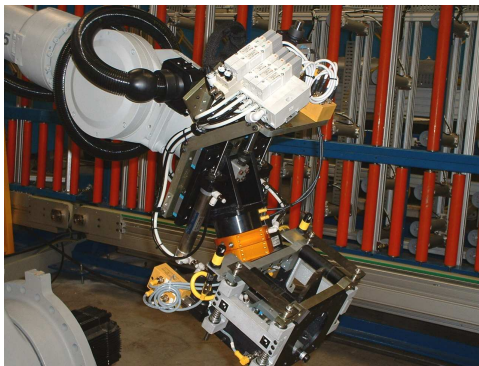
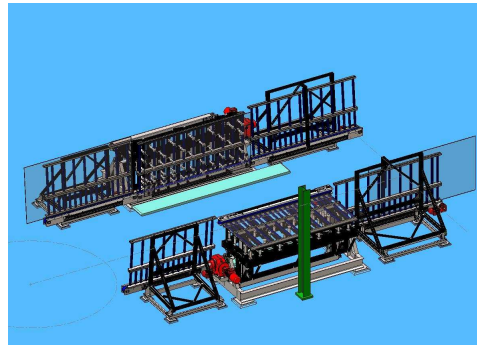
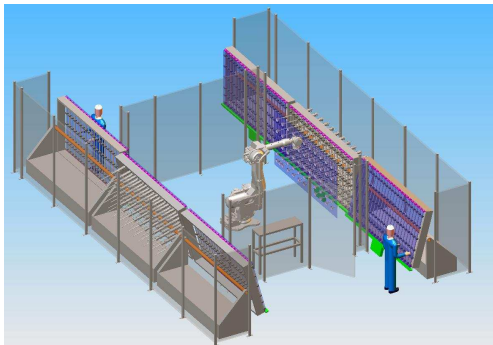


Case Study – Trimming Laminated Glass

This process uses a Motoman robot to trim the vinyl laminate that is used as a middle layer between two sheets of glass in hurricane proof windows.

The challenges with automating this cutting process included

- The part range and variety is huge – there can be literally any size part presented to the windows manufacturing plant for quick turnaround and all of the hurricane proof sheets of glass need to be processed through the trimmer
- This process was manual and had not been done before
- The edges of the glass were not regular, leading to a challenge to maximize tool life
- The operator and floor supervisory personnel needed education as to the proper use of this more sophisticated equipment and process
- The end user had no experience with robotic trimming or robots – the partnership between the customer and TEC is very close to assure that the technical and commercial goals are all met





System Requirements

- Measure and trim sheets from a smallest of 2 x 2 feet to largest 6 x 10 feet with no known discrete sizes until measured
- Run around the clock and with a variety of operators
- Direct labor savings
- Trimmed material must be collected and delivered out of the cell
- Part to part changeovers must be done while cutting; TEC developed an A and B side system for this
- Supply a rugged and industrial system
- Meet the financial requirements set forth by the customer

Description of the Solution

The system uses a Motoman HP165 robot with NX100 controller, a TEC double sided, multiple-bladed trimming tool with built-in compliance.

There are two infeed and exit conveyors (A and B sides of the cell); the glass is fed in and out on it's edge, set at a 5 degree angle off vertical. The center section located on each side of the conveyors is a powered tilt table with an array of vacuum cups. As the new sheet of glass is powered in, it is stopped at a datum, the tilt table extends its vacuum cups, the cups grip the sheet and tilt the glass sheet back against the cups (rotation is by SEW-Eurodrive servo drive and gear reducer) and rotated back – this exposes the bottom edge of the glass to the blade.

The robot trims all four edges of the glass. A tool changer is included in the system for quick changeover of blade cassettes.

The results of this automation are much improved overall quality of trimming, operator safety improvements and predictable throughput.

Customer Benefits

- Consistent throughput
- Part to part changeovers and the ramifications of wide part size variations and mixes are irrelevant to the process output
- No human involvement with the cutting of vinyl laminate
- The flexible and programmable industrial (automotive spec.) robot will have a long and useful life
- Removal of the human element from a very repetitive and boring task

TEC Automation, Inc.

**30 Hickory Springs Industrial Drive
Canton, GA 30115**

**Phone 770-720-3333
www.tec-automation.com**