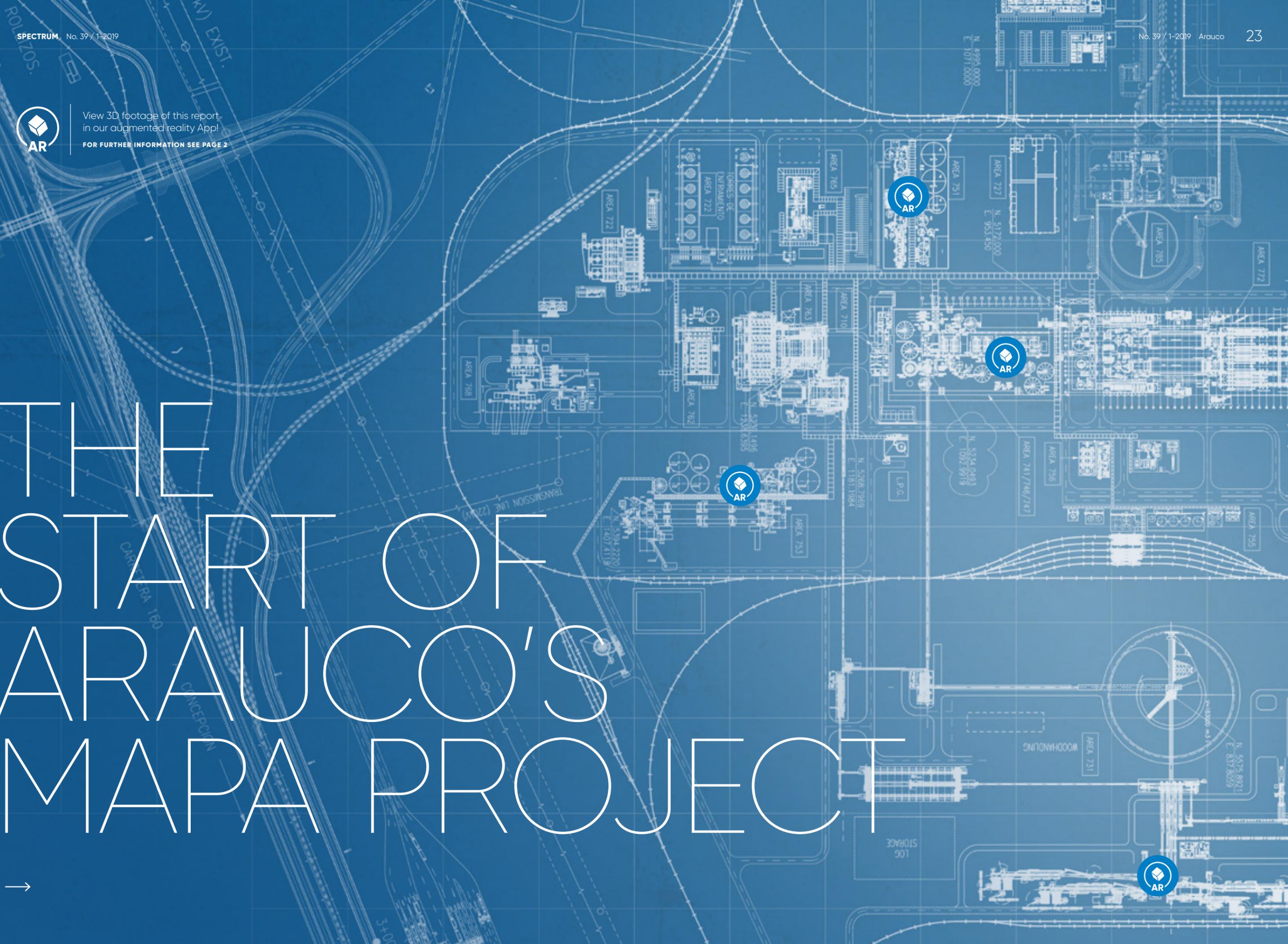




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THE START OF ARAUCO'S MAPA PROJECT





After start-up in 2021, Arauco's Mill in Horcones will be the most modern mill operating in the 21st century.

Arauco's MAPA project in Chile represents not only the most important expansion the company has ever undertaken, it is also currently the only major eucalyptus pulp project taking place in the world. The company operates five mills in Chile, one in Argentina, and has a joint venture in Uruguay, together with Stora Enso.

Franco Bozzalla, Senior Vice President, Pulp and Energy, Arauco, talked to SPECTRUM at Arauco's headquarters in Santiago about the significance of the MAPA project.

"We are very excited about the MAPA project as it will give us a fantastic opportunity to gain market share both in global pulp supply, but also in our share of the eucalyptus market. We will increase our market share of pulp supply from 5.3% to 7%, maintaining our position as the second largest pulp producer globally, and the new line will mean that we move from seventh to third place in the supply

of eucalyptus pulp. The MAPA project with its higher capacity and advanced technology will mean that we can be more competitive, and in a better position for increasing our market share."

