

# AD of energycrops and manure: Case study Strem



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# Biogas plant Strem (AUT)

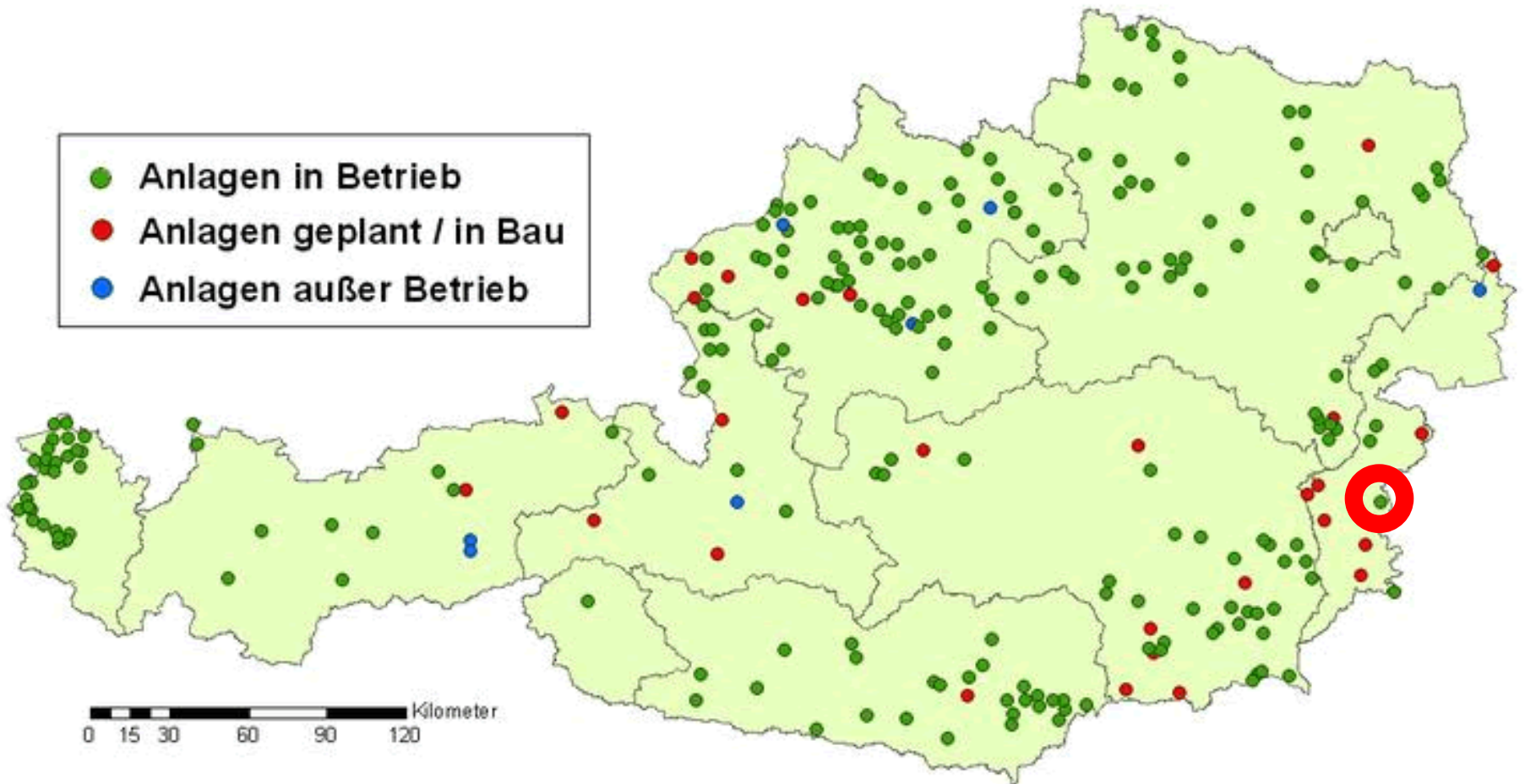


- Location: Strem  
Austria
- Commissioned:  
2005
- Electrical capacity:  
500 kW
- Thermal capacity:  
517 kW
- Design: Thöni  
(Austria)

