

Panel Debonder System



Challenge

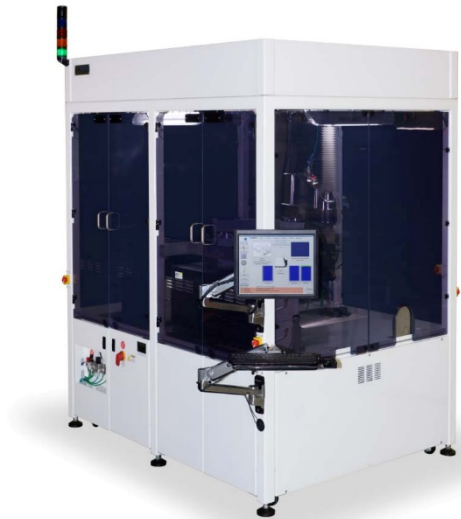
A semiconductor manufacturer needed an automated system to heat and remove a carrier panel and thermal tape from a molded panel assembly.

Solution

The debonder system uses a combination of recipe-controlled temperature and pressure to heat the thermal release tape on a molded panel assembly, and a robot to remove the carrier panel and the tape.

Operators load full input magazines of molded panel assemblies where two through beam photocells use a light beam sensor and detection to verify that the magazine is in position. A robot with a custom end effector guided by a laser distance sensor removes the panel assemblies from the magazine and places them on a heated plate at the heated press station. The robot's combination end effector includes a paddle with suction cups to carry the panels and a gripper to separate the carrier panel and thermal release tape from the molded panel.

A camera at the heated press station accurately aligns the panel assembly to the bottom plate and determines the carrier panel and molded panel orientation. The heated press station features top and bottom heated plates that heat the panel assemblies until the tape reaches the release temperature. The bottom plate moves up and down to apply pressure to the panel, and the top plate moves to the side so the robot can access the panels. The robot then grips one edge of the carrier panel and lifts the panel off of the thermal release tape. After separating the carrier panel and the thermal release tape, the robot places the panels in the empty magazines and the tape in a waste bin for disposal.



Result

The system met the project specification with cycle times of 4 minutes per panel.

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.

