

## A long life at high speed

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Sulzer HST turbocompressors provide substantial OPEX savings for UK Water Company. Since installing four Sulzer HST turbocompressors in 2012, Severn Trent's Rushmoor wastewater treatment has enjoyed a significant reduction in maintenance costs, energy consumption and unplanned downtime. That experience has led to the company installing another four Sulzer HSTs during its most recent facility upgrade.



“The four positive displacement compressors used in the plant’s previous aeration process had each incurred around GBP 10’000 in annual maintenance costs. Worse, the units had been prone to failures in service requiring disruptive emergency repairs. In the eight years since the switch to Sulzer HSTs, our compressor maintenance costs have been almost entirely eliminated, and the units are still operating as effectively today as when they were first installed.”

**Andy Bradford, Site Manager for the Rushmoor facility**

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Aeration systems play a crucial role in modern wastewater treatment processes. They are also a significant driver of overall operational costs. In a typical wastewater treatment facility, for example, aeration equipment accounts for between 45% and 70% of a site’s total energy consumption, and up to 15% of its overall operating costs.

### **Proven design**

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As water utilities seek to reduce costs and improve the environmental sustainability of their operations, there is growing interest in alternatives to the bulky, complex and energy-hungry blower designs that are commonly used in aeration applications. One proven option is the Sulzer HST high speed turbocompressor range.

These units offer a radically simpler mechanical design, with compression provided by a highly efficient turbo air-end, which rotates at very high speed on friction-free magnetic-levitation bearings. Energy use analyses completed in real-world wastewater treatment facilities have shown that HST-powered aeration systems typically consume 30% less energy than conventional positive-displacement blower designs.

While some users make the case for a switch to high-speed turbocompressor technology on energy consumption alone, many find that other benefits of the HST design contribute quite significantly to the overall savings. The integrated design and small footprint, for example, simplifies design installation and commissioning. The low weight of the units and the almost complete absence of mechanical vibration means they do not require specially prepared foundations, or a crane for installation.



HST turbocompressors installed in bespoke GRP enclosures which offers flexibility and savings on civil works costs.

## Easy integration

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HST turbocompressors play well with blowers built with other technologies too, making it easy for facilities to operate a number of HST units in parallel to match fluctuating demand, or to upgrade existing plant over time, running a mix of HST and legacy blowers in the same process.

For a large number of users, one of the biggest benefits of the Sulzer HST is its extremely high reliability and low maintenance costs. With a simple mechanical design and no metal to metal contact or wearing parts, HST turbocompressors require negligible routine maintenance, and retain their as-built levels of efficiency throughout their operating life.

These benefits can also be extended to backup compressors that are used to support fixed installations that may be under maintenance. Sulzer has developed a way to mount the HST in a container that can be easily transported to site and quickly connected to the existing pipework, power and control systems. These mobile units are specifically designed for operation outdoors and provide a flexible and upgradeable supply of air for key aeration processes. The low noise level of the HST is highly valuable when installed outside in this way.

## Minimizing maintenance costs

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Maintenance savings were a primary decision driver for UK water utility Severn Trent when it installed four Sulzer HST units in its Rushmoor wastewater treatment plant in 2012. The Rushmoor facility in Shropshire serves more than 50'000 people in the nearby town of Telford, and the HST turbocompressors were installed as part of a new aeration system built to meet the needs of the fast-growing local population.

Severn Trent embarked on a further expansion project at Rushmoor in 2018, and following an extensive tendering process, Sulzer HSTs were again selected due to the lowest overall TOTEX costs and trouble-free operation of other Sulzer turbocompressors on site.



The Rushmoor facility serves more than 50'000 - four HST20-6000-1-125-40 turbocompressors were installed as replacements for ageing inefficient and unreliable blowers.

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