Energy Usage Data

Waste Water Treatment Plant, Koblenz

Electricity consumption and generation Description	EU-Application 2008	Operation 2018	Unit
Total electrical energy consumption	4.670	6.010	MWh/a
- Of which supplied by external provider	2.140	865	MWh/a
- Of which generated in-house	2.530	5.145	MWh/a
- In-house share	54	86	%
Individually:			
Dryer			
Dryer power requirement (3.350 Mg dried solid matter/a, 29 % dry matter)		705	MWh/a
Gasification			
Gasification power requirement		525	MWh/a
In-house electrical power generation from Syngas-CHP		2.450	MWh/a
Water treatment plant			
Treatment plant power requirement Excluding drying and gasification		4.780	MWh/a
In-house electrical power generation from digester-gas CHP		2.610	MWh/a
Photo-voltaic electrical power generation		85	MWh/a

Thermal balance of existing heating system Description	EU-Application 2008	Operation 2018	Unit
Total heat consumption	5.550	10.665	MWh/a
- of which supplied by external provider (heating oil in 2008) (natural gas in 2018)	150	600	MWh/a
- of which generated in house	5.400	10.065	MWh/a
- In-house share	97	96	%
Individually:			
Dryer			
Dryer heat energy requirement (3.350 Mg dried solid matter/a, 29 % dry matter)		6.265	MWh/a
- of which on the 85°C rail		3.720	MWh/a
- of which on the 140°C rail		2.545	MWh/a
Heat recycling 60 °C rail dryer (3.350 Mg dried solid matter/a)	between 2.745 - 4.125		MWh/a
Gasification			
Gasification digester-gas consumption (1st stage with digester-gas)		2.850	MWh/a
Syngas-CHP heat generation		4.240	MWh/a
- of which on the 85°C rail		1.316	MWh/a
- of which on the 140°C rail		2.924	MWh/a
Water treatment plant			
Treatment plant heat requirement Excluding drying and gasification		4.400	MWh/a
Digester-gas CHP heat production		3.080	MWh/a

Energy Usage Data

Waste Water Treatment Plant, Koblenz

Other data Description	EU-Application 2008	Operation 2018	Unit
Dryer			
Dewatered sewerage sludge (3.350 Mg dried solid matter/a, 29 % dry matter)		11.550	Mg FiKu/a
Filter cake water content		8.200	Mg H2O/a
Dried sewerage sludge (90% dry matter)		3.720	Mg TS/a
Reduction through drying		69	%
Evaporated water volume		7.830	Mg H2O/a
Maximum evaporation achievement of dryer		1.250	kg H2O/h
Specific heat requirement of dryer		800	kWh/Mg H2O
Specific electrical power requirement of dryer		90	kWh/Mg H2O
Potential heat recycling		45 - 69	%
Gasification			
Gasification system maximum output		4.000	Mg TR/a
For 90% dry matter content		4.440	Mg TS/a
Or		590	kg TS/h
Gasification residue		1.890	Mg/a
- Slag/ash		1.265	Mg/a
- Fly ash		560	Mg/a
- Filter dust		65	Mg/a
Reduction in volume through gasification		49	%
Reduction in volume through drying and gasification		84	%
General			
CO2 emission	1.115	780	Mg CO2/a
CO2 reduction		60	%

SEK STADTENTWÄSSERUNG
EIGENBETRIEB DER STADT KOBLENZ

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