

## Polishing Pad Inspection System



### Challenge

A semiconductor manufacturer needed an automated system to clean and inspect polishing pads for semiconductor wafers.

### Solution

The system includes five modules in sequence that load, index, clean, inspect, compress, measures, and tests each polishing pad.

Robots load pads from a cart into a dead nest and then to a conveyor, groove-side up where they are transferred to a clean station where a brush, ionizer, air knife, and roller remove particulates. Remaining particulates are measured following the ingress to the compress station, which applies a force to the pad and measures the amount of pad compression by comparing the delta between two thickness measurements taken over a period of time.

Three line scan cameras and four class 2M laser sensors check the pad for surface defects (top and bottom) and 2D laser scanners look at the top and bottom of the pad to measure the thickness. The pad may optionally be rotated 90° and returned to the inspection process for additional inspections and laser measurements or passed under two hardness testers. Following the hardness tests, the robot moves the pad to the dead nest for a weight check and then past the bar code printer. Depending on the inspection results, the robot moves the inspected pad to either the "Good" cart or the "Reject" cart.



### Result

The system cleans mechanical planarization pads and performs eight different measurements in less than 80 seconds per pad.

### 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.

