SUCCESS STORY
ARAUCO do Brasil,
Jaguariaíva mill

PANELBOARD

HIGH-QUALITY FIBER FOR HIGH-VOLUME MDF PRODUCTION

HEALTHY COMPETITION LEADS TO HIGH PERFORMANCE

ENGINEERED SUCCESS

Side-by-side: healthy competition leads to high performance

ARAUCO, the largest forest products company in South America, has an impressive growth curve based on sustainable production. To gain a presence in Brazil, it acquired two panelboard plants – Jaguariaíva and Piên. When Jaguariaíva recently obtained approval to add a second line, ARAUCO gave ANDRITZ an opportunity to bid against the established competitor and install a state-of-the-art system for MDF fiber production. This side-by-side challenge makes an interesting story.

ARAUCO purchased the Jaguariaíva plant in 2005 from Louis Dreyfus (the French group involved in commodities and other business). Dreyfus originally built the plant in 2001 and installed a 900 m^3/d line delivered turnkey by Metso. The Piên plant was acquired by ARAUCO in 2009 and has two ANDRITZ chip washing and pressurized refining lines, which are performing well. Alex Ferreira Alves, Plant Manager, has been at Jaguariaíva since the beginning, starting as an electrical maintenance coordinator. "ARAUCO has been a very good employer," Alves says. "Their main business is wood and they have a long-term view. They made several improvements in safety (for example fire protection) when they purchased our facility and have consistently invested in technology."

Within a very short time, ARAUCO do Brasil (the ARAUCO subsidiary in Brazil) began making investments in Jaguariaíva. A melamine line was installed in 2007, and a second followed in 2009. An impregnation line was started in 2011. "After the start-up of our second MDF line in February of 2013, we also started up a third melamine line and a second impregnation line," says Andreas Hoffmann, Industrial Director. "So this has been a busy and exciting time for us." Hoffman explains the current setup. "Jaguariaíva is not just a commodity MDF plant," he says. "About 40% of our output is value added (surfaced with decorative paper) and is sold under our TRUPAN brand - one of the most versatile and light-color MDF products available. We produce 32 finishes here. Our MDF is in the range of 6-30 mm, with most in the 12-18 mm range. This gives our customers a wide variety of options." ARAUCO do Brasil's main customers are the furniture industry, kitchen cabinet makers, distribution centers, and even retail outlets. Some of the product is exported, but the majority is for the Brazilian domestic market.

ARAUCO do Brasil's Jaguariaíva plant as seen from the woodyard. Most of the fiber comes from ARAUCO's FSC-certified forests.

SUSTAINABLE IN MANY WAYS

"The business model for our company is to add value to the forest in the best way," Hoffmann explains. "That is why ARAUCO is involved in many different areas. Here in Brazil, we draw fiber primarily from our own forests. This aspect of sustainability is very important to us, as is our commitment to safety and the environment. Sustainability is consistent with our company's approach of taking the variability out of a raw material (wood) and converting it into something that is consistently stable." Currently, the fiber source at Jaguariaíva is primarily softwood. But Alves explains that the intent is to utilize more hardwood (eucalyptus) in the future.

A BIG STEP - THE SECOND MDF LINE

The Jaguariaíva plant was built with provisions for having a second line. That was always part of the thinking, according to Hoffmann. The big question was – when? "We received Board approval to move ahead with MDF #2 in May of 2010 and signed contracts with suppliers very quickly after that," he says. While MDF #1 was a turnkey installation from one supplier, it was decided to combine the technologies and capabilities of ANDRITZ with other key suppliers for the MDF #2 line, with the focus on high performance, reliability, and environmental safety. "This is one reason we chose a different dosing technology – dry blending – for MDF #2," Alves explains. "It has lower emissions and consumes less glue."

"We have a good relationship with ANDRITZ at our sister plant (Piên) and we carried out a small project to improve the dewatering process there," Hoffmann says. "This helped us to increase the capacity of our two lines by about 15%. All the references inside of ARAUCO pointed to the fact that ANDRITZ is innovative with its technology, but also cares about its customers. That service aspect is very important to us." The contract with ANDRITZ to supply the chip screening, chip washing, and pressurized refining technology for MDF #2 was signed in August of 2010.

