

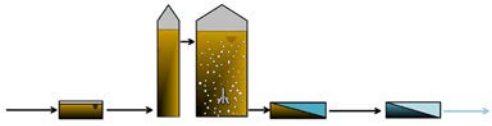
Application

Treatment of liquid manure & digestate

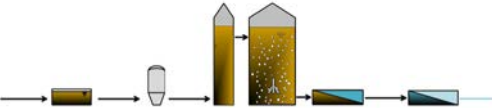
1. Conventional: Production of manure concentrate



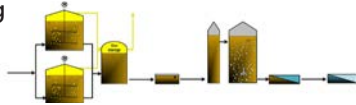
2. Compact all-rounder: BIOMEMBRAT® MBR



3. Hybrid: BIOMEMBRAT® MBR with NH₃ stripping



4. All-rounder: Fermenter + BIOMEMBRAT® MBR, optional stripping



Besides the processes for fertiliser production, nutrient-destructive treatment gains more and more acceptance, in particular because of the following reasons:

- ▶ A surplus of P and N in many regions makes a fertiliser production less favourable
- ▶ Costs for certification, storage and transport of the produced fertilisers must be added to the operation costs
- ▶ The biological nutrient-destructive processes are more reliable and stable

The treatment of the nitrogen compounds Ammonia (NH₄) and Nitrate (NO₃), which are detrimental to the environment, requires specific technologies and expert operating experience linking the interactions of biological and physical-chemical processes.

WEHRLE Umwelt GmbH

Plant engineering & services
from one source

Since 1982, WEHRLE Umwelt sets benchmarks as pioneer and technology leader for the treatment of very difficult and complex wastewaters. 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.



WEHRLE is your experienced partner and plant constructor for the treatment of liquid manure and digestate. Our first plants for nitrogen elimination have been in operation since 1991 already and still prove their reliability and cost-effectiveness every day.

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Company video

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WASTEWATER TREATMENT FOR LIQUID MANURE & DIGESTATE

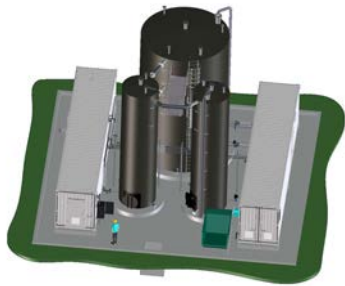


Liquid manure

Plants for direct discharge into Nature

Project description:

Small and very compact plant for the treatment of pig manure. This process combination achieves highest treatment requirements in continuous operation.



Inlet	Pig manure
Flow rate	30 m ³ /d
Process / System	Separation of solids MBR BIOMEMBRAT® Reverse Osmosis
Planning	WEHRLE Umwelt
Construction	WEHRLE Umwelt
Operation	Client
Commissioning	2016

Component	MBR Inlet	Outlet	Performance
COD [mg/l]	20,000	< 10	> 99 %
NH ₄ -N [mg/l]	2,000	< 1	> 99 %

Remark: The plant has proven that even liquid manure stocked for a very long time can be treated successfully.

Liquid manure

Plants for indirect discharge into wwtps

Project description:

A large-scale site for pig breeding, pig fattening and piglet breeding produces high quantities of liquid manure with big variations in its composition. The entire Nitrogen is removed by the biological system: Nges < 50 mg/l.



Inlet	Pig manure
Flow rate	4,000 m ³ /d
Process / System	Separation of solids MBR BIOMEMBRAT®
Planning	WEHRLE Umwelt + BRS
Construction	WEHRLE Umwelt + BRS
Operation	Client
Commissioning	2014/15

Component	MBR Inlet	Outlet	Performance
COD [mg/l]	15,000	< 500	> 95 %
NH ₄ -N [mg/l]	2,000	< 10	> 99 %

Remark: The compact, space-saving membrane system made it possible to convert existing tanks to the MBR and to reuse the existing building.

Digestate

Treatment of liquid digestate

Project description:

The entire plant treats 115 t/d of highly loaded digestate from the fermentation of varying substrates (maize, vegetable waste, crop residues, addition of chicken manure). The BIOMEMBRAT® plant is capable of treating the highly varying N loads of the digestate.



Inlet	Liquid digestate phase
Flow rate	114 m ³ /d
Process / System	Separation of solids MBR BIOMEMBRAT®
Planning	WEHRLE Umwelt
Construction	WEHRLE Umwelt
Operation	Client
Commissioning	2013

Component	Inlet	Outlet	Performance
COD [mg/l]	60,000	< 500	> 99 %
NH ₄ -N [mg/l]	2,800	< 50	> 99 %

Remark: Improvement of the operator's carbon and water footprint by water reuse for irrigation.

Our plants are individually adapted to your requirements and can be built in a bespoke design.