

THE LEADER IN TUBULAR MEMBRANES

# Berghof Membranes Products and Services

[www.berghofmembranes.com](http://www.berghofmembranes.com)



BERGHOF

**Membranes**

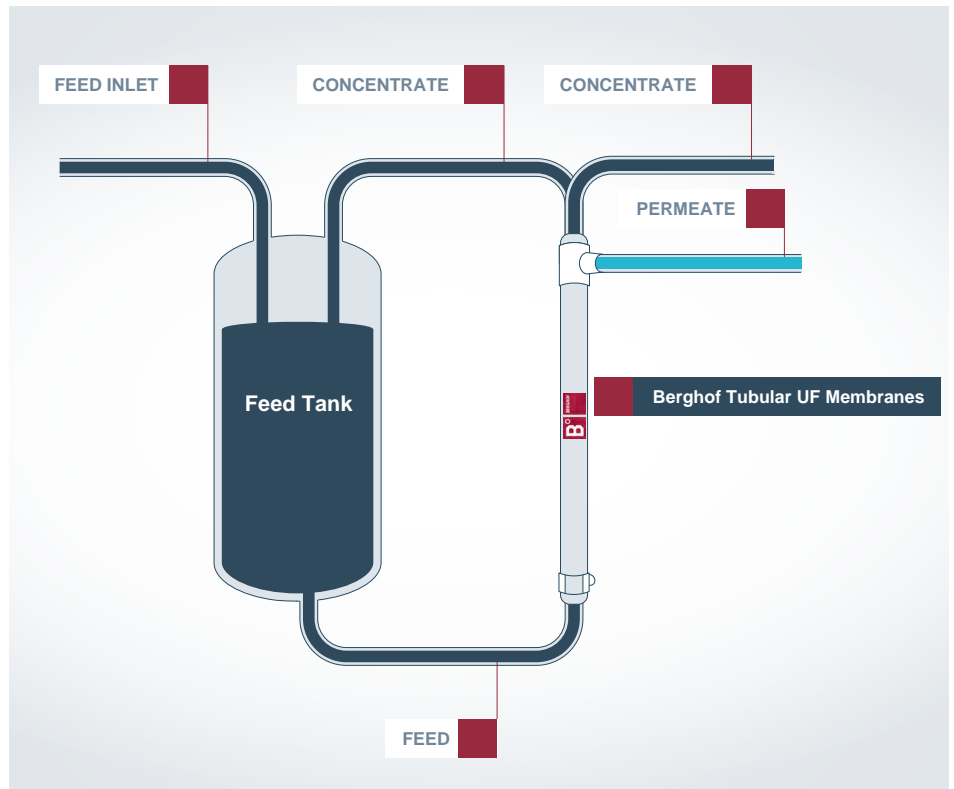
Think outside the box

# Applications

## Treatment of industrial wastewater and process streams is increasingly challenged by:

- membrane fouling
- lower system flux and output
- difficult maintenance procedures
- high energy consumption
- higher chemical costs for cleaning
- large footprint requiring higher capital investment

Berghof Membranes specializes in external membrane filtration and we continuously “think outside the box” to resolve the typical challenges in industrial wastewater treatment and reuse applications. Our external filtration membranes and systems are positioned outside the feed tank, utilizing crossflow velocity to keep the membranes working at optimal conditions.



## Membrane Bioreactor (MBR)

MBRs are ideal for the treatment of wastewater streams with high concentrations of organics, solids, fat, oil, and grease. However, traditional submerged MBRs are highly susceptible to fouling, resulting in extensive maintenance requirements and lower flux rates.

Berghof Membranes specializes in external MBRs that are positioned outside the bioreactor and utilize variable crossflow velocity to keep the membranes working at optimal conditions. Your benefits:

- less fouling
- ease-of-maintenance
- flexibility
- lower energy costs

## Anaerobic MBR (AnMBR)

Industrial wastewater with high organic loads is a potentially valuable source of energy if treated anaerobically. AnMBR systems combine anaerobic digestion with physical separation via membrane filtration, resulting in maximum organic load removal.

