



Mitsubishi Electric and R+D Custom Automation Reduce Programming and Installation Time with Easy-To-Use Robots

Case Study

Solution

- RH-3FH35 Floor Mount SCARA Robot
- RH-3SDHR Ceiling Mount SCARA Robot
- Cognex In-Sight® 7000 Vision System

R+D Custom Automation Benefits

- Less debug hassles
- Boosted operation efficiency
- Optimized engineering efforts

Mitsubishi Electric Value-added Advantages

- Simplified cable management with internal cable routing
- Increased productivity with high-speed operation
- Easy-to-use vision connectivity

BACKGROUND

With first-class manufacturing equipment and a skilled engineering department, since 1977, R+D Custom Automation has provided state-of-the-art system integration and turnkey solutions in the Chicago-land area. R+D has continually expanded upon its automation capabilities with cutting edge technology and top-line facilities. A recent building renovation increased floor space by 25%, boosting productivity and allowing for the realization of simultaneous large-scale projects. With a prestigious robotics trade show approaching quickly, Mitsubishi Electric challenged R+D to incorporate state-of-the-art robot technology into a complex demo machine known as 'RoboPick'. With an expedited plan in place and a hunger for a challenge, R+D began to detail the design, ordering components, and specifying the unit's requirements. Jim Marron, Project Manager at R+D Custom Automation commented "The RoboPick unit was a great opportunity to be introduced to MEAU's products and staff. R+D prides itself on delivering fully custom solutions for all types of unique applications. This certainly was a challenge, but delivering custom solutions to clients with complex problems is precisely R+D's specialty.



"Partnering with Mitsubishi Electric on the RoboPick project was fun, exciting, and challenging given the tight constraints to build a system and learn a new product within two weeks. With MEAU's products and support combined with R+D Custom Automation's expertise with custom machinery and unique system integration; I had total confidence we would deliver and maintain our proud history of 100% customer satisfaction."

– Jim Marron, R+D Custom Automation.

CHALLENGE

Recently, Mitsubishi Electric Automation, Inc. approached R+D Custom Automation with a daunting robotics challenge; to build and deliver a custom vision-guided pick and place system in less than 2 weeks. The collaboration offered the companies the opportunity to deepen their relationship, for R+D to experiment with a leading edge robotics product line, and for Mitsubishi to see their technology applied by a leading system integrator. Within two weeks, R+D effectively designed and built the pick and place system using Mitsubishi Electric's robotics technology to achieve the desired throughput goals.

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SOLUTION

The system combines rigidity and flexibility. For a machine demonstrating high-speed robotic pick & place with infeed and outfeed conveyors, two of Mitsubishi Electric's latest SCARA robots help to minimize path movement for increased throughput. Products moving down the infeed conveyor have random orientations. A Cognex In-Sight® 7000 vision system detects the position (X and Y coordinate data) and orientation (angle data) of the products as they enter the camera's field of view. An RH-3SDHR ceiling mount robot moves in sync with the infeed conveyor, lifting products one at a time to be placed on the outfeed conveyor. The products travel toward a floor-mounted RH-3FH35 SCARA robot that picks and places the products to be randomly oriented on the infeed conveyor again. This process repeats itself as parts rotate throughout the machine.

RESULTS

The Mitsubishi Electric RoboPick machine was transformed from a bill of materials on paper into a fully programmed system in 2 weeks. Mitsubishi Electric's unique add-on vision calibration tool, which is built into Cognex's In-Sight® Explorer EasyBuilder® interface, helped reduce hours of set up time. The built-in robot vision instructions included with Mitsubishi Electric's robot programming software, RT Toolbox2, further helped to reduce programming time. Through a combination of Mitsubishi's easy-to-use robots, R+D Custom Automation's expert system integration, and their combined ingenuity, the team delivered efficient and professional results in two weeks. The RoboPick machine is on display at multiple events, including the IMTS, Pack Expo, Expo Pack, ATE Expo, Intersolar, MODEX, and ProMat trade exhibitions



Mitsubishi Electric's SCARA robots with Cognex vision systems provide easy installation and fast programming for conveyor and vision line tracking applications.

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