



Aerobic treatment of production waste water from beverage production using the SBR method

On behalf of a beverage bottler for beer and soft drinks, CUSS built a waste water treatment plant on a Caribbean island in 2011.

The mixed waste water discharged from the production facility was to be completely cleaned as part of the waste water treatment so that it could then be returned to the receiving waters with confidence.

When designing industrial treatment plants, one particular challenge is often on how to cope with the fluctuating input of varying substances - also in this case.

Flexible waste water treatment methods have proven particularly suitable for such a tough task.

The biological treatment stage forms the center of the treatment plant. The SBR technology (sequencing batch reactor) is often used for this kind of task. This technology is also able to clean complex, highly polluted production waste water cost-effectively and reliably.

For tasks of this kind, CUSS has developed processing concepts that take into consideration the project-specific conditions that ensure the reliable operation of the plant also in cases of extremely high peak flows. These processes have been used in many cases and been optimised for a variety of conditions.

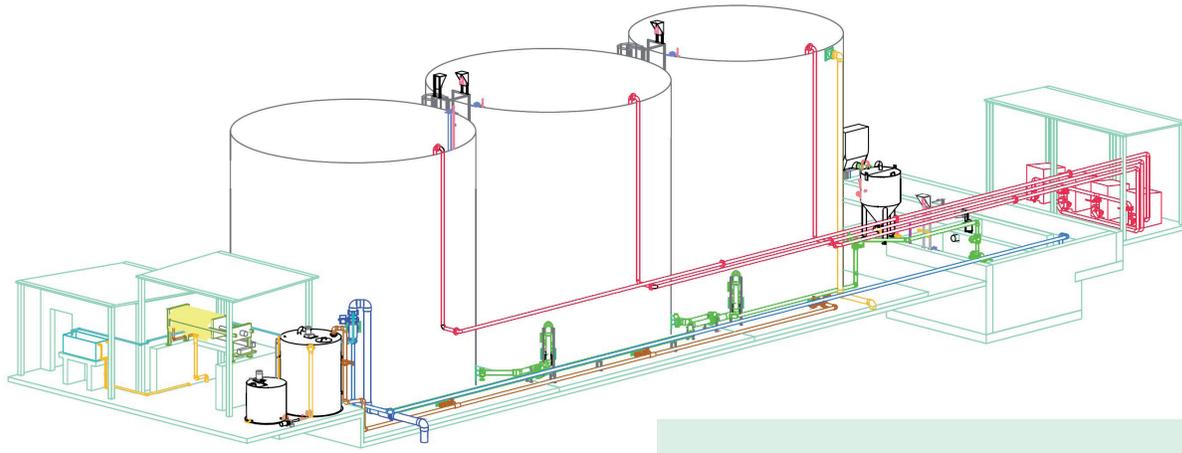
The CUSS process engineers have been using this and other methods for more than 20 years. Based on

the accumulated experience of all employees, the used methods are constantly optimised and enhanced. Through this the company CUSS is always able to provide the clients with state-of-the-art technology.

Waste water content

- Sugar, yeast, brewers grain
- Production residue from storage, processing and bottling
- Glue and solids as well as cleaning solvents and acids from bottle cleaning
- Mineral-based grease





Process description

Waste water from soft drink production is first directed into a mechanical separator. Oil and fat as well as particles capable of sedimentation are separated here.

Apart from the main stream of waste water, yeast from beer production requires particular attention. Yeast can cause problems if it is fed untreated into the treatment plant. This partial waste stream is therefore pre-treated before it is added to the waste water stream in a controlled manner.

After primary treatment, homogenisation and neutralisation of the entire volume of waste water takes place. Then pre-treated waste water is given into biological treatment – executed as SBR plant. The main task of the biological treatment is the elimination of the organic load, which is characteristic of waste water from this industry. Dissolved substances are synthesised by the activated sludge bacteria. Harmless metabolic products, primarily CO₂, water and new biomass are the results.

The last phase of the SBR cycle takes care of the separation of the water and sludge phase. Whilst the clear water phase can go through subsequent processing, it is possible to remove excess sludge at the same time. Owing to sludge thickening, it can be disposed cost-effectively and safely.

The SBR technology optimised by CUSS has proven to be extremely effective and operationally more reliable. This is achieved not only through the accurate calculation but also sizing of all plant components.

As a result of the multi-stage treatment and all considered substance streams, all client requirements have been met, and furthermore also the required BOD (biological oxygen demand) discharge value was well below required levels.

The scope of supply for the project characterizes by plant engineering and the entire planning and implemen-

Processing steps

- Mechanical separation
- Homogenisation and neutralisation
- SBR activation
- Treatment of sludge

tation by CUSS. A turnkey plant was handed over to the client after completion in 2011. From construction to a fully functional plant – all from a single source. Since then, the plant has been operating without problems and to the client's full satisfaction.

Customer benefits

- Low reactor volume required
- High process reliability
- Simple and low-maintenance treatment technology
- Low investment and operating costs
- Accurate control of the cleaning process
- Variable process sequence possible if required

Figures – Data – Facts

Location:	Caribbean
Plant performance:	Waste water quantity approx. 450 m ³ /d ongoing BOD reduction > 98% BOD inflow: approx. 2.000 mg/l max.
Task:	Treatment of production waste water from a beverage production plant
Scope of supply:	Turnkey project implementation: Design and implementation of construction, building supervision, process engineering and detailed engineering, supply and installation of the plant, personnel training, commissioning.
Time:	Completed 2011

