



A LEAP INTO NEW DIMENSIONS THROUGH FORESIGHT AND TRUST

SUCCESS STORY

ANDRITZ successfully modernized the KM3 board machine at MM Fröhnleiten, Europe's leading cartonboard producer.

ANDRITZ



Frohnleiten: The home of history, nature, and innovation

Nestled in the heart of the Austrian state of Styria, Frohnleiten is not only renowned for its stunning natural beauty and historic charm but also as the home of Mayr-Melnhof Frohnleiten, Europe's leading cartonboard producer. Surrounded by rolling hills and the lush greenery of the Mur Valley, this idyllic location offers breathtaking landscapes that seamlessly blend nature and innovation.

MEDIEVAL CENTER

Founded in 1280 by Count Heinrich von Pfannberg, Frohnleiten quickly became a vital trading hub due to its strategic position along the River Mur. Its well-preserved medieval center still reflects this rich history, where colorful facades and narrow cobblestone streets create a fairytale-like atmosphere. The iconic Hauptplatz, the town's central square, was historically a bustling market space and remains a vibrant hub today, flanked by traditional Austrian architecture and cozy cafés.

INDUSTRIAL HERITAGE

Frohnleiten's industrial journey began in earnest in 1887 with the establishment of the Carl Schweizer paper factory and the Mayr-Melnhof cardboard factory, which grew to become the largest cartonboard producer in Europe. This industrial innovation has placed Frohnleiten on the map as a hub of progress, balancing its historical charm with a modern commercial role.

Today, the town invites visitors to explore its historical landmarks, immerse themselves in its natural beauty, and witness its ongoing innovations.

A decade of collaboration, driving innovation and efficiency

In a groundbreaking project, ANDRITZ modernized the KM3 board machine at MM Frohnleiten GmbH, Europe's leading cartonboard manufacturer. Recommissioned in March 2023 after a rebuild taking just one-and-a-half months, the machine is already achieving impressive results: 10% less steam consumption, a significantly reduced carbon footprint, and improved product quality thanks to the new dual shoe press concept.

ANDRITZ and MM Frohnleiten GmbH are global leaders in their respective industries. Only 20 kilometers apart, they can look back on a decade of collaboration. This proximity and shared history create the trust needed to successfully realize demanding projects requiring extensive know-how.

In 2015, the two companies launched an ambitious project: to further optimize the already productive KM3 board machine. This machine produces folding box board in chromo duplex and triplex quality of 230 to 450 g/m² and achieves a speed of 800 m/min with a wire width of 5 m. The goal was to reduce the specific energy consumption, increase quality of the end product, and boost productivity across the entire product range.

CHALLENGES AND INNOVATIVE SOLUTIONS

One particular challenge was realizing a higher dewatering capacity in the middle layer without significant extension of the wire section as well as the installation of an additional layer with the new *PrimeFlow* AT two-layer headbox in the specified space. ANDRITZ once again proved its solution expertise: The existing, around 30-year-old headboxes from the other three layers were overhauled at the ANDRITZ workshop and made fit for the future. Georg-Michael Sautter, Director Key Accounts Paper & Board at ANDRITZ, was confident in the ability to overcome this challenge by taking an innovative approach: "Before this, we hadn't installed any two-layer headboxes in a multi-layer machine. But thanks to our good cooperation, we were able to convince MM that our hybrid formers would enable such a

modification without having to increase the size of the middle layer. We also installed a complete fifth approach flow for the additional layer in the basement, which was quite a perfect fit."

Over the long term, MM will also benefit from the first ever installation of the ANDRITZ-developed "VIB TriStream" steam blow box. The application of steam, which is optimized using three uninterrupted vacuum levels, increases the temperature of the board web, significantly improving the dry content after the press. The specific overall steam consumption in the dryer section is reduced as a result. This saves energy and minimizes the carbon footprint.



PARTNERSHIP & COLLABORATION

From left to right: Johannes Holzer, MM Frohnleiten, Georg-Michael Sautter, ANDRITZ, Georg Hammer und Adrian Kaiser, MM Frohnleiten



