Process Device Advances Can Bring New Life to Legacy I/O

Industrial I/O (input/output) devices play a critical role in modern industrial automation systems, enabling control engineers and operators to monitor and manage highly complex industrial equipment with confidence. The possible use-cases for industrial I/O are incredibly broad, and here are a few real-world examples to paint a clearer picture:

- Digital inputs such as proximity switches to detect the presence of a part on a production line, momentary start/stop pushbuttons, maintained switches to change operating modes, and high/low float switches.

- Digital outputs such as motor start commands, inverter start commands, oven start commands, and valve open/close commands.

- Analog inputs such as level transducers, pump speed feedback signals, oven temperature readings, and flow meters.

- Analog outputs such as pump speed commands, conveyor speed commands, and analog valve position commands.

These examples are merely the "tip of the iceberg" when it comes to industrial I/O applications, as there are nearly countless other I/O field devices available for industrial monitoring and control. It is important to make a clear distinction at this point between field devices and processing devices. Using a simple momentary pushbutton as an example, the physical pushbutton would be considered the field device, and the processing device would be something such as a PLC or Edge Controller that the pushbutton is wired to in order to read and process the status of the pushbutton.

MAJOR ADVANCEMENTS

While there have been major advancements in field devices, processing devices have advanced at a much faster rate while unlocking new features for legacy field devices. For example, an existing water lift station system may consist of dozens of field devices such as sensors, pushbuttons, and more all connected to a decades-old PLC which lacks built-in support for some modern, in-demand features. One example of this type of feature is MQTT, which users are quickly gravitating towards to bring their data into the cloud and unlock the benefits of IIOT (Industrial Internet of Things) connectivity. In this scenario, the processing device could be upgraded from the old PLC to a cutting-edge Red Lion FlexEdge® DA70 Industrial Edge Controller with the appropriate I/O cards to connect the existing field devices. Additionally, a cellular sled could be installed in the DA70 to provide internet access.

From there, the FlexEdge DA70 could be configured as needed using the Crimson ® software. Crimson includes Crimson Control (available in the Group 4 software package), which gives users access to IEC 61131 programming languages such as Function Block, Ladder Diagram, and Structured Text. This functionality allows the DA70 to replace the PLC in this example. Additionally, Crimson has built-in support for several MQTT cloud connectors to easily bring all of the I/O and process data into the cloud.

With these features, the existing industrial I/O field devices in this example could remain in place while using a FlexEdge DA70 to unlock the power of MQTT cloud connectivity. Overall, Red Lion makes it easier than ever to upgrade existing systems with cutting-edge features that make industrial I/O more readily available than ever