



Surplus electricity to biogas via hydrogen

Giantsiou Nikoletta, M.Sc.

Research Supervisor: Prof. Dr. – Ing. Renatus Widmann,
Dr. – Ing. Thorsten Mietzel, Dr. – Ing. Sebastian Schmuck



UNIVERSITÄT
DUISBURG
ESSEN

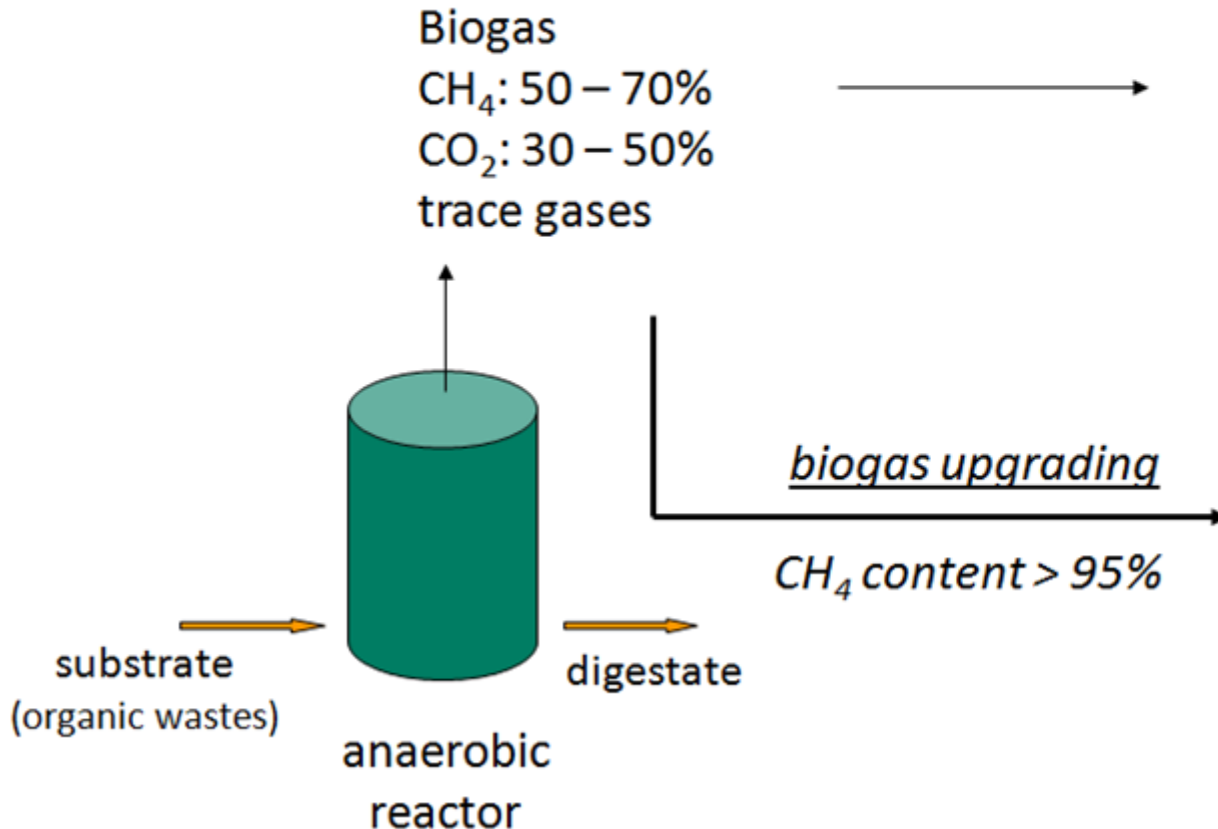
Open-Minded



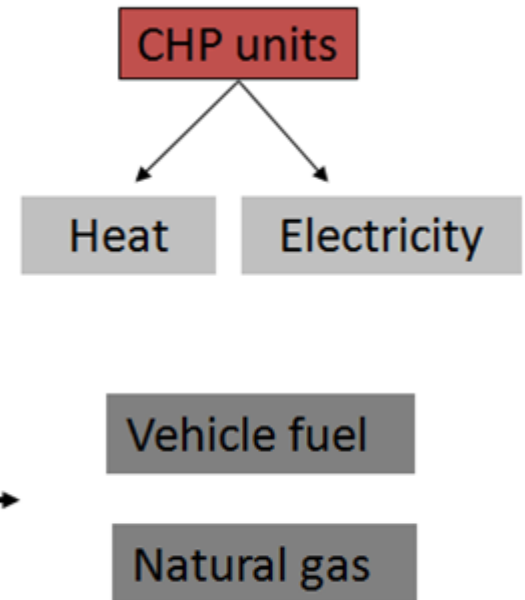
Funded by
the European Union

Biogas production and utilisation

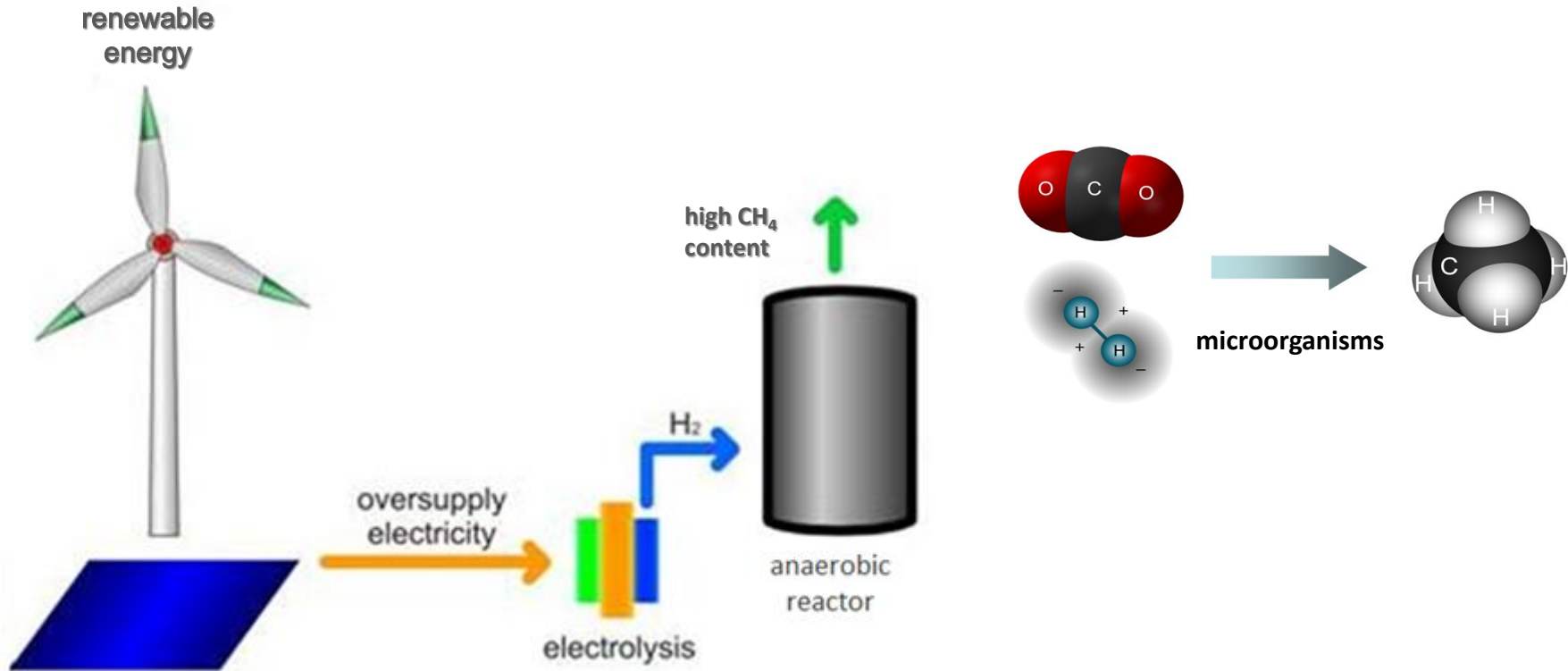
Anaerobic digestion



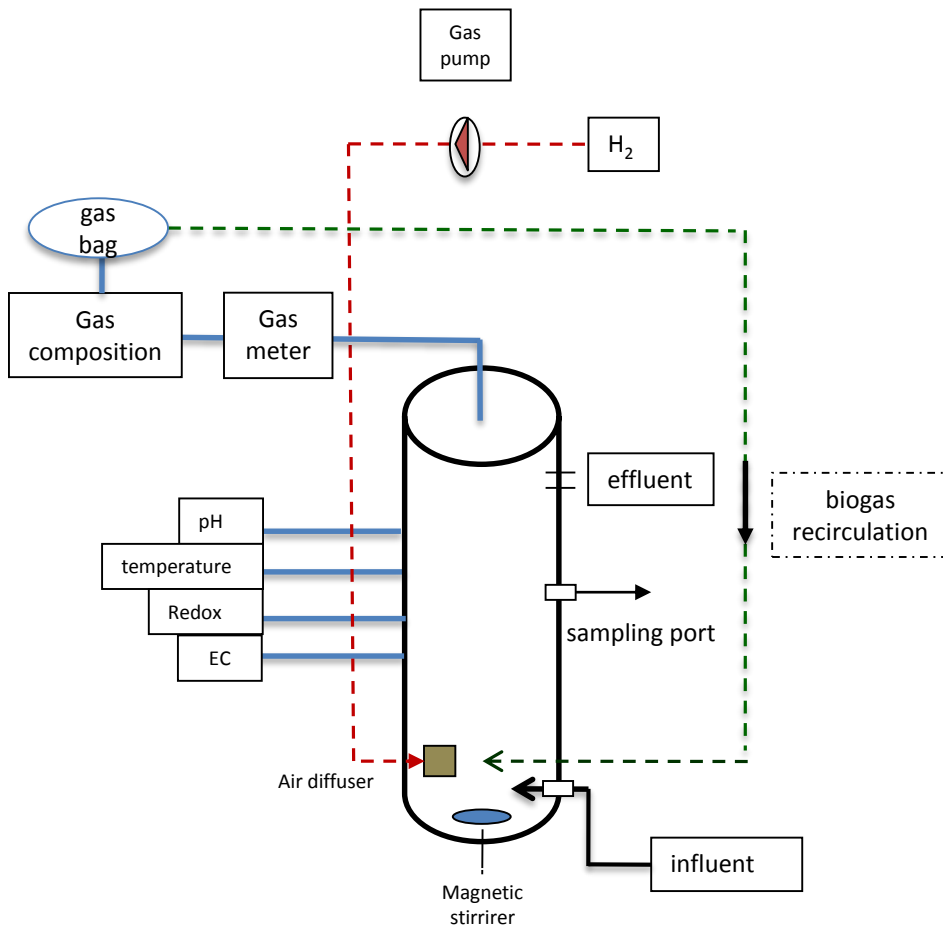
Biogas utilisation:



Biogas production and utilisation



Experimental configuration



Operational conditions:

- maintained at 37° C
- sewage sludge as substrate

Modifications:

- various organic loading rates
- biogas recirculation

Performance:

The system corresponds well. The production rate, biogas and CH₄ yield follow the changes of the operational conditions. It presents:

- stable operation
- increased CH₄ yield
- slight increase of pH

Outcome

The expected outcome of this project is:

- To implement an efficient process for converting the excessive renewable energy into CH₄
- To decrease biogas upgrading costs
- The possible use of biogas as an alternative to natural gas
- The use of the existing infrastructure system for storing electricity



Thanks for listening



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement n. 316838



Project coordinated by the QUESTOR Centre
at Queen's University Belfast
www.qub.ac.uk/questor