

# Membrane Solutions for Landfill Leachate Treatment



**bürkert**  
FLUID CONTROL SYSTEMS



landfill leachate water

collect

storage tank

biology  
(nitrification/denitrification)

biomass

ultrafiltration



# Safe Process Technology with Membrane Filtration

Landfill leachate treatment is one of the most challenging processes for membrane technology. Landfill leachate consists of water collected from rainwater that flows through the body of the landfill, water released from the disposed waste and water released as a result of biological degradation. Improperly sealed landfills can be affected by groundwater which increases the landfill leachate.

Various chemical compounds and a variety of particulates will leach as the water passes through the landfill. The composition of these will depend on the types of waste, the age of the landfill site and the climatic conditions such as the storm water quantity, the evaporation capability and seasonal fluctuations. High organic load and high salt concentrations should be considered as well.

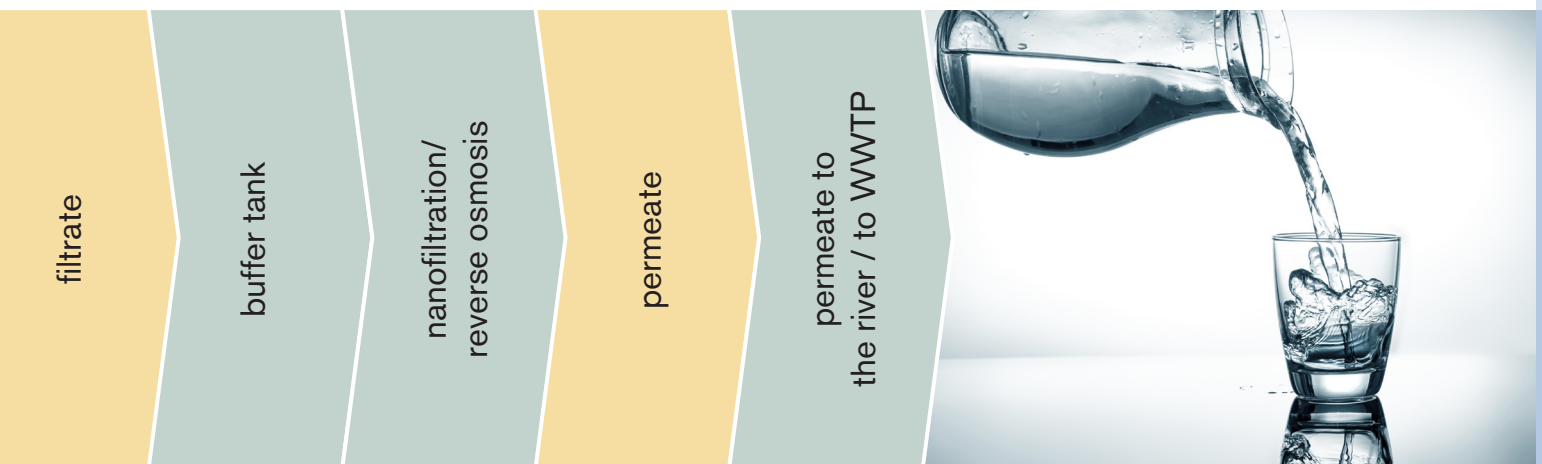
The polluted water discharged from the body of the landfill has to be collected and treated. The treated effluent has to meet acceptable criteria

to allow direct discharge into natural water sources or be pumped to Wastewater Treatment Plants (WWTP) for final treatment. Several treatment processes are available to reach this effluent quality level.

A combination of a Membrane Bio-Reactor (MBR) and nano-filtration (NF) or reverse osmosis (RO) is the state-of-the-art technology for treating landfill leachate. To ensure safe operation of the NF/RO membrane system, the landfill leachate should be pretreated properly. An MBR process based on biologic and cross-flow ultra-filtration (UF) membrane is a reliable approach.

The UF filtrate from the T-CUT module ensures a long service life for the NF/RO membrane. The resulting permeate from this leachate treatment can be discharged or further treated in a WWTP to ensure a safe landfill operation. The combination enables the organic and inorganic material in the leachate to be separated by up to 99%.

Schematic drawing of a process combination used for landfill leachate treatment



# T-CUT - Ultrafiltration Module for Landfill Leachate Treatment

The T-CUT tubular module developed for continuous operation in MBR processes is highly reliable for long-term operation in landfill leachate treatment plants. Continuous product innovation ensures that the T-CUT module used in landfill leachate treatment plants provides excellent protection for the sensitive NF/RO elements against biomass. The advanced membrane production process and high quality assurance programs produces a T-CUT tubular module with high mechanical stability. This high mechanical stability and chemical cleaning resistance provides a product for even the most challenging applications.



