



Universität Stuttgart

IER Institut für Energiewirtschaft
und Rationelle Energieanwendung

Background

Different technologies are in place to turn raw biogas into biomethane (biogas upgrading processes). Among the chemical absorption technologies a key feature is the type of absorption medium, which is utilized to capture CO₂ from the raw biogas and increase the concentration of methane.

The Triple-A-technology (Ambient Amin Absorption) is a new biogas upgrading process that would operate regularly with amin scrubbing media such as Diethanolamine (DEA) or Monoethanolamine (MEA). As an alternative to these conventional solvents, amino acid solutions can be used. They are nontoxic and easily degradable and, more importantly, can be obtained from the substrate in a biogas plant (BGP). They can also be recycled in the fermenter at the end of use. This way, it could help the gas upgrading process be more sustainable and cost effective.

The research question remains open, which agro-industrial residues can be used efficiently as sources for the production of amino acid absorption medium.

Tasks

In the student work (BSc or MSc-level), which will be connected to the " Triple-A " project, agro-industrial residues and by-products containing amino acid compounds are to be identified and examined. The extraction process of amino acids from the selected residues need to be analyzed from the techno-economic perspective. Furthermore, the possible direct extraction of amino acids from the fermented typical substrates in a BGP should also be investigated. Finally, the options with the great potential of producing amino acids would be determined.

We are looking forward to the applicants:

- Doing their Bachelor's or Master's degree in chemical process engineering or biochemical engineering
- Having basic knowledge in the field of industrial chemical processes and chemical compounds
- Having a high level of self-motivation and independence
- Having strong verbal and written skills in English and German language

Contact

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BACHELOR OR MASTER THESIS

Investigation of agro- industrial residues to determine the viable sources for amino acids production

