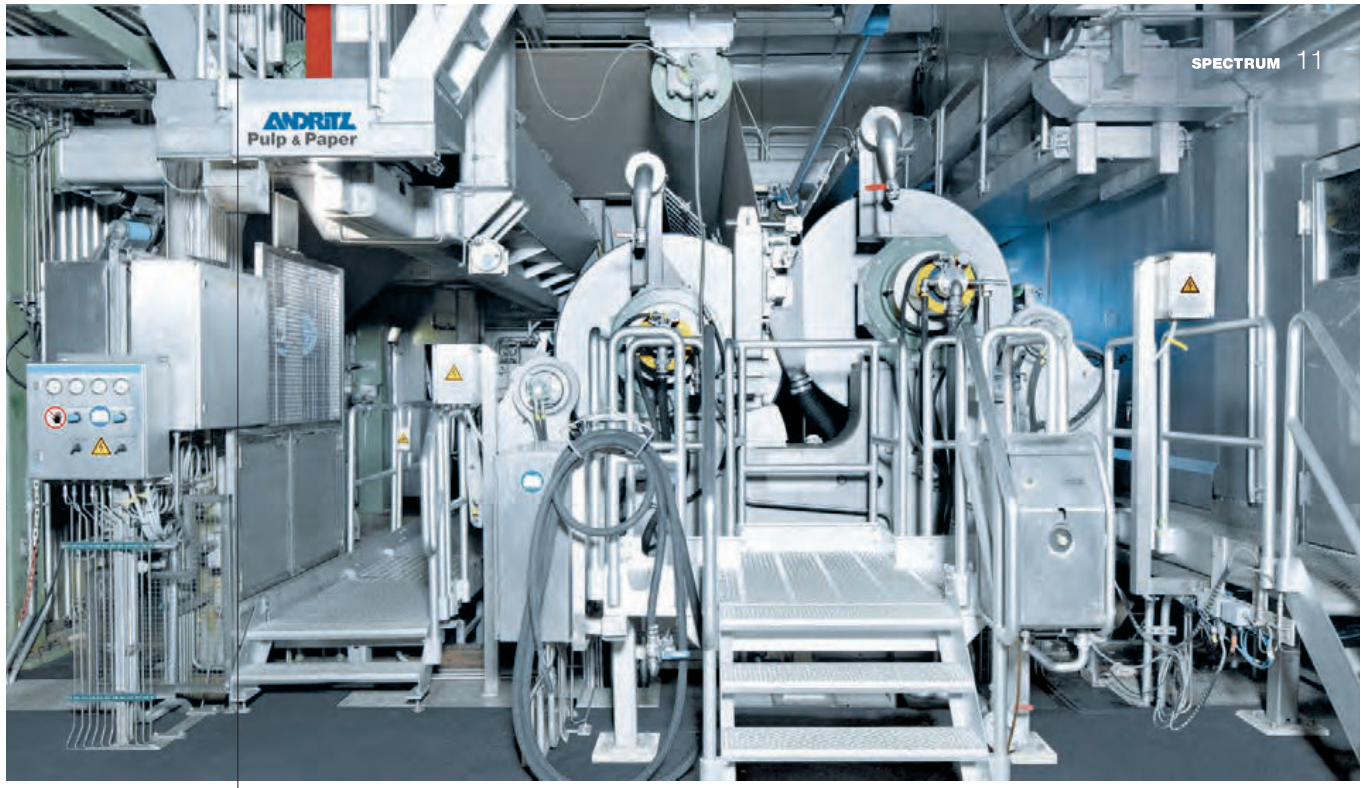

Combination film/size press installed at Hamburger Pitten. ▶

Just the 2 of us

For Hamburger Containerboard in Austria, ANDRITZ converted the machine's old size press into a new design combination film/size press to accommodate different grades of packaging paper. The new press allows machine operators to switch between film-mode or size-mode in less than two minutes. Remarkably, the switch can occur "on the fly" without having to stop the machine.

Hamburger Containerboard is a leading producer of high-quality containerboard in Europe, with an annual capacity of about 1.6 million tonnes of packaging papers. One of its mills is situated in Pitten (Austria), a location with a tradition of 150 years of papermaking expertise.

PM4 in Pitten was put into service in 1978 and has been rebuilt several times. With the last rebuild in 2004, PM4 increased production to 865 t/d of testliner and fluting (100 to 230 gsm). PM4 has a trim of 5.1 m and a top speed of 1,100 m/min. The weak point in the machine after the rebuild was the size press, which had reached the end of its useful life after being in operation nearly 25 years.

"We were noticing very high specific steam consumption in the size press," says Gerald Steiner, Production Manager at the mill. "We could see corrosion on the frame and we noticed vibration at high speeds and low grammage. Roll covers had a very short life of two to three months. It was time for replacement."

Two-phases of project

Steiner and his team began the process of evaluating suppliers for the rebuild of PM4. In their minds, the project had four major targets: energy, starch, quality, and safety. According to Steiner, "On the economic side, our aim was to lower our energy costs and decrease the consumption of expensive starch. On the operational side, we wanted to improve the sheet quality and make the machine safer to operate for our people."

