

The first biomethane plant running on hop silage in Oberlauterbach-Hallertau, Germany

SUCCESS STORY



Picture: Oberlauterbach plant, Schmack Biogas GmbH

Operator

Bioerdgas Hallertau GmbH

Location of the project



Oberlauterbach, Hallertau, Germany

Contact details

Schmack Biogas GmbH (Viessmann Group) Bayernwerk 8
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Project results

Project outline

At the heart of Bavaria, Hallertau is a major hop growing region worldwide. Unlike hop umbels, hop silage (residues from hop growing) cannot be used for the process of beer brewing. It was previously stored and spread on hop fields as a fertilizer, without any energetic use. The idea behind the project was to recover energy from hop silage produced in Hallertau. Schmack built a biogas plant specifically designed for processing fibres-rich materials (lignocellulosic). Schmack technology enables the digestion of a broad range of agricultural residues including grass, corn silage and hop silage.

Technical data

Year of plant construction:
2012

Year of performed service:
2012

Plant size: 11.5 MW_{GAS}
~ 95 million kWh/a

Digester volume: 22,000 m³

Gas storage: 10,000 m³ on site
Unlimited storage in gas grid

HRT : ~ 110 days

Process temperature:
Mesophilic, ~ 40°C

Type of raw material:
65% Hop silage
35% Maize / grass silage

Utilisation of biogas:
Biogas upgrading to biomethane,
injection to the gas grid

Heat utilisation:
Heat is used for digestate drying and
digesters heating

Utilisation of digestate:
High-grade, low odour fertiliser

Performed actions

The hop silage is collected among 170 farms that represent one third of the total production in the region. It is mechanically pre-treated before entering the AD system. The spikes, which are needed to mount the hops at the rack, are removed during pre-treatment. This way no metal is spread on field and metal can be recycled. The AD system is made of 3 horizontal digesters and 4 round digesters. It is able to process various fibrous material, including hop silage. The biogas produced at Oberlauterbach plant undergoes upgrading process (CO₂ removal) so that biomethane is injected to the national gas grid, 5 km away from the plant. Finally, digestate is sent to a covered post-fermenter and samples are tested in a lab for their content in trace elements (phosphorus, etc). This way, the farmer knows exactly the amount of digestate to spread on the fields to achieve best nutrition.

Results of performed service

The 95 million kWh produced every year roughly correspond to the average gas consumption of 5,000 households should biomethane be used for heat generation only. The plant, owned by Bioerdgas Hallertau GmbH, is the result of a joint venture between a large hop grower (HVG) and an energy provider (E.ON Bioerdgas GmbH). It was inaugurated by Bavaria's State Governor Seehofer in September 2012.



Left: Oberlauterbach plant - Schmack Biogas GmbH

Right : Hop plant - FNR e.V.