



Oil and Gas Industry

Horner -106 I/O and FlowCore Systems



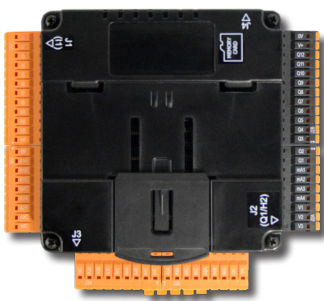
FLOWCORE

Oil Production Project

FlowCore, Williston, North Dakota



FlowCore Systems Solutions



Horner XL4 with -106 I/O (back)

With the newest of Horner Automation Group's high-density I/O boards, FlowCore Systems in North Dakota was able to develop a new product that reduces the amount of components necessary for its chemical metering operation in oil production.

"The XL4 Model 6 is a perfect solution for us," said FlowCore Systems President, Chuck Black.

The Model 6, or -106 I/O option board, is available for all Horner XL automation controllers the EXL10, EXL6, XL7, XL4, XLT and XLE. These controllers have even more I/O capabilities with the -106, which utilizes 6 analog inputs, 4 analog outputs, 12 digital inputs, and 12 digital outputs. Software configurable, these inputs are universal for such signals as voltage (0-10, 0-60mV), current (0-20, 4-20mA), thermocouples, and RTD (PT100, PT1000).

The -106 I/O option makes connecting various field signals easier because each individual input and output is completely configured within software, reducing the time and complexity of hardware setup.

FlowCore Systems uses a non-mechanical pumping process to treat fresh and salt water used in oil-production wells. The water is either being produced from oil production or flowing into the well bore for desalinization, or it carries chemicals that reduce scaling, corrosion, and bacteria.

In the past, the pumps were simple machines that were set to a certain volume per day and left to do their work. In other words, the system was "not smart," Black said. "That works for a short period until the scenario changes."

The -106 I/O option board has configurable analog inputs that are particularly beneficial for process automation systems with multiple sensors for maintaining temperature, pressure or measuring weights.

Oil and Gas

- Maximize capacity utilization
- Rationalize assets
- Maintain emission standards

Building Automation

- Improve occupant comfort
- Economical operation systems
- Reduce energy consumption

Material Handling

- Minimize HMI inefficiencies
- Track/log/catalog data
- Increase overall productivity

Renewable Energy

- Data logging, remote access
- Sunlight and UV protection
- Durable, robust controllers

Water/Wastewater

- Operate chlorination systems
- Station pump control
- Remote water well controls

“Fresh water injection volumes can change daily, which requires an adaptive chemical treatment system,” he said. Currently, most production wells are chemically over-treating or under-treating, and often by as much as 100 percent.”

Black said his company used the -106 I/O in the XL4 to connect four pressure transducers and a thermocouple for their pumping system.

The XL4 also ties into an existing SCADA system to remotely monitor conditions such as flow, temperature and pressure and send out email and text alerts to workers who can make changes as necessary. Some of these workers have dozens of wells they need to monitor, and that had meant physically driving around to visit each well every day to make sure everything was in order.

Black has used Horner controllers for more than 20 years in various roles, and the products continue to evolve to give him the flexibility he needs to solve problems or to make systems better in oil production.

“There’s a huge information and management gap between the pumpers and the chemical guys,” Black said. “Our system fills that with automation.”

“We have added significantly to the scope of our company’s use of Horner controllers. We now have 7 systems that use the XL4 and the X4 controllers in a variety of applications. These developments have led to 4 US and Canadian patents.”

Horner in Oil and Gas

Upstream, midstream and downstream segments have very similar needs when it comes to automation: Process and control, communication capabilities, environmental considerations, monitoring, repeatability and reliability.

So the need for Horner OCS in Oil and Gas is wide ranging. There are emerging markets, as well as established markets with aging infrastructure and technology in an industry that pushes technology to always achieve more productivity.

Model 6 -106 I/O

The Model 6 I/O features 12 DC Inputs, 12 DC outputs, with high performance, highly configurable Analog Inputs (6) and Analog Outputs (4).

The DC Inputs are 12/24Vdc compatible, and can be software configured for Positive Logic (sinking), or Negative Logic (sourcing). Two of the inputs (H1-H2) can be used for high-speed functions up to 500kHz. The 12/24VDC Outputs feature Electronic Short Circuit protection, and support currents up to 0.5A per point, and 4A total. Two of the DC Outputs can be used for high speed functions (PWM or PTO). The output frequency is limited by the switching capability of the output drivers (about 10kHz), although an optional accessory (HE-XHSQ) can be added to provide parallel output drivers supporting frequencies up to 200kHz.

The two high resolution Analog Inputs can be configured for 4-20mA, 0-10V, or 0-100mV at 14-bit resolution. They also can be configured for 16-bit temperature measurement - supporting Thermocouples or RTDs with 0.05°C resolution. The Analog Outputs are sourcing, and can be configured for 4-20mA or 0-10V at 14-bit resolution. Each Analog Input or Output channel can be configured independently for maximum flexibility.

