Biological Syngas Metanation

Karin Berg, RISE

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innovations in the BIOMETHANE uniVERSE

Brief description of the site

Woodroll technology - 6 MW Syngas

- H2: ~58 vol-%
- CO: ~29 vol-%
- CH4: ~2 vol-%
- CO2: ~11 vol%

Pure syngas, no N2 or other impurities

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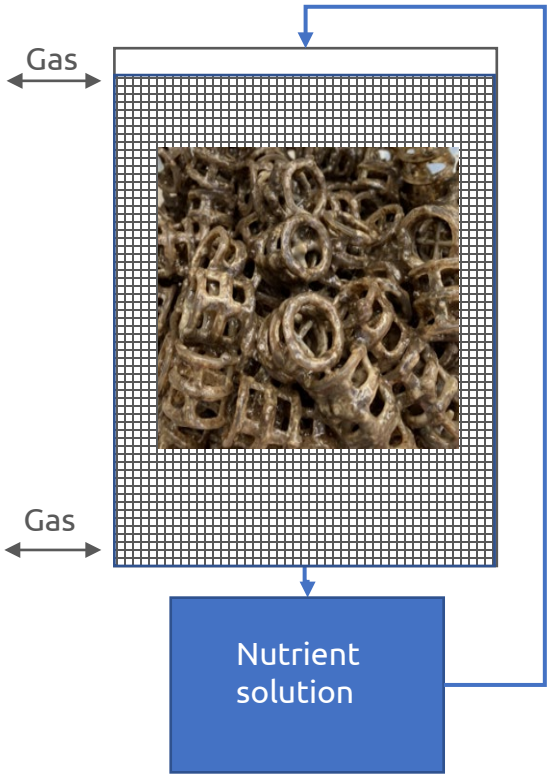
Description of innovative technology

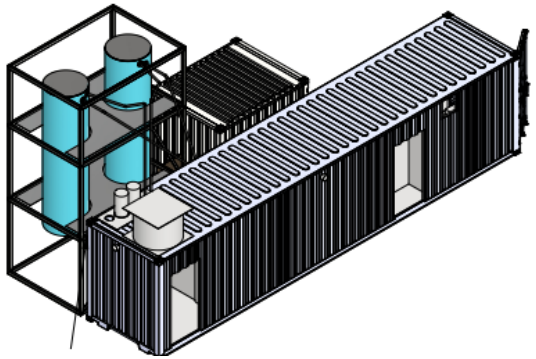
Syngas methanation increase methane potential by increasing available substrates for methane production

Trickle bed reactor (TBR)



TRL Today

RISE: 4/5



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Objectives and first results

Goals

TRL -> 6-7

Year 1

- Syngas methanation trials in 2 parallel reactors
- Steady state trials with full capacity and full conversion rate
- Product gas quality ~ 50% CH4, 50% CO2

Year 2

- Syngas methanation trials in 2 reactors in series with h2-boost
- Steaddy state trials with full capacity and full conversion rate
- Product gas quality ~ 96% CH4

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Challenges and criticalities of technology

Syngas

- Multiple applications for syngas (on-site user, catalytic methanation, methanol, H2, aviation fuel)
- In competition with other technologies pathways for the syngas
- The EU approach to biomass use

Methanation

- Maintaining performance of the bed
  - During sale-up
  - Over time

System perspective

- Difficult to generalize, no generic syngas plant => no generic system design
  - Different syngas content and different energy content
  - Different amount of impurities
- Geographic location matters

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Contact: Karin Berg
Email: Karin.Berg@ri.se

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