simas

Training institute in Seelscheid
for membrane technology in
sewage treatment

Membrane systems – your professional future

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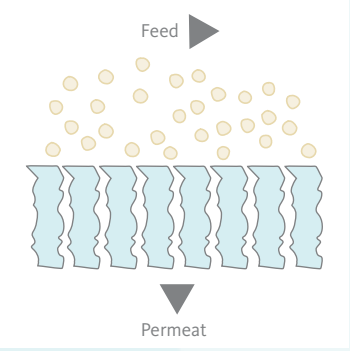
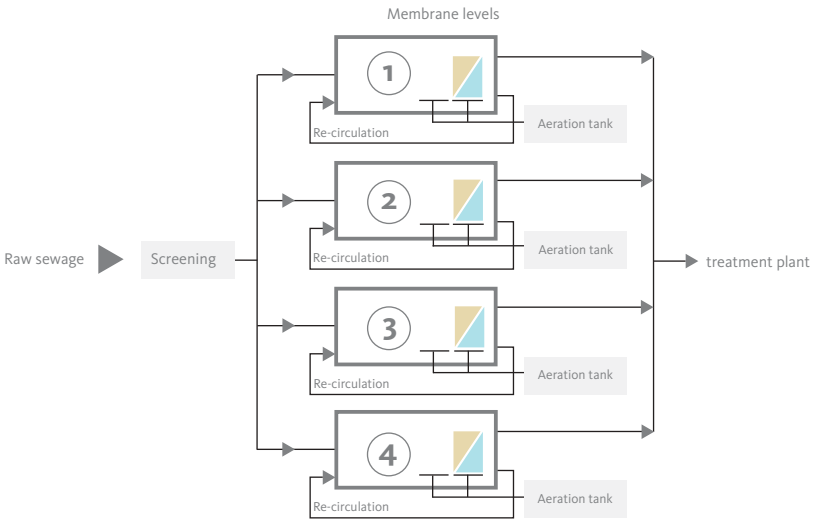


Schematic depiction of a membrane during cross-flow filtration (Melin 1999)

The reason for simas

The membrane bioreactor process is an innovative technology for the treatment of domestic and industrial wastewater. Since the end of the 1990s, a large number of membrane bioreactor systems have been commissioned in Europe.
In a membrane bioreactor system, the wastewater is filtered by microfiltration or ultrafiltration membranes with a pore size of less than a thousandth of a millimetre following biological treatment. The key advantages of this process are its compact design and the outstanding quality of the treated water, especially with reference to hygiene (bathing water quality). Membrane filtration replaces secondary clarification and conventional filtration and disinfection by a single process stage. This has far-reaching consequences for treatment plant operation and control.

Process diagramm of the training-plant.



The objectives and targets of simas

simas acts as a partner for the specialist and personal development of individual employees and companies involved in the design, construction and operation of membrane bioreactor systems for wastewater treatment.
The objective of simas is to provide comprehensive theoretical and practical training in the operation of membrane bioreactor systems and to familiarize trainees with the use of different membrane systems. The courses concentrate mainly on practical aspects.

The simas approach

simas courses present the various configurations of wastewater treatment plants with membrane bioreactors that have been tried and tested in industrial-scale operation. Four membrane bioreactor systems using four different membrane types are available for practical demonstrations. The bioreactors use immersed low-pressure membranes in the microfiltration and ultrafiltration range (nominal pore size ≤ 0.4 µm), each with product-specific control systems.

simas offers basic and advanced courses. The three-day courses cover the following areas in theory and practice:

- Principle of membrane filtration in wastewater treatment
- Mode of operation and differences between membrane bioreactor systems
- Terms and key figures
- Cleaning and maintenance
- Process monitoring and control
- Specific laboratory analyses for membrane systems

Active participants are trained in the different control procedures for membrane bioreactor systems and learn to assess system performance, identify crucial process factors and take appropriate action. The simas team concentrates on an approach with is neutral with respect to the technology used and also integrates the practical wastewater treatment experience of course participants.

Membrane activation tanks at Erftverbands' Nordkanal treatment plant.

Training institute for membrane technology.

The simas training facility

Most of the courses and seminars are held at the simas training facility at Neunkirchen-Seelscheid wastewater treatment plant. This is a membrane bioreactor plant operated by the Aggerverband which is designed for a population equivalent of 12,000.

The simas training facility has a large seminar room and a laboratory with eight workplaces. An additional building with four membrane bioreactors is available for training in the practical use of the various membranes and membrane systems. Domestic wastewater from the neighbouring treatment plant is fed through these bioreactors. Using these systems, the various types of process control, as well as maintenance procedures and membrane cleaning work, can be demonstrated in full-scale operation, the work which is required can be initiated and the optimum mode of operation can be tested.

Training courses are regularly supplemented by visits to other full-scale membrane bioreactor systems in the vicinity such as the Nordkanal wastewater treatment plant of the Erftverband, designed for a population equivalent of 80,000.

The simas team and instructors

The instructors of simas are recognized experts and people with considerable practical experience in membrane technology and wastewater treatment. They come from higher education, relevant industrial companies and well-known operators of full-scale membrane bioreactor systems. Some of the instructors are qualified as engineers while others are experienced plant operating personnel such as foremen.

The simas team for each course and seminar is adapted to the requirements, knowledge and specific working areas of the participants.

The simas training institute and its partners

simas was established on 2 September 2005 on the initiative of the State of North Rhine-Westphalia, major water associations and a number of German universities. The list of members and the articles of association are available at www.simas.de.

The training building and the equipment for the membrane bioreactors were funded with the support of the North Rhine-Westphalian Ministry for Environment and Nature Protection, Agriculture and Consumer Protection. The Aggerverband provided the membrane bioreactor hall and the land for the training building.

The membranes were made available by the manufacturers free of charge and the machinery and electrical equipment required were supplied at cost price.

simas' partners are involved in the organization and development of training and advanced training courses and seminars. A comprehensive list of all partners can be found at: www.simas.de.

The Executive Committee is responsible for the content and organization of training.

Register at: www.simas.de

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c/o Aggerverband
Sonnenstraße 40
D-51645 Gummersbach

Fon +49 (0) 22 61. 36-0
Fax +49 (0) 22 61. 36-8
www.simas.de