**SIGNIFICANT EFFICIENCY BOOST:
KM3 REBUILD ACHIEVES 10% STEAM
REDUCTION**

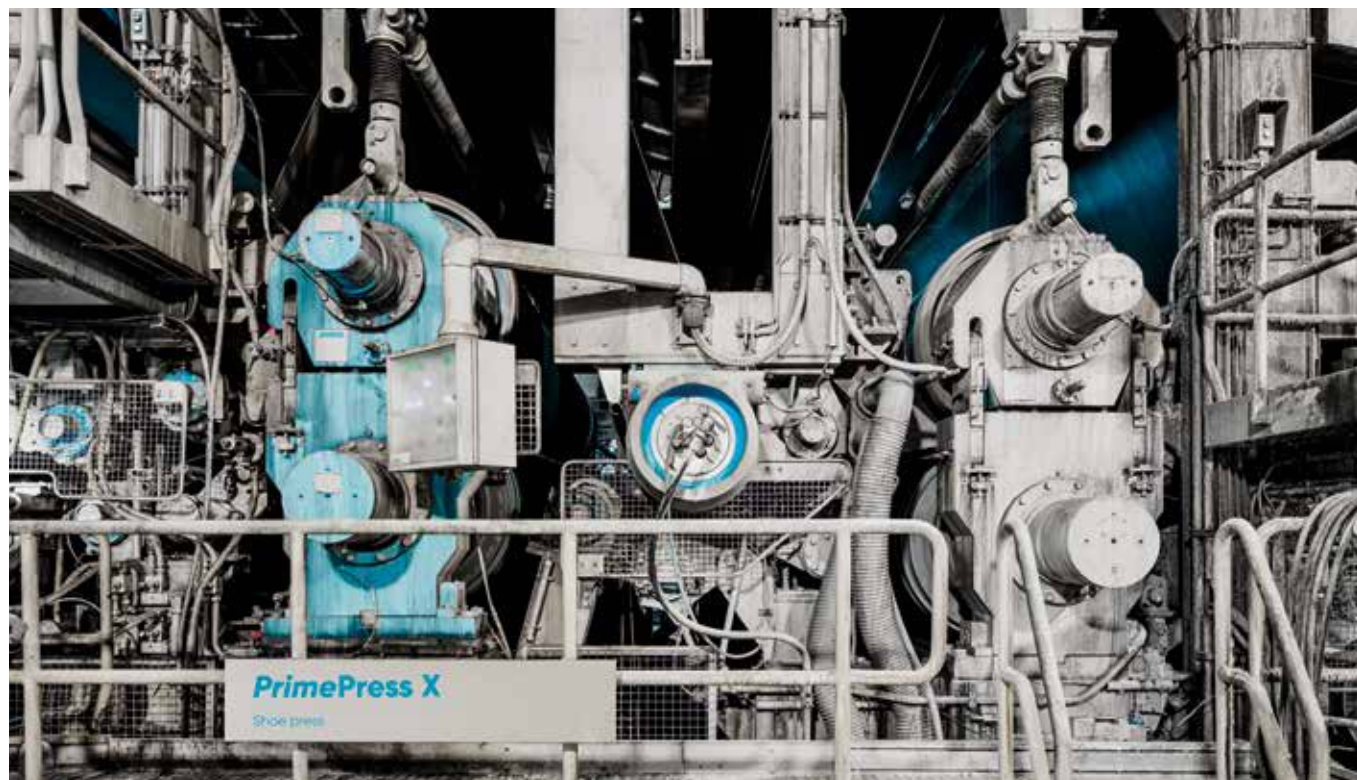
The rebuild of the KM3, a machine that produces folding box board in chromo duplex and triplex quality ranging from 230 to 450 g/m² at a speed of 800 m/min with a wire width of 5 meters, achieved a significant milestone by decreasing steam consumption in the drying section by 10%.

THE LIST OF TASKS FOR REBUILDING THE KM3

- Conversion of the wire section: extensive modification of the approach systems with new pumps, modernization of the three existing headboxes and of the *PrimeForm* HB hybrid former for improved formation, as well as a new two-layer *PrimeFlow* AT headbox with the latest CD dilution control system.
- New press section: two *PrimePress* X shoe presses for gentle, energy-efficient dewatering that maintains bulk with a high dry matter content.
- Conversion of the pre-drying section: *PrimeRun* web stabilizers for an improved sheet run.
- Upgrade of the paper machine pulper: in the area of the press and pre-drying section.
- Complete adjustment of the automation system: for the entire scope of delivery.
- Machine clothing: for the entire scope of delivery, installation, commissioning, and production support.



Andreas Pfennich, Senior Project Manager, ANDRITZ Paper & Board



PrimePress X: the new dual shoe press concept enables 10% less steam consumption

Experience and flexibility: essential success factors

The project was preceded by a long, extensive planning phase. "Still – and this cannot be avoided with such large tasks – there were situations where we faced unplanned deviations. Although we planned and discussed the holes to anchor the foundation plates of the press down to the last detail, and even produced drilling templates, unfortunately the holes still didn't initially fit," reminisces Johannes Holzer, Project Manager at MM. In these kinds of situations especially, everyone had to work together to be successful in the long run.

The rebuild of the KM3 was a milestone on MM's path towards conserving resources and boosting energy efficiency. "The rebuild was a key part of a big location development project with a total investment sum of 100 million euros," describes Adrian Kaiser, Head of

Technical Department at MM. "Before the rebuild, the stock preparation system had to be gradually adapted to the new requirements within just under two years. Also, everything on the equipment side had to be finished when the machine was started back up," explained Kaiser. And then it became clear that the planning was not only thorough – but the rebuild work itself was also extremely precise: "I really have to compliment ANDRITZ on the fact that they, together with us, organized this rebuild in a very compact way and that everything worked almost exactly to the day."

