



F&N Dairies

Industry: Food and Beverage



“At our Rojana factory, F&N Dairies produces 3 million cans a day of sterilized milk, or 2,500 cans per minute. With the integration of Wonderware software solutions to provide vital data on production processes as well as track and trace, we are able to have comprehensive control of our manufacturing operations to ensure product quality and control.”

—Somchai Khwahan, Production Manager
F&N Dairies Thailand

F&N Dairies Achieves Significant Savings in Production, Logistics and Inventory Costs with Wonderware MES Software

Goals

- To enable the dairy to achieve quality track and traceability
- To facilitate connectivity of plant operations with the plant's industrial automation devices, computers and laboratory measuring instruments
- To reduce the total cost of ownership of the overall solution by enabling easy upgrades of systems across the enterprise

Challenges

- When quality parameter deviations were detected, the operators had to manually trace the information in the archived, paper-based operations sheets to determine the root cause, which took a tremendous amount of time

Solutions and Products

- Wonderware® MES Performance Software
- Wonderware System Platform
- Wonderware InTouch®
- Wonderware InBatch®
- Wonderware Historian
- Wonderware QI Analyst®

Results

- The plant achieved production goal of 2,500 cans a minute = 3 million cans a day = 24 million cases a year
- It reduced quality traceability time from 4 hours to 1 minute
- The manufacturing facility achieved its return on investment within one year
- The plant achieved “100% First-Time Quality,” a lean metric that indicates what parts are manufactured correctly the first time without need for inspection, rework or replacement.



Background

Ayutthaya, Thailand – What do two Scotsmen and, Ayutthaya, the ancient capital city of Thailand, have in common? F&N Dairies — providing consumers in Southeast Asia nutritious dairy products for more than 130 years.

Named after its Scotsmen founders, John Fraser and David Neave, F&N Dairies was established in 1883 in Southeast Asia, and has become one of the food and beverage giants in the region, producing more than 24 million cases a year.

Wonderware® software solutions from Schneider Electric® are the backbone of F&N's successful manufacturing operations, ensuring product quality, streamlined production and overall customer satisfaction of its wide range of dairy products, including popular brands such as Carnation, Teapot and Bearbrand.

“F&N Dairies has set very high standards for food safety, production efficiency and energy usage goals,” said Somchai Khwahan, production manager at F&N Dairies. “Our plant adheres to very strict quality control measurements at every step of the manufacturing process, and the Rojana plant relies on the latest manufacturing technologies and solutions to meet these goals and metrics. A critical software solution developed at F&N Dairies Thailand is Process Nexus II which features Wonderware software.”

F&N Dairies developed its Process Nexus II system with the help of Wonderware Ecosystem Partner Sagitate (Thailand) Co., Ltd. Based on Wonderware Operations Management and Manufacturing Execution Systems (MES) Solutions, the Process Nexus II project has enabled F&N to attain significant improvements in operations efficiencies and expanded its reporting capabilities throughout the enterprise.

Wonderware MES has enabled F&N Dairies to optimize its entire enterprise, including manufacturing execution, enterprise integration, batch, quality, operations and performance management. This enables agility, flexibility and operations transparency while establishing a foundation for compliance, good manufacturing practices and profitability.



“Sagitate provided F&N Dairies a wide range of Wonderware software solutions to achieve their business objectives. We implemented Wonderware MES, Wonderware System Platform, Wonderware Historian, and QI Analyst software as part of the Process Nexus II project according to F&N’s functional requirements, such as quality control, tracking and traceability.”

—Paruhut Chanpahol, Sales Manager
Sagitate (Thailand) Co., Ltd. pany/Organization



> One of F&N Dairies product packaging production lines

Wonderware Software Solutions Serves as Foundation for Process Nexus II

As a customized in-house automation software solution, Process Nexus II effectively and efficiently monitors F&N Dairies manufacturing processes, allowing plant operators and management to achieve an optimized enterprise.

As a global leader in Human Machine Interface (HMI), SCADA and real-time operations management software, Wonderware automation software solutions enable production and industrial operations to synchronize with business objectives to achieve speed, flexibility and sustained profitability. Wonderware software delivers significant cost benefits for designing, building, deploying and maintaining robust applications for manufacturing and infrastructure operations.

