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ABB drives cut Bristol Water power bill

Bristol Water was concerned to improve the energy efficiency of its pumping equipment at its Purton pumping station. Jim Reckhouse, Engineering Manager Bristol Water, says. “The original pumping equipment had been installed in 1963 and tests showed that it had fallen below a good standard of efficiency. A review of the site recommended new pumping plant that would be more suited to the duty we now have. This would see the pumps reduced in number from five to three and making them all the same size.”

The pumping station, which has a capacity of 70 mega litres per day, takes water from a canal and pumps it to a water treatment works and other industry down stream. The original installation used direct-on-line starters, which were unable to match flow to demand,

Bristol Water asked ABB Drives Alliance Partner, APDS, to improve the installation. Working closely with a pump manufacturer, APDS carried out a turnkey solution, upgrading the pump and power train.

APDS installed two transformers, three new pump ends with ABB Eff1 high efficiency motors and three 400kW ABB industrial drives. These were low harmonic drives to comply with the G5/4 regulations.

Following the installation, the 40 mega litre pumps went from consuming 560 kW down to 240kW, an improvement in efficiency from 68% to 87%.

Bristol Water now has better flow control and can match flow to demand. Says Reckhouse: “Often we only need to run one pump. As demand increases and the first pump approaches full capacity, we switch in the second pump. The load is then shared equally between the pumps, with the first being slowed down and the second being speeded up to match it. The system also allows us to maximise the use of low cost electricity at night. We do try to pump as much at night as we can, depending on the downstream capacity in the storage reservoir and raw water storage.”

Another major benefit was that, before the project, the pumps were supplied at 3.3kV. This meant that they were restricted in a high voltage area and needed operators with high voltage experience to service them. The new drives and pumps are low voltage and so operators can reset them and do not need high voltage experience.

Doug Pitt of APDS says: “One of the biggest challenges of the job was that we always needed to maintain the ability to pump over the entire 15 month contract. We employed a specialist company to isolate the 3.3 kV supply and used temporary switchgear to maintain power to the 3.3 kV pumps.”

“We were attracted to APDS because they clearly had the competence to do the job; were certified installers of ABB drives, which are quality drives; and also produced the lowest tender,” say Reckhouse. “We would certainly consider APDS and ABB for other similar jobs as using them has produced a good outcome for us at Purton.”

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Caption: ABB drives help Bristol Water improve the energy efficiency of its pumping equipment at its Purton pumping station.

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