CASE:

Bright produces ambient yogurt in the world's most digital dairy

▶ The Challenge

Bright Dairy is China's third largest dairy producer and the leading high-end producer of dairy products in China. With our help, they successfully developed and launched the world's first ever ambient yoghurt product to the Chinese market in 2010. To meet the rapidly growing market demand for ambient yoghurt, Bright decided to invest in a building a new production site in Tianjin, China, dedicated to high volume ambient yoghurt production. In order stay competitive and produce ambient yoghurt as quickly and efficiently as possible – and meet growing demands on food safety, quality and traceability – Bright wanted one single manufacturing execution system (MES) system for their entire plant. They also wanted to digitalize their manual recording and combine their multiple database applications into one single automation and information solution for their entire site to get full visibility and total control of operational performance, product quality and traceability.

"In handling approximately 500 tons of raw milk daily, it is vital for them to ensure full traceability from the raw milk to their final products – but they have previously been forced to rely on significant amounts of manual data entry to achieve this," explains Xiaobo Yan, project manager of the field test at Bright Dairy. *"That has required lots of operator time and effort and risked human errors. It was also complex for them to manually collate all the information for an overall picture of quality and efficiency. They wanted that process to be automated to save time and ensure the accuracy of the data – and enable them to improve their operations and cut costs."*

Management requested real time and historical data to manage operations, work with continuous improvement and reduce operational cost. Operators required support to handle operations more efficiently. And the laboratory needed to digitalize manual records and capture quality control data in one system for the entire production site.

▶ The Solution

Bright Dairy turned to us in part due to the efficiency and performance of our equipment, but they needed advanced automation as well. They wanted one solution to integrate all processing and packaging operations in their entire plant and their ERP systems, and that was something no other supplier could offer them. The Tetra Pak® PlantMaster MES Suite solution we created is developed specifically for food production and connects processing and packaging together in one system – in one digital environment and on one screen. The solution consists of the software platform that covers their entire plant and the complete suite of MES functionalities that we offer, including:

- Equipment management
- Utility management
- Integration with world-class manufacturing (WCM)
- Warehouse management system (WMS)
- Traceability analysis and reports from raw milk reception to warehouse with QR codes
- Quality management

The new platform's modern architecture gives improved customization possibilities, and it is well prepared for future extensions. Furthermore, it is scalable so it can be used to embed MES functionality in capital equipment.

The first step was an on-site field test of our Tetra Pak® PlantMaster MES suite from March to December of 2016. The full Tetra Pak® PlantMaster MES suite with production control and production integrator has now been up and running in the entire plant since January 2017.
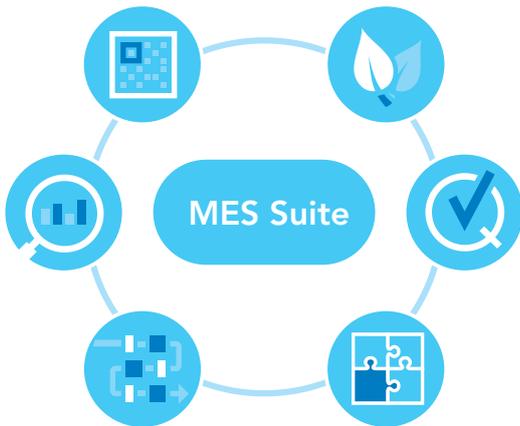
"We took the time in the beginning of the project to identify and really understand their needs in dialogue with Caihua Xu, the General Manager of the Bright Tianjin plant," says Xiaobo Yan. "And we have worked closely together during the entire project to refine the program and customize how they view data so it matches their own format for data analysis."

▶ The Result

The new system has lived up to Bright Dairy's expectations. They now have a common look and feel and can search for reports in the same way regardless of whether they are looking at processing or packaging machines. It has given them one digital, integrated system and eliminated paperwork and manual data entry. It is also more flexible and more relevant since it makes it possible for customers to customize reports based on cleaning and shifts, for example, and customize KPIs for the filling machine to better fit their preferences. All quality parameters, for example, are logged and can be linked to production data to enable advanced quality and performance analysis.

"The MES has made our production traceability more accurate and quick. It improves the transparency of management," says Caihua Xu. "I believe that for us, this is a major step forward towards the fully digital plant. We see improvement in usability, operation coverage, equipment maintenance, data analysis and reduced operational stops. The quality control functionality is also excellent."

The new system improves plant OEE since all relevant production data available in real time. This also secures quality, reduces utility consumption and operation waiting time, increases the preciseness of production cost allocation, cuts losses due to wrong manual input and saves on time and resources for data analysis, inspection and auditing. Paperwork and reporting time related to manual data entry, for example, has been cut in half thanks to the new system.

"The new system eliminates manual errors and improves data visualization. Fewer people are needed to carry out operations and the right data is always available which improves decision making, saves time and reduces product losses," says Yang Liu, Production Manager at the Bright Tianjin plant."

Bright Dairy now plans to implement the complete Tetra Pak® PlantMaster MES suite automation and information solution at all of their sites within the Bright group, beginning with all of their UHT production operations.

CASE: facts

Bright Dairy Tianjin factory in Tianjin, China

COMPANY
Bright Dairy

SITE
Bright Dairy Tianjin factory
Tianjin, China

PROCESS
Continuous ambient dairy processing and filling

PRODUCT
Ambient yoghurt

PRODUCTION CAPACITY
500,000 tons/year in 250 ml Tetra Prisma® packages

PRODUCTION CYCLE
20

PROJECT TIME FRAME
Field test up and running: March 2016
Field test complete: December 2016
Up and running in entire plant: January 2017

KEY EQUIPMENT
Complete processing, filling and packaging lines from raw milk intake to package distribution in nine processing lines with:
• 9 Tetra Pak® Pasteurizers
• Tetra Pak® High Shear Mixer
• Buffer tanks for fermentation
• 9 Tetra Pak® Homogenizers
• Secondary pasteurizer
• 9 Tetra Pak® High Hygiene Tanks
• 18 Tetra Pak® A3 filling machines

KEY PERFORMANCE CRITERIA
• Processing – protein yield
• Packaging – filling machine OEE