

Where there's a will, there's a way

Coordination, cooperation, communication – the successful elements for any capital project – require a commitment from both supplier and customer. A textbook example of this commitment is the new bleach plant at Stora Enso's Kvarnsveden Mill. The plant had to be brought online quickly for a new SC grade being produced at the mill.



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Kjell Nygren, Manager of Projects & Strategic Planning, Stora Enso Kvarnsveden

Stora Enso's Kvarnsveden Mill is a modern facility mill in Borlänge, originally built in 1900 on the banks of the Dalälven River in the heart of Sweden. Many generations of Borlänge people have earned their living working at the mill, which employs more than 900 people.

The mill's product range focuses on three paper grades: newsprint, improved newsprint, and uncoated magazine paper. The current production capacity of the mill is 970,000 tons per year on four paper machines.

Mechanical pulp (groundwood and TMP) is produced in the mill. Most of the raw materials is spruce. "Over 80% of our final products and about 45% of our wood are conveyed by rail, making the transport as environmentally friendly as possible," says Kjell Nygren, Manager of Projects & Strategic Planning for Kvarnsveden, and a key player in the recent bleach plant installation with Andritz.

KP-M Project

"We have a series of improvement actions under the name KP-M project, based upon a strategic decision taken in 2003," explains Stefan Pettersson, Assistant Superintendent of Woodhandling and Groundwood. KP-M stands for Kvarnsveden Paper mill, Magazine. The M can also stand for Million, as the total production will be more than one million tons per year.

"Our objective has been to continuously improve the quality of SC paper, especially our top brands," says Per Stenberg, Project Manager.

► Per Stenberg, Project Manager (left) and Stefan Pettersson, Assistant Superintendent of Woodhandling and Groundwood discuss Kvarnsveden's KP-M project. Stora Enso's decision to close down a mill in Germany and shift production of its high-quality InnoPress brand to Kvarnsveden prompted the need for a new bleach plant – and drove the fast-track schedule.



A shift in production

Stora Enso's decision to close down its Reisholz Mill in Germany by the end of 2007 and move production of its high-quality InnoPress brand to PM 8 at Kvarnsveden prompted the need for a new bleach plant – and drove the fast-track schedule.

InnoPress is one of Stora Enso's top brands, says Stenberg. "Both InnoPress and MagniPress represent some of our highest standards."

InnoPress is also well in demand by major European customers. So, Stora Enso needed a smooth transition in production from Reisholz to Kvarnsveden. After a quick decision by the Board in November 2006, a contract was signed with Andritz on December 7 for delivery of the PHC bleach plant. In November 2007, operations were up and running, according to Stenberg.

▼ Andritz's delivery included these two twin-wire presses installed where PM 9 once stood. The components for the bleaching line were lowered into the building through the roof, using two large cranes.



"We chose Andritz because we knew that they could deliver the equipment in time and they have an excellent reputation," Stenberg says. "References were extremely important. Andritz has a long history of success with Stora Enso, having delivered bleach plants for example to the Summa Mill in Finland, the Maxau and Reisholz Mills in Germany ...so yes, there is a long and solid cooperation."

Expanded Andritz scope

The equipment Andritz supplied for the Kvarnsveden Mill consisted of two twin-wire presses, an HC-mixer, and HC-tower – as well as a screw conveyor system and four MC-pumps. Andritz was also responsible for engineering as well as for DCS (Distributed Control System) programming, complete mechanical installation, training, commissioning, and start-up.

Though it was rather uncommon for Kvarnsveden, the mill contracted with Andritz to perform the detailed engineering for the bleach plant project. "We usually do this on our own with local support," Stenberg says, "but in this case it made our life much easier in the planning phase and helped us meet the tight schedule."

The first phase of the project was to decide upon the precise bleaching concept. This was followed by detailed engineering diagrams, flowsheets, and equipment layouts. "What is very important in this kind of operation is quality process engineering," Stenberg notes.

Cooperation, coordination, communication

Technically speaking, the Kvarnsveden Mill's bleach plant is similar to the other 130 that Andritz has installed. "But what made this project challenging for all of us – and exciting when you see the outcome – was the tight schedule of the delivery and installation," says Josef Liendl, Sales Manager for Mechanical Pulping Systems at Andritz.

