

## System 800xA provides Mälarenergi KVV with better possibility to optimize the production



*Mälarenergi's combined heat and power plant in Västerås has been gradually optimizing its processes since the start of 1963.*

*This has transformed the plant into one of Europe's most efficient heat and power plants, where at present an impressive 90 percent of its fuel's energy content is utilized.*

An important reason for the progress made by the plant is that the choice has always been made throughout its entire history to work with the best technology available on the market.

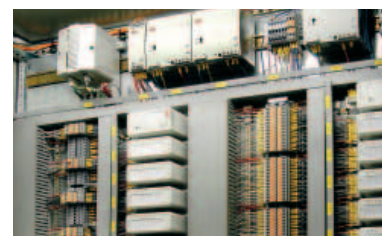
So it is natural to find that the System 800xA controls and supervises the heat and power generation process at Västerås KVV today.

The history of automation at the combined heat and power plant began in 1986 with the

installation of a system for integrated network dispatch and control (SINDAC).

“In the beginning, we used it exclusively for process monitoring and continued to manage it with manual controls. A program for planning our operations became available at the beginning of the 1990s. It became an important tool that enabled us to begin to optimize district heating production in a more rationalized manner,” – says Börje Horsell, who together with his colleague, Kjell Thuné, is responsible for the automation systems at the plant.

From SINDAC, the automation process continued via the Advant platform to System 800xA. Continuing the work with the System 800xA was a natural choice, particularly because it has built-in compatibility with the preceding



systems. Another advantage is that the System 800xA contains all the automation functions in one and the same operating and engineering environment, thus providing solid support for increased integration and accessibility.

To be able to gather all of our processes together into one and the same system and to have the best possible overview has been an important goal for us, – says Börje Horsell.

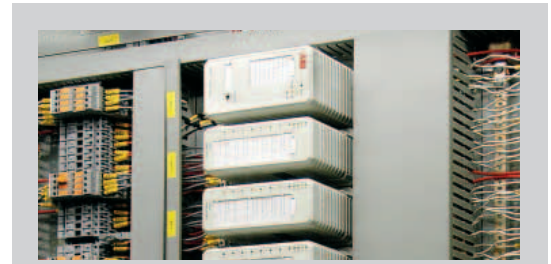
### Constantly under development

In recent years many new activities have been added. Probably the greatest change has been a clear environmental profile. In the autumn of 2000, for example, a completely new biofuel boiler was placed into service and 75 – 80 % of the production is now based on biofuels.

“Because we needed to control the flow in the hydro-electric generating stations, we also needed a system that did not just monitor our systems,” – says Börje Horsell.

However, in addition to the possibilities for controlling a complex power process production mechanism, Börje Horsell also points out a number of other advantages of the 800xA:

“The 800xA enables us to produce electricity and heat in a more efficient manner and much more than just this. We are receiving more information and are more easily able to implement change in the plant. For example, the system provides us with better possibilities to optimize our production of electricity. Today, we are on-line with the Nord Pool Power Exchange and can follow the movements in prices and adjust our production accordingly in real time.”



#### Block 1

Binary control Wallpanel, (AC 450, Fuel, DeNox, DeSox plant)  
Analog control Contrinsic 3

#### Block 2

Binary control Wallpanel, (AC 450, Fuel, DeNox, DeSox plant)  
Analog control Contrinsic 3

#### Block 3

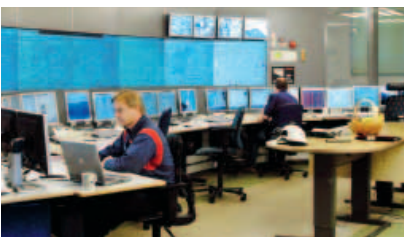
Binary control Wallpanel, (SATT-Con 35 DeNox plant)  
Analog control Contrinsic 1, AC 450

#### Block 4

Binary control AC 450, AC 800M  
Analog control AC 450

#### Panna 5

Binary control AC 450  
Analog control AC 450



Production unit	Drive drop	Fuel	Steam Ton/h	Power MW	Heat MW	Fuel consumption
B1	MT	Coal	205	41	95	20 t/h
	MT	Peat	120	21	57	22 t/h
	MT	Oil	240	42	105	16,7 m³/h
B2	MT	Coal	210	41	95	20 t/h
	MT	Oil	240	42	105	16,7 m³/h
B3	MT	Oil	830	230	370	64 m³/h
	KK	Oil	870	270		66 m³/h
B4	MT	Oil	750	215	335	55 m³/h
	KK	Oil	750	240		55 m³/h
	MT	Coal	620	180	270	61,2 t/h
	KK	Coal	620	205		61,2 t/h
B4 - P5	MT	3 Bio, 1 Coal + Boiler 5	550	160	250 + 45	45+16+19 t/h
	MT	2 Bio, 2 Coal + Boiler 5	620	180	280 + 45	40+32+19 t/h
	MT	1 Bio, 3 Coal + Boiler 5	680	200	300 + 45	20+48+19 t/h

