

Clean solutions in a delicate environment



At its plant in Grenå, Denmark, the company produces around 10 million kilos of baker's yeast a year, and 50,000 litres/day of pure alcohol (96.6%) as well as a variety of yeasts for fermentation of table wine.

To ensure high sterility standards and meet future government requirements, Danish Distillers needed to replace its existing process control and monitoring system installed in the 1980s.

Concerns over production downtime, the ability to access parts and service and secure a clear and profitable evolution strategy were other reasons for upgrading to ABB's Industrial^{IT} platform.

Danish Distillers is a leading player in the market for potable spirits and yeast in Denmark and internationally. Headquartered in Copenhagen, Denmark, the company, which forms part of the Swedish V&S Vin & Sprit AB, has production facilities in Denmark and Germany and sells its products in about 140 countries worldwide.

At its plant in Grenå, Denmark, the company produces around 10 million kilos of baker's yeast a year, and 50,000 litres/day of pure alcohol (96.6%) as well as a variety of yeasts for fermentation of table wine. The yeast plant, which is the sole supplier to the Danish market and has considerable exports as well, has recently implemented an integrated production control system based on ABB's Industrial^{IT} platform.



Jens Jochumsen, process engineer at Danish Distillers' yeast plant in Grenå

The customer's viewpoint

Jens Jochumsen, process engineer at Danish Distillers' yeast plant in Grenå:

"We decided to contact ABB with a project for replacement of the complete process control and monitoring system," explains Jochumsen. "We did so because we had previous experience with ABB since they installed the control system for our yeast tanks."

"And based on our positive impression both of the expertise of ABB, Denmark and the function and durability of the Advant system, we decided to let them develop what could be seen as a complete modernization and integration of the plant's control environment."



Danish Distillers needed a new control system that would meet the new government regulation about traceability in production. From 2005 Danish Distillers will be required to keep very precise track records of production.

The industrial production of yeast is a quite complicated process involving the propagation in large tanks of yeast cells and the subsequent cleaning up of the broth to isolate the yeast cells from the nutrients and fermentation aids before the product is ready to be packed and sold.

Keeping the right balance

Among the numerous challenges facing the staff at Danish Distillers is to ensure sterility throughout the process. Yeast cells, which are living organisms, are supplied with exactly the right amounts of nutrients, temperature in the tanks is kept just right and air is blown through the broth in sufficient quantities. Production parameters are constantly being monitored and optimized to increase production while at the same time reduce energy consumption, costs and pollution. A final challenge is to keep the ideal temperature in the tanks. Yeast cells grow best at a temperature of 32 degrees Celsius, but the rapid propagation creates heat. Consequently, the tanks are being cooled to keep the temperature down.

Danish Distillers faced increasing problems with the installed control system, a Texas Instruments system installed in the 1980's

(TI was later purchased by Siemens). Process manager and engineer Jens Jochumsen from Danish Distillers says, "We had to realise that the existing system needed a replacement, it was outdated, and it was increasingly difficult to get spare parts and qualified service." Danish Distillers felt that there was a substantial risk for production disturbances due to problems with the old control system.

Meeting new traceability requirements

Danish Distillers also needed a new control system that would meet the new European regulation about traceability in production. From 2005, Danish Distillers will be required to keep very precise track records of production. Their old system would not live up to that requirement.

"We decided to contact ABB with a project for replacement of the complete process control and monitoring system," explains Jochumsen. "And based on our positive impression both of the expertise of ABB, Denmark and the function and durability of the Advant system – controlling the yeast tank – we decided to let them develop what could be seen as a complete modernization and integration of the plant's control environment."



The project team at Danish Distillers were quite confident about the new system, so in fact they decided to take down the old system while installing the new one.

Key factor: ABB's evolution strategy

Another very important factor for choosing ABB was ABB's evolution strategy. Danish Distillers did not want to end up in a similar dead-end situation again.

"After realising the need to implement a new control and monitoring system, we embarked on the huge task of describing our processes in detail," explains Jochumsen. "We did so to be able to decide what exactly were our needs and to identify places where we would like to improve our process control and our operators' interaction with the system."

Wanted: openness, accessibility, flexibility

It was during this phase that the project team at Danish Distillers decided that they wanted an open system with an interface that was easy to work with, and a system setup that allowed easy access across all departments involved, and to documentation concerning the processes and products. At the same time, they wanted a system that was flexible enough to allow for individual programming of screens and information access.