Due to worldwide shortages, some components such as gearboxes and the stainless steel for the twin-wire press nips were extremely hard to procure. "Our sub-suppliers' order books are quite full with orders from Chinese customers for the next few years," Liendl says. "It took quite a lot of effort and some additional money, but we were able to get the materials for Kvarnsveden in time."



▲ One of the twin-wire press units is shown in the photo above. In the photo below, Stefan Pettersson (left), Josef Liendl (center), Andritz Sales Manager for Mechanical Pulping Systems and Per Stenberg are standing in the basement of the bleach plant. Andritz also provided basic and detailed engineering, control system programming, mechanical installation, training, commissioning, and start-up services.



For all those involved in the project, one of the key success factors was the easy flow of communications. There was very good cooperation within and between the project teams which contributed to the precise planning, delivery, and execution of the project.

“All our discussions were very open,” Stenberg says. “Together we came up with a very straight equipment layout, instead of the original idea of a side-by-side arrangement.” The twin-wire presses are now located where Kvarnsveden’s PM 9 once stood which allows perfect access for the overhead crane. “With this solution, we could even install a third twin-wire press in the future in line with the existing ones,” Liendl agrees.

An interesting aspect of the new Andritz line is that it was placed in the center of the existing building through the roof opening. This required the use of the largest and most out-reaching mobile cranes available in the region. According to Günther Glück, Andritz Project Manager, “The lifting boom was 42.5 m long. It was quite challenging to move the components for the bleach tower bottom and discharge system with two cranes (one 250-ton and one 200-ton) working in coordination...especially since the crane operators could not see inside the building to the installation area. The lifting and placement operation was very challenging, sensitive, and intense throughout equipment erection.”

The Kvarnsveden-Andritz project team was able to complete the task safely, on time, and without any major setbacks. “I must say that it was a masterpiece



▲ The Kvarnsveden Mill in Borlänge, Sweden was built in 1900 on the banks of the Dalälven River. While some of the typical Swedish buildings around reflect earlier times, the production machinery inside Kvarnsveden Mill is modern and efficient.

of coordination and communication,” Glück says.

Energy recovery, environmental efficiency

The state-of-the-art bleaching equipment helps Kvarnsveden reduce its impact on the environment by being efficient in terms of energy and chemicals consumed.

“This mill’s carbon dioxide footprint is continually being reduced,” says Nygren. “Very early in the 1980’s, we installed equipment for efficient heat recovery and for utilizing biofuel in our boilers. With our efficient TMP steam recovery system and two big boilers designed for burning high shares of wood waste, we are in a good situation today. Our internal bark, wood waste, and water treatment sludge is fully utilized as high-value fuel – and has been for over 20 years. Every year we increase the quantity of biofuel that we buy from sawmills and forest operations and convert it to energy.”

“The new Andritz sludge press plays an important role in giving us the processing capacity for wastewater treatment,” Nygren continues. “The material from all three presses goes directly to the boiler plant.”

Performance guaranteed

“Of course, I’m a bit prejudiced,” Liendl says, “but I would venture to say that nothing compares with our PHC bleach plants. The world’s high-quality SC and LWC paper producers have our technology. With more than 130 PHC

bleach plants installed, this indicates that our equipment is well proven.”

After intimate mixing of pulp and chemicals in a unique fluffer-type mixer from Andritz, the pulp enters the bleaching tower. Retention time in the HC-Peroxide bleaching tower is two to three hours. Then, the pulp is re-diluted with wash water and fed to the twin-wire press to remove anionic trash. The clean bleached pulp then goes to the stock prep system for PM 8, primarily for the production of the SC magazine paper InnoPress.

“I must compliment the Andritz team on doing a fine job. The new bleach plant has run very well since its start-up in November, and now we are discussing

together how to make future improvements.” Stenberg says. “We always seek improvements in our pulp quality, energy efficiency, and environmental performance. Currently, we are discussing with Andritz ways to improve some other systems in the mill, over and above what has already been delivered.”

“Andritz’s bleach plant helps us achieve the pulp quality needed to produce InnoPress which has been very well received in our markets and we are positive about the future of this grade,” Nygren says. “The print performance is excellent.”

►► find out more at www.fiberspectrum.andritz.com



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Andritz’s Josef Liendl (right) joins Per Stenberg (left) and Stefan Pettersson in displaying a sample of the InnoPress product.