Bozzalla explains why the new mill is being built on the site at Horcones, which is situated in the Bio Bio region of central Chile, close to the Pacific Ocean. "The reasons we are building this new mill in this location are very simple; first, and foremost, we have wood resources that are very close to the mill; the majority of our raw material comes in from a radius of just

60-70 kilometers, where we have access to a vast area of eucalyptus plantations. Second, we have three ports in close proximity from which to serve our customers, with the closest one only 35 kilometers away, and that alone already makes us highly competitive.

"Added to these advantages, MAPA is unusual in that it's a brown/greenfield project, as we are shutting down one old line that is over 40 years old, but we will keep our existing pine mill producing some 600,000 tonnes a year and then, of course, we will add over 1.5 million

tonnes annually with the new line. We have other real advantages at Horcones, including management capabilities, forestry, energy generation, and other Arauco businesses in the area, including panels and saw mills which again make this expansion very attractive."

PEOPLE AND SAFETY FIRST

There is a real culture of "Safety First" that permeates right from the very top at Arauco, and there is a strong emphasis on making sure everything is in place for health and safety across the whole company and, of course, for the complete MAPA project. Bozzalla says, "A group of people simply working together is not a team; a group of people working together with the same purpose and the same values – that's what makes a really successful team. The value of human life is much more important than anything to us at Arauco, including being on time and on budget.

FRANCO BOZZALLA
Senior Vice President,
Pulp and Energy, Arauco

"At Arauco we are very impressed with ANDRITZ's ability to attack real problems, and then solve them."



"In the region there will be some 8,000 people working on the MAPA project, and it is very important to us as a company that each one of those people goes home at night to their families and friends in exactly the same good state of health in which they came to our site. For us a project well done is first and foremost safe, and then everything else comes after it."

ANDRITZ – "AN ABILITY TO ATTACK PROBLEMS – AND SOLVE THEM"

All of the technology and equipment for the MAPA project was ordered at the end of last year, with a large portion of ANDRITZ equipment being chosen by Arauco. Bozzalla says of Arauco's experience with ANDRITZ, "We have known ANDRITZ for years, but we really got a good idea of how the company operates and is managed when we worked together on the Montes del Plata project,

our joint venture with Stora Enso in Uruguay. That was a 100% ANDRITZ turnkey supply, and it was a very difficult project. However, we were really impressed at how the company operated under such difficult conditions, and then how its senior management and experts teamed together to have the mill up and running quickly and with the best possible quality output. At Arauco we are very impressed with ANDRITZ's ability to attack real problems, and then solve them, at the same time as not avoiding any difficult discussions. The way ANDRITZ handled the Montes del Plata project is still something I admire, and it gives us great faith in the company for other projects.



"So when it came to the MAPA project, we knew pretty much exactly what we wanted ANDRITZ to supply. It makes sense to have the woodyard and the fiberline from the same supplier as one raw material is the same for the other one. And as regards the black liquor evaporation and white liquor plants, there was an open race, and ANDRITZ won those due to excellent technology and good negotiations. We are very happy with the technology we have selected from ANDRITZ for this project. It is also very important to choose the right supplier, as all the way across this industry each company is only as strong as its weakest link; with ANDRITZ we feel we have a strong partner. The project phase ends only after achieving the full capacity of the mill, and we know ANDRITZ is fully committed to contribute to Arauco's business."

MAPA AND THE AUTONOMOUS MILL

The MAPA project, at its start-up in 2021, will result in the most modern mill operating in the 21st century, how far is Arauco going to go with the concept of the autonomous pulp mill – basically a mill that runs itself? "The autonomous mill will be the standard

for the future, but it will take some time to get there," says Bozzalla. "However, for us and the MAPA project, it is all part of the design for the new mill. We predict that we will have a virtually autonomous mill here in five years' time and we will be able to maintain the mill with techniques that are totally different from what we have here today. We at Arauco consider ourselves to be leaders in this industry, and we are taking this concept very seriously. We are building the new mill here from zero, which means it's easier to take risks, and we can be more proactive in terms of adapting the new technology into our operations, for instance, machine learning and Big Data analysis.

"The fact is, this is not necessarily about having no people running your mill; this is about having the right people to turn the concept of the autonomous mill into reality. We are now hiring a different type of person to work at our mills; they will be engineers and technicians, but they should bring a different mentality and mindset. We mix this with the experienced people we already have. I will be very open about this; we are going to work very hard to become the first

autonomous mill in the industry. We are taking the innovation of digital transformation very seriously and we are putting in a lot of effort to make it happen."

MAPA: THE GROUND CONTINUES TO BE PREPARED

The ground continues to be prepared at Arauco's Horcones pulp mill in southern Chile.

It's not often that the SPECTRUM team gets to see a greenfield project



Arauco is planning to close the existing eucalyptus line L1, upgrade the existing pine line L2 and install a new state-of-the-art eucalyptus line L3.



