AD of energycrops and manure: Case study Reidling

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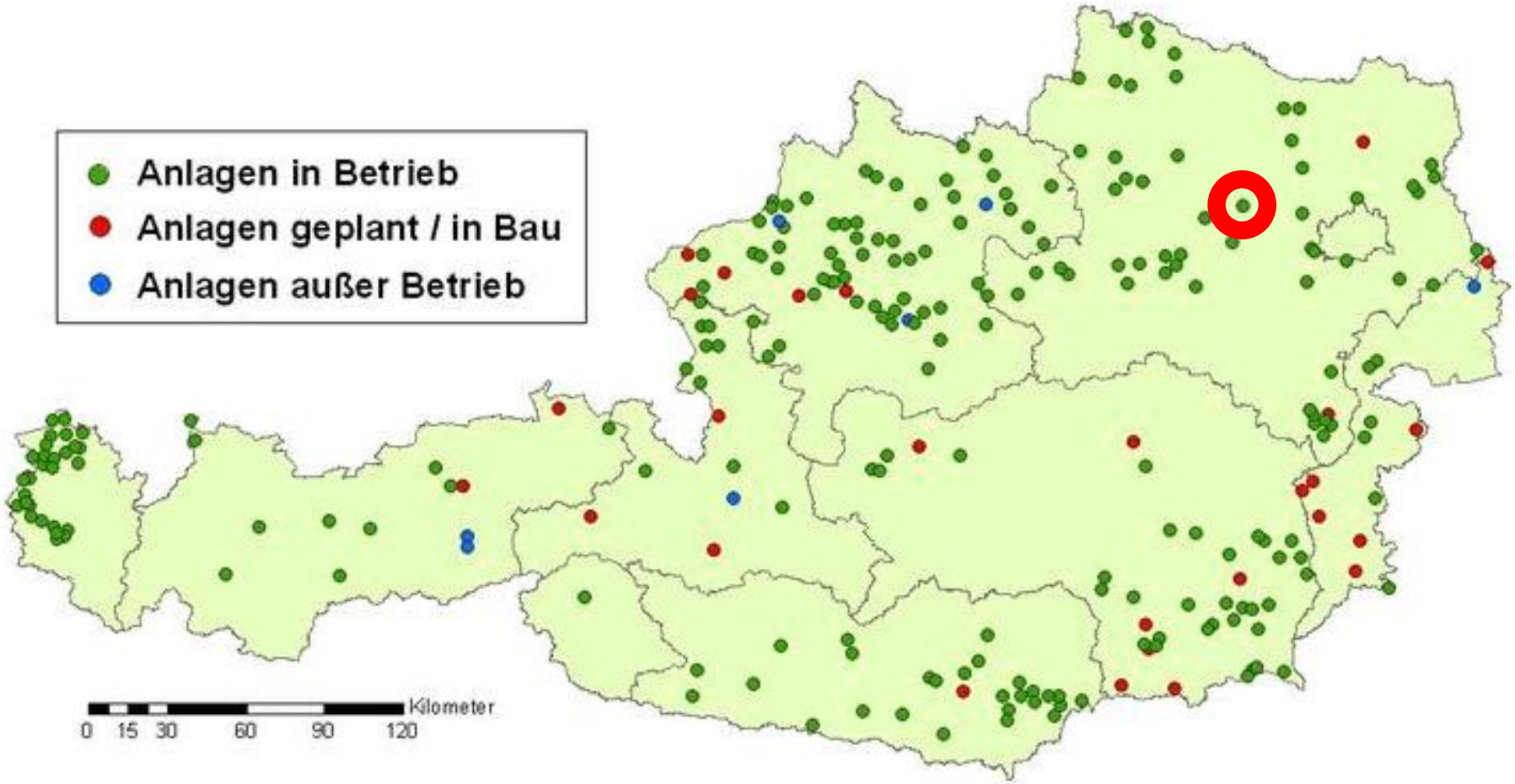
Biogas plant Reidling (AUT)

- Location: Reidling Austria
- Commissioned: 2003
- Electrical capacity: 1000 kW
- Thermal capacity: 1034 kW
- Design: AAT (Austria)

Table 2: Process parameters of the "Rohkraft" biogas plant in Reidling, Austria as measured in 2005 (8030 hours of annual CHP operation)

