



Siam City Cement Public Company Limited (SCCC) Thailand's First Smart Connected Factory Driving growth in an emerging ASEAN economy

Fujitsu has been helping the Siam City Cement Public Company Limited (SCCC) and its ITC subsidiary, INSEE Digital Company Limited to accelerate digital transformation for years. An example of this partnership is the transformation of SCCC's cement factory in Saraburi Province, 2 hours' drive from Bangkok, into a smart connected facility. Rolling out such new technologies and processes like machine learning, predictive analytics, remote tracking and contractor management systems, the factory has substantially improved operational efficiency and safety, and lowered maintenance costs. Following the success of this smart project, the parties are planning to implement the same technologies in overseas factories in other Asian countries.

The Digital Connected Plant is one of the major projects of SCCC that will drive efficiency and further cost reduction in our plant operations. Furthermore, SCCC hopes to contribute to the government's agenda on Thailand 4.0 and to the country as a whole. Leveraging strong partnership with Fujitsu, we are able to deliver and implement the Digital Connected Plant project faster than expected without compromising quality. Making SCCC the first mover in IoT and giving us a competitive advantage in the cement industry in Thailand.

*Siva Mahasandana
CEO, Siam City Cement Public Company Limited*

Innovation is crucial for the growth of SCCC. Digitization is a key driver and incubator for innovation, that's why we have such a strong focus on digital at SCCC. We drive our digital transformation across the full value chain, ensuring we capture all key innovation opportunities. Investing in industry 4.0, like our connected plant, is a great example of business, IT, digital and partners like Fujitsu collaborate and create exponential value.

*Dennis van Heezik
CEO, INSEE Digital - a subsidiary of Siam City Cement Public Company Limited*

Complex and long-established processes: New level of transformation required

Committed to industrial transformation, Thailand has formulated a national strategy, dubbed "Thailand 4.0," with the ambition of transforming heavy, lumbering industries into technology-driven, nimble companies, tradition-bound family businesses into smart enterprises and inefficient farms into smart agricultural operations. As if to serve as a national example, one Thai company has been driving digital transformation of its production plant, the Siam City Cement Public Company Limited (SCCC), the second largest cement producer in Thailand.

Since launching its business in 1969, SCCC has been regularly improving its plant operation, seeking to boost productivity and reduce the impact of its operations on the society and the environment. But because the company's plants operations consist of complex and long-established processes, including processing raw material, grinding, proportioning and blending, clinker kilning, cooling and final grinding, it has always been difficult to implement transformative change. In addition, maintenance of giant production machines and management of contractors with high turnover rates have presented thorny problems for plant managers. It required groundbreaking ideas and vision to

dramatically improve plant performance.

Understanding the challenges, SCCC kicked off its project for digital transformation in July 2017. "To continue to provide high quality products and services to our customers, with efficient and safe operations, we wanted to create the world's most advanced digital cement factory," says Amornsak Torot, Senior Vice President, Saraburi Operations. "We call it the 'smart connected factory,' because it connects people, processes and machines. We wanted to change the way our people work and create a sustainable workforce."

Rolling out IoT technologies to be the Thailand's first "smart connected factory"

To achieve the goal, Fujitsu started by identifying problems in the field. "Fujitsu's approach is very customer centric," says Eiji Furukawa, Managing Director of Fujitsu (Thailand) Company Limited. "We talked carefully with Siam City Cement to understand their operations, requirements and digital journey roadmap. I think dialogues with both factory and IT people are the key for success."

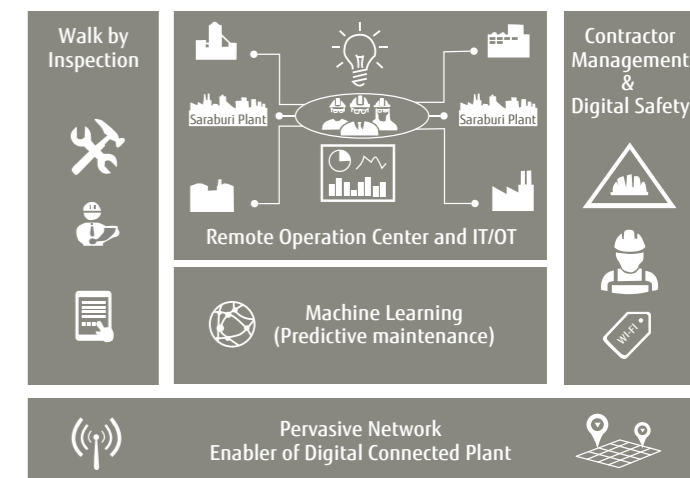
Interviews identified a number of problem areas, including the need for updates or enhancements in the deployment of digital devices, ICT asset management, worker training, contractor management, communication and collaboration across the facility as well as machine maintenance and repair. Fujitsu turned to IoT technologies to address these problems and set out to create a roadmap for SCCC to build a smart connected factory connecting people, processes and machines.

Based on the roadmap, SCCC and Fujitsu worked together to build a pervasive network by deploying 374 Wi-Fi access points across the vast facility to help supervisors monitor and track the entire plant's operation for enhanced communication. SCCC and Fujitsu built a Remote Operation Center and integrated IT/OT together as well. They also implemented machine learning and predictive analytics for failure prognosis and a contractor management system for contractor registration, profiling and work assignment, as well as location-based control and safety measures for plant maintenance. The Remote Operation Center is equipped with a video wall display and an IT/OT staging database for centralized monitoring. This enables to control and remote support for plant maintenance and operation as well as enables managers to track contractors in real-time. "The Remote Operations Center allows experienced staff to remotely support onsite staff," says Chaiyan Sakulsaowapakkul, Plant 2 manager, SCCC. "Now we can make the right decision to fix the problem faster."

These technologies enabled SCCC to substantially increase operational efficiency while enhancing safety, giving managers the information they need to aim for even higher goals of improving plant operational and performance excellence.

Expanding this connected factory to other countries to accelerate innovation with Fujitsu

SCCC's smart connected factory launched operations on schedule



The conceptual diagram of SCCC's 'Smart Connected Factory'

in December 2017. Torot recounts, "Early results promise a 2% improvement in annual OEE (overall equipment efficiency) and maintenance costs to decrease by 10%." Dennis van Heezik, CEO of INSEE Digital, and Hans Keril Ante, Department Manager, Infrastructure Services and Security Management, who has been collaborating with Fujitsu for two years on building the ICT infrastructure for SCCC, sees the successful project as an important step toward ensuring the cement company's future growth. "Smart Connected Factory creates power not only for cement production but also for business. Integration of people, processes and machines enables the management to have a clearer view of production and to quickly make a next move with accurate decisions."

SCCC is planning to deploy the smart connected factory processes and technologies to other Asian counties, including Vietnam, Sri Lanka, Bangladesh and Cambodia. "Innovation is crucial for the growth of SCCC. So we cannot stop digital transformation in any aspect of our business," says Heezik. "That's why we partner with Fujitsu."

Customer Profile

Siam City Cement Public Company Limited (SCCC)

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