Use of the Plant Batch iT process control system at the meat plants of Schafft Fleischwerke, Germany

Managed Recipes

By automating their mixing plant, which is used for the production of the mini salami snack Bifi, Schafft Fleischwerke achieved a significant increase in productivity in addition to considerably improving recipe management and being able to connect to SAP via the new process control system.

Schafft Fleischwerke, a subsidiary of Deutsche Unilever, manufactures the mini salami snack Bifi for the German market and Europe-wide export at its production plant in Ansbach, Germany (Fig. 1). To guarantee consistent product quality, Schafft places great importance on recipe management. According to the specifications, the ingredients are filled into the hoppers, metered for production, weighed on the conveyor belt and fed to the cutter, where they are finely chopped and seasoned. Previously, a system was used for plant control whose maintenance was extremely time-consuming and which also demanded comprehensive hardware and programming knowledge from the maintenance team.

Fig. 1 Schafft Fleischwerke manufactures Bifi for Germany and Europe

Therefore, only process automation that not only guarantees smooth batch processes but also ensures convenient recipe management was suitable for the plant modernisation process (Fig. 2). “A key argument in favour of the automation concept was also the continuous expandability of the system,” explains project manager Thomas Wolf. “When we started automating the Bifi production line, the conversion of other lines was already being planned. Moreover, it should be possible to integrate adjustments made during commissioning into the system without any problems at all.”

System platform Plant Batch iT

Plant Batch iT, a modular client-server system that is adapted to the specific requirements of batch-controlled processes and adapts to a variety of different scenarios, was chosen for the process automation. A unique configuration tool is used to parameterise the technological plant structure. Specific parameters of the plant components are defined here as well as the individual basic functions of the plant. The result is a plant model that accurately reflects the technical characteristics and forms the basis for creating and implementing manufacturer specifications and control recipes.

As a system service, the Batch iT server/recipe generator executes central communication and coordination functions at plant level. An important function is the batch-related generation of control recipes and their transfer to the executing control system. By linking the BOM and the procedure, the control recipes can be generated in such a way that specific plant situations (availability of products and plant components) can be taken into account. The batch server/recipe generator archives all batch data in the database.

Displaying and logging processes

BOMs that are independent of the plant (assignment of ingredients and quantities) can becreated for the products being manufactured. The technical or manufacturer specifications represent the production flow. A graphical recipe editor supports the creation of technical specifications. Procedures can therefore be created and checked quickly and clearly by the user as a result of individual basic functions, their concatenations and dependencies.

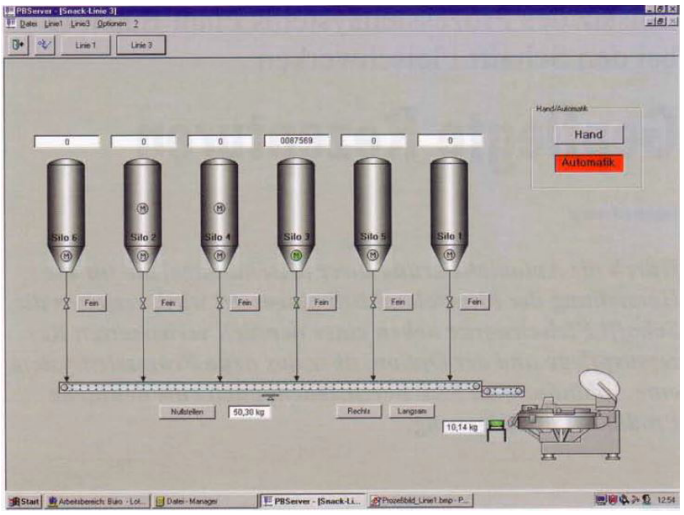

Fig. 2 Overview of the plant process image

INFO

ProLeiT

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The order list is an instrument for creating and completing production orders and for displaying the current status of all planned, ongoing and completed production orders in a condensed form. All order and batch data is comprehensively logged in the database. Numerous selection options facilitate the selection of the data to be investigated. A batch record contains all the target and actual values, start and end times, as well as the actual sequence of each individual recipe step.

The batch matrix provides the user with an overview of all currently running batches in the plant. The colour differentiation of the various states of individual recipe steps enables fast orientation (Fig. 3). From here it is possible to branch into the batch list. The batch list visualises all the details (status, target and actual values, current parameters, start and end time) of the individual recipe steps of a batch and enables the necessary.

