

## Bio-e-Chem

*Electrolysis-assisted production of chemical products from biomass and waste materials*

### CHALLENGE

Synthesis gas is a key intermediate product for numerous chemical products. However, existing processes for biogenic waste have their limitations: gasification is energy-efficient but does not make sufficient use of the available carbon. Electrochemical processes based on high-temperature electrolysis achieve a high carbon utilization rate but require large amounts of renewable electrical energy. In addition, the usual supply of oxygen for gasification via air separation is energy- and cost-intensive.

### OUR PROJECT

Against this background, a combined process concept is to be developed and technically validated. For this purpose, biomass gasification and high-temperature electrolysis of water and CO<sub>2</sub> are coupled to form a joint synthesis gas process in order to increase the carbon utilization rate, reduce electricity consumption, and use the oxygen produced during electrolysis directly in the gasification process. A pilot plant is being operated at the Freiberg site for this purpose, where gasification, gas purification, and high-temperature electrolysis are being tested and evaluated in coupled operation. A techno-economic analysis of scalability and economic efficiency is being conducted alongside these tests. The project goal is to develop and technically validate the concept and evaluate its industrial feasibility.

### PARTNERS

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### FUNDING

Sächsische Aufbaubank – Förderbank – (SAB)

The funding is provided from resources of the European Regional Development Fund (ERDF) and from tax revenue on the basis of the budget approved by the Saxon State Parliament.



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Sächsischen Landtag beschlossenen Haushaltes.

### DURATION

August 2025 – December 2027 (2 years, 5 months)

