

Precision Pillar Placement Tool



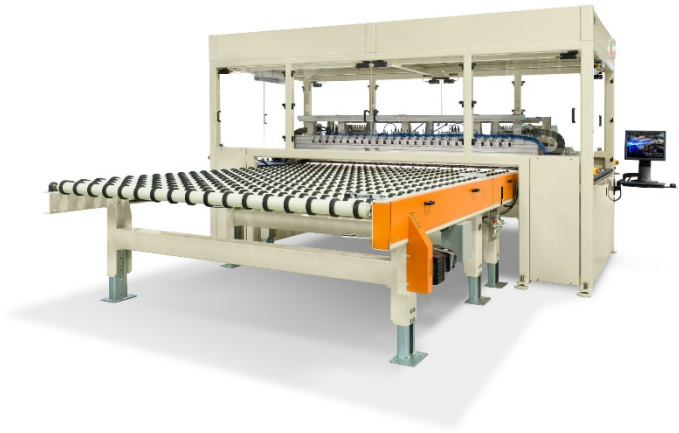
Challenge

A leading glass manufacturer needed a system to automatically assemble high-quality vacuum-insulated glass products to maximize output and reduce product costs.

Solution

The automated system precisely places tiny pillars across sheets of glass up to 5'x8'. The pillars measure only 0.625mm \pm 0.05mm in diameter and 0.3mm \pm 0.02mm in height. Pillar placement must be precise within \pm 1.0mm tolerance to true position.

Two washed and dried sheets of glass are fed into the production line. Sensors detect glass location and size, automatically loading the appropriate recipe for the correct sized glass. At the precise location, the glass stops and high-speed pick heads begin to pick-and-place the pillars. Pillars are automatically loaded into small vibratory bowls and custom designed tips locate and pick the singulated pillars.



An array of cameras inspects each row of pillars for their presence and location. If a pillar is missing, on its side, or outside of true position, the glass reverses for rework of those pillars. Once all rows have been completed, the glass advances to the station where the top glass is lowered onto the bottom glass, which contains the frit and pillars. Pressure holds the glass together as it advances to the next process on the line.

Result

The system achieves throughput times of 8 minutes per normal sized part with an accuracy of \pm 1.0mm tolerance to true position. The system has a 98% uptime and 99.7% pillar placement yield.

About DWFritz Automation

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

