

Project:

Enabling Sustainable Precast Concrete Production – An innovative hardening accelerator to reduce CO₂ emissions

Location:

Japan

Project completed:

2022

Owner/s:

Sekiryō Concrete

Market sector:

Precast concrete

Products used:

Master X-Seed 150 JP

Enabling Sustainable Precast Concrete Production

An innovative hardening accelerator to reduce CO₂ emissions



Our reference in Japan: Enabling Sustainable Precast Concrete Production

The background

Founded in 1932, Sekiryō Concrete Corporation manufactures and sells ready-mix and precast concrete products. In 2021, the company's annual production volume was 25,000 m³ of ready-mix concrete and 13,000 tons of precast concrete.

The company has been researching for ways to reduce its CO₂ emissions in the production of precast concrete. As a supporter of the UN's Sustainable Development Goals and its local initiatives, Sekiryō Concrete aims to integrate the 3R philosophy of Reduce, Reuse, and Recycle into its business.

The challenge

The company believes that reducing the amount of heavy fuel oil used in steam curing will be the most effective way in reducing CO₂ emissions at the plant. However, using powder admixtures will require the installation of silos which changes the production layout and equipment. Another admixture solution was needed to complement the existing production process.

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Our solution

The Master Builders Solutions team in Japan developed a liquid type early strength accelerating admixture, Master X-Seed 150 JP, which allows Sekiryō Concrete to use it in their concrete production without changing the layout of their facility. The company conducted a test to evaluate this new admixture, and the results showed that Master X-Seed 150 JP shortens the steam curing process and a reduction of 1,570kg of CO₂ emissions when no fuel oil is used.

Master X-Seed 150 JP is based on a special and unique seeding nano-technology of Calcium Silicate Hydrate (CSH) resulting in “Crystal Speed Hardening” in concrete.

The customer's benefit

- Reduces the amount of fuel oil used in the precast concrete production process by 17%.
- By adding Master X-Seed 150 JP in the steam curing process, a reduction of 1,570kg of CO₂ emissions is observed and no fuel oil is consumed.
- Master X-Seed 150 JP shortens the steam curing time which reduces overtime hours and improves the working environment.

Projects facts at a glance

- Based on test results, it is predicted that Master X-Seed 150 JP will save 140 tons of fuel oil annually when added to precast concrete production.
- CO₂ emissions will be reduced by approximately 380 tons annually with Master X-Seed 150 JP.
- The project shows an 8% reduction in annual CO₂ emissions generated in manufacturing precast concrete.

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Further information is available at:

<https://www.master-builders-solutions.com/ja-jp>