For this project phase it is important that everything is in place and the ground works are on target.

commence right from the very start – for example, in the preparation of ground works. So we were delighted to take up Arauco's invitation to visit its site in Horcones, Chile, for what will surely become one of the most modern and efficient pulp mills the world has ever seen.

On our visit to the Horcones site, vigorous work was taking place in earth moving, foundation building, and construction planning. This is a greenfield project with a difference; Arauco already has a

thriving pulp mill right next to the new site, and therefore has all the infrastructure in place for both raw material procurement and for serving its customers all around the world. The MAPA project appears to be a very smart move.

Héctor Araneda, MAPA Project Manager, says, "This is a very exciting period of my life; MAPA is the most important project in the history of the company, so we have a lot of expectations. At the moment, we are working very hard on

making sure that everything is in place for the project, developing the people, making sure all the right equipment has been ordered, and making sure the ground works are on target.

This is the second major project on which Araneda has worked, having gained extensive experience working on Montes del Plata, Arauco's joint venture with Stora Enso in Uruguay. He says, "There is a lot of work that needs to be done to ensure that a project like this goes well, and is

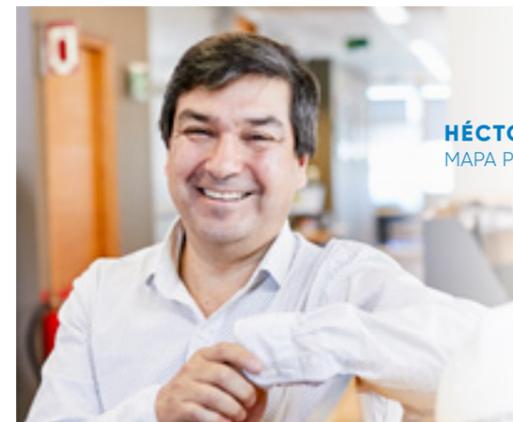
PATRICK O'SHEA
ANDRITZ Pulp & Paper,
Chile

"From the ANDRITZ point of view, people are at the heart of the MAPA project."



HÉCTOR ARANEDA
MAPA Project manager

"We believe we will have one of the best mills in the world with a high level of safety, performance, and productivity."





The site for the new pulp mill will see Arauco rise to be the third largest eucalyptus pulp producer in the world.

without problems, and I mean no problems, no accidents, environmental issues, as well as a good start-up performance.”

There is also ongoing work taking place currently to update the original pulp mill, which involves shutting down line No. 1, and completely modernizing the existing line No. 2. The total production at the Horcones mill after the MAPA project will be approximately 2.1 million t/y.

ANDRITZ is a major supplier to the MAPA project, with its top technology being chosen for a complete wood processing plant, fiberline, black liquor evaporation plant and a complete white liquor plant.

Operating from project offices at the mill site in Horcones, ANDRITZ will also have support from the local company workshop at Concepcion. ARAUCO will also have access to local ANDRITZ experts over the complete life cycle of the mill and receive a holistic service according to their needs and requirements.

“We believe we have selected the right technology to have one of the best mills in the world with a high level of safety, performance, and productivity,” says Araneda. “We have ordered a large portion of our technology and equipment from ANDRITZ simply because we believe they are the best option for our project; we

have experience with those technologies and we are confident we are getting a very good product, with a good outcome.”

Patrick O’Shea, ANDRITZ Pulp & Paper, Chile says, “It is an honor for us at ANDRITZ to be associated with Arauco’s MAPA project. We have completed a lot of successful projects with the company in the past and although we find them quite tough to deal with, they are always professional and open, particularly when any challenges or difficulties arise.

“At the moment; there are various levels of activities that ANDRITZ is engaged in regarding the project and we have

excellent communications strategy in place to monitor progress. Most important are the quarterly steering committee meetings that involve the senior management from both Arauco and ANDRITZ to make sure everything is running on schedule and to make sure this will be one of the most successful projects.”

At the time of our visit in February 2019, the ground works had begun, all the equipment had been ordered, and the process of hiring people who are going to work at the mill had just started. Araneda continues, “There is so much that goes into a project like this; the conceptual study took place six years ago. It then took

around five years to get environmental permits; then there is the basic engineering, and the selecting and buying of all the equipment. We are now working to start the daily engineering and the actual construction of the mill.

“But one of the most important areas we have when working on a project like this is the hiring of the people who are going to operate this mill. We have already been hiring a lot of young people, because this mill must be prepared for the future. In the case of MAPA, we are actually looking as far ahead as 40 years; we need people with the right skills, engineering yes, but also skilled in

the modern world of advanced technology and digital transformation.”

From the ANDRITZ point of view, people are at the heart of the MAPA project. O’Shea says, “Over the next months, we are hiring all the right people for this project, but also we will be bringing in our very best technical engineers and experts to the site to make sure that everything is in place to ensure this project goes as smoothly as possible.”

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Around 15 million person-hours, up to 8,000 workers on site during erection, and more than 7,000 truck loads of material are estimated for the project

