Korea-EU Horizon Europe Researchers Networking Forum

on Energy & Advanced Mobility

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- **Senior Scientist**
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1. Fraunhofer UMSICHT

Fraunhofer UMSICHT – Key Institutional Characteristics

Applied research institute within the Fraunhofer-Gesellschaft, Europe's largest organization for applied R&D
>600 employees across sites in Oberhausen, Willich, and Sulzbach-Rosenberg

State-of-the-art laboratories and pilot-scale facilities for catalysis, electrochemistry, process engineering, and energy systems

Research focus on:

- Circular economy and resource efficiency
- Carbon management and CO_2 utilization
- Green hydrogen production, storage, and application
- Decentralized and sector-coupled energy systems

Strong track record in scaling lab innovations to industrial applications
Active in European and industrial consortia supporting sustainable energy transitions

Fraunhofer UMSICHT

2. Expertise – Fraunhofer UMSICHT

Applied R&D in energy, carbon, and resource transition

Strong know-how in electrochemical systems, carbon capture & utilization (CCU), and process intensification

Demonstrated experience in pilot-scale system development, reactor engineering, and techno-economic assessment
Integrated approach combining materials development, process design, and system analysis

Potential Contribution to Consortium

- Development and scale-up of electrochemical and catalytic processes
- Design and testing of modular pilot units for CO_2 conversion and renewable fuels
- Initial Techno-economic analysis
- Industrial validation and upscaling through Fraunhofer's infrastructure and industrial network

Keywords

Carbon management • CO_2 utilization • Green hydrogen • Electrolysis • Electrocatalysis • Process scale-up • Circular economy • En ergy transition • Sustainability assessment

3. Project Idea

Targeted Call:
HORIZON-CL5-2027-03-D3-31 – Advancements in Direct Air Capture

Main Objectives:

Develop new materials for electrifying DAC

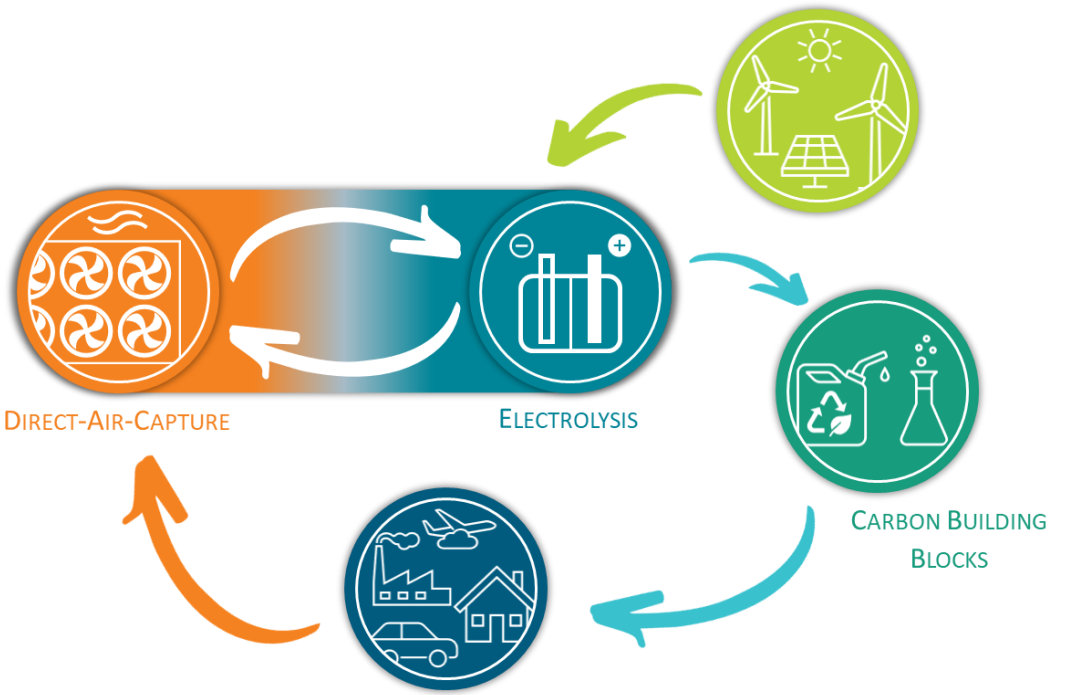
Integrate renewable energy and CO_2 utilization

Demonstrate this solutions at the technical / pilot-level

Idea Briefly Explained

Demonstration of modular electrochemical systems converting CO_2 and renewable power into valuable chemicals.