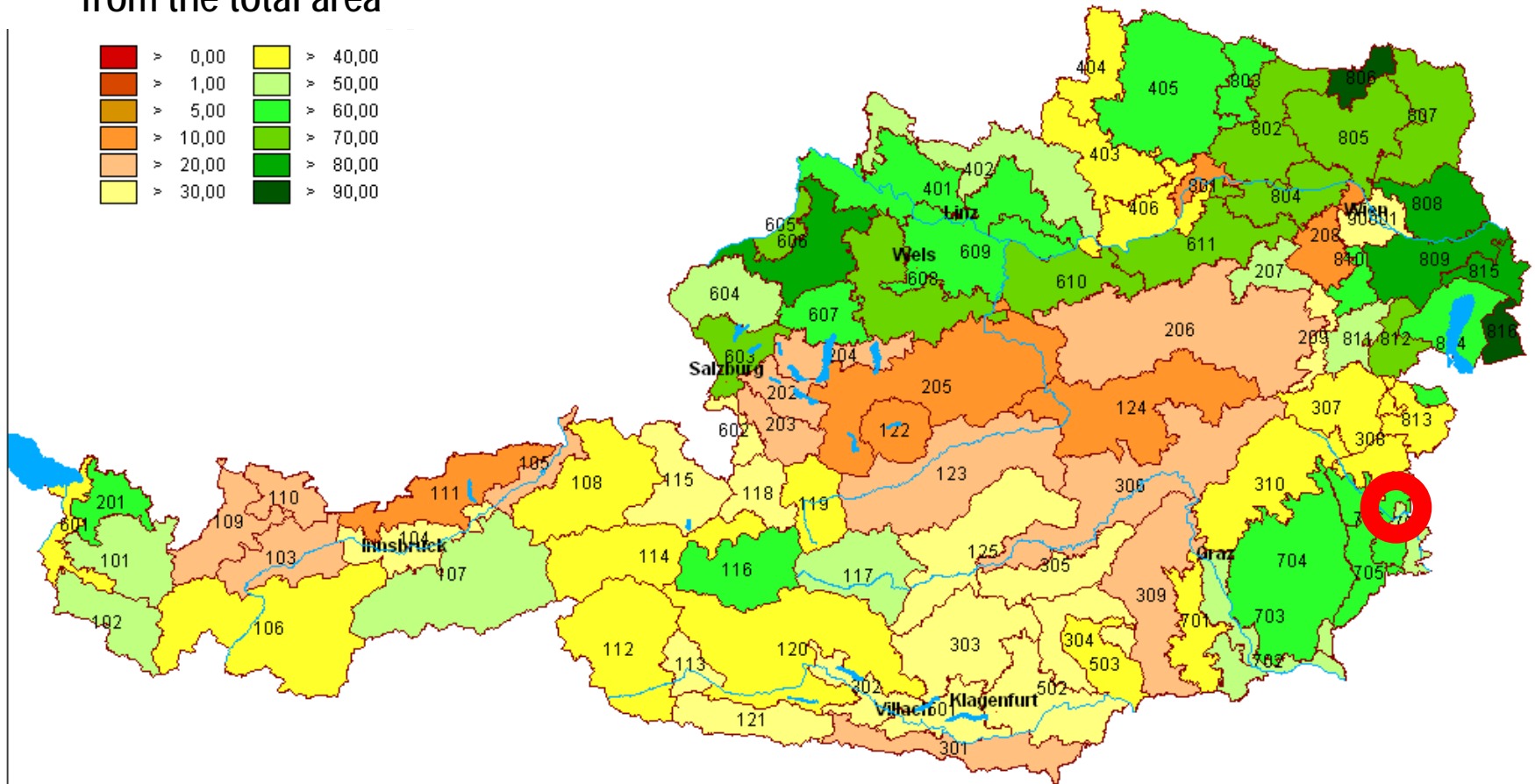
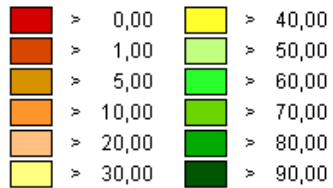
**Table 1:** Process parameters of the Strem biogas plant as measured in 2005 – 2006 (96 % availability of full contracted CHP operation)

