

*Liquids to Value*



## MBR Decanter from GEA Westfalia Separator

Sludge dewatering in waste water treatment plants  
with membrane filtration



# GEA Westfalia Separator MBR Decanters – Perfection of Innovative Technology

Membrane filtration has established itself as an efficient and space-saving technology for waste water treatment. The integration of the GEA Westfalia Separator MBR decanter has now also achieved an optimum solution to the problem of surplus activated sludge.

Although still a young technology, membrane filtration for treating waste water has established itself worldwide in a very short time. Municipal and industrial operators of waste water treatment plants appreciate membrane filtration for two main reasons.

Firstly, ultrafiltration with membranes enables heavily contaminated waste water and surface water to be treated efficiently and in an environmentally friendly manner. The sludge throughput of the installation rises which means that higher capacities can be handled. Secondly, this effect can be achieved within the existing installations. Structural extensions and related high levels of investment are not necessary.

One problem, however, is surplus activated sludge. In addition to pure water, ultrafiltration produces a sludge with a special composition which has to be dewatered and disposed of.

## Dewatering and disposing of surplus activated sludge

This fine sludge cannot be compared with the coarse sludge that is obtained with alternative technologies. It requires a dewatering process that is precisely tailored to handle the fine sludge particles. GEA Westfalia Separator has found a solution to this problem: the GEA Westfalia Separator MBR decanter for customized sludge dewatering. This module has enabled membrane filtration to be perfected.





In the membrane bioreactor (MBR), hollow fibre membranes purify the water from the biological waste water treatment plant with underpressure, either in the activation tank or secondary sedimentation basin. The membrane-filtered purified water is discharged and the remaining surplus activated sludge is dewatered with the GEA Westfalia Separator MBR decanter.

# This Special Development Clarifies All Problems Relating to Fine Sludge

The decanter developed specifically by GEA Westfalia Separator for MBR technology features a convincing combination of continuous sludge dewatering and high dewatering efficiency. This means that the system is not only more efficient, it is also more economical than comparable technologies.


GEA Westfalia Separator has designed the MBR decanter specifically for maximum dewatering of the very homogeneous fine sludge from the membrane bioreactor, in conjunction with high throughput capacities. A special rotor geometry, with a specific inlet and discharge diameter, has been developed for the bowl and scroll of the decanter for this purpose.

## Maximum efficiency

As a result of this modification, the dewatering efficiency of the GEA Westfalia Separator MBR decanter is up to five percent higher than standard decanters available on the market or up to ten percent higher than can be achieved with alternative technologies such as strainer belt presses. This means approximately 20 to 30 percent less volume and thus considerably lower disposal costs! A further important advantage is the continuous operation. Whereas presses regularly have to be flushed and cleaned, there are no process interruptions with the GEA Westfalia Separator MBR decanter. The geometry also reduces the consumption of flocculents and requires less electricity. In addition, as is the case with all decanters, the GEA Westfalia Separator MBR decanter is a closed system. It is not possible for any aerosols to escape and pose a hazard to the operating personnel and the environment. Talking of personnel, the completely automatic control and low maintenance design allows the GEA Westfalia Separator MBR decanter to run almost automatically.

