

ENVIRONMENTAL TECHNOLOGY



BIOWANZE SÜDZUCKER - Wanze Biological wastewater treatment and tertiary treatment for reuse

BIOWANZE (Südzucker) is the leading bio ethanol producer in Belgium with an annual capacity of 300 000 m³ of bio ethanol. Therefore, a supply of up to 800 000 tons of wheat and up to 400 000 tons of sugar beets is foreseen. The innovative manufacturing processes, which uses bran as a primary energy source for the biomass boiler, lowers CO₂ emissions up to 70% compared to fossil fuels. This also means that the plant is virtually self-sufficient when it comes to the on site energy generation.

On the same site a business establishment of TIENSE SUIKERRAFFINADERIJ is found. This sugar refinery is also part of the Südzucker Group, the European leader in sugar production.

Daily 22 000 tons of sugar beets are processed into 3000 tons of sugar.

TREVI provided for the design, construction, start-up and monitoring of a biological treatment of the wastewater originating from both manufacturing processes. The design flow rate reaches 20 000 m³ a day.



Settling tank

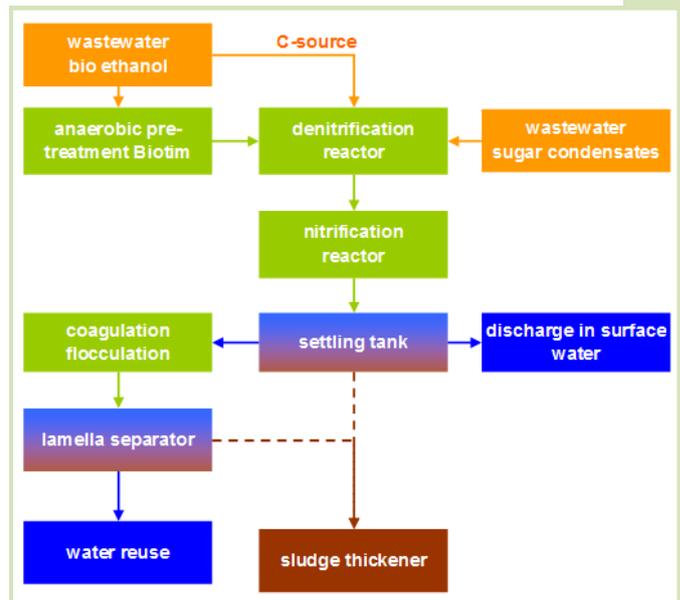


The bio ethanol manufacturing process generates a strongly organic loaded wastewater, which is separately treated in an anaerobic reactor. Organic matter is converted into biogas, which is valorised by means of a cogeneration process. The sugar beet campaign (September - December) generates a nitrogen rich wastewater from sugar condensates. This wastewater is treated with the effluent of the anaerobic digester in an aerobic treatment process, including a nitrification and denitrification pathway.

A part of the bio ethanol wastewater is used directly in the denitrification step as carbon source for efficient nitrogen removal. After the settling tank an effluent which meets the discharge standards is obtained. For water reuse purposes a physicochemical treatment consisting of a coagulation - flocculation reactor is incorporated. Remaining contaminants are converted into solids which settles in the lamella separator. The waste sludge is further treated in the thickener.

Total active volume is more than 30 000 m³ for storage and treatment of the wastewater. The installation is designed for a COD load of 11 tons per day and a nitrogen removal of 1,5 tons of nitrogen per day can be achieved.

Typical reached remaining effluent concentrations are 30 to 80 mg COD/l, 5 to 10 mg total nitrogen/l and less than 30 mg suspended solids/l.



Suppressors



Lamella separator



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