BioEnergy Farm 2

# BELGIUM - BIOLECTRIC

## The new paradigm of the biogas sector

## Biolectric

The Biolectric biogas installation sets the new paradigm for the biogas sector: a small investment that is quickly earned back ! As there is no food, feed nor organic biologic waste added to the system, the running cost stays under control and the question whether or not it's ethical to use edible crops to produce energy doesn't apply. By using only slurry, own to the farm, in a small scale installation frequently heard complains of noise, odor and transportation nuisance are omitted.

The installation is fully automated, so only 1 or 2 hours of work per week are needed to keep the system going: as long as the cows are producing dung, the innovative concept will get the most possible electricity and heat out of it. (www.biolectric.eu)

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A Biolectric biogas plan doesn't only give your farm a green image; it settles the ever rising electric energy bill for good. The extra heat that can be used elsewhere on the farm is just the icing on the cake.

## What lessons has been learned

Since the first installation has been installed on the farm in 2010 we have learned and improved the installation over the years. A big advantage is that the installation is conceived as a "product" and not as a "project".

Meaning :

- easy set-up ( 2-3 days) .
- easy for export
- always the same feedstock ( dairy slurry)

Some general advantages for the farmer :

- No ever rising electricity bill any more
- $CO_2$ neutral while making profit
- No extra work

## A short description of the process

The installation is placed near the stable.

Each day the biogas plant pumps a predetermined amount of slurry from the reactor to the digestate stock and supplies the transported volume with fresh slurry from the basement. This process is fully automatic done under the supervision of the control system.

The slurry in the reactor is heated up to 38 °C by means of warm water circulating in tubes along the side of the reactor.

The formed biogas is fed through a few filters to the engine.

The produced electricity is injected into the grid and the heat is primarily recovered to heat up the reactor and the rest of the heat is by means of a second heat exchanger transported to the farm.

## Key data:

**Start of operation:** 2013
**Manufacturer:** Bioelectric
**Type of plant:** Micro biogas plant on slurry (mono-digester)
**Location:** Oelegem, Belgium
**Amount of gas produced (m3 per year):** 69.600
**Amount of biomass treated (tonnes per year):** 2.900
**Investment costs (EUR):** € 150.000
**Cost and benefit:**

- Gross yearly income : 43.404 €
- Yearly maintenance : 6.000 €
- Net yearly income : 37.404 €
- Payback period (years): 4

## Feedstock

**Liquid cattle manure (tonnes per year):** 2900 m³

## Production data

**Electric power of the gas engine (kW):** 19.4
**Generated thermal energy:** 335 MWh
**Utilization of heat:** 73%
**Generated electric energy (kWh):** 155.200
**Power consumption (electricity) of the plant itself (kWh):** 9.600 kWh

## Technical plant description

**Operating temperature (dg):** 35 - 42
**Average retention time in digester (days):** 25
**Average expenditure of human labor (persons):** 1 hours/week maintenance and 24/7 monitoring
**Size of reception facility (m3):** 0
**Size of fermentor (m3):** 240
**Size of end storage tanks (m3):** existing storage for slurry

The project BioEnergy Farm II wants to inform farmers about the benefits of micro scale digestion and give farmers a view on the feasibility of this technology for their business.

Are you curious about the feasibility of micro scale digestion on your farm?

From September 2015 we offer personal guidance at home! Our biogas experts have software tools to calculate the feasibility of micro scale digestion on your farm.

www.BioEnergyFarm.eu

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