

**University of Stuttgart**  
Germany

Institute of Combustion and Power Plant Technology  
Prof. Dr. techn. G. Scheffknecht

Announcement

# Modelling and Simulation of CO<sub>2</sub> capture process using amino acid salt scrubbing for biogas upgrading

**Bachelor Thesis,  
Student Research  
Project**

## Background

The primary technology for CO<sub>2</sub> capture is the absorption-based technology. Amine scrubbing was initially developed and applied, and it is now widely used in various industries, such as upgrading biogas to capture CO<sub>2</sub> from raw biogas and increasing methane concentration for further application. Triple-A-technology (Ambient Amin Absorption) is a new biogas upgrading process that would operate regularly with amine scrubbing media such as conventional amine or amino acid solutions. In order to find the optimum operating conditions, the limits of this system, and reduce the analyses time, it is necessary to build a simulation model of the process.

## Objective

Within this project, a model will be built in Aspen Plus to describe Triple A system which can simulate CO<sub>2</sub> removal under various operating conditions. Comparison and initial screening of operating conditions based on the calculation of equilibrium conditions in this model and adjustment of parameters.

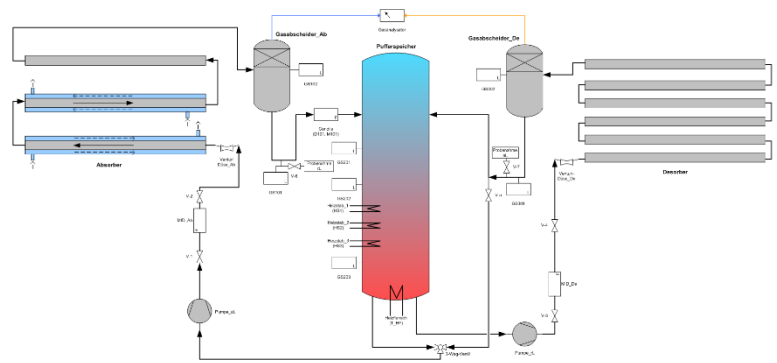


Figure Process scheme of the Triple A system

## Approach and tasks

1. Literature research
2. Modelling and simulation of amine scrubbing system in Aspen Plus
3. Equilibrium calculation and parameter adjustment
4. Assessment and compilation of the results (**German or English**)

## Requirements

- Interested in biogas upgrading and CO<sub>2</sub> capture technologies
- Knowledge in simulation (Aspen Plus) and process engineering desirable
- Working independently
- Proper documentation

**Start date: from now on**

**Interested students please contact**

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