

# Maximizing ROI and Sustainability in Cement Production Through Digital Transformation

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# Our mission in cement business

We help the cement industry adopt a culture of innovation that ensures long-term sustainability, productivity, energy efficiency, and value chain excellence.

Our digital-first approach integrates automation, power, and process solutions. The result of this connected consolidation is enhanced stakeholder return and a more sustainable, efficient operation.

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# Challenges

Cement business operations today face five main challenges.

### License to operate

In addition to adhering to the highest safety standards, Cement production companies today need to contribute to community development and environmental sustainability. Expectations for responsibility are embedded in the industry's social license to operate; Cement business must navigate stakeholder pressure while driving down OpEx.

### CapEx and OpEx constraints

The demand to remain profitable in a very competitive landscape, all while doing more with less, is another hurdle cement production companies must face.

### Value chain responsiveness

Cement production operations need to be able to swiftly pivot to the traditional value chain. Market changes and price volatility undergird the values that digitization brings to the cement industry, including improved connectivity and flexibility.

### Workforce shift

By 2025, millennials will comprise 75% of the workforce. As experienced employees retire, it's important to transfer their knowledge by leveraging technology. Right now, however, the cement business needs to attract new talent and improve gender diversity.

### Culture of innovation

As it's true in many industries, there's a relentless drive to accelerate digital transformation, technology adoption, and innovation to remain competitive.



