

Automated Medical Implant Inspection System



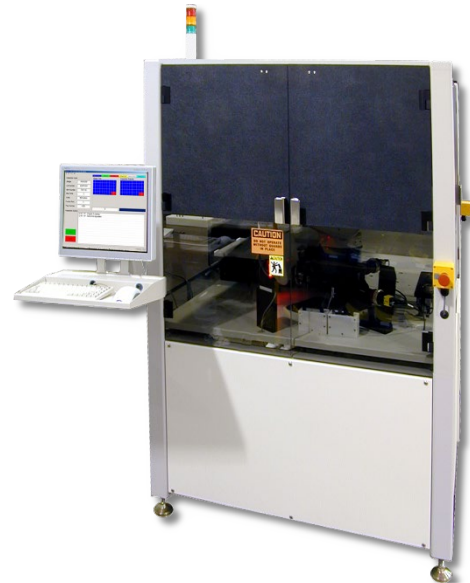
Challenge

A medical device manufacturer needed to measure multiple different types of medical implants and small parts, including screws, hooks and connectors. The manufacturer needed an automated inspection system that enabled high throughput as well as statistical tracking and NIST traceable accuracy with gold standard parts.

Solution

Parts are loaded in trays of 25 to 100 each. Then, a high precision, six-axis robot picks up individual parts and positions them in front of two high-resolution cameras fitted with telecentric lenses. High performance machine vision and sophisticated software capture and use up to 55 dimensions to accept or reject the part.

At output, failed parts move to a reject tray. The system measures almost any external dimension, including thread profile, radius, length, width, diameter, and hole size. Depth measurement and other non-external requirements can be integrated using other measurement devices.



Result

The automated system achieves **throughput of <1 second per measurement**, depending on the part type and number of dimensions measured. When calibrated to the NIST traceable grid, accuracy is **less than 2 microns**. Multiple end effectors enable 10-second automated changeover, based on the part type entered by the operation. Normal pass/fail optical comparator inspections can be performed with numeric data, and data can be uploaded to statistical quality management system. Additional features include automated calibration and verification for robot and vision system, and optical character verification for laser etching.

About DWFritz Automation

Established in 1973, DWFritz Automation provides world-class build-to-print manufacturing capabilities to clients, in addition to designing, building, and supporting engineered-to-order automation systems and high-speed, non-contact metrology products.

