

Wielkopolska province, Poland

Biogas Plant Skrzatusz

Special feature of Project

It is the first agro-industrial biogas plant in Poland. Installation in Skrzatusz is one of the very few biogas plants in Poland, which currently do not generate losses because as a raw material for biogas production uses only the waste, most of which gets for free.

The investor created its own design for the Polish market, because the others offered a ready project brought in a briefcase and not tailored to the needs of the real location. The owner of biogas plant in Skrzatusz applied another way to ensure its cost-effectiveness. He built the plant for drying wood. Thus the heat produced from biogas can be fully utilized. Another thing that distinguishes this biogas plant against the others is that this biogas plant has its own biotechnological laboratory which makes possible to test various raw materials and obtained data allows to calculate how much of the substrate can be added.

Biogas plant description

The desire to manage waste from a nearby distillery, rotten fruit and vegetables (the so-called plant-waste) from supermarkets resulted in the construction of the first agro-industrial biogas plant in Poland.

The biogas plant is located in the town of Skrzatusz, Szydłowo commune, Greater Poland Voivodeship in the vicinity of alcohol distillery. The immediate surroundings of the location is a field

and fallow lands, the nearest human settlements are located at a distance of 250 m.

Installation in Skrzatusz annually processes about 24 000 tonnes of substrates. The resulting biogas allows to produce about 4 000 MWh of electricity per year.

The project was co-financed from EU funds under the Operational Programme Infrastructure and Environment. Support value was 5.2 million PLN.



Stillage intermediate tank in the distillery. From this tank the stock is pumped to the initial reservoir in the biogas plant.



Stillage premix tank with working volume approx. 370 m³. The vertical mixer was installed to insure proper unification of the brew before feeding to the fermentation process.

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The reservoir of liquid organic waste. The heating system was installed providing the possibility of maintaining the proper temperature of the substrate prior to delivery to the fermentation process. Thanks to the heating system, it is possible to receive viscous waste, for example, glycerol, fat waste.



Collection building for waste requiring hygienisation. The building was installed to allow the device to receive and process the animal waste or, for example: overdue food.



Solid substrates container. Concrete bunker with installed moving floor and the system of screw conveyors automatically transporting solid substrates to the mixing tank. The bunker capacity is approx. 100 m³.



Chemical filters for odors from the receptions station. Ventilation air is extruded outside the station by the main chemical filter. In addition, storage tank and hygieniser are equipped with air extraction from above the sludge. Extracted air flows through the lower odor filter.



Silo for grain or other flaked and dry substrate



Mixing tank with a capacity of approx. 6 m³ with a vertical mixer and tensometric weight. Into this tank all substrates get and are dosed in accordance with a predetermined recipe. Weighing, dilution and mixing of substrates is automatic, even tens of cycles per day.



Digester 1. Concrete tank, equipped with a heating system and vertical double propeller mixer to prevent sedimentation and maintain uniform concentration of co-substrates in the workspace. Tank height 8 m, diameter 13 m, capacity approx. 982 m³.



Fermentation tank 2. Open chamber, made of concrete, with a double, tight membrane covering. The tank is equipped with a heating system and lateral mixers to prevent sedimentation and maintenance of uniform co-substrates' concentration in the workspace. Tank height 8 m, diameter 22 m, capacity approx. 2813 m³.



JENBACHER's gas engine type JMS 312 GS, with the electric power of 526 kW and thermal power of 300 kW. Electricity is directed into the grid, thermal energy jets used to cover own thermal needs of the biogas plant. The hot exhaust gases from the engine are directed to a steam boiler.



Steam boiler with heat capacity of 205 kW. The nominal steam production is 300 kg/h. Produced a steam goes to a neighboring distillery. The exhaust gases from the engine after passing through the steam boiler are directed to the chimney.

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Lagoon

(Source: <http://www.google.pl?url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&ved=0CCAQFjAA&url=http%3A%2F%2Fwww.reoseminars.pl%2Fseminaria%2Fcontent%2C51.4%2Cfile%2C220.html&ei=pflaVdfiA8SjsAGQy4H4Bw&usg=AFQjCNHCntVIRY OZQUI98K4UIITM3YHBaw&bvm=bv.89381419,d.bGg>)

Technology at a glance

Biogas production:	2,058,600 m ³ /year
Installed power:	526 kWel 558 kWth
Digesters:	3795 m ³
Substrate/year:	15800 t distillery stillage 2700 t carrot pomace 5500 t potato pulp 5500 t corn silage 2100 t waste protein
Input waste/substrate:	33600 t/year

Information on financing

Year of realisation:	2011
Investment costs:	13 mln PLN
Feed-in tariff electricity:	0.38 PLN/kWh
Tariff for heat sale:	not available
Disposal costs:	not available



More information

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