# Digital transformation — the promise of new technology

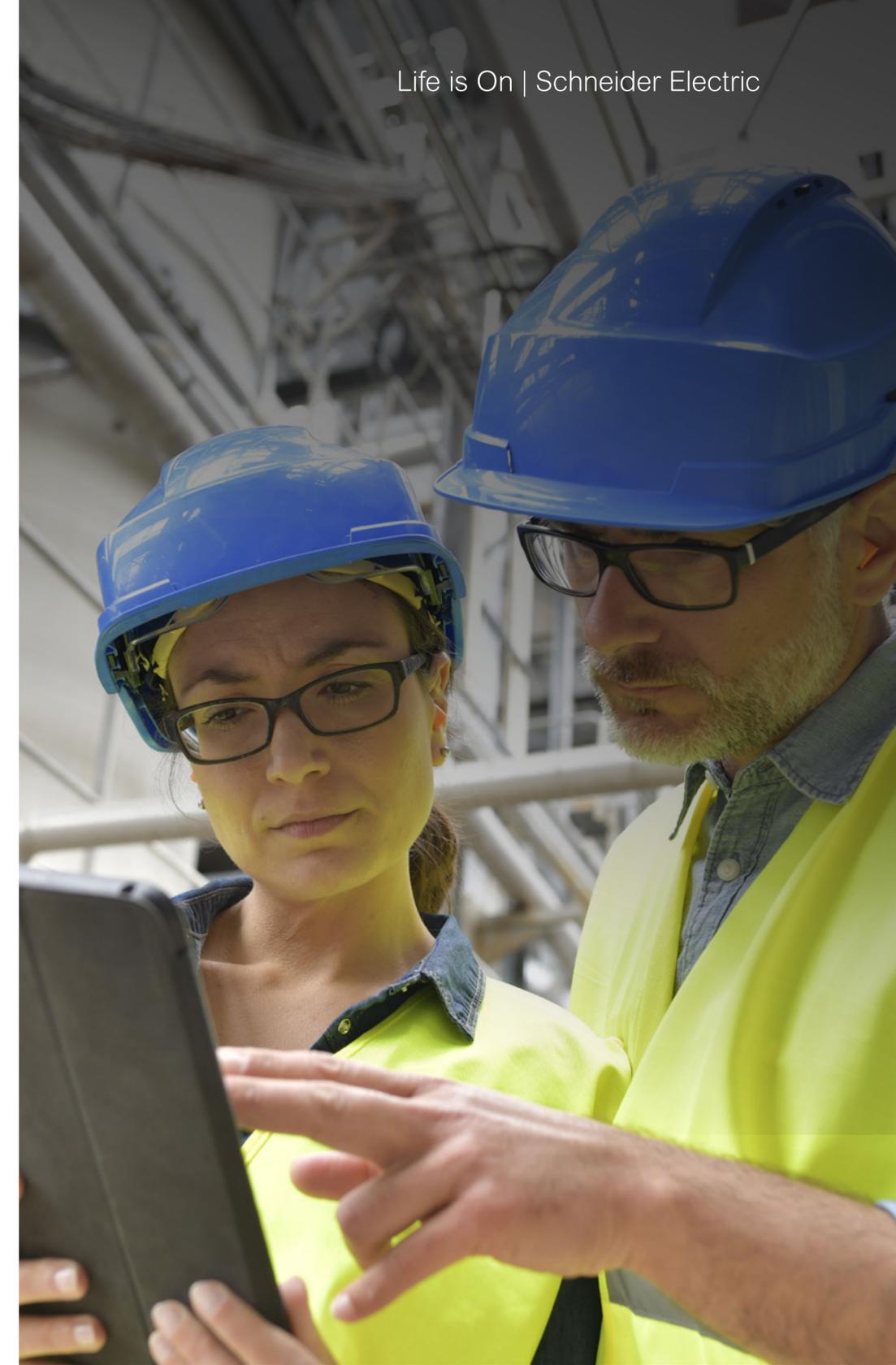
## Digital technologies and IIoT

Digital transformation is happening all around us, and the cement industry has taken notice. The advantages of a digital, IIoT-connected environment are necessary not just for survival, but to attract the best and brightest of the next generation of workers. It's also a key contributor in maintaining and improving sustainability.

## From data to wisdom

Smart devices and sensors are generating lots of data from processes, from both fixed and mobile equipment, and with unprecedented granularity. They even allow data to be collected from things such as fire extinguishers and personal protective equipment that are not typically connected

to a network. But massive amounts of data alone is not an answer. Companies need to derive real business value from this ocean of data and turn it into meaningful, insightful information – and that is achieved thanks to intelligent software and technology that can transform data into information, information into knowledge, and ultimately knowledge into action that advances efficiency and profitability.





Digitization and sustainability levers together can increase margin by

**\$4 to \$9**

per ton of cement.

Integrated **digital twin** enables

**end to end optimized operations**

Source: <https://www.mckinsey.com/industries/chemicals/our-insights/the-21st-century-cement-plant-greener-and-more-connected>



# Our digital differentiator

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# Why partner with Schneider Electric?

We empower through digital transformation to ensure our customers' competitive advantage.

We have an unrivaled ability to integrate power and process throughout the entire value chain — from design, planning, and scheduling to operation, production, and maintenance.

- Our deep industry knowledge features demonstrated value through a cement business-specific application portfolio.
- We offer the greatest breadth of smart connected products, edge control solutions, and analytics that cover the entire industrial automation and energy management space.
- Our strategic partnership with AVEVA™ allows us to build digitally connected, unified environments.
- EcoStruxure for Cement delivers IoT-enabled solutions that drive operational and energy efficiency in the cement production industry.



# Resiliency through EcoStruxure

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# EcoStruxure for Cement

## What is EcoStruxure for Cement?

EcoStruxure™ is the IIoT architecture designed to improve profitability, efficiency and sustainability of the cement production business. This open framework allows for seamless and cybersecure linkages of smart devices, edge control and software analytics. As a result, end users can generate more precise, and more profitable operational decisions to ensure the most optimal cement production and operations.

## How are we different?

1. Most wide range of products and solutions, from energy management to industrial automation
2. Our solutions are scalable and interoperable; open standards allow for seamless integration of third-party systems and devices
3. Our offers enable users to access data on-premise or via the cloud, depending on your specific needs

## Innovation At Every Level

We have leveraged advanced technology in IoT, mobility, sensing, cloud, analytics, and cyber security for solutions that deliver Innovation At Every Level.

### Connected Products

Because the Internet-of-Things starts with “things”, it is intelligent products like connected breakers, sensors, meters, process instrumentation, and motor drives that serve as the foundation of smarter operations and optimized production.

### Edge Control

We deliver “real time” solutions for control at the edge of the network because all control decisions can’t be made remotely, and having the ability to override control of devices at the edge of your network is essential.

### Applications, Analytics, and Services

Sophisticated problem solving and analysis at the enterprise level optimizes business operations and maximizes results.



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# Four values enabled by digital transformation

Discover the wide array of benefits unleashed by digital transformation.

