

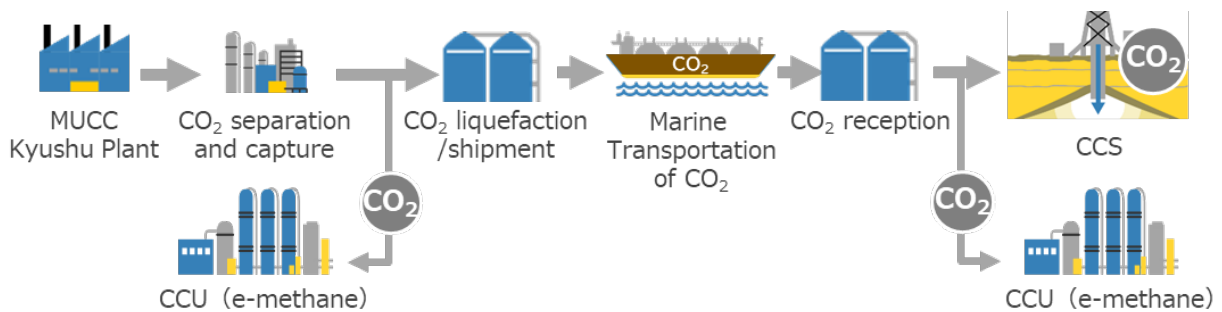
**Commencement of Joint Study on CCUS to Achieve Carbon Neutrality in the Cement Manufacturing Process**

March 28, 2024  
Mitsubishi UBE Cement Corporation  
Osaka Gas Co., Ltd.

Mitsubishi UBE Cement Corporation (Headquarters: Chiyoda-ku, Tokyo; President: Makoto Koyama; hereinafter referred to as “MUCC”) and Osaka Gas Co., Ltd. (Headquarters: Chuo-ku, Osaka; President: Masataka Fujiwara) have commenced a joint study on CCUS (Carbon Capture, Utilization, and Storage) of CO<sub>2</sub> emissions from the cement manufacturing process to achieve carbon neutrality in the process.

The project aims for carbon capture and storage (CCS), as well as carbon capture and utilization (CCU). In CCS, CO<sub>2</sub> emissions derived from both thermal energy discharged from cement firing kilns and raw materials for cement production at MUCC’s Kyushu Plant (located in Miyako-gun, Fukuoka Prefecture), boasting the largest cement production capacity in Japan, are recovered, injected deep underground, and stored. In CCU, the recovered CO<sub>2</sub> is reused as a raw material for e-methane.\*<sup>1</sup> In this joint study, both companies will collaborate on designing a comprehensive value chain covering CO<sub>2</sub> separation, capture, liquefaction, temporary storage, shipment, marine transportation of liquefied CO<sub>2</sub>, underground CO<sub>2</sub> storage, and e-methane production, as well as evaluating its economic feasibility.

<Conceptual scheme of the project>



<MUCC Kyushu Plant>



The MUCC Group, in its medium-term management strategy announced in April 2023 titled “Infinity with Will 2025 - MUCC Sustainable Plan 1st STEP,” aims to reduce CO<sub>2</sub> emissions by 40% compared to the 2013 level by 2030 and achieve carbon neutrality across the entire group by 2050. The group will engage in new initiatives through collaboration with local governments and other industries, including this joint study for early adoption of CCS, to become a carbon neutrality leader in the industry.

The Daigas Group declared its commitment to achieving carbon neutrality by 2050 in January 2021. In addition, on March 9, 2023, the group announced, “Energy Transition 2030” which declares that the group aims to achieve low-carbonization through a fuel shift to natural gas and a seamless transition to decarbonization, using e-methane in existing combustion equipment. Furthermore, as a step towards establishing a CCS value chain for recovering CO<sub>2</sub> emissions from industries such as steel, cement, and chemicals and injecting and storing the recovered CO<sub>2</sub> deep underground, on May 9, 2023, the Daigas Group signed a contract with Shell Singapore Pte. Ltd. to conduct a joint study for injecting and storing CO<sub>2</sub> at storage sites in the Asia-Pacific region.

Through this joint study, both companies will advance efforts towards achieving carbon neutrality in the cement industry, which produces a fundamental material for developing social infrastructure, by 2050.

\*1: e-methane is methane synthesized through the process of “methanation,” a technology that recycles CO<sub>2</sub> to produce feedstock for city gas.