

biogeniV bV-B3

Plasma gasification of residue mixtures



CHALLENGE

The sustainable use of regional resources is a key pillar for the energy transition and structural change in rural areas. Every year, large quantities of biogenic residues are generated—including digestate from biogas plants, sewage sludge, and other by-products from agriculture and the food industry. These residues have so far only been partially utilized, even though they represent valuable raw materials for the production of green fuels and value-added products. At the same time, the demand for climate-friendly alternatives to fossil energy sources is increasing, especially in the transport and industrial sectors.

OUR PROJECT

Building on the results of the previous projects on residue drying and residue gasification within the biogeniV alliance, the aim is to further develop and optimize the synthesis gas route for the production of biomethanol from biogenic residues. To lay the foundation for transferring biomethanol production into industrial practice, new approaches to the mechanical processing of regionally generated residue mixtures will be tested. By specifically adding biochar, the gasification behavior of the residues is improved, enabling more efficient thermochemical conversion.

The core innovation of the project is the integration of renewable electrical energy into the gasification process using arc plasma. As a result, process heat is no longer provided exclusively by the oxidation of carbon. This allows for a significant reduction in CO₂ emissions and an increase in carbon utilization efficiency. The produced synthesis gas is of high quality and ideally suited for subsequent methanol synthesis. Based on the successful demonstration at pilot scale, an industrialization concept will be developed for the practical implementation of the plasma-assisted synthesis gas route in the biogeniV alliance region.

PARTNERS

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- Cosun Beet Company GmbH & Co. KG Anklam
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