Cement business industry leaders will achieve their biggest successes by embracing digital technologies like IIoT and advanced analytics. We see four main areas that digitization will improve:



### Improve sustainability and maintain license to operate

Reduce CO2 emissions and provide a clean, safe and reliable operation while ensuring compliance and brand image by increasing end-to-end sustainability and corporate transparency.



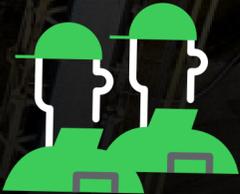
### Improve asset efficiency

Digitally transform operations for reduced OpEx and resiliency. Improve process and technology interoperability through integrated power and process for data-driven decision-making.



### Optimize value chain from resource to market

Increase value chain flexibility, agility, and predictability to boost competitiveness in a volatile environment.



### Empower workforce

Retain knowledge, eliminate information silos, improve operator safety, and provide virtual learning programs, immersive training, and collaborative digital environments that allow for informed decisions in real time.



# Improve sustainability

Digital transformation helps our clients transition to renewable energy while facilitating clean, safe, and reliable operation. In addition to allowing cement companies to more easily meet compliance goals, digital transformation enhances brand image by increasing end-to-end sustainability and corporate transparency.

Digital transformation is greatly enhancing cement companies' social license by:

- Improving compliance and safety of people, buildings, and assets with integrated safety and security

- Reducing power incidents and supporting business continuity through reliable power distribution and automation
- Increasing corporate sustainability and transparency with a comprehensive strategy and implementation plan

- Optimizing resource usage with real-time control and operations analytics.
- Decarbonizing and reducing energy costs while making it easier for companies to manage a complex energy mix
- Protecting business, assets, and people with end-to-end cyber security



# Improve asset efficiency

Digitally transform operations for reduced OpEx and resiliency. Improve process and technology interoperability through integrated power and process for data-driven decision-making.

Digital transformation is improving asset efficiency for the cement industry by:

- Mitigating information silos by unifying key power and process across the value chain
- Minimizing production losses through integrated asset performance

- Allowing for the real-time analysis of performance indicators through production optimization solution
- Reducing process variability and increasing profitability with state-of-the-art advanced and automated process control, operational artificial intelligence and process “self-learning”

- Improving operations efficiency by optimizing power and process engineering, and designing via simulation
- Decreasing costs by minimizing maintenance OpEx with an integrated, mobile workforce



# Optimize value chain

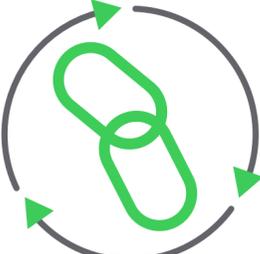
Increase value chain flexibility, agility, and predictability to boost competitiveness in a volatile environment.

Digital transformation is optimizing the cement industry's value chain at every level by:

- Improving decision-making by integrating key power and process information across the value chain through integrated operation

- Optimizing value chain visibility with planning and scheduling solutions
- Reducing transfers, damages, and bottlenecks in supply lines with automated material handling solutions

- Improving response agility with real-time inventories that allow rapid containment measures and enable optimized stock levels and fast reaction to changing demand needs.



# Empower workforce

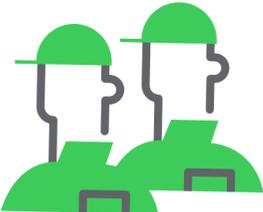
Retain knowledge, eliminate information silos, improve operator safety, and empower workforce through virtual learning programs, immersive training, and collaborative digital environments that allow for informed decisions in real time.

Digital transformation greatly enhances process management and empowers all levels of the cement industry’s workforce by:

- Allowing for rapid training of new teams on safety and other best practices via immersive virtual training

- Enabling faster and better-informed decisions with instant, hands-off augmented reality digital diagnostics and maintenance
- Mitigating information silos for improved decision-making in a collaborative environment

- Equipping field workers with essential data on operations and maintenance, equipment diagrams, and operating history using digital, current, and valid technical and process information
- Lowering training costs with fast, easy access to training modules, especially during production stoppage



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[Saint-Gobain: Improved power quality and optimised energy use](#)



[China National Building Materials: Improved energy efficiency with energy management and automation system](#)



[LafargeHolcim Maroc modernizes its electrical installation to increase power reliability and worker safety.](#)



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