CUSTOMER’S VOICE

Irving Paper’s mill in Saint John, New Brunswick, Canada has managed to conclusively improve its customer roll throughput and the hardness uniformity on the winder of its PM 1 SCA+ production line with the help of a new polyurethane-covered Valmet reel drum with integrated iRoll nip load and reel hardness profile measurement and control. The mill now produces considerably larger jumbo reels with good profiles, even sheet tension and improved winder productivity.

Mark Chatterton, the Operations Manager at the mill, summarizes the successful project: “We are making more good-quality wound rolls, the efficiency of the winder has been increased. The iRoll has been a success story, a real plus for us.” PM 1 produces mainly SCA+ grades with basis weights from 42 to 67 g/m².

**Good roll structure is challenging**

Many SCA producers would agree that it’s challenging to make a well-structured jumbo SCA reel with good hardness profiles once a certain reel size threshold is reached; the effects of air entrapment become significant after so many wraps in a parent reel. Dense SCA+ sheets, with their very low porosity, do not effectively allow the air trapped between the winding layers to escape evenly, which has a cumulative effect on sheet tension, causing wrinkling and winder breaks.

Dr. Heikki Kettunen of Valmet explains the practical papermaking reasoning: “Profile errors affect the accumulation of air under the top-most layer of paper. In many cases, you can run with a stable air bubble before the nip. However, if the top-layers of paper are not stabilized, an air bubble impacting the tight part of the roll easily creates foldovers and wrinkles.”

With those wrinkling effects, winder production often falls behind and the familiar sight of full reel spools in the aisles signals low productivity. The solution is often unwanted but necessary: limit the number of sets in the jumbo – which then increases the losses from bottom and surface broke.

That was the situation at the Irving mill. Chatterton reports that they were limited to making two sets of 50-inch diameter rolls, particularly on the heavier basis weights. Anything bigger and the rolls being wound would suffer from hard and soft spots and wrinkles that would lead to winder breaks. Winder production would fall behind. Also, with frequent reel turnups, the slab losses were higher than they should be.

**Integrated two-component solution**

The mill looked for a solution from Valmet, who had rebuilt PM 1 in 2006, to produce SCA+ with North America’s first OptiLoad TwinLine multi-nip online calenders. After visiting an SCA reference site in Europe, Irving concluded that an integrated, two-component solution was the right one for them.

First, they decided on a compliant nip polymer-covered reel drum with chevron grooving. The extended nip would provide more nip dwell time and therefore better air removal, which would be assisted by the grooving. The extended nip would also provide a tighter wind.

Material for the cover was ReelSeal P

**Irving Paper’s jumbo set throughput boosted with iRoll**

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As is typical of this paper grade, the nip load and related reel hardness profiles are measured continuously and transmitted wirelessly to a central processing unit, which updates the profiles every half a second. These profiles are used to control the profiling of both OptiCal and calender stacks to meet the targeted hardness profile. The calender profiling is done by using 5mm CD-zone-controlled rolls in the top and bottom position of each calender stack.

**Immediate results: One extra set right after start-up**

The new reel drum was installed over the weekend, and the mill was able to produce three sets right after start-up. The new responsive measurement system has allowed the mill to develop a new, effective control strategy to reduce production with good parent roll hardness profiles immediately following a long break. The control “flatlines” with all zones at an equal nip pressure until the iRoll profile is seen soon after the sheet is on the reel. The profile measurement is valid just a few minutes after the sheet resumes. Whether the location of hard and soft spots has changed is immediately visible, and the control works on them right away.

**From two to four sets**

The mill was able to produce three good sets – up from two – right after start-up, but the results have improved since then. Chatterton sums it up: “We eliminated wrinkles from air entrapment, giving us reduced breaks and winder cull. We now have a more even tension profile and finished rolls. We have run up to five sets, but we cannot easily handle the larger reels. We now run four sets of 56-inch rolls on every grade.”

Missed turnups are also down 70%, although iRoll is not the only reason. The iRoll feedback has aided in tuning and optimizing the OptiReel Plus operation. Thanks to the larger jumbo roll profiles and decreased web breaks on the winder, the mill can also now perform maintenance tasks on the winder without needing to wait for a shutdown. All told, this adds up to a handsome ROI for Irving Paper.

hinges have evolved quickly. In just a couple of years, Valmet’s service projects and service agreements in Chile have multiplied, and the staff has grown from a handful of people to 22. An important customer is Celulosa Arauco y Constitución, with whom Valmet has had a four-year shutdown service agreement.

One of the mills covered in the service agreement is Arauco’s Nueva Aldea Pulp Mill. At Arauco mills there are large islands of processes and equipment supplied by Valmet, which makes it a good choice to have Valmet as a service partner as well. Valmet’s employees have solid knowledge of our processes and equipment, so it makes total sense to have a partnership with Valmet,” says Hans Amstein R., Reliability Manager of Nueva Aldea Pulp Mill.

**Local service with local resources**

What is happening in Chile is part of Valmet’s global strategy: Competence is being moved closer to the customer, communication is taking place in the customer’s language and the Valmet staff is part of the local community. Hans Amstein R. likes the concept: “This is what we’ve been waiting for. Chile is geographically isolated from the rest of the world, and it can take a long time to get a service team on the site. Having a local service organization and a local warehouse with consumables and spare parts is a big improvement.”

An ideally located service point

Valmet’s new service point is located in Concepción, a city in the center of the long and narrow country of Chile. From there, the majority of Valmet’s customers are never more than a three-hour drive away, facilitating close collaborations and quick deliveries.

Valmet has an office as well as a well-stocked warehouse in Concepción. One of the benefits for the customers is that they don’t have to keep things in stock themselves, which frees up their tied-up capital. The next natural step in Valmet’s evolution will be to expand its repair capacity in Chile.

**The objective: to maximize production efficiency**

Valmet’s service agreements extend across its main areas: paper, pulp and energy. Each customer receives a customized solution in order to optimize maintenance and maximize production efficiency.

The agreements with Arauco cover areas including Valmet’s Smelt-X and Liquor-to-Liquor service concepts. Valmet has also performed maintenance of TwistRoll presses and Pulp-to-Pulp activities around annual shutdowns.

One of the aims is to correct faults directly when they appear – but Valmet also works proactively in order to improve processes and equipment in the long run. A significant portion of maintenance work takes place when the machinery is shut down. Hans Amstein R. explains: “Valmet employees’ service exit reports are reviewed together and preventive actions are the input for future maintenance shutdowns. We are having regular development meetings, to prioritize and focus our work on the most value adding activities for the mill.”

A large pulp and paper family

Valmet’s objective is to create a close relationship with its customers. Hans Amstein R. of Arauco shares his opinion: “Arauco and Valmet have been cooperating for about 40 years. We know each other, and work together as a large pulp and paper family. It took time to get a larger local service organization up and running in Chile. Now the potential is tremendous. We need each other.”

Hans Amstein R. is satisfied with Valmet’s expanded service capabilities in Chile.