Input energy crops:	11,000 t/year
Input manure + leachates:	7,300 t/year
Biogas production:	4.02 Mio m^3/year
Production of electrical energy:	8,030 MWh/year
Production of thermal energy:	8,223 MWh/year
Own electrical consumption:	562 MWh/year
Own thermal consumption:	50 MWh/year
Thermal consumption pig breeding:	1,000 MWh/year
Sale of electrical energy:	8,030 MWh/year
Sale of thermal energy:	1,600 MWh/year

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

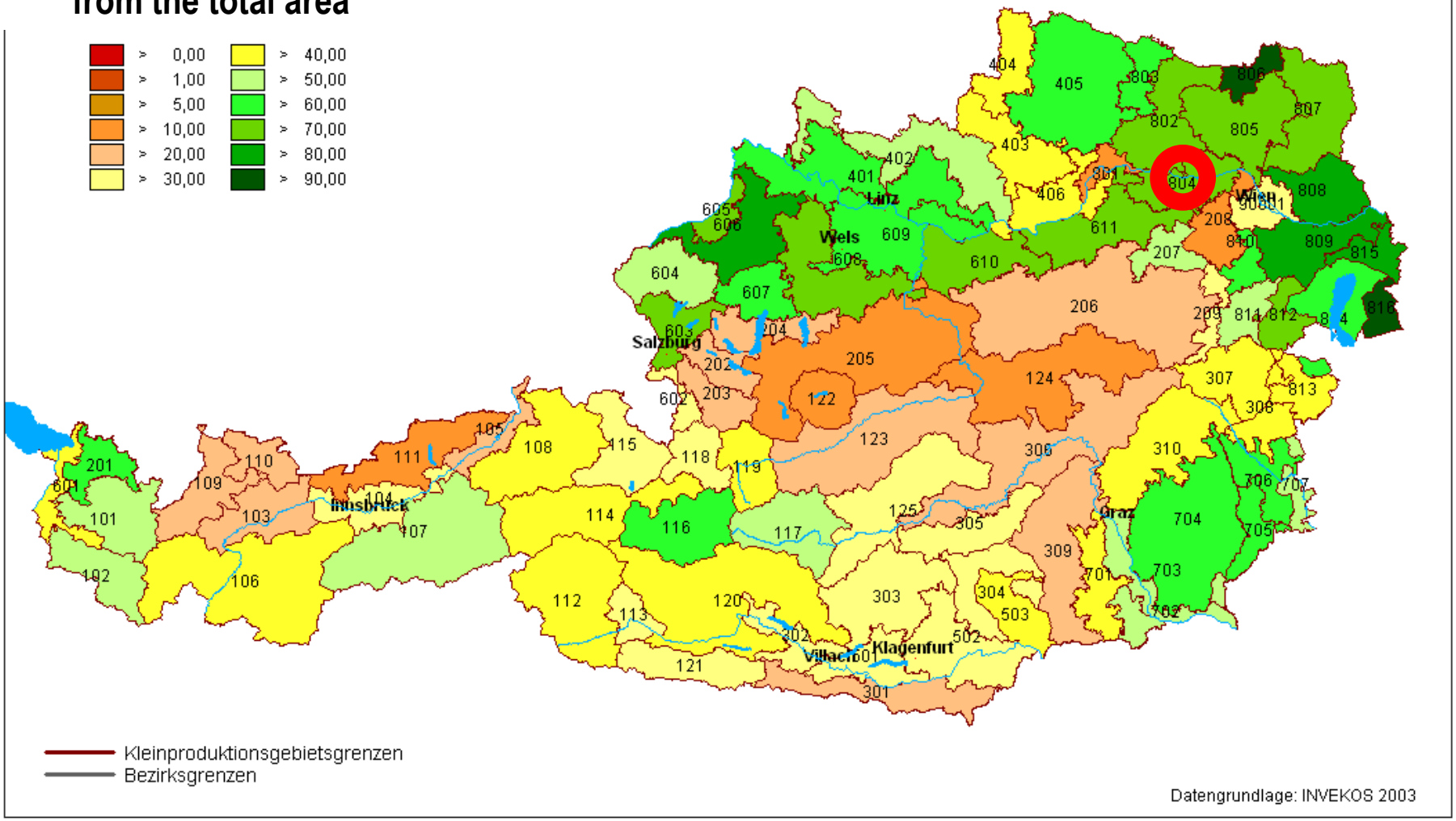


raumberg gumpenstein

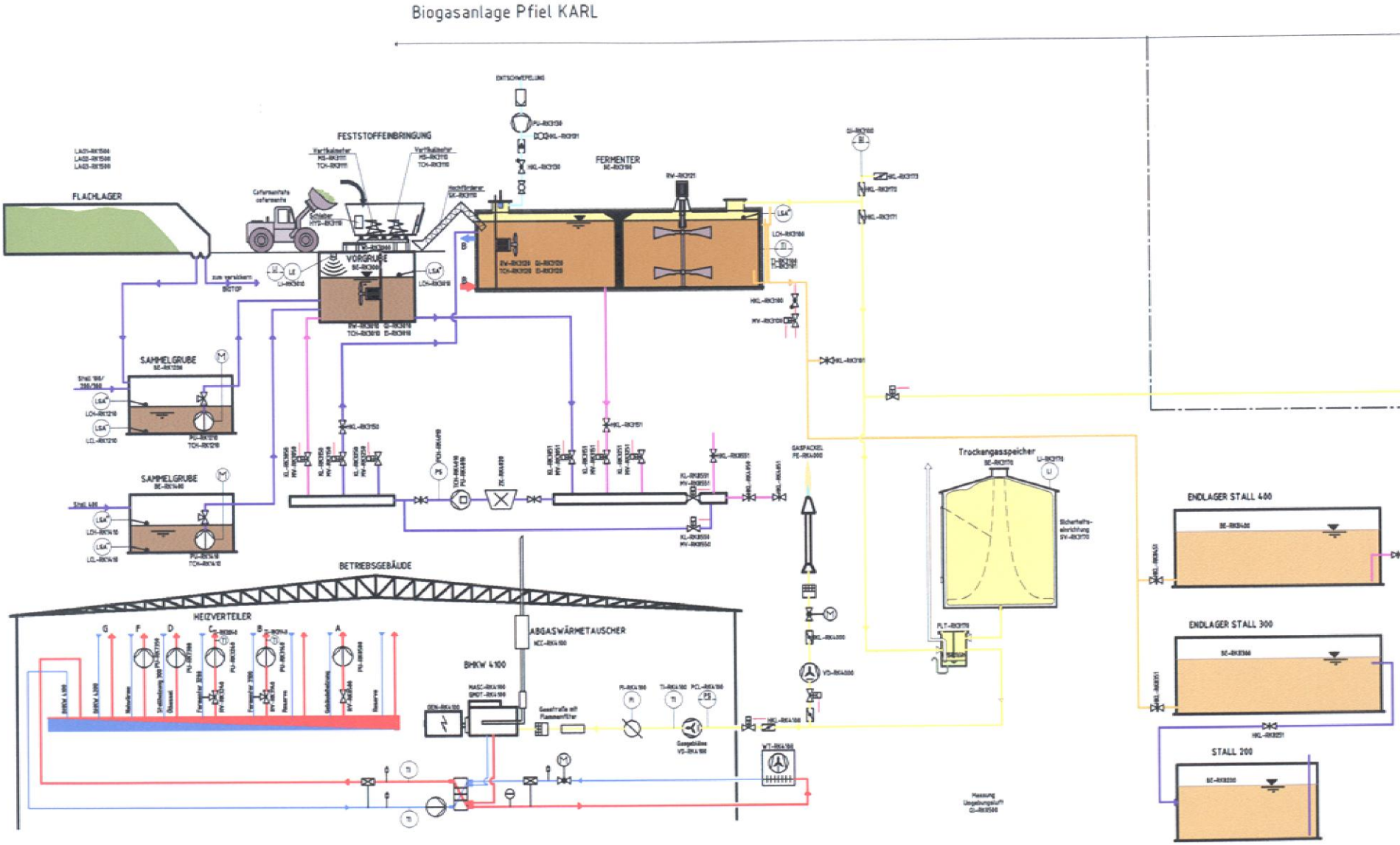
Datenzusammenstellung: E.M. Pötsch
Erstellung: A. Schaumberger / Juli 2006

