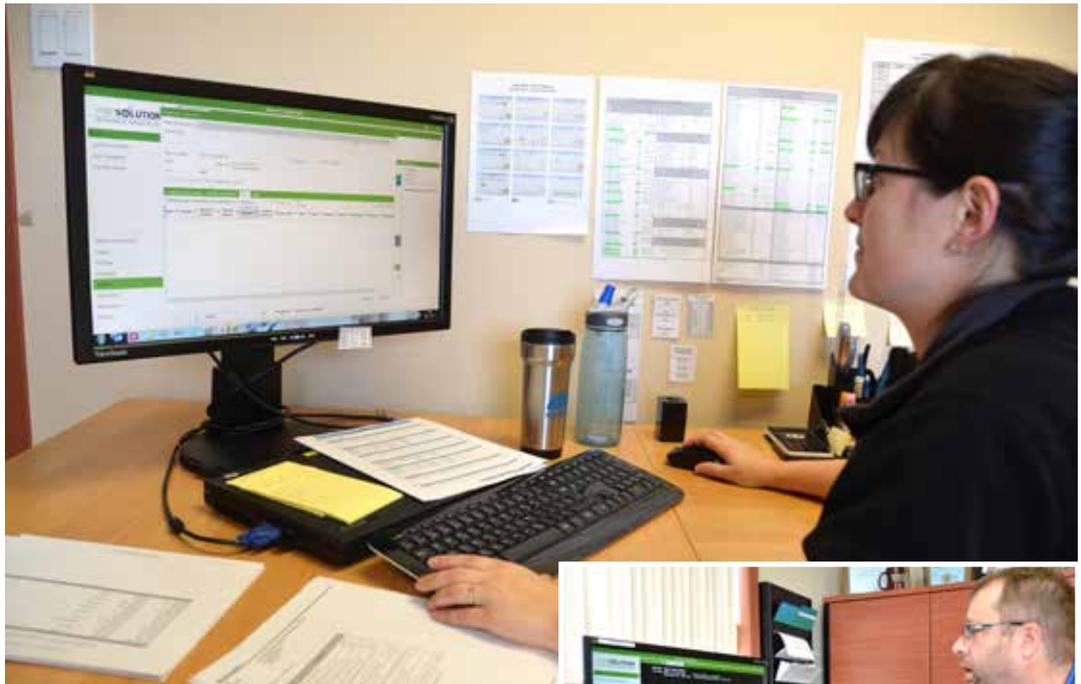


SAWMILL 4.0

BY
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Maibec has optimized its Saint-Pamphile, Que., mill by using data available at all stages of the sawmilling process to take real-time decisions. Welcome the 4.0 sawmill.

Looking at her computer, client manager Isabelle Moreau can see all the real-time mill production data to plan the weekly drying and planing schedule. “With all the data we have, I can easily plan the operations to meet the client’s needs in less than two hours per week,” she says. It’s a revolution, because there used to be a full time job dedicated to this task.”

How is that possible? Since 2006, Maibec’s St-Pamphile mill invested nearly \$1 million in production performance data acquisition at all stages of the sawmilling process, tracking the fibre from the forest to the client. And all that data is utilized when it comes to the planning process, notes François Léger, PMP Solutions founder, who provided the technology to the mill. “We would not be able to do a precise planning tool if we didn’t have precise data across the mill,” he says.



MAIN: On one screen, Isabelle Moreau can see all the sawmilling, drying and planing schedule in order to complete a weekly planning schedule in just two hours.

ABOVE: Jean-Sébastien Pelletier shows how the dashboards can tell him how the mill runs in just a few seconds, since the information is in context with the mill’s goals.

Every week, Moreau meets for about half an hour with production, planing and quality supervisors to make the best decisions with the available wood inventory. "We want to make an optimal use of the drying and planing equipment, while making sure clients receive their order in time," she says.

According to the priorities (production or specific products), the software developed by PMP solutions, proposes an optimal loading weekly schedule, using the 15 drying recipes allowed in the five kilns. "With the data we collected, we now know which products can be dried together instead of just guessing," she says. For example, they learned 2x6 do not dry well with 2x3 or 2x4. When needed, extra products can also be fitted in to accommodate a client's need.

Not only is the mill saving almost a full-time salary, but it also improved the delivery time and, thus, relationships with clients. "I can tell the client what is available, what is running late and make shipments accordingly," Moreau says. "In the end, they are much more satisfied."

With the information systems in place, the managers also said goodbye to trial and error. They can now make smarter decisions based on accurate data. And the results are impressive. The mill increased the value-added products (over \$60 /1000 fbm on average) proportion from 25 to 40 per cent, while increasing the drying capacity by 20 per cent.

HOW IT STARTED

Back in 2006, Jean-Sébastien Pelletier, the St-Pamphile mill manager, had a drying capacity issue. Instead of buying a new kiln, Léger convinced him to invest in data management to improve the drying efficiency.

