Streamlining Electrical Distribution MES Processes

Recognized as a leader in the field of industrial connectivity solutions, Comtrol recently met the challenge of creating an Industrial Ethernet gateway solution for one of the most prominent producers of circuit breakers for electrical distribution and industrial automation and control. As an industry leader in its field, this company operates over two dozen assembly plants located in Canada, Mexico and the United States. With Comtrol's DeviceMaster UP product line supporting major Industrial Ethernet PLC protocols – Ethernet/IP, PROFINET IO or CbA, Modbus Router, Modbus Server, or Modbus/TCP, we were able to provide this customer with a cost-effective, customized solution. Through a deep understanding of what challenges our customer was faced with, as well as the importance of quality needed throughout the manufacturing process, Comtrol was able to supply this customer with a superior, reliable technological solution.

This company's product line includes circuit breakers, relays, safety switches, sensors, terminal blocks and transformers. Although they have been known in the industry for their unparalleled quality, they were in search for a better way to guarantee the parameters of their fastening sub-assembly process. During the fastening process, power tools collect a wealth of data, which can be used for gaining valuable information such as analyzing process quality, manufacturing statistics, tracking down and pinpointing bad manufacturing runs, as well as historical record keeping.

The circuit breakers go through a number of sub-assembly processes before they reach final goods. The challenge to Comtrol was finding a way to collect data being generated from high-powered electric screwdrivers and passing that information to the Programmable Logic Controllers (PLCs), which control the automation process. Each sub-assembly station consists of two bar-code readers and two screwdrivers. The screwdrivers communicate on the RS-232 Modbus ASCII protocol, while the bar-code readers communicate through standard RS-232, and PLCs communicate through Modbus TCP. With three different communication standards to work with, Comtrol's DeviceMaster UP product provided a perfect solution to interface these components of the sub-assembly station.

In order to design and implement the right solution for our customer, Comtrol had to fully understand the manufacturing processes involved. In this application, the partly assembled circuit breakers travel down a conveyor line and are scanned with a fixed mount bar-code reader. The bar-code contains the bill number, identification of parts, and gives the recipe for joining two electrical boards and two steel plates. The metrics are then downloaded to the screwdriver to program the torque setting and assembly parameters. Upon completion of this task, the number of screws inserted is verified, the torque of the screws is verified, and the angle at which the screws are driven is calculated in order to prevent cross threads. The process is complete when the circuit boards are scanned with a second bar-code reader for verification. If any of the quality points fail at this station, the assembly of that specific unit is rejected.

With Comtrol's solution of DeviceMaster UP products, we were able to strengthen our customer's manufacturing process, thus, ensuring that each and every circuit breaker is manufactured correctly and with the highest level of quality maintained. Comtrol's DeviceMaster UP products provided a simple way to facilitate the communication between the devices used at this fastening sub-assembly station and eliminated the use of multiple interfaces into the PLC. The diagnostic capabilities reported on the DeviceMaster UP web pages assisted in troubleshooting device level communication issues, reduced downtime, and improved general maintenance that added an additional level of quality metrics to the overall manufacturing strategy.

PRODUCT SUPPORT & SERVICE INFORMATION

Warranty Information
Comtrol offers a 30-day satisfaction guarantee and 5-year limited warranty.

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