Carbon Credits Are Transforming Concrete Plants into Carbon Removal Factories

Why Lauren Concrete expanded the adoption of CarbonCure technology to all 24 of its plants
Introduction

Use CO₂ to Build a Better Product with Less Cement

“Build with strength” has been the mantra of the concrete industry as it educates building and design communities on the benefits of concrete. No other material can replicate concrete’s advantages in terms of strength, sustainability, durability, safety and ease of use.¹ In fact its widespread use in buildings and infrastructure make it the most-used construction material in the world.²

Unfortunately, the key ingredient responsible for concrete’s strength—cement—is also currently responsible for about 7% of carbon dioxide (CO₂) emissions worldwide.³ Global construction is expected to double by 2060, adding the equivalent of one New York City every month.⁴ The cumulative impact of emissions will only worsen unless something is done quickly.

At CarbonCure Technologies, we’ve developed engineered solutions that can play a significant role in driving carbon removal and decarbonizing the concrete industry. CarbonCure Ready Mix and CarbonCure Reclaimed Water are carbon removal and reduction technologies that create lower carbon concrete by beneficially using and eliminating CO₂, while enabling a reduction in the cement required without reducing the strength of the concrete. Our carbon removal and reduction technologies are up and running in hundreds of concrete plants around the world, but are slow to be adopted by the industry despite their proven effectiveness.

Concrete producers face the pragmatic challenges of a commodity industry. Market pressures and the very nature of the industry create inherent barriers to adopting new technology.

That’s where CarbonCure carbon credits are proving to be successful in helping concrete producers, such as Lauren Concrete, adopt our carbon removal and reduction technologies, accelerating carbon removal and the decarbonization of this hard-to-abate sector.

². rsc.org/images/Construction_tcm18-111430.pdf
⁴. architecture2030.org/why-the-building-sector/
Why the Concrete Industry Is Hard to Decarbonize

There’s a complex mix of variables that make it difficult for individual concrete producers to adopt any new technology, never mind one that changes longstanding (multiple millennial!) materials and practices. Convincing them to introduce a new ingredient such as CO$_2$ into the production of concrete is not an easy task.

**Slow-to-change.** Concrete manufacturing is thousands of years old. It has survived and thrived using virtually the same ingredients and methods for centuries. As a result, it’s slower than other industries to innovate or adopt new technologies.

**Tight margins and price sensitivity.** The concrete industry is a highly competitive commodity business with very tight margins. Concrete is often one of the most expensive line items in a construction project, so there’s extreme market pressure to keep costs down.

**Performance concerns.** Concrete producers are comfortable with traditional mixes that perform reliably. They are skeptical of reducing cement content or incorporating new processes or ingredients such as CO$_2$ that might impact the quality and performance of their product.

**Limited awareness/demand.** While demand for lower emission concrete is growing, injecting CO$_2$ into the concrete production process lacks the awareness needed to drive widespread use. Engineers and contractors are not specifying the use of lower carbon concrete because their customers don’t know they can ask for it.

**Green premium.** Developers naturally try to keep costs down so are reluctant to ask for low carbon concrete, assuming anything that is good for the environment will come at a premium. In addition, sustainably-minded producers who experiment with initiatives to improve the carbon footprint of their concrete often find the solutions to be commercially non-viable.
How CarbonCure Uses Concrete as a Pathway to Remove and Reduce CO₂

CarbonCure Ready Mix injects captured carbon dioxide (CO₂) into concrete as it’s being mixed. The CO₂ reacts with cement to form a solid mineral, calcium carbonate (CaCO₃), permanently storing the mineralized CO₂. It will never be released back into the atmosphere, even if the concrete is later demolished. The mineralized CO₂ also improves the concrete’s compressive strength, allowing producers to safely reduce cement content by an average of 4-6% while lowering the carbon footprint of the concrete—with no impact on quality or performance.

But adoption of the technology all comes down to the numbers. While concrete producers may view producing lower carbon concrete as an environmental win, it also needs to make financial sense to the business.

That’s where CarbonCure’s carbon credits are proving successful in changing the financial equation, as they did for Texas ready-mix concrete supplier Lauren Concrete.

$$\text{Cement} + \text{H}_2\text{O} = \text{Ca}^{2+} \text{ Calcium} \downarrow \text{CaCO}_3 \text{ Calcium Carbonate}$$

$$\text{CO}_2 + \text{H}_2\text{O} = \text{CO}_3^{2-} \text{ Carbonate} \uparrow$$
Lauren Concrete and the Case for CarbonCure

Lauren Concrete started as a family-based business in Austin in 1986 and has grown to 24 plants throughout central Texas. Along with safety, world-class service and a high-quality product, Lauren prides itself on being innovative. Unlike many in the industry, Lauren has been quick to adopt new technologies—from GPS tracking for fleet optimization to software for real-time quality monitoring—to meet these priorities.

When CarbonCure offered a technology to help produce a greener concrete, they were eager to explore it. The City of Austin is a recognized leader in green building practices, and the technology could potentially help Lauren win those projects.

Lauren assessed their concrete mixes and determined that with the adoption of CarbonCure’s Ready Mix technology and the introduction and permanent storage of CO₂, they could confidently reduce their cement content by 6%. But adopting CarbonCure’s Ready Mix technology only made economic sense for their four largest plants.

