



# Genomic optimisation of hydrolysis in biogas production

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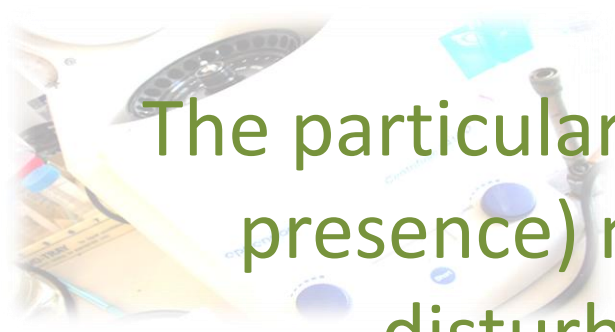
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Investigation of the microbiological content in the AD samples



Finding the correlation between the presence of specific organism and high (or low) methane production in ADs



The particular organism (its DNA and RNA presence) might be an indicator of the disturbance of the AD process



# Present work



Design and trial run of lab-scale semi-continuous digester



Beggining of the collaboration with Scandinavian Biogas

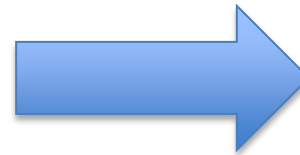


**Control digesters**  
(triplicates):

- Inoculum – AFBI's sample (full-scale mesophilic AD)
- Feedstock – slurry
- Mesophilic AD (38°C)

**Treatment digesters**  
(triplicates):

- Parameters – the same as in control AD, but:  
addition of H<sub>2</sub>



Investigation of the samples from mesophilic and thermophilic lab-scale digesters in the near future

# Methodology

## Lab-scale reactors analysis

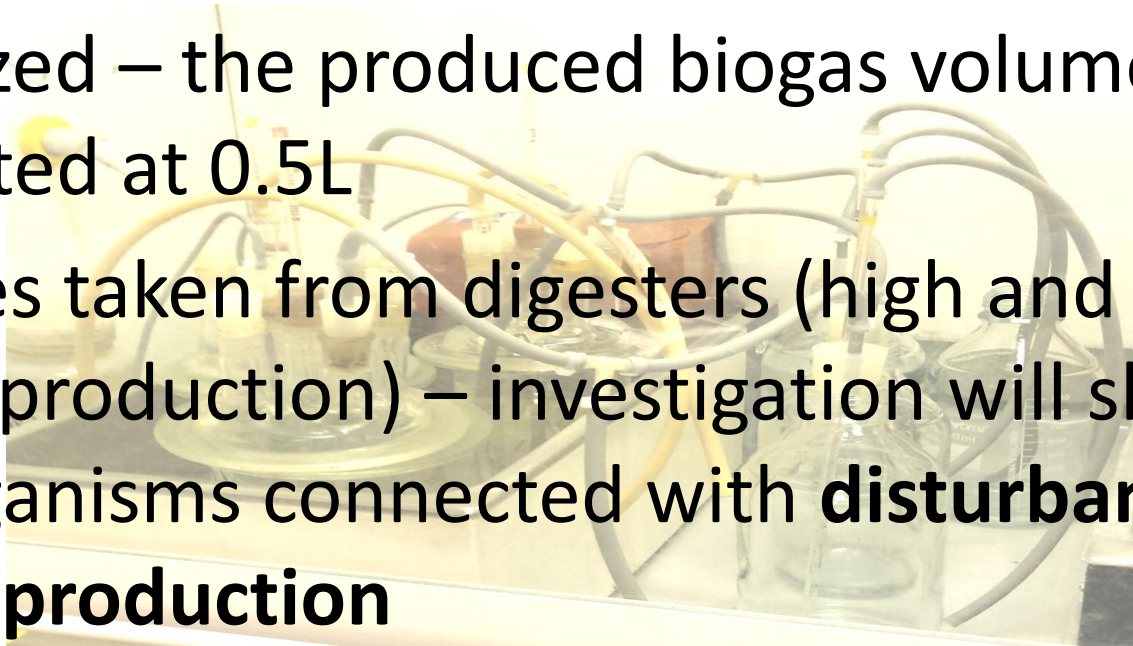
- Measurement of gas volume by displacement method
- Gas content measurement – portable gas analyzer
- Collecting and freezing the samples once a week for later analysis (chemical and biological)
- DNA and RNA content analysis – investigation of microbiological component in samples

## Scandinavian Biogas samples analysis

- Investigating samples by using molecular biology method to analyse the changes in microbial population caused by the feedstock ratio changes in reactors

# Results and conclusions

- The feedstock to inoculum ratio and **HRT** are optimized – the produced biogas volume estimated at 0.5L
- Samples taken from digesters (high and low biogas production) – investigation will show the organisms connected with **disturbances in biogas production**
- The outcome will help to **monitor the whole AD process** also in full-scale reactors





Thank you for listening



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