ROBOTIC ASSEMBLY & MULTI-POINT VISION INSPECTION CELL

INDUSTRY: PLASTIC MOLDING CUSTOMER: DIAL TOOLS, ADDISON IL

CHALLENGE

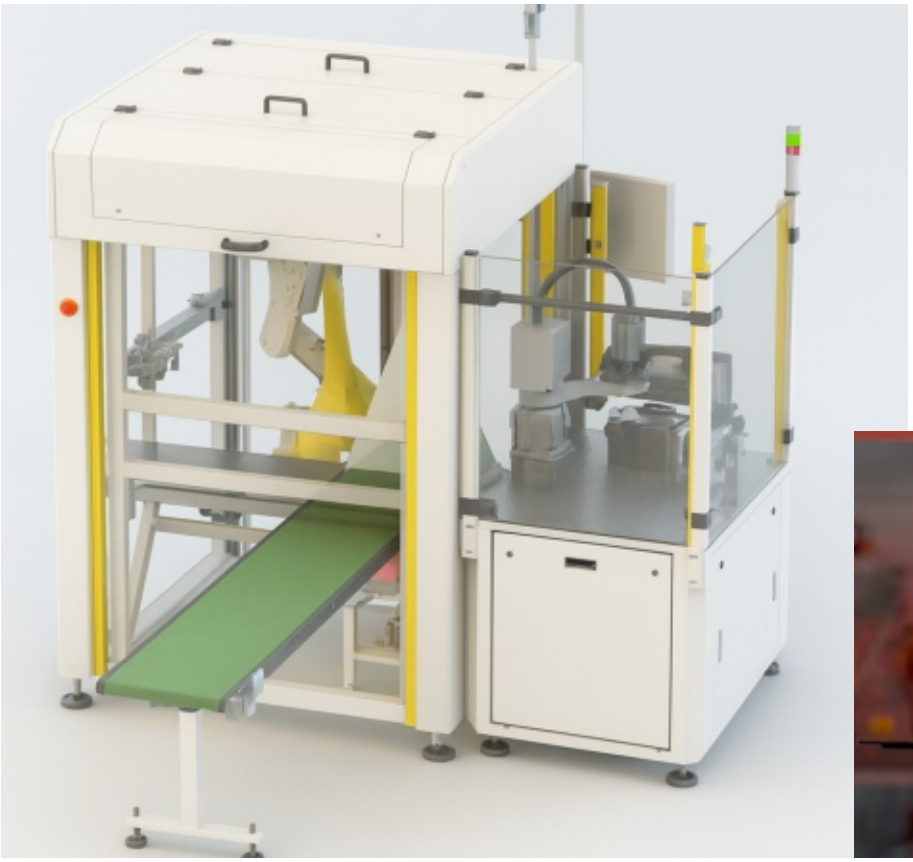
A client in the precision manufacturing industry, needed to automate a critical assembly and quality control process. The task required pressing a metal insert into a part and then performing a complex, 100% inspection, esuring zero defects.

ISSUES

Quality Control: A manual inspection process was susceptible to human error, creating a risk of non-conforming parts.
Labor: The multi-step process required a dedicated operator for the repetitive tasks, and inspecting each part.
Process Reliability: The manual workflow lacked the repeatability and data tracking needed for modern quality

SOLUTION

HQA designed and built a complete, turnkey robotic cell that automates the entire assembly and inspection sequence. An operator loads the part and insert onto a fixture, and the machine takes over. The system features a servo-driven shuttle, a pressing station, and a 6-axis robot that presents the part to multiple high-resolution cameras for a comprehensive quality check before sorting it into "pass" or "fail" locations.

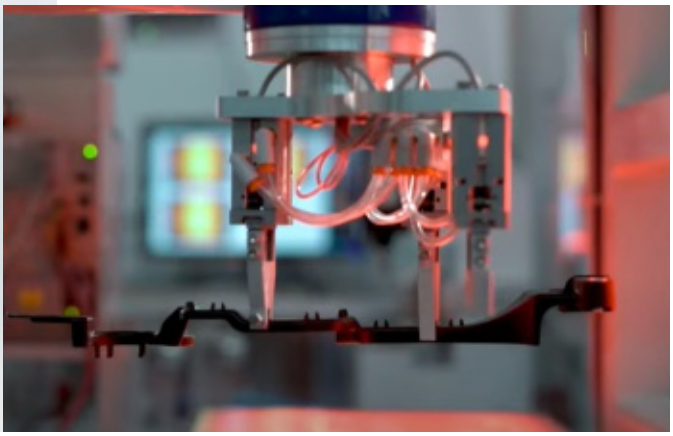


HQA-Developed Modules

Custom End-of-Arm Tooling (EOAT)
Quick-Change Part and Tool Fixtures
Pneumatic Press Station
Automated Inspection & Rejection

Key Technologies

Control System: Beckhoff PLC & HMI
Robotics: Epson VT6L, T6 robots
Vision: 3x Cognex cameras



RESULTS

Quality Assurance: The system provides 100% automated inspection, eliminating human error and ensuring zero defects
Increased Throughput: The process was automated to a consistent cycle time of 10 parts per minute.
Labor Optimization: The need for a dedicated operator was eliminated, freeing up skilled labor for higher-value tasks.
ROI: 10 Months.

THINK, DESIGN, BUILD

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