

Newsletter No 5 April 2025

DEEP REMOVAL OF CO<sub>2</sub> & INNOVATIVE ELECTRIFICATION CONCEPTS

### Welcome to the DRIVE project!

DRIVE envisions a future where industries achieve carbon neutrality or negativity, paving the way for a sustainable environment by 2050 through innovative technological solutions and comprehensive guidance on  $CO_2$  reduction.

Check out the latest news of the DRIVE project in this issue!





# LATEST PROGRESS

The DRIVE project continues to make significant strides in advancing deep CO<sub>2</sub> removal through both thermal and electrochemical regeneration pathways. A series of parametric and emissions mitigation campaigns were successfully conducted at the RWE pilot plant, using CESAR1 solvent in varying configurations. These campaigns, spanning 8 months until now, have demonstrated high CO<sub>2</sub> capture rates (up to >99.9%) and generated valuable data for efficiency, emissions and degradation analysis.

Simultaneously, we are progressing the development and demonstration of the CODEC and ZEUS electrochemical systems. Hardware upgrades, modeling activities, and initial optimization tests are underway, supported by contributions from partners including Hovyu, HWU, TNO, and TU/e. Although some milestones such as energy targets need to be rescheduled for more realistic timelines, the modeling framework is already complete, and testing campaigns are advancing. For the upscaling of the technology a unit for full-scale demonstration is under preparation at the CEMEX industrial site are also in motion, marking a critical phase in the transition toward TRL6 deployment of novel capture technologies.

**Coming Soon: Discover the Science Behind DRIVE's CO<sub>2</sub> Capture Innovation** Get ready for the release of our first animated video explaining how the DRIVE project is advancing cutting-edge electrochemical technologies for deep CO<sub>2</sub> removal. From real flue gas testing to breakthrough solvent regeneration methods, this video brings the science to life in an accessible and engaging way. **Stay tuned to learn how DRIVE is helping pave the path toward a carbon-neutral future!** 

# ACTIVITIES

DRIVE Showcased at the 247th ECS Meeting in Montréal

The DRIVE project was proudly represented at the 247th Meeting of the Electrochemical Society (ECS), held from 18th to 22nd May 2025 in Montréal, Canada. TNO delivered an oral titled "Electrochemical presentation Regeneration of CO<sub>2</sub>-Rich Capture Solvents Towards Pilot Scale Implementation", showcasing early findings from the development and optimisation of the CODEC electrochemical regeneration system. The session highlighted the project's progress toward scaling up low-energy CO<sub>2</sub> capture solutions, reinforcing the relevance of electrochemical approaches in the transition to greener industrial processes.



Participation in this prestigious international forum marks an DRIVE's important step in dissemination strategy. lt provided an opportunity to share results with leading scientists and industry stakeholders. exchange knowledge, and position the within the global project research landscape on carbon and electrochemical capture technologies.

### THE PARTNERSHIP





















## ACTIVITIES

### **3rd Transnational Project Meeting in Edinburgh, hosted by Heriot-Watt University**

On 12–13 March 2025, the DRIVE consortium convened at Heriot-Watt University's National Robotarium for its 3rd project meeting. Partners shared key updates on breakthroughs in CO<sub>2</sub> capture efficiency, with RWE presenting promising results for industrial scalability. TNO and HOVYU showcased data-driven advancements in electrochemical regeneration, pointing to reduced energy use and enhanced capture rates. A technical tour of HWU's facilities added hands-on insight into experimental innovations, reinforcing DRIVE's commitment to impactful, collaborative progress in industrial decarbonisation.



#### **DRIVE to Present Key Findings at PCCC-8 in Marseille**

The DRIVE project will take part in the <u>8<sup>th</sup> Post-Combustion Capture Conference (PCCC-8)</u>, organized by IEAGHG in Marseille from 16–18 September 2025. As a leading event in the field of carbon capture, PCCC-8 will bring together international experts from academia, industry, and government. DRIVE will contribute to the knowledge exchange with unique results from four major testing campaigns—spanning eight months—focused on deep  $CO_2$  removal. Presentations will include findings from RWE's pilot plant on CESAR1 solvent degradation, capture efficiency up to >99.9%, and model validations by TNO and Hovyu. These contributions highlight DRIVE's role in shaping next-generation  $CO_2$  capture technologies for industrial application.

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