## Benefits of the new T-CUT Tubular Module

- Process high solids content
- High filtrate power
- Easy rinsing/cleaning
- Excellent pressure resistance
- High mechanical stability
- Long-term stability
- FRP and stainless steel housings
- Available as complete module or insert style

## Customer Benefits

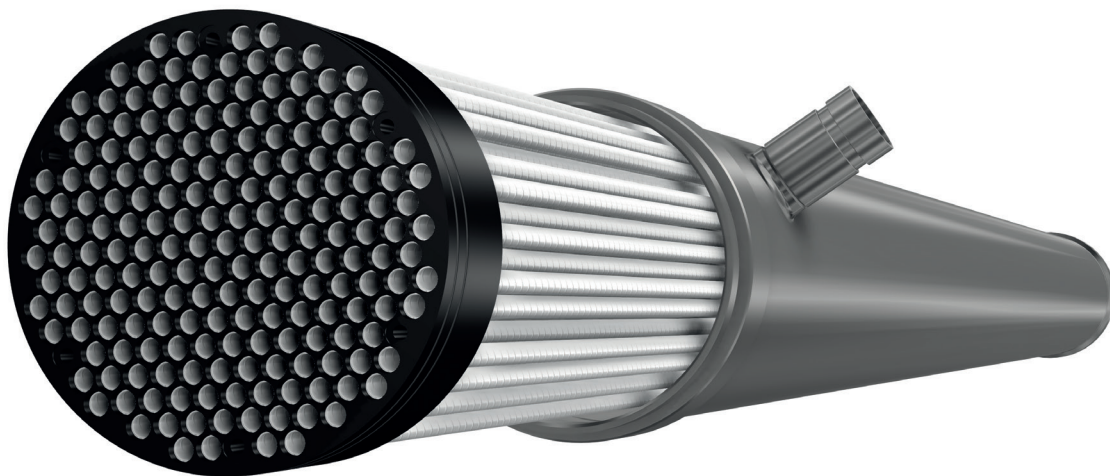
- Modular design with exchangeable filters (cores)
- Easy installation and safe operation
- Reliable filtration performance
- Highest safety during filtration
- Easy and efficient chemical cleaning
- Global availability

# T-CUT Insert - Environmentally Friendly and Cost-Effective

CUT Membrane Technology enables a significant reduction in the membrane set costs. Reusing the existing pressure housing, the insert approach reduces transportation cost, is economically attractive and is ecologically advantageous compared to purchasing a new complete module. The 'Plug and Play' principle allows for replacing the membrane insert quickly and easily.

The T-CUT module is available in two standard lengths: 3,000 mm and 4,000 mm\*.

\*applies to modules with FRP housings.



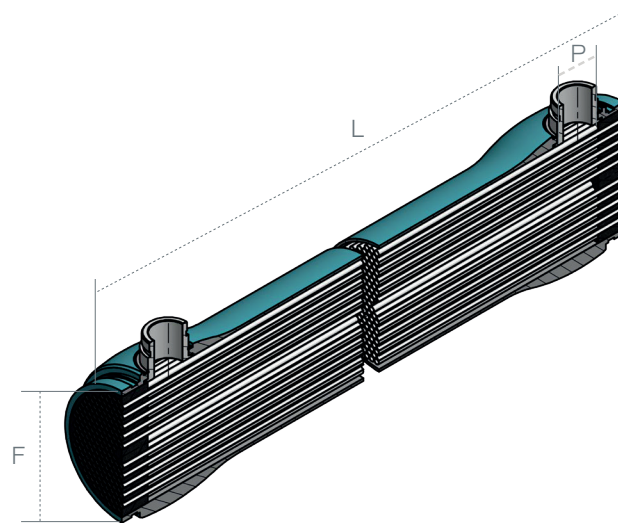
The ultrafiltration membranes are made from PES or PVDF and are available with MWCOs of 50 kD, 100 kD or 200 kD. They are robust and have long-term stability against normal chemical cleaning agents used in MBR applications. The module housing is available as FRP and stainless steel. Please choose your membrane surface from the following table.

# T-CUT Tubular Module

## T-CUT Tubular Module Specifications

Module Length (L)	mm	3,000	3,000	4,000	4,000	4,000	4,000
Module Diameter	mm	211	211	211	211	259	259
Membrane Area	m <sup>2</sup>	33	27	44	36	67	53
Module Housing Material		FRP					
Permeate connector type		Victaulic					
Permeate connector sizes (P)	mm	73	73	73	73	88.9	88.9
Feed connector type		Victaulic					
Feed connector sizes (F)	mm	219.1	219.1	219.1	219.1	273	273
Membrane Lumen Diameter	mm	5.2	8	5.2	8	5.2	8
Material (Membrane)		PVDF, PES					
MWCO	kDa	50;100; 200					
No. of Membranes	Qty	667	358	667	358	1,025	527

Shown here is a current FRP version module with the current membrane lumen diameters of 5.2 mm or 8 mm. Other versions with pressure casings made from stainless steel or with larger membrane lumen diameters are available upon request.



With our CUT production facility in Erkrath/Germany, the Burkert Filtration Team has the technology and expertise to satisfy your membrane filtration needs for juice filtration. We provide support to our customers in application development, piloting services, cleaning and maintenance procedures both at Erkrath facilities or at your location.

CUT Membrane Technology, a subsidiary of the Burkert-Group, produces a variety of innovative tubular, hollow fiber and spiral wound modules at their facility in Erkrath, near Düsseldorf, Germany.



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