



IQ series: Easy to use with limited space

Case Study - Freiberg sewage treatment plant



Problem

Little space for installing, servicing and maintaining an additional pump

Solution

Vogelsang rotary lobe pump IQ112-81

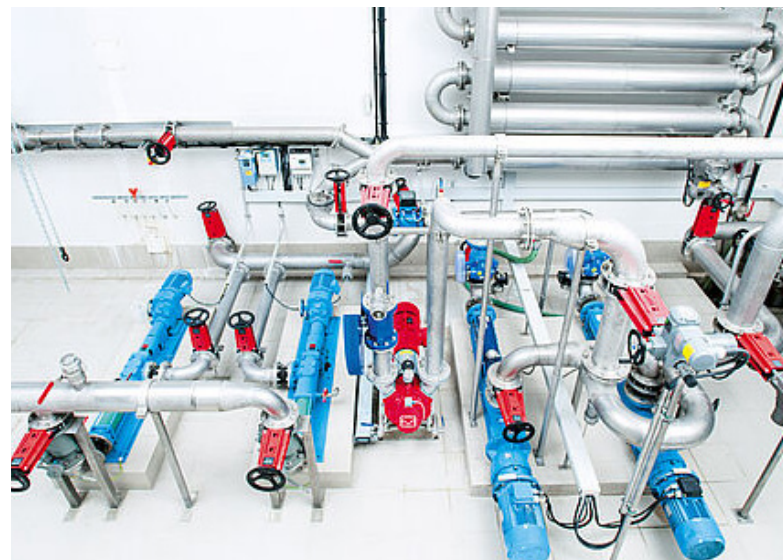
The customer

The sewage treatment plant of the city of Freiberg/Neckar was put into operation in 1964. Over the years, the plant has been modernized and expanded many times. It is now designed for up to 25,000 population equivalents. In addition to the mechanical, biological and chemical treatment stages, the treatment plant includes anaerobic sludge stabilization process. The digestion tower was also built in 1964, it has a capacity of 1,100 m³ and is fed with about 30 m³ of thickened surplus sludge and 30 m³ of primary sludge each day. Added to this each week is about 2 m³ of a mixture of grease and water from the longitudinal grit trap. The gas is utilized in a combined heat and power plant with 50 kWel and 100 kWth. At 100 % capacity utilization, it was possible to generate in-house 61 % of the electricity required by the plant. The heat is used to heat the plant's own building, the neighboring municipal building yard, three homes, a sports hall with a stadium, restaurant and apartment.

The problem

In 2012, further improvements for the sludge digestion were planned. To reduce the production amount of sewage sludge, there was a plan to increase the DM content in the

digestion tower by drawing off about 75 m³ sludge each day into a bypass, dewatering them to about 20 m³ using the existing belt thickener and then returning it to the digestion tower. As multiple progressive cavity pumps were already in use, the plans also included installing another pump of this kind, which would have required costly construction work due to the piping and the limited space in the pump room.



The solution

„We then found out about the new IQ series from Vogelsang at IFAT,“ says wastewater manager Sternkiker. „The compact type of construction is very handy for us, given the lack of space in our pump room. The flexible connectors parts made it easy to connect the pump to the pipe system. Despite our well-functioning screen, we’re constantly finding foreign matter in the sludge, so we liked the higher resistance to foreign matter provided by the integrated InjectionSystem. And even if a clump does clog the pump, the quick and easy access to the pump chamber and pumping elements means that we can fix the malfunction very quickly – unlike with our progressive cavity pumps,“ says Sternkiker, explaining why he decided to buy the IQ pump.



Vogelsang IQ series

Since the construction work was completed, the DM content has increased on average from 2 % to 5 %. Due to the increased dry matter content and reduced water content in the sludge, the belt press now only needs approx. 55 min instead of 75 min to dewater the digested sludge. The 15 kW drive of the press consumes less energy and the amount of polymer used can be reduced. At the same time, the gas yield from the digestion tower increased.

Overall more electrical and thermal energy is produced or released, which has a positive impact on the overall balance. However, the sewage sludge has already been reduced by about 50 %. Meanwhile, the IQ rotary lobe pump runs trouble-free and pumps about 10 m³/h sludge at a pressure of 1.5 – 2 bar during normal operation at 25 Hz, but can also pump up to 25 m³/h at 2.5 – 3 bar when running at 50 Hz. In terms of service, the new concept of the IQ series also impressed in practice. Compared to the progressive cavity pumps, changing parts is quick and easy. The IQ pump has made a significant contribution to improving digestion.

Advantages of the IQ series

- Minimum space requirements
- Universal connectors
- Easy maintenance, rapid onsite service

Benefits for the user

- Low cost and effort for retrofit additional pump
- Simple connection to pipework
- Improved operation of the digestion tower

Mentioned Vogelsang product

[IQ series: Easy to use rotary lobe pump](#)



Mentioned Vogelsang product

[IQ series: Rotary lobe pumps for wastewater applications](#)



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