Fraunhofer UMSICHT provides expertise in electrocatalysis, reactor design, and pilot-scale validation to bridge lab and industry.

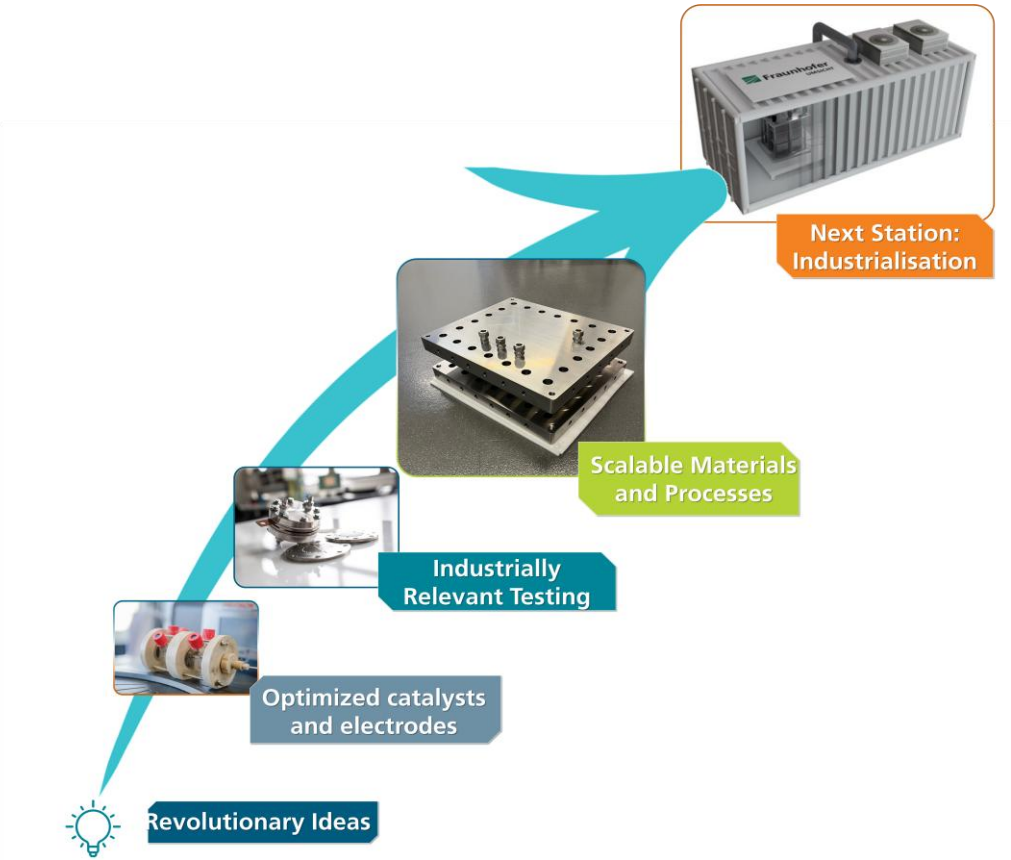


4. Profile You are Seeking and Why

Fraunhofer UMSICHT seeks partnerships with researchers in CO_2 utilization, green hydrogen, and industrial decarbonisation.

With expertise in electrocatalysis, reactor and process design, and pilot-scale validation, UMSICHT contributes to demonstrating scalable, low-carbon industrial processes in collaboration with end-users and engineering partners.

Biomass valorisation through electrocatalysis is also a topic we are highly interested in.



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