

# The Örebro Cogeneration Plant Upgraded with System 800xA



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## The Plant

The Åby Cogeneration Plant is owned by Swedish E.ON Värme and produces district heat and electricity from biomass, such as wood chips and bark, for the city of Örebro and the surrounding areas. The plant includes a total of five steam boilers. Boiler 5, the newest and largest one, serves as the plant's main boiler. It operates on a fluidized-bed combustion principle and delivers an output of 170MW. It is in service every year, from early fall until late spring. The other boilers are started up only if there is an increase in heat demand in times with extremely cold weather conditions. In the summer, district heat is generated from industrial surplus heat and through heat recovery from city sewage water.

## The Task

Boiler 5 went on-line in 1990 for the first time, and was equipped with a Contrinsic E automation system, complemented by a Contrinsic E-K operating and monitoring system. Over the last 16 years, only one update was carried out during the preparations for the Y2K problem. However, the service life of the Contrinsic E-K operating and monitoring system has come to an end. Spare parts were only available to a limited extent. Replacing the CE-K system therefore became unavoidable.

This retrofit project comprised the following scope of automation:

Control functions	Qty.
Analog signal conditioning	540
Binary signal conditioning	980
Controlled drives	350
Function groups	24
Single-loop analog controls	90
Master controllers	7
Graphic displays	150

Bill of quantities for control functions

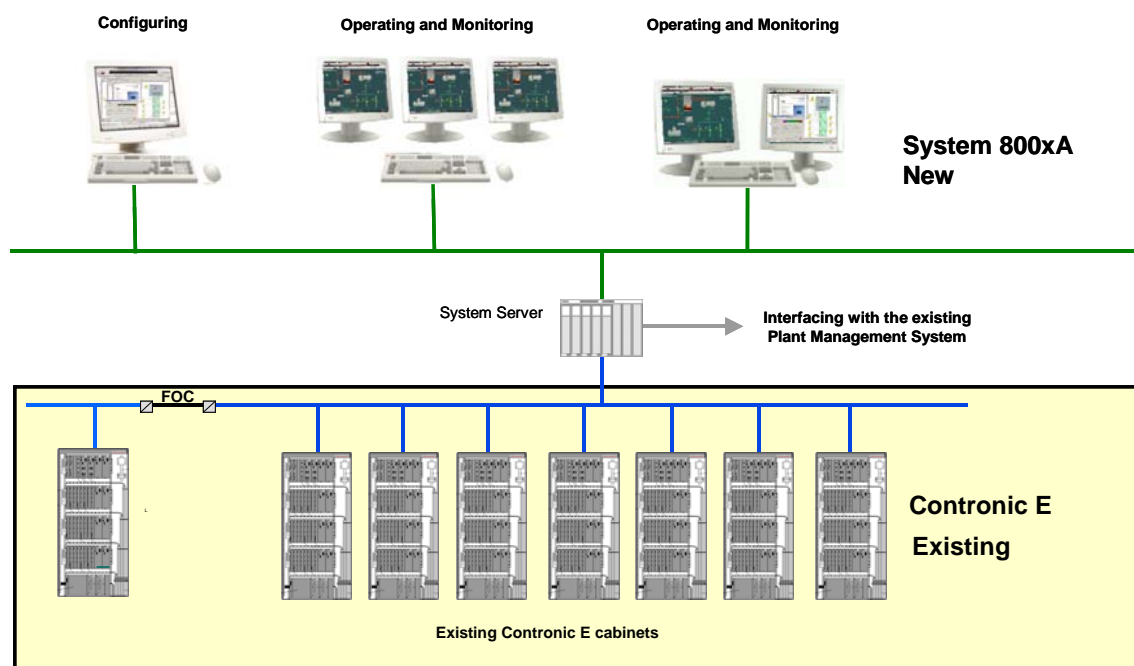


Control room in the Örebro cogeneration plant

## The Solution

Until recently, such a task would have made it necessary to replace the entire process control system. System 800xA is setting a new standard in this regard. Thanks to its capability of integrating the entire spectrum of ABB control systems, such as the Contrinsic E, it is capable of extending the service life of existing automation systems so that future plant operation is safe and cost-optimized. System 800xA is therefore an ideal solution for migration projects and retrofits of this kind. The configuration of the existing process control system does not need to be modified. All engineering data remain unchanged. The existing engineering system can continue to be used as well, without limitation. The capital-intensive Contrinsic E automation cabinets can also be kept in service, along with the installed subassemblies for signal conditioning, open-loop and closed-loop control.

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Configuration of the 800xA System with Contrinsic E

## The System

The quality, the ergonomics and the efficiency of operating and monitoring activities is improved considerably with System 800xA. The system report functions available for the issuing of alarms and messages help create optimized schedules for preventive maintenance. This way, unexpected and costly outage times can be prevented beforehand. Since the operating staff is working in a Windows environment, they can quickly and easily access all relevant functions and run the plant processes more efficiently. The menus, buttons, symbols and navigation options are similar to other Windows applications.

Since the System 800xA integrated the operating philosophies of Contrinsic E to a large extent, the operating staff was ready to take-over the plant's operation after a very short time.

Upon E.ON's request, ABB provided for two workplaces for operating and monitoring boiler 5, one equipped with two, the other with three VDUs, complemented by a configuring workplace.

System 800xA is linked to the existing Plant Management System of E.ON via an OPC interface.

## The Processing of the Order

The time between the placing of the purchase order until the plant was scheduled to go on line again was less than 4 months. In order to be able to adhere to this narrow timeframe, the Factory Acceptance Test was performed on site. As of August 15, 2006, the system was fully operable and subjected to numerous tests. Boiler startup was on schedule on September 15, 2006, after less than 4 months.

The operators only needed a one-day familiarization training before they were able to operate the new system themselves. The 800xA System greatly facilitates their work. "We are also getting more information about the plant than before," says plant engineer Mikael Ljung and Project Manager Peter Widlund.

The Åby cogeneration plant is one of three cogeneration plants in Sweden that recently migrated from Contrinsic E-K to System 800xA. Before this project, ABB successfully handled similar challenges in the Nässjö and Lidingö cogeneration plants.

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**ABB AG**

**Power Technology Systems**

P.O. Box 10 03 51

68128 Mannheim

GERMANY

Phone: +49 (0) 621 381-3000

Fax: +49 (0) 621 381-2645

E-Mail: [powertech@de.abb.com](mailto:powertech@de.abb.com)

Internet: <http://www.abb.de/pt>

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