto a packaging table. If one (1) or more of the holes were found to have a defect, the hub was placed into a rejection shut.

A twelve (12) second cycle rate was required for each hub. Each hole was inspected at a rate of 1.5 seconds.

100% of the product was inspected for thread quality. Customer concerns for this automotive supplier were eliminated as the system provided to be a reliable means of inspecting this wheel hub. Shipments for these hubs have become defect-free for threads or zero (0) PPMs.

Other Products

- Process Monitoring
- Press Monitoring
- Gauging Systems
- OEM Heat Treat Monitors
- Assembly/Verification Systems
- Packaging Systems
- Robotic Automation
- Engineering Services

Providing Process Monitoring Automation to Achieve Zero-Defects

3337-3 Air Park Road • Fuquay-Varina, NC 27526 • Tel: (919) 557-6824 • Fax: (919) 557-8170 • E-mail: sales@auto-in.com