



Rysunek 11 Schemat idźony biogazowni w Stadźonice \* (opracowanie własne IED)

POLAND

SELF MADE BIOGAS PLANT

## Poland

In Studzionka an experimental agricultural biogas plant with power around 25-30kW was built. It is fed mostly with chicken manure and pig slurry. The investor is a private farmer (with 40ha of land) who is breeding poultry and piglets. It was driven by the new EU requirements to build in each livestock farm a dunghill. The farmer decided to build the biogas plant mostly for utilization of significant amounts of chicken manure and pig slurry produced on his farm. However, he also hoped to improve economics of the farm operations. One of the problems the investor had to deal with was the social acceptance of the project. Moreover, the local authorities responsible for issuing necessary permits did not understand biogas technology.

*By using this simple sedimentation principle, it is possibly to increase the gas output from the manure.*

## What lessons has been learned

As for the public acceptance of biogas plant – several actions were undertaken like: meetings with Major and local people supported by well recognized experts and plant designer. This resulted with establishing communication between all actors, and finally with acceptance of the plant. The smaller amount of odors were also noticed. As for the economic aspects – the investor experienced difficulties with connection his generator to the public electricity grid. Therefore, the electricity and heat is used only for the farm.

## A short description of the process

This micro is not considered as a reference for future plants, but experiences gained are extremely valuable. The installation process per year approx. 690 t of chicken manure and 320 t of pig slurry and additional substrates - 365 t of maize silage and grass and organic waste from the farm. Biogas is converted into energy in the cogeneration unit with power of 30 kW el. and approx. 40 kW th. Electricity is being used for own needs of the biogas plant and the farm. However, it was planned also as a source for heating of residential buildings and livestock building for piglets. The fermented manure farmer uses to fertilize the fields. The basic unit is fermentation chamber - thermally insulated steel tank with a capacity of 61m<sup>3</sup>. Digestate accumulates in the reinforced concrete, circular tank sunk into the ground at about 1.5 m with volume of 350 m<sup>3</sup>.

## Key data:

Start of operation:	2009
Manufacturer:	self made
Type of plant:	Micro biogas plant on slurry and maize
Location:	Studzionka, Poland
Amount of gas produced (m <sup>3</sup> per year):	98.000
Amount of biomass treated (tonnes per year):	1.375
Investment costs (EUR):	50.000
Cost and benefit:	Gross yearly income : unknown € Yearly maintenance : unknown € - Net yearly income : unknown
Payback period (years):	unknown

## Feedstock

Liquid pig manure (tonnes per year):	320
Liquid cattle manure (tonnes per year):	0
Leftovers (tonnes per year):	small amounts
Chicken manure:	690
Maize silage and grass:	365

## Production data

Electric power of the gas engine (kW):	30
Generated thermal energy:	40 kW
Utilization of heat:	unknown
Generated electric energy (kWh):	180.000
Power consumption (electricity) of the plant itself (kWh):	unknown

## Technical plant description

Operating temperature (dg):	40
Average retention time in digester (days):	unknown
Average expenditure of human labor (persons):	1 hour/day
Size of reception facility (m <sup>3</sup> ):	none
Size of fermentor (m <sup>3</sup> ):	61
Size of end storage tanks (m <sup>3</sup> ):	350
CHP (kW):	30

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. Contact us!



[www.BioEnergyFarm.eu](http://www.BioEnergyFarm.eu)



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