

Reliable POWER GENERATION



The new biomass-fueled Torsvik 2 power plant in Jönköping, Sweden, was inaugurated in April 2015. The investment has turned out to be just as reliable as expected. TEXT Marjaana Lehtinen

A few years ago, Jönköping Energi decided to expand and modernize its combined heat and power (CHP) plant in Torsvik to better meet the growing district heat and electric power needs of its owner, the municipality of Jönköping. The investment was in fact necessary as the existing district heat boilers and related systems were reaching the end of their life cycles. Another target was

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→ **EXCELLENT COMBINATION**
"New technology with extensive training program was excellent combination for us." says Per Eklund

to replace the use of refined bio-fuels with primary biomass fuels, such as wood chips.

Cost efficiency, high availability and reliability were the most important technical criteria when Jönköping Energi chose Valmet to supply the technology. Valmet's extensive scope included a 100 MW HYBEX boiler utilizing bubbling fluidized bed (BFB) technology, buildings, an electrostatic filter, electrification and

instrumentation, a DCS, a catalyst, burners and a demi water treatment plant, all erected and commissioned.

"Availability is very important since the plant is a big investment, and it must run when the customers need heat and power," says **Pontus Steinvall** of Projekt- & Energikonsult Steinvall AB, who acted as a project manager on the customer's side. "As Jönköping Energi is a rather small company and such a major investment is a risk, it is very important that the plant is not only modern and efficient with low emissions to meet future demands, but it also features proven technology to avoid high risks."

High availability during the first winter

Torsvik's new plant was commis-

sioned in the fall of 2014. It serves as a mid-load unit and runs only in wintertime when there is a high demand for district heat. The main power plant, the waste-fueled Torsvik 1, runs throughout the year.

As the winter of 2014-15 in Sweden was quite mild and there were no long sub-zero centigrade periods, Block 2 could not show all of its capabilities to the fullest. Nevertheless, the experience has been positive. "The plant has been running with high availability. However, there is still a lot of tuning to be done to optimize the production," Pontus Steinvall points out.

Sharing the same goal pays off

The project was characterized by excellent cooperation between Jönköping Energi and Valmet. "We were impressed that the project was completed on time and within budget," says **Svante Berglund**, Project Manager, Jönköping Energi.

"The Valmet people are easy to work with. We shared the same goal and focus throughout the whole project of building a well-functioning plant for Jönköping Energi and its customers," Steinvall adds. Steinvall also emphasizes how both Jönköping Energi and Valmet focused on health and security issues – and how this paid off. "By working hard and with some luck, we had no accidents and no injuries." ■

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PHOTO: LEIF GUSTAVSSON

ABOUT THE PLANT

The capacity of the new boiler at Jönköping Energi has an output of 100 MW thermal energy. The new plant uses roughly 550,000 cubic meters of forest fuels annually. It produces approximately 320 GWh of district heat per year, corresponding to the heating needs of 17,000 single-family homes. The production of electricity amounts to 120 GWh/year, covering the power consumption of about 25,000 households.



Training is an investment for the future at Jönköping Energi

A successful outcome of the investment on the new HYBEX boiler at Jönköping Energi was further ensured through a solid educational program. All 24 operators in the six shifts learned to run the new boiler through Valmet's classroom and online product training, accompanied by extensive training in a simulator.

Simulator training was exciting and effective

The simulator utilizes the same DCS control system as the boiler in real life to give realistic training environment. Three operators were selected to be tutors and to have deeper training for creating different operating scenarios for future new employees and other operators to learn with.

The employees were excited about the simulator and **Per Eklund**, Operating Engineer at Jönköping Energi, is pleased with results: "The whole training program, including the DCS-based simulator, is a good investment over time. A couple of avoided unplanned stops in production gives a fast payoff."

Per Eklund continues: "This training program has been important part of the delivery. It gave the operators a chance to try the new technology in a safe environment before the power plant was started up in November 2014. When the operators had finished the training with the simulator they went

straight into production without any transitional problems." In addition to the simulator training, all operators also participated in an online course in Valmet WebAcademy.

Training increased the involvement

The level of know-how and skills were also tested after the training. This created a challenge for the company: how individuals experience training, learning and testing. Results varied between low stress and some panic in test situations, but now the staff is used to testing. "Our overall aim is that all employees take responsibility of their own learning. After the training we perform tests to evaluate the level of competence, and to see what needs to be improved. The tests are also a means to awaken an interest among the staff, and to secure and enhance their level of competence", says Eklund.

After being responsible for the training in Jönköping Energi, Per Eklund could see several advantages.

"Firstly, operators are committed and have started to be more involved with problems and solutions. Secondly, all teams now have the capability to start, operate and stop the production process. The higher level of competence gives them confidence in their jobs and enables them to think further", he concludes.

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