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Let's Solve Water

Case study

Blower Efficiency Achieved for Dorking Sewage Treatment Works

In wastewater applications such as Sewage Treatment Works (STW), aeration systems can typically account for between 40 and 80 per cent of a plant's total energy consumption. Where equipment is old and technology dated, other factors such as downtime and ongoing maintenance issues are a further concern. With this in mind, Thames Water worked with Xylem to replace existing blowers at one of their key sites with new state-of-the-art technology.

Dorking STW is a plant in Dorking, Surrey, serving a population equivalent of approximately 11,500 people. The existing equipment installed on site was highly unreliable and inefficient utilising a conventional activated sludge process with fine bubble diffused aeration fed by three 55kW bi-lobe positive displacement blowers.

TurboMAX Blower Solution

For Thames Water the goal was simple - to replace the existing system with modern technology. As a result, the business aimed to secure significant energy savings and reduced maintenance requirements, which would in turn provide the operating team with confidence in the system's ability to deliver the biological secondary treatment process.

The solution from Xylem was to replace the existing blowers with new Sanitaire TurboMAX turbo blowers. Offering improved compression efficiency over a traditional positive displacement blower, the TurboMAX blower is also direct-driven and utilises air bearings that are completely contactless, resulting in zero mechanical losses.

Furthermore, the blowers are equipped with best-in-class permanent magnet synchronous motors, offering 95 per cent efficiency. With no gears or belts, the blowers are driven direct from the motor, resulting in low maintenance requirements. The system is also incredibly easy to maintain, thanks to the completely oil-free blowers, and air bearings that are entirely mechanical and self-controlled in operation, so there are no complex control systems or battery backups required – unlike other turbo blowers that may require this.

Water Authority:	Thames Water
Site Name:	Dorking STW, Surrey, UK
Population Equivalent:	11,500
Blower Model:	Three (3) MAX 75
Installation:	December 2016

In addition the blowers feature integral variable frequency drives and integrated control panels which offer simple plug-and-play operation to help simplify the installation, alongside increased control on a day-to-day basis.

Michael Hancock, Applications Engineer at Xylem said: "The Sanitaire range of blowers is extensive, which means we were ideally placed to offer the perfect equipment to meet Thames Water's requirements. Thanks to an optimised motor size and the best possible efficiency ratings, the blowers have clearly demonstrated their worth and have proved to offer an excellent return on capital expenditure for Thames Water too."

Energy Savings Potential

The new installation has resulted in a 23kW energy saving per blower – when compared to the old system – which equates to an annual saving of approximately £37,600 together with reduced maintenance costs and decreased sound levels.

Customer Feedback

Jack Whitby, Project Integrator at Thames Water said: "As an energy intensive industry, we are constantly on the lookout for new ways to improve our operations and reduce costs. Working with Xylem for the installation of the replacement blowers, has enabled us to achieve what we set out to do and restored our confidence in the site's treatment process."