

## Au2mate CASE

# GLYCOM

Expansion of the production plant in the former lysine factory in Esbjerg with a new process enabling the plant to produce HMOs for infant formula.

### THE FACTORY

Glycom is a Danish biotechnology company dedicated to improving human health using natural human oligosaccharides. The company's principal focus is to make human milk oligosaccharides (HMOs) widely available. HMOs are complex carbohydrates originally found in breast milk, where they contribute to many of its significant health benefits.

At Glycom, they have cracked the code for the production of these unique glycans, which are inherent in the human body and authorised as safe by the EFSA and the FDA.

### BACKGROUND

In January 2016, Glycom acquired the VitaLys lysine factory in Esbjerg from DLG. At the time of the acquisition, the production plant produced lysine.

Following expansion, the production plant would instead be capable of producing HMOs for infant formula. This was achieved by expanding the existing process (Upstream) and adding a new process (Downstream). The new process was created using new Siemens PLCs, a new Wonderware visualisation system as well as the Au2mate Manufacturing Management system for MES functionality.

The following key points were identified in connection with the project:

- A solution to ensure flexible and stable production
- A scalable and flexible solution that can easily be changed and expanded
- Based on Au2mate's standard for MES (Manufacturing Execution System)
- Reporting with traceability
- Solution with high uptime and local maintenance
- Cost-effective solution assessed over the entire life cycle of the system



The new control system for Downstream is based on Siemens S7-1500 PLCs and the InTouch/IAS system from Wonderware for visualisation and data processing:

- Material Definition Management (MDM) module for materials handling
- Product Definition Management (PDM) module for handling recipes
- Production Performance Management (PPM) module for data collection and traceability

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Quote by Odd Erik Hansen, Chief Operating Officer at Glycom.



## THE PROCESS

At Glycom in Esbjerg, the process is divided into two areas – Upstream and Downstream. Upstream comprises weighing, mixing, sterilisation, fermentation and product storage. Downstream comprises many complex processes and concludes with drying and packing.

## SCOPE OF DELIVERY

Au2mate's scope of delivery in connection with the project included:

- Delivery of Siemens PLC and I/O hardware
- Delivery of servers and PC hardware
- Delivery of control panels – PLC, MCC and I/O (including ATEX)
- Development of software for the existing Upstream control system
- Development of complete functional descriptions for Downstream
- Development of software for new Siemens S7-1500 PLCs in Downstream
- Development of software for the Wonderware InTouch/IAS application (visualisation) in Downstream
- Design, development and configuration of new MES solution based on the Au2mate Manufacturing Management system in Downstream
- Training of Glycom staff
- Participation in I/O test and running-in of both control systems

## PROJECT PROGRESS

The contract was signed in October 2016, and the project was initiated immediately. The software FAT (Factory Acceptance Test) was conducted five months later and, in immediate continuation of this, the commission was commenced and was concluded eight months later. Final project handover took place as agreed in December 2017, just over one year after project commencement.

The project was implemented in accordance with Au2mate's project model. After a review was conducted with Glycom, Au2mate prepared complete functional descriptions for Downstream, structured in accordance with the ISA S88 standard, a design standard used to describe and control the individual processes and procedures in a plant, a system or equipment.

Review meetings were subsequently held with Glycom staff at which the functional descriptions were reviewed, to ensure full clarification of the desired functionality in the new software. After approval of the functional descriptions, the overall process of development, configuration and internal testing of the new software commenced.



After internal testing of the new software, the FAT (Factory Acceptance Test) commenced at Au2mate, Silkeborg, together with Glycom staff. A very thorough test was performed to ensure correct software and functionality before testing at the physical plant in Esbjerg.

I/O testing and commissioning of the plant commenced shortly after completion of software testing. This part was performed at Glycom in Esbjerg.

## GLYCOM'S CHIEF OPERATING OFFICER SAYS:

**“AU2MATE HAS BEEN AN INTEGRAL AND INVALUABLE PART OF OUR TEAM ON THIS MAJOR PROJECT. THEY HAVE CONTRIBUTED A STRONG COMBINATION OF A BROAD PERSPECTIVE, TECHNICAL EXPERTISE AND THE ABILITY TO GRASP AND MANAGE COMPLEX NEW PROCESSES.”**

Quote by Odd Erik Hansen, Chief Operating Officer at Glycom.