SULZER

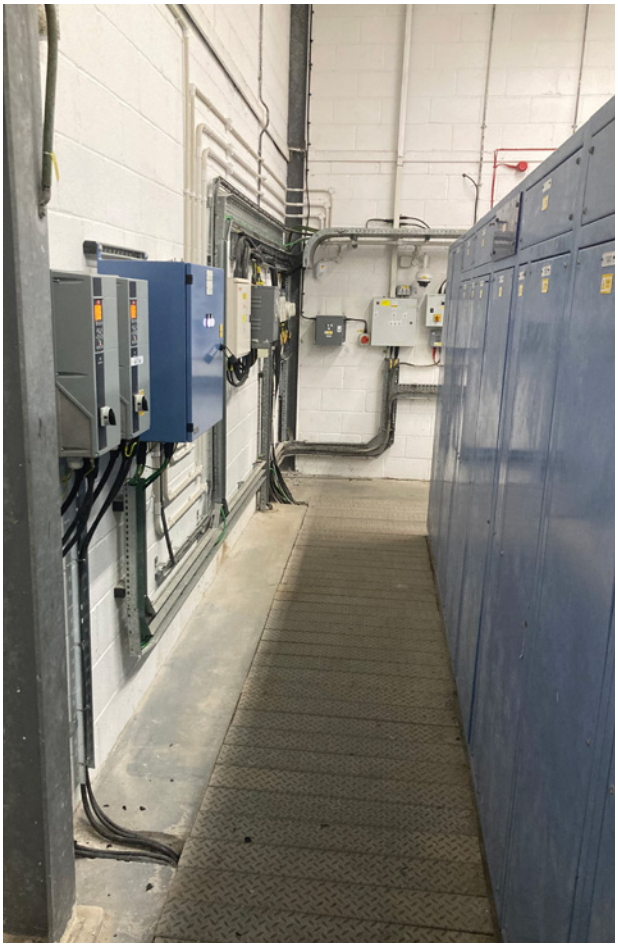
CASE STUDY

Sulzer provides turnkey mixer installation to improve reliability and energy efficiency

Wastewater treatment works (WWTWs) need to operate around the clock, and all the processes require electrically powered equipment to transport and treat the water. As such, reliability and efficiency are key priorities so when a pair of mixers used in the activated sludge process (ASP) of a large plant experienced fundamental reliability issues, the operator turned to Sulzer for a more effective solution. The turnkey installation of the company's XRW mixers offered an extended service life and provided the potential for energy savings of up to 25%.

"As a result of the success of this project, the operators have decided to install an XRW mixer on another site, which is also experiencing some reliability issues. This will also have equipment specifically monitoring the energy usage of the mixers so that it can be compared with the legacy assets and provide precise figures and insights for the energy savings. A great project and excellent work by all involved."

Mitch Davidson, UK Technical Manager



The installation of a VFD as part of the project has given the customer greater overall control, allowing to fine-tune the activated sludge process.

To remove organic matter from wastewater, treatment plants use ASP tanks that are aerated and contain bacteria, which feed on the organic material. Depending on the design of the tanks, they can require mixers that combine the aerated water with anoxic water.

Meeting rising demands

The treatment plant in this case has two ASP tanks which present particularly challenging conditions for the installed mixers. The process runs around the clock, so motor efficiency has also become increasingly important due to rising energy costs.

Over recent years, the operational demands on the treatment works have increased and this has resulted in the mixers overheating. Products from another manufacturer lasted only a short period before they needed to be replaced.

However, the operations team at the WWTW wanted to find a solution to extend this even further and asked Sulzer for support. Within the current range of XRW mixers, operators have a choice of Premium Efficiency IE3 or permanent magnet motors. The latter have a number of advantages, not least, fewer moving parts, which was particularly important for this application to minimize heat generation.

Precision process control

Sulzer suggested the 650 model with a 10 kW permanent magnet motor, a slightly larger replacement, to account for the increased workload in the ASP tanks due to the growth of the surrounding area. The addition of the variable frequency drive (VFD) meant that output could be precisely controlled, keeping energy costs to a minimum.

In addition, the installation of a VFD as part of the project has provided the opportunity to benefit from greater overall control, allowing the plant operators to fine-tune the activated sludge process.

Sulzer supported the whole specification process, and the local field service team installed the equipment, including the changes required within motor control center (MCC) and fitting the VFD. The addition of the drive required considerable changes to the electrical and telemetry circuits for the mixers, but they were all completed by the Sulzer team as part of the project.

Mitch Davidson, UK Technical Manager, comments: “Up to 25% energy saving can be achieved by upgrading older mixers and replacing them with XRW products. At a time when energy prices are at an all-time high, the decision to replace the existing mixers with new assets offers an opportunity to also reduce energy consumption and operating costs.”

Reducing lifetime costs

Many WWTPs have operated a ‘fix-on-failure’ policy, which means no preventive maintenance is done, saving short-term costs. However, this is changing, and more proactive maintenance teams are now looking at the lifetime costs of important assets and how long-term reliability can be improved.

Sulzer was able to deliver a turnkey solution for the mixer upgrade, ensuring that any disruption to the ASP was minimized. Completed during a period of minimal flow through the plant, the treatment facility was able to continue operating as normal with the mixers being installed in a staged process.

The XRW mixers offered the customer extended service life and potential for energy savings of up to 25%.

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