



Micro biogas plant

Input material: slurry	9 100 m ³ /year
Fermentation temperature (mesophilic)	38–40 °C
Working volume of the fermenter	525 m ³
Retention time	21 days
Expected biogas production	approx. 201 500 m ³ /year
Predicted CH ₄ content in biogas	55–60 %
Max. electrical output of the cogeneration unit	42 kW
Max. thermal output of the cogeneration unit	61 kW
Operating time CHP unit	8 400 h/year
Electrical energy production (at 100 % output)	353 MWh
Thermal energy production (at 100 % output)	512 MWh
Dimension of the required area	30 x 30 m

The construction part consists of the cost of the concrete foundation for the fermenter, paved area for the CHP unit (Combine Heat and Power) container, concrete footings for the flare system (safety burner) and columns for the pipeline routes.

Turnkey delivery time

approx. 30 weeks from the signing of the contract





Basic technical description

Slurry/digestate sump

Underground concrete sump with dimensions 9x4,5x3 m, which is separated by a partition into two sections, each with a working volume 55 m³ for slurry and digestate.

The sump is equipped with vertical pumps with mixing nozzle for pumping the slurry into the fermenter and removing the digestate.

Note: It is possible to use the customer's existing sumps, which will only be fitted with new pumps and piping.

Fermenter – isolated, bolted steel enamel tank with double membrane roof

Diameter	13,71 m
Fermenter height / number of rows of sheets	4,36 m / 3 rows
Working volume (sludge part)	525 m ³
Double membrane roof with gas holder	180 m ³
Total height	7,7 m

The fermentation space is stirred by a side shell stirrer and heated by a built-in heating circuit, in which hot water flows from the CHP unit cooling system. The filling of the fermenter with fresh slurry is carried out by a pump from an underground concrete sump. The draining and filling of the daily dose is carried out 4 times a day.

Biogas drying (option – recommended)

Raw biogas contains high relative humidity. To operate the CHP unit, the humidity must be reduced. For this purpose, a heat exchanger-based device is used. The principle is to cool and then heat the biogas. The precipitated condensate is drained into a pumping sump.

Biogas desulphurisation (option – recommended)

Biogas produced from the slurry contains a higher amount of H₂S than is allowed for standard CHP unit operation. Desulphurisation is carried out by flowing biogas through a container with activated carbon or special granulate

Container of CHP unit, including control system

Steel container in which the CHP unit including accessories – biogas blower, biogas analyzer and thermal management. The container is also equipped with emergency cooling system of the CHP unit. In separate sections of the container are located electrical switchgear and control system with computer.

Flare system (safety burner)

For the disposal of excess biogas or during a shutdown of the CHP unit, the biogas plant is equipped with a flare system with a covered flame. (min. distance is 15 m from construction objects)

Measurement and regulation (MaR)

The control system provides automation of the BPS technological system through a control computer with visualisation software.

WITKOWITZ ENVI a.s. also offers the possibility to customize the technological design of the biogas plant for specific input raw materials.