"We found that the Industrial^{IT} platform was the ideal answer to our needs," says Jochumsen. "It's Windows-based providing

for easy logging and export of data to a wide variety of additional IT-tools such as spreadsheets, databases used for reporting and archiving of process and product data. The Windows interface also means that it's easy and intuitive to work with for the operators who to a large extent can themselves design screens to suit their needs. Further, using an open platform gives the possibility to access other data and to use a variety of suppliers."

ABB's solution to accommodate future expansion

Based on the detailed process description, ABB, Denmark, was given the task of designing the new system, which in addition to the functionalities of the existing system, also had to be flexible enough to accommodate future expansions both in the number of I/O's and processes involved. The solution consisted of three Operate^{IT} Process Portal workstations, two Control^{IT} AC 800M controllers and S800 I/O.

Next step: dried yeast

"This was a very important point for us," stresses Jochumsen. "And we have already taken the first step to increase the system to cover more than just the yeast production in

itself. What we have done is to include the control of the cooling towers, which are responsible for cooling down the water that has been used to cool down the fermentation tanks during production. And while doing so, we have used the opportunity to implement a whole new process which allows us to obtain considerable savings. And the next enlargement – to include the production of dried yeast – is already being considered.” The joint efforts of the ABB experts in Odense and our process technicians have been very successful, and to my mind there is no doubt that the willingness of the ABB people to listen to the client and to adapt their project to our special needs and requirements has been decisive for the final success of the project,” adds Jochumsen.

Easy access from one source in real-time

“The advantage of this set-up, as I said earlier, is the possibility to present information in layers and to have easy access to all relevant information from one source only,” explains Jochumsen. “Additionally, the Profibus solution allows us to extract a lot of information about process parameters in real-time – data we can use to optimize our processes and see the results immediately.”

Additionally, there is a permanent link to ABB in Odense where process automation and control experts can work on-line on the system in case problems arise or if improvements of the system are needed. This means that the service technician is never further away than the nearest Internet connection.

Talk about trust!

The project team at Danish Distillers were quite confident about the new system, so in fact they decided to take down the old system while installing the new one. This meant that there was no fall-back possibility in case anything should go wrong during initiation of the new system.

“We did so because we trusted ABB, and because we had had the opportunity to weed out those inevitable little bugs during and after the tests,” explains Jochumsen.

“And luckily we didn’t experience any fatal incidences during that memorable Monday morning, when we pushed the start-up button.”

“The use of open standards based on the well-known Windows platform facilitates programming, maintenance and the design of process representations, which is handled by our own operators in close collaboration with ABB in Odense,” says Jens Jochumsen.

Future steps

- Next in line for modernization are the AdvaCommand workstations, supervising the yeast tank. They will be upgraded to IndustrialIT workstations Process Portal during 2004.
- In the more distant future, if Danish Distillers want to upgrade the MasterPiece 200s and Advant Controller 450s that controls the

yeast tank to the IndustrialIT controller AC 800M, they will still be able to retain their field wiring and I/O since S100 I/O can be connected to AC 800M.

- Already today data is being exchanged between the AC 800M and MasterPieces and Advant Controllers using peer-to-peer communication.

For the latest information on ABB visit us on the World Wide Web at <http://www.abb.com>



Automation Technologies

Västerås, Sweden

Phone: +46 (0) 21 34 20 00

Fax: +46 (0) 21 13 78 45

www.abb.com/controlsystems

e-mail : processautomation@se.abb.com

Automation Technologies

Wickliffe, Ohio, USA

Phone: +1 440 585 8500

Fax: +1 440 585 8756

www.abb.com/controlsystems

email:industrialitsolutions@us.abb.com

Automation Technologies

Mannheim, Germany

Phone: +49 (0)1805 26 67 76

Fax: +49 (0) 1805 77 63 29

www.abb.de/controlsystems

email: marketing.control-products@de.abb.com

3BSE035149R0001

©Copyright 2003 ABB. All rights reserved.

Specifications subject to change without notice. Pictures, schematics, and other graphics contained herein are published for illustration purposes only and do not represent product configurations or functionality. User documentation accompanying the product is the exclusive source for functionality descriptions.

The Industrial^{IT} wordmark, Aspect Objects, and all above-mentioned names in the form XXXXX^{IT} are registered or pending trademarks of ABB. All rights to other trademarks reside with their respective owners.