Input energy crops maize whole crop silage:	5,940 t/year
Input energy crops grass silage:	2,181 t/year
Input energy crops clover silage:	1,374 t/year
Biogas production:	1.88 Mio m <sup>3</sup> /year
Production of electrical energy:	4,153 MWh/year
Production of thermal energy:	4,220 MWh/year
Own electrical consumption:	61 MWh/year
Own thermal consumption:	701 MWh/year
Sale of electrical energy:	4,153 MWh/year
Sale of thermal energy:	1,697 MWh/year

# Geographical distribution of the biogas plants in Austria (June 2006)



## Percentage of agricultural area from the total area



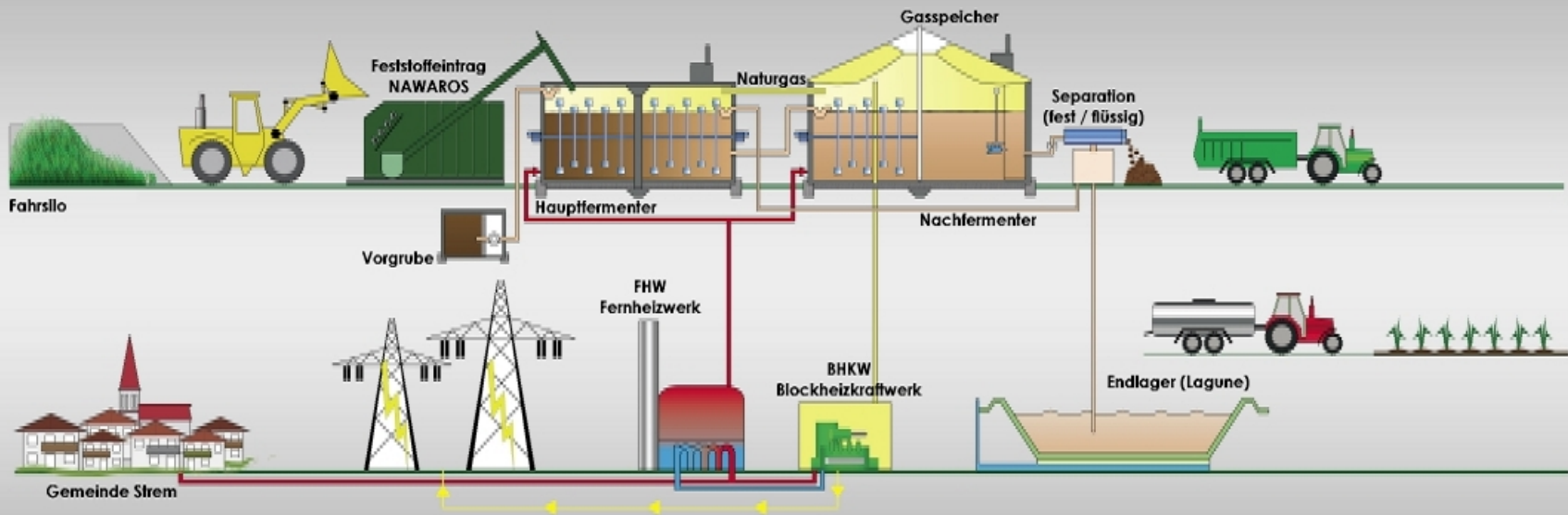
— Kleinproduktionsgebietsgrenzen  
 — Bezirksgrenzen

# Scheme Biogas plant Strem



## ANLAGENSHEMA

**thöni**.NATURGAS



# Feedstock



- Maize (hole crop silage)
- Grass silage

t / a

4550

5000



# Energy Crop reception and feeding systems for biogas plants



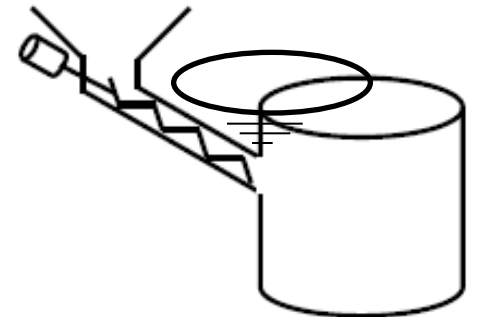
- Delivery: with tractors and lorries
- Weighing: on weighbridge
- Storage: in the bunker silos
- Hopper connected to the feeding system to store the daily feedstock
- Feeding system
  - Auger feeding system

