DWFRITZ
PRECISION AUTOMATION

Roll Bar Hole Inspection System

Challenge

A consumer electronics manufacturer needed a system to automatically inspect and measure critical dimensions in a strip of 14 individual roll bars, and identify bad parts versus good parts.

Solution

The system uses a camera and a laser to scan a strip of parts and measure specific dimensions. An ink printer then marks any parts on the strip that fail inspection. The process begins when the operator manually loads the strip of parts into an inspection nest mounted on a single-axis stage. Once placed within the inspection nest, a pneumatic cylinder extends a plate with spring "fingers" that apply a light force on the connectors between the roll bars, holding the strip in place during inspection.

The linear stage moves the nest with the parts over laser distance sensor to determine if the strip is properly nested for inspection. The stage then moves over a prism assembly and camera. The prism assembly uses prisms and a strobe light for the camera, with mirrors to reflect the light towards the prisms. The pins of the part extend down past the prisms. The camera looks up at the prisms and views the reflection of the sides of the pins, allowing the camera to view the sides of both pins at the same time.

The system inspects all of the parts before the nest continues to the end of the linear stage and the bad part ink marker. The bad part contact marker places a dot of ink on parts that fail inspection. As the nest returns to the start position, it stops when a bad part is above the marker so the marker tip can extend to apply the ink. Once complete, the operator opens the access door and removes the strip of parts.

Result

The high-precision system achieves 20% GRR for a dimension with a tolerance range of 30 microns.

About DWFritz Automation

Established in 1973, DWFritz Automation designs, builds, and supports engineer-to-order automation systems and high-speed, non-contact metrology platforms, as well as provides world-class build-to-print manufacturing capabilities to clients.