Georg-Michael Sautter reciprocated this appreciation: "The project continued to grow in planning discussions. Our partner MM was always open to innovations. Of course, we constantly strive to be innovative. Because only those who are ready for something new can enjoy success at the end of the day. But this requires the customer's trust and their shared belief that it will ultimately work."



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ADRIAN KAISER
Head of Technical Department,
MM Frohnleiten



VIB TriStream by ANDRITZ: saves energy and minimizes the carbon footprint.

Interpersonal cooperation paired with a focus on solutions

Especially when problems occur unexpectedly, it becomes clear how well the cooperation between the project partners and employees works. "We in the project management team were pleasantly surprised by how quickly and easily the project members overcame unforeseen challenges," said Holzer. "Solutions were found before the topics were brought up in the team meeting. It was very remarkable." "Problems like this are inevitable," states Sautter. "In such cases, we benefit from the solution-oriented approach of our employees – for example when a colleague takes a part to the workshop in Graz, repairs it there, and immediately brings it back again."

FLEXIBLE SOLUTIONS AND FUTURE POTENTIALS

For Ernst Kerschhofer, Vice President Paper Machine Service at ANDRITZ, a flexible approach was an important factor in modernizing the headboxes. "The very tight deadline was only possible thanks to optimized logistics. When rebuilding such complex system parts, you always have to expect unforeseen challenges, but we managed to keep to the schedule," emphasizes Kerschhofer.

ANDRITZ' focus on always finding flexible solutions for the customer pays off when changes have to be made at the very last minute. "We were still able to integrate new technologies into the rebuild relatively late in the process," adds Holzer. And not only ANDRITZ

and MM benefit from overcoming all these challenges. All of ANDRITZ' other customers do, too. "Every day is a school day," emphasizes Andreas Pfennich, Senior Project Manager Paper & Board at ANDRITZ.

**"Each project
is complex and
challenging. No matter
how much experience
you already have, you
always take away
something new for
future projects."**

Andreas Pfennich
Senior Project Manager Paper & Board,
ANDRITZ





**PrimeCoat
Curtain**

Efficient board and
packaging coating for
excellent end product
quality.

Sustainability and efficiency are the key to success

The goal of modernizing the KM3 was to make the machine more energy-efficient.

"Our main aspects were always: To save energy and water and improve process cycles all while continuing to increase product quality," explains Kaiser. Bottlenecks were also eliminated. The success is already evident: Steam consumption was decreased by 10% in the drying section. "The machine was already in a very good range in that area," states Kerschhofer, comparing with other industrial plants. "But now we've achieved record-breaking values, even world market leader values!" For companies like MM, sustainability is becoming increasingly important. On the one hand because sustainability cuts costs over the long term, and on the other because it's a selling point that's becoming stronger and stronger on the global market. "Customers, too, are more and more often asking for sustainability reports. As a cartonboard producer, recycling is part of our main business and one of our goals. Everything moving in this direction is accepted and desired on the markets. This has been the case in Europe for quite some time now, but we are now also seeing trends overseas too. Demand is growing on the American markets especially, where this was almost impossible to imagine in the past. The environment and recycling mindset is gaining prevalence there as well," explains Georg Hammer, Head of Production at MM Frohnleiten.

PROGRESS AND OUTLOOK

Despite successful start-up of the KM3 after rebuild, it is clear that the overarching location development project isn't complete yet. "A 10% decrease in steam is a considerable success," says Kaiser, satisfied. But there is still room for improvement. "Now, after putting the KM3 back into operation, we will review technical and quality-relevant data. We'll have to exercise some patience before we have conclusive reference values. But we can already see that there is potential for further optimizations. And that's where we'll be needing ANDRITZ again," concludes Kaiser.



PrimeFlow AT two-layer headbox



GOOD TO KNOW

With a capacity of 570,000 tons of recycled cartonboard a year, the "MM Frohnleiten" plant has the highest production capacity in the European cartonboard industry. It is also home to the world's largest research and development center in the cartonboard industry. This is where outstanding progress is made in the use of alternative fibers and the optimization of cartonboard properties, among other things: Several years ago, the FOODBOARD™ private label set a milestone in the area of food packaging. This type of cartonboard is a safe food carton with the ultimate functional barrier. Packaged food is protected from defined, undesirable substances such as mineral oils and retains its original flavour.

MM Frohnleiten is part of the "Board & Paper" division of the Mayr-Melnhof Group, Europe's largest producer of cartonboard (not including liquid board). Besides the plant in Frohnleiten, the Group operates six additional locations in Poland, Finland, Norway, Germany, and Slovenia. The cartonboard and paper grades are primarily used for packaging (foods, household, hygiene, pharmaceuticals) as well as office and laminate paper. The division is characterized by short transport distances, flexible service, and maximum supply reliability.

WATCH THE VIDEO

Sustainable and efficient board production at MM Frohnleiten





DISCOVER OUR FULL-RANGE PORTFOLIO FROM FIBER PROCESSING TO PAPERMAKING

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