WARRINGTON, UK, MARCH 5, 2010

ABB drives save £100,000 per year energy costs for Severn Trent Water

Severn Trent Water (STW) is saving around £100,000 per year on energy costs thanks to the installation of ABB variable speed drives at its Wanlip Sewage Treatment Works.

STW was suffering low flow rates on its dry well flow pumps, with typical rates being less than 400 litres per second against a design of 550 litres per second. This meant that under storm conditions the works was unable to achieve the rates specified under the Environment Agency's consents, without the need for supplementary temporary pumping, further adding to the company's operating costs.

Sentridge Control, a member of the ABB Drives Alliance, had cured a similar problem at another of STW's treatment works and was asked to get involved in providing a solution at Wanlip. Sentridge's Glen Hickman says: "We suspected the problem was due to ragging of the pumps and reversed the flow of selected pumps to prove this. Ragging is where rags foul the pump inlet and prevent the pump from operating normally."

The original installation had four direct-on-line pumps and two pumps controlled by variable speed drives (VSDs). One of the VSD driven pumps was a duty pump while the other was used to assist as pumping requirements demanded.

Historically, reversing the pumps had allowed them to achieve higher flow rates for short periods of time. One of the direct-on-line pumps achieved 550 litres per second compared to 325 litres a second previously, while one of the VSD powered pumps achieved 575 litres a second, compared to 390 litres a second.

To solve the problem permanently, Sentridge suggested installing 75kW ABB industrial drives on all the pumps, each equipped with ABB Anti-Jam software, part of its Intelligent Pump Control (IPC) software. An add-on to ABB industrial drives, IPC contains all the common functions needed by water and waste utilities, industrial plants and other pump users.

The Anti-Jam software module performs a number of cleaning cycles every time the pump starts. Each cycle consists of a series of rapid ramp ups in both forward and reverse directions. Taking one to two minutes to complete, the cleaning cycle removes the debris from around the pump volute, preventing it from entering the pump and blocking it when the pump ramps up from zero to its normal operating speed.

The cleaning cycle is also started when the VSD detects a drop in pump efficiency.

Graham Drabble STW's Capital Liaison Technician for Wanlip says: "As well as curing the flow problem, the new installation allows us to achieve our pumping requirement using only two or three pumps instead of all six, achieving an energy saving of approximately £100,000 per year."

products. As title partner in ABB Formula E, the fully electric international FIA motorsport class, ABB is pushing the boundaries of e-mobility to contribute to a sustainable future. ABB operates in more than 100 countries with about 147,000 employees. www.abb.com

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