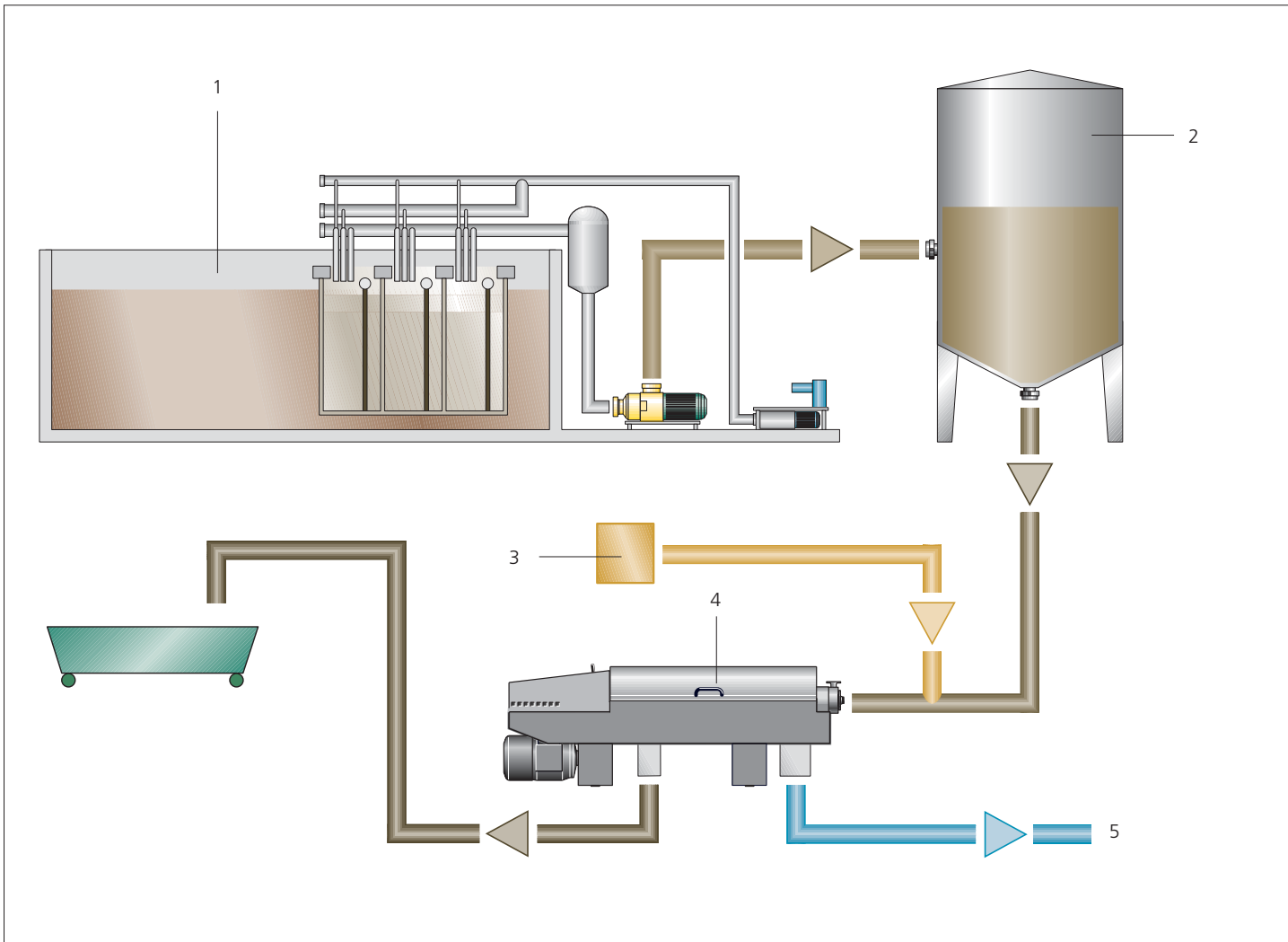
The GEA Westfalia Separator MBR decanter, an overview:

- Decanter series with performances from 1 m<sup>3</sup>/h to 100 m<sup>3</sup>/h
- Continuous operation – no flushing and cleaning
- Special geometry for high throughput with maximum separation
- Dewatering efficiency up to 10 percent higher than with presses and 5 percent higher than with decanters normally available on the market
- Up to 15 percent less flocculent consumption
- Up to 20 percent less electricity consumption
- Small size – small space requirement
- Closed system – no escape of aerosols
- Fully automatic control
- Low maintenance



**MBR Decanter**  
designed for  
maximum clarification

Compared with the chamber filter press, for example, the GEA Westfalia Separator MBR decanter does not require expensive conditioning of the sludge with chemicals such as ferrous chloride. This also significantly reduces operating costs.



1 Membrane bioreactor

2 Sludge tank

3 Flocculents

4 Decanter

5 To the municipal waste  
water treatment plant

# Dewater 20 Percent More Efficiently – Without any Additional Space Requirement

The GEA Westfalia Separator MBR decanter lowers disposal and operating costs by up to 20 percent. This cost advantage can be achieved within existing premises: plug and play.

For municipalities and industrial operators, cost is the critical factor for choosing a specific technology. The GEA Westfalia Separator MBR decanter offers the advantage of its unparalleled cost-effectiveness. Disposal costs for residual sludge are reduced by 20 percent and operating costs are also 20 percent lower compared with other technologies. These economic advantages can be achieved immediately. As a result of its small size, the GEA Westfalia Separator MBR decanter can be integrated into an existing installation without any problems. The service-friendly plug and play modules guarantee simple and rapid installation.

## Stationary or mobile solution

In addition to stationary operation, GEA Westfalia Separator offers the option of a mobile solution.

In this case, the GEA Westfalia Separator MBR decanter is supplied as a plug and play module in a transportable container. This is ideal, particularly for many industrial customers who frequently have to dewater sewage sludge temporarily and at different locations. Whatever method is chosen, the GEA Westfalia Separator MBR technology has achieved a new dimension in efficiency.

## The economic benefit, an overview:

- 20 percent less residual volume, lower disposal costs
- 20 percent lower operating cost
- No investments for expanding premises
- Low manpower requirement
- Low service costs





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