Infant Nutritional Facility in KSA

Almarai's factory gate

INFO

Company: ALMARAI
Sector: Dairy
Location: Riyadh
Country: Saudi Arabia

The Saudi Arabian dairy company ALMARAI is the leading manufacturer of dairy products in the Middle East. The company has now entered into the nutritional foods category thanks to its new Infant Nutritional facility near Riyadh.

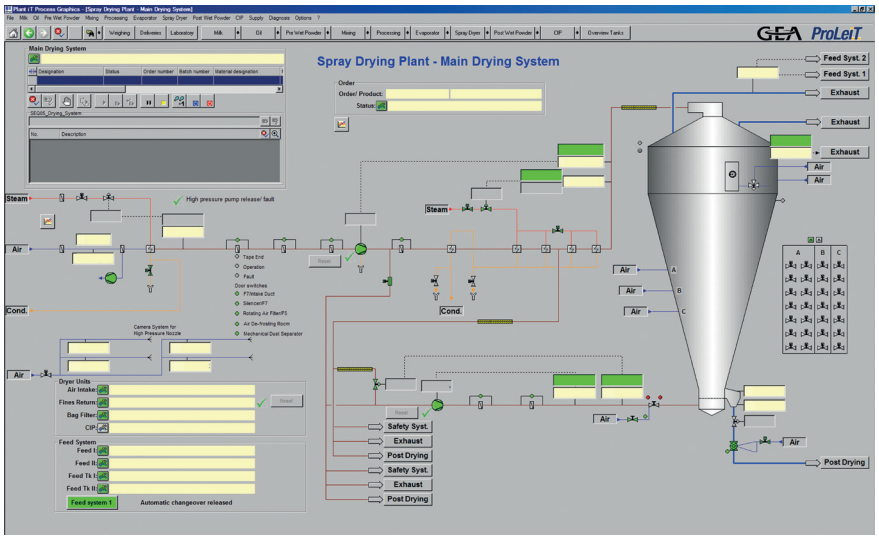
Acting as the general contractor, the GEA Group installed and commissioned the production equipment and ProLeiT AG, based in Herzogenaurach, Germany, was commissioned with the development of the automation software. The solution is based on ProLeiT's process control system Plant iT; special modules for both the continuous and the batch processes control the entire product flow in compliance with a standardised order list from the ERP system. The SAP system monitors the quality and the inventory of the raw materials, enables part processes and posts the finished product.

ALMARAI cannot be compared to a European dairy which sources its raw milk from local farmers. The climate in Central Saudi Arabia demands short distances and on-time delivery. ALMARAI is therefore responsible for the whole value creation process: from the production of feed and the production and processing of milk to delivery of the finished product to retailers. Hundreds of thousands of cows are kept in super farms boasting the latest equipment.

The GEA Group was responsible for the design, installation and commissioning of the process equipment and contracted ProLeiT AG with the development of the process control for the overall production equipment. The process control system Plant iT is employed by, amongst others, the German dairy giant Müller and the private dairy Bauer.

Production begins with the receipt control of raw materials. The result of the inhibitor samples is entered into the ERP system (SAP) via a mask; approval to transfer the raw materials into the plant is only granted by the SAP system if the measured values are below the specified limits. The entire product flow is mapped in a failsafe manner: operating staff receive instructions via radio-controlled handheld scanners.

Almarai's products



Process screen of Plant iT for spray towers

All the materials used in the process are recorded in the inventory audit of the SAP system and the semi-finished and finished products are re-posted. The reporting capability ensures the full tracking of production.

ProLeiT usually applies its Plant Liqu iT module, specially developed for continuous processes, to control recipes in dairy plants. However, the production at the infant nutritional facility demanded a large number of batch processes. These processes can be best controlled with Plant Batch iT, ProLeiT's recipe control for batch processes. Both recipe controls are 100% ProLeiT developments – just like all Plant iT basic systems and modules. The ProLeiT solution varies between continuous and batch processes during the product flow. The ideal module is used for each sub-process – with full transfer of process information. The orders from the ERP system (SAP) are processed from a common list by the respective responsible module.

The ProLeiT developers have also created the handheld scanner masks for each sub-process to ensure that operators place the correct raw material in the correct position at the correct time. Each process is logged to facilitate subsequent tracking. The additional module Plant Direct iT Visu-Recorder records all the processes and signals in real time. The source of faults can be quickly detected using the process image history. Three highly redundant servers are part of the automation system hardware. However, technically speaking, the entire system could run on a single central production server. PROFIBUS is used to network the controls and connect the frequency converters, but numerous field devices are also integrated via ASI Bus. Possible faults at ASI devices can be detected easily. Before a process commences, checks are carried out to ensure all the relevant frequency inverters are in automatic mode.

Jochen Stamerjohanns, head of Competence Center Dairy Industry at ProLeiT AG, has nothing but praise for the client's plant construction: "Due to the flexible combination of our basic systems Plant Liqu iT and Plant Batch iT, we needed considerably less steps than are usually required for projects of this size. This resulted in clearer mapping and easier programming of the sub-processes."

Authors:

Jochen Stamerjohanns,
Head of Department,
Dairy Industry, ProLeiT AG

Bernd Opgenorth,
Sales Manager,
Dairy Industry, ProLeiT AG

Operation room