

DIGITAL

Better black gold

Sinopec Hainan Refining & Chemical Co., Ltd
Hainan, China

Safe, stable and sustainable operations with
EcoStruxure™ for Oil, Gas & Petrochemicals.

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[EcoStruxure Triconex Safety Systems](#) are part of the Edge Control portfolio of the Schneider Electric IoT-enabled architecture:

[EcoStruxure for Oil, Gas & Petrochemicals](#).

Introduction

Sinopec Hainan Refining & Chemical Co., Ltd, is a subsidiary of Sinopec, one of China's largest energy and chemical companies. It operates 17 sets of oil refining and petrochemical production units.

Sinopec Hainan Refining & Chemical Co., Ltd. is located in the Yangpu Economic Development Zone in the northwestern part of the Hainan Province. In 2003, they embarked on their new refinery project, which was commissioned and put into operation in 2006.

The foundation for a digital transformation

Petroleum production is closely tied to the development of the national economy. According to statistics, China consumed 651 million tons of crude oil in 2018. Whether for industry, agriculture, transportation, or national defense construction, petroleum products are indispensable. Before turning the viscous liquid into a valuable chemical product, petroleum passes through multiple complex stages, from exploration and extraction to pipeline transportation, refining, and processing. Downstream refining is the key step to turn the precious black gold into commercial products.

In September 2006, the hydrocracking unit of the Hainan Refining & Chemical plant was successfully commissioned and officially began operations. The petroleum products it produces are sold to the mainland and widely exported around Southeast Asia.

Parent company, the Sinopec Group Corporation, places tremendous value on its Hainan plant. It was the first domestic refining project to adopt the EPC general contracting model. Prior to that, projects often deployed control systems from different vendors which was not conducive to the efficient development, maintenance, management, and upgrade of the systems, and made digital operation and maintenance scenarios, such as centralized monitoring of all field data, seem out of reach.

Nowadays, cost along with operational and maintenance considerations have led companies to prefer integrated bidding for joint installations. This was the case with Hainan Refining & Chemical and the reason that they looked for a main automation system supplier with strong engineering capabilities and a complete DCS, supported by a safety system.

Goal

Safe and stable operation of chemical plant, while also reducing energy consumption.

Story

To deliver the chemical products demanded by the marketplace, Sinopec Hainan Petrochemical needed to digitize its processes to improve the plant's operation and maintenance levels.

Solution

A complete EcoStruxure for Oil, Gas & Petrochemicals solution including: Turnkey engineering services, AVEVA InTouch HMI, EcoStruxure Foxboro DCS, EcoStruxure Triconex Safety Systems, Foxboro temperature transmitters, safety barriers, CATV, and Low Voltage products.

Results

- Stable operations for over 14 years
- Confidence in their process control & safety systems to protect personnel and assets
- Established reputation as leader in indexes such as light oil yield, environmental protection, energy consumption, and economic benefits

Not only does Schneider Electric's EcoStruxure for Oil, Gas & Petrochemical architecture enable safe, reliable, stable, and efficient operation and production at the plant, but its complete automation system also lays a solid foundation for future digital transformation and upgrades.

Double insurance for safe and stable operation

For any refinery, safety and stability are its first priority. Only by ensuring the safety of equipment and personnel can the plant confidently produce the products that are needed by the market. Schneider Electric's stable and reliable solutions, combined with our expert services, provided double insurance for Hainan Refining & Chemical, and helped them achieve the safe and stable operations they required.

The solution included a complete set of EcoStruxure Foxboro DCS I/A, EcoStruxure Triconex Safety Instrumented System (SIS), fire alarm and gas detection system, and compressor control system (TMC). The SIS provides continuous safety interlocking and protection for key units in the plant, performs process monitoring, and stops safely when necessary. The fire alarm and gas detection system addresses the ever present threat of fire and toxic, highly flammable gas. It also provides a critical emergency shutdown function.

In addition to software and hardware solutions, Schneider Electric also served as the main automation supplier, providing Hainan Refining & Chemical with turnkey engineering services covering system integration, project management and execution, third-party procurement, and expert technical support.