With some indicators, Léger rapidly showed the products were not dried properly. "When we started to measure the ingredients we put in the kiln and how we mixed our products, we rapidly improved the quality, the productivity and the quantity of value added products," Pelletier says. Tests based on trial and error could now be replaced with solid data. Drying capacity at the mill improved from 90 million FBM to 115 million FBM.

Next, the system was integrated in the planing mill. "To link the drying and planing steps, we needed traceability. So

we put in place a system with bar code labels on each pack," Léger says.

The mill also integrated the labeling system with the inventory and transactional systems, which are now completely automated. "All mistakes were eliminated by automation," Léger says. "We started with a standard inventory where 60 per cent of the products had a deviation, to a really strong inventory, with fewer than 10 per cent deviation," adds the mill manager.

When the data-management system was integrated in the sawline and in the shipping operations, continuous improvement teams were created to analyze the data through graphic interface. "They meet once a week to see if what we did on the sawline produced what we expected for our clients. If not, they look at what could be done to improve the process," Pelletier says.

This operation also created links between the sawing, drying and planing departments. If defects are noticed during planing, the products can be tracked back to see what went wrong earlier in the process. Supervisors now work across the three departments instead of working in silos.

This first set of investment came between 2006 and 2009, at a time where Maibec did not have the money to make big investments to lower their production cost. "Instead, we were able to increase value by investing in data management. Without these investments, we would have closed," Pelletier says. In numbers, that meant Maibec products were worth \$50 more per 1,000 feet as compared to the random length indicator. Before the data management system, the mill average was below this indicator.

But change is not always easy, Pelletier notes. "You need to manage the transformation process, because change creates frustrations," he says. "You cannot assume everybody will accept the use of new tools at once. You need to train people, give a lot of information and show leadership to make sure the staff follows you."

Under Pelletier's leadership, the St-Pamphile mill was awarded an important Manufacturing Innovation Award (PM100 Award) in 2011. "All of this would not have been possible without our team's dedication," Pelletier says.

But the improvements did not stop

there. Maibec wanted to know if they paid the right price for their wood supply, which comes almost entirely from private woodlands. So they built a wood supply information tool. "For each supply sector, we take a sample of a few loads full of timber. We saw it and analyze the basket of products we can get out of it. We can then say how much the wood is worth in this area," explains Pelletier. This tool stores the suppliers' history, while taking into account the wood market and the exchange rates.

In 2012, came the planning tool, followed by a \$25-million investment in mill modernization that cut down the production costs. And in 2015, the mill installed PMP TeamMate, a platform for real-time performance management.

"Almost every mill has real-time data these days, but does that data drive actions?" Léger says. "We add a context to the data, comparing the actual performance to the goals set by the mill, with a user-friendly interface that encourages people to take actions." For analogy, that's the difference between a car that tells you only how fast you are going versus a car telling you when you will reach the destination, taking into account your speed, the traffic and the road you chose to get there. "It's a complete environment where employees have access to all the information on dashboards across the mill but also on their mobile phones."

If the mill's performances differ too much from the goal's set, alerts immediately drive staff to take action. But sometimes alerts are not even needed.

When Jérôme Poulin, the Saint-Pamphile mill process engineer, opened his computer for his daily routine the day we visited the mill, he noticed something was wrong. "I could see we had a cant volume loss on the screen," he says. He investigated the primary breakdown data and saw that the products were well placed. When he looked into the secondary breakdown, he saw a blurred image and he solved the problem simply by wiping the dust off the scanner. "Without the real-time management data, I would not have seen the problem as fast and we would have lost money," Poulin adds.

The data information system changed most employees' tasks. On the sawline, staff numbers were reduced from 28 to 14 as employees were relocated (none of

whom lost their jobs). “We want our staff to think more about what they are doing to see how they can improve things,” says Poulin, who stopped doing Excel spreadsheets since PMP TeamMate was installed. “I now find the information instead of looking for them.”

Not only does this system produce analysis and reports with key performance indicators everyday, but it also stores the big data generated by the mill. “I can use the log’s history to see trends,” Poulin says. He recently analyzed 30,000 logs by diameter class to find a hidden potential.

Big data and simulations also showed which unprofitable products should be eliminated, while helping to develop new products.

All that information is shared on an industrial social-media platform, called Yammer, to foster collaboration. While the network is not used at full potential yet, it is already considered a good tool to share statistics and maintenance videos, for example.

More flexible and modern than ever



Jérôme Poulin, the mill process engineer, and François Léger, PMP Solutions founder.

before, Maibec’s St-Pamphile mill still has many ideas to improve. “Eventually, we would like to be able to use the best wood available in the lumber yard to seize specific commercial opportunities.

We could also connect all the data with our other mill in Masardis, Maine, to optimize all our processes,” Pelletier says.

Welcome to the data era.