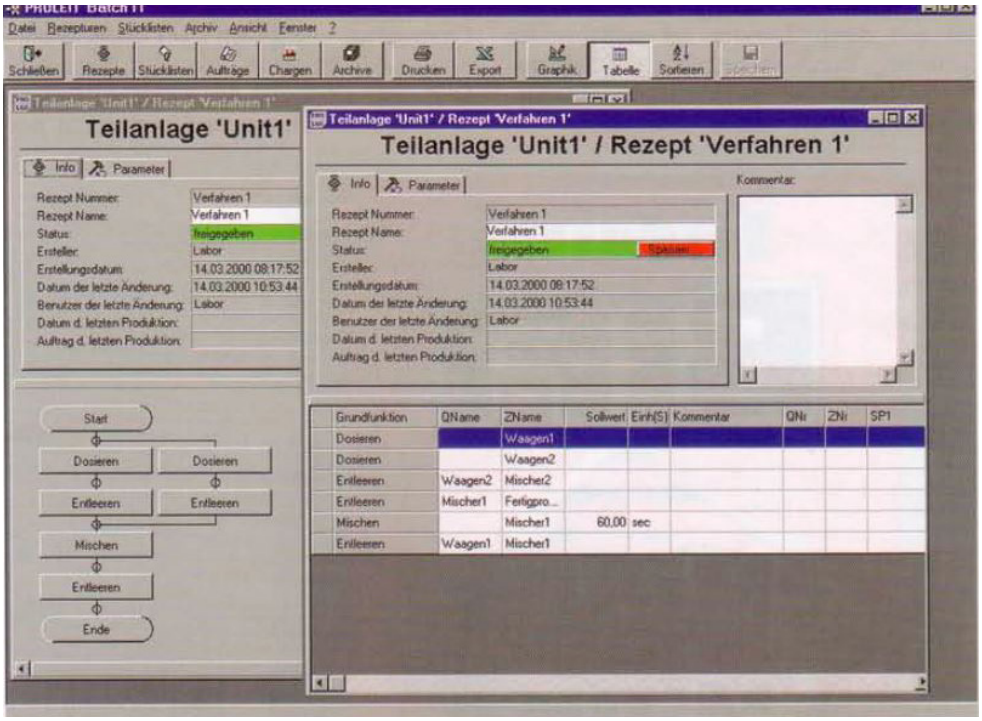

Fig. 3 Recipe creation in the standard system Plant Batch iT

Materials management

The materials management module takes over the entire inventory management for all the items known to the system. Various storage locations can be managed. The batch system generates stock movements automatically (e.g. raw material metering and finished product receipts). Manual recording is also possible. Stock corrections are possible via permanent or key date inventory. The comprehensive statistics select and summarise the transaction data according to various criteria. The seamless logging of batch numbers for raw materials and products enables continuous batch traceability from the supplier of the raw material to the final product.

Real world use

The new process control system offers Schafft a batch system that coordinates individual orders. The process control system visualises many things, including process images, order lists, selected ingredient lists, active dosing procedures, master data and production statuses. Comprehensive logging of the batch numbers for the raw materials and for the finished products enables continuous batch traceability. All order data and information are archived by the batch server in the database and the batch data is printed out at the end of the batch on a consignment note for each roll container. The process control system also takes over materials management functions at Schafft and thus the inventory management of all the items. In addition to controlling the batch processes, the implemented process control system also establishes the connection to the higher-level SAP production planning system planned by Schafft at a later date - in order to load recipes from there directly into the process control system, while the system controls, coordinates and documents the orders before sending the process-related data back to the SAP system as reports. Until then, the recipes at the meat plants will still be entered into the process control system using a personal computer.In addition to optimum control, simple recipe management is one of the system's greatest strengths.

The server generates batch-related control recipes and forwards them to the Siemens programmable logic controller. Through the free linking of BOMs and procedures, the control recipes can be generated in such a way that allows optimum plant utilisation. "Introduction of the new batch system for the Bifi line last year has really paid off for us," says Georg Fischer, project manager at the Schafft plant in Ansbach. "We were able to start production straight after commissioning."

The automation of the mixing plant is only the first step, the integration of other lines such as the weighing stations or the spice chamber are already in the planning phase with the aim of achieving a significant increase in production at Schafft Fleischwerke.