xylem
Let's Solve Water

Case study
Water Pumping

Pump replacement project at Gloucester Docks keeps Bristol's water supply flowing

Xylem provided end-to-end support on the project, capturing the specific requirements of the site and selecting the most appropriate pumps and control systems to meet The Canal & Rivers Trust's needs.

The Challenge

The River Severn has supplied drinking water to Bristol via the Gloucester & Sharpness Canal since the 1960s and currently provides around half of the city's supply.

The four existing column pumps at Gloucester Docks - which are vital for managing water levels in the canal and keeping Bristol's water supply running - were reaching the end of their working life and needed replacement. Maintenance was becoming time-consuming and costly, as the existing pumps needed manual inspection which requird the pumps to be lifted out of their position and physically checked.

The Canal & Rivers Trust initiated the pump replacement project as part of a wider acivities to reduce energy consumption and CO2 emissions at the site, as well as improve the quality of water monitoring.

Xylem was challenged to replace the aging pumps while keeping disruption to the area at a minimum and - most importantly - without disrupting the drinking water supply for 300,000 Bristol residents.

The Solution

The pump replacement project involved the installation of four new custom-designed Flygt column pumps at the Gloucester Docks site. The pumps, which have been designed to be easier to maintain and more efficient than their predecessors, were installed over three phases between 2021 and 2023 to minimise disruption. Each pump required a 40-tonne road crane to install.

As the leading brand int he market, Flygt pumps offer a high level of resilience giving them a lifespan of around 20 years, reducing the need for frequent maintenance visits. The pumps, which operate on demand, can be controlled locally or through the Trust's supervisory control and data acquisition (SCADA) management software, giving them real-time data insights into the operation of the pumps.

Figure 1. Engineers working with the Canal & River Trust on the installation of the new pumps in Gloucester Docks.

DID YOU KNOW?

- Flygt column pumps weigh over three tonnes and are capable of filing an Olympic size swimming pool every 21 minutes.
- Funding for the project was provided in part via the People's Postcode Lottery as part of its Postcode Climate Challenge initiative.

Figure 2. The old and new -'snail pump' from 1963 with its 2021 equivalent about to be installed in the Gloucester Docks on the 7th December 2021.

FLYGT
a xylem brand

Xylem also fitted up-to-date technology to other equipment in the field, to allow for remote monitoring and control of the full system.

The Results

The four Flygt column pumps installed by Xylem are able to take an average of 100 million litres of water per day from the River Severn to feed the Gloucester & Sharpness Canal, ensuring the water levels at the canal remain stable and drinking water makes it way to Bristol residents.

In addition, CO2 emissions have been reduced through the use of energy efficient motors and upgraded propellers, and the pumps have cut the electricity consumption for the pumping station by around 10 percent.

The pumps can be controlled by the Trust's SCADA level management software reducing the need for on site visits and physical inspection, in turn reducing maintenance costs for the Trust.

Nigel Taylor, senior maintenance engineer from Canal & River Trust, commented: "Since 1834 water has been pumped from the Severn into the canal, and these new pumps are the latest exciting step in helping us to continue reducing energy consumption and CO2 emissions while supplying hundreds of millions of litres of water each week."

"Xylem's work on this project demonstrates their unique end-to-end customer offering - from the bespoke design of pumping equipment based on the exact needs of our site, through phased installation and commissioning, and ultimately their invaluable ongoing post-project service."

Ian Bull, Regional Account Manager, Industry and Infrastructure at Xylem, said: "The Gloucester and Sharpness canal is not only an important canal navigation, but also acts as a source for Bristol's Water supply for the population of Bristol. It was therefore essential that we completed this work with as little disruption to these essential activities as possible."

"The new Flygt pumps are highly efficient, have a higher level of resilience and have been designed to be easier to maintain, helping their sustainability and giving them a life span of around 20 years. They are controlled by a state-of-the-art monitoring system so the Trust can continuously manage water levels in the canal."

GLOUCESTER DOCKS JUNE 2023

Figure 3. New 3 tonne pump ready to go into the Gloucester Docks.

Figure 4. Pump installation.

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