

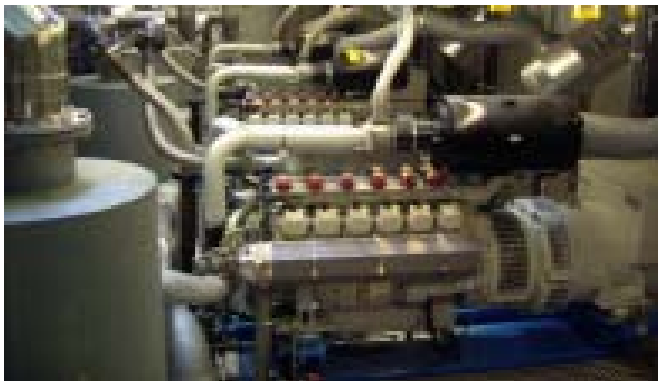
### Industrial Biogas Plant with Wastewater Treatment



Bioenergie Hammlar GmbH

This Biogas plant was designed and erected for the disposal of the residues of one of the biggest drying facilities for pot-herbs in Germany. Since now it is the largest Biogas plant according to the INNOVAS-System and contains 3.770 m<sup>3</sup> retention room.

The plant is designed for the maximum refuse streams during the drying period. In case less material accrues at the drying facility, respectively during winter time when drying is not operated, the Biogas plant will be supplied with external Biomass from food production industry.



The restriction on substrates and residues from food production only is to be seen against the background that the Biogas plant is a part of the pot-herb processing plant. Therefore No manure becomes fermented. The Biogas plant has been designed as a two-stage system optimized for the fermentation of crops. The performance data are accordingly very good.

In this factory the generated energy is optimal utilized. The Biogas is used in two CHP-modules MDE 3042 (674 kW). The heat energy is used in the drying facility, the electricity is sold to the local grid. Approx. 25 % of the heat is used for the Biogas plant itself.

With the goal to reduce the total quantities of effluent, following the Biogas plant a wastewater treatment is installed. With that SBR (Sequence Batch Reactor)-plant the surplus water will be cleaned as good as it could be discharged into the Danube (Donau) river. Just only approx. 25 % of the Input quantity will remain as a fertilizer, which is used back at the fields of the crop farms.



#### Technical Data

**Fermenter volume:** 2 x 1.885 m<sup>3</sup>  
**Substratum input:**  
 pot-herb residues during campaign up to 100 t/d  
 like parsley stems, celery, garden lovage a.s.o.  
 Beyond the campaign and as a substitute and/or supplementing:  
 Selected residues from food production Potato rejects (chips production), pulp, Process sludge (from diary), flotation fat, etc.  
**Up to the load limit of:** max. 200 m<sup>3</sup>/d  
**at a Load factor of:** 3 – 4 kgODM/m<sup>3</sup>\*d

**Biogas yield** ca. 5.600 m<sup>3</sup>/d  
**Methane content** > 60 % CH<sub>4</sub>  
**CHP-plant (Supplier MDE):** 2 x 345 kW<sub>el</sub>  
**SBR-plant:**  
**Reactor volume:** 250 m<sup>3</sup> + 326 m<sup>3</sup>  
**for max. wastewater flow of:** 130 m<sup>3</sup>/d  
**with charge of:** < 3.800 mgCOD/l  
**Effluent values:** < 200 mgCOD/l  
 < 20 mgBOD/l  
 < 70 mg N<sub>total</sub>-N/l



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