Case study MBR BioFlow

OEM Partner

Complete MBR waste water treatment plant from municipal solid waste built by Hydrotech Engineering in Italy.

UF process:

-Decanter separation unit;
-Biological reactor set-up with nitrification and denitrification step
-Tubular cross-flow ultrafiltration;
-Reverse osmosis.

Application:
Processing of waste water produced by the fermentation of the organic fraction of municipal solid waste

UF configuration

The ultrafiltration plant splits water from the nitro/denitro reactor, that present an MLSS concentration of 30 g/l, into a clear permeate stream for the following reverse osmosis step and a concentrate stream in order to ensure the recirculation of the activated sludge into the bioreactor.

UF Membranes/ Modules

Module program	HyperFlux I8
Membrane type	66.03
Membrane material	PVDF
Membrane diameter	8 mm
Cut off	30 nm
Module type	MO83G 66.03 I8
Membrane area	27 m2

UF design

Loops	2
Modules/Loop	5
Total membrane area	272 m2
Permate flow rate	10,4 m3/h
Temperature	30 C
Permeate flux	38 l/hm2
Working pressure	4,5 bar

UF analysis

Feed

TSS	3 - 5 %
COD	29.000 mg/l
P	60 mg/l

Permeate

TSS	1,5 %
COD	< 1.500 mg/l
P	< 10 mg/l

Membranes/ Modules

UF unit

RO-Design

The reverse osmosis unit consists of a multistage plant with 80% recovery.
The energy consumption is attested in 2 kWh/m3 of the total inlet water.

RO Membranes/ Modules

Membrane type	spiral wound
Membrane material	Composit
Salt rejection	99,4 %
Membrane area	25 m2

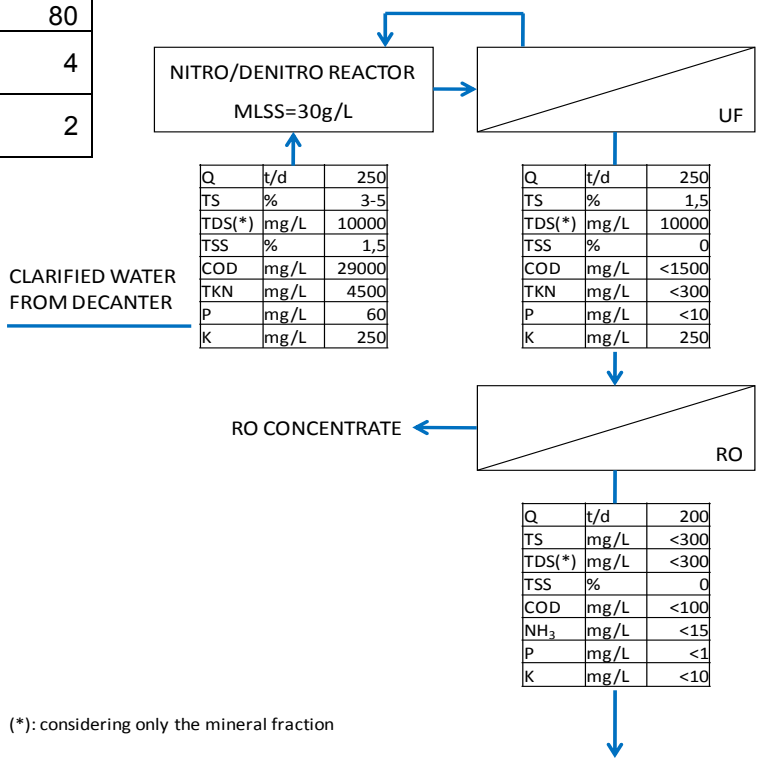
RO plant design

Loops	2
Modules/Loop	16
Total membrane area	400 m2
Permate flow rate	8,3 m3/h
Temperature	30-40 C
Permeate flux	21 l/hm2
Working pressure	32 bar

RO unit

The performance of the process:

COD's reduction	%	99,4
BOD's reduction	%	99,2
Ammonia's reduction	%	99,7
Recovery ratio	%	80
UF section energy consumption	kWh/m^3	4
RO section energy consumption	kWh/m^3	2



(*): considering only the mineral fraction

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