“I would have stopped right there,” said Matt Jetmore, General Manager of Lauren Concrete’s central division, if not for the prospect of earning new revenue from the CarbonCure Carbon Credit Program.
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Changing the Financial Equation with Carbon Credits

In August 2021, Lauren Concrete joined CarbonCure’s newly developed carbon credit program, designed to incentivize adoption of its innovative carbon removal and reduction technologies and encourage concrete producers to use more CO₂ in their concrete. CarbonCure’s technologies generate high quality, measurable, verifiable carbon credits by both removing and reducing CO₂.

CarbonCure shares the carbon credit revenue directly with concrete producers to ensure the economics of adopting CarbonCure’s technologies and the introduction of CO₂ into concrete production is financially possible and that the benefits of carbon removal are distributed back to local host communities. Because of the revenue earned through carbon credits, it was now financially viable for Lauren Concrete to expand CarbonCure to 12 more plants. This brought the total number of plants with CarbonCure to 16.

But there were still eight smaller regional plants in Lauren Concrete’s eastern division that had not adopted CarbonCure. In May 2022, carbon credits enabled CarbonCure to find new ways to drive even greater adoption of its technologies, offering two years of carbon credit revenue up front to encourage concrete producers to adopt the technology. Invert Inc. had just signed a deal with CarbonCure to purchase $25-million worth of carbon reduction and removal credits, providing the capital that would allow CarbonCure to offer the incentive to concrete producers to adopt its carbon removal and reduction technologies.

“When CarbonCure came back willing to prepay for the carbon savings of the smaller plants, essentially saying ‘Hey, we’re going to give you the money that you’d make over two years upfront instead of waiting for two years,’ that was really the tipping point for us. At that point, it made financial sense. They just removed any financial barriers for us to go ahead and roll it out everywhere.”

Matt Jetmore, General Manager Central Division, Lauren Concrete

With the exception of two temporary satellite plants, CarbonCure is now used in all 24 of Lauren Concrete’s permanent plants.

Incentivized Technology Adoption Timeline

- **JULY 2020**
  - No carbon credits
  - 4 Plants

- **AUGUST 2021**
  - Carbon credit revenue
  - 16 Plants

- **AUGUST 2022**
  - Prepayment of carbon credit revenue
  - 24 Plants
Pragmatism over Politics

Before CarbonCure introduced its carbon credit program, the cost-benefit analysis made it unrealistic for many concrete producers to adopt its carbon removal and reduction technologies—or to fully adopt them in all plants—despite their concern for the environment. With the additional revenue stream from carbon credits, it now makes financial sense to use CO$_2$ in the production of concrete, creating a win-win for concrete producers and the environment. And in a commodity industry with such tight margins, pragmatism wins.

Lauren Concrete is really proud of the positive impact it’s had on its community and the environment by producing lower carbon concrete. Since July 2020, it has saved 7,846 tonnes of CO$_2$, the equivalent of planting 9,415 acres (3,810 hectares) of trees. And they have achieved these carbon savings without any additional land use.

Even though the eastern division of Lauren Concrete’s plants produce a lower volume of concrete and are “very conservative, both in terms of technology, and politics,” the proven technology along with the financial impact of a new carbon credit revenue stream made too much sense not to get on board.

Incentive to Eliminate More CO$_2$

Even after concrete plants have CarbonCure installed, they don’t normally use it in all their mixes. Earning carbon credit revenue for every tonne of CarbonCure concrete produced encourages plants to use CarbonCure to remove and reduce as much CO$_2$ as possible.

Matt expects Lauren’s entire operation will now use CarbonCure concrete in projects whenever they can. “Carbon credits just turbocharge the financial case for doing it. The more buyers that step up and show there’s an appetite for these credits, the more we generate by using CarbonCure. It’s pretty straightforward, actually.”

At the end of the day, by purchasing CarbonCure Carbon Credits, buyers are eliminating the key barrier to adopting CarbonCure’s carbon removal and reduction technologies and enabling the concrete industry to continue to “Build with Strength”… and less carbon.

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Matt Jetmore, General Manager Central Division, Lauren Concrete
Lauren Concrete now has the potential to remove and reduce up to 6,585 tonnes of CO$_2$ annually.

**Lauren Concrete Production Stats:**

- 7,846 tonnes of CO$_2$ saved to date – equivalent to planting 9,415 acres (3,810 hectares) of trees
- 82,753 truckloads of CarbonCure concrete produced
- 782,433 yd$^3$ (598,213 m$^3$) of CarbonCure concrete poured
- 372,663 lbs (169,037 kg) of cement reduced
Invest in CarbonCure’s Carbon Credits

Make a concrete impact to fight climate change

Hundreds of concrete producers around the world use CarbonCure’s award-winning technologies to decrease the carbon emissions of concrete, reducing and permanently removing tens of thousands of tons of CO$_2$ each year, and generating high-quality carbon credits you can trust to deliver immediate, scalable, high-impact climate benefits.

For more information about purchasing carbon credits from CarbonCure, visit carboncure.com/carbon-removal. To get in touch with a CarbonCure representative, email us at sales@carboncure.com or call us at +1 (902) 448-4100 (Worldwide) or +1 (844) 407-0032 (North America).