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Flowserve gets fast pump testing with ABB variable-speed drives

Flowserve Corp., a leading provider of fluid motion and control products and services, is using ABB variable-speed drives (VSDs) and motors for quick and easy testing of its new pump variants at different speeds. The power supply panel, inverters, cabling and local isolation boxes were installed by ABB Authorized Value Provider, Inverter Drive Systems (IDS), which also installed a control system and software, as well as undertaking complete electrical installation and cabling for the project.

The company is using a test bay at its facility in Newark, United Kingdom, to conduct production tests on the new pump variants.

The test rig is divided into two independent test facilities capable of running at the same time. The first and smallest facility has two test stations with ABB 2 pole motors, one of 11 kW and the other of 37 kW. The second, larger, facility has three test stations with ABB motors, one with a 75 kW 2 pole, one with a 132 kW 2 pole and one with a 75 kW 4 pole. The motors are controlled with an ABB standard PC package called 'Drive Windows' enabling remote start/stop and VSD control via fibre optic link.

The five VSDs were ABB ACS800 IP54 wall-mounting units and range from 11 kW to 132 kW to match the motors. The VSDs are fed from a new motor control panel which was also supplied by IDS.

The use of multiple test stations allows Flowserve to test one pump, while another pump and motor are being installed. The rigs also use ABB flowmeters to determine the flow rates of the water used as a pumping load. A data acquisition system takes data from the test station instruments, such as the flowmeter, pressure transducer and tachometer, as well as data on vibration and noise, and feeds them to a control room where they are displayed on a screen via a PC.

Ian Gray, engineering manager at the Newark facility, says: "This gives us instantaneous access to the measurement data of the current pump under test, as well as control over the water discharge valve and the VSDs." The discharge control valves are remotely controlled with Flowserve actuators and an independent control system also linked to the PCs.

The test rigs will help Flowserve ensure its new pump variants meet the requirements of ISO 9906, which specifies hydraulic performance tests of centrifugal, axial and mixed flow pumps. As well as providing data on hydraulic and mechanical performance and parameters such as noise and vibration, the bay also avoids the need to share a test facility with the production department, thereby allowing Flowserve to complete the test series in the quickest time.

The new pump variants will be sold worldwide, in both 50 Hz and 60 Hz markets, so Flowserve needed a facility that could test the pumps at either of these speeds. "We need to run the pump at the speed the customers want, so a VSD solution was ideal," Gray said. "Most pump purchasers will buy a motor with the pump, and tests are usually conducted with the motor directly driving the pump. By using the VSD, it means we can vary the speed without spending time putting a different motor on the test rig.

“We also have calibrated torque meters permanently installed on the motor shafts to accurately output the motor power absorbed. With the torque reading and the accurate speed of the drive we can determine the power absorbed and use this to accurately determine the efficiency of the pump.

“Some end users of pumps are not confident of using efficiency figures derived from the VSD alone, so the ability to use the torque meter in the application helps us reassure these customers.”

ABB (www.abb.com) is a leader in power and automation technologies that enable utility and industry customers to improve performance while lowering environmental impact. The ABB Group of companies operates in around 100 countries and employs about 145,000 people.

Flowserve Corp. is one of the world’s leading providers of fluid motion and control products and services. Operating in more than 55 countries, the company produces engineered and industrial pumps, seals and valves as well as a range of related flow management services. More information about Flowserve can be obtained by visiting the company’s website at www.flowserve.com

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Caption: Flowserve is using ABB VSDs and motors for quick and easy testing of its new pump variants at different speeds.

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