

The MemTriq® Industrial

VHP Thermophilic Membrane Bioreactor

Triqua delivers turn-key waste water treatment plants and is specialised in biological treatment and membrane filtration. Triqua realises projects for industries, marine and off-shore. At the VHP Paper Mill in Ugchelen (NL) Triqua has build the first full scale thermophilic membrane bioreactor. This plant is in operation since November 2000

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After a short period of sludge stabilisation and adaptation the membrane bioreactor ran on his design capacity of 12 m³/h. VHP reuses more than 90% of the effluent in the bleaching process of the paper mill. For the membrane bioreactor operates at high temperature the energy profit by effluent reuse is a great benefit. The system produces no excess sludge.

Technical details		
Average flow influent	9	m ³ /h
Volume influent tank	20	m ³
Volume bioreactor (gross)	280	m ³
Membrane surface	82,5	m ²
Amount of membrane streets	3	-
Amount of modules per street	6	-

Technological details		
COD reduction	> 85	%
Operation temperature	55	°C
Effluent reuse	> 90	%



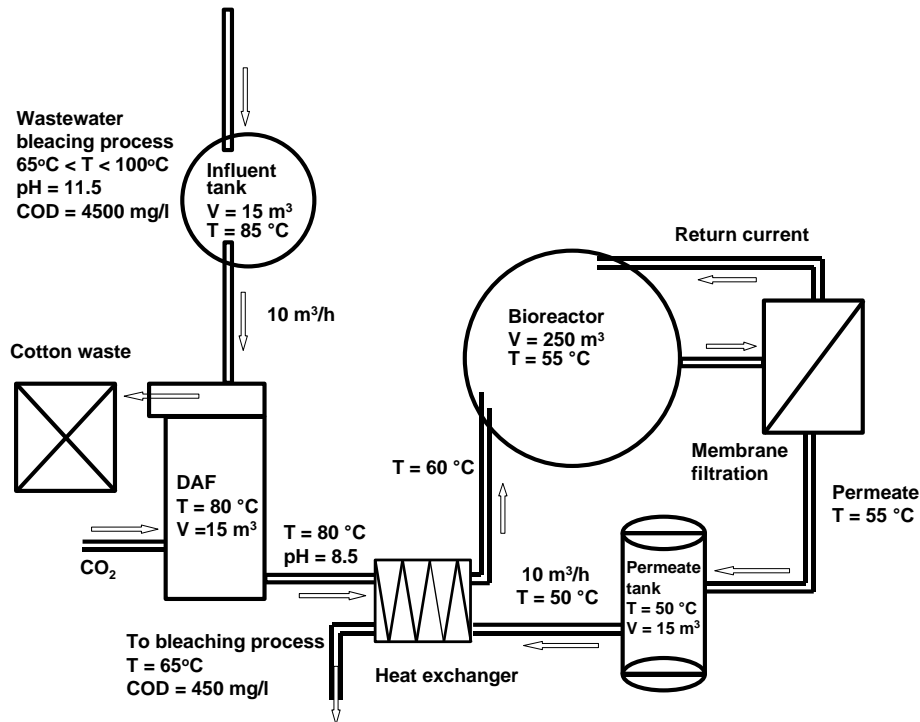
For further information:

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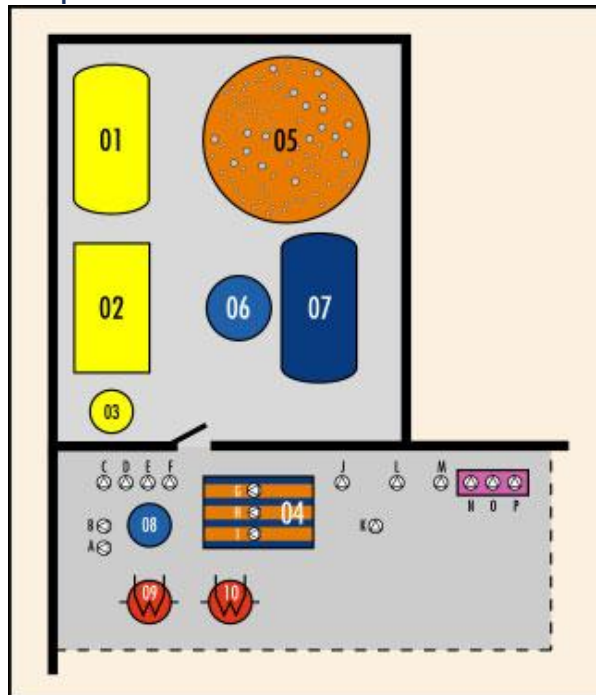
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Process Flow Diagram



Plot plan



01	Influent tank
02	Dissolved air flotation unit
03	Tank between D.A.F.-unit and bioreactor
04	Membrane unit
05	Bioreactor
06	Cleaned return water
07	Effluent tank
08	Clean water tank
09	Heat exchanger 1
10	Heat exchanger 2
A	Seal water pump
B	Clean water pump
C	In put pump
D	Circulation pump D.A.F.-unit
E	Supply pump
F	Cleaned water return pump
G	Circulation pump membrane street 1
H	Circulation pump membrane street 2
I	Circulation pump membrane street 3
J	Drain off pump permeaat
K	Blower CO ₂ gas D.A.F.-unit
L	Blower aeration bioreactor
M	Blower aeration bioreactor
N	Dosage unit nutrients
O	Dosage unit anti-foam
P	Dosage unit phosphate acid

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