

Case History

Wastewater Treatment with Biological Phosphorus Elimination for the Dairy Industry





This dairy company commissioned Hager + Elsässer to build a wastewater treatment plant for a production facility in a small Bavarian town. The plant was constructed in 1993. Due to increases in production, wastewater flows and loads increased over time until, in 2004, the wastewater treatment plant was expanded following the same design principle. It is still running successfully today.



1. Customer

For nearly 100 years this dairy, a traditional, family-owned company, has been producing yoghurt, desserts and cream cheese in a small Bavarian town.

Having discharged production wastewater to the public sewer system for years, they decided to build a wastewater treatment plant (WWTP) in order to save discharge costs by discharging treated wastewater directly to the nearby river.

At that time, 2,400 m³ of wastewater with a BOD₅ load of 3 tonnes, and high concentrations of nutrients and calcium were produced daily. Due to frequent changes in the production program, the wastewater varied strongly in terms of pollution and pH value.

2. Problem

The high pollutant concentrations in the wastewater had to be reduced significantly in order to comply with the legal effluent values for direct discharge (COD < 90 mg/l, BOD₅ < 20 mg/l, NH₄-N < 10 mg/l and P < 1.5 mg/l).

3. Solution

Wastewater streams with high suspended solids concentrations are pre-treated by screening, flotation and sedimentation. In the following

buffer tank, all the wastewater streams are mixed, equalised and neutralised if necessary.

Biological treatment is carried out in two parallel treatment lines. The partition of the activated sludge tanks into anaerobic, anoxic and aerobic zones results in considerable biological phosphorus elimination. Precipitation is only used to remove the low remaining concentration of phosphorous. After passing the secondary clarifier, the treated wastewater is discharged to the river.

High calcium concentrations in dairy wastewater frequently lead to precipitation that can seriously damage the aeration system. For this reason, the robust in-house aeration system AEROFIT-D was chosen. The aerators installed in 1993 are still working today without any problems.

Excess activated sludge is treated in an anaerobic digester for stabilisation. The stabilised sludge can be used in agriculture due to the high nutrient content and the absence of harmful chemicals.

4. Results

The WWTP has been working reliably ever since the start-up. The average discharge values have consistently been far below the legal limit values (COD= 27 mg/l, BOD₅= 6 mg/l, NH₄-N = 0.4 mg/l and P = 0.8 mg/l).

H+E ranks among the world's leading suppliers in the fields of: water & wastewater treatment, and energy efficiency. Based on its global presence, the **H+E GROUP** has completed projects in over 50 countries.



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