



## Design Parameters

### Type of wastewater:

- domestic
- municipal
- industrial

<sup>1)</sup> n.d. = not detectable

<sup>2)</sup> depending on the selected membrane

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 <sup>2)</sup>
Strepto-coccus	KBE / 100 ml	< 1	< 10 <sup>2)</sup>
salmonella	KBE / 100 ml	0	n.n. <sup>1) 2)</sup>
virus removal	%	99,9999	99,99 <sup>2)</sup>

The advantages compared to 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 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<sup>3</sup>/h  
 Average flux: 22 l / m<sup>2</sup>h at 2 chemical cleanings per year

Membrane surface area: 350 m<sup>2</sup> (MA04-90)  
 Permeate extraction: Gravity flow

Waste water feed:  
 Total daily flow (DWF): 144 m<sup>3</sup>/day BOD<sub>5</sub> loading 1.400 mg/l COD loading 2.430 mg/l TKN loading 245 mg/l

Plant performance:  
 BOD<sub>5</sub> 95% reduction  
 COD 90 % reduction  
 Ammoniacal Nitrogen [NH<sub>4</sub>-N] 90 % reduction

