

Feasibility report Höganäs

Municipality of Höganäs

2014

EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX**GENERAL INFORMATION**

WWTP Name: Hoganäs Waste Water treatment plant	
Type: Municipal WWTP	
Name of Municipality/Organisation: Hoganäs municipality	
Plant location: Höganäs, Höganäs kommun, Skåne Län	
Contact Name, Phone Number: Fredrik Arthursson, +46 42 337256	
E-mail: fredrik.arthursson@hoganäs.se	
WWW: hoganäs.se	
Google Maps:	
Photos:	
Average flow rate by design	14 000
Maximum flow rate by design	28 000
PE dimension by design	20 000

WASTEWATER TREATMENT

-----> 2012 average day

-----> WWTP P

Raw sewage

Real flow rate average	8 672
Real flow rate maximum	14 000
Real PE dimension	20 028
COD	423
BOD7	170
N	31
P	4

Primary treatment

HRT	4
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Primary Sludge (PS)

Flow rate	measured combined
TS	2
VS (% TS)	80

Activated sludge tank

Flow rate	8 672
Volume	3 600
BOD7 at the inlet	85
COD5 at the inlet	200
Type of aeration	Diffuse
Oxygen concentration	2
MLSS	3 500
MLVSS	
Sludge load	0
Sludge age	8

Nitrogen removal

Type	Upstream bio
External carbon sources used	y
Quantity of external carbon source necessary for denitrifying	3 600
Type of carbon source used for denitrifying	etl
Nitrates to remove	5
Volume of the anoxic zone in the biological reactor	1 800

Phosphorus removal

Biological removal (Bio-P)	Yes
Chemical P-precipitation	Yes
Simultaneous	Yes

Secondary clarification

HRT	1
SVI	200
Bulking	Yes
Foaming	no

Return Activated Sludge (RAS)

Flow rate	
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TS	800
Load	
VS (% TS)	80
Waste Activated Sludge (WAS)	
Flow rate	200
TS	2 000
Load	
VS (% TS)	80
Effluent characteristics	
COD	34
BOD7	5
N residual	9
P residual	0
TSS	

SLUDGE THICKENING [-----> MORE TECH](#)

Thickened Primary Sludge (TPS)	
Equipment	Dra
Flow rate	200
TS	2
TS load	4
VS (% TS)	80
VS load	3
Flocculant	y
Flocculant quantity	5
Thickened Waste Activated Sludge (TWAS)	
Equipement	
Flow rate	
TS	
TS load	
VS (% TS)	
VS load	
Flocculant	
Flocculant quantity	

MIXED DIGESTER FEED [-----> MORE TECH](#) **-----> BEFORE PRE-TREATMENT**

Flow rate	20
Wet Feedstock Consumption	20
Wet Feedstock Consumption	780
Sludge	
Sludge load	
Another Fuel ----- > see: Expenses. Fuel Cost.	
Another Fuel load	
Total Solids Fraction of Wet Feedstock (kg/kg)	
TS load	
Ratio of Volatile Solids to Total Solids in Feedstock (kg/kg)	80
VS load	
Inorganic solids load	
% of TPS in mixed digester feed	
% of TWAS in mixed digester feed	

FEESTOCK PRE-TREATMENT [-----> MORE TECH](#)

Technology:	
Technology:	
Technology:	
Manufacturer	
..... added	
Manufacturer	
Dosage	
.....cost	

EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX

Total electrical energy associated with feedstock pre-treatment	
Total electrical energy cost associated with feedstock pre-treatment	
Total heat associated with feedstock pre-treatment	
Total heat cost associated with feedstock pre-treatment	

ANAEROBIC DIGESTION[-----> MORE TECH](#)**Anaerobic digestion**

Anaerobic Digestion System: mesophilic	
Types of Anaerobic Reactors: mixed	
Manufacturer	
N° of digesters tanks	2
Volume per digester tank	640
Total volume of digestion	1 280
Temperature in digester N° 1	37
Temperature in digester N° 2	27
Operational pressure	
Capacity, throughput	
HRT	20
Gas storage capacity	100

Digester feed

Total Solids Fraction of Wet Feedstock (kg/kg)	5
TS load	391
Ratio of Volatile Solids to Total Solids in Feedstock (kg/kg)	80
VS load	312
Wet Feedstock Consumption	7 820
Wet Feedstock Consumption	
..... added	
Manufacturer	
Dosage	
.....cost	

