

A man in a blue work jacket and safety glasses stands in a factory, touching a large white roll of paper. The background shows industrial machinery and a large roll of paper.

Sappi Alfeld PM 2:

# 80% less winding broke with iRoll

Valmet's iRoll technology and the optimal control strategy for each grade have allowed Sappi Alfeld to reduce winder broke by 80% on its PM 2. **TEXT** Tatu Pitkänen

"With iRoll, we have made a huge step forward in improving winding quality," says Dustin Jeckstadt, Project Manager at Sappi Alfeld (left), pictured here with Ralf Füssel, responsible for the project at Valmet.

In 2013, the Sappi Alfeld mill near Hannover in Germany converted its PM 2 into what is probably the most sophisticated and biggest specialty paper machine ever built. The extensive grade conversion project was carried out by Valmet. However, the wide variety of grades was challenging for process control and runnability, and various other parameters related to speed and efficiency needed to be optimized.

After achieving its targets for product properties and high quality, Sappi Alfeld focused on production efficiency. The product mix in specialty paper production is diverse, with frequent changes of grade. This calls for a wide variety of process parameters, too. Material efficiency can easily fall due to profile- and runnability-related broke, especially when reeling and winding higher-density paper grades that require more calendering impact.

Multinip-calendered or soft-calendered grades create a set of challenges for profile control. Dry end broke depends on the hardness and diameter profiles of the parent roll. Bad profiles can cause reeling, winding and runnability problems, resulting in high amounts of broke. Hard areas in parent roll CD hardness profiles can lead to baggy areas, ridging, or corrugation in parent rolls, and poor visual qualities in customer rolls.



Sappi Alfeld set the quality standard high: only rolls with a perfect appearance and perfect profiles would be accepted. This led into relatively high levels of winding broke and had a negative impact on overall profitability.

### Decreasing broke first by 46%

The first step involved tuning the headbox and adding oscillation to the reel, but this had a relatively small effect. Online thickness profile control for calender profiling did not give optimal results, so the focus shifted to the reel hardness profile.

The mill tried to improve and stabilize the hardness profiles at the PM 2 reel by regularly observing hardness profiles on all grades. Optimized profile targets for the pre- and multinip calenders improved the hardness profile. Valmet conducted an iRoll Portable analysis to further fine-tune the profiles.

The cumulative effect of all these actions was a decrease in winding broke of 46% from the original levels.

### iRoll technology improves hardness profile resulting in 80% less winding broke

The final phase was carried out by adding an iRoll Reel with a soft Valmet Reel Drum Cover to the PM 2 reel.

iRoll Reel is Valmet's solution for improving hardness profiles, offering extreme sensitivity and measurement speed. The sensitivity comes from the cumulative nature of the reeling process: reeling thousands of layers of paper on top of each other amplifies any variations in hardness and diameter profile, too. Thus, the iRoll system can easily detect even the smallest variations and provide control accuracy that cannot be matched with any other type of QCS application. The iRoll hardness profile control can use the available profiling tools, such as headbox actuators or calender zone-controlled rolls and induction profilers.

For Sappi Alfeld's PM 2, the iRoll hardness profile signal was connected to the Valmet IQ CD Controls multivariable profile control system. The iRoll hardness profile was used as an input in the controllers to obtain a good hardness profile, rather than using thickness profile control alone. The sophisticated multivariable controller also made it possible to combine several inputs and outputs, with optimized weight for each. This allows the use of different control strategies for different grades.

As a result, winder broke fell by 80% compared with the original figures. "iRoll has let us make a huge step forward in improving our winding quality," says **Dustin Jeckstadt**, Project Manager at Sappi Alfeld. ■

#### CONTACT PERSONS

**Dirk Petersen**  
Mill Sales Manager  
+49 1733080543  
dirk.petersen@valmet.com

**Tatu Pitkanen**  
Global Technology Manager  
+358 10 672 8601  
tatu.pitkanen@valmet.com