“Schneider Electric has a wealth of engineering experience and a large number of successful achievements in the petrochemical industry, so we began a long-term relationship with them.”

— Liwei Liu,
Technical Supervisor
Hainan Refining &
Chemical Co., Ltd.



Partnering for a digital future

As one of the country's pillar industries, China's petrochemical industry is going through a tremendous growth period. Refining is a way for oil companies to add value and increase profitability. To successfully achieve this, though, companies are realizing that they need to apply new digital technologies to improve operational and maintenance levels and reduce energy consumption.

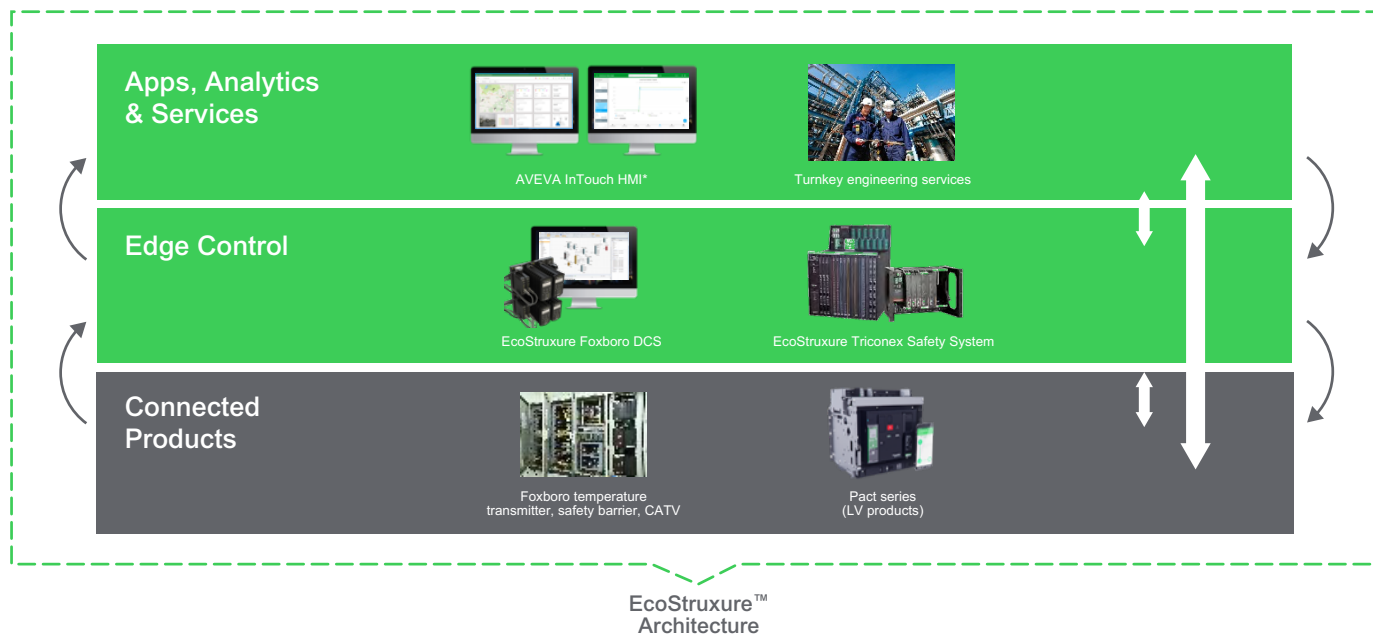
By integrating AVEVA simulation software, petrochemical companies can create digital twins to simulate the entire process, from design and construction to production, operation, and management. It visualizes the closed-loop management of the entire life cycle of a petrochemical plant and uses predictive maintenance methods to prevent failures before they occur. The results are better overall construction and operating efficiency of the plant. Schneider Electric and Hainan Refining & Chemical are currently exploring ways it can use this digital simulation technology to create a "virtual plant."

