

Tube Nut Internal Thread Inspection and Sorting

App Note 1006

Reduction of PPMs

**100% In-Line Process
Monitoring**

Defect-Free Threads

Capacitive Sensor Technology

**Additional Applications Notes
Available**

Situation

A producer of tube nuts for automotive refrigerant lines, needed to assure that 100% of their product was free from internal thread defects. Current production of parts contained nuts with short threads, missing threads, torn threads, chips in threads and no threads.

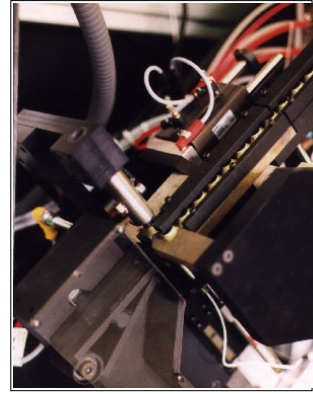
Solution

Automation Innovation coupled their proprietary Signature Analysis based Process Monitoring System to their Patent Pending Capacitive Thread Probes and created an automated stand alone machine which inspected and sorted the manufactured tube nuts.

The stand alone inspection station consisted of an automated inspection head, part sorter and a manually loaded track feeder (expandable to add a bowl feeder).

Parts were automatically indexed from the track feeder to the inspection head where the nut was then automatically captured and the capacitive thread probe moved in and out of the nut inspecting the entire thread during the retraction motion.

The signature analysis controller checked the signature obtained for each nut and determined the quality of the threads. If the controller



determined the threads to be good, the nut was discharged from the inspection head into a final packaging container. If the threads were defective, the nut was discharged into a rejection chute.

Production rate was 1,800 parts per hour or a 2.0 second cycle time.

100% of the threaded nut was inspected for quality. Labor requirements were reduced from two (2) full time inspectors to one (1) feeder attendant, (later to be replaced by a bowl feeder). Within the first week, the client realized a net return on investment based upon labor savings and defective parts that would have left the plant.

With over 1,200,000 parts shipped since the installation of the inspection system, the customer's shipments have been defect free- and their PPMs have plummeted from over 1,600 to zero (0).

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

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