Geoinformation im ländlichen Raum

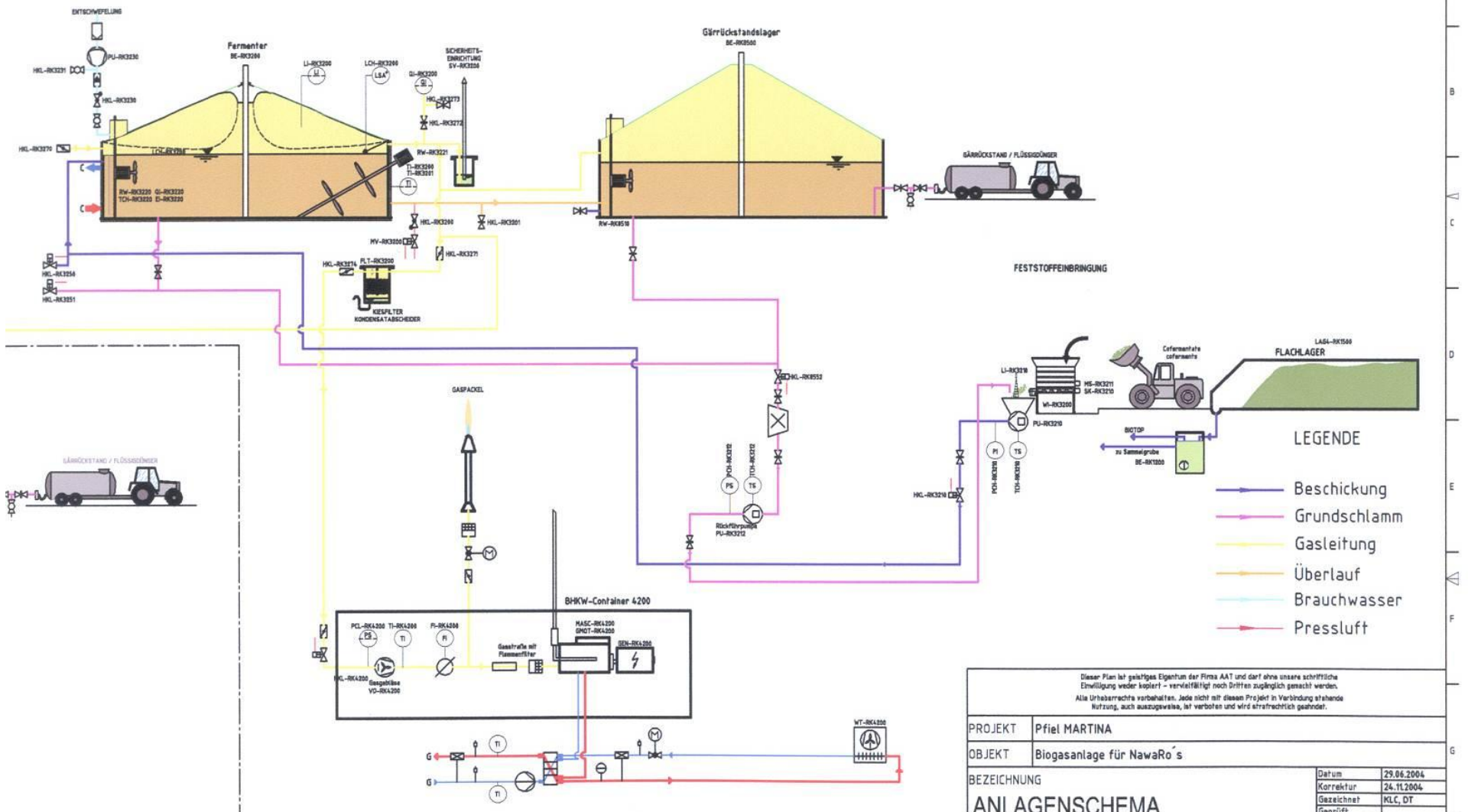
Percentage of agricultural area from the total area



Scheme Biogas plant Reidling



Biogasanlage Pfiel MARTINA



PROJEKT	Pfiel MARTINA
OBJEKT	Biogasanlage für NawaRo´s

BEZEICHNUNG

ANLAGENSCHEMA

Datum	29.06.2004
Korrektur	24.11.2004
Gezeichnet	KLC, DT
Geprüft	
Maßstab:	
Plan Nr.:	A-A_04_066-004b