“Process Nexus II is a process and quality data acquisition system which enables online data to be captured and made ready for the user to review and release online,” said Roongroj Roongruang, factory engineering manager at F&N Dairies. “Based on the extensive capabilities of Wonderware software, the Process Nexus II system enables our production and management teams to monitor and control plant processes in real-time.”

Automation of Processes and Reporting Key to Profitability

An important operation of Process Nexus II at F&N Dairies is to monitor and record Net Content Control, which measures product net weight and product loss during the manufacturing process. The captured net weight is plotted to show its trend, from there, the operators at F&N Dairies are able to calculate overfill in real time and react immediately to address overfill issues to minimize loss.

With Wonderware InTouch®, staff is able to quickly and easily see what is happening along the production lines. InTouch offers an open and extensible supervisory HMI and SCADA solution that allows F&N to quickly create standardized, reusable visualization applications, and easily deploy them across its entire enterprise.

The use of InTouch by F&N provides the company with engineering simplicity, operational agility, real-time performance, lower operating costs, reduced risk and increased security.



F&N Dairies Thailand is the largest canned milk factory in the World, producing

3 million cans a day,
2,500 cans a minute,
24 million cases a year

“Imagine manufacturing 3 million cans per day – how do you control each can’s net weight to ensure it is properly filled with little to no overfill?” Khwahan said. “This was an issue which our team faced daily, and eventually the paper-based record keeping processes were not able to keep up with our rapid production, so we developed Process Nexus II to capture this information in real time.”

F&N also uses Wonderware QI Analyst Statistical Process Control (SPC) software which offers real-time communications to shop floor systems. This statistical process control software helps to quickly reduce variations, lower costs of manufacturing and increase productivity at F&N Dairies. Performing both online and historical SPC, QI Analyst supports quality monitoring and alarm management to view process “health” over any period of time.

Integrated Real-time Operations Management to Maintain Product Quality

Food and Beverage (F&B) / Consumer package goods (CPG) companies, such as F&N, are faced with the challenge to maintain consistent high-quality products, reduce waste, while at the same time keep operating costs to a minimum. Wonderware Operations Management solutions enables F&N to monitor in real time the quality of its products and the overall manufacturing process.

Process Nexus II also takes care of the batching processes of the Rojana Plant with Wonderware InBatch®, which enables plant technicians to effectively manage batch operations, perform recipe modeling, and develop batch execution automation. In addition, InBatch records material genealogy and batch history, as well as provides stringent security. These metrics can be captured and presented in Web-based reports for plant and executive management team for review. With these system featured, F&N can successfully meet stringent requirements for product quality and ingredient traceability.

As an independent control system for batch management, plant operators can quickly deploy and run revised or new product recipes without control system changes, reducing the time to market and recipe validation efforts in regulated industries. Maximized process equipment utilization and Return on Assets (ROA) is achieved through InBatch’s sophisticated batch control logic, designed for simultaneous multi-product and multi-stream batch execution on shared equipment.



Process Nexus II allows early dispatch of finished products



Wonderware helps reduce quality traceability time from four hours to one minute

Quality monitoring, traceability and reporting were challenges at the Rojana plant, since Thai law dictates that the plant must store and retrieve product information fast and correctly. F&N also is required to keep product quality documentation until the end of the product's shelf life, which is typically 2 years.

Before Process Nexus II, it was easy to make mistakes during the process of reviewing these parameters since the reports were all hand written. It also was a time consuming process, with a high workload that involved developing the QA documentation of the processing line.

"There were about 40 reports per day, which included raw material receiving, processing control sheets, filling and packaging, as well as cleaning operation control sheets," said Watcharapong Boonnam, quality assurance manager at F&N. "Process Nexus II has helped to solve this problem by reducing the quality traceability process time to only one minute. Without Process Nexus II, it would take us more than four hours to complete one traceability report."

Prior to the Process Nexus II system, when quality parameter deviations were detected, operators had to manually trace the information in the paper-based operations sheets filed in the archive room. This took countless hours of manpower time and effort to trace the root cause of the problem.

To resolve the manual input of data, the new software system features Wonderware Historian which is a high-performance process historian, capable of electronically storing huge volumes of data generated from F&N's facility. Historian easily retrieves and securely delivers information to desktop or mobile devices, enabling the company to analyze processes anywhere at any time.

