

FAQ!



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The Technologies Changing Concrete Production & Delivery

Technology continues to revolutionize the concrete construction industry from the batching plant, the delivery truck, to your jobsite.





World of Concrete will mark its 50th anniversary in 2024.

In the five decades since the event began, the ready-mix concrete industry has seen many technological advancements: Quality assurance solutions, mobile manufacturing, cloud-based systems, e-ticketing and more are helping businesses increase efficiency, product quality and customer satisfaction while boosting the bottom line.

The role of advanced technology in concrete production and delivery continues to grow, and there are exciting innovations on the horizon that promise to further improve processes and profitability while addressing workforce shortages. Capturing accurate data, transforming data into actionable insights, ensuring that systems are interoperable and harnessing the power of artificial intelligence to augment human decision-making are all key factors in this technology revolution.

We gathered a group of experts to talk about how technology has transformed the concrete industry and what we can expect in the future. [Click here to watch a recording of the full discussion.](#) In the meantime, keep reading for an overview of key concepts covered in the session.

→ Key Terms To Know

Cloud-Based Monitoring Systems: Cloud-based monitoring systems track data and make it accessible to multiple stakeholders from any internet-connected device, including tablets and smartphones. Cloud-based platforms allow users to monitor their fleets in real time, make proactive decisions and respond to events as they happen.

Artificial Intelligence (AI): AI is revolutionizing the concrete industry. It uses advanced algorithms and machine learning to create efficiencies and provide operational insights.

Telematics: Telematics is a combination of telecommunications and informatics. It describes how telecommunications devices send, receive and store data related to mobile, connected assets. Telematics systems provide crucial operational insights. For instance, fleet telematics paired with GPS tracking gives fleet managers insights into asset location, miles traveled, idling, vehicle speeds, driver behavior and more. Real-time and historical data are accessible via a cloud-based portal to help fleet managers, dispatchers and other stakeholders make better decisions in the moment and for the long term.

Connected-Construction: Connected construction technology integrates data across the project lifecycle, ensuring all information flows seamlessly from one system to another. Automatic job statusing is one aspect of connected construction that gives fleet managers full visibility, allowing them to better allocate resources and ensure that concrete is delivered to a site on time. Knowing how many concrete mixer trucks are ticketed, en route, on site, pouring, and traveling back to the plant gives key personnel the information they need to make sure jobs are done properly.

**Q How are new technologies becoming more connected?
How will this bear out for materials producers in the future?**

From production to delivery, concrete businesses generate a huge amount of data. However, for too long various data points have been disconnected, making it difficult for businesses to use them to improve operations. Interoperability of systems connects data from different sources to provide a full operational picture.

[McKinsey forecasts that 30% of jobs will be reinvented in the next five years.](#) For the cement and concrete industry, this will include the adoption of AI solutions that help transform massive amounts of data into actionable



insights to relieve the administrative burden, facilitate better decision-making and allow producers to focus on their core business.

Just as it has been in other businesses, AI will increasingly be integrated into operations of concrete businesses in the coming years, helping to increase efficiency, sustainability and profitability – and attract a new generation of tech-savvy workers into the industry.

Q What are the potential opportunities for concrete quality control?

Data and system interconnectivity is critical for quality control.

As technology facilitates the move away from the old methods of sampling, the industry is finding better ways to measure product quality. While disparate systems bring much value to the producer – helping understand material better, understand where the material is, what’s going on, and how concrete changes in the drum – the interconnectivity of these systems will maximize these benefits.

With interconnectivity producers can see the elements of the concrete as it’s batched, and the material added. This is brought together with active measurement of the material in the drum, while the chemical reactions are taking place. That technology can then report data back live to the quality control technician, manager, and/or driver.

The interconnectivity of systems will allow the industry to deliver more value to the customer and do more with existing assets and workforce.

Q How can producers find efficiencies? What opportunities does AI bring to the equation?

In terms of practicality, a key consideration is simplicity of hardware installation, especially when it comes to the sensors that collect real-time data during trips from the plant to the jobsite and back again. In the past, such installations could take an asset offline for hours. Today, technology is available that can be installed in about a half-hour.

New technology can also deliver efficiencies through data capture – from operational considerations like vehicle health to job statusing to product quality information, such as water ratios. Interoperability of the systems that collect and report various data points is crucial. Producers will begin to benefit from efficiencies related to data capture only when they move away from closed systems to integrated ones that allow for data sharing across systems.

