

Precision Adhesive Dispensing System



Challenge

A semiconductor manufacturer needed a fully automated system to dispense precise quantities of adhesive to predefined areas on a customer-supplied wafer.

Solution

The automated system applies adhesive onto a substrate at a very high rate of speed and with micron-level precision. Operators install a wafer cassette at the load station where the waferbot scans and identifies the locations of all available wafers. Waferbot then transfers wafer A from the bottom-most slot in the cassette to the X-Y stage flat finder.

The flat finder lowers and rotates the wafer to identify the edge and holds the wafer while the OCR system reads the wafer serial number. Waferbot transfers wafer A to the wafer chuck, where snuggers precisely locate the wafer and a vacuum system holds it against the wafer chuck for inspection by the vision system. While wafer A undergoes inspection, waferbot transfers the wnext wafer (wafer B) from the cassette to the X-Y stage.

On the wafer chuck, a glue head applies test drops of glue to the wafer while a camera inspects the size and placement of the last glue drop in the series. Passed wafers proceed to assembly, where a glue head applies adhesive in a pre-configured pattern. Failed wafers require operator intervention.

Waferbot transfers the completed wafer A to a temporary storage slot before moving wafer B to the wafer chuck for alignment, inspection, and glue application. Waferbot then transfers wafer A from the storage slot to the unload cassette and repeats the process for all remaining wafers.



Result

The system uses high performance machine vision and motion control to apply three, **300-micron diameter glue dots per second** to the surface of a wafer with **25-micron accuracy**.

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.

