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ARLA FOODS ARINCO

Spray Dryer Upgrade - Tower 6

THE DAIRY

Arla Foods Arinco is located in Videbæk in Denmark and was founded in 1953 as a common condensing plant from smaller cooperative dairies. In 2023 the dairy employs 320 people and the plant produces different products for child nutrition, but also whole, skimmed and fat filled milk powder.

The process at Arinco is divided into 2 areas: The wet process and the dry process. The wet process includes milk weighing-in, milk and cream processing and wet mixing. The dry process includes evaporation, spray drying, powder storage, powder handling and packaging.

The dairy has 4 Spray Dryers (Tower 3 – 6) for production of milk powder. In 2020/21 Au2mate upgraded Tower 3.

THE PROJECT

The upgrade of the Spray Dryer, Tower 6, was initiated by the demand for higher product quality and improved cleaning standards.

Tower 6 is the largest Spray Dryer at Arla Food Arinco and was built in the late 1990s. Since then, only small changes have been made to the plant.

To meet the new standards, a new system to clean the tower was needed hence a No Intervention CIP was implemented.

To ensure the correct heat treatment of the product, a critical control point (CCP) system was implemented on the evaporator.

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

- A new, modern, and flexible solution to incorporatet the GMP and CCP systems
- Based on Arla Foods Software Standard OAS1
- A scalable solution that can easily be modified and extended
- A solution with high up-time, that can be maintained locally

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TECHNICAL SOLUTTION

The new control system was based on Siemens TIA PLC's and Intouch/IAS from Aveva for visualization and data processing. The new system was replacing the existing two Siemens 400 PLC's with new Siemens 1500 PLC's.

The plant areas were divided as follows in two PLC's:

- PLC01: Evaporator, Milk Silos
- PLC02: Spray Dryer, Feed Line, CIP, Feed Tanks, Recovery Tank

During the process of the project, PLC01 was placed out of scope and a lighter version of Critical Control Point (CCP) was implemented in the existing program instead, as well as in the interface of the new control system.
The existing MES and SAP functionalities were kept as they were, but the new interface between these functionalities and the new control system was implemented.

SCOPE OF DELIVERY

The scope of delivery by Au2mate included among others:

- Functional description specifications for the plant
- Development of software for new Siemens TIA PLC
- Development of software for new Intouch/IAS application
- Training of Arla Foods Arinco operators and service personnel
- Electrical Profinet IO and PLC panels, and electrical installation
- Participation in I/O test
- Full Commissioning of the new control system in close cooperation with Arinco staff
- Handover of project to Arinco, and to Au2mate 24/7 Hotline

PROJECT PROGRESS

To investigate the current condition of the plant and the possible upgrades to meet the new solution, a pre-project was initiated. The pre-project ended in December 2021.

The main project started in January 2022 and software FAT (Factory Acceptance Test) was held by the end of September 2022. I/O testing and commissioning started in November and ended in mid-December 2022. After onsite commissioning Au2mate provided extended commissioning support with engineer on call 24/7 for 6 weeks.

Today, Arla Foods Arinco has a new Spray Dryer control system for Tower 6, that can accommodate the new standards for both quality and cleaning.

STATEMENT FROM THE PROJECT MANAGER, ARLA FOODS ARINCO:

"From the start, Au2mate delivered a combination of technical and professional skills to the project. They quickly got a hold of the complexity of the project and adapted as the project unfold.

Through good partnership and coorperation with Au2mate, we delivered the project on time - on a tight schedule. We will happily work together with A2mate in the future"

Quote: Dannie I. Dali, Automation Project Manager,
Arla Foods ARINCO.