



Design Parameters

Type of wastewater:

- domestic
- municipal
- industrial

¹⁾ n.d. = not detectable







²⁾ depending on the selected membrane

The flux and the retention rate of the filtration system has been tested and approved by the University of Applied Sciences at Giessen-Friedberg, Germany.







Parameter	Unit	Design	Guarantee
BSB	mg / l	< 5	
CSB	mg / l	< 50	
TSS	mg / l	< 1	< 1
TKN-N	mg / l	< 5	
ph		6,5 - 8	
faecal coliforme	KBE / 100 ml	< 1	< 10 ²⁾
Strepto-coccus	KBE / 100 ml	< 1	< 10 ²⁾
salmonella	KBE / 100 ml	0	n.n. ^{1) 2)}
virus removal	%	99,9999	99,99 ²⁾

The plant performance is subject to the right design of the biological treatment and the pre-treatment of the water. If the design is made according to our recommendations, the designed outlet water quality can be expected.



The advantages compared to hollow fibre systems:

-  higher filtrate output and higher retention rate due to the possibility to make use of efficient air scour and backflush
-  less membrane area required and therefore lower invest. Lower energy consumption per cubic meter of water
-  operation with air scour only is possible (up to one year of operation), less cost for chemicals
-  no clogging with fibres (e.g. hair) without fine screening 0.5 mm. No expensive fine screening necessary, only 2 mm punched hole screen
-  no breaking of fibres
-  multiple permeate outlets enable a complete venting, no unused membrane areas

The advantages compared to other plate and frame systems:

-  higher filtrate output and higher retention rate due to efficient air scour, plate design and optimized membrane
-  less necessary membrane area and therefore lower invest
-  medium size bubble aeration with optimized flow pattern leads to less energy consumption of the total system. The aeration system is maintenance free
-  The membrane has the only state-of-the-art laser- welded membrane module
-  The membrane is not only welded along the outer edge, but also across the inner area of the membrane. This enables true backflush and higher output
-  The membrane's Full-Surface-Distribution technology makes use of the total membrane surface, because



- the pressure across the membrane is evenly distributed.
-  higher packing density and smaller footprint (minus 50%)
-  flexible, modular configuration

waste water treatment from fish processing, Italy

Project Description

An industrial fish processing company, based in Italy, produces highly loaded process water and has a demand for high quality use water. The use water has to fulfil highest standards and should be free of turbidity. A tight barrier for all particles larger 1 μm in the water treatment was a must. To be able ensuring a long term reliable water quality, a submerged Membrane-Bio- reactor (MBR) using an ultra filtration membrane has been chosen. A robust system made of highest quality materials with the lowest maintenance requirements was the end customers choice.



Performance characteristics

Flow: 6 m^3/h
 Average flux: 22 l / m^2h at 2 chemical cleanings per year

Membrane
 surface area: 350 m^2 (MA04-90)
 Permeate
 extraction: Gravity flow

Waste water feed:
 Total daily flow
 (DWF): 144 m^3/day BOD₅
 loading 1.400 mg/l COD loading
 2.430 mg/l TKN loading 245 mg/l

Plant performance:
 BOD₅ 95% reduction
 COD 90 %
 reduction Ammoniacal
 Nitrogen
 [NH₄-N] 90 % reduction