The close cooperation between Hainan Refining & Chemical and Schneider Electric



has lasted more than a decade. In that time, the company has become a valuable and valued industry in Hainan. They have enjoyed stable operations and have confidence that their process control and safety systems will protect their personnel and assets. As a result, Hainan has gained a reputation as an industry leader in light oil yield, environmental protection, energy consumption, and economic benefit indexes, and has been nationally recognized for its high safety standards and sustainability efforts. Schneider Electric will continue to work with them as they continue on their path of digital transformation to drive innovation and sustainable development.

EcoStruxure™ for Oil, Gas & Petrochemicals



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EcoStruxure™

Innovation At Every Level

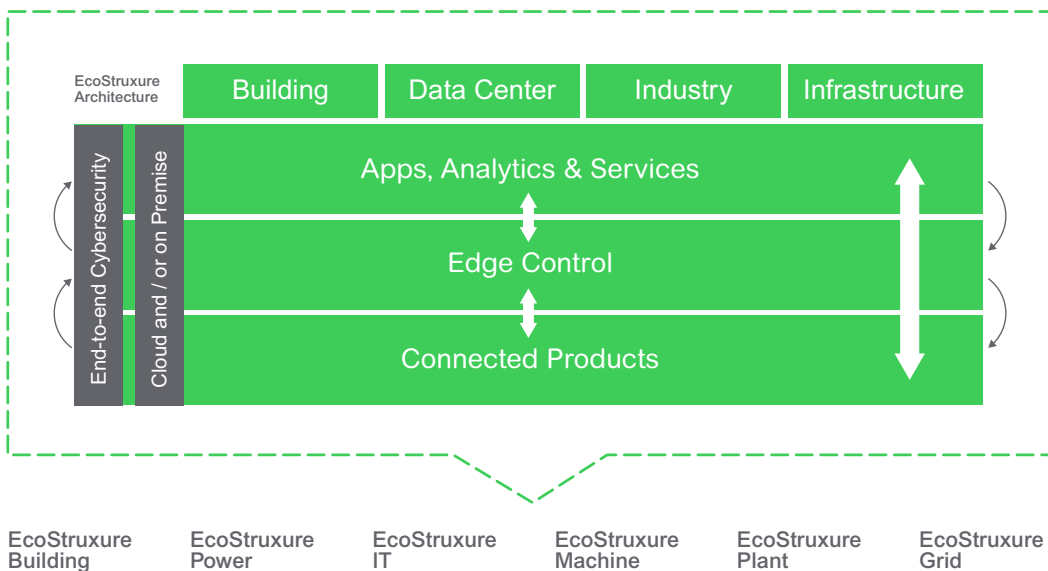
IoT-enabled solutions that drive operational and energy efficiency

EcoStruxure is Schneider Electric's open, interoperable, IoT-enabled system architecture and platform.

EcoStruxure delivers enhanced value around safety, reliability, efficiency, sustainability, and connectivity for our customers.

EcoStruxure leverages advancements in IoT, mobility, sensing, cloud, analytics, and cybersecurity to deliver Innovation at Every Level including Connected Products, Edge Control, and Apps, Analytics & Services. EcoStruxure™ has been deployed in 480,000+ sites, with the support of 20,000+ system integrators and developers, connecting over 1.6 million assets under management through 40+ digital services.

One EcoStruxure architecture, serving 4 End Markets with 6 Domains of Expertise



Connected Products

The Internet of Things starts with the best things. Our IoT-enabled best-in-class connected products include breakers, drives, UPSs, relays, sensors, and more. Devices with embedded intelligence drive better decision-making throughout operations.

Edge Control

Mission-critical scenarios can be unpredictable, so control of devices at the edge of the IoT network is a must. This essential capability provides real-time solutions that enable local control at the edge, protecting safety and uptime.

Apps, Analytics & Services

Interoperability is imperative to supporting the diverse hardware and systems in building, data center, industry, and grid environments. EcoStruxure enables a breadth of agnostic Applications, Analytics, & Services for seamless enterprise integration.

Find out more about EcoStruxure

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Intuitive Industries – Digitized!



Learn about EcoStruxure for
Oil, Gas & Petrochemicals



EcoStruxure Triconex Safety
Instrumented Systems



See our innovative
EcoStruxure Foxboro DCS



See our other customer stories

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