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Mobile drive helps solve cloudy water problem

Cloudy water at a Borehole owned by South Staffordshire Water has been investigated with the help of a hired ABB drive, supplied by ABB Drive Alliance member Central Electrical.

South Staffordshire Water was experiencing problems with water extracted from its borehole at Sandhills, near Lichfield. Although the water quality was adequate, aeration of the water was causing a cloudy appearance, which water customers found unacceptable.

The water company approached Central Electrical for help in conducting tests on the borehole. Central Electrical responded quickly, setting up a mobile variable speed drive at the site within 24 hours. Supplied under Central Electrical's hire drive scheme, the 75 kW drive was put to work pumping water from various depths in the borehole to investigate the problem.

South Staffordshire Water wanted to determine if the pump or the borehole itself was the source of the problem. If it was the pump, then cavitation could be causing the aeration of the water. If it was the borehole, then this could potentially be a much more serious problem, involving expensive repair work.

To resolve the problem, the old shaft driven pump was removed together with the jointed rising main, eliminating the 40 plus pipework joints on the pump suction. A submersible pump set was then installed which would change the characteristic of the pump borehole rising main to that of a positive pressure, also eliminating the prospect of air being drawn in the rising main.

Bob Harding, Automation Systems Engineer for South Staffordshire Water, says: "Central Electrical could quickly provide a hire drive that enabled the borehole to be pumped at various output flows, allowing us to assess the risk of air pollution at various flows and pressures."

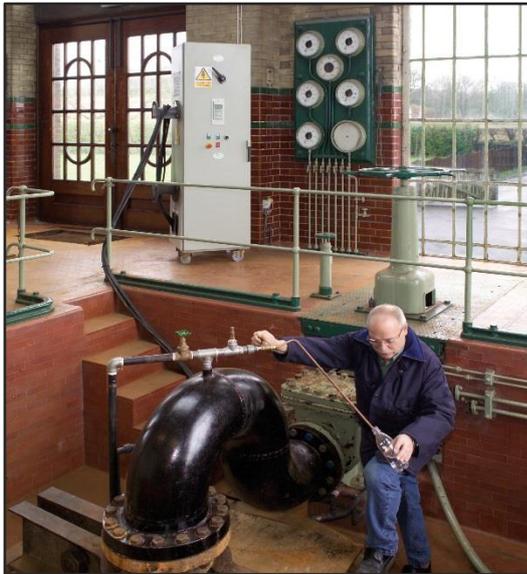
Glen Hickman of Central Electrical says: "We cabled up the drive to the existing pump and controls, all within a day. If really needed, however, we can actually do this in a couple of hours." Central Electrical's hire drives service is based on a mobile ABB drive, adapted with eyes for easy lifting and capable of being wheel mounted for easy handling.

Harding adds: "The drive was needed to lower the standing water level for a camera survey, which revealed that the actual problem was dissolved oxygen in the water. There were no structural problems in the borehole and the borehole did not require relining"

Central Electrical hired out the drive to South Staffordshire Water for two weeks. Says Harding: "Using the hire drive saved us time and cost, and helped us eliminate the major possible causes of the aeration. We showed that it was not due to the water level going lower than the inlet of the shaft driven water pump and letting air in, and the variable speed drive proved that pumping at various speed and depths also made no difference. The problem seems to be a characteristic of the borehole itself - oxygen is introduced into the water because of the geometry and chemical characteristics of the lining of the borehole."

Although an ultimate solution has yet to be decided on, the ABB drive loaned by Central Electrical helped South Staffordshire Water eliminate the likely causes, preventing it from adopting potentially expensive but futile fixes.

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Caption: Cloudy water at a borehole owned by South Staffordshire Water has been investigated with the help of a hired ABB drive, supplied by ABB Drives Alliance member Central Electrical.

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