**Other new developments that are also managed from the control room: –**

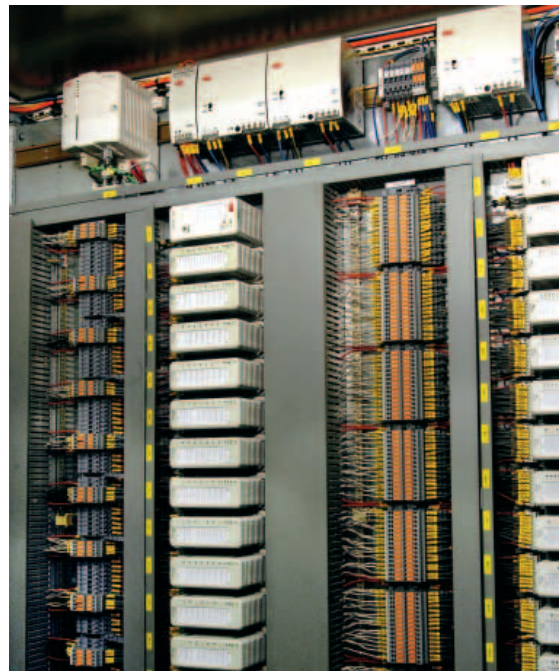
- Production and delivery of district cooling. Mälarenergi supplies comfort cooling via its own network to a number of workplaces in the Västerås region.
- A new biogas facility was opened in 2005 in Västerås. Via the use of a gas engine generator, Mälarenergi is utilizing the surplus from its electricity production process.
- The district heating network has been expanded to also include the population centers of Hallstahammar, Kolbäck and Skultuna. Mälarenergi currently supplies district heating to 11,500 properties in the Västerås region.
- In addition, 24 smaller hydro-electric generating stations in Västra Mälardalen owned by Mälarenergi are controlled and managed. This measure was also a starting point for the more comprehensive automation that is now occurring.

**More stable processes with the 800xA**

System 800xA in combination with investments in new frequency-controlled motors has also created both more stable temperatures and a more uniform pressure in its 600 km long district heating network.

“We can now make the process more efficient and make complicated adjustments in a more rational manner. Previously, we performed the measurements and management manually, but now it is taken care of automatically via the new control system and a new drive system for the district heating pumps,” – says Peter Karlsson, the plant’s production manager.

The control of emissions has also been made more efficient. Since the summer of 2005, the System 800xA has been controlling and managing the advanced sulphur scrubbing process. That, in combination with the transition to biofuel have comprised the primary reasons for Västerås currently having one of Europe’s cleanest combined heat and power plants.



### **Better information for everyone**

The transition to the 800xA has also involved improving the possibilities for the operators to monitor processes.

“Its user-friendly presentation technology and the fact that it is easy to navigate between different process sections are some of the advantages of the 800xA,” – says Kjell Thuné.

The AspectObjects™ technology also makes it possible to gain access to more detailed information by just clicking on the object that one is interested in.

In the control room there are six operator stations. The eight large-screen displays that were recently installed are controlled from one of these. One important reason for making the choice to work with the large-screens was that everyone visiting the control room would be able to quickly obtain a current picture of the process without having to disturb the operators.

“The large screen allows everyone to be better informed and actually more of a participant,” – says Börje Horsell.

### **The automation process continues**

The combined heat and power plant at Västerås has achieved its standing as one of Europe’s most efficient as a result of its continuous development. Hence it is natural that the automation process also continues.

“During the autumn months of 2006 we were connecting the controls of our largest turbine to the 800xA. At present, it is being controlled manually, but now we wish to have a more automated control system in order to be able to further optimize production,” – says Kjell Thuné.

Another example is the on-going work with replacing old sensors and simultaneously increasing the number of information points in the plant. At present, the automation system is fetching approx 28,000 tags.

“The 800xA allows substantially more sensors than we have at present, also on-line. This provides us with better possibilities to continuously fine-tune our processes,” – finishes Kjell Thuné.

System 800xA contains all the automation functions in one and the same operating and design environment.



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# System 800xA maximizes the processes at Mälarenergi KVV

One of the most efficient combined heat and power plants in Europe.

Project Brief



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