



Membrane bio-reactors (MBR) are modified activated sludge systems, whereby secondary clarifiers are replaced by membrane filters.

- MBR systems combine biological wastewater treatment with membrane filtration and disinfection.
- Mixed-liquor solids concentration is increased by a factor of 3 - 5 and tank volume reduced to 20 – 35 %.
- Ultra-filtration membranes retain all solids and bacteria; effluents are of excellent quality.
- Power consumption of MBR-systems is 40 – 80 kWh/(PE•a), whereof about 50 % is consumed by membrane filter operation.
- Membrane scouring air introduces some oxygen into the wastewater so that oxygen supply by fine bubble aeration can be reduced.
- Increased mixed-liquor concentration lowers aeration alpha-factors (e.g. from 0.7 to 0.5) and thus aeration efficiency.
- These two effects approximately cancel each other out.
- MBR-systems increase power consumption by around 10 % in comparison with conventional biological treatment + sand filtration + disinfection.
- MBR-systems should be used where plant footprint is limited and/or where excellent effluent quality is required.

Since membrane filters are major power consumers, installation of energy-efficient units is very important.

The table shows power consumption of a HUBER Vacuum Rotation Membrane VRM® Bioreactor for a 20,000 PT plant in comparison with those of competitors.

Effluent Flow	HUBER VRM	Competition
Q <sub>av</sub> = 140 m <sup>3</sup> /h	0,32 kWh/m <sup>3</sup>	0,45 kWh/m <sup>3</sup>

Q <sub>max</sub> = 220 m <sup>3</sup> /h	0,23 kWh/m <sup>3</sup>	0,40 kWh/m <sup>3</sup>
Q <sub>min</sub> = 30 m <sup>3</sup> /h	0,31 kWh/m <sup>3</sup>	0,43 kWh/m <sup>3</sup>

S.à r.l. au capital de 75 000 EUR – RCS Colmar B389416231 – APE 4669B – Siret 389 416 231 00030 – N° TVA FR 08 389 416 231

Adresse :  
10 A allée de l'Europe  
67140 BARR  
FRANCE

Télécopie :  
+ 33 (0) 3 88 08 14 98  
e-mail : [info@huber.fr](mailto:info@huber.fr)  
internet : [www.huber.fr](http://www.huber.fr)

Téléphone administration : + 33 (0) 3 90 57 49 10  
Téléphone commercial : + 33 (0) 3 88 08 51 52  
Téléphone réalisation : + 33 (0) 3 88 08 59 60  
Téléphone SAV : + 33 (0) 3 90 57 49 09

BNP PARIBAS : BIC BNPAFRPPSTR  
IBAN FR76 3000 4004 8700 0100 0723 125  
CIC BANQUE CIAL : BIC CMCIFRPP  
IBAN FR76 3008 7330 8000 0428 2740 114