

Robotics and Glass:

Changing The Way We Move

Who We Are

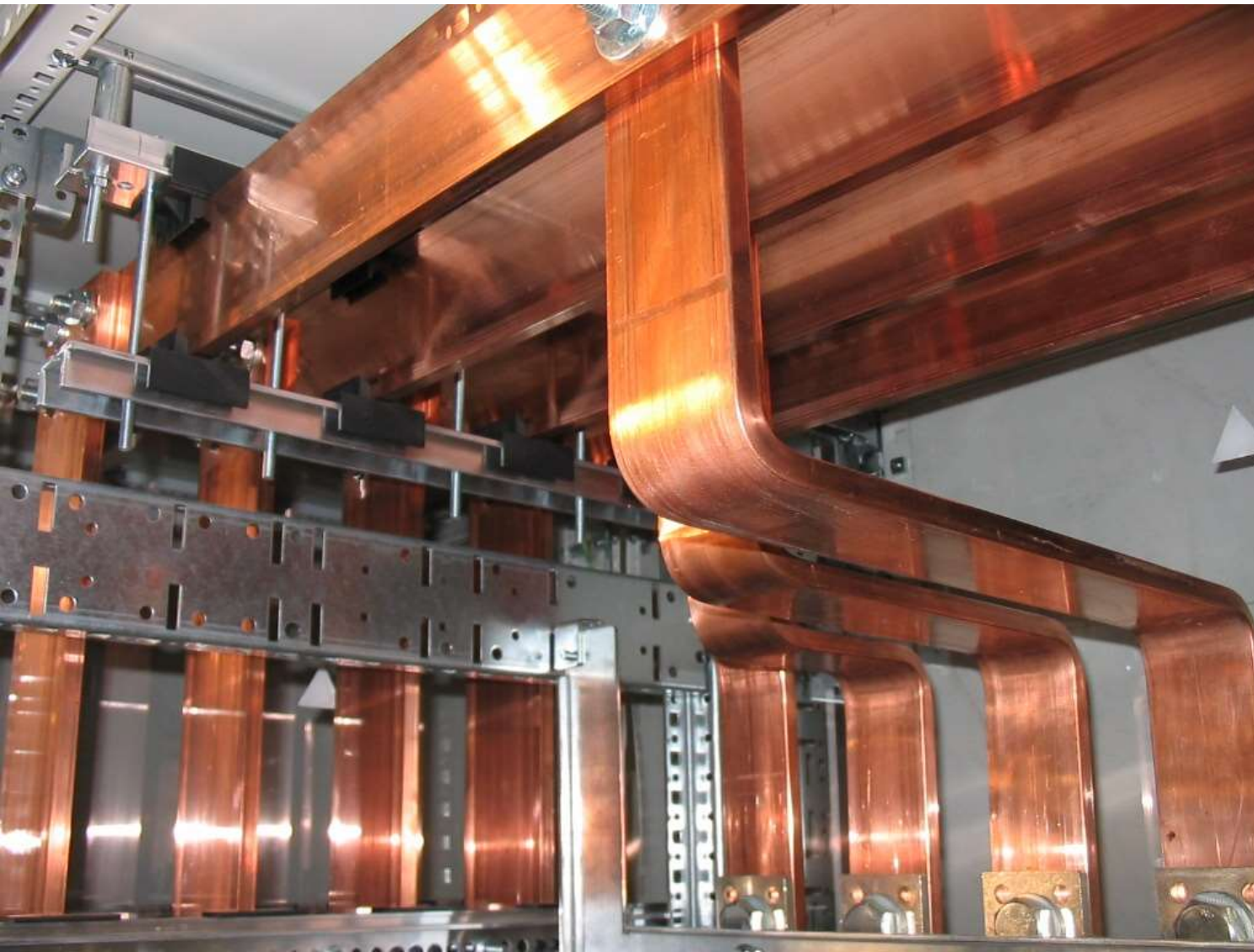
What is Industrial Automation?



