

CASE STUDY

Sulzer turbocompressors for optimized wastewater treatment in dairy plants

A major producer of dairy products in Europe has three factories close to each other, with a common wastewater treatment plant. This industrial wastewater treatment plant (IWWTP) is one of the largest in the country. During the past years, the plant has seen a series of upgrades and extensions, including average flow increases and the addition of a tertiary filtration process. As part of the latest upgrade, Sulzer delivered two HST turbocompressors for aeration of the biological basins.



“ *The performances of the HST turbocompressors have exceeded the client’s expectations, with significant energy savings, little maintenance, and a low noise level. Furthermore, the top-quality service from Sulzer is greatly appreciated.* **”**

Fabrice Martin, Business Development Manager

The Sulzer difference

- In the high-speed turbocompressor market, Sulzer is the leader in magnetic bearing technology.
- The HST turbocompressors have 20 years of operation experience with multiple references in industrial wastewater treatment plants.
- They are known for their reliable operation and top efficiency at the lowest cost, while minimizing the environmental impact.

The challenge

During the past years, because of successive extensions of the dairy production sites, the size of the wastewater treatment plant has grown significantly. Initially, a set of roots blowers were providing air to the biological tanks. These roots blowers were later replaced by more efficient screw compressors. The performance of the new machines, however, proved to be rather disappointing and moreover, their maintenance was expensive. When the latest extension of the IWWTP was recently decided, the client looked for additional compressors, which would not only respond to the technical specifications, but also give complete satisfaction in the long term.

The solution

Sulzer tailored a package of two HST 20-6000-1-190 turbocompressors and one master control unit (MCU) to match the customer’s requirements exactly. A complete set of pipework accessories for the new compressor room was also supplied. In addition, Sulzer gave recommendations for the most proper application of the equipment, e.g. for the ducting of the motor cooling air outlets, which reduces the temperature in the compressor room and is beneficial for the process air. Finally, the optimal design of the installation helped save a lot of energy.



The master control unit in the compressor room

Customer benefit

The two HST 20-6000 turbocompressors offer a truly outstanding wire-to-air efficiency. They interface with the upper level control system through the MCU. This MCU selects the most economical compressor combination (one or two running – duty points in the best efficiency zone) to keep the pressure within tight limits whatever air flow is needed.

The two HST 20-6000 are extremely silent, which means a better working environment. The noise level in the compressor room is remarkably low (max. 73 dBA).

The HST uses digitally controlled magnetic bearings, which cause no mechanical friction or wear. The maintenance of the machine mainly consists of the regular replacement of inlet filters.

During the past three years, the operational costs have been minimal, with low energy consumption, no shutdowns, and very small service and maintenance expenses.

Today, the client is extremely satisfied with the Sulzer equipment and collaboration. The customer actually considers further HSTs for the future expansion of the wastewater treatment plant.

Product data

- 2 HST 20-6000-1-190
- 1 MCU (master control unit)
- Air filters for the compressor room
- Ducted motor and cabinet cooling air outlet

2 HST 20-6000-1-190 turbocompressors	
Airflow range	2 000 to 7 000 Nm ³ /h
Pressure rise	70 kPa
Input power	190 kW
Max. current (400 V)	309 A
Power supply	380 – 690 V
Input frequency	50 – 60 Hz
Max. noise level	73 dBA

Contact

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Applicable markets

Municipal and industrial wastewater treatment

Applicable products

HST Turbocompressors



The two HST 20-6000-1-190s in the compressor room