

Another Au2mate case

BEYTI

A full control upgrade of both hardware and software in a dairy plant running full capacity production

THE DAIRY

Beyti was established in 1998 and is one of the largest producers of milk, juice and yoghurt in Egypt, targeting a market of 90 million consumers and catering to different consumer profiles.

In 2009 the partnership between PepsiCo International and regional dairy powerhouse Almarai, called IDJ, acquired Beyti, providing it with the latest technologies and knowhow of the industry. Beyti produces a number of agrifoods products, including juices, 100% natural milk, flavoured milk, a variety of spoonable and drinkable yoghurts, as well as cooking and whipping creams, for domestic consumption and export sales.

The plant makes use of the latest and best food processing techniques and innovative layout that maximises efficiency. It employs high-speed processing machinery, and is capable of producing a diverse variety of dairy, juice and dairy-based products to the highest standards of hygiene and safety. Today Beyti holds strong market positions in all the categories it operates in and employs over 3,000 people.

“AU2MATE HAS DRIVEN THE BEST RESULTS FOR SUCH A MAJOR AND COMPLEX PROJECT BY COMBINING LATEST TECHNOLOGY WITH PROCESS KNOWLEDGE AND UNIQUE AUTOMATION EXPERIENCE. IT'S TRUE THAT AU2MATE IS OUR PREFERRED AUTOMATION PARTNER”

Quote by Atef Motawea, Project Manager at Beyti



BACKGROUND

The control system at Beyti was initially installed in 2001. Over the years expansions incorporated in the existing control system lead to a very complex system, difficult to navigate.

At the same time the hardware used was going to be obsolete and an upgrade was eventually required.

In September 2014, Beyti and Au2mate began discussions on how to handle the very complex task - a full control system upgrade (hardware and software) in a dairy plant running full capacity production!

The following key points were identified in connection with the project:

- A solution to ensure flexible and stable production.
- A scalable and flexible solution that can easily be changed and expanded
- A MES system based on Wonderware software, handling material, products and recipes
- CIP and production reporting providing full material traceability
- Solution with high uptime and local maintenance
- Cost-effective solution assessed over the entire life cycle of the system
- Project schedule taking into account that upgrade is made during full production in the plant!
- Full simulation possibility for troubleshooting and training of operators before software is deployed on the live system

The new control system is based on Siemens S7-400 PLCs, InTouch/IAS from Wonderware for visualisation and Wonderware Operation package for material, products and recipe handling. A fully operational test and simulation system running on virtual PLCs is delivered for test and training purposes.



Once all new hardware was operational the software upgrade/commissioning took place in 3 tempi. Prior to each shutdown a thorough FAT test/training session with involved project team members and operators was performed to obtain confidence and align on system functionality.

THE PROCESS

At Beyti process can be divided into 4 main areas: Milk processing, Aseptic, Yoghurt and Juice areas.

Equipment involved in brief:

- 2 milk intake lines, 5 tanks
- 2 milk pasteurisers, 7 tanks
- 2 mixing lines for recombined milk, 7 tanks
- 3 yoghurt pasteurizers
- 15 yoghurt tanks, fermentation and storage
- 8 yoghurt fillers (set and stirred)
- 4 UHT plants, 4 sterile tanks
- 16 Aseptic fillers (milk & juice)
- 4 CIP plants

PROJECT PROGRESS

Contract was signed December 2014 and the project was launched immediately after. Based on review of existing software and interview of client staff, functional descriptions for the entire plant were prepared.

Installation and commissioning schedule was carefully planned in close cooperation with the project and production teams at Beyti in order to create minimum impact on the ongoing production.

Installation was started in May 2015 and was planned in the following steps:

- Hardware upgrade in 4 tempi. Old I/O's on Profibus were replaced with new I/O's on ProfiNet. The new I/O's were physically connected to 4 new PLC's but via I/O-mirroring still controlled from the old control system.

- Upgrade of raw milk section and 1 CIP plant
- Upgrade of milk pasteurisers, mixing and UHT areas
- Upgrade of yoghurt area

The shutdowns were all executed within the given timeframe (12-18 hours), with 24/7 Au2mate presence on site until snag list was closed.

According to plan, the last shutdown and commissioning was completed 10 months after contract signing in September 2015!

SCOPE OF DELIVERY

Au2mate's scope of delivery in connection with the project included:

- Delivery of Siemens PLC and I/O hardware
- Delivery of servers and PC hardware
- Delivery of control panels – PLC and I/O
- Development of system design specifications for hardware and software
- Development of complete functional descriptions
- Development of software for the existing control system
- Development of software for the Wonderware InTouch/IAS application (visualisation)
- Design, development and configuration of new MES solution based on MES Operations package from Wonderware
- Installation of new hardware in existing IO panels
- Installation of new ProfiNet network
- Installation of new PLC, PC and Server systems
- Offsite and Onsite FAT testing
- Commissioning of the new system
- Training of Beyti staff