Alex Ferreira Alves, Plant Manager in front of an ANDRITZ refiner.

"Currently, the fiber source at Jaguariaíva is primarily softwood. But the intent is to utilize more hardwood in the future."

ALEX FERREIRA ALVES
Plant Manager, ARAUCO Jaguariaíva plant

ANDRITZ supplied the chip screening and washing technology seen here.

ON TOP OF THINGS

"ANDRITZ was on top of things during erection of the plant, during commissioning, and during start-up," Alves says. "Theirs was the first process area to be ready to go."

Michael Frint, Technology Director of ANDRITZ Panelboard for the Jaguariaíva project, comments: "Every so often you have a project where great chemistry exists between purchaser and supplier from the very first day. It was exactly like this when we worked with the team from Jaguariaíva. They were very open to discussions, and although they were not that familiar with ANDRITZ technology, they were eager to learn more. We worked well together and even developed ongoing friendships. We met challenges together, with the common goal of making this outstanding MDF production line possible."

As an example of the trust and respect, Frint recalls one particular event during commissioning. "Our R&D team came up with a new development for our refiners," he says. "We wanted our friends at Jaguariaíva to have the latest development, so we approached them about retrofitting their new refiner even before it was started up. Most customers would be nervous about making a change in this phase, but not here. Together with ARAUCO, we made the improvements and started the refiner up without missing a beat."

"We are on an acceleration curve after the start-up phase, so it is a bit too soon to share performance data comparing the two lines," Hoffmann says. "But I can say that we have already achieved our capacity target (1,400 m^3/d) and fiber quality is outstanding."

WHAT CAN I SAY?

"We are still fine-tuning and measuring the important performance criteria on MDF #2 - specific energy consumption, shive/dust content, plate life, and equipment availability," Alves says. "What I can say at this point is that ANDRITZ has been very proactive, and very responsive. Not just to win the order in the face of a strong competitor. Whenever we had a question, Michael Frint (Technology Director, ANDRITZ Panelboard)and his team had an answer – quickly. It was clear that ANDRITZ really wanted to be partners with us." This attitude has carried through.

"The technical assistance we receive from the service people is impressive," Hoffmann says. "I would have to say it is rather unique in this industry. That doesn't mean that we have not had small problems. But any problem is addressed very professionally and quickly. The working relationship is very good." One example that Alves cites about responsiveness was how ANDRITZ handled the challenge of incorporating fines into the process. Fines were not introduced during start-up, but soon Jaguariaíva wanted to start feeding them into the process. "Given that fines and the by-products of chip screening are a different material to wood chips, we needed a solution from ANDRITZ to avoid major process disruptions," Alves says. Frint explains that the volume of fines and the on-off method of feeding at Jaguariaíva was quite a unique situation. "Their set-up required a special response," he says. "But we were able to develop a solution and modify the equipment to accommodate their request."

"Jaguariaíva and ANDRITZ people on site met challenges together, with the common goal of making this outstanding MDF production line possible."

MICHAEL FRINT
Technology Director
ANDRITZ Panelboard

(Left to right): Alexandre Morato, ANDRITZ Sales Representative; Clemens Seidl, ANDRITZ; Alex Ferreira Alves and Andreas Hoffmann, ARAUCO

"All I know is that within a very short time, we had the problem solved in a good way," Alves says. "That is impressive.

THE ANDRITZ SCOPE

ANDRITZ provided the chip screening, chip washing, and pressurized refining technology for Jaguariaíva's new line. The plant has a complete woodyard (wood receiving, debarking, chipping with capacity for both lines). Chips purchased from local sawmills account for about 10-15% of the raw material mix. The chip screening process uses proven vibratory screen technology. Chip washing is a two-stage process that recirculates a major portion of the wash water to minimize fresh water consumption.

Once the chips are washed, they enter the ANDRITZ pressurized refining system. A vibrating discharger ensures a continuous flow of heated and softened chips from the pre-steaming bin into the plug screw feeder. "Our raw material has a high moisture content," Alves says. "Even with this, ANDRITZ was quite confident that they could achieve the level of dryness we wanted after the plug screw feeder, which helps us save steam energy. This was an important consideration for us. Their feeder has some design features, including a larger dewatering area, that achieve this."