Use of Berghof Membranes tubular UF filtration ensures complete solids retention, efficient system operation and process stability at all times. External crossflow filtration technology from Berghof Membranes results in

- superior effluent quality
- increased treatment capacity
- smaller footprint
- low sludge production

## RO Brine Treatment

The volume of RO brine (concentrate) produced by RO systems is significant and, in most cases, contains high levels of contaminants. Berghof Membranes delivers robust chemical-resistant membranes and solutions capable of reducing the RO concentrate volume and, in combination with other technologies, can achieve minimal or even zero liquid discharge (ZLD).

## Polishing and Recovery

Tubular UF membranes are ideal for the separation of effluent streams, further removing any remaining suspended solids. In certain applications, they can also enable the recovery of valuable materials such as metals and proteins, for example.

# Industries we serve

- Dairy
- Food & Beverage
- Oil & Gas
- Chemical & Petrochemical
- Textile & Tannery
- Landfill Leachate
- Mining & Metals



# Membranes

To prevent fouling and clogging, Berghof Membranes developed its line of robust tubular UF membranes based on inside-out crossflow filtration. This means more fouling-resistant membranes that are ideal for the separation and filtration of challenging industrial effluent and wastewater.

Unlike outside-in filtration, as seen with submerged membrane technology, our robust tubular UF membranes enable operators to sustain higher flux rates with less frequent cleanings and reduced maintenance.

Tubular UF membranes from Berghof Membranes are made from low-fouling PVDF, PES and chemical-resistant polymers cast onto dual support layers. In addition, our unique straight module assembling process ensures straight end-to-end membrane tube configurations. We offer various configurations and options to choose from:

- Non-backwashable membranes
- Backwashable membranes requiring less chemical usage
- Various tube diameters and cut-offs
- GRP or PVC module housings

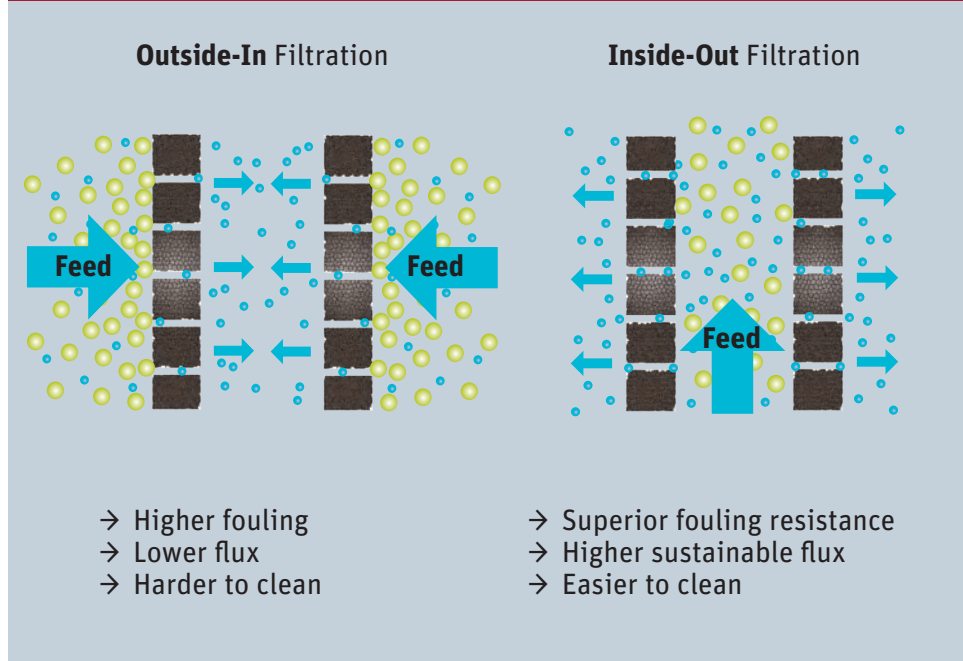
These membranes are manufactured in our fully-automated production facility, equipped with state-of-the-art photo imaging inspection systems to ensure membrane quality and integrity.

