KAESER Kompressoren

Blower for oxygen input into the aeration basins

Screw blowers &
Rotary blowers

Initial situation

The electrical energy requirement was reduced by more than 20 percent. This was achieved by modernizing an existing air compressor unit with a new blower station from KAESER Kompressoren SE.

Challenge

The central blower station had to be modernized at a wastewater treatment plant used for 85,000 inhabitants. Here, four older frequency-controlled rotary blowers generated the compressed air, which was distributed to the individual activated sludge zones via a manifold with orifice regulating gates. In the case of a new plant, the requirement was to reduce the electrical energy demand considerably and thus to better adapt the compressed air generators running in the interconnected system to the air demand, which fluctuates strongly seasonally, e.g., as a result of the grape harvest. Half of all cascades are ventilated intermittently. The new systems must undergo a performance test in accordance with ISO 1217 Annex C or E before delivery.

Solution statement

- The intensive analysis of the time-related air demand and operating pressure as well as the applications of the many years of experience in compressed air technology resulted in a solution that allows each demand point to be approached with as little use of machine and lossy frequency conversion as possible.
- Two EB 380S-SFC screw blowers (55kW each, frequency controlled), one EB 380S-STC (37kW, Y/D starter) and one BB 89C-STC rotary piston blower (11kW, Y/D starter).
- A control range for the generated compressed air of 315 to 5515 Nm³/h (approx. 1:17) was achieved.
- The SIGMA AIR MANAGER interconnected control system combines the most effective machines for the current demand. The control system also manages backup capacities in case a machine fails or needs maintenance.
- The SIGMA AIR MANAGER communicates via data bus with the process control system, exchanges operating and status data, and at the same time performs pressure control.

Customer value

- Looking back at the comparative periods of the last few years, the energy generation expenditure was reduced by at least 23 percent, which even exceeded expectations.
- As an aside, the compressor station, which is ventilated with ambient air in the machine room, was completely unaffected by the German temperature record of over 40 °C set in 2015, as KAESER screw blowers are designed to operate at ambient temperatures of up to 45 °C as standard anyway.
- However, should anything require optimization in terms of mechanics, machine control, power electrics, operating regime or communication of the compressors, there is now a contact person who is quickly on site and can fully understand the interrelationships - according to the operator, this in combination with KAESER service represents the perfect solution.

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