Overall plant automation

When relocating its brewery plant, Ringnes AS took the opportunity to automate the overall brewing process completely. Within a very short space of time, a new system has been installed which replaced the former stand-alone solutions and provided reliable data exchange between individual plant units.

The Norwegian beer market is small but geared towards the discerning customers, 2.2 million hl of beer are produced annually, beer consumption is 51 l per capita, the lowest in Europe. Ringnes, with a market share of about 60%, is one of the leading producers of beer, water and soft drinks. Eight beer types ar brewed in several domestic brewery plants. Ringnes, Lysholmer and Munkholm are the three top brands. Ringnes was taken over by the Danish Carlsberg group in 1993 and brews and sells the well-known Carlsberg brand in Norway.

Ringnes relocated the whole brewery from a city centre site to a new location for reasons of logistics. The decision was based on providing improved delivery routes for suppliers as well as bringing production and filling together. Ringnes took relocation as an opportunity to make considerable investments in its brewery plant: The new brewhouse e.g. was equipped with a new milling plant of the MILLSTAR™ type and a lauter tun.

Huppmann of Kitzingen/Germany supplied the brewhouse and malt handling plants as well as the control hardware. The 24 fermenters in the fermenting room were relocated and another 10 tanks added. A propagation plant supplied by Essau & Hueber, filtration in co-operation with Seitz-Schenk, Carbosets as well as CIP plants were also new additions. The Landteckknik and Alfa Laval companies supplied the equipment for the fermenting room, the storage and yeast cellars, the CIP plants for automatic tank and pice cleaning as well as the whole electronics, pneumatics and switchgear.

Before the move, individual systems solutions were used to control existing units. The interfaces were prone to repeated upsets affecting the wort preparation and fermentation processes, leading to production delays. Plant operators additionally had to work with different surfaces. This was another reason why Ringnes Brewery made a decision in favour of overall automation for the whole brewing process, in order to avoid productivity looses and be sure of high-quality beer in the long term. The existing stand-alone solutions were to be controlled by an innovative system extending over the whole brewing process.

Promaxx GmbH & Co. KG, the joint venture company of Huppmann Group and ProLeiT AG was re-sponsible for automation and process visualization of the whole brewing plant. It supplied all the process control software and hardware for the brewhouse and malt handling areas as well as the system software brewmaxx in Norway. In cooperation with ProLeiT, all application software for the hot and cold wort sections was developed and commissioned. brewmaxx is a com-prehensive component-based process control system with plant-encompassing information management based on Windows NT and MS SQL server. As the control is of modular design and ist extendable, it is particularly suited for replacement and upgrading projects such as the Ringnes one. The system archives production data centrally and can therefore respond to a later MES request easily. MS Visual Basic is used for visualising process pictures. The visualisation controls - activeX components developed by ProLeiT as object classes - are connected in the process pictures directly with data points in the progammable logic controllers (PLC's). As each of these classes has predefined characteristics and functions, the brewery itself is in a position to perform changes using parameterisation without having to program.

One of the main challendges was to implement the project in the very short space of time available. The major part of the brewhouse had to be installed within two weeks. because this was the maximum period acceptable between the last brew in the city centre brewery and the first brew at the new site. About three months were envisaged for project engineering.

INFO

RINGNES

Part of the Carlsberg Group

Company:	Ringnes AS
Sector:	Breweries
Location:	Oslo
Country:	Norway

The newly automated brewhouse plant was actually commissioned after a two-week break. In the subsequent adaptation process, additional vessels supplied later were integrated in terms of software in the ongoing process. In the beginning, only two, and not all sensors had been connected. ProLeiT AG stayed with the step-wise commissioning of the whole brewery plant. Ringnes AS has now five controllers, type S7/400. Bus connection is via 100 mBits Ethernet with TCP/IP protocol. The central server is equipped with eight hard discs and serves ten workstations as well as two industrial PC's. this arrangement allows area-wide operation of plants from various operator locations. In addition, process control had to be designed in such a way as to allow the highest possible degree of flexibility, also in terms of plant usage. The flexible transfer program for the fermenting room provides the brewery with an opportunity to make optimal use of the plant. Yeast addition and downstream secondary fermentation in the storage cellar can be performed in various steps and combinations. This ist a further improvement in flexibility of fermenting room and storage cellar utilisation. The new control software thus increasees the options inherent in such a complex fermentation plant.