



## Biogas Regions Shining Example



### Biogas plant „Biowerk Hamburg”

ltd. Company Co. KG

The joint venture **BioWerk Hamburg GmbH & Co. KG** has been operating the Stelling Moor biogas plant since April 2006. It is the first one in Hamburg and one of the most modern and most powerful in Germany. There, about 20,000 t/a of food wastes and leftovers, both packed and unpacked, are being utilised to generate electricity and heat by applying biological conversion.

The Stelling Moor biogas plant operates in the sense of the Renewable Energy Sources Act which Directive 2001/77/EC from the European Parliament and the Council of 27 September 2001 put into force to promote electric power generation from renewable energy sources in the domestic electricity market.

Disposing of food leftovers using biogas plants corresponds to the EU Hygiene Stipulation (EU no. 1774/2002) of 3 October 2002. Whereas in the past it was allowed to process leftovers into fodder for use as animal food, that has no longer been possible since November 2006 as, from that time on, the European feeding ban started.

The plant processes

- Fruit and vegetable waste
- Foodstuffs in the trade that have been stored too long
- Leftovers from gastronomy, old people's homes, hospitals and company canteens
- Fats and oils

A special feature is that even packed foods can be treated.

Pre-treatment starts after delivery of the waste: the waste is crushed and foreign particles such as the packing are separated out. The pumpable waste substrate reaches a sanitization system in the large fermenting containers.

At a temperature of ca. 38°C, bacteria ensure conversion of the biological waste into gas here. With a methane content of ca. 65%, that is very energy rich.

After processing (drying and desulphurization), the gas drives an internal combustion engine in a combined heat and power plant, facilitating generation of electric and thermal power. The electric and heat energy produced in the Stelling Moor biogas plant is climate neutral and covers the energy needs of ca. 2,500 households. The heat from the biogas plant also heats both nearby arenas.

Source <http://www.biowerk-hamburg.de/>

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Biogas plant  
Biowerk Hamburg © IBBK

## key data

Submission of application.....	<b>07.03.2005</b>
Foundation of BOWERK Hamburg GmbH.....	<b>15.07.2005</b>
Official Opening.....	<b>24.04.2006</b>
Digestion Residue .....	<b>17.350 tons</b> per year
Biogas .....	<b>3.350 tons</b> per year
Packaging and Metals.....	<b>2.250 tons</b> per year
Investment costs .....	<b>5 000 000 €</b>

## feedstock

Expired foodstuff .....	<b>15.000 tons</b> per year
Water .....	<b>3.450 tons</b> per year
Mixed Waste.....	<b>2.000 tons</b> per year
Oil and Fat .....	<b>2.850 tons</b> per year

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## production data

Engine .....	<b>MWM Deutz 12 Zylinder V</b>
Electrical power .....	<b>1.021 kW</b>
Thermal power .....	<b>1.070 kW</b>
Overall Efficiency .....	<b>82,6%</b>
Electrical energy.....	<b>6,7 Mio kWh per year</b>
Thermal energy.....	<b>7,0 Mio kWh per year</b>

## technical plant description

Heat utilisation.....	<b>The heat is provided to the nearby stadium for hot water supply an air conditioning</b>
Gas Production rate.....	<b>330 m<sup>3</sup> per hour</b>
Energy content Biogas.....	<b>approx 6,5 kWh/m<sup>3</sup></b>
Residence time in the digester .....	<b>~ 40 days</b>
Temperature of the anaerobic digestion (operational) .....	<b>37° - 41° C</b>
Waste pre-treatment with Shredder, Separation, Hydrolysis, thermal treatment	



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