ICS Automation

PCS-Integration Batch mixer

ICS fit® PCS

PROJECT STORY

CUSTOMER PROFILE

The customer is a Swiss chocolate manufacturer in the premium segment with a site in Germany.

STARTING POSITION

With six batch mixers, chocolate mass is mixed with other components, tempered and conched. Each mixer has his own control system, which is connected to the plant control system via a digital interface. This interface is used, among other things, to control the timing of the additions and dosing.

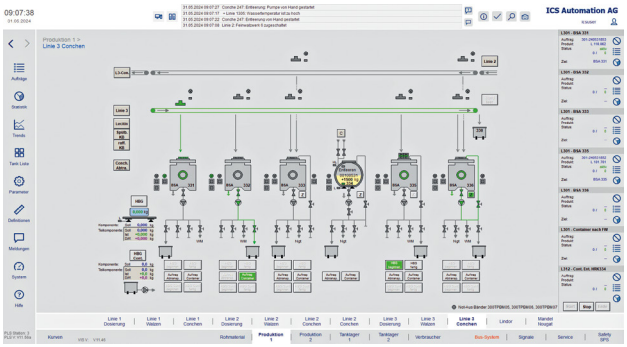
The hardware is no longer state of the art and spare parts are in short supply, which poses a risk to maintaining production.

The customer initiated a replacement of the machine control system for the following reasons:

- replacement of old hardware
- improved traceability
- centralized operation and monitoring
- centralized recipe and parameter management
- extended functionality of the mixers

CONCEPT/SOLUTION

The six batch mixers are refurbished and integrated into the plant control system one after the other. For this purpose, a new Siemens S7-PLC controller is used which is connected to the process control system via a bus system. Each mixer receives a new control cabinet with a decentralised I/O node. Thanks to the step-by-step conversion, production can continue with only minor disruption.



The step recipes for the desired mixing sequence and the associated parameters are now managed centrally in the higher-level process control system. On one hand, this makes it easier to implement adjustments and extensions to the recipes, and on the other hand, it enables mutual checking of the dosing and step recipes. Thanks to various analysis options, traceability and data consistency are also guaranteed.

As part of the integration, not only the existing functionalities should be adapted, but also additional, functions should be implemented. For example, a low-viscosity dosing component can now be selected in the recipe. If the power consumption of the mixing drive exceeds a defined value, part of

Central production data

ICS ACS

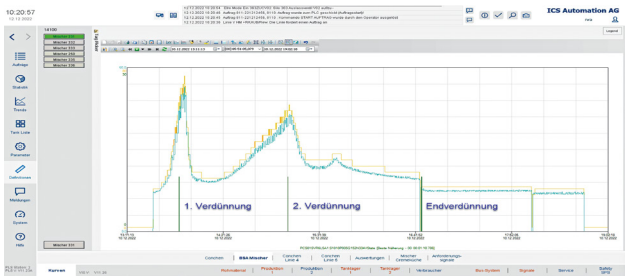
this component is dosed to reduce the viscosity of the mass. In this way, the power consumption and the mechanical stress on the mixer can be optimised.

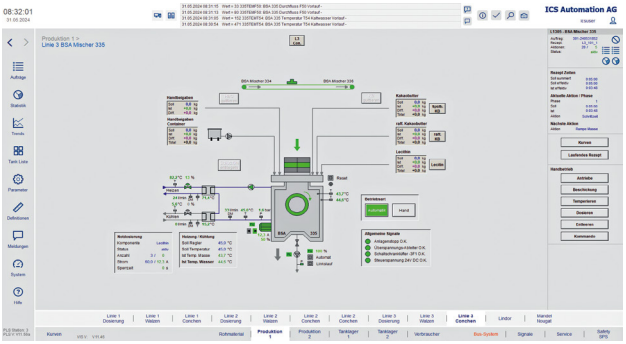
Main challenges for reconstruction/integration:
- conversion during ongoing operation
- flexibility due to delivery delays of components
- implementation of a step handler
- recalculation of the dosing components
- differences between the individual batch mixers

SEQUENCE OF REFURBISHMENT

To ensure that production is disrupted as little as possible, the new elements were integrated into two other I/O nodes during the Easter holiday. The old I/O nodes could be dissolved through the reconstruction of the last mixer.

Subsequently, one mixer after the other was refurbished, rewired and subjected to an input/output test. With the subsequent flushing of the mixers, the basic functionality was tested at the same time.





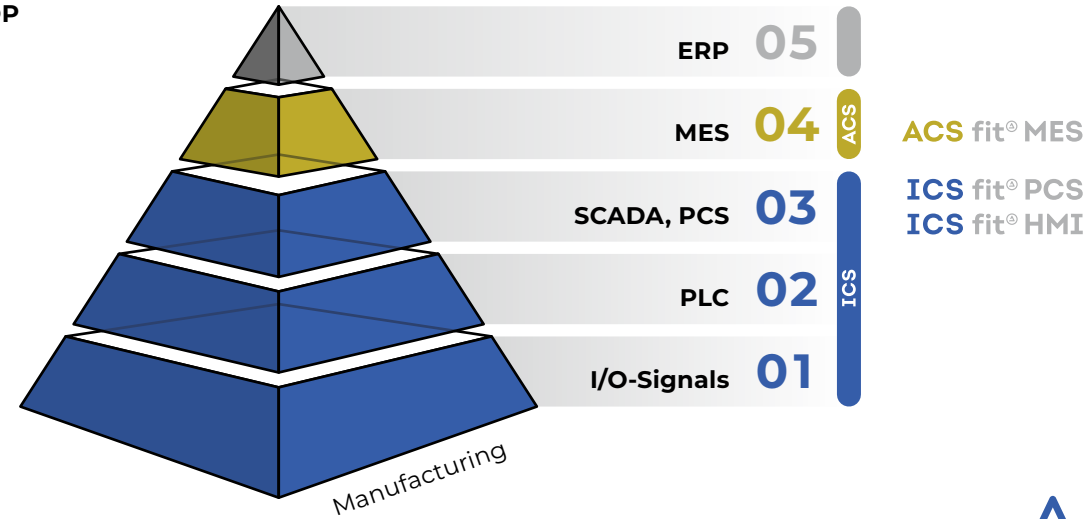
For the commissioning of the first mixer, an ICS employee was on site to provide direct support. Further commissioning took place via remote access.

Due to the step-by-step conversion, the commissioning period lasted from May 2022 to October 2022.

CUSTOMER BENEFITS

- extended functionality of the mixers
- improved traceability
- central product, recipe and parameter management
- improved recipe verification
- secure and reliable production
- modern equipment, ready for the future
- easy and efficient operation
- historical production data available
- improved production overview and monitoring
- more targeted presentation of information
- production data available anytime and anywhere
- more efficient error analysis
- plant data available for maintenance
- 24/7 support for the entire plant

ONE-STOP-SHOP



ICS Automation

+41 71 955 04 50 | info@ics-automation.com | ics-automation.com