DWFRITZ
PRECISION AUTOMATION

Solution Sheet

Laser Assembly System

Challenge

A consumer electronics manufacturer needed an automated system to assemble and laser-weld molded plastic atomizer components into finished atomizer assemblies.

Solution

Bulk components enter the system through two vibratory bowl feeders. Pneumatic pick-and-place devices transfer and orient parts from each of the two vibratory bowl feeders to the next available vacuum nest on a circular dial plate. Once in the nest, sensors confirm part presence and orientation prior to laser welding by an 810-nm laser beam. Weld output is monitored through the on-board video capture, while assembly quality is inspected at the tilt station.

A vision camera indexes parts exiting the welder for optical inspection by a custom-designed Heidenhain gauge array, which automatically inspects parts for planarity. Failed assemblies are ejected into a reject bin, while good assemblies are sorted by nest identification into bins on a rotating output tray. An additional sensor immediately downstream of the unload station inspects for any parts remaining in the nest.

The entire assembly, weld, and inspection process is configurable via custom screens at the user interface, though operator attention is required only for loading raw materials, unloading the output tray and reject bin, and acknowledging any error conditions.

Result

The automated system precisely aligns, assembles, and laser-welds small parts in just three seconds, achieving **a throughput of 20ppm**.

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.

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