ECO2CELL

GKT

CO_2– Valorization

ECO2CELL – Turning emissions into resources. Turning circularity into value creation.

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CO_2 – from a problem to an opportunity

Converting carbon dioxide into valuable products such as chemicals and fuels

CO_2 as a resource for industry

CO_2 emissions are a central challenge of climate change. At the same time, carbon dioxide is increasingly gaining attention as an available carbon source for sustainable industrial processes. With the establishment of the Environmental Technologies business unit in 2022, GKT strategically anchored this development. ECO2CELL, successfully introduced to the market in 2024, enables the material utilization of industrial emissions through a technology designed for practical industrial application.

CCU – Value creation from CO_2

Carbon Capture and Utilization (CCU) integrates captured CO_2 directly into industrial processes. Instead of being released as an emission, it becomes a feedstock for new products. GKT focuses consistently on the **utilization of CO_2** and, with ECO2CELL, combines climate protection with measurable economic value.

Electrochemical CO_2 conversion

The patented ECO2CELL unit converts CO_2 electrochemically into chemicals and alternative fuels. The process operates at ambient temperature and atmospheric pressure. CO_2, water, and electrical energy serve as input materials; no external hydrogen is required. When powered by renewable energy, the conversion can operate without emissions.

Operating principle

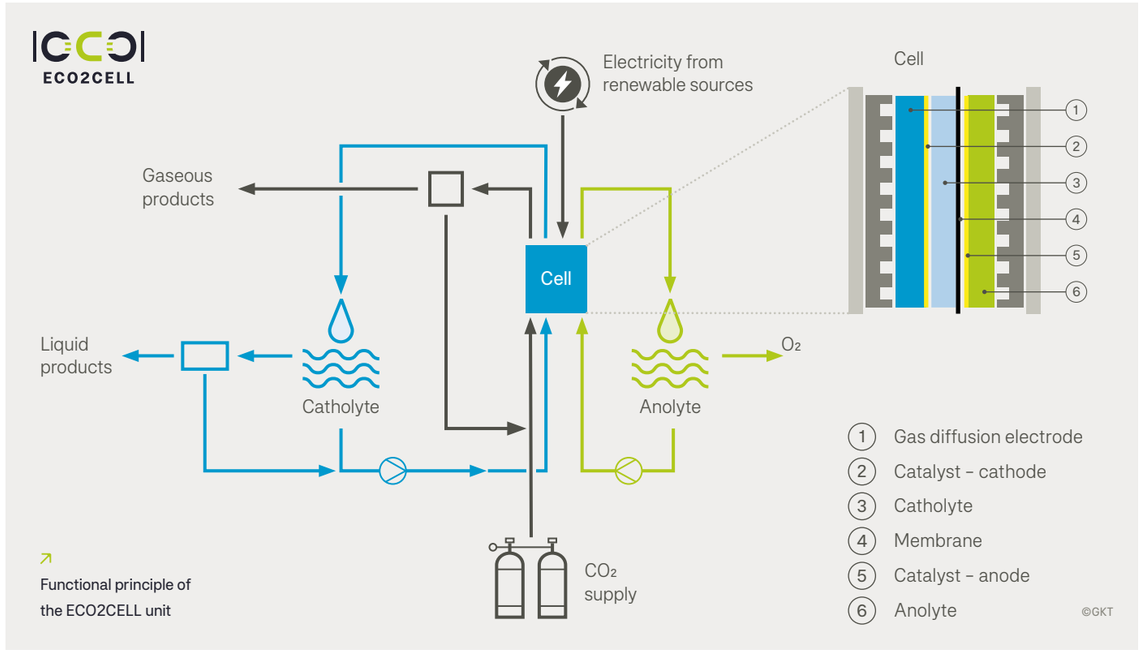
In an electrocatalytic process, single- and multi-carbon products such as synthesis gas, ethylene, and formic acid are generated at the cathode, while oxygen is formed at the anode. The type and composition of the products can be precisely controlled through catalysts, electrode materials, current density, and electrolyte composition.

Explore further insights

End products

- Synthesis gas
- Ethylene
- Formic acid
- Methanol
- Additional chemicals and fuels available upon request

Patented ECO2CELL electrolysis cell



Functional principle of the ECO2CELL unit

From laboratory to industrial scale

ECO2CELL has been gradually transferred from research to industrial application – our milestones:

- Patent granted for the technology
- Launch of the **ECO2CELL Core** laboratory unit
- Scale-up of the electrolyzer in the ZEUS cooperation project (Zero Emission through Sector Coupling)
- Inclusion in the FFG funding program (Austrian Research Promotion Agency)
- Development of the container-based **ECO2CELL Cube** system
- Scaling project toward a **1 MW system**

Advantages

- Product diversity: wide range of possible end products
- Emission-free operation when powered by renewable electricity
- Scalability: modular design
- Mild process conditions (ambient temperature and atmospheric pressure)
- No external hydrogen required

Applications

ECO2CELL is particularly suited for CO_2-intensive industries such as cement, steel, biogas, and petrochemical plants, as well as for the production of sustainable chemical base materials and climate-friendly fuels.

ECO2CELL Core laboratory unit

GKT – Your partner

GKT combines expertise in plant engineering, process engineering, and electrochemistry. Our capabilities range from concept development to full industrial implementation. ECO2CELL integrates CO_2 into industrial value chains — supporting a climate-friendly and economically viable industry.

ECO2CELL Cube container-based system

WE ENGINEER GREEN KEY TECHNOLOGIES

E-01-2026

GKT is a globally operating system partner for thermal separation and environmental technologies – built on nearly 90 years of metalworking expertise and today defined by deeply rooted process engineering competence. In an industry where resources, circularity, energy, and CO_2 determine competitiveness, we make challenges technologically manageable and economically effective.

Our approach:
We Engineer Green Key Technologies.

We develop and implement key industrial technologies – from falling-film, thin-film, and short-path evaporators to distillation and drying, as well as CO_2 valorization, waste heat recovery, and IIoT-enabled process optimization.

As part of the Dr. Aichhorn Group, we validate processes in our own technical center under real operating conditions and scale them up to turnkey EPC facilities.

For our customers, this means maximum efficiency, reduced energy consumption, lower CO_2 emissions, and stronger economic viability – proven worldwide through numerous successfully executed projects.

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