CHEMICAL, PHARMACEUTICAL AND COSMETICS INDUSTRY

WEHRLE

The treatment of production wastewater

In many cases, wastewater from the production of chemicals, pharmaceuticals or cosmetics is difficult to treat: for an effective biological degradation of organic pollutants, these effluents often lack important nutrients for the microbes involved; depending on the type of product, the wastewater may be rich in detergents and tends to strong foaming; Silicones may damage equipment and components used; micro pollutants and APIs overstrain conventional wastewater treatment plants. On top of that, these industries often produce in campaigns or batch processes, which may lead to frequent changes in the wastewater composition.

All these aspects demonstrate the particular requirements for a plant to treat such effluents, i.e. requirements which can often not be fulfilled by using conventional technologies.

WEHRLE plants have been developed for such difficult conditions. Apart from wastewater treatment plants, we also build plants for emulsion splitting, the recovery of materials and process water treatment. All this is rounded off by a customer-oriented service concept making a reliable plant operation, low operation costs and a high plant life-time possible.

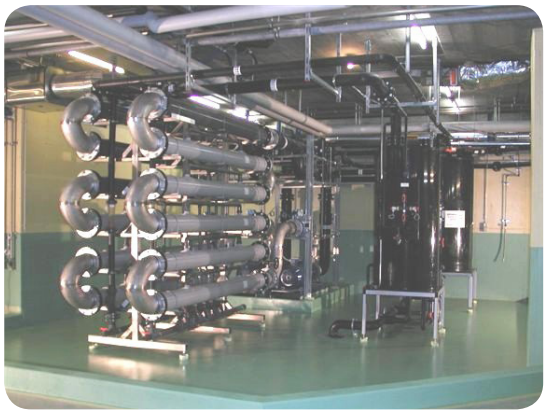
Overview Applications

Chemical industry	Pharmaceutical industry	Household & personal care products
Polymer production	Medicine/drugs	Household cleaners
Fertilizer	APIs	Shampoos & shower gels
Organic raw material	Antibiotics	Creams
Flavouring	Ointments	Essential oils
Dyes	Enzymes	Toothpaste
Textile auxiliaries	Food supplements	Nail polish
Petrochemical industry *)	Vitamins	Fragrances
…	…	…

*) see also separate flyer

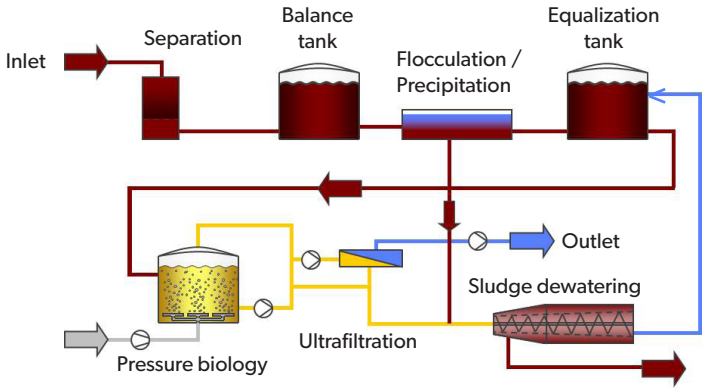
Industrial Effluent Treatment / Batch Processes

In many factories, substances are produced in batch processes. After every batch, the tanks and pipes must be cleaned. The effluent produced contains a wide range of substances and concentrations which conventional systems can only treat with considerable space requirements.



For example **BERTSCHI AG, Birrfeld/CH** – Wastewater treatment from road tanker cleaning by using a BIOMEMBRAT® high-performance MBR with compact pressure biology: Depending on the content of the chemical road tankers, the wastewater containing also detergents varies rapidly – yet the plant reliably complies with the discharge limits!

Flow rate	100 m³/d
Inlet / COD	10,000 mg/l
Outlet / COD	< 1,000 mg/l
Performance	> 90 %



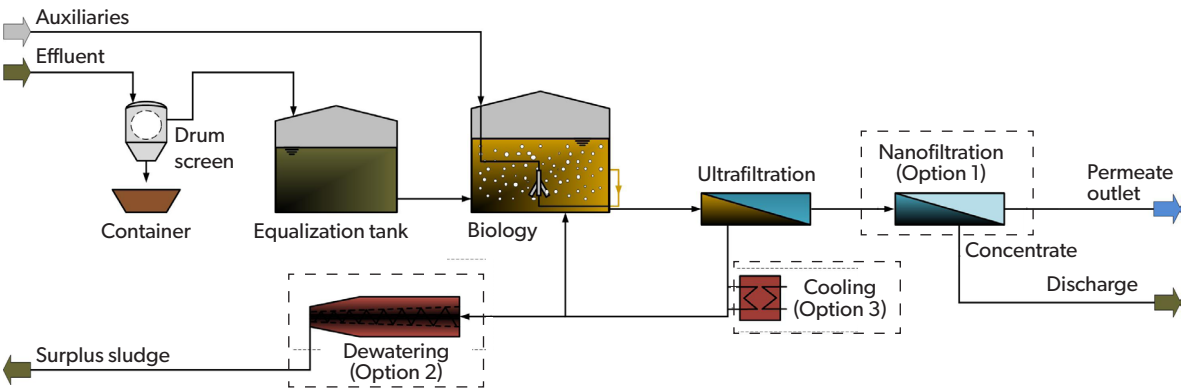
Industrial Effluent Treatment for Household and Personal Care Production

Especially the effluents from the household and personal care production industry, which are rich in anionic surfactants / tensides, tend to very strong foaming. This is a particular challenge for aerated bioreactors.
WEHRLE's ejector aeration offers clear advantages. Combined with external cross-flow membranes, the WEHRLE BIOMEMBRAT® high-performance MBR is a treatment technology which requires little space and can be used flexibly. The modular system is suitable for strong variations of quantity and load and may simply be upgraded for higher flow rates, if necessary.