AI has the potential to supercharge efficiencies related to operations and product quality. Predictive analytics powered by AI, for instance, can help producers avoid vehicle and asset shutdowns by predicting when an asset might have an issue and recommending (and in the future, possibly auto-scheduling) maintenance to avoid a breakdown. Today, AI tools augment human decision-making when it comes to scheduling, routing, delivery and more.

Q How can these new technologies help bridge the labor gap?

Cloud-based technologies and predictive AI systems can help producers create a proactive maintenance program. Tools like predictive maintenance, real-time performance information, digital inspection reports and more can

help producers increase the efficiency of their maintenance personnel.

The inability to adapt production in real time has been a perennial problem that has the potential to jeopardize the product quality and, as a result, profitability for producers. AI systems are being developed by companies like BCMI and Giatec that would autonomously monitor and manage production, helping to optimize processes. Furthermore, technology tools from companies like EROAD are improving data collection to support operational functions and make processes more predictable.

These types of technologies are making it possible for one person to effectively manage batching operations for multiple plants, helping producers maintain operations despite labor shortfalls.

And better data flow, interconnectivity and AI can accomplish more than just filling the gaps through things like predicting materials requirement more accurately, reducing the risk of overstocking shortages and minimizing the labor required for inventory management. It's important to note that these technologies are not meant to replace the human workforce, instead they can augment human decision-making, bridge the experience gap and enable them to do more with less.

WHICH TECHNOLOGY APPLICATIONS WILL HAVE THE MOST IMPACT?

In a recent webinar, the attending audience was asked which technology applications would have the most impact to the concrete industry.

While somewhat related, both Artificial Intelligence and Bridging Labor Gap Shortage were tied as No. 1. The options were Artificial Intelligence, Bridging Labor Gap Shortage, Improving Concrete Quality, Interoperability of Systems, and Supporting Sustainability.

In a way, AI and the labor gap shortage are related to each other. AI is being used today to help bridge the gap while ensuring the industry isn't taking away from the expertise needed in the cement and concrete industry.



Q What are the greatest impacts AI could have on how concrete producers operate and their business in the next five years?

There's a winning combination in concrete: hassle-free producers who provide the best customer experience while selling at near market price are profitable – and being profitable is table stakes for producers to remain in business. There are two primary ways that AI can help producers ensure profitability. First, it empowers all the participants in the value chain with instant access to information about the best possible decision to move forward, in effect flattening organizational decision making to reduce friction and hassle.

Second, AI can help plug profit leaks, things like inefficient logistics, pulling material from locations where it's more expensive than others, extra labor, bad loads going out, aging and more. AI can work in the background looking for patterns, helping to identify patterns of profitability and warn against potentially detrimental actions.

Q Is AI safe? What are the dangers and how can the concrete industry mitigate these concerns?

New technologies often benefit people and businesses; however, there will always be bad actors. Eventual regulation will help mitigate risks associated with AI. Unfortunately, history shows that a catastrophic event needs to occur before regulation is put into place.

