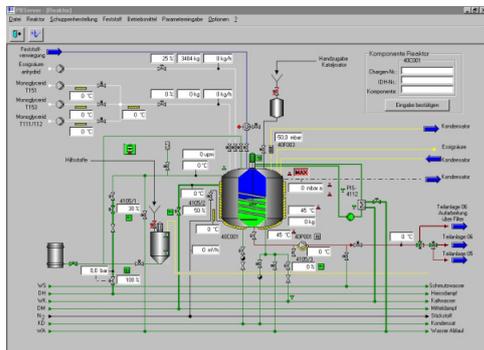


Optimizing product quality using integrated process control

Cognis Deutschland GmbH & Co. KG (formerly Grünau Illertissen GmbH) specializes in the production of additives for foodstuffs. It is the leading manufacturer of emulsifiers as well as other specialty products for the international food and beverage industry. The higher the standards required for industrially produced consumables, the more critical the quality of highly developed additives. Cognis Deutschland GmbH & Co. KG, the German subsidiary of Cognis AG, an international supplier for specialty chemicals, is committed to the supply of consistently high quality products to the food and beverages manufacturing industry.



Automation „in the middle“ of the production process was the first step - the next stage undertaken by Cognis Deutschland GmbH & Co. KG was the software connection of an upstream reactor. The result is a uniform, integrated system allowing a highly effective batch-oriented and continuous control.

With this in mind, Cognis decided to automate the process in the emulsifier plant. This process involves the production and bottling of a preliminary liquid product. The entire plant produces, among other things, additives for the baking industry.

Production of the preliminary product

Prior to processing, a reactor is used to produce the preliminary liquid product out of several raw material components. This requires the precise control of temperature and pressure, up to now

carried out manually.

As the existing plant was running at full capacity for the foreseeable future, Cognis decided to install a new reactor, taking the opportunity at the same time to connect the new, upstream reactor with the already automated refining process. The goal was to improve both product quality and batch tracking during operation of the reactor.

An unusual combination

Cognis asked the software specialists ProLeiT AG, based in Herzogenaurach, Bavaria, to manage the automation project. The ProLeiT engineers had already installed the entire Plant iT software system, whose modules, Direct iT, Acquis iT, Batch iT and Liqu iT cover all control-related tasks from the control to the production management level. The modular system and open architecture offered by this range of products allow their easy integration into existing plants, as well as their subsequent expansion where required. This was ideal for the needs of Grünau, who wanted to equip only the processing stage at this point in time.

The challenge facing the ProLeiT specialists in the automation task was to convert the existing solution into a uniform and integrated control system. In order to achieve the optimal combination of the sequence-controlled plant sections, they decided on the somewhat unusual combination of the two system modules, Plant Batch iT and Plant Liqu iT.

The Plant Batch iT system is designed for the specific requirements of batch-controlled processes, taking into account material cost factors. A configuration tool - Batch iT Configuration - is used for the parameterization of the technological plant structure. This involves the specification of certain parameters and basic functions in the plant sections, resulting in a plant model which serves as the base for drawing up manufacturing guidelines and control recipes. The central coordinating functions are carried out by the Batch iT Server, while production guidelines (master recipes, material lists, process descriptions) are produced and

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managed by the Plant Batch iT Manager. The linking of the material list and process sequences allows the generation of control recipes, taking into account actual plant conditions, such as the availability of ingredients and plant sections.

The software package Plant Liqu iT offers technological sequences with recipe lists and procedures to complement Plant Direct iT, ProLeiT's modular process control system. The parameterization of the sequences is integrated in the Plant iT parameterization user-interface. This requires the definition of the appropriate actuators and sensors, and the configuration of the procedures with step logic, for example, start and transition conditions, as well as the required setpoints. Plant Liqu iT allows the simple programming and display of individual steps.

Optimized batch tracing

Plant Batch iT allows the continual documentation and back tracking of all relevant data. The ProLeiT engineers therefore implemented the Liqu iT sequences „below“ the Batch iT master recipe phases. The benefit: the operating personnel in the plant can now work with the user-friendly Plant Batch iT batch matrix, and

application profile

follow the individual steps displayed by the Plant Liqu iT program in the master recipe phases. This results in significantly greater transparency across the plant.

The batch matrix gives the employees at Cognis an overview of all current batches in the plant. The production orders are produced, operated and managed with the help of order lists.

A further requirement of Cognis Deutschland GmbH & Co. KG was the creation of batch-related protocols, made possible by Plant Batch iT as all batch data is archived in a database. Process values and setpoints of the reactor batches, start and end times, as well as the actual sequence of the individual steps can now be displayed automatically. Messages about faults or manual switching are documented in realtime.

The continual reporting of batch numbers for raw materials and products allows Cognis to trace batches automatically from the point of raw material supply right through to completion of the final product.

Cognis Deutschland GmbH & Co. KG have been able to make full use of the benefits offered by the Plant iT system product range. It was possible to make the link to the automation system „in the middle“ of the production process, while the uniformity of the system means that it will be possible to connect the old reactor to the controller later in the year. It is also planned to make use of the link between Plant Liqu iT and Plant Batch iT in other plants.