FOOD & BEVERAGE INDUSTRY

WEHRLE

Efficient concepts for WATER supply and disposal

Effluents from the food & beverage production can be biodegraded easily. However, the demands for the discharge qualities have risen in the last years and are often very difficult to reach with conventional activated sludge plants, SBR's or MBBR's.

Especially in the aspects of space requirement, automatisation, reliability when treating varying loads, tolerance against cleaning agents and disinfectants, as well as odourlessness, modern high-performance MBR plants offer best results.

As turnkey provider, WEHRLE delivers a wide range of solutions for production water: from fresh water supply to nutrient recovery, biogas generation, effluent treatment up to water recycling and ZLD (zero liquid discharge).

WEHRLE plants are known for their high reliability and longevity and all of this coupled with simple operation and predictable, stable and low operation costs.

Overview Process Technologies

Anaerobic biology *For high organic load for the production of biogas, respectively electricity and heat*	**Aerobic biology** *For very strongly varying wastewater throughputs and compositions*	**Membrane technologies** *Systems for the filtration of water and separation of dissolved and undissolved substances*
BIODIGAT®-family For the removal of organically high loaded wastewaters	**BIOMEMBRAT®**-family High-performance MBRs for highest requirements in stability and outlet quality	**UF:** For the retention of macro-molecules, particles, seaweeds, bacteria and viruses **NF:** e.g. for softening of drinking water or as 3rd step of a wastewater treatment **RO:** e.g. for the demineralization of water, among other things for boiler feed water
BIODIGEST®-family For organic material flow with very high up to mainly solid content	**BIOSTREAM®**-family Loop reactors for an energy efficient removal of high organic wastewaters with a minimum of space requirements	

Recovery of Materials and Water Supply

The WEHRLE membrane technology allows an easy separation of solids and liquids or of different liquids, e.g. separation of oil and water – and thereby recovery of substances.

Membrane technology can also be used for water supply or –softening or as post-treatment step in a biological water treatment plant, for example, to treat the effluent so that it can be recycled and used as process water.

For example **Omnicane, Ltd., Mauritius** - recovery of brine in the sugar industry using a WEHRLE nanofiltration for the regeneration of sodium chloride and elimination of molasses colourants.

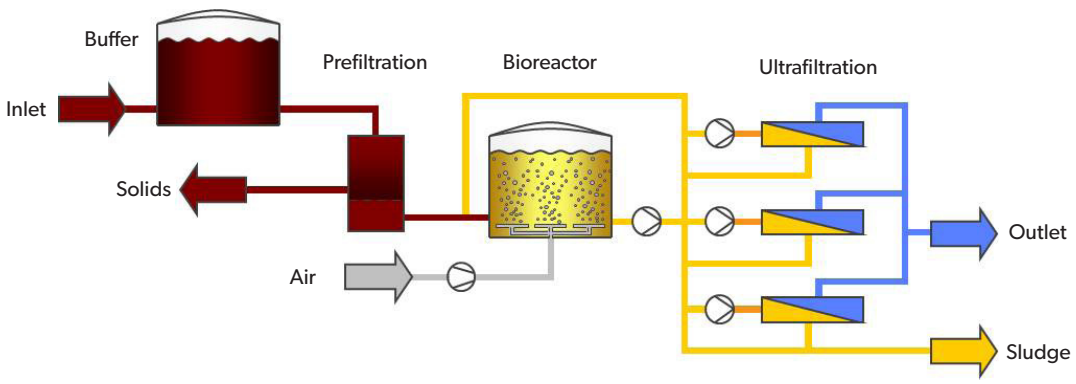
Flow rate	70...100 m^3/d
Inlet / COD	18,000 mg/l
Outlet / COD	4,000 mg/l
Performance	80 %

Aerobic Wastewater Treatment

WEHRLE high-performance bioreactores are characterized by its particularly high process stability and reliability – especially for strong variations in wastewater streams.
By using slim, tall reactors, space requirement is reduced and aeration is energetically optimized.
WEHRLE plants are not conventional industrial treatment plants – they are odourless and can also be integrated in direct neighbourhood to densely populated areas or working places without problems. The modular plant concept allows an easy upgrade of the plant capacity or for water recycling.

For example **F&N Beverages Marketing Sdn Bhd, Ltd., Kuala Lumpur / MY** - upgrade of an existing conventional wastewater treatment plant for soft drinks production to increase the treatment capacity by 60 % using space-saving MBR-technology for direct discharge to river.

