



# FIRST ToolCommander® FOR BENEQ OY

The first ALD (Atomic Layer Deposition) equipment from Beneq with the Kontron AIS control framework ToolCommander® was put into operation at the end customer. It was pre-tested in the Beneq Headquarter, in Espoo (Finland). The coating system is now used in China in a cluster for OLED microdisplay production. The Beneq system consists of a heater, loadlock, transfer module and a process module, which is controlled by Beneq.

A special feature is that single-wafer processes and batch processes can run in the system. In addition to the equipment control solution using the ToolCommander® Kontron AIS also realized a custom host integration protocol.



## GOALS

- ▶ Control of the ALD equipment with ToolCommander®
- ▶ High software quality and easy commissioning

## CHALLENGE

- ▶ Support of single wafer batch and batch processing
- ▶ Custom horizontal and vertical interface

## SOLUTION

- ▶ Creation of a solution for future equipments
- ▶ Delivery of the control software ToolCommander® in time and budget



„The flexibility of the ToolCommander® and the experienced Kontron AIS engineers were the key aspects for the success of the project. We are looking forward to continue the excellent cooperation with Kontron AIS team.“

Pasi Meriläinen, Beneq Oy



Beneq is the home of ALD, offering a wide portfolio of equipment products and development services.

Today Beneq leads the market with innovative solutions for flexible high-volume manufacturing (BENEQ Transform™), advanced R&D (TFS 200, R2), ultra-fast high precision spatial ALD coatings (C2R), roll-to-roll thin film coating of continuous webs (WCS 600), and specialized batch production for thicker film stacks (P400, P800). Headquartered in Espoo, Finland Beneq is dedicated to making ALD technology accessible for researchers and providing the invisible advantage in emerging semiconductor applications.

[www.beneq.com](http://www.beneq.com)

### Beneq Oy

Espoo, Finland

### Project:

Integration of a Beckhoff-PLC with ToolCommander®

### Platform:

ToolCommander®

### Kontron AIS Services:

Windows 10, TwinCAT, CC-Link

## SOLUTION

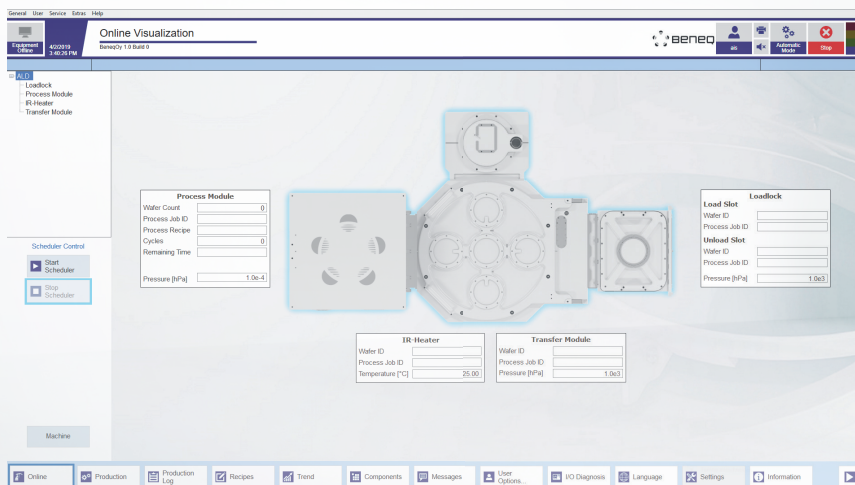
The ToolCommander® framework from Kontron AIS GmbH is a universal equipment control framework supporting the control of batch, cluster and inline systems. Within this project Kontron AIS utilized the existing functionality of the ToolCommander® as the scheduler functionality and the user interface. In a custom project the integration of the Beneq Oy Beckhoff-PLC controlling the ALD process was realized. The Beckhoff TwinCAT protocol is used for the communication between the ToolComander® and the Beckhoff-PLC allowing an easy integration. In addition to the integration of the Beckhoff-PLC the ToolCommander® controls several components e.g. the load lock or the pumping system of the transfer module directly. The direct control is realized by using a distributed I/O station and by control via TCP/IP interfaces for example.

The end customer in China defined for the vertical host integration a custom interface protocol. The protocol is in general similar to the SECS/GEM standard but the streams and functions are custom. Therefore, the integration team from Kontron AIS developed a message custom adapter. The horizontal integration into the main cluster was realized by CC-Link. The CC-Interface was also developed by Kontron AIS.

Project kickoff for this project was at the end of the year and the first step was a solid specification written by Kontron AIS in close cooperation with Beneq Oy. Part of this specification process was also the specification of the test scenarios. Due to the tight schedule agreed parts of the specification were already developed by Kontron AIS before the specification was finally completed. The next step was the inhouse-test by the Kontron AIS test department using the simulation capability of the ToolCommander®. After passing the inhouse-test the commissioning and pre-test were executed at Beneq Oy.

During this project phase Kontron AIS was in a very close cooperation with the developers from Beneq Oy.

Around six months after the kickoff the system was shipped to China and also commissioned by Beneq Oy and Kontron AIS.



## Über Kontron – Mitglied der S&T Gruppe

Kontron ist ein weltweit führender Anbieter von IoT/Embedded Computer Technologie (ECT). Als Teil des Technologiekonzerns S&T bietet Kontron über ein kombiniertes Portfolio aus Hardware, Software und Services individuelle Lösungen in den Bereichen Internet der Dinge (IoT) und Industrie 4.0 an. Mit seinen Standard- und kundenspezifischen Produkten auf Basis neuester, hoch zuverlässiger Technologien ermöglicht Kontron sichere und innovative Anwendungen für verschiedenste Branchen. Dadurch profitieren Kunden von einer schnelleren Time-to-Market, niedrigerer Total-Cost-of-Ownership, längeren Produktlebenszyklen und ganzheitlich integrierten Applikationen.

Weitere Informationen finden Sie unter: [www.kontron.de](http://www.kontron.de)

## Über Kontron AIS GmbH – Mitglied der S&T Gruppe

Wir setzen den Benchmark in industrieller Software. Seit mehr als 30 Jahren und mit 160 Mitarbeitern unterstützen wir mit unseren Lösungen Maschinen- und Anlagenbauer sowie Fabrikbetreiber dabei, in der Automatisierung neue Wege zu gehen und dadurch nachhaltig Kosten zu reduzieren. Gemeinsam mit unseren Kunden entwickeln wir Konzepte für Smart Manufacturing und Industrie 4.0 und helfen damit intelligente Digitalisierungsstrategien erfolgreich zu implementieren.

Weitere Informationen finden Sie unter: [www.kontron-ais.com](http://www.kontron-ais.com)



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