

Success story

Industry: Manufacturing

PLC + HMI ALL IN ONE™



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George Lipovan, systems engineer



How can retrofitting old controls with an all-in-one PLC improve machine flexibility?

Summary:

OPA Consulting Services provide industrial process control solutions, including retyofitting for a wide range of industries and customers. OPA often relies on Unitronics PLC+HMI controllers to offer powerful, easy-to-use solutions. For one recent

project, OPA replaced the 40 year old control system on a monofilament extrusion machine with Unitronics PLCs. The new controls were user-friendly - with integrated HMI panels - and increased the application's flexibility, letting the customer switch between local and remote functions.

OPA Consulting Services, Inc. of North Carolina is an engineering service provider, offering their customers the latest proven technology in industrial process control. Their services include system integration, custom control panels, and machine retrofitting, provided by experience industrial automation specialists. For one recent project, OPA completely automated monofilament extrusion and downstream equipment, focusing on flexibility and affordability.



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This entire process is now being controlled by two Unitronics' Vision1040s, and nine Vision560s; these all in one PLC+HMI units offered robust and reliable control with integrated color-touch HMIs. "We needed powerful controllers at very affordable prices," explained George Lipovan, systems engineer for OPA. He continued, saying "we benefited tremendously by using the Unitronics Vision series PLC/HMI right off the bat, just by having the HMI and PLC all in one. Another important factor was the Ethernet (Modbus TCP/IP) communication port capability."

Ultimately, the reliability and flexibility of OPA's solution was key to the extrusion lines' success. If they wanted to replace one machine line element, all they would need to do is unplug the power and the Ethernet cable and slide a different one in its place. Each machine—including the extruder, the quench bath, the draw stands, and hot air oven—needed to have a local PLC and HMI so they could see the current machine conditions and be able to switch from "Remote" to "Local" control. This allowed the customer to fine tune the extrusion process to perfection. Once these parameters have been established, they are read back into the recipe file and stored on the server- then back to "Remote" for synchronizes operation.

Each machine contains an Ethernet switch with a dual purpose. Using the Modbus TCP/IP network the Unitronics PLC to communicate with the variable speed drive for speed controls when needed. The Ethernet communications also link all the machines to SCADA to simultaneously monitor and control each individual machine to perform and process specific tasks. A total of eleven machine elements are on this Modbus TCP/IP network, controlled by a supervisory controller that in turn stores and receives commands from the office network. Essentially, the supervisory controller serves as a bridge between the production equipment and the management network.

Unitronics is "not a small fish in the sea!" says Lipovan. "At first, a few years ago, I really did not pay too much attention to the Vision series, but the more I came to understand them, I'd wished I would have used them much earlier!"

