

# Success Story

*Building a Fully Automated Plant with a Seamless Sugar Production Cycle*

## Mitr Phol Group Sugar and Bio-Energy Plant

**Location:** Phu Luang, Thailand

**Order date:** April 2017

**Completion:** November 2017

**Industry:** Sugar production, renewable energy, wood substitute material, fertilizer



### Executive Summary

As Thailand and Asia's biggest sugar, bio-energy, and ethanol producer, the Mitr Phol Group is also ranked as the world's third largest sugar producer. With a presence in Thailand, China, Lao PDR, and Australia, Mitr Phol's key business units include sugar, ethanol, biomass energy, wood substitute materials, and agriculture-related logistics. A veteran in the sugar industry, Mitr Phol has been in the business for over 62 years and operates a total of 16 mills globally. Altogether, these mills process up to 25 million tons of sugar cane per year (221,000 tons per day) to produce raw sugar, bagasse, and ethanol. The six sugar mills in Thailand are able to process a total of 129,500 tons of sugar cane per day.

In line with the company's expansion plan, Yokogawa was tasked with implementing automation solutions for construction of a sugar mill with an auxiliary power plant in Loei Province. Building on phase 1 of the project that was completed in 2014, phase 2 consisted of the construction of a separate plant with a crushing capacity of 20,000 tons of sugar cane per day and 5 boilers to provide energy and electricity to the plant. Commissioned in April 2017, the Mitr Phol Phu Luang Plant was completed in November 2017. Yokogawa successfully implemented the automation solutions with integration to new electrical equipment.



The Mitr Phol Phu Luang sugar and bio-energy plant

### The Challenges and Solutions

As a company that places great emphasis on sustainability, Mitr Phol was facing the challenging task of building an automated sugar and bio-energy plant in the face of increasing labor costs and market competition. They wanted to maintain sustainable operations and increase human reliability in order to improve the overall operation efficiency and reliability of the plant. One of the ways Yokogawa enabled Mitr Phol to gain operational efficiency was by consolidating multiple control centers into one central control room. With safety, comfort, and innovation in mind, Yokogawa took into consideration all aspects of the work environment at the plant and streamlined aspects like operator comfort, ergonomics, safety, ease of communication, functionality, automation of systems, and business policy to create a synergy throughout the layout and design of the central control room (CCR) and thereby ensure the plant had streamlined and safe operations. Another bonus of having a CCR is that it acts as a showcase platform that introduces customers to the sugar mill.

The implementation of a data historian has also enabled Mitr Phol to have centralized production data for a complete and consolidated view of all plant process data. Operations dashboards and management reports are easily generated from one central location, and communicated instantly with the relevant stakeholders. Yokogawa's expertise enabled seamless integration from data acquisition to data processing, and the production dashboard system provided a scalable and unified decision-making platform for stakeholders. The management team is able to gain real-time insights into aspects such as production, operations, energy and asset equipment, market prices, logistics, and supply demand forecasts. With the ability to gain better insights, executives can easily identify the gaps in planned vs. actual performance and make critical production and operation decisions from the insights gleaned for a data-driven approach to industry 4.0.



With the completion of phase 2, Mitr Phol was also able to reduce production manpower by 50% through more effective manpower planning and scheduling. With the reduced need to hire and train new workers, Mitr Phol was able to reduce its dependency on human skills and thus attain more consistent quality.

### **A comprehensive solution suite**

Supplied by Yokogawa:

- Distributed control system (DCS)
- Field instruments and analyzers
- Project management engineering, installation, and commissioning services
- Plant information management system (PIMS)

### **Customer Satisfaction**

Through close collaboration with Mitr Phol, Yokogawa Thailand successfully implemented a cost effective and operationally efficient distributed control system for sugar refinery operations using state of the art technology in Thailand. Wanchai Chartchawan, Engineering Manager, said, “Mitr Phol is pleased with the professional services rendered by Yokogawa that resulted in a smooth project delivery. Not only is the platform simple and easy to use, it offers one of the best performing CPU systems and reliability. In addition, the Yokogawa engineering team was friendly, professional, and truly committed to making this project a success.”

#### **For more Information and Contact**

[www.yokogawa.com/dcs/](http://www.yokogawa.com/dcs/)

[www.yokogawa.com/industries/food-beverage/](http://www.yokogawa.com/industries/food-beverage/)

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