



# GERG

## Young Researcher's Prize

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Nov 25, 2015



# Martin Miltner

## Solutions for Advanced Biogas Upgrading

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GERG  
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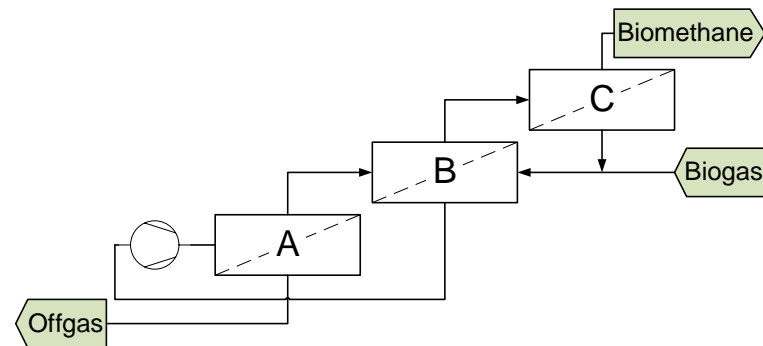
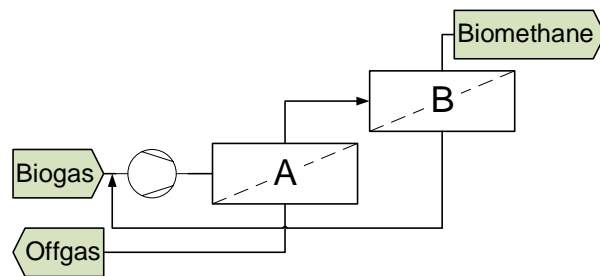
# Slide 1 - Introduction

- Biogas upgrading to biomethane
  - Natural gas grid injection
  - Local usage as CNG-fuel
- Better energy utilization (comp. CHP)
- Commercially available
- Potential for optimization
  - Gas permeation
  - Process simulation
  - Novel desulphurization



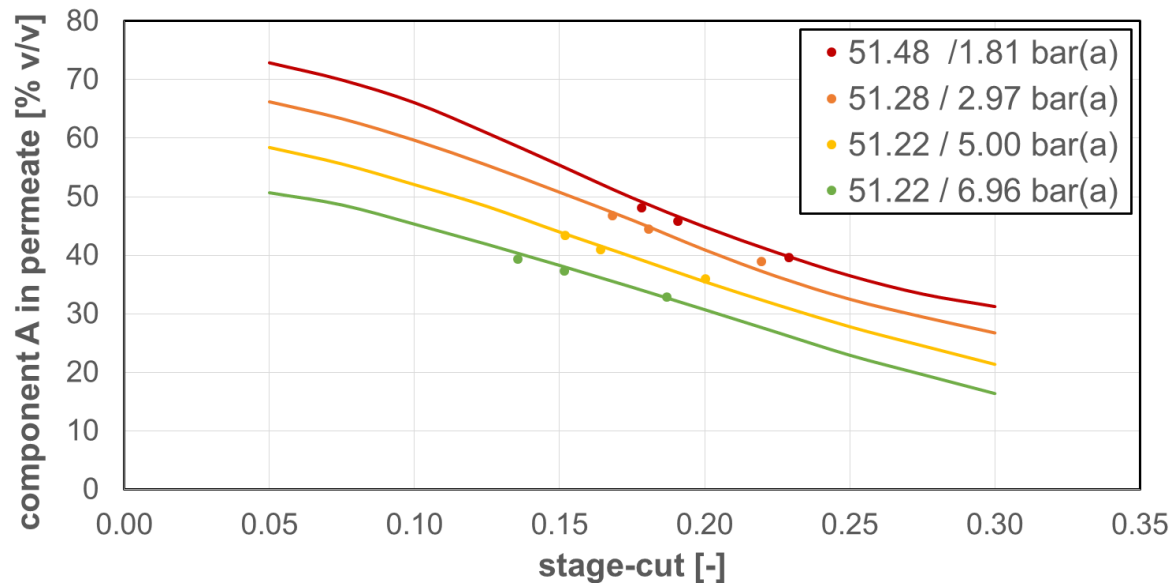
# Slide 2 – Membrane-based biogas upgrading

- Adaptability during process design
  - Membrane module configuration
  - Plant topology
  - Membrane material combinations
- Flexibility during plant operation
  - Degree of freedom / process control



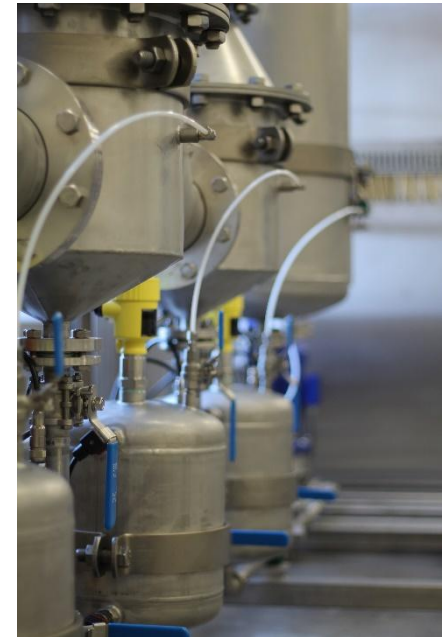
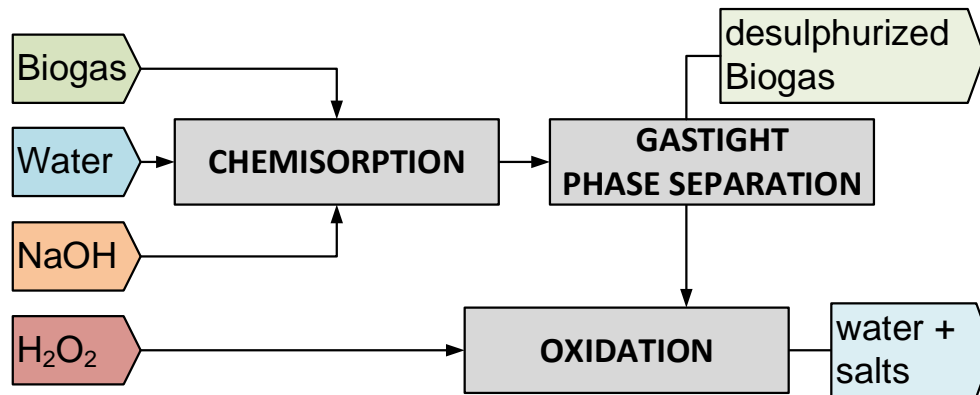
# Slide 3 – Process design and simulation

- Detailed numerical models for gas permeation
- Implementation in ASPEN<sup>®</sup> Plus<sup>®</sup> and MATLAB
- Rigorous comparison against experimental data



# Slide 4 – Chemical-oxidative desulphurization

- Highly effective removal of H<sub>2</sub>S from biogas
- Intense mixing of biogas and caustic liquid
- Precisely adjusted short-time contacting
- Gastight phase separation
- Oxidation to harmless salts



# Thank you for your attention

