SUCCESS STORY

ANDRITZ vibrating discharger and automation controls for pre-steaming bin at ADI 13.5'' plug screw feeder

PANELBOARD

PERFECT CHIP FLOW AND PRE-STEAMING EFFICIENCY

BEST SERVICE SOLUTIONS FOR SONAE ARAUCO PORTUGAL

ANDRITZ

ENGINEERED SUCCESS

The challenge: Pre-steaming bin with old-design

THE SONAE ARAUCO MILL MANGUALDE

The Sonae Arauco Portugal mill is located in Mangualde in Portugal and consists of two complete MDF lines.

A new continuous line is being installed for a yearly capacity of 250,000 m^3 and designed to produce thin MDF from 2 mm thickness.

SONAE ARAUCO & GTECH CORPORATE TEAM AND ANDRITZ PANELBOARD SERVICE

The GTECH Group Technology Corporate team at Sonae Arauco is responsible for evaluating the most suitable technical solutions for upgrades, modernizations, and for strategic projects with a global approach.

One of these projects was for modernization of the Mangualde refining system in line #1.

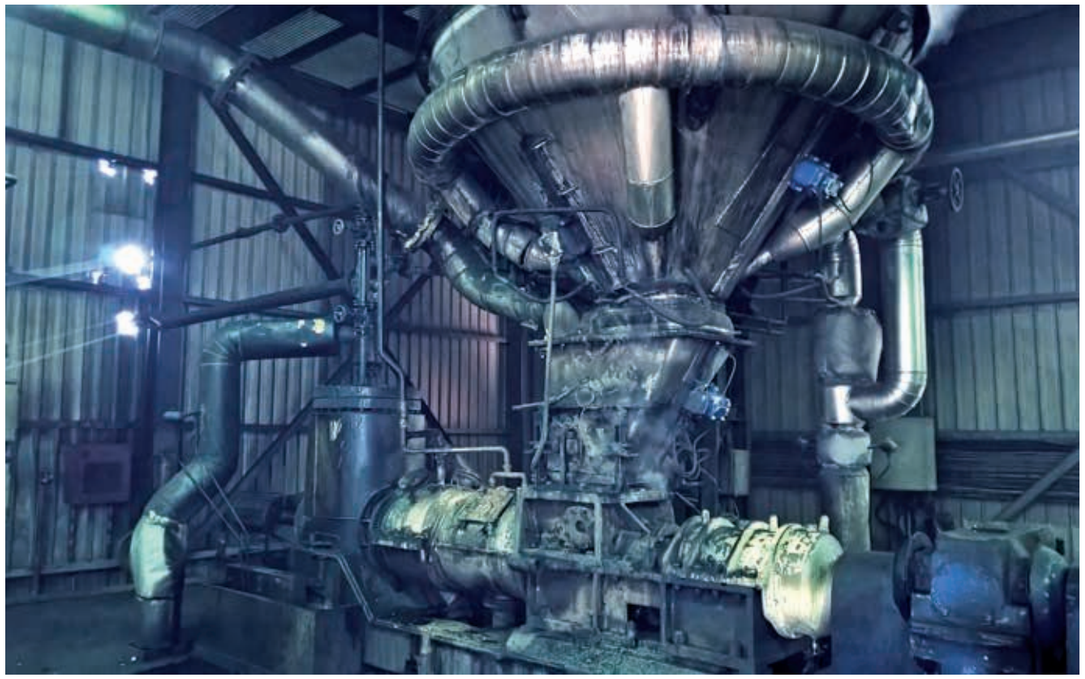
The original pre-steaming bin installed in this production line did not allow a regular material flow to the ADI 13.5" plug screw feeder.

This frequently caused so called "bridging" (chip blockages) and unscheduled plant stops in the entire production line with L46 refiner. Time-consuming maintenance activities with the related loss of production were also necessary to return to normal operations.

ANDRITZ Panelboard Service presented its technical solution during meetings at the plant and the company's headquarters and received the approval of GTECH.

ANDRITZ offered the best solution for Sonae Arauco!

