The biogas plant in Gambarana (North Eastern Italy) started the operation in April 2006 in the farm company “Azienda Agricola Castello” with the latest “UTS Italia” technology. This plant is set up with:

1. Liquid manure collecting tank
2. Biomass Dosage and transport utilities
3. Liquids distribution room
4. Digester warmed by dipping agitators
5. Storage tank
6. Gas pipelines provided by desulphurization system
7. Co-generator

The costs for the plant amounted to 1,500,000 Euro.

The amount of feedstock utilized is about 18-20 tons per days of energy crops, including silage maize, silage grain maize, sorghum and rye silage. A small amount of liquid manure is needed for the start of the fermentation process. The digester size is 1.727 m$^3$, the residence time is 56 days, and the operational temperature is about 44°C. The amount of gas produced per day is 3.800 m$^3$.

The electrical power rating of the cogenerator is 330 kW and the plant produces about 2,9 MWh of electricity per year, which is supplied to the public grid for the 90%, as the 10% of the total amount is the annual power consumption of the plant itself. Because of the production of nitrogen fertilizer (residue of the fermentation of the feedstock) it is possible to substitute the acquisition of commercial fertilizer. The available area for spreading the fertilizer is 150 ha.
Biogas Regions
Shining Example

key data
Start of Operation ................................................. 2006
Type of corporation ................................................... farm company
Amount of gas produced .............................................. 3800 m³ per day
Investment costs ..................................................... 1 500 000 €

feedstock
Liquid manure .................................................. Little amount in the process start up
Silage (mais, sorghum, rye and corn) ......................... 18-20 tons per day
About half the feedstock is provided by the owners of the plant. The other is supplied externally generating a small revenue.

production data
Available area for the output of the biogas fertilizer .......... 150 ha
Thermal power rating of the gas engine ....................... 152 kW
Generated thermal energy ........................................ 1,33 MWh per year
Utilisation of heat .................................................... no
Electric power rating of the gas engine ....................... 330 kW
Generated electric energy ......................................... 2,9 MWh per year
Power consumption (electricity) of the plant itself ........... 0,29 MWh per year
Annual delivery of electricity to the (regional) electric grid company 2,6 MWh per year

technical plant description
Bunker silo ..................................................... 7000 m³
Existing manure sump ........................................... 300 m³
Digester .......................................................... 1727 m³
Digested manure storage tank .................................. 4349 m³
Residence time in the digester .................................. ~ 56 days
Temperature of the anaerobic digestion (operational) ...... 44 °C
Average expenditure of human labour ....................... 2 hours per day

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