The catching point was how to swiftly and efficiently apply starch to the different basis weight sheets. For paper with a basis weight of more than 170 gsm, Hamburger wanted to use a size press (maximum 11% starch). For other grammages and products, the mill preferred the benefits of a film press (maximum 18% starch). This would allow the mill to reduce the energy required to dry the sheet and increase the speed of production for a lighter sheet in the future.

The best of both worlds

In a typical machine, the size press applies a solution of starch or other material onto the surface of relatively dry paper (in a vat or pond), after which the paper is dried to final moisture content. The starch increases the surface strength of the paper and can also reduce dusting tendencies, increase stiffness, and reduce air-permeability.

Because the surface of the sheet is re-wetted in a size press, there is an increased possibility that the web will break. The likelihood of web breakage is considerably greater if the size press is of the traditional "flood" type, in which the sizing is applied by passing the paper web through a vat of starch solution.

This is where the film press comes in. The film press applies a precise amount of starch on a press roll, which is then transferred to the paper sheet. More starch can be applied with less water, so the after-drying is more energy-efficient.

"We had the desire to have both press technologies available to us on the same machine and within our space requirements," Steiner says. "We asked several suppliers for a proposal on how they would accomplish this."

Faced with this challenge, ANDRITZ engineers looked at their traditional technology in a new way. "Our target was to efficiently combine the size press and film press in the same basic unit and make it an economically attractive solution," explained Altay Koc, Technical Manager at ANDRITZ.

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Klaus Aengenendt, Project Manager, ANDRITZ

"We did not have much experience with ANDRITZ in the past, but their concept was sound and we were convinced they could do it," Steiner says. "They were flexible and willing to regard our wishes even in the details. This made it easy to come to the decision and sign the contract."

Combination *Prime*Coat Film/ *Prime*Coat Size

"There are not many combination size/film presses operating in the world," says Koc. "While this is a limitation in terms of experience, it also removes the limitation of being confined by what is considered an industry standard. We were free to take a fresh look."

Within nine months, the ANDRITZ team designed and built its first combination press – joining the technologies of the *Prime*Coat Film and *Prime*Coat Size into one compact unit.

"It is certainly not the first combined prime press in the world," Steiner of Hamburger Pitten says. "But there are only a few of them in the world, and none with the exact capabilities we were asking for."

Two phases to project

The work at Pitten was done in two phases. In August of 2011, Pitten installed a ropeless threading system and other modifications on the machine.

In January 2012, ANDRITZ installed a combined film and size press with a *Prime*Air Glide. Pitten also installed a quality control system for measuring moisture prior to the new press. The work in January required an outage of only 11 days.

Machine rebuilds are always a challenge. Just ask Klaus Aengenendt, Project Manager for ANDRITZ. "There are a certain number of unknowns until you actually get in there and dismantle the machinery to see what condition it is in," he says. In the case of PM4, some extra work was required due to the framing corrosion.

Machine downtime was less than two weeks. "Reaching this result required hard work and great cooperation on both sides," says Aengenendt. "We all learned a lot from each other," Steiner agrees. "It was a very good partnership and communications were clear. We certainly are not ones to be easily satisfied and to always accept the first answer. We need to see solid actions and performance results."

Combined results

With the new combination press, Hamburger has more flexibility in production planning for PM4 and in operating the machine. It is possible to mix the two modes: using the film press for the top side and the size press for the bottom size, for example.

"We are very satisfied with the new film/size press," Steiner says. "We now have the maximum of flexibility in production, higher speeds, and higher quality. Maintenance accessibility is also pretty good."

As we all know, even the most meticulous planning and test results in pilot trials can lead to surprises in results from real-life installations. But, in the case of PM4, the surprises were all good.

"When we began to operate the rebuilt machine, we tested the limits of the film press mode," Steiner says. "To our surprise, the film press actually performs perfectly with heavy testliner up to 230 gsm. This means we can cover our whole product range with the film press. This saves us energy in the drying section due to the higher starch application. Of course, our operators don't get the fun of switching modes 'on the fly' but the economics are important."

The film press mode significantly reduces starch consumption compared to the old pond-style size press. "The strength values of the sheet are all within specifications after the rebuild and we have been able to reduce dryer steam pressure by two to three bar," Steiner says. "The energy savings alone is about 10%."

When doing the ROI calculations at the feasibility phase of the project, Hamburger Pitten arrived at an estimated three-year payback, but has realized another pleasant surprise. "We are now seeing that the payback period is significantly shorter than what we estimated," Steiner says. "Those are the kind of surprises we love to have!"

The new press brings some other notable enhancements. It avoids the waste of starch due to incomplete closure of the nip, which creates sediment in the pond. This sediment can be a major cause of web breaks. Steiner also likes the addition of a new *Prime*Air Glide system with air turn to turn the web on a cushion of air, with a consistent ride height regardless of the web tension.

"We are looking forward to the next project and would certainly consider ANDRITZ again," Steiner says. "They intrigued us with their initial concept, and convinced us with their project performance, technical expertise, and ongoing support."

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◂ 3D graphic of the ANDRITZ film press.