

Feasibility report Höganäs

Municipality of Höganäs

2012

EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX

GENERAL INFORMATION

WWTP Name: Lybyverket	
Type:	Municipi
Name of Municipality/Organisation: Hörby municipality	
Plant location: Lyby (Hörby)	
Contact Name, Phone Number: +4641518308	
E-mail: maria.persson@horby.se	
WWW: www.horby.se	
Google Maps:	
Photos:	
Average flow rate by design	5 800,00
Maximum flow rate by design	7 950,00
PE dimension by design	18 000,00

WASTEWATER TREATMENT

-----> 2011 average day

-----> WWTP P

Raw sewage

Real flow rate average	2 982,00
Real flow rate maximum	10 000,00
Real PE dimension	8 900,00
COD	XX
BOD	233,20
N	47,10
P	6,60

Primary treatment

HRT	0,45
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Primary Sludge (PS)

Flow rate	XX
TS	XX
VS (% TS)	XX

Activated sludge tank

Flow rate	2 982,00
Volume	2 024,00
BOD5 at the inlet	233,20
COD5 at the inlet	XX
Type of aeration	Poppe
Oxygen concentration	2,00
MLSS	2000-3000
MLVSS	
Sludge load	0,18
Sludge age	?

Nitrogen removal

Type	Pre-denitrifikation
External carbon sources used	N
Quantity of external carbon source necessary for denitrifying	XX
Type of carbon source used for denitrifying	
Nitrates to remove	3,00
Volume of the anoxic zone in the biological reactor	976,00

Phosphorus removal

Biological removal (Bio-P)	N
Chemical P-precipitation	Y
Simultaneous	N

Secondary clarification

HRT	0,13
SVI	XX
Bulking	
Foaming	N

Return Activated Sludge (RAS)

Flow rate	2 500,00
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EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX

TS	5,20
Load	13 000,00
VS (% TS)	0,70
Waste Activated Sludge (WAS)	
Flow rate	?
TS	5,20
Load	XX
VS (% TS)	0,70
Effluent characteristics	
COD	32,00
BOD5	3,00
N residual	14,00
P residual	0,16
TSS	2,50

SLUDGE THICKENING[-----> MORE TECH](#)**Thickened Primary Sludge (TPS)**

Equipment	
Flow rate	XX
TS	XX
TS load	XX
VS (% TS)	XX
VS load	XX
Flocculant	XX
Flocculant quantity	XX

Thickened Waste Activated Sludge (TWAS)

Equipement	Gravity b
Flow rate	?
TS	5 200,00
TS load	?
VS (% TS)	0,70
VS load	?
Flocculant	N
Flocculant quantity	XX

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

Flow rate	
Wet Feedstock Consumption	
Wet Feedstock Consumption	
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)	
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:	
Types of Anaerobic Reactors:	
Manufacturer	
N° of digesters tanks	
Volume per digester tank	
Total volume of digestion	
Temperature in digester N° 1	
Temperature in digester N° 2	
Operational pressure	
Capacity, throughput	
HRT	
Gas storage capacity	

Digester feed

Total Solids Fraction of Wet Feedstock (kg/kg)	
TS load	
Ratio of Volatile Solids to Total Solids in Feedstock (kg/kg)	
VS load	
Wet Feedstock Consumption	
Wet Feedstock Consumption	
..... added	
Manufacturer	
Dosage	
.....cost	

Performances

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

Biogas & Methane

Biogas production	xx
Biogas production	xx
Biogas production (Nm ³ /kg VS destroyed)	xx
Biogas produced per VS fed	xx
Methane Concentration in Biogas	xx
Biogas for cogeneration	xx
Biogas flared	xx
Biogas for other uses	xx

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

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

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

Plant electricity consumption per year (KWh)	1 232 018,00
Total electrical energy cost	1 141 000,00
Total electrical energy associated with aeration	300 000,00
Total electrical energy cost associated with aeration	280 000,00

EUROSLAM TECHNOLOGY AND COST ANALYSIS QUESTIONNAIRE: WWTP WITH EX

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

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	Y
Dosage	8,80
Polymer cost	39,50
Cake dryness	16,00
Total electrical energy associated with dewatering	2 000,00
Total heat associated with dewatering	XX

SLUDGE FOR DISPOSAL -----> MORE TECH	
Final use	
Biosolids disposal cost	290,00
Biosolids load for disposal (dry matter)	2 500,00
Biosolids load for disposal (wet matter)	20 000,00

STING AD

Local WWTP
m³/d
m³/d
PE

Process Flow Diagram

m³/d
m³/d
PE
mg/l
mg/l
mg/l
mg/l
h
m³/d
g/l
%
m³/d
m³
mg/l
mg/l
Reaerations
mg/l
mg/l
mg/l
kg BOD5/kg TS·day
d
tion, recirculation
Y/N
kg/d
XX
mg/l
m³
Y/N
Y/N
Y/N
d
ml/g
Y/N
Y/N
m³/d

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

m³/d
%
ton/d
%
ton/d
Y/N
kg/ton TS

elt thickener
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

XX
Nm ³ /h
% by volume
% by volume
XX
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

screw press
Hydropress Huber AB
Y/N
kg/dry matter ton
LCU/kg
%
KWh/year
KWh/year

NICAL DATA, PHOTOS

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