

KAESER Kompressoren

Screw blowers for more efficiency and environmental protection



Screw blower & Control system SIGMA AIR

Initial situation

The customer of KAESER Kompressoren SE is a municipality in a very innovative wastewater treatment network that is striving to become even more efficient in the future. By installing a new screw blower, 344 liters of clean water per second could be discharged. This will considerably relieve the financial situation.

The wastewater treatment plant is a Sequencing Batch Reactor plant (SBR plant). Here, the wastewater is processed in batches. The processing cycle for a basin is about 300 minutes. The water levels are about 5.5 meters with a physical pressure of about 570 mbar during operation. The amount of wastewater passing through varies depending on the season. In summer, due to tourists and wine growers, they are much higher than in the winter months. The pressure varies between 480 and 570 mbar (g) depending on the water level of the SBR plant.

Solution statement

- Use of a screw blower type FSB with a delivery rate of up to 67 m³/min for testing, to replace the previous rotary blower.
- The unit itself has a screw block with an upstream pressure of 650 mbar (g), which suits the system.
- Screw blower as a complete system: delivery and installation in individual parts, as the wastewater treatment plant was retrofitted with a sludge press, which restricted access to the blower cellar in terms of space
- Modular design of the screw blower allowed easy commissioning of the sludge press
- Dispensing with auxiliary units and recirculating oil lubrication additionally increases the longevity and reliability of the machines



Challenge

The customer had previously used positive displacement blowers, which operated very satisfactorily. With a basin depth of 6 meters, the treatment plant has a relatively average water depth. This is where the air intake is most optimal. The use of the new screw blowers with a new design and technology had the goal of considerably saving energy costs and significantly reducing the noise emission values compared to the original situation.



Customer value

- The new screw blowers used are up to 35% more efficient and also offer significant energy advantages compared to conventional screw and turbo blowers due to the pre-compressed internal pressure of the screw blower, which is already quite close to the pressure of the system.
- Avoiding over-compression, i.e., generating a higher pressure than the wastewater system actually requires. This would reduce the energy advantage of the compression principle and, in the worst case, even lose it altogether.
- Screw blowers have an internal cooling concept that eliminates the energy-consuming use of oil pumps and oil coolers. They are equipped with an effective sealing concept that ensures long-term tightness even without a vacuum pump.
- Easy installation of blowers, safe continuous operation and very robust and durable.
- Both wall-mounted and side-by-side installation possible: simple and cost-effective option for maintenance while saving space.