# Energy Crop reception and storage





# Auger feeding system for energy crops

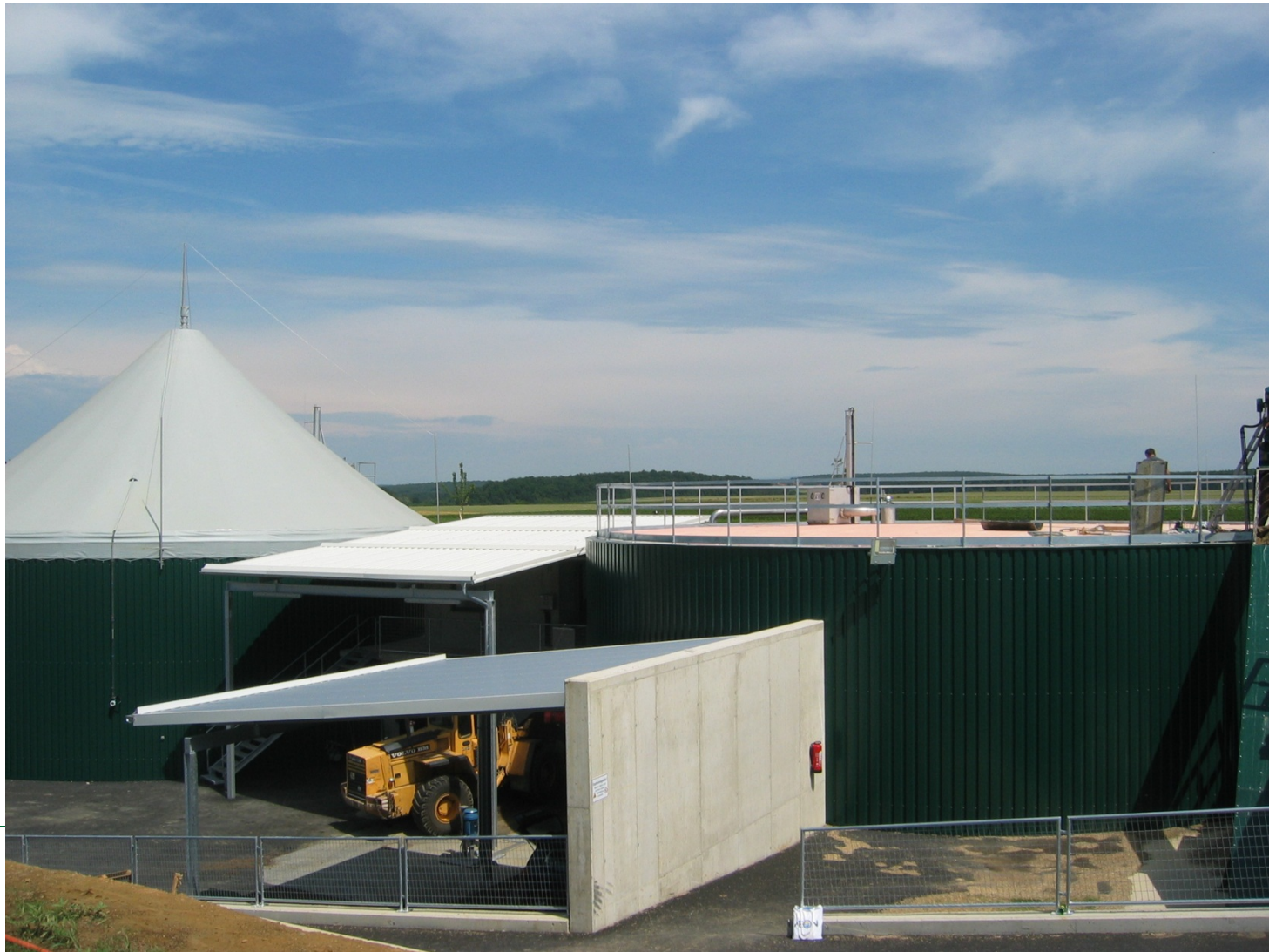


# Digesters



- Cylindrical concrete tanks
  - Main Fermenter: 1500 m<sup>3</sup>
  - Secondary Fermenter: 1500 m<sup>3</sup>
  - Digestate storage (open lagoon): 3000 m<sup>3</sup>