ORIGINAL INSTALLATION / Pre-steaming bin old obsolete design



Original installation. Not symmetrical chute

The ANDRITZ solution: Vibrating discharger and automation controls

MODERNIZATION

Installation of the new vibrating discharger in center-steaming design and replacement of the existing pre-steaming bin and chute by new ones with the ANDRITZ design was the solution chosen to bring this old equipment up to state-of-the-art ANDRITZ standard.

An ANDRITZ automation solution was also implemented to monitor and regulate the level of the pre-steaming bin independently of the bulk density of the raw material. This included three weighing cells, one maximum level switch, one radar sensor, and the related components and technical support.

FULL CUSTOMER SATISFACTION

The entire pre-steaming bin was modernized by the customer under the supervision of ANDRITZ mechanical engineering and automation specialists.

Dismounting, new installation, and start-up were completed within the time scheduled during the summer shutdown, and the plant has been in production successfully with improved characteristics since August 2017.

ANDRITZ vibrating discharger in center-steaming design

Design comparison

A comparison of the two designs clearly shows the benefits of our solution.

OLD OBSOLETE DESIGN – FEATURES

- Over-dimensioned conical bin
- Discharger without cone inside
- Stiff construction: no springs
- Inefficient vibrating motors
- Discharger not centered
- Chute not symmetrical
- Steam supply from wall shell and not from the bottom of the bin
- Ultrasonic sensor only

RESULTS

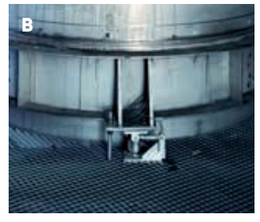
- Difficult chip flow and irregular feed to plug screw
- "Bridging" (chip blockages)
- Poor and uneven moistening and warming of the chips due to "First in – Last out" principle
- Pre-steaming not efficient
- Pre-steaming level cannot always be measured
- Difficult process with unscheduled plant stops

ANDRITZ STATE-OF-THE-ART DESIGN – FEATURES

- Correctly dimensioned, cylindrical bin
- Discharger with Chinese hat-shaped cone inside
- Flexible construction: spring assemblies
- Suitable vibrating motor
- Same axis for discharger, chute, and plug screw feeder housing
- Symmetrical chute
- Steam supply from the bottom of the bin as well as from the side and center
- Automation solution as a combination of weight cells and radar sensor

RESULTS

- Regular chip flow and constant feed to plug screw
- No "bridging" (no chip blockages)
- Softening of chips and even temperature distribution within chips and bin due to "First in – First out" principle
- Optimized steaming efficiency (prevents steam channeling)
- Level of pre-steaming bin can be measured and is independent of bulk density
- Proper and fully controlled process



A Radar sensor for ANDRITZ automation solution

B Weight cell

The ANDRITZ Refining Service Team – Global support for any kind of refiner

STRONG PARTNERSHIP

For successful development of this project and in order to support Sonae Arauco Portugal in the best possible way, it was necessary to pay clear attention to several specific aspects.

This meant being very careful right from the beginning and conducting an analysis of the existing design and plant layout, including on-site technical and process verifications, to offer the most suitable, customized technical solutions to the customer.

The ANDRITZ refining service team was in constant contact with Sonae Arauco Portugal at every stage of the project and was able to modernize the plant successfully to the full satisfaction of the customer.

The ANDRITZ refining service team has shown once again that it is a reliable and trustworthy partner, also when dealing with competitors' equipment.

"The vibrating discharger works very well and feeds in an extraordinary way, we have solved all feeding issues we had before. We can now use the pre-steaming and control the process in a perfect way."

ANTÓNIO JOÃO MARAVALHAS, Production Manager

On-site technical meeting for a strong partnership – From left to right: Alfonso Del Rio, GTECH Corporate Team; António João Maravalhas, Production Manager; Enrico Fuser, ANDRITZ Senior Sales Manager; Clemens Seidl, ANDRITZ Research & Process Technology

The new ANDRITZ vibrating discharger with new pre-steaming bin and new chute at Sonae Arauco Portugal plant in Mangualde – From left to right: Clemens Seidl, ANDRITZ Research & Process Technology; António João Maravalhas, Production Manager; Luís Fernando Santos, Maintenance Manager, Alfonso Del Rio, GTECH Corporate Team, Enrico Fuser, ANDRITZ Senior Sales Manager

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