

Case study MBR BioFlow

Leather industry

Ultrafiltration for waste water treatment in the leather industry. After a corresponding chemically physically pretreatment of the waste water, starts the substantial decomposition of organic contents materials in a biological stage with 5.000 m³.

Following for separation of biomass and further reduction of COD and BOD₅ contains an ultrafiltration plant with PVDF tubular membranes.

The UF plant with the 14 loops is divided in 7 process engineering units.

Every loop reach a permeate capacity of more than 15 m³/h by an installed total membrane surface of over 2.600 m².

UF Configuration

UF Membranes/ Modules

Module program	HyperFlux I8
Membrane type	66.03
Membrane material	PVDF
Membrane diameter	8 mm
Cut off	30 nm
Module type	MO 83G 66.03 I8
Membrane area	27 m ²

UF design

Loops	14
Modules/Loop	7
Total membrane area	2.592 m ²
Permeate flow rate	210 m ³ /h
Temperature	30 C
Permeate flux	80 l/hm ²
Working pressure	7 bar
Cleaning intervals	2-3 weeks

UF analysis

Feed:

TSS	13,7 %
COD	1.200 mg/l
NH ₄ -N	52 mg/l
pH	9,2

Permeate:

COD	212 mg/l
Conductivity	15.300 µS/cm



Berghof HyperFlux products



Bioreactor 5.000 m³



UF units



Control cabinet

RO-Design

The RO system concentrate the UF permeate wastewater to a recovery of 80 %.
The permeate conductivity is below 500 $\mu\text{S}/\text{cm}$

RO Membranes/ Modules

Membrane type	spiral wound
Membrane material	Composit
Salt rejection	99,4 %
Membrane area	25 m ²

RO design

Loops	3
Modules/Loop	96
Total membrane area	7.200 m ²
Permate flow rate	168 m ³ /h
Temperature	30 C
Permeate flux	24 l/hm ²
Working pressure	40 bar
Cleaning intervalls	every 12 weeks

Analysis RO

Permeate

Conductivity	480 $\mu\text{S}/\text{cm}$
COD	15 mg/l
NH ₄ -N	3 mg/l
PO ₄	3,5 mg/l

Concentrate

Conductivity	2.450 $\mu\text{S}/\text{cm}$
COD	1.200 mg/l
NH ₄ -N	246 mg/l
PO ₄	24 mg/l



RO unit



Evaporator for the RO concentrate