

Southern Water cuts pump downtime with motor-drive package

A low lift pump used for surface water abstraction is now more reliable following installation of an ABB synchronous reluctance motor (SynRM) and drive package.

Southern Water has cut the maintenance of a low lift pump and improved its reliability following the installation of an ABB synchronous reluctance motor (SynRM) and variable speed drive (VSD) package.

The pump is sited at Hardham Water Supply Works (HWSW), which provides water to more than 450,000 customers in the north of West Sussex. It extracts an average of 25 million litres of water per day from the local river.

Southern Water needed to replace the pump motor and control system, which were becoming obsolete and increasingly unreliable. Installed for over 30 years, spare parts such as contactors and control cards in the main panel were becoming difficult to source and maintain.

The existing 75 kW DC motor required maintenance to its brushes every three months and a recent failure had made it critical to find a more reliable solution. A major consideration for Southern Water was cutting operational and downtime costs as part of the total expenditure (TOTEX) approach adopted by Ofwat's latest Asset Management Period, AMP 6.

Under AMP 6, water companies are being encouraged to re-focus attention away from the traditional capital and operating expenditure (capex/opex) spending models towards a total expenditure, or TOTEX, approach, one that emphasises controlling operational and maintenance costs.

Southern Water contacted ABB authorised value provider, MKE, which recommended the ABB SynRM and drive package. The SynRM uses the magnetic principle of reluctance, eliminating rotor cage losses and increasing efficiency, all within a smaller motor frame size.

With lower losses, the SynRM also runs cooler, cutting maintenance costs by extending the lifetime of the motor insulation and lengthening the bearing lifetime or greasing intervals.

MKE installed a 75 kW SynRM motor with an IE4 efficiency rating. To control the motor, MKE supplied an ABB drive, ACQ810, which is specifically designed for water and wastewater

applications. Its intelligent pump control software offers macros that can be customised to meet the requirements of single or multi-pump systems.

As part of the solution MKE also supplied ABB's power quality filter manager (PQFM), which offers one master and up to seven slave units to form a factory tested and assembled system. As well as reducing the effects of harmonic currents and voltages, a particular threat to water facilities, ABB's PQF solutions perform smooth reactive power compensation and load balancing.

As well as improved reliability, the ABB drive is also expected to produce a four percent increase in motor efficiency, further cutting operating costs.

Matt Dean, field performance manager for West Sussex, says: 'This is one of Southern Water's most important sites so reliability is key. We're running this pump as our duty pump because it's the most efficient system and it's been 100 percent reliable. The fact that we're now spending less time maintaining old equipment means that we can spend more time being proactive elsewhere'

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Photo caption: Southern Water has cut the maintenance of a low lift pump and improved its reliability by replacing the pump motor and control system with an ABB synchronous reluctance motor and variable speed drive package

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