

Carbon Capture Projects at RWE – Technical Overview

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Abstract

In order to mitigate the global climate change, carbon dioxide (CO₂) emissions to the atmosphere have to be significantly reduced. This decarbonization applies also to the power generation sector, which remains, despite recent significant reductions, among the highest industrial sources.

RWE has one of the largest fleets of Combined Cycle Gas Turbine (CCGT) and two coal/biomass power plants in Europe. The company is committed to accelerate its decarbonization projects, with a complete coal phase-out by 2030 and full company-wide carbon neutrality by 2040. This work presents an overview of the ongoing carbon capture developments within RWE for decarbonizing its thermal power plants.

In the Netherlands, RWE is repurposing former coal-fired power stations to produce electricity from biomass combustion complemented by carbon capture and storage (BECCS). This innovative approach not only facilitates decarbonized power production but also generates negative CO₂ emissions, thereby contributing to net emissions reduction on a global scale. In parallel, in the United Kingdom, RWE is developing highly flexible and rapid-response CCGT plants integrated with CCS to minimize emissions and to ensure energy security during periods of limited renewable power generation. Both initiatives utilize advanced post-combustion technologies applying adsorption-based amine wash systems, which are distinguished by their high technological maturity and scalable deployment potential.

These projects are underpinned by the engineering expertise of RWE Technology International GmbH. This presentation will highlight RWE TI's contributions in overcoming technical challenges encountered during the design phase of project development, developing innovative solutions and will also summarize lessons learned.