

Cleaner lime, lower energy, captured CO_2: MOJITO decarbonizes

MOJITO has been selected for funding under the highly competitive European Innovation Council (EIC) Pathfinder challenge “Towards cement and concrete as a carbon sink.”

MOJITO aims to validate a laboratory-scale system for producing decarbonised lime with lower energy demand and reduced calcination-related CO_2 emissions, while enabling CO_2 removal. The concept relies on an electrified rotary kiln integrating hybrid microwave and electrical heating to deliver heat directly to the calcining material.

- Thanks to microwave penetration into limestone particles, the process can operate at lower temperatures than conventional systems
- The feedstock is complemented with carbonaceous additives that enhance electromagnetic energy absorption and convert it into heat, improving overall process efficiency
- The CO_2 released during calcination is collected in a dedicated external vessel, enabling downstream CCU/CCS pathways
- In parallel, MOJITO will perform atomistic simulations of $CaCO_3$ calcination under realistic conditions, leveraging machine-learning force fields and Tier-0 supercomputing to resolve key mechanisms and guide the design and optimisation of the MOJITO system
- The project targets lime quality grades covering up to 70% of market demand



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Funded by the European Union

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