

Madsen Bioenergi – Biogas Plant

Main results / outcomes

- The biogas plant is a facility located on a farm that processes manure from farmers in the region.
- Primarily designed to handle livestock manure, including deep litter, the plant also accepts energy crops like maize and grass, as well as residual products from industry.
- Madsen Bioenergi is among the first biogas plants in Denmark to upgrade biogas to bio-natural gas and inject it into the Danish natural gas grid, with an annual production capacity of nearly 5 million Nm³ of natural gas.
- The upgrading process is facilitated by Ammongas, with the absorber column serving as the core component. In this column, raw gas is washed with a water-amine mixture, allowing the amine to absorb CO₂ and H₂S gases.

Practical recommendations

- Biogas serves as a substitute for fossil fuels like oil, coal, and natural gas, offering significant environmental benefits.
- In agriculture's "climate accounting," biogas plays a crucial role, as greenhouse gas emissions can be substantially reduced by treating livestock manure in a biogas plant.
- Additionally, the biogas process enhances the availability of nutrients in manure for plants, contributing to improved agricultural productivity.
- To maximize environmental benefits, factors such as transportation, process energy consumption, and methane emissions from the plant must be carefully monitored and managed.



Figure 1: Madsen Bioenergi.

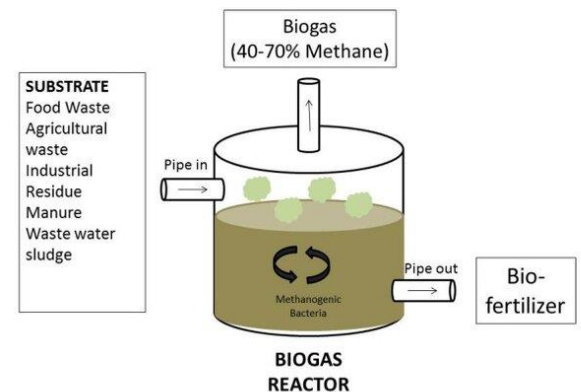


Figure 2. Biogas production process (Lara Anne Hale)

Further information

<https://madsenbioenergi.dk/>
<https://bce.au.dk/en/research/facilities/biogas-plant>

About this abstract

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AgroFossilFree is a H2020 multi-actor project that will evaluate the current status in EU agriculture regarding energy use and assess existing needs, allowing farmers to optimize agricultural production through more efficient energy use and reduced GHG emissions, resulting in economic, agronomic and environmental benefits. AgroFossilFree will create a framework under which critical stakeholders will cooperate to evaluate and promote the currently available Fossil-Energy-Free Technologies and Strategies (FEFTS) in EU agriculture. The project is running from October 2020 to September 2023.

Website: www.agrofossilfree.eu



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement ID 101000496

Madsen Bioenergi, - Biogasanlæg

Resultater

Madsen Bioenergi ejes af 3 brødre: Kim Madsen, Boe Madsen og Per Madsen. Tilsammen driver brødrene 450 ha. agerbrug. I biogasanlægget behandles gylle fra området landmænd. Biogasanlægget er designet til hovedsageligt at behandle husdyrgødning - herunder dybstrøelse. Der anvendes også energiafgrøder som majs og græs samt restprodukter fra industrien. Madsen Bioenergi er et af de første biogasanlæg i Danmark, som opgraderer biogassen til bio-naturgas og leverer den til det danske naturgasnet. Produktionen ligger i dag på næsten 5 millioner Nm³ naturgas om året. Opgraderingsanlægget er leveret af firmaet Ammongas. Hjertet i processen er absorberkolonnen. I denne kolonne vaskes rå-gassen med en vand-amin-blanding, og aminen optager CO₂ og H₂S.

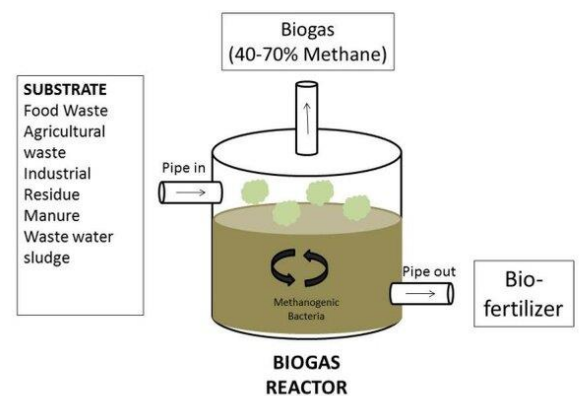
Praksis og anbefalinger

Biogas kan bruges i stedet for fossile brændstoffer som olie, kul og naturgas. For landbrugets "klimaregnskab" har biogas stor betydning, da udledningen af drivhusgasser kan begrænses væsentligt ved at behandle husdyrgødning i et biogasanlæg.

Biogasprocessen gør også næringsstofferne i gylle lettere tilgængelige for planterne. Faktorer som transport, forbrug af procesenergi og metan udledningen (tab på grund af utætheder mm.) fra anlægget skal være i fokus for at sikre maksimal miljøgevinst.



Figur 1: Madsen Bioenergi.



Figur 2. Biogas processen (Lara Anne Hale)

Yderlig information

<https://madsenbioenergi.dk/>

<https://bce.au.dk/en/research/facilities/biogas-plant>

Om dette abstrakt

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Dato: March 2022

AgroFossilFree er et EU Horizon 2020 projekt, der skal evaluere den nuværende status i EU's landbrug med hensyn til energiforbrug og vurdere eksisterende behov, således at landmændene får mulighed for at optimere landbrugsproduktionen gennem mere effektiv energianvendelse og reducerede drivhusgasemissioner. Dette vil resultere i økonomiske, agronomiske og miljømæssige fordele. AgroFossilFree vil skabe en ramme, hvorunder centrale interessenter kan samarbejde om at evaluere og fremme de aktuelt tilgængelige fossil-frie energiteknologier og -strategier (FEFTS) indenfor EU's landbrug. Projektet løber fra oktober 2020 til september 2023.

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