

# REMOVE RECYCLE RECYCLE REPEAT

ANDRITZ has become the market leader in systems for the removal of chlorides and potassium from the kraft recovery cycle, components which often reduce recovery boiler efficiency in terms of fouling or corrosion. Pulp giant Suzano recently started up an Ash ReCrystallization (ARC) chloride removal plant at its Aracruz unit in Brazil.

The main function of the ANDRITZ ARC chloride removal plant in pulp mill operations is to treat the ash that is collected from the ElectroStatic Precipitators (ESP). The plant removes harmful chloride and potassium from the ESP ash and returns valuable chemicals to the chemical recovery cycle. In the case of Suzano Aracruz, the plant supplied has been designed to handle 550 tons of ash daily.

Rafael Silva Pinto, Project Manager, Suzano Aracruz Unit, says, "At Suzano Aracruz we have three recovery boilers, and the role of the ARC is to remove the components that are harmful to the process, namely chloride and potassium. These two components are responsible for clogging the lines and cause corrosion of equipment, leading to low efficiency."

The accumulations of the elements such as chloride and potassium often lead to significant increases in the frequency of the recovery boiler shut-downs boiler due to plugging of the heat exchanger passages. Furthermore, the corrosion of the heat exchange surfaces causes expensive material damage.

"The ARC removes these components taking care not to lose the sulfate and sodium that are important to return to the system," continues Silva. "It processes

the ash that has been diverted to the plant by removing the harmful components and returning the uncontaminated part of the ash. Previously, the falling ash was returned to the process still containing the chloride and potassium. This means the incrustation of the boilers is now reduced which allows us to extend our campaigns."

Antti Frigård, Development Manager, Evaporation Technology at ANDRITZ adds, "This reduction of incrustation in the boiler will continue to improve in the long run as the ARC operates for longer periods. What generally occurs is that the chloride and potassium are reduced in the recovery cycle and boiler operation is even further improved."

ANDRITZ was chosen to supply the ARC, the second of its kind to Suzano, as it represented the best cost option for Suzano. The ARC+ plant was ordered in late 2021, and is complete with the latest improved and more efficient system when compared with the traditional ARC. The plant replaces ash leaching technology that the mill was using for its ash recovery requirements.

"When we compare the ARC technology with the ash leaching process, there are differing factors as the throughput capacity and efficiency rates are totally different," says Silva. "Ash leaching has a removal efficiency rate of around 45% compared to the ARC at around 95%."

The ARC plant was also chosen by Suzano for its energy efficiency, an important factor for the company. Silva says, "First and foremost, energy is money, and we are in a period of expensive energy. The less energy we are consuming, the more we can be selling to the grid. So it is very important to us that we have the most energy efficient technology operating in the mill and the less steam energy the ARC consumes the better."



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Development Manager  
Evaporation Technology at ANDRITZ



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→ **A CHALLENGING PROJECT – WITH A FAST START-UP**

The project to install the ARC plant was a challenging one; it had to be installed in a tight space between a maintenance shop, sulfate system, and the boilers, which meant limitations when it came to crane movements. There were also the usual challenges thrown up by the pandemic to contend with. Silva explains, "The main challenge was to install the ARC in a tight space with equipment still in operation and work in a corrosive area with a lot of vibration and heat. There was also a lot of scaffolding needed that complicated the task further. All in all, this project was a major challenge for ANDRITZ and the mill team.

ANDRITZ had sent a designer to the site early on in the project, and many details of the challenges were already identified at the assembly stage. During the project ANDRITZ spared no resources, and there were no holidays between Christmas and New Year to affect the productivity of the project. I have never seen so much commitment for a delivery. All this during the COVID pandemic!"

The plant started up in April last year and went into operation immediately. The ANDRITZ commissioning team introduced the ARC plant process in stages with stability being quickly achieved. "We were very impressed at the speed the plant went into operation," says Silva. "We saw the centrifuge running on the first day and we saw chloride coming out right away. As far as we know, this is the first crystallizer with this design installed in the world. We are very pleased and optimistic that we will achieve the expected performance results very quickly."

Silva concludes, "Suzano has a strong belief in ANDRITZ's ability to handle a project like this, and for decades the company has always provided services on time and with top quality."

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