

System 800xA

An energy-efficient boiler provides eco-friendly energy to Mölndal



With a new combined heat and power station powered by bio fuel, Mölndal Energi in Sweden is investing in the efficient production of electricity and district heating. Three collaborating suppliers to the new Riskulla combined heat and power station are Metso Power, COWI and ABB. “The control system for the plant is ABB’s System 800xA. This corresponded best to our needs,” says Göran Lundström, plant manager for Mölndal Energy.

Riskulla combined heat and power station shines as a new landmark beside the old power station. The new boiler that is within the glazed façade is fed with bio fuel and boils water for the steam turbine and district heating network.

“The reason for building a new station was the fact that we has an increased demand for district heating which the old boiler from 1984 could not satisfy,” operating manager Göran Lundström tells us.

“It was also obvious that combined power and heating was more profitable than simply producing heat, as was the case with the old boiler.

The new boiler can only be heated up with solid fuel and built to be heated up with a mixture of different fuels. It should be possible to use both wet fuel such as wet branches, roots and tree-tops, and dry fuel such as stem wood and peat.

“It is important to be able to utilize different kinds and mixtures; we do not know what will be relevant in the future.

Prior to the construction of the combined heat and power station, Mölndal Energy ordered a boiler from Metso Power and selected ABB’s System 800xA as the control system.

“We looked at different systems, but ABB’s was very competent and afforded great freedom of choice,” says Göran Lundström.

Great demands

The boiler for Riskulla is according to Metso Power the largest size for a standing boiler with a thermal output of 70 MW. Mölndal Energy placed great demands on energy efficiency and did not only require an efficient boiler, but even a system that fully utilized all energy sources, e.g. surplus steam. It required 30 percent more instrumentation and a more comprehensive control system than normal.

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ABB delivered System 800xA to Metso Power in “building bits”, miscellaneous software such as servers and I/O units as well as four operator workplaces and one engineering station. Metso Power hired system integrator COWI, an ABB partner for automation systems, for the programming.

“We have many assignments for the process industry and combined heat and power stations, so this is a normal task for us. Things have gone very well; ABB has a very good process control system,” says Stefan Ottosson, section head at COWI in Gothenburg.

COWI’s programming work and function tests have been carried out in close collaboration with Metso and ABB.

“Metso is responsible for the time plan and when commissioning is approaching, we support them in checking signals, start-up of routines and other start-up procedures. Then the programmers from COWI are on site all the time,” Stefan Ottosson concludes.

System trained

Commissioning has taken place under the autumn of 2009 and during this period, among other things, Mölndal Energy’s operators, system administrators and Göran Lundström have been trained in the control system by COWI.

“A good control system with such things as an alarm system and monitoring of the district heating network is critical for operations. In addition, we have a continuously ongoing process for changes

The new boiler is built to be heated up with a mixture of different wet and dry bio fuels such as branches, roots, tree-tops mixed mixed with stem wood and peat. The fuel is delivered by trucks and its humidity is measured at the arrival to the plant.



Photos: Bo Håkansson, Bilduppdraget i Göteborg AB and Anna Rehnberg (the photo of Göran Lundström).

and improvements and for this reason the kind of flexible system sold by ABB is a great advantage,” says Göran Lundström.

When production is at full capacity, the new boiler with steam turbine and flue-gas condensation will annually produce approximately 130 MWh of electricity, which will be enough to supply all households in Mölndal. The supply of district heat will be approximately 350 MWh and will heat approximately 25,000 self-contained houses. The old boiler of 35 MW will be placed on standby to be taken into service for peak loads.

“It feels really great to secure the continued expansion of the district heating network and to be able to provide locally produced renewable electricity,” says Göran Lundström.

Riskulla utilizes an AC 800M HI controller with high integrity I/Os for the burner control. Carl-Fredrik Carlsson, automation engineer, is checking the installation.



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A good control system with such things as an alarm system and monitoring of the district heating network is critical for the operations of the plant.

Mölndal Energy AB, Sweden

- Together with Mölndal Energi Nät AB, Mölndal Energi AB is part of the Mölndal Energy Group, with the City of Mölndal as its owner.
- Mölndal Energi AB offers electricity, district heating and contract services.
- The company has approximately 90 employees.

Metso Power AB, Sweden

- Metso Power is part of Metso OY with its headquarters in Finland.
- Approximately 350 people are employed in Gothenburg.

COWI AB, Sweden

- COWI is operating and carrying out industrial projects within the process and energy sector.
- COWI is a channel partner for ABB’s automation products.

ABB’s supply

- Extended Automation System 800xA with four operator workplaces, one engineering station, four AC 800M controllers and one AC 800M HI (High Integrity) controller.
- 5 motors 315-1376 kW for pumps and fans.
- 36 frequency converters ACS800.

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