Flow rate	1,680 m^3/d		
	COD	**BOD**	**TDS**
Inlet	4,000 mg/l	2,000 mg/l	500 mg/l
Outlet	< 50 mg/l	< 30 mg/l	< 1 mg/l
Performance	> 98 %	> 98 %	> 99 %

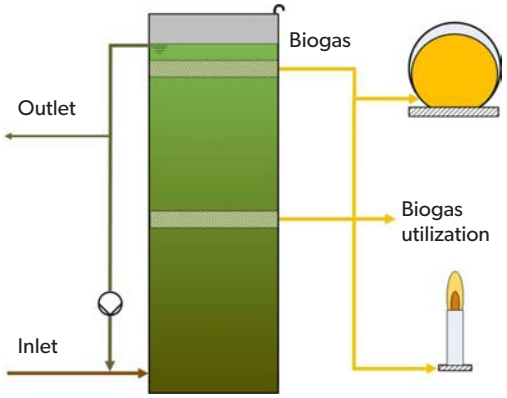


Generation of Biogas from Wastewater or organic Waste

Biogas can be generated from highly loaded effluent and streams with high organic fractions. After an appropriate treatment, this biogas can be fed into the gas network or be used to generate heat and electricity.

WEHRLE has different processes to match customer requirements for the treatment of wastewater (BIODIGAT® family) or solids (BIODIGEST® family).

For example **AmBev, Piraí / BR** - the anaerobic treatment achieves a significant reduction of the COD load of the brewery wastewater and thereby enables the succeeding, already existing aerobic treatment step to cope with the increased production from the factory.



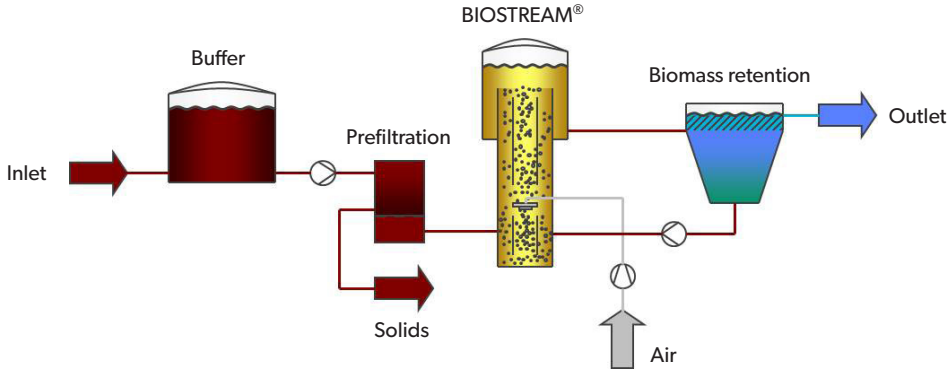
Flow rate	8,088 m^3/d
COD	3,251 mg/l
COD	26,294 kg/d

BIOSTREAM® - the Energy-Optimized Alternative to Anaerobic Treatment

For clients who have to treat highly polluted wastewater but do not want to use anaerobic processes for reasons like plant flexibility, space requirement, achieving discharge limits or the efforts conjured by the generation of biogas, WEHRLE offers the BIOSTREAM® aerobic process technology, which keeps the operational costs to a minimum due to the energy-optimized aeration technology. In contrary to anaerobic technologies, the BIOSTREAM® process can degrade nitrogen and is characterized in particular by a high flexibility for load variations.

For example **BIT Co. & Ulsan Municipality, Ulsan / KR** - aerobic treatment of wastewater from the digestion of food waste using a loop reactor with optimized aeration technology to reduce energy costs and space requirement.

Flow rate	574 m^3/d	
	COD	**TKN**
Inlet	15,370 mg/l	2,800 mg/l
Outlet	< 500 mg/l	< 60 mg/l
Performance	> 96 %	> 99 %



Complete Systems and Service Packages

WEHRLE's approach developing the plant concept ensures, that all aspects are considered - from suitable and aligned pretreatment technologies, the consideration of internal production processes and shutdown periods, the inclusion of existing assets into the design, as well as a modern plant automation, which allows to subcontract the plant operation.

As additional services, we offer concept development and feasibility studies to identify the right process technology for a specific wastewater or to upgrade an existing installation, laboratory tests and on-site pilot trials, and open-ended consultancy comparing different treatment options for the client.

For applications in the dairy industry information can be found in a separate flyer. Please do not hesitate to contact us!

WEHRLE Umwelt GmbH

Plant engineering and services from one source

Since 1982 WEHRLE sets benchmarks as pioneer and technology leader for the treatment of very difficult and complex wastewater. The wide range of available process technologies allows intelligent process combinations, to fulfil the requirements and expectations of the client the best possible way. WEHRLE consults, plans and builds plants and offers corresponding services such as piloting, efficiency optimization and retrofit of existing plants. Especially for applications in the industry also factors beyond the used technology are important: a reliable performance in case of possible variations of wastewater volume and loads in the industry (e.g. caused by seasonal production or changes of product lines) and by all climate conditions, as well as a modular design for future upgrades of the production and easiest operation, to enable a simple outsourcing of the plant operation. The stable high effluent quality of WEHRLE plants allow an easy, optional upgrading, e.g. to use the treated water for reuse / recycling and therefore, to save costs for process water, heat energy and possibly softening.

WEHRLE is dedicated to the company's history: As family-owned company reliability, longevity and openness with clients and partner are our top priorities. The clients of WEHRLE trust in this philosophy – in over 40 countries and on 5 continents .

Contact

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Company video

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