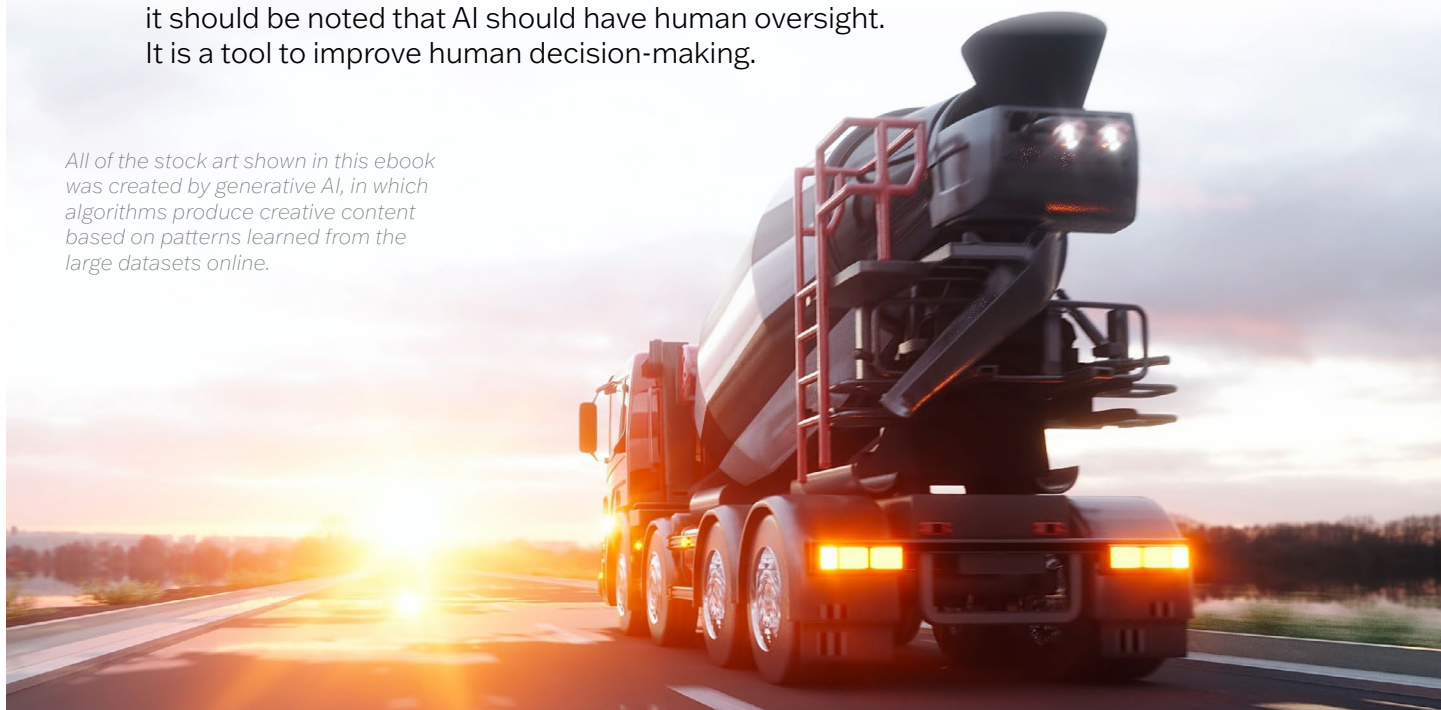
Cybersecurity is a primary consideration. AI is only as powerful as the data and systems put into it. In this instance, then, it's less about the security of AI and more about the security of the systems. So, ensuring general cybersecurity is crucial. To that end, suppliers, producers and other stakeholders should have a mutual understanding of the security measures each is taking. Also, it should be noted that AI should have human oversight. It is a tool to improve human decision-making.

THE POWER OF FLEET MANAGEMENT

A 2021 study by G2, found that 45% of 1,200 surveyed U.S. fleet managers, executives, and other mobile-business professionals achieved positive ROI in 11 months or less on their fleet management solutions. Results like these highlight the true power of fleet technology and reliable integration.

When fleet managers have real-time, command-center visibility into drivers and assets, they have the actionable data and communication tools needed to increase productivity, efficiency and revenue. And when construction fleets take that a step further and combine integration capabilities with the power of fleet tech, employers and employees alike benefit with a safe work environment, a successful and productive business model and an improved bottom line – all thanks to the power of integrations.

All of the stock art shown in this ebook was created by generative AI, in which algorithms produce creative content based on patterns learned from the large datasets online.



Q How are interconnected technologies changing expectations about delivered concrete?

Interconnected technologies can increase visibility for stakeholders and customers, giving them insights into the status and location of their products at every step (just like UberEats does for food orders). That same visibility can empower stakeholders throughout the supply chain to make better decisions. From mobile manufacturing environments and plants to quality control and systems to measure air entrainment in concrete – data from all of it must be a part of the equation.

Q How will technology appeal to the concrete industry's next generation of workers?

The next generation of workers will be more tech-savvy. They are digital natives, born and raised in the information age. These workers will be comfortable with interconnected technology tools and will expect to use them on the job. Technology can also serve to flatten hierarchies and empower workers to be more autonomous. Finally, technology will be crucial to bridging the experience-gap for new workers. Lack of technology or outdated technology may be detrimental to hiring efforts as potential workers look toward more technologically advanced industries.

BOOK

"The Coming Wave: Technology, Power, and the Twenty-first Century's Greatest Dilemma" by Mustafa Suleyman, Random House, 2023

BLOG

"Increased Operational Visibility is the Key To Success for Construction Businesses"

WEBINAR ON DEMAND

"Transforming How Concrete is Poured and Delivered With Emerging Technologies"

Have more questions?

Contact **EROAD** to Get Started.

<https://go.eroad.com/builtforconstruction>

