

Taking the Low Carbon Pledge: AI and Green Concrete in the Mix

Moderator:

Scott Blair, *Editor-in-Chief*, Engineering News-Record

Nancy Novak, *Chief Innovation Officer*, Compass Data Centers

Ryan Henkensiefken, *VP Business Development*, Concrete.ai

USE OF TECHNOLOGY

Reducing Scope 3 Emissions



Low-carbon Concrete

OBJECTIVE

Reduce the embodied carbon emissions associated with Compass' data center structural materials by using CarbonCure and Concrete.ai technologies to design and produce low-carbon concrete.

SUMMARY

Compass recognizes the impact of embodied carbon emissions associated with manufacturing and transporting the concrete structure of its data centers. **To reduce these emissions, Compass uses technology from CarbonCure and Concrete.ai.** These innovative solutions either model or change concrete composition to **minimize the amount of cement** - the primary ingredient in concrete responsible for the majority of CO₂ emissions.

Using CarbonCure, **Compass has achieved a 4-6% reduction in embodied carbon emissions of their precast and cast-in-place concrete.** The technology injects post-industrial CO₂ into the concrete during mixing, which chemically converts into a mineral. This process helps strengthen the concrete and means less cement is needed.

In addition, **Compass has utilized Concrete.ai's database and algorithm to reduce concrete embodied carbon emissions by 7-16%** from artificial intelligence modeling by optimizing the concrete mix design. Full optimization, including the use of supplementary cementing materials, can yield **up to 70% embodied carbon reductions.**¹

AVOIDED EMISSIONS

TOTAL AVOIDED EMISSIONS POTENTIAL FROM CARBONCURE TECHNOLOGY²

Precast concrete	kg CO ₂ e / m ³	15.8
	kg CO ₂ e / cy	20.6
Cast-in-place concrete	kg CO ₂ e / m ³	11.4
	kg CO ₂ e / cy	13.8

OVERALL IMPACT

5% average lower concrete embodied carbon emissions using CarbonCure³

5,741 tonnes CO₂e of avoided embodied carbon emissions using CarbonCure across all US Compass sites⁴

~15 - 20% total embodied carbon emission reductions using CarbonCure and Concrete.ai

¹Source: Concrete.ai

²Source: HED Design

³Compared to Compass' concrete supplier baseline

⁴Based on current and forecasted portfolio

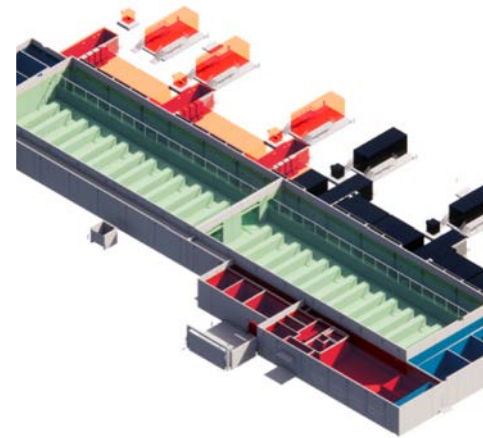
TOP 4 BENEFITS

- 1 Reduce concrete embodied carbon emissions (scope 3) by minimizing cement content
- 2 Enable custom concrete mix design using Concrete.ai technology
- 3 Sequester CO₂e emissions directly into concrete through CarbonCure technology
- 4 Increase building resilience by integrating high-end durable structural elements and offering high compressive strength



Means & Methods

- How you approach construction projects or operate your facilities
- What are the goal related initiatives?
 - Must have specific objectives
 - Reduced labor
 - Less waste
 - Faster delivery
 - Streamline processes
- How will you quantify and report performance



Confidential and Proprietary



Technology

- Capitalizing on new technologies to achieve objectives
- **Materials**
 - Production
 - Off-site optimization
 - Transportation
- **Production**
 - Incorporating innovations
- **Off-site optimization**
 - Heat transfer ceramic coatings
- **Reduction/Elimination**
 - Ex: "Virtual" rebar



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Thank you!

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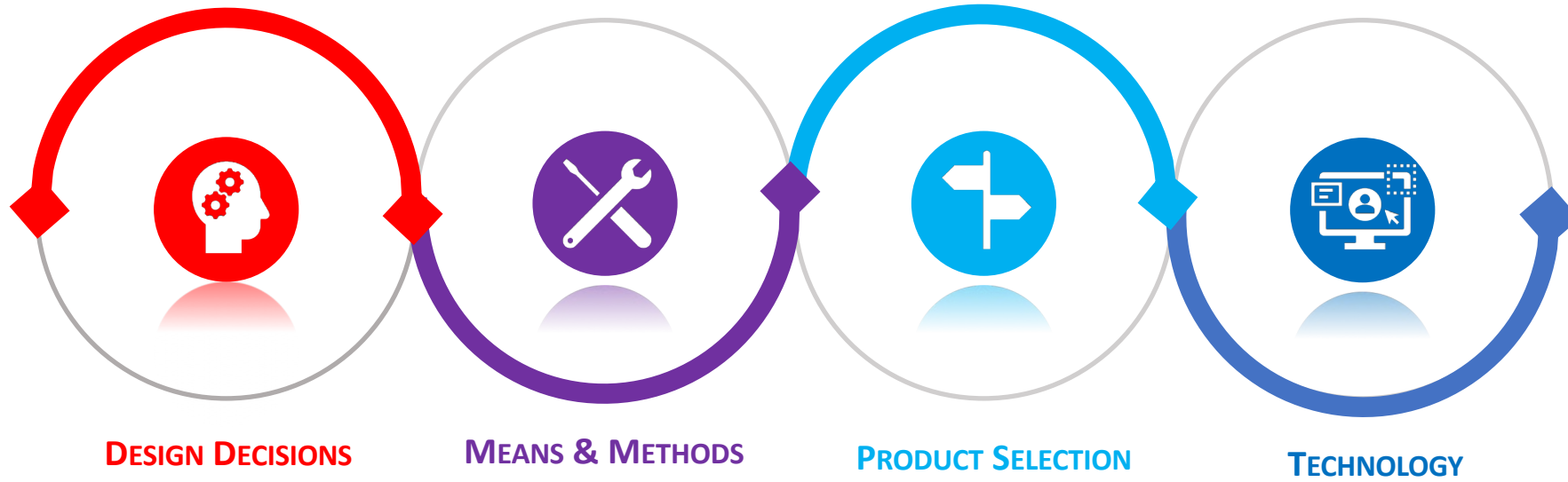
www.compassdatacenters.com



TODAY'S
CHALLENGE

**THE NEED TO INCORPORATE
EMBODIED CARBON INTO THE
CONCRETE PROCUREMENT PROCESS**

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Platform Benefits

- » Software allows concrete producers to optimize concrete mixes for performance, cost, and carbon reductions.
- » Seamlessly integrates into the producer's existing industry software and deploys changes, such as new materials, immediately into the producer's workflow process.
- » The concrete producer is in complete control of the process. They choose what to optimize and what constraints to apply based on their unique situation and business objectives.

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