Samyoung System

Process control solution DOUBLES Korean beverage manufacturer's output and efficiency.

Case Study

Korean beverage manufacturer Samyoung System Company Ltd. started in 1991, concentrating on food and beverage packaging. In recent years, it has launched a line of 10 fresh, vegetable-based health drinks. The full scope of its operations now includes distribution to retail shops and overseas exports. It expanded its presence to Russia in 2002 and to China and Vietnam in 2004. Currently, it has two manufacturing plants, six distribution facilities and a head office. Its revenue in 2008 reached approximately US$100 million.

The Challenge

As a manufacturer, Samyoung set a number of goals for itself, namely meeting customer preferences for quality preservative-free mixes; the ability to fulfil increased order levels during peak seasons; maintaining the highest level of microbiological safety while still using natural ingredients ("no added preservatives"); maintaining highest quality levels, including appearance and taste; and achieving a shelf life comparable to that of products with preserved flavour systems. It sought to increase productivity and product reliability (consumer confidence) with minimal increases in personnel.

In order to realise these goals, Samyoung required reliable and controlled cleaning and sterilisation of the plant's processing equipment so they could deliver quality products free from living germs. They also needed a system for packaging the sterilised products in airtight containers to preserve freshness over an extended period of time.

All these critical processes necessitated a solution comprising efficient and stable hardware and process automation software that could monitor and control both the continuous mix of the fresh ingredients through the in-line blending system, as well as the proper sterilisation of the aseptic tanks.

The Solution

Samyoung opted to implement Ultra-High Temperature (UHT) pasteurisation as the means of providing long-term "preservative-free" product storage. The UHT process partially sterilises the

The Challenge

To install efficient and reliable process automation software to monitor and control both the continuous mix of fresh ingredients through the in-line blending system and the proper sterilisation of the aseptic tanks, in order to produce quality preservative-free beverages.

The Solution

To monitor and control the UHT pasteurisation as well as the other processes involved in the manufacture of their beverages, Samyoung selected a 15,000-point CitectSCADA solution comprised of one 5,000-point CitectSCADA Full Server and two 5,000-point CitectSCADA Display Clients.

The Benefits

Samyoung is now able to run two production lines with the same equipment and number of staff as had previously operated only one, effectively doubling the efficiency and cost effectiveness of its manufacturing process. They have also experienced a significant drop in the number of customer complaints regarding the end products.

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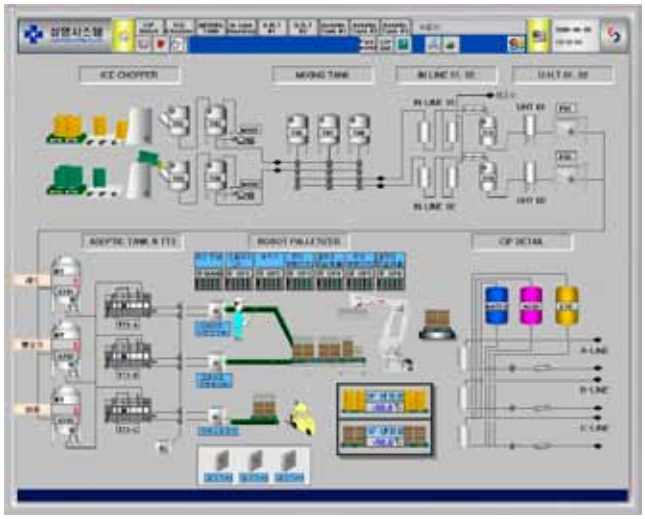

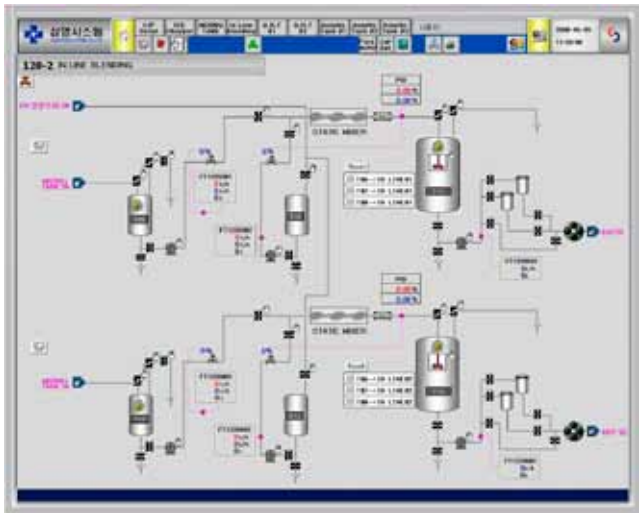

CitectSCADA screen shots of the system overview (left) and in-line blending (above).

beverage at a temperature that destroys harmful micro-organisms without significantly altering the chemistry of the beverage. The UHT system is also better for the environment by significantly cutting down on the need for refrigeration and thereby reducing the plant's greenhouse gas emission levels.

To monitor and control this and the other processes involved in the manufacture of their beverages, Samyoung implemented a 15,000-point CitectSCADA solution comprised of one 5,000-point CitectSCADA Full Server and two 5,000-point CitectSCADA Display Clients.

Although Samyoung had previous experience with a competitor's product, they were not satisfied with its communications performance. With CitectSCADA, however, they could enjoy fast communication speeds between the PLCs and the SCADA system for increased operational efficiency and faster output. "CitectSCADA has excellent communication speed," says Yeo Jeon-Hwa, Team Manager, Samyoung. "Scan times of 200 milliseconds and trend sampling times of one second let us process vast amounts of data in real time, helping us bolster our quality control capabilities and production performance," he continues.

I/O events, Cleaning-in-Place (CIP) and production progress data are all stored in the SQL server. Reports are then generated using Visual Basic programs. The reports help the plant managers understand the results of production completion and CIP, providing valuable insights to the production quality and efficiency.

The recipe database is controlled by a SQL server that allows operators to monitor the process and gives them much needed flexibility to make changes or adjustments to the recipe rates/ portions, as necessary.

System Configuration:

> Real-time CitectSCADA variables: 2,000 tags

> Historical Trends: 500 tags

> CitectSCADA Display Clients: 2 ea

> CitectSCADA I/O Servers: 1 ea

> CitectSCADA Trend Servers: 1 ea

> CitectSCADA Alarm/Report Servers: 1ea

> Windows NT File Servers: Windows XP Pro./Windows 2003 Server

> SQL Server: Microsoft SQL Server

> I/O Devices: 8 ea

> I/O Server CPU Usage: under 10%

> Trend Server CPU Usage: under 10%

> Alarm/Report Server CPU Usage: under 10%

> Display Client CPU Usage: under 10%

> PLC Brands: LG Glofa in Korea

The Benefits

As a result of the CitectSCADA implementation, two production lines are now being operated by the same equipment and number of staff as had previously operated one production line, making Samyoung's manufacturing process twice as efficient and cost effective. They have also experienced a significant drop in the number of complaints concerning the manufactured goods. "Hygiene is an essential factor in the processing of food products," Jeon-Wa points out. "With CitectSCADA, we can count on optimal performance, minimal water usage and clean, trustworthy products."

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