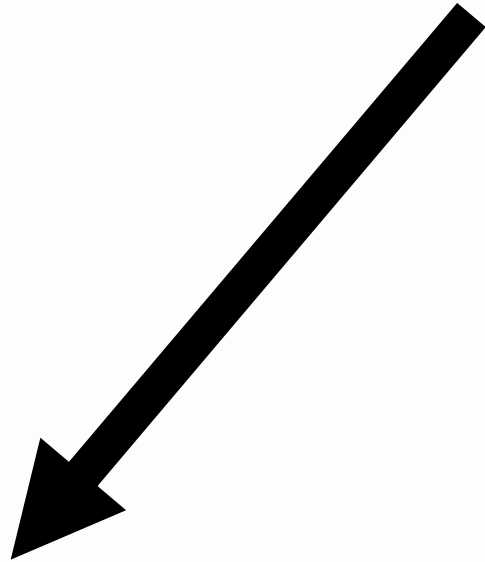
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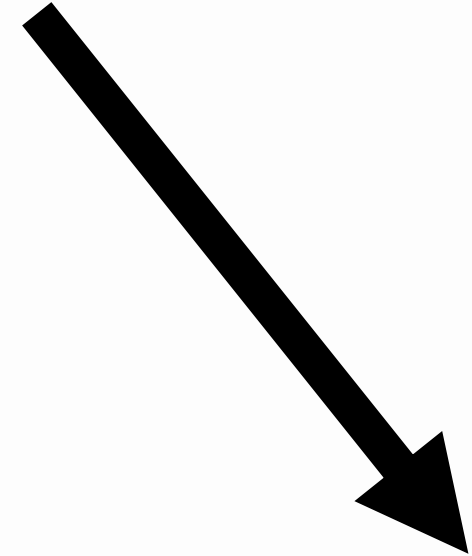
Industrial Automation



PLC Automation
Software/Motion



Drives
Motor Automation



ROBOTICS

Robotics and Moving Glass

Challenge:

Glass Manufacturer experienced high rejection rate while moving glass side windows from one process to the next.

Scenarios Further Defined:

Glass side-windows needed to be unloaded from a conveyor onto a plastic rack and unloaded from a plastic rack onto a conveyor

Robotics and Moving Glass

Key Factors:

Rejection rate: 6-8 pieces per hour

Primary Cause: glass-to-glass contact

Secondary Cause: manual error

Initial Key Constraints:

Glass placement on exit conveyor was random

Racks were inconsistent

Robotics and Moving Glass

Objective:

Integrate a robot into the existing plant processes to eliminate glass-to-glass contact, increase productivity and promote safety.

Meeting the Objectives – Loading the Racks

Eliminating Glass-to-Glass Contact:

1. Make the Robot “See” the Rack and the Glass using laser sensors
2. Teach the Robot to decipher the number of slots, defects and positioning
3. Program the robot to execute motion for pick and placement without glass-to-glass contact

Considerations:

1. End of arm tooling
2. Getting “reach” and range of motion

Meeting the Objectives – Loading the Racks

Increasing Productivity:

1. Process data from laser sensors effectively and quickly
2. Convert data to motion cues
3. Increase speed of armature movement to match conveyor output

Considerations:

1. The right I/O module – Trial and Error
2. Matching speed of data with speed of motion

Meeting the Objectives – Loading the Racks

Promote Safety:

1. Eliminate broken glass
2. Establish mechanical safety perimeter
3. Design and build light curtains to allow human interaction

Considerations:

1. Human interactions for moving racks and maintenance

Outcomes

Objective: Eliminate Glass-to-Glass Contact

Outcome: Defects went from 6-8 rejections per hour to ZERO

Objective: Increase Productivity

Outcome: Cycle time is currently faster than line can deliver glass

Objective: Promote Safety

Outcome: Zero injuries since installation

digitalbridge²⁰¹⁸

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COMCAST
BUSINESS