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Weidachstraße 6
6900 BREGENZ, Austria
Tel. Nr. +43 5574/65 190-0
Fax Nr. +43 5574/65 185-6

Feedstock

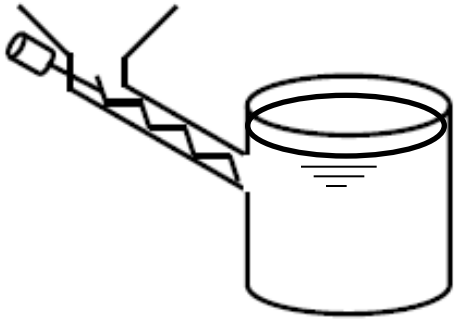
	t / a
Pig manure	5500
Maize (hole crop silage)	3950
Maize (grain silage)	5200
Organic by-products	800

Energy Crop reception and feeding systems for biogas plants

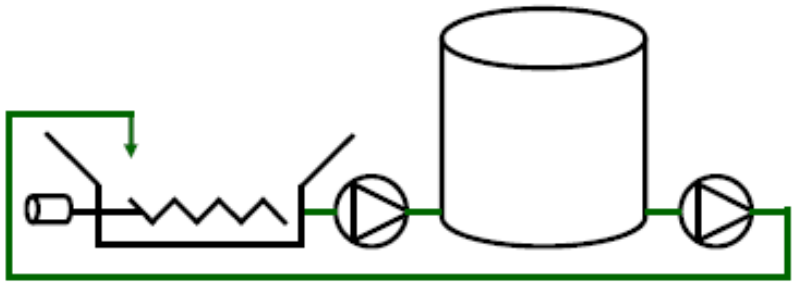
- Delivery: with tractors and lorries
- Weighing: on weighbridge
- Storage: in the bunker silos and manure pit
- Hopper connected to the feeding system to store the daily feedstock
- Feeding systems
  - Auger feeding system
  - Auger + pump feed system
  - Pump feeding

Energy Crop reception systems for biogas plants

Auger feeding system for energy crops



Energy Crop feeding systems for biogas plants



Digesters

- Cylindrical concrete tanks
  - Main Fermenter: 2000 m3
  - Secondary Fermenter: 1850 m3
  - Post Digester: 3800 m3
  - Digestate storage: 3000 m3

Digesters

Mixing systems in the digesters

- Main fermenter
  - 1 paddle
  - 1 propeller
- Secondary Fermenter
  - 1 angular paddle
  - 1 propeller
- Post digester
  - 1 propeller

Mixing systems in the digesters

Heating (cooling) systems

- Stainless steel heating pipes inside of the digesters
- For cooling (spring water)
- For heating exhaust heat from the CHP

Biogas treatment

- Desulphurization
  - Internal biological by blowing air in the headspace of the reactor
  - Chemical by adding iron ions

Biogas storage tanks

- 1 external membrane gas holder
- 1 membrane gas holder on the secondary digester

Biogas utilization

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

Biogas flare

For emergency actions

- **overproduction**
- **breakdown of gas utilization system**
- **bad biogas quality**