The feeder transports the raw material to a vertical digester, compressing it into a "plug" to form a seal between the atmospheric conditions in the vibrating discharger and the pressurized digester. In addition to moisture, factors such as bulk density and capacity are closely controlled to achieve the highest possible performance on a consistent basis. The vertical digester is an essential step in the treatment of the fiber to deliver its unique properties for MDF production. It is heated with pressurized steam generated by the plant's bio-

"This plant has our latest low-energy technology. The C-feeder is one of our energy-saving features."

CLEMENS SEIDL
Manager of Research & Technology,
ANDRITZ Panelboard

mass boiler, which burns bark, cinder dust, and trim waste from the MDF board. The boiler also heats the thermal oil for the presses. According to Alves, "the physical appearance of our board is very important. What happens in the ANDRITZ digester, and then the refiner, is important for the final look for our product."

After digesting, the fiber material is discharged from the vessel into a C (Constant)-feeder. "This plant has our latest low-energy technology," says Clemens Seidl, Manager of Research & Technology at ANDRITZ Panelboard. "The C-feeder is one of our energy-saving features that provides even feeding to the refiner over a wide range of operating conditions. As the fiber properties or process conditions change, there will be small differences in the flow in the ribbon feeder of a pressurized refiner. The C-feeder equalizes potentially uneven material flow from the digester to the refiner, whether capacity is high or low. This reduces load peaks, saving specific energy, and stabilizes the refining process." Alves is sold on the C-feeder technology. "When ANDRITZ approached us with the idea of using

ANDRITZ plug screw feeder.

Sawmill residuals (10-15% of furnish mix).

ANDRITZ pressurized refiner

the C-feeder, we were not so sure how much of a difference it would make," he says. "With it installed, we do not see fluctuations in the power or the flow to the refiner, so it is doing a very good job."

PLATES MAKE A DIFFERENCE

ANDRITZ has also supplied refiner plates to both ARAUCO do Brasil facilities, even for the lines that do not feature ANDRITZ refiners. According to Rodrigo Viel, ANDRITZ's Sales Manager for refiner plates in South America, the plates have helped ARAUCO create fiber mats with less fines and powder, which makes it easier to evacuate air in the pressing operation – speeding up the line and reducing specific energy consumption.

"Whenever we had a question, Michael Frint and his team had an answer quickly. It was clear that ANDRITZ really wanted to be partners with us."

ALEX FERREIRA ALVES
Plant Manager, ARAUCO Jaguariaíva plant

"We have been working with these plants for many years," Viel says. "The Jaguariaíva plant has very fast presses with high production. Our plates make a contribution towards them achieving production records." For MDF #1, the original pattern was a 62-inch design, which was later changed to the latest MDF spiral design for higher performance at lower energy consumption. According to Viel, "The spiral design has cut the energy requirement for this line by about 20 kWh/t.

For MDF #2, Jaguariaíva is in the process of testing the spiral plate design. "During the start-up, we used conventional plates and are now in the process of running trials with a spiral pattern, which we expect will deliver increased production with the same or better energy efficiency as on MDF #1."

"The swing-door design of the ANDRITZ refiner makes maintenance easy," Alves says. "When we change plates, we can do it much faster than on our first line."

NOT JUST BIGGER – BETTER

"This is a large production plant, but size is not a good way to compare," Hoffmann says. "Our focus is on being the best. There are economies of scale that help us do that in a sustainable way. There are also technology partners, like ANDRITZ, who are helping us reach our goals."

FULL-RANGE CAPABILITIES FROM ANDRITZ PANELBOARD

ANDRITZ Panelboard supplies innovative single equipment and complete front-end packages, ranging from debarking, chipping and screening, to chip handling, as well as from chip washing to pressurized refining systems, including waste water evaporation. Our machines process any species of wood or annual fibers, such as bagasse, bamboo or straw. Extensive system and process know-how for panelboard fiber preparation is the technological basis of our solution, which also comprises responsive service, replacement parts, and upgrades to existing machines. Low electrical and thermal energy consumption with best performance is the driving factor for the design of each individual machine in the system and the process.

CONTACT US
ANDRITZ AG, Vienna / Austria
p: +43 50805 0

PANELBOARD@ANDRITZ.COM
ANDRITZ.COM/PANELBOARD

Get to know our locations worldwide