CASE HISTORY

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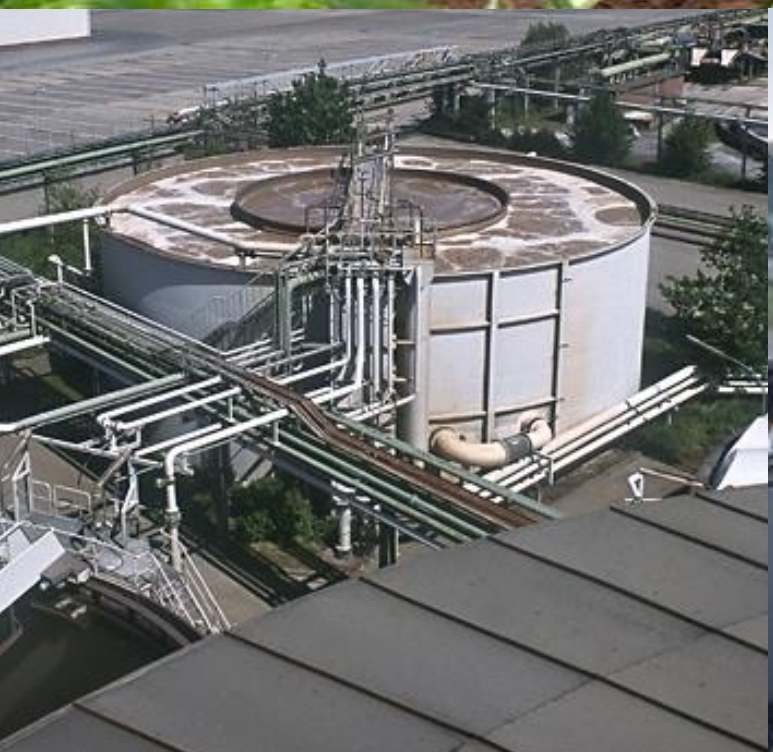
HAGER+ELSÄSSER

An aquarion Group Company

Beet Sugar Factory – Germany

Wastewater Treatment



Wastewater Treatment for a Beet Sugar Factory in Germany

Until the mid-1980's the wastewater by the Sugar Factory at Jülich (between Aachen and Cologne in Germany) was treated in existing wastewater lagoons. As the German government's regulations became progressively more stringent, a more advanced wastewater treatment plant design became more desirable and, eventually, mandatory.

Hager + Elsässer GmbH were commissioned to build the new anaerobic / aerobic wastewater treatment plant.

1. Customer

The sugar factory in Jülich was founded in 1880. The factory produces refined sugar and white sugar.

In 2006, ownership of the Sugar Factory transferred to the German Sugar Company Pfeifer & Langen.

The beet processing capacity of the Sugar Factory is 15,000 t/d.

2. Project

The existing wastewater ponds, operated in batch mode, had the disadvantages of very large space requirement, substantial odour emissions, the risk of algal growth (which, despite biodegradation treatment having been completed, can cause a high COD and nitrogen load in the wastewater) and the difficulty of maintaining a stable nitrogen removal process.

The prevailing ratio of COD and BOD load favoured a two-stage treatment process, with a first anaerobic stage for COD removal, and a second aerobic stage for nitrogen and residual BOD removal.

3. Solution

The flume water from the existing mud settlement ponds (where the wastewater has already been acidified due the multi-day residence time) is first pre-treated in the anaerobic contact sludge reactor ANAFIT-CS, and is then subsequently treated together with the excess condensates in an aerobic activated sludge reactor.

The preference of the anaerobic contact sludge process is due to the liming of flume water (which is standard practice in middle and east European countries, Russia and North Africa), that leads to substantial lime precipitation in all anaerobic systems. In contrast to typical anaerobic sludge bed (e.g. UASB or EGSB) and fixed-bed processes, this precipitation does not result in any operational constraints in the anaerobic contact sludge process. In fact, the lime precipitation remains in the reactor and is removed from it after the end of the campaign.

The aerobic stage consists of an upstream denitrification of the total wastewater (anaerobic effluent and condensate) in the inner ring of the anoxic sludge reactor followed by nitrification in the outer ring. The nitrified water from the nitrification stage is recirculated to the denitrification stage to ensure optimum conditions for nitrogen removal.

The nitrification system is equipped with the AEROFIT-D non-clogging aeration system.

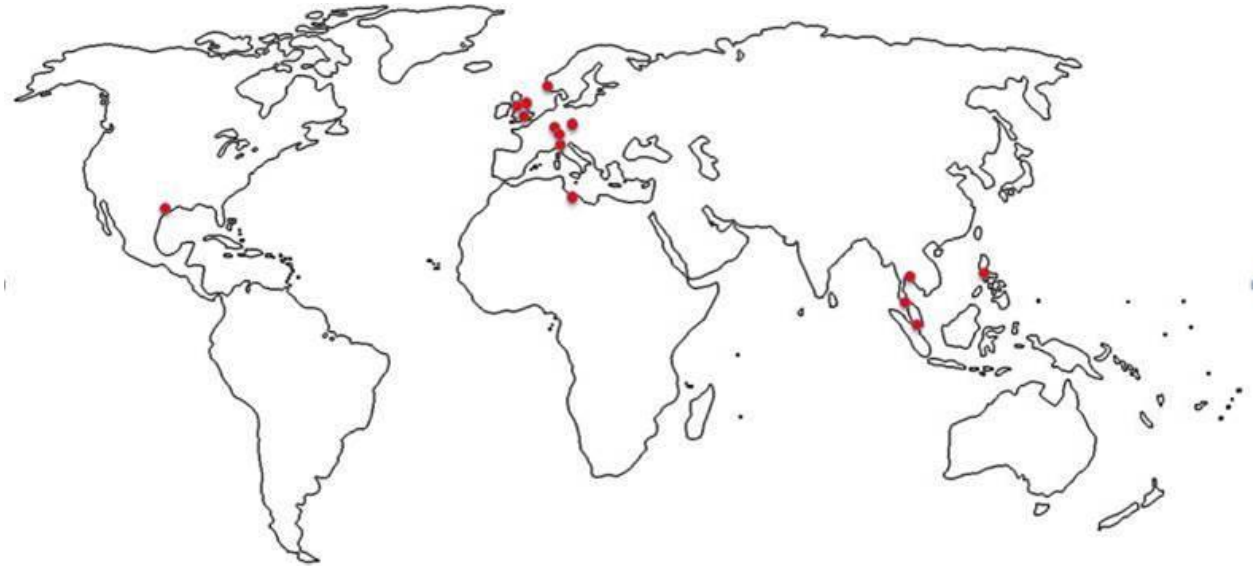
4. Results

The WWTP has now been operating for 25 years and has always achieved discharge values lower than the German Wastewater Ordinance (AbwV) requires (COD < 200 mg/l, BOD_5 < 125 mg/l, Total Nitrogen < 10 mg/l, NH_4-N < 10 mg/l).

This wastewater treatment plant was one of the first plants to be built with the anaerobic contact sludge system, which has proved its reliability and value time after time.

Since then Hager + Elsässer has built more than 20 similar plants in the sugar industry.

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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