

CASE STUDY

New Compressors Dramatically Increase Efficiency at Wastewater Treatment Plants

The aeration blowers at the Surbiton Park wastewater treatment plant (WWTP) in Melton, Victoria and the near-by Sunbury WWTP in Australia needed to be upgraded as the existing units were inefficient and the plant needed to expand capacity due to increasing local population. The Surbiton Park Plant was expanded from 8 mld (million litres per day) to 18 mld. The Sunbury upgrade focused on efficiency improvement without capacity increase.



The Sunbury compressor room

“ Our electricity costs fell by 18% following the installation of these machines. ”

Rod Curtis, Head Operator at Surbiton Park WWTP

The Sulzer difference

- The turbocompressor installation gave an energy saving of 18% already prior to moving to BEP operation (which will add further 6%).
- The Sulzer turbocompressor type ABS HST offers reliable operation and top efficiency at the best whole life cost while minimizing the environmental impact.
- In the high speed turbocompressor market, Sulzer is the leader in magnetic bearing technology.
- Easy temporary installation simplified project execution.

The challenge

Both treatment plants had several Roots-type positive displacement (PD) blowers, each around 100 kW. The new compressors were to provide all the duty air required, but the customer still wanted to retain the ability to use the PD blowers in the same manifold. The replacement work was difficult as the existing blower rooms were noisy. It was not possible to work safely, and the installation could not be done without shutting down the plant.

The solution

Most of the PD blowers were removed and replaced with Sulzer turbocompressors type ABS HST. The HST turbocompressors are equipped with active magnetic bearings, so they can withstand the pulsations generated by the PD blowers discharging into the same manifold. This is a key point of difference compared with air-bearing machines.

To remove the existing units without shutting down the plant, one of the new HST turbocompressors was temporarily installed in a shipping container outside the building, piped in and commissioned. This arrangement allowed unrestricted access to replace the existing units, which would have been impossible without the HST's quiet, vibration-free operation and small footprint.



The Surbiton Park compressor room

Customer benefit

- The upgrade of the aeration blowers at Surbiton Park and Sunbury resulted in higher reliability and efficiency, with significant savings in both energy and maintenance. The customer experienced an 18% power saving immediately.
- The compressor installation was part of a larger upgrade, and when that comes on-line, the duty point will move closer to the best efficiency point (BEP) further increasing the efficiency of the system.
- The reliability of the system has increased significantly with no failures since 2011.
- Health and Safety has improved as hearing protection is no longer required in the compressor rooms.

Product data

Two units Sulzer turbocompressor type ABS HST40-350 for Surbiton Park and two units HST40-400 for Sunbury

Surbiton Park

- Capacity: 18 mld
- Process: Oxidation ditches

Turbocompressor type HST40-350-1-L

Capacity	14,000 Nm ³ /hr
Pressure	40-65 kPa
Motor power	350 kW

Sunbury

- Capacity 8 mld
- Process: Oxidation ditches

Turbocompressor type HST40-400-1-L

Capacity	16,000 Nm ³ /hr
Pressure	40-65 kPa
Motor power	400 kW

For more information on our products and solutions for wastewater treatment, please visit sulzer.com.

Contact

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Applicable markets

Municipal and industrial wastewater treatment

Applicable products

Turbocompressor type ABS HST