

Project Title: Development of a new neutral CO₂ emissions concrete, which uses gaseous CO₂ for the fresh concrete matrix mineralization and 2D Mesoporous Silica Doped with Copper Ions for the CO₂ absorption and storage during the concrete service life.

Acronim: CO₂-CRETE

Reference: CPP2022-009910

Lenght: 02/10/2023-01/10/2026

Financial Entity: Ministry of Science, Innovation, and Universities ´s

Call: 2023 AEI Public-Private Collaboration Projects

Applicant: PREHORQUI, S.A.

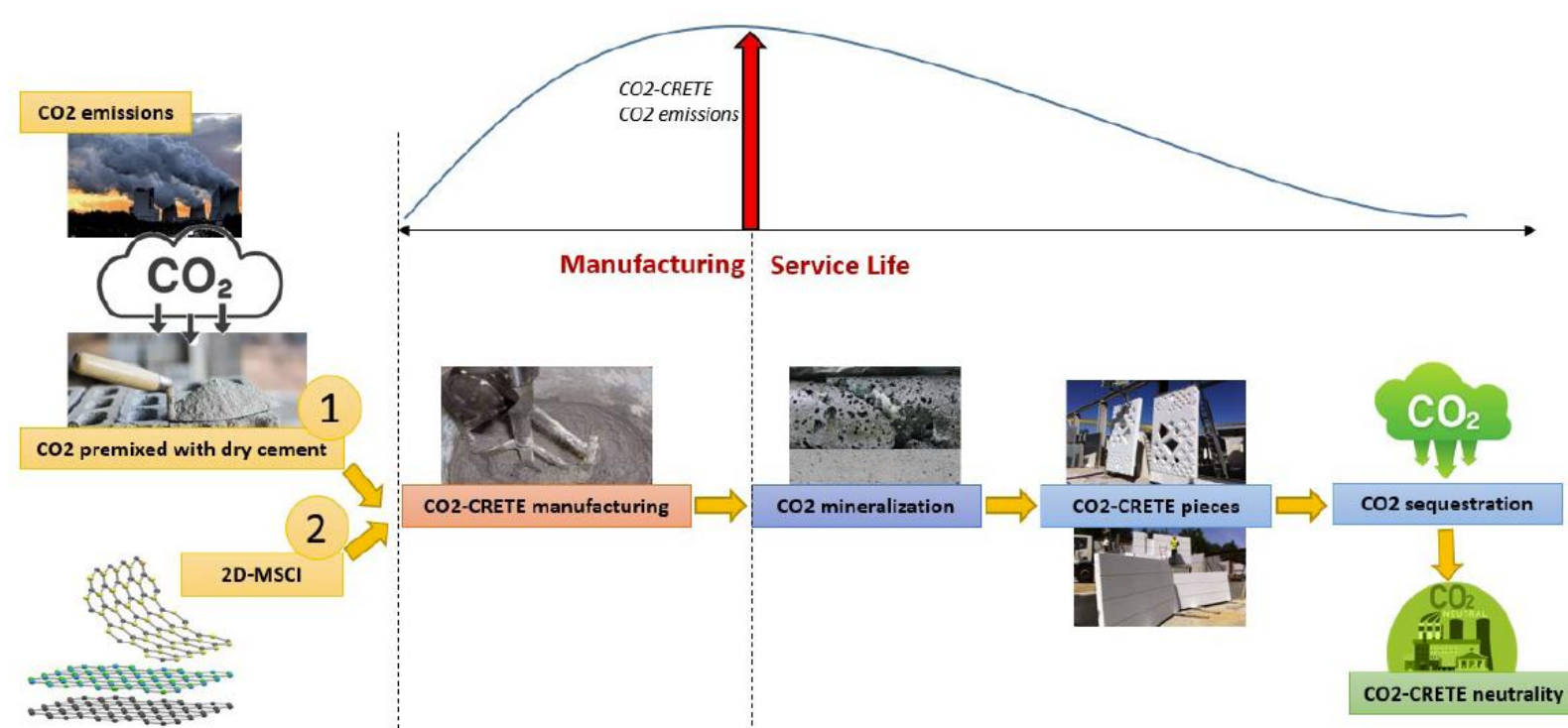
Partners: Obras y Servicios TEX S.L.; PROMA, Proyecto de Ingeniería Ambiental, S.L.; Universidad Complutense de Madrid; Lurederra, Fundación para el Desarrollo Tecnológico y Social; Asociación para el Fomento de La Innovación, y la Sostenibilidad en la Arquitectura y Construcción.

Project Funding: 975.340,88 €

The main purpose of the project is to develop a disruptive neutral CO₂ emissions concrete (CO₂-CRETE) which will use a new chemical pathway for the CO₂ mineralization and a 2D material for the pollutant CO₂ sequestration as the two pillars of the development. CO₂-CRETE will achieve the neutrality dealing with CO₂ on both during the manufacturing and service life. Regarding the manufacturing process, CO₂ emissions will be reduced up to 27,86%, thanks to the new chemical procedure for the CO₂ mineralization. And, regarding its service life, CO₂ -CRETE will capture and storage an equal amount of the generated emissions during the manufacturing stage.

The project aims to provide a solution for the cement industry, since it is one of the top CO₂ producers worldwide (8% of the global amount). An in-force agreement between the main companies has been reached recently to achieve the CO₂ neutrality for the next 2050. Nevertheless, these figures will be possible only if technologies not only to capture CO₂ but also to storage and use it are provided. In this scenario, the mineralization of the CO₂ as a concrete raw material emerges as potential research pathway.

The project will be carried out by a well-balanced consortium, being leaded by a precast concrete company (PREHORQUISA) as a main potential user of the CO₂-CRETE project result. A potential user of CO₂-CRETE precast products (TEX) and an environmental consulting (PROMA INGENIEROS) to define the uses with more added value, will be also part of it. From the scientific side, COMPLUTENSE UNIVERSITY OF MADRID to assess the CO₂-CRETE efficiency through specific test, LUREDERRA to develop the 2D addition and I2CON to define the new CO₂mineralization process will complete the consortium.



CO₂-CRETE general service life.

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