



Sysmac platform helps Innovair Automation provide seamless control and safety in Dimatec robotic cell project

Innovair Automation, an automation company specializing in installing and servicing robotic solutions, recently took on a robotic cell project with Canadian manufacturer Dimatec Inc. The manufacturer of high-quality metal-bond diamond tools and related drilling equipment first invested in robotics ten years ago and has since installed a total of seven robotic cells.

The cell in question involves a robotic arm that loads and unloads drill bits from furnaces reaching temperatures up to 2000 degrees Fahrenheit and then puts them into a press. Conveyance systems, sensing, and safety technology also form part of the system. As these operations were

previously performed manually, this robotic cell has the dual benefit of improving efficiency while eliminating manual activities that would require operators to be near the extremely hot furnaces.

Innovair chose to work with Omron thanks to its reputation for technology that is highly reliable, easy to integrate, cost-effective, and user-friendly. One of Omron's strengths is that its technologies speak common industrial protocols used by robots, such as EtherCAT, CIP Safety, Modbus, and EtherNet/IP. Innovair's prior experience with automation suppliers that require more complicated software and service plans also made Omron's simpler plans especially attractive.

INNOVAIR
Automation

Business need

Innovair Automation needed to help put together a new robotic cell for Dimatec that would eliminate time-consuming manual processes

Unique solution

Innovair used Omron control, safety, sensing, and HMI technology under the Sysmac platform to synchronize robot pickup with part arrival at the end of the conveyor.

Customer benefits

Innovair is impressed with the reliability of Omron technologies, the speed of the EtherCAT network, and the versatility and user-friendliness of Sysmac.



The solution

Seamless control with Sysmac



The need

As the inventor of the diamond-coated drill head, Dimatec had a unique process that had proven its merits for several decades. For this reason, the manufacturer sought to conserve as much of its existing equipment as possible in the new robotic cell. The purpose of the cell was to automate time-consuming manual processes that were requiring operators to work in the proximity of hot furnaces.

Innovair turned to Omron for efficient control that would eliminate wasted time, as well as highly flexible technology that was easy to retrofit onto the existing equipment. In particular, the automation partners wanted to design safety mechanisms to provide the highest degree of protection for operators while causing minimal disruptions to the process. Since the robots in the cell needed to move through the light curtain detection areas to access specific points near conveyors, muting functionality was important.



The solution

The new robotic cell incorporates a complete PLC application that brings together control, sensing, robotics, and safety to seamlessly pick up parts from the conveyors without pause. Everything is programmed within Sysmac Studio – Omron's automation platform that provides one connection for motion, logic, vision, safety and more – using a widescreen Omron NA5 HMI. The Omron technologies in the cell run on EtherCAT, while other technologies use EtherNet/IP or Modbus.

For efficient and reliable safety, Innovair implemented Omron light curtains with a muting function and the NX-SL3300 safety controller. When works-in-progress hit a certain point at the end of the conveyor, Omron E3Z sensors send a signal to the PLC prompting a robot to go pick up the product. The PLC simultaneously mutes the light curtain so that the robot can pass through without triggering it.



The outcome

Thanks to ultra-fast EtherCAT speeds and the all-encompassing Sysmac platform, the new robotic cell is highly efficient, flexible, and easy to program. In fact, EtherCAT communication speeds are even faster than is necessary for this project. Sysmac's single connection makes it possible to program everything from a single development interface, and variables can be shared effortlessly from the HMI to the PLC. Furthermore, the control cabinet can be left closed during programming thanks to the single Ethernet connection, and this prevents issues with lockout/tagout.

The light curtain system has been running for about a year with no reliability issues whatsoever, and Innovair is pleased with the muting function that makes it possible for robots to easily access the conveyors when necessary. Innovair also appreciated Omron's commitment to thorough training and support, including remote troubleshooting in real time.