Historian works in conjunction with Wonderware InTouch allowing critical process data to be captured and available for troubleshooting and process analysis when necessary.

"After the Nexus II implementation, it is very convenient to summarize and consolidate the plant data," said Sitthichai Sribunyapirat, F&N production manager. "We are now able to collect product traceability information for both the upstream and downstream functions of our process in real time."



"Without Process Nexus II, it would take us more than four hours to complete one traceability report."

—Watcharapong Boonnam,
Quality Assurance Manager, F&N Dairies



Wonderware easily connects to a wide variety of 3rd-party products

There are several reasons why Wonderware software solutions were chosen by F&N Dairies. First, was for its easy connectivity with other devices in the plant. With so many processes and equipment types in place at F&N Dairies, the Wonderware software solutions provide easy connectivity with the other industrial automation devices, computers and lab measuring instruments currently at F&N.

Total Cost of Ownership is lower than most competitors

The second reason is the lower total cost of ownership for system upgrades which was provided by Wonderware software solutions. When evaluating Wonderware, F&N compared it with other software applications, and the total cost of ownership of Wonderware was comparatively lower than its competitors.

“Because Wonderware software is Windows-based, it provides an easy upgrade path,” Roongruang, said. “When Microsoft® upgrades a version of Windows®, or Wonderware issues a software upgrade, the Process Nexus II software is automatically upgraded over all processes and locations.”

Process Nexus II gives F&N Dairies 100% FTQ

With Wonderware MES Software/Operations solutions, F&N Dairies is able to track raw materials inventory more efficiently. The solution helps the company to manage, execute and document production operations information during work order execution, which includes bills of material and equipment set point specifications, inventory tracking and collecting product genealogy for lots and sub lots, as well as consumed and produced materials. The plant also achieved “100% First-Time Quality,” which is a lean metric that indicates what products are manufactured correctly the first time, without the need for inspection, rework or replacement.

Return on Investment within 1 year

Using Wonderware MES Software/Operations Solutions, F&N increased its operational efficiencies, reduced production errors and quality losses, as well as increased product yields. F&N productivity also has risen through rapid inventory turns, reduced production lead times and faster new product introductions.

Process Nexus II is also responsible for Product Inventory Control. After production is completed, the finished products are typically stored in a warehouse where they await transport. After the implementation of Process Nexus II, products are dispatched early and sent straight to the container vans, ready for transfer to the ports for distribution, bypassing the warehouse altogether.



“With this system, F&N has reduced inventory in our warehouses, created cost savings, and achieved payback from our system investment within one year.”

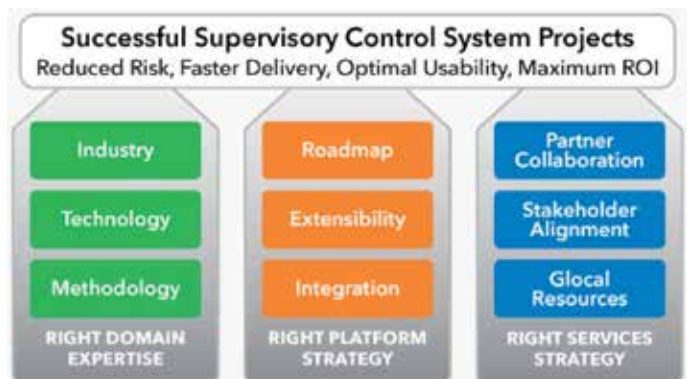
*—Somchai Khwahan, Production Manager
F&N Dairies Thailand*



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The trust of F&N Dairies in the capability of Wonderware Ecosystem Partner Sagitate is evident in its long and deep collaboration

The success of the Process Nexus II system at F&N Dairies was thanks to a small village of experienced engineers both at F&N and Sagitate. F&N has benefitted from a seasoned team of Wonderware consultants, architects, and project managers that are uniquely qualified to provide design engineering and product specialist services that address all aspects of supervisory control, operations and asset management services.



With Process Nexus II, the Rojana plant of F&N Dairies, Thailand, enjoys significant savings in production, logistics and inventory costs, making the company well placed to meet the needs of its business goals now and well into the future.



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