For example **UNILEVER Rus, St. Petersburg/ RU:** Treatment of effluents from the household and personal care production industry using a BIOMEMBRAT® high-performance MBR designed for future performance doubling requiring only few modifications.

Flow rate	100 ...200 m³/d (possibility to upgrade)		
	Inlet	**Outlet**	**Performance**
COD	18,600 mg/l	< 1,400 mg/l	> 92 %
ASAS*	6,500 mg/l	< 140 mg/l	> 97 %

*ASAS= Anionic Surface-Active Substances



Recovery of Materials / Water Recycling

Apart from process water treatment and wastewater treatment, WEHRLE also supplies plants for the recovery of materials or for water recycling – including Zero Liquid Discharge (ZLD). The applications are, for example, oil-water separation, recovery of colour pigments, separation of endotoxins and pyrogens or the sterilisation of liquids, concentrating of water-soluble colours and varnish, etc.

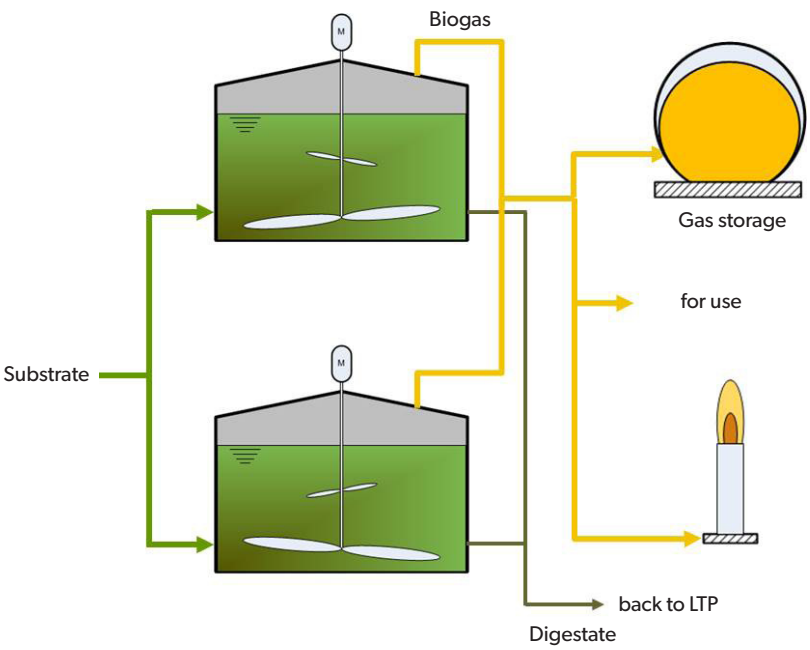
For example **CLARIANT, Gersthofen/DE** – Separation and recovery of nitrous additives from the production of polymer additives.

Flow rate	20 m^3/d
Inlet / N bound	2,000 mg/l
Outlet / N bound	< 400 mg/l
Performance	80 %

Generation of Biogas and Decontamination of Substrates

If the effluent has a very high organic content, it is often possible to generate biogas by using an anaerobic treatment. This is also possible if the effluent contains a lot of solids, even if those contain toxic substances. The generated biogas permits the generation of electricity and heat and makes a profitable wastewater treatment possible.

For example, the production site of a **pharmaceutical group in Irvine/GB** – mechanical-biological treatment of wastewater rich in solids with toxic substances utilizing the BIODIGEST® Process. In this project, WEHRLE also provided a vast service package including analysis of materials, Water Mapping and side-stream treatment in order to reduce the operation costs of an existing plant.



Inlet / TSS	18,800 kg/d
Outlet / TSS	< 2,000 kg/d
Biogas yield	8,600 m^3/d
Electricity yield	15,000 kW/d
Heat yield	16,000 kW/d

Solutions for the Petrochemical Industry

WEHRLE has a wide range of experience and processes, also for effluent treatment in the petrochemical industry. No matter if "oil shocks", or toxic organic compounds such as cyanides, phenols, furans, etc. are involved – WEHRLE has tested the corresponding solutions and is ready to apply them. In case of open questions, we have a large fleet of pilot plants which make it possible to test and optimise different treatment patterns directly on site by using the wastewater stream of your factory.

Further information concerning "Effluent Treatment in the Petrochemical Industry" 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 in the best possible way. WEHRLE consults, plans and builds plants and also offers corresponding services such as piloting, efficiency optimisation 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 possible softening.

WEHRLE is dedicated to the company's history: As family-owned company reliability, longevity and openness with clients and partners are our top priorities. The clients of WEHRLE trust in this philosophy – in over 40 countries and on 5 continents – for example, Clariant, Syngenta, L'Oréal, Unilever and many more.

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Company video

14/09/2018