

CASE HISTORY

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An **aquarion** Group Company

Konyer Seker – Cumra, Turkey

Wastewater Treatment for a Beet Sugar Factory





Konya Seker, the largest sugar producer in Turkey, built a new beet sugar factory in the town of Cumra in 2004. Hager + Elsässer GmbH were commissioned to build the associated wastewater treatment plant. The success of the project convinced Konya Seker to order two more wastewater treatment plants for their beet sugar factories.



1. Customer

Konya Seker is the largest private sugar producer in Turkey and has invested strongly in modern production facilities in recent years. In 2004, Konya Seker commissioned a new beet sugar factory in Cumra, a small town in central Anatolia. The beet sugar factory can process up to 12.000 tons of sugar beet per day and produces up to 1,500 tons of sugar per day (during the sugar season).

2. Problem

In order to treat the wastewater from the beet sugar factory, a wastewater treatment plant (WWTP) had to be constructed. Konya Seker awarded the contract for the WWTP to Hager + Elsässer GmbH because of our extensive experience with wastewater treatment for the sugar industry (14 anaerobic plants built over recent years in Europe and the Near East).

The contract for the new WWTP was signed in April 2004 and was developed to a strict schedule. The construction began in August 2004 and the commissioning in December 2004. The entire project was completed in less than a year.

The plant is designed to treat the two wastewater flows that typically originate from beet sugar production. One is a highly polluted wastewater flow from beet washing (flow rate 3,600 m³/d), the second a slightly polluted condensate flow from sugar crystallisation (flow rate 5,520 m³/d).

3. Solution

The highly polluted wastewater from beet washing is treated in an anaerobic stage consisting of a hydrolysis reactor and an anaerobic contact sludge reactor ANAFIT-CS with biogas injection system.

The ANAFIT-CS reactor, which was developed by HAGER + ELSÄSSER is particularly suited to wastewater with a high calcium concentration, such as beet washing water. It operates reliably and dependably avoids operation problems which, in processes of this kind, can be caused by calcium carbonate clogging. Furthermore, it achieves a constant COD removal of more than 95%.

The effluent of the anaerobic stage is treated together with the slightly polluted wastewater in the aerobic stage, which is designed as a nitrifying activated sludge tank (equipped with the non-clogging aeration system AEROFIT-D) and an upstream denitrification stage. Remaining organic pollution and nitrogen is eliminated in this stage.

4. Results

The WWTP works very well and achieves discharge values lower than EU law requires: (COD < 60 mg/l, BOD₅ < 30 mg/l, N < 30 mg/l).

Due to the success of this project, Konya Seker later commissioned a WWTP for their sugar production in Konya as well. In 2007, a bio-ethanol plant was added to the sugar factory in Cumra and the wastewater treatment plant was upgraded by Hager + Elsässer GmbH to cater for the additional wastewater.

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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