

CONTROL ARCHITECTURE

A STATE-OF-THE-ART SYSTEM

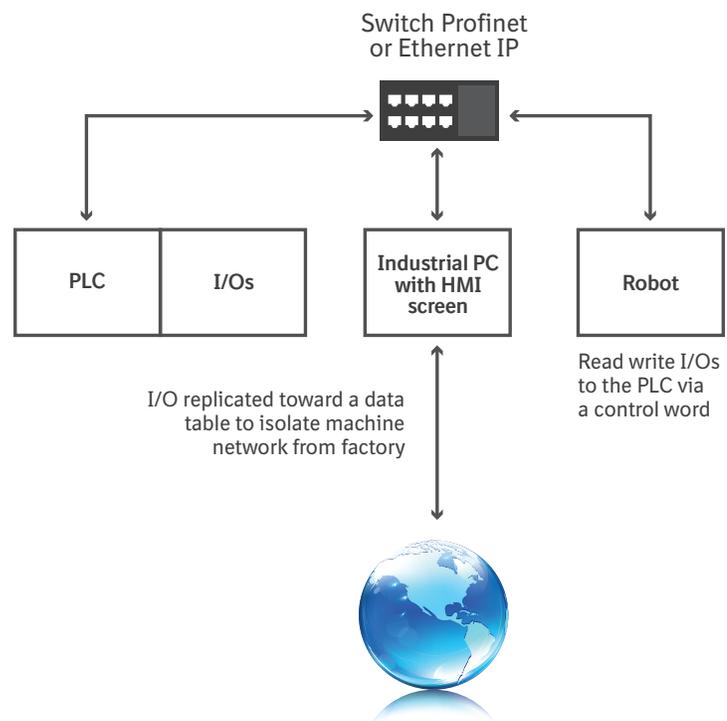
FOR A TYPICAL SHELL-MAKING ROBOTIC CELL, A POWERFUL PLC SYSTEM ENABLES ALL THE CONNECTIVITY, CPU POWER AND MEMORY CAPACITY NEEDED TO MAKE A STATE-OF-THE-ART SYSTEM.

We use state-of-the-art high end PLC of reputable brands and, while most robotic cell manufacturers would provide a human-machine interface (HMI) panel with limited CPU and expansion capacity, at Shell-O-Matic we recommend an industrial PC with the use of Scada software to perform the HMI.

In a Shell-O-Matic-powered robotic cell, the PLC takes control of all the inputs and outputs (I/Os), broadcasting their status over an easy-to-configure network connected by a robust, machine-level ethernet platform.

- » Reliable communication
- » Easy to expand if future automation is added
- » Can be connected to surrounding automated systems or higher-level IT systems
- » PLC brand can be selected to match existing customer factory automation standard.

TYPICAL MACHINE-LEVEL AUTOMATION NETWORK



KEY CELL COMPONENTS

There are three key elements to the overall architecture: the PLC, an industrial PC displaying Scada-HMI, and an articulated robot (which connects to the rest of the system through the Ethernet communication protocol).

SCADA-HMI

- » Configurable and scalable system
- » Functions equally well as a small or large supervisory system:
 - Can be delivered as a basic single-station HMI
 - In a bigger system, can be turned into a distributed multi-user supervisory system
- » Can be set up in multiple ways
 - In a redundant-servers fashion
 - Deploying a full factory status display
- » Enables Internet-based connectivity for remote system status display
- » Extensive connectivity package
 - Any vendor automation products
 - All vendor communication protocols
 - Higher-level systems and databases

ARTICULATED ROBOT

Ethernet allows the PLC to connect to any robot brand, allowing the PLC to know the real-time status of the robot, and control its functions:

- » Dictate robot routine to run as a function of the part recipe
- » Allow robot programs to access all I/Os and process variables
- » Enhance safety and human-robot collaboration

ETHERNET COMMUNICATION BETWEEN THE PLC AND ANY ROBOT

