

# Eliminating the Achilles heel

**INTEGRATED CONTROL SYSTEM** | In the context of a plant extension, Bavaria Brewery of the Netherlands decided to integrate the filling matrix into the existing ProLeiT System brewmaxx already being used in the remaining process section. A system component for automatic bright beer tank selection based on material and tank status simplifies organisation of the filling section and filter cellar and serves to provide the highest level of safety. The brewmaxx Visu Recorder records every process unit event, creating the basis for optimisation and enabling analysis of process history.

**WITH AN ANNUAL CAPACITY** of six million hectolitres, Bavaria Brewery in Lie-shout/NL is one of the largest brewery plants in Europe. For a long time, Bavaria has used the brewmaxx process control system for automation of the brewing process.

The bright beer tank farm was being extended at that point in time. Bright beer tanks were going from 10 to 22. The control complexity arising in tying in the 22 bright beer tanks plus four additional points of supply to the 14 filling lines served by a valve block incorporating 364 junctions and a total of 428 valves pushed the existing system to its limits. As availability of this plant section represented the Achilles heel of the brewery, executives of Bavaria decided to go for a uniform automation landscape. Control of the valve block between bright beer tanks and filling lines was integrated into the brewmaxx process control system. Automation carried right through without any gap from raw materials intake up to transfer of beer to the filling lines.

## Optimised usage of bright beer tank farm

By linking up the valve block in brewmaxx and utilising a special logic for selecting

the bright beer tanks, a whole new control concept emerged. The various beer types are stored in the process control system explicitly with their material characteristics. The filling plant operator simply selects the beer type he wants for the next filling order, without having to concern himself with the location in the bright beer tank farm. The

logic in the process control system checks in which bright beer tank the required product is available, makes a selection and automatically recommends the bright beer tank having the highest priority level for filling at that point in time. When the operator acknowledges the proposed bright beer tank at the filler, the particular tank is tapped and the beer is made available to the respective filling line. Special situations can be catered for, such as blending from a number of bright beer tanks into one line or parallel emptying of a tank into a number of filling lines with a limit value for simultaneously active drawdown lines for any one tank.

At a particular quantity remaining in the connected bright beer tank, the filling line operator is provided with a signal from the process control system with a recommendation that an additional tank with the specific product be made ready. Upon acknowledgement of the selection, the system switches over to the next bright beer tank pre-selected

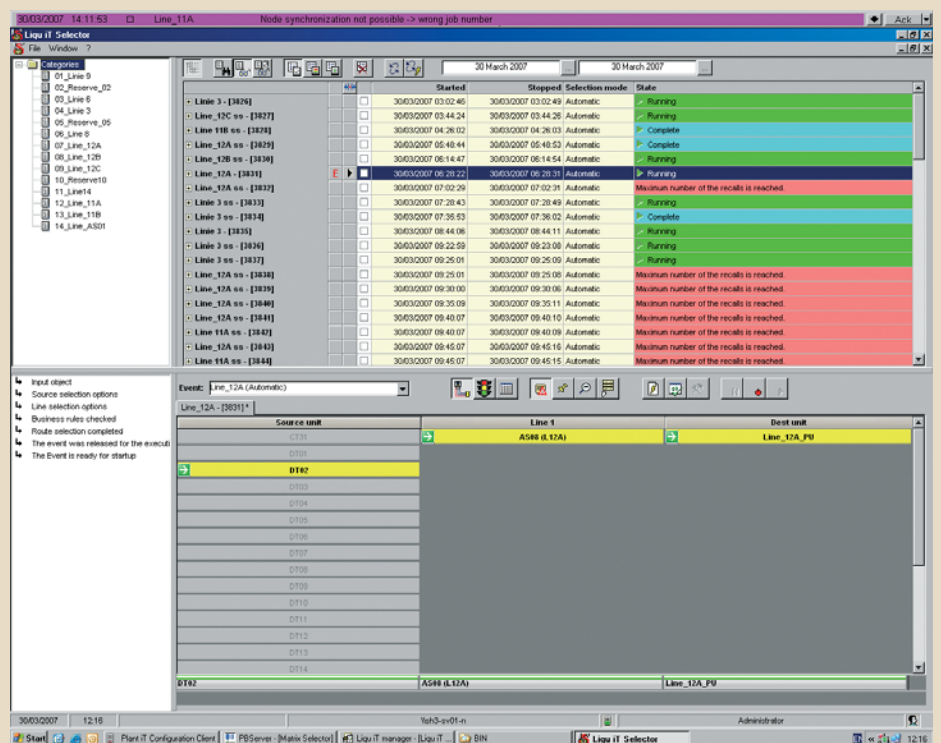


Fig. 1 Screenshot selector

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**Fig. 2 Company facility**

by the system as soon as the first tank is empty, and the filling plant continues to operate without interruption.

### **Call-off of bright beer tanks in accordance with precisely defined rules**

Using this status-controlled fully automatic selection of bright beer tanks, beer production and filling line which, based on process requirements, have different priorities in accessing the bright beer tank farm, are completely decoupled. This simplifies the processes in the filter cellar as well as in the filling lines. For example, it is now assured that partly empty bright beer tanks are called upon first for new filling orders and are immediately available to filtration for filling after having been completely emptied and cleaned.

This innovative automation solution for the bright beer tank cellar in brewmaxx has made it possible to not only have an individual definition of products but also to generate new logic rules as selection criteria for the bright beer tank selection. With the brewmaxx process control system, the brewery has also the option at any time of specifying new products or changed selection criteria for connecting the bright beer tanks - both while filling as well as when calling off product from the filling line.

In addition to the extensive logging functions of the selection module, Bavaria Brewery has integrated the brewmaxx Visu-Recorder into the process control system in this section. All plant status information together with all functions of valves and pumps as well as all digital and analogue readings from measuring instruments are

archived in a separate PC. In terms of process data logging, this system goes far beyond the usual method because the whole process is captured separately and made transparent, showing all parameters and equipment status. The plant operator can thus recreate the history of the status of each individual switching item in detail and consequently analyse the process accurately. It is thus possible to carry out process optimisations or upset analyses very rapidly and easily.

### **Project management for fast implementation**

Implementation of a new automation system naturally requires extensive tests. Plants with such a high output as that of Bavaria cannot be simply shut down for a number of days for rebuild and testing, modernisation and extension of the process control system described here and integration of the highly complex valve block called for special project management.

Individual software and hardware modules were integrated partly parallel to ongoing operation. A joint project team made up of engineers from both the brewery and ProLeiT ran tests and simulations in parallel and planned integration of all modules in detail. In this way, the complete automation solution was engineered to perfection prior to the rebuild. The new process control system with all control components was thus successfully installed during a very short shutdown. Switchover proper as well as commissioning including hardware rebuild required only three days stoppage over a weekend. After that, the brewery and filling lines came immediately on stream again at design throughput. ■