# Digesters



# Mixing systems in the digesters



- Main fermenter
  - 2 horizontal paddles
- Secondary Fermenter
  - 1 horizontal paddle
  - 1 propeller

# Biogas storage tanks



- 1 membrane gas holder on the secondary digester
- Desulphurization
  - Internal biological by blowing air in the headspace of the reactor



# Biogas utilization



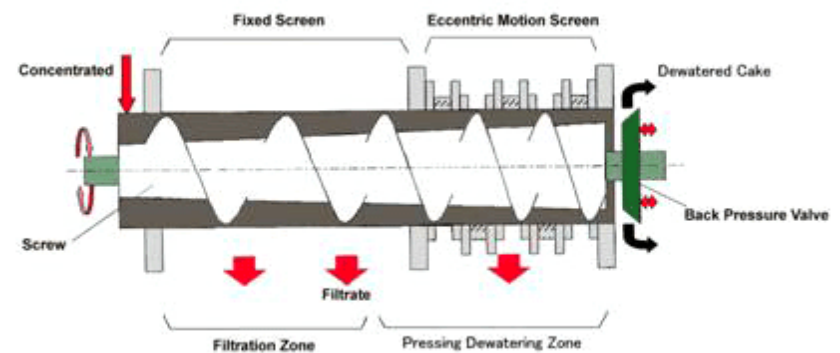
- 2 x 500 kW CHP units  
(Jenbacher GMS 312 B.L.)
- Electric efficiency: ~ 40 %
- thermal efficiency: ~43 %



# Digestate treatment



- Solid liquid separation (screw press separator)
  - Retention of fibers
  - No retention of suspended and colloidal solids
  - Provides process liquid