## 5mm Membranes

The 5mm UF membranes from Berghof Membranes are excellent in treating low-strength wastewater and effluent streams that contain a low amount of solids, such as in water reuse applications. The smaller inner diameter of the 5 mm membrane tubes means more membranes can be packaged into a membrane module. Greater packing density means a larger membrane area can be achieved with fewer modules, enabling plant designs with smaller footprints that still achieve the desired flux.

# Advantages of Tubular UF

- Reduced membrane fouling due to crossflow filtration
- Higher flux and output
- High quality permeate ideal as pretreated feed for RO systems
- Less frequent cleaning resulting in reduced chemical costs
- Decrease in system downtime
- More robust membranes that are less susceptible to breakage



## 8mm Membranes

The degrading, recycling, and reuse of wastewater that contains high amounts of solids can be a real challenge for wastewater treatment plants. The 8mm inner diameter of our high-solids tubular membranes make them ideally suited for high-strength wastewaters and effluent streams while maintaining superior fouling resistance. Applications such as landfill leachate or treatment of industrial wastewater containing oils, metals, or high COD concentration.

## Chemical Resistant (CR) Membranes

The superior robustness of Berghof's CR membranes enable them to exhibit impressive resistance to a wide variety of chemicals and pH values (2–12), meaning that our CR membranes are ideally suited for applications with high-strength wastewater or process streams, such as RO concentrate/brine. In addition, our CR membranes can withstand intensive cleaning with strong alkaline, thus enabling longer service life.



# B-SMART® INTELLIGENT SOFTWARE AND ENGINEERED SYSTEMS

As manufacturing industries grow to meet the demand of an ever-increasing population, the need for quality process water used in manufacturing processes and the high volume wastewater/effluent resulting from these processes have led companies to invest in more efficient wastewater treatment systems.

Unfortunately, traditional submerged filtration systems are:

- limited in fouling control
- difficult to clean
- a costly investment due to large space requirements
- less efficient with lower flux rates

For these reasons, Berghof Membranes developed the B-SMART® intelligent software platform to further assist our OEM partners in offering unique and advanced solutions to their customers.

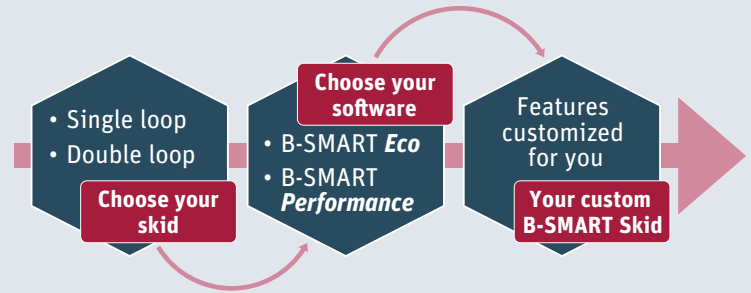
Compatible with all Berghof Membranes skid designs, B-SMART® is a proprietary software platform that enhances the performance, efficiency, robustness and maintenance of an external tubular UF system. This intelligent software is a real game-changer that reduces the energy requirements traditionally associated with conventional crossflow filtration. The B-SMART® software ensures that the system will operate at the lowest possible crossflow velocity while maintaining desired flux, controlling fouling and minimizing membrane plugging.

