OPTIPUMP CONTROLLERS

Programmable Logic Controller Case Study

OptiPump™ Controllers Offer Ease-of-Use and Versatility for Field Applications

Whether it's wastewater bypass, pumping crude oil or a wide variety of water utility applications, operating a reliable electric driven pumping system is critical. The addition of variable frequency drives (VFDs) can help support improved reliability, as well as increased efficiency and cost savings.

However, programming a VFD to perform start/stop functions, varied speed control, and a multitude of other functions can be difficult for crews in the field. It's not uncommon to lose an entire day in the field, while speaking with a VFD manufacturer's support team, to learn how to program basic functionality. This scenario is a primary reason AID Software Engineers designed the OptiController family of PLC's, including both OptiPump and OptiPressure Controllers.

The ease-of-use and versatility made possible with these controllers was demonstrated firsthand for contractors on a Southern-U.S. wastewater treatment plant. The project required a bypass between several clarifiers and an aeration basin to refurbish piping and replace valves.

Employing the AID OptiPump Controller and Mobile Duty drive, a single electrical technician was able to program the controller by utilizing the clearly defined menus. After programming motor speed and start/stop control parameters, along with configurations for the transducers, the operator conducted a series of field tests to confirm the effectiveness. After lowering the transducer into the basin to confirm the motor would start, then lifting it to confirm the motor would continue slowing, it was also removed completely from the water to stop the motor - with each step working as required.

The electrical technician was then able to repeat the programming process on three additional drive packages. The speed provided by the user-friendly OptiPump controllers provided tremendous value to a project that required startup and commissioning in two days.

Simplifying VFD programming in this way eliminates the need to hire expert engineers, saving operators time and money and improving the total cost of ownership. With less time required during the commissioning and operation of the equipment, you can maximize your available labor and achieve return on investment (ROI) more quickly.

AID also understands no two jobsites are the same, so each OptiPump Controller is tailored to a customer's unique application. The OptiPump Controller touchscreens are available in 5.7 or 12.1-inch models depending on customer preference.

Set up and monitoring system performance
The OptiPump Controller's main menu provides options for programming the application according to parameters for speed control (pump setup) and start/stop control, along with configuring analog devices (transducers) connected to the controller. Operators can also set parameters for the VFD, and digital devices connected to the controller, such as switches and contacts. The controller also offers visibility into a pumping system performance, with detailed status reports, including:

Critical operational monitors – The OptiPump Controller provides critical data in an easy-to-read, organized format. The data is also tailored according to the needs of each application, with the touch screen displaying values such as suction and discharge pressure, flow rate, vibration, and pump RPM. With the increasing attention to ESG initiatives, monitoring the pump motor speed and power consumption can help contractors optimize the efficiency of their operation.

VFD and motor status – Operators can easily determine the VFD and motor status through the OptiPump Controller. The controller can monitor the temperature of the motor and the bearings to help prevent overheating. It can also provide an alert if the motor stopped, whether that is due to it not being needed at the moment or because of a catastrophic event.

Process and performance metrics – The OptiPump Controller provides data on pump uptime and power metrics. Looking at amperages, it can determine how much power the pump has been using and whether it is appropriate for the set parameters. The controller can confirm if the speed at which the pump is operating is producing the correct amount of pressure or if it is experiencing lower pressure, indicating pump wear.

Maintenance reminders – The OptiPump Controller offers timed alerts to conduct maintenance at a specific intervals, such as greasing bearings and cleaning air filters. Customers can request reminders if there is additional cyclical care that needs to be completed.

For applications where remote operation and monitoring is desired, AID offers the optional DriveLynx™ data management solution to pair with the OptiPump Controller. DriveLynx allows operators to monitor a site in real time from any internet-connected device, along with providing tailored alerts and remote configuration changes to the controller's settings.