

# KAESER Kompressoren

## Energy-efficient wastewater management for the sake of the environment

### Initial situation

Lake Constance, also called the Swabian Sea, is the largest inland body of water in Germany and the third largest lake in Central Europe. The secret of Lake Constance is its versatility, which makes it known as an attractive vacation destination and recreation area. With a length of 63 kilometers, a width of 14 kilometers and a water surface of 536 square kilometers, Lake Constance is our largest drinking water reservoir. Drinking water from Lake Constance is a foodstuff of special goods: clean water from the Alps feeds Lake Constance, and strict regulations for water protection keep the lake clean.

The customer of KAESER Kompressoren SE is the largest wastewater treatment plant in the northern Lake Constance catchment area. 80,000 inhabitants as well as numerous commercial and industrial enterprises discharge between 12 and 16 million cubic meters of wastewater to the treatment plant each year.

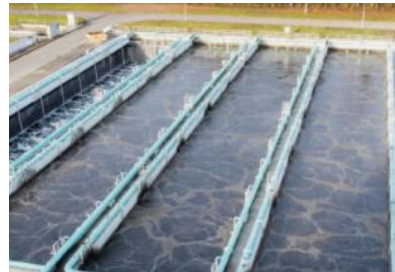
### Solution statement

- KAESER used four LP8000 magnetic bearing Pillaerator turbo blowers (150 kW for airflows up to 8,000 m<sup>3</sup>/h) in this project.
- The units are characterized by their quiet operation as well as their economical and low-maintenance design.
- Due to the vertically arranged drive shaft, which is connected to the impeller, the latter floats without contact in a magnetic field created by annularly arranged permanent and electromagnets.
- Due to the dynamic magnetic bearing, the motor is oil-free, vibration-free, friction-free, wear-free and maintenance-free.



### Customer value

- By acquiring the new turbo blowers, three important goals were achieved in one fell swoop: energy efficiency, noise reduction, and economy.



### Turbo blower

### Challenge

The wastewater treatment plant is equipped with all state-of-the-art treatment stages and an additional 4th treatment stage. Thus, the wastewater association meets particularly high requirements in terms of purification performance.

Wastewater treatment plants require a lot of energy in the form of electricity and heat for wastewater purification and sludge treatment. Surely the obvious thing to do here is to utilize the waste products from the wastewater to generate energy? This means that the sewage gas from sludge digestion is reused to generate electricity. The generators of the three combined heat and power plants generate electricity and heat (waste heat) from the combustion of the sewage gas. As a result, the sewage treatment plant can be operated with 100 % energy self-sufficiency.

For the biological treatment stage, which takes place in the aeration basins, ambient air is required for the healthy growth of the microorganisms working there. Previously, the air was conveyed by five rotary piston blowers from different manufacturers. Due to their age, the systems were no longer energy-efficient, extremely noisy and caused high costs due to frequent repairs and maintenance.

