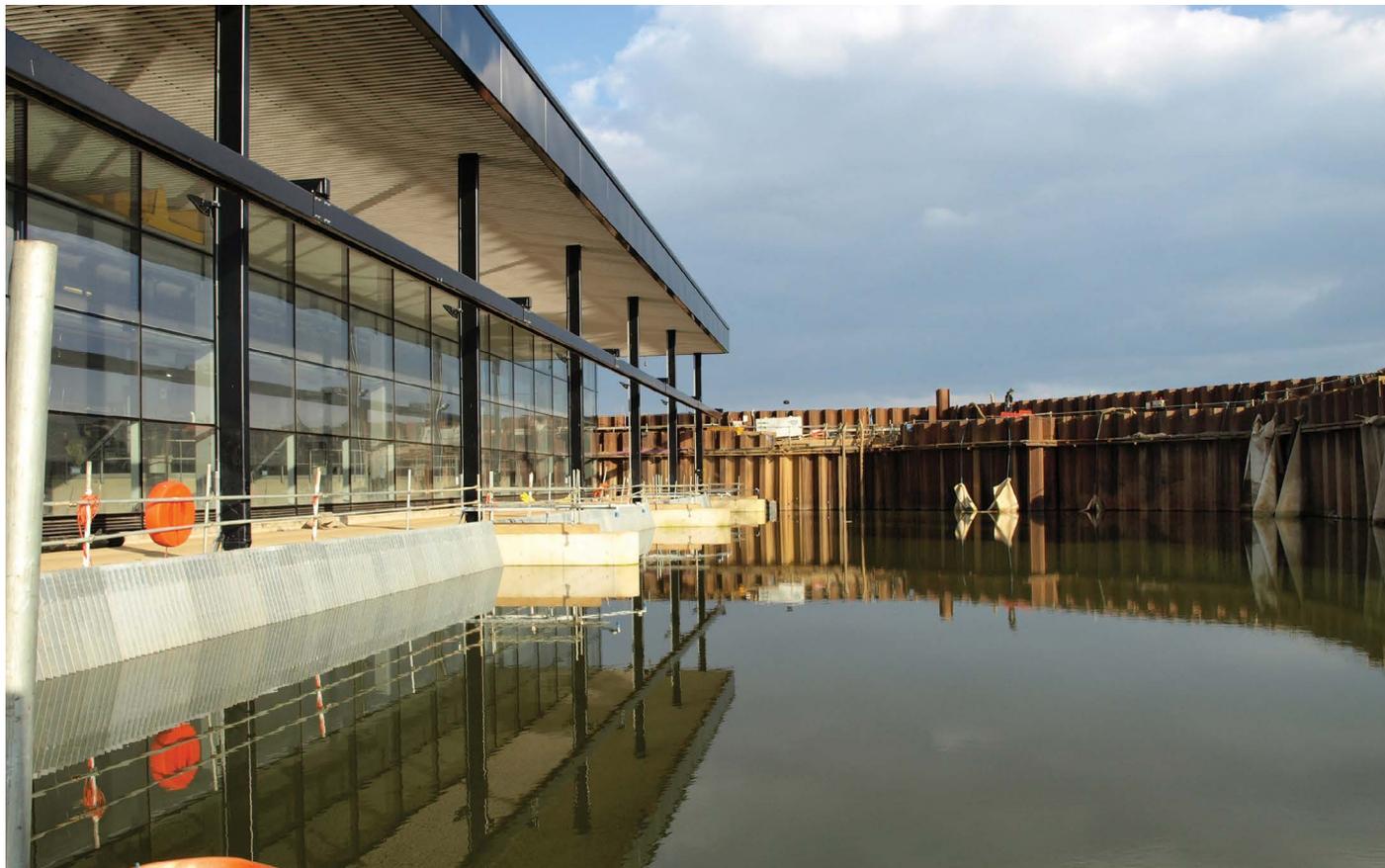


Case note

ABB drives ensure continued flood defence for Fens



Six ABB medium voltage industrial drives control the pumps at the St Germans pumping station

The St Germans pumping station provides water management for the Middle Level District, an area of the Cambridgeshire Fens reclaimed during the 17th Century. Over the centuries, much of the area has sunk to below sea level due to peat shrinkage and soil erosion. The original pumping station was built in 1934 to pump land drainage and flood flows from the Middle Level into the tidal River Ouse. Aging equipment and a predicted need for a higher capacity meant that a new station was needed.

Improved control

The Middle Level Commissioners, operators of the station, chose six pumps for the new station instead of the previous four, to provide increased capacity. Each of the six new pump sets can raise $16.66 \text{ m}^3/\text{sec}$ to a static head of 4.25m, giving a total capacity of $100 \text{ m}^3/\text{sec}$. This gives the new station

the capacity to deal with extreme events, although no more than three pumps at a time are expected to run under normal conditions.

Six 1.2 MW ABB industrial drives were selected to control the six pumps. One of the reasons for choosing the ABB drives was that they were low voltage, a priority for the customer.

The drives were fitted as a chassis mount in three Motor Control Centre (MCC) cabinets, built by Technical Control Systems Ltd (TCS). The drives are controlled via a SCADA system that is fed data from level meters. This gives accurate control and adjustment of the flow. It is essential to avoid over pumping of water as the drains must be maintained at a minimum level to allow navigation by boats.

Exceptional support

Andrew Heron, estimating engineer for TCS, was impressed with the level of support offered by ABB. "We got a lot of help from ABB throughout the project," he says. "We were not just given a kit of parts and left to get on with it. ABB gave us exceptional support, confirming that the ABB product was the right one."

Another advantage for TCS was the ease of installation of the drive modules. This allows them to be swapped out very quickly for maintenance or to replace a failed drive. Each ABB drive module is interchangeable and parts can also be swapped from one drive to another. If the ABB drives suffer a borderline failure, they can still run at a reduced power of 800 kW, allowing pumping to continue at a lower rate.

Testing, installation and commissioning of the drives went smoothly and quickly. The string tests were conducted at the ABB Helsinki factory with the actual motors, taking only five days instead of the expected ten. ABB also commissioned the drives on site.

Challenge

- Replace aging pumping station with more modern, capable facility
- Use variable-speed drives to give better control

Solution

- Six 1.2 MW ABB industrial drives controlling six new pumps
- String testing carried out on actual motors at ABB plant
- ABB commissioned drives on site



Ref: St Germans Facfile/Sep2013

Benefits

- String testing completed ahead of schedule with no problems
- Accurate control and adjustment of the flow maintain minimum drain level to aid navigation
- ABB drives quick and easy to install
- Can be easily swapped to give quick maintenance or replacement
- ABB drives can run at reduced power in the case of minor failure to allow pumping at lower rate

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