# Digestate storage tank

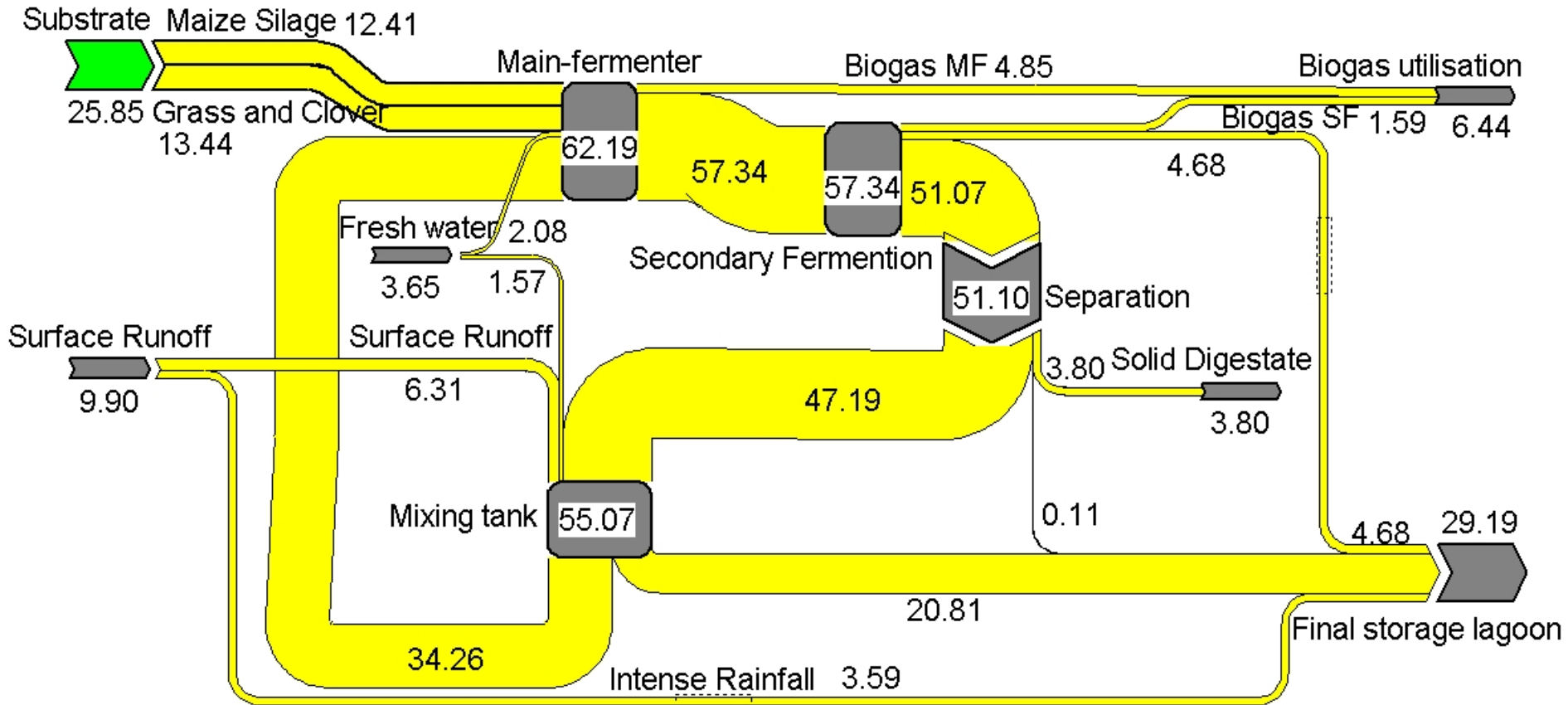


- One open lagoon for liquid fraction digestate

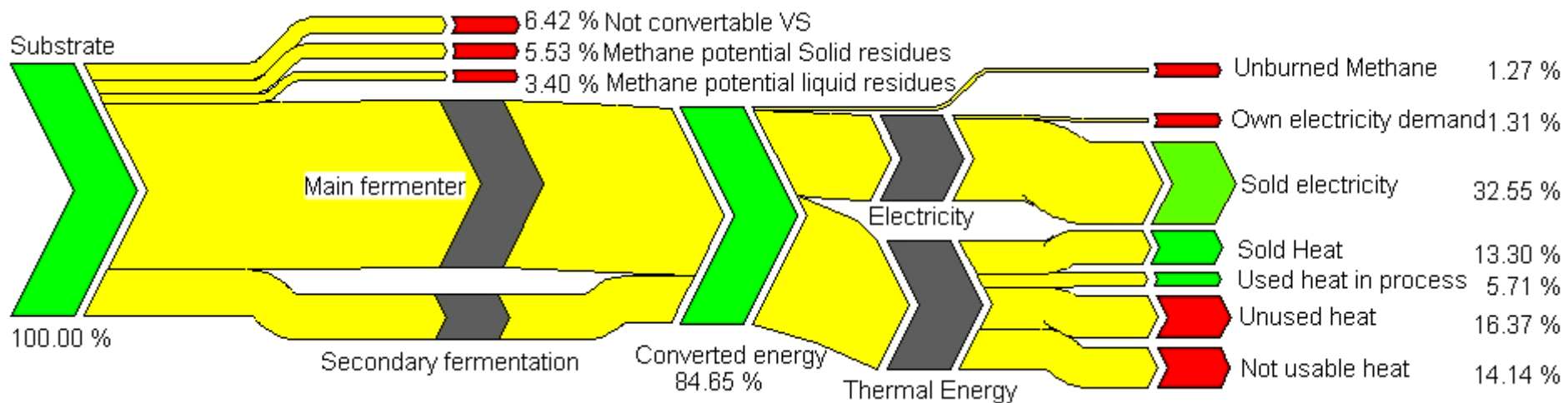


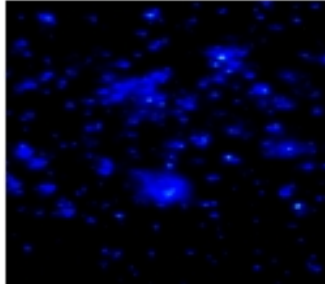


# Mass Balance



# Energy Balance





# Thanks for your attention

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