



## Glass Coating Line Handling Robots

### OVERVIEW

This customer does all handling of large pieces of glass with robots. They installed a new coating line to put coatings on various types and sizes of architectural and automotive glass. Four Fanuc robots were installed on the line to handle glass at the entry and exit and two Fanuc robots were installed to handle mask screens that are used to load and unload coating masks. I²T wrote all of the software to control the six robots on the line.

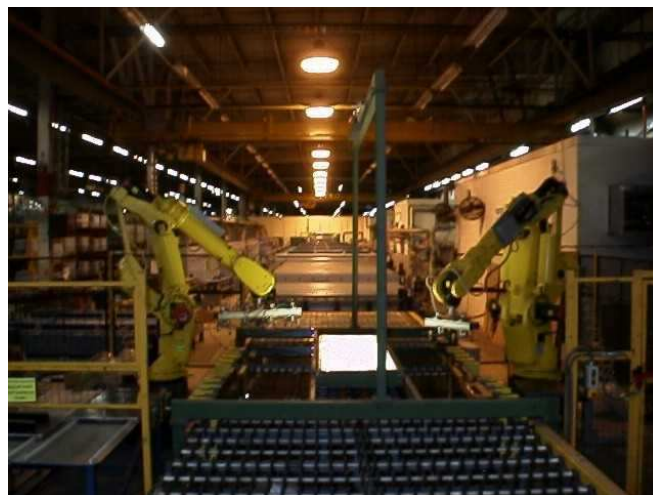
There are two robots at the entry of the line named Load Robot A and Load Robot B. The robots pick glass off of pallets and put it on the line for processing. The following picture shows one of the Load robots.



There are two robots at the exit end of the line named Unload Robot A and Unload Robot B. These robots pick processed glass from the line and stack it on pallets. The following picture shows one of the unload robots.



The two mask robots are located in the center of the coating line. One of these robots is the mask load robot. It picks up a mask and places it on the line. When the mask is no longer needed, the mask unload robot picks the masks off of the line and places them on a pallet. The following picture shows one of the mask robots.



## **Technical Details**

All six of the robots used on this line are Fanuc S-420if robots with R-J2 controllers. A Modicon Quantum PLC is used to do the overall line control. The load and unload robots are connected to the PLC via Modbus and via hardwired I/O. The mask load and unload robots are connected to an Allen-Bradley ControlLogix PLC via DataHighway. Parameters to control each of the robots are entered via an HMI and passed to the robots via the PLC. The robots are programmed using both Teach Pendant Programming and with Karel.

Pallets with glass are arranged around the robots. The robots are directed where to pickup the glass and the glass is then placed on the conveyors. Calculations are done to offset the drop position of the glass based on the size of the glass. The glass must always be placed on the center of the conveyor.