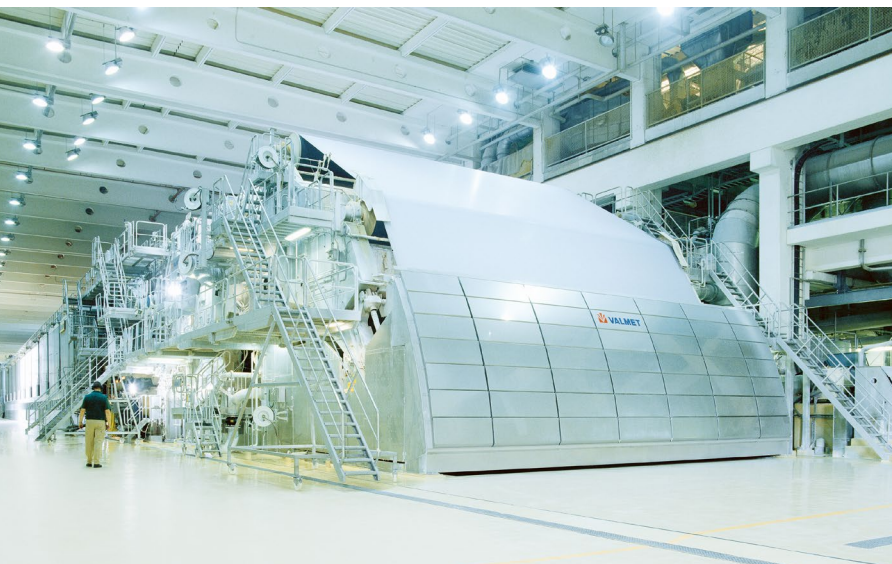


PULP AND PAPER

Top quality for fine paper

Substantial reduction of grade change time



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01 Paper Machine 4 at
UPM Nordland Papier

Even in the digital age, paper remains an important data storage medium. Every year, more than 400 million tons of this material are produced globally, for advertising, brochures, books, newspapers and other uses. With production plants in 13 countries, the Finnish UPM Group is one of the largest paper producers in the world. Its German subsidiary, UPM Nordland Papier located in Dörpen, Emsland, is one of the leading fine paper mills in Europe. Some 1.4 million tons of fine paper is produced here annually, and for more than 30 years the mill has relied on ABB in its know-how and technology.

For more than 30 years, UPM Nordland Papier has been entrusting its process automation to ABB technology.

With ABB's 800xA platform and the new Fast Ash Change & Control package, the company ensures the high quality of its fine paper more quickly and precisely.

Competitiveness factor optimization

By investing in innovative solutions, the company constantly improves its production processes. For example, this is the first paper producer in the world to work with ABB's customized Fast Ash Change & Control package to control the filler content. The package supports the operators of Paper Machine 4 (PM 4), the largest in the factory. Fast Ash Change & Control helps optimize paper quality and productivity, thus securing the position of UPM Nordland Papier in these two decisive competitiveness factors.

The wood-free fine papers made by the company must comply with high quality specifications, with such parameters as opacity, smoothness and color. In order to achieve these properties, certain substances are added to the fiber blend during the production process: for example, fillers like kaolin and calcium carbonate. In professional jargon, these are called "ash", improving the opacity as well as the whiteness degree of the paper. PM 4, with its operating width of 9.4 meters, is one of the largest facilities of its kind in the world; it produces a broad spectrum of fine paper grades, each of which requires a different ash mixture to be added.

Faster grade change

UPM Nordland Papier puts its greatest value in maintaining the correct parameters. With Fast Ash Change & Control, the ash content of paper is significantly more precise, and above all, is faster to adjust. This way, paper grade changes at UPM Nordland Papier occur about 60% faster than before, while the amount of rejected product is reduced. Even if there is a web break, the quality can be maintained constantly. This is made sure by an ABB-developed soft sensor that monitors the filler content on the wet end of the machine and adjusts it if a break occurs.

Furthermore, the plant operators gain from simpler operation and the robust control strategy of the ABB concept. It was created with well-established control models based on Internal Model Control (IMC) that manage to function with few parameters. This way the settings introduced can be understood intuitively.

“Upgrade on the fly”

The control concept is implemented in the quality control system of PM 4, which is based on ABB’s 800xA automation platform. In 2014, UPM Nordland Papier already had introduced the former ABB control system on the machine as part of an upgrade to the latest technological level. In order to keep interruptions in the production process to a minimum, the paper producer decided to have upgrade on the fly. This was the first time the company conducted such a system change without shutting down the operation, and it was a novelty in the industry.

With good preparation and close collaboration between the partners at UPM Nordland Papier and ABB, the project team successfully accomplished this task.

Before the upgrade, the ABB experts built a complete parallel quality control system, so that all the functions and interfaces could be fully tested. In this, the decisive role was played by ABB’s simulation programs. Furthermore, comprehensive systems training of the production and service personnel at UPM Nordland Papier was supported by these simulation programs. This way the project risks were minimized and production could continue without interruptions.

The transition to the ABB 800xA system with the Fast Ash Change & Control package was a step in the right direction for UPM Nordland Papier, as Wilhelm Wessels, the PM 4 production manager, noted:

“Thanks to our excellent collaboration with ABB, we have been able to complete this innovative project with success. All the goals of the upgrade were accomplished: Increased product consistency, more efficiency, and fewer costs mean a highly satisfactory result for us.”