Pump design

project:

street:

city/postal code:

Peak extraction

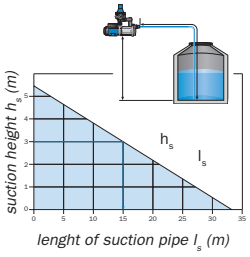
application	claculated flow	x	number	=	volume flow
toilets DIN 19542 ¾″ (DN 20)	0,13 l/s	x		=	l/s
washing machine ½″ (DN 15)	0,25 l/s	x		=	l/s
pressure flushes ½″ (DN 15)	0,3 l/s	x		=	l/s
pressure DIN 3265 ½″ (DN 15)	1,0 l/s	x		=	l/s
taps ½″ (DN 15)	0,3 l/s	x		=	l/s
taps ¾″ (DN 20)	0,5 l/s	x		=	l/s
taps 1″ (DN 25)	1,0 l/s	x		=	l/s

total volume flow = ∑ = **l/s**

physical data:
water temperature: 11°C
kinematic visositiy: 1,52mm²/s
density: 0,999kg/dm³
steam pressure: 0,0116bar

suction pipe Duplex-System

suction pipe length and height of a self-priming pump



suction pipe: PE-HD 1″
flow rate: 3m³/h

If there is more than one appartment connected to the pump the max volume flow is to be reduced according to the simulate factor:

number of appartments	simultaneous factor
1	1,0
2	0,9
3	0,8
4	0,7
5	0,6
8	0,5
10	0,4
20	0,35

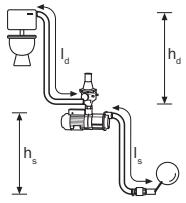
total volume flow	x	simultaneous factor	=	**peak extraction** Q_{max}
l/s	**x**		**=**	**l/s**

Discharge head

h_d	+	(l_d x 0,2)	=	H_d
m	**+**	**m**	**=**	**m**
h_s	+	(l_s x 0,2)	=	$^*H_s$
m	**+**	**m**	**=**	**m**

min. flow pressure at tap = 1bar = **10 m**

max. discharge head $^*H_{max}$ = **m**



**If H_s is 5m, a submersile pump should be used.*

Chosen pump

Typ	Q_{max}	H_{max}
	l/s	m

Holding tank design

project:

street:

city/postal code:

Rainwater yield

Roof size

The roof size is considered to be the floor space of the house independent of the roof pitch or shape.

Precipitation

The local precipitation can be taken out of precipitaion maps or can be obtained at local weather stations.

Roof factor

roof material	roof factor
glazed tile	0,9
tile, slate, concrete tile	0,8
gravel flat roof	0,6
planted roof	0,4

roof size	x	annual precipitaion	x	roof factor	=	rainwater yield
m²	x	l/m²	x		=	l

Water needed

application	annual consumption		number of persons		sum
toilet flushing	9.000 l	x		=	l
washing machine	5.000 l	x		=	l
cleaning	1.000 l	x		=	l
garden irrigation	60 l/m2	x		=	l
other		x		=	l

figures for lage systems:
school: 1.000 l/persons
office: 2.500 l/persons

water needed per year = ∑ = l

Dimension

calculation factor	x	tank volume factor (storage days : days/year)	=	tank volume
l/m²	x	25 : 365	=	l

*The **smaller figure** of **rainwater yield** or **water needed** per year is used as **calculation factor.***

for more information see: www.gep-umwelttechnik.com