

Automotive Glass Producer & Distributor

An industry-leading glass manufacturer produces, processes, and distributes automotive glass products that support passenger safety and security. Premier Automation Robotics delivered a solution that ensured reliability, safety and cost-effectiveness to improve the customer's operations.

Premier Automation Case Study

INDUSTRY

Material Handling / Glass

RESULTS

- The robot eliminated the manual handling of glass during loading and unloading of glass.
- The upgraded process virtually eliminated all scratch defects from production.
- The robot eliminated any variations in cycle time, which reduced line stoppages and increased productivity.
- Additionally, this reduced the amount of glass that had to be thrown out because it was overheated in the lamination ovens upstream of the robot.

PRODUCT SPECIFIC DETAILS

- **Glass Size Minimum:** 20 inches x 20 inches
- **Glass Size Maximum:** 30 inches x 40 inches
- **Thickness:** 4-6 mm
- **Cycle Time:** 12 seconds
- **Glass Weight:** 7-15 lbs.
- **OEM Part Setups:** Approximately 30 different part styles with specific setups

The Problem

The customer needed a customized solution to eliminate human error and related production downtime to increase overall process efficiency. To reduce line-stoppage, the customer needed to increase their process reliability. This required a flexible solution that could comply to all current and future rack and part configurations. Unnecessary costs associated with outsourced human labor and expenses due to scrap rate resulting from damaged/scratched glass needed to be decreased to improve the company's bottom line. The customer's previous operations increased the risk of injury to employees and needed to be reconfigured to ensure user safety at all times.

The Solution

Premier Automation provided the engineering, design, fabrication and installation to safely automate the transfer of laminated sidelites from the assembly line into autoclave racks set up specifically for multiple part configurations. Premier Automation ensured the newly installed robotic system would be compatible with existing equipment to reduce the number of spare parts needed on hand. The error-proof system ensures that glass-to-glass, or glass-to-equipment contact will no longer occur from the transfer and loading process.

Instead of using a vision system sensitive to lighting that needed continuous recalibration, Premier Automation installed inexpensive sensors to completely measure the autoclave racks. 100% measurement ensured there were no loading errors causing glass-to-glass contact or broken glass. In addition, Premier Automation installed a remote login capability to decrease response time for programming assistance.



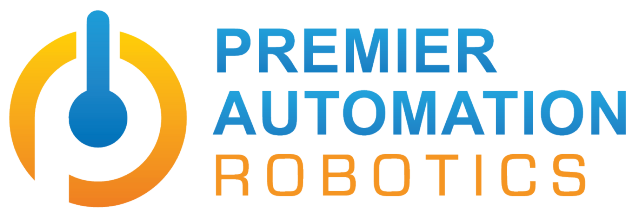
Premier Automation Case Study

ROBOT CELL SPECIFICATIONS

- Fanuc R-2000iC/125L robot with integrated high-resolution Fanuc iRVision system
- Vacuum gripper end of arm tooling with integrated rack measurement sensors
- Dual isolated rack stands to allow independent changeover of full glass racks
- Allen-Bradley safety PLC and HMI for system control and operation

PROCESS SPECIFICATIONS

- Parts delivered continuously on belt conveyor with 12 second cycle times
- Stopping the line will ruin any parts held in the line
- Parts are to be loaded on edge into racks with slots for each part
 - Racks have discrete slots for each piece of glass that will be loaded
 - Racks are configurable and inconsistent
- Fork truck drivers must be able to remove full racks and place empty racks while cell is in operation



Robot Cell Operation

The cell receives a piece of glass from the line every 12 seconds. When a new rack is placed in the cell, the infeed conveyor stages up to 3 pieces of glass while the robot measures every slot on the new rack. After measuring, the robot calculates a unique offset for every slot in the rack and then uses the vision system to pick up pieces of glass from the line and place them in the rack.

Safety Guarding




Premier Automation installed a combination of safety guarding and light curtains around the robot's working envelope. The combination of Fanuc Dual Check Safety (DCS) light curtains and area scanners allowed operators to safely enter the cell to remove full racks of glass while the robot continued to load the other rack. This allowed continuous operation of the cell and maintained productivity.

Premier Automation Robotics

Premier Automation designs and implements automated robotics systems for industrial OEM and End User customers. Automated robotics systems are an increasingly versatile, safe, and cost-effective solution for a broad range of industrial applications. Our engineering team has the automation and process control experience to provide our customers with unique, highly efficient robotics solutions to streamline production, improve efficiency, and save on operational costs.

Premier Automation is an Authorized System Integrator for Fanuc Robotics and a Robotics Value Provider for ABB Robotics.



 1100 Rico Road, Monroeville, PA 15146
 (412) 373-3700
 sales@premierautomation.com