Performances

Biodegradability (kg VS destroyed/kg VS added)	50
VS reduction in loading (Δ)	
TS reduction	40
TS reduction in loading (Δ)	

Biogas & Methane

Biogas production	960
Biogas production	350 400
Biogas production (Nm ³ /kg VS destroyed)	44
Biogas produced per VS fed	
Methane Concentration in Biogas	70
Biogas for cogeneration	
Biogas flared	66 000
Biogas for other uses	

BIOGAS UPGRADING[-----> MORE TECH](#)

Technology description:	
Manufacturer	
Biomethane capacity	
Biomethane quality --- vol.-% CH ₄	
Losses	
Utilisation	
Total electrical energy associated with biogas upgrading	
Total electrical energy cost associated with biogas upgrading	

ELECTRICAL ENERGY[-----> MORE TECH](#)

Plant electricity consumption per year (KWh)	231 465
Total electrical energy cost	231 465
Total electrical energy associated with aeration	200 000
Total electrical energy cost associated with aeration	200 000

EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX

Total electrical energy associated with AD	
Total electrical energy cost associated with AD	
Power generation facilities	
Power in Biogas (kW)	
Gross Electrical Capacity (kWe)	
Net Electrical Capacity (kWe)	
Availability of CHP	
CHP operational hours per year	
Net Efficiency -- Biogas to Electricity (%)	
Gross Efficiency -- Biogas to Electricity (%)	
Purchased power cost	1
Aggregate sales price for power	

HEAT -----> MORE TECH	
Total heat associated with AD	
Total heat cost associated with AD	
Total heat production rate (kWth)	
Aggregate fraction of heat recovered (%)	
Recovered heat (kWth)	
Installed heating power	
Plant heat consumption per year	
Purchased heat cost	
Aggregate sales price for heat	

SLUDGE DEWATERING -----> MORE TECH	
Equipment	
Manufacturer	
Polymer added	yes
Dosage	5
Polymer cost	30
Cake dryness	24
Total electrical energy associated with dewatering	
Total heat associated with dewatering	

SLUDGE FOR DISPOSAL -----> MORE TECH	
Final use	
Biosolids disposal cost	400
Biosolids load for disposal (dry matter)	268
Biosolids load for disposal (wet matter)	1 200

STING AD

g/l
ton/d
%

m³/d
g/l
ton/d
%

mg/l
mg/l
mg/l
mg/l
mg/l

NICAL DATA, PHOTOS

in Belt
m³/d
%
ton/d
%
ton/d
Y/N
kg/ton TS

m³/d
%
ton/d
%
ton/d
Y/N
kg/ton TS

NICAL DATA, PHOTOS

m³/d
ton/d
ton/year
%
ton/year
%
ton/year
%
ton/year
%
ton/year
ton/year
%
%

NICAL DATA, PHOTOS

Y/N
kg/dry matter ton
LCU/kg

STING AD

KWh/year
LCU/year
KWh/year
LCU/year

NICAL DATA, PHOTOS

Each
m ³
m ³
° C
° C
mbar
m ³ /d
d
m ³

%
ton/year
%
ton/year
ton/year
m ³ /d
Y/N

kg/dry matter ton
LCU/kg

%
ton/year
%
ton/year

Nm ³ /d
Nm ³ /year
Nm ³ /kg VS destroyed
Nm ³ /kg VS fed
% by volume
Nm ³ /year
Nm ³ /year
Nm ³ /year

NICAL DATA, PHOTOS

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Nm ³ /h
% by volume
% by volume

KWh/year
LCU/year

NICAL DATA, PHOTOS

KWh
LCU/year
KWh/year
LCU/year

STING AD

KWh/year
LCU/year
Y/N
kW
kWe
kWe
%
hours
%
%
LCU/KWh
LCU/KWh

NICAL DATA, PHOTOS

KWh/year
LCU/year
kWth
%
kWth
kWth
KWh
LCU/KWh
LCU/KWh

NICAL DATA, PHOTOS

Centrifuge
Noxon
Y/N
kg/dry matter ton
SEK/kg
%
KWh/year
KWh/year

NICAL DATA, PHOTOS

Agriculture
LCU/wet matter ton
Dry matter ton/year
Wet matter ton/year