

Stora Enso made a mega investment in Sweden



Client: Stora Enso, Kvarnsveden mill

Location: Borlänge, Sweden

Scope of Delivery: Power distribution, process electrification, building electrification, paper machine drive system, refiner motors, and project execution services: project management, engineering, site management, start-up, and training of the mill personnel

The use of the latest technology in the new machine makes Stora Enso more competitive in the global market.

Taking a look at the 300 meter long building is not enough to give away that it is part of an industrial project that is something out of the ordinary. The building houses the new paper machine, PM 12, at Stora Enso's Kvarnsveden mill - the biggest paper machine in the world.

The Kvarnsveden mill is situated in Borlänge in central Sweden in the middle of forests and by the river Dalälven. Forests and the availability to create electricity from the river were good reasons to build a paper mill there over 100 years ago. With an annual capacity of 420,000 tons, the new PM 12 is one of the world's largest paper machines for the production of uncoated SC magazine paper, and today Kvarnsveden with production capacity of 1.1 million tons is one of the biggest mills in Europe



Maximizing a mega mill

In 2002, Stora Enso announced a plan to invest in a new paper machine. Access to local fresh fiber, production structure and knowledge of uncoated magazine paper were factors that allowed Kvarnsveden to secure new investment that amounted to USD 540 million. Project KP-M involved at its peak around 1,200 people and included a new paper machine, a new roll packaging line, a TMP-SC plant, a new wood chipping line and an extension of the raw and waste water plant. The project took nearly two years.

Working with full speed

PM12 started up successfully in early November 2005. ABB's close cooperation with the paper machine supplier Metso resulted in a smooth test run and also a smooth start-up. The inauguration of the new production line took place at the end of April, 2006.

Liquid cooling new technology

"It was quite a shock, when we heard that the frequency converters, being a part of the drive system delivered to the mill, were liquid cooled," the maintenance manager said. "We noticed however in practice, that they are working well, and we do not need any more fans to cool the electricity room. It means a much lower noise level there." Liquid cooled frequency converters represent ABB's newest technology in this area, and the Kvarnsveden installation is one of the first for paper mills. The drive system for PM 12 included 12-pulse incomer sections, 37 drive sections with ACS 600 drives,

11 drive sections with ACS 800 drives for lower voltages, AC 800M controllers with G200 control panels, 36 drive sections to two TwinLine calenders, 32 drive sections for two Win-Roll winders each, 6 drive sections for the WinBelt rewinder as well as engineering, commissioning, customer training and spare parts.

One of the biggest electrification projects

"This delivery is one of our most extensive electrification solutions. We had over 100 people simultaneously working for electrification," said ABB's project manager Kenneth Storvist.

ABB delivered the power distribution, process electrification and building electrification, plus all services such as project management, engineering, site management, commissioning, installations and customer training. For power distribution ABB delivered 132 kV substations, 63 MVA main transformers and 37 11 kV Unigear switchgear; 23 Resiblock distribution transformers and MicroSCADA network monitoring and control systems as well all installations and materials. The process electrification delivery included 15 MW refiner motors, protection and excitation systems, bus ducts, intelligent MNS motor control centers – 500 motor starters, 150 ACS 800 single drives, 400 process motors, safety switches, and all installations and materials. In addition, ABB was responsible for building electrification including main 400 V distribution boards, lighting and process control voltage sub-boards, general and emergency lighting, UPS, maintenance outlet panels and a fire detection system for the entire PM 12 building.



Service is number 1

“Everything must work 365 days a year,” said mill staff. The shift crews were changed from five to six and all the facilities run continuously. This means that it is only possible to shut everything down for maintenance during long public holidays. The mill staff also remarked that maintenance is number 1. Therefore having ABB local, and spare parts at ABB Västerås or Helsinki, is a major advantage.



Stora Enso in brief

Stora Enso is an integrated paper, packaging, and forest products company, producing publication and fine paper, packaging board, and wood products – all areas in which the Stora Enso Group is a global market leader.

The Group has production facilities in Europe, North and South America, and Asia. Its modern production capacity, combined with efficient raw material and energy sourcing and efficient processes, ensure excellent continuity of production.

Stora Enso's Kvarnsveden paper mill was founded in 1900. The company's history goes hand in hand with the history of the surrounding community, in which the Kvarnsveden mill is an important stakeholder. Many of the 970 employees come from families that have been connected to the mill for several generations.

The mill's products are newsprint, improved newsprint and uncoated magazine paper. The product range is well adapted to suit the majority of printing methods.

The production capacity has reached over 1 million tons a year, with four paper machines.

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