

Technical data sheet for one Advanced wastewater treatment plant

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Plant size

75 PE

Maximum flow

Qd 11,25 m³/d

Maximum organic load

Bd 4,50 kg/d

Design according to ATV-A122

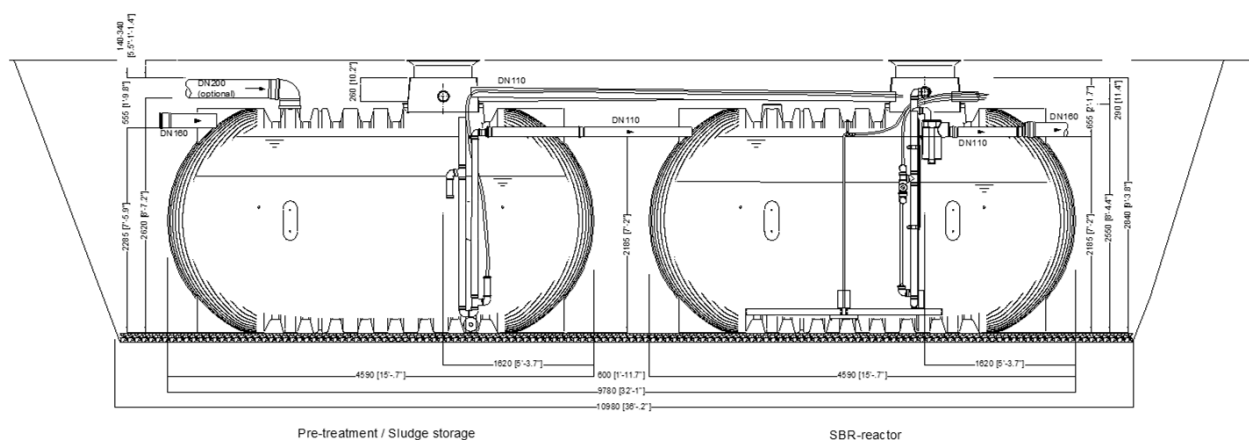
Effluent values:

	BOD ₅	COD	SS	NH ₄ N	TN	TP	Coliforms
<	20 mg/l		30 mg/l	20 mg/l			

Total tank capacity: 31,7 m³

Air compressor	Type:	Rotary vane	DT 4.40
	Installed motor power		1,70 kW
	Power consumption at 0,3 bar		1,50 kW
	Motor design	1 bar 50 Hz 1~	230 V

Daily operating time 13,3 h/d



Symbolic representation

Stage	Number	Container, material	Diameter Width [m]	Length [m]	Maximum water depth [m]	Maximum volume [m³]
SS + PT + B	1	Carat 16000, PE	2,50	4,59	2,20	15,8
SBR	1	Carat 16000, PE	2,50	4,59	2,20	15,8

Hoses	V1: 1x 19mm	V2: 1x 25mm	V3: 1x 19mm	V4: 1x 19mm
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Calculation for one Advanced wastewater treatment plant according to ATV-A122

Basic data / project data

Customer Graf UK Ltd
 Project
 Type of waste water: domestic
 Particularities

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 Editor sasc

Base of calculation

Outlet	BOD ₅ < 20 mg/l	COD	SS < 30 mg/l	NH ₄ N < 20 mg/l	TN	TP	Coliforms
Population equivalent						75 PE	
Wastewater			at Q _{PE}		150 l / (PE*d)	11,3 m ³ /d	
Infiltration water					0 %	0,0 m ³ /d	
Total daily inflow				Q _d		11,3 m ³ /d	
Daily peak factor						10 h/d	
Hourly volume of wastewater						1,1 m ³ /h	
Waste load BOD ₅				B _d	60 g/(PE x d)	4,50 kg/d	
Waste load COD					120 g/(PE x d)	9,00 kg/d	
<u>After primary treatment</u>							
Waste load BOD ₅				B _d	40 g/(PE x d)	3,00 kg/d	
Waste load COD					80 g/(PE x d)	6,00 kg/d	
Treatment cycles per day						4	

1. Stage: sludge storage, pre-treatment and buffer

Container type	Carat 16000
Number of containers / proportion of chambers	1
Width	2,50 m
Length	4,59 m
Water depth	2,20 m
Total area	11,48 m ²
Sludge storage (SS)	
Specific sludge storage volume	250 l / (PE*a)
Removal interval	6,0 months
Required volume	75 PE x 250 l / (PE*a) x 6 / 12 months = 9,38 m ³
Required water depth	1,35 m
Primary treatment (PT)	
Retention period	(15,83 m ³ - 9,38 m ³ - 3,77 m ³) / 1,1 m ³ /h = 2,39 h
Required volume	1,69 m ³
Required water depth	0,18 m
Overall (SS + PT)	
Required water depth	1,35 m + 0,18 m = 1,54 m
Selected water depth	1,65 m
Buffer (B)	
Percentage of daily load	33%
Required volume	33% x 11,25 m ³ /d = 3,75 m ³
Required water depth	0,55 m
Selected water depth	0,55 m
Selected volume	33% Total daily inflow = 3,77 m ³
Overall (SS + PT + B)	
Required volume	9,4 m ³ + 1,7 m ³ + 3,8 m ³ = 14,81 m ³
Existing total volume	15,83 m ³
Required water depth (SS + PT + B)	1,35 m + 0,18 m + 0,55 m = 2,09 m

2. Stage: biological treatment (SBR)

Container type	Carat 16000
Number of containers / proportion of chambers	1
Width	2,50 m
Length	4,59 m
Water depth	Wd max = 2,20 m
Total area	11,48 m ²
Required volume	3 kg/d / 0,2 kg/(d*m ³) = 15,00 m ³
Required water depth	2,04 m
Volume load BOD ₅	Br 3 kg/d / 15,83 m ³ = 0,19 kg / (m ³ x d)
BOD Sludge loading	B _{TS} ≤ 0,05 kg/(kg x d)
Sludge index	ISV 100,00 ml/g
Mixed Liquor Suspended Solids	TS _{BB} ≤ 4,00 kg/m ³
Oxygen concentration	C _O ≥ 2,00 mg/l
Selected water depth Before loading phase	Wd max - 33% x 11,25 m ³ /d = 1,65 m
Water depth After loading phase	Wd min + 25% x 11,25 m ³ /d = 2,03 m
Existing total volume	15,83 m ³