

## 5) Aeration capacity (acc. M&amp;E)

General parameters		Specific for diffused aeration		Specific for surface aeration	
Local elevation =	400 m	alfa =	0,80 (-)	alfa,surf. =	0,9 (-)
Patm =	0,97 bar	theta =	1,024 (-)	theta,surf =	1,012 (-)
Salinity =	0 g/l	Hliq,r =	4 m	Csat,20 (1 atm) =	9,1 (-)
DOsp =	2,0 mg O2/l	Hdif =	0,3 m	SOTR =	2,4 kg O2/kWh
Tavg,amb =	12 deg C	dP line/grid =	0,15 barg		
Tmax,amb =	35 deg C	Blower Eff. =	80%		
beta =	0,95 (-)	Motor Eff. =	80%		
Vaer =	2450 m3	SOTE (4,5 m) =	25 %		
MOt =	1773 kg O2/d	Csat,20 (Pavg) =	10,7 mg O2/l		
Peak factor =	1,5 (-)				
Tr =	17	25	deg C		
Pvap,T =	0,017	0,032	bar		
Csat (T, 1 Atm) =	9,7	8,2	mg O2/l	diffused aer.	
Csat (T, Pavg) =	11,3	9,7	mg O2/l	diffused aer.	
Csat(T, Patm) =	9,2	7,9	mg O2/l	surface aer.	

Diffused aeration		Surface aeration					
Normal operation: avg. demand, avg. temp		Design case: max. demand, max. temp					
		Normal	Max				
MOt (avg) =	74 kg O2/h	MOt (max) =	111 kg O2/h	MOt (avg) =	74	111	kg O2/h
SOTE (Hr-Hdif) =	21,4 %	SOTE (Hr-Hdif) =	21,4 %	AOTR =	1,55	1,38	kg O2/kWh
AOTE =	13,0 %	AOTE =	12,9 %	MOt (avg) =	74	111	kg O2/h
Qair =	2464 kg air/h	Qair =	3728 kg air/h	Pmotor =	48	71	kW
	1910 Nm3 air/h		2890 nm3 air/h	Pdiss =	15,6	23,3	W/m3
Qair,avg =	1994 m3 air/h	Qair,max =	3260 m3 air/h				
Power requirements diffused aeration: calculation method 2 (Metcalf & Eddy)							
Pblower =	33 kW	Pblower =	50 kW				
Pmotor =	41 kW	Pmotor =	63 kW				
Pdiss (aerobic) =	10,8 W/m3	Pdiss (aer) =	16,4 W/m3				
OC =	1,8 kg O2/kWh	OC =	1,8 kg O2/kWh				