

Mounting Studs Internal and External Thread Inspection and Sorting

App Note 1002

Reduction of PPMs

100% In-Line Process Monitoring

Defect-Free Internal and External Threads

Dimensional Gauging of Part Features

Plating Verification

Unmanned Operation

Packaging System

Capacitive Sensor Technology

Displacement Sensor Technology

Fiber-Optic Sensor Technology

Additional Applications Notes Available

Situation

An automotive and truck company needed to assure that 100% of the mounting studs used to secure electronic chassises to vehicle frames were free from defects. The customer wanted to insure that both the internal and external threads were within tolerance, the parts were plated and the overall length were to specification.

Solution

Automation Innovation designed an automated machine to orientate, inspect, sort and package the parts that utilized their proprietary Signature Analysis based Process Monitoring System, their Patent Pending Capacitive Thread Probes and various gauging sensors.

A bulk feeding system was used to facilitate loading and to allow for several hours of unattended operation. The parts were orientated using a bowl feeder, and the parts were moved through the inspection system utilizing a walking beam mechanism.

The parts were inspected for length and plating at one (1) station using retractable gauging. At another station, capacitive thread probes moved in and out of the threaded hole and threaded stud. The signature analysis controller checked the signature obtained for



each threaded hole and determined the quality of the threads.

The parts moved through a sorting station where good parts were placed in shipping containers, while bad parts were placed into a secure area to eliminate the chances of part mixing.

The customer required a production rate of 25 parts per minute, while the system's production rate was 38 parts per minute or 1.58 seconds cycle time.

Only simple spot checks using Go-No Go Gauging was used previously, which lead to high PPM levels. With 100% inspection of the product the PPMs were reduced to less than one (1) and the customer was not required to perform costly quality audits. The customer realized a net return on investment in less than six (6) months.

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