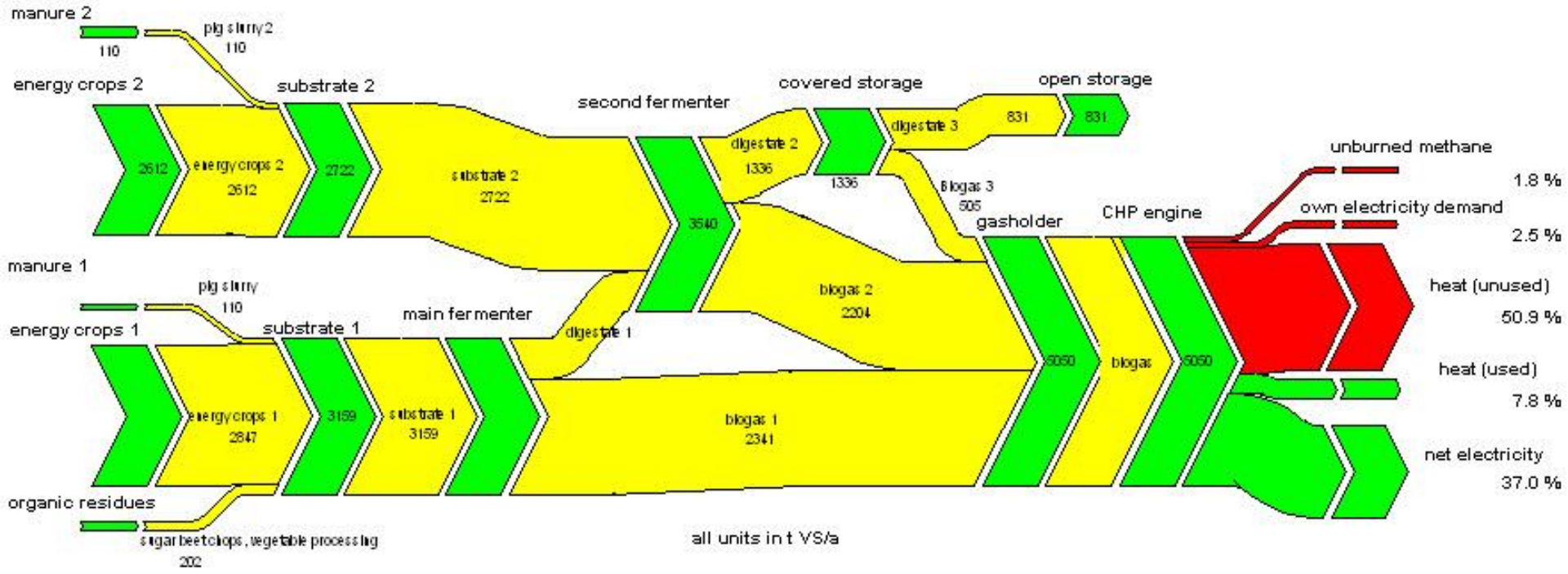
Digestate storage tank

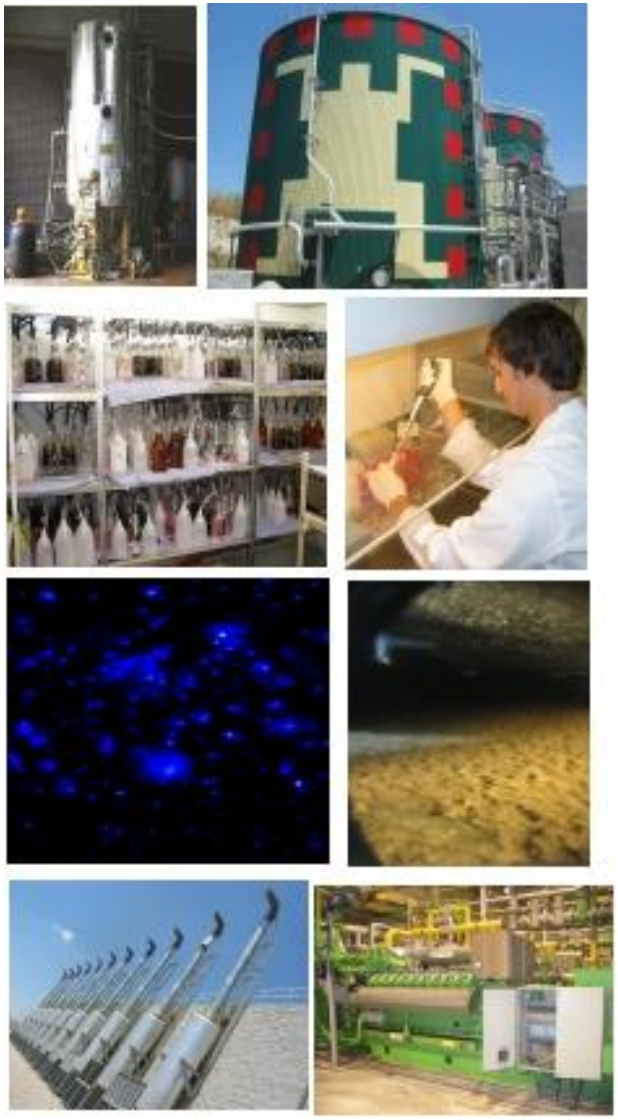
- To store the digestate over the time when it cannot be applied as fertilizer to agricultural areas (app. 180 days)

Digestate utilization

- Digestate is utilized as biofertilizer

Energy Balance





Thanks for your attention

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