WARRINGTON, UK, JULY 23, 2002

ABB drives solve harmonics problems for water company

ABB drives systems were designed and supplied by SDS (slater Drive Systems) in order to help Southern Water Services (SWS) upgrade one of its pumping stations while avoiding damaging harmonic effects.

SWS needed to improve the pumping facilities at its Range Road Pumping Station at Hythe in Kent. The forwarding pumps at the plant ran at a fixed speed and intermittent flow allowed air to accumulate in the rising main.

Consulting engineers Montgomery Watson Harza investigated upgrading the transfer pumping system, and suggested adding variable speed drives to eliminate the problem and improve performance. The site already has a duty and standby variable speed drive system for the storm pumps, together with two diesel powered generator sets for automatic back up.

To ensure there would be no problems with harmonics, Montgomery Watson Harza commissioned a site harmonic survey which was carried out by ABB. The survey revealed that although the supply from the electricity company would not be affected by harmonics, the emergency generators would be.

To prevent this, 12-pulse VSDs were initially proposed, but it was found that these would cause high in-rush currents on the generators, which would not be able to withstand them. With the existing drives running on the mains supply the voltage distortion level is around 2.9%, however, with the generator supply a voltage distortion level of up to 11.5% was predicted.

The problem was solved using ABB ACS 611s, regenerative drives which produce very low levels of harmonic currents.

Laing Utilities were responsible for installing the drives. Andy Davenport, project engineer with Laing, says: “SWS has a framework agreement with ABB and wanted to use ABB drives on this job. They find them to be very reliable and are happy to continue using them.”

The drives were supplied by ABB Drives Alliance partner Slater Drives Systems (SDS). Laing has worked with SDS on a number of occasions. “We like to work with SDS as they are local and give us very good support, “says Davenport. “We had some problems with voltage spikes on the supply and SDS gave us good advice on how to solve the problem.”

SDS also modified the drive’s controlling keypad so that it could be powered by a separate 24V supply. This means that, in the event of a power failure, the drive can still be interrogated.

Davenport concluded: “The ABB solution using ACS 611 drives was the most cost effective option and was certainly cheaper than replacing the two 350 kW generators.”

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Caption: ABB drives systems were designed and supplied by ABB Drive Alliance partner Slater Drive Systems to help Southern Water Services upgrade one of its pumping stations while avoiding damaging harmonic effects.

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