Name	Value Proposition	Performance Feature	Circulation Pump	Skid Type	Backwash	Permeate Control
B-SMART® <i>Performance</i>	Low CAPEX	High Flux	VFD	Modular	No	Optional
B-SMART® <i>Eco</i>	Low OPEX	Low Energy	VFD	Modular	Yes	Standard

Available capacity range is 200–10,000 m<sup>3</sup>/day

## Choose the configuration that best suits the application.

It's that simple! Whichever configuration you choose, the variable frequency drive (VFD) pumps combined with the B-SMART® software will help to reduce energy costs. The *Eco* version even allows for total system or individual module backwashing, the ability to operate in extra low energy mode and a significant reduction in overall chemical usage for cleaning.



If you would like a more customized approach, Berghof Membranes engineers will work with you to design the right system for your customer.

## Flexibility

## Adaptability

## Reliability



# B-CARE<sup>®</sup> SERVICE AND SUPPORT PROGRAM

The B-CARE<sup>®</sup> program from Berghof Membranes is an end-to-end comprehensive program developed to support our OEM partners from the piloting and engineering phase to operational system monitoring. Because process streams and wastewater can vary significantly, there is no typical or standard treatment solution. Unique, customized solutions are the specialty of Berghof Membranes.



## Application Analysis

The B-SCAN<sup>™</sup> system from Berghof Membranes is a benchtop UF system to help you develop new applications and optimize existing applications.

- Quick screening of wastewater/feed samples
- New application analysis
- Short-term analysis
- Pre-pilot analysis

## Engineering and Commissioning

More than 50 years of experience and over 1,500 references are the foundation of our experience in the design and commissioning of external membrane filtration systems. We know that any membrane system can only meet the expected performance when each element is thoroughly calculated, designed, engineered and assembled.

During the commissioning phase, our network of experienced engineers are available to provide the necessary on-site support to get your system up and running as quickly as possible. They will not only oversee installation, but they will develop detailed system documentation and operation guidelines to ensure optimal performance and minimal maintenance long after the start-up.

## Pilot Testing

New applications often require on-site testing or support from our applications center to ensure optimal treatment of effluent. During the pilot phase, the system is validated to ensure that it will meet the required permeate quality, energy consumption, chemical resistance, and plant capacity.

By putting our pilot unit to work, we can show you the advantages of our external membrane technology for your specific application. Contact us for more details.

## Technical and After Sales Support

Even after a system has been installed and optimized, Berghof Membranes engineers don't stop there. We offer a suite of after-sales service programs and technical support that include:

- Service agreements
- Extended warranties
- On- and off-site support
- Operator training
- B-CONNECT<sup>™</sup> platform to enable remote monitoring and access
- Installed base management
- Membrane autopsy
- System trouble-shooting

THE LEADER IN TUBULAR MEMBRANES

## More Than Just a Membrane Supplier

Berghof Membrane Technology GmbH

### OUR VISION

To create a clean environment for all generations and providing the best solutions for sustainable industrial growth.

### OUR MISSION

We provide SMART filtration technologies, support services and innovative membrane products to our partners and their customers to create a sustainable industry by reusing water, valuable components and saving energy.

### OUR PRINCIPLES

Innovation, integrity, quality and partnership

Berghof Membrane Technology GmbH, part of the Berghof Group, is the leading manufacturer of tubular membranes for the filtration and separation of process streams and wastewater in a variety of industries including dairy, landfills, food & beverage, chemical, pharmaceutical, and oil & gas.

We at Berghof Membranes continuously “think outside the box” by not only offering tubular membrane modules, but we also deliver engineered filtration systems and support services to our OEM partners. From lab-scale testing, to piloting, to engineering design, to commissioning, to remote monitoring and analysis, to replacement parts – we are more than just a membrane supplier.

### Global Reach



When it comes to membrane filtration, think outside the box and contact Berghof Membranes today.



**Membranes**  
Think outside the box

**Commercial Office**  
Berghof Membranes  
Agora 4  
8934CJ Leeuwarden  
The Netherlands  
T: +31 588 100 110  
info@berghofmembranes.com

**Headquarters**  
Berghof Membrane Technology GmbH  
Harretstraße 1  
72800 Eningen  
Germany  
www.berghofmembranes.com