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PRESS RELEASE

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[October 29, 2026]

“Carbon Lock” Concrete Carbonation Curing System First Introduction at an Overseas Production Plant

Trial Production Begins at a Precast Concrete Plant in Malaysia

Kajima Corporation (President: Masafumi Kiryu) has installed its proprietary concrete carbonation curing system, “Carbon Lock,” at a production plant in Johor, Malaysia, operated by Singapore-based precast concrete manufacturer JOE Green Pte Ltd (JOE Green). This marks the first installation of Carbon Lock at an overseas production plant.

Carbonation curing enables concrete to absorb and permanently fix CO_2 as it hardens. Trial production of CO_2-fixed concrete partition walls using Carbon Lock has now commenced at the plant. This will enable the system’s performance and control capabilities to be evaluated under local climatic and production conditions.

Trial production will also provide valuable insights for future overseas deployment.



Carbon Lock installed at JOE Green’s Malaysia plant

Background

Reducing CO_2 emissions from the construction sector is an important challenge in achieving a carbon-neutral society. In the concrete industry, efforts are underway to reduce CO_2 emissions by lowering cement consumption. Carbonation curing technologies are also being applied to absorb and fix CO_2 during concrete production. In practice, introducing carbonation curing into concrete product manufacturing requires a stable supply of CO_2 to the curing chamber. It also requires the CO_2 concentration, temperature, humidity, and other conditions inside the chamber to be carefully controlled.

Kajima has accumulated extensive experience in carbonation curing through the development of CO_2-SUICOM, a concrete technology that absorbs and fixes CO_2. Based on this experience, Carbon Lock was developed to enable carbonation curing at precast concrete plants stably and efficiently. Subsequently, the system was installed at precast concrete plants and other facilities in Japan, and

production at these facilities has provided valuable insights for the system's future deployment overseas.

Carbon Lock: Key Features and Installation

Carbon Lock automatically controls the CO_2 concentration, temperature, and humidity inside the curing chamber. Operators can easily adjust the required settings through a touch panel. The amount of CO_2 fixed in the concrete can also be calculated from the amount of CO_2 injected, the amount remaining in the chamber, and other parameters.

In August 2026, Carbon Lock was installed at JOE Green's plant in Johor, Malaysia, to support the trial production of CO_2-fixed concrete partition walls. Following commissioning, testing began in September 2026 to confirm that the system could be integrated into the plant's production line and to verify the carbonation curing process.



Precast concrete products loaded into Carbon Lock



Trial-produced CO_2-fixed concrete products

Future Development

Trial production will provide practical insights into equipment control, operation, and maintenance under local climatic and production conditions. Based on the results, deployment approaches will be developed for different product types and plant conditions, with a view to full-scale rollout in overseas markets.

Related Information

Environmentally Friendly Concrete "KAJIMA CONCRETE BASE"
https://www.kajima.co.jp/tech/c_sus_con/index.html