

R E L E V A N T

FIBRIA / BRAZIL



Intelligent sensors, analysis of large data volumes (big data), and computer-aided augmented reality are powerful tools for optimizing industrial processes. The OPP system (Optimization of Process Performance) developed by ANDRITZ PULP & PAPER detects anomalies and deviations in pulp and paper production at an early stage by analyzing production data. Sheet breaks in pulp and paper production can now be predicted before they occur. Customers can initiate counter-measures in order to maintain reliable production.

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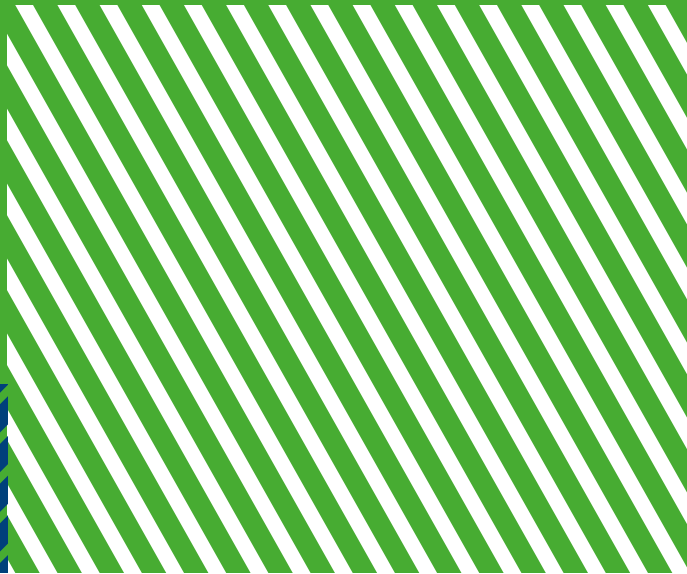
Fibria's Horizonte 1 mill in Três Lagoas, Brazil, at night. For Fibria's Horizonte 2 pulp mill, ANDRITZ is to supply the complete fiberline as well as the recovery island, including all relevant process steps.

+20 %

Reduction in
soda loss

+4 %

Production increase
by optimizing
combustion control
in the recovery
boiler



-10 %

Savings in
chemicals used

-8 %

Savings in caustic
soda due to optimized
valve maintenance



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ANDRITZ OPP, already used successfully in the market for many years now, has substantially improved production at the Aracruz mill: Productivity has increased, with significant savings in resources. As the illustration shows, this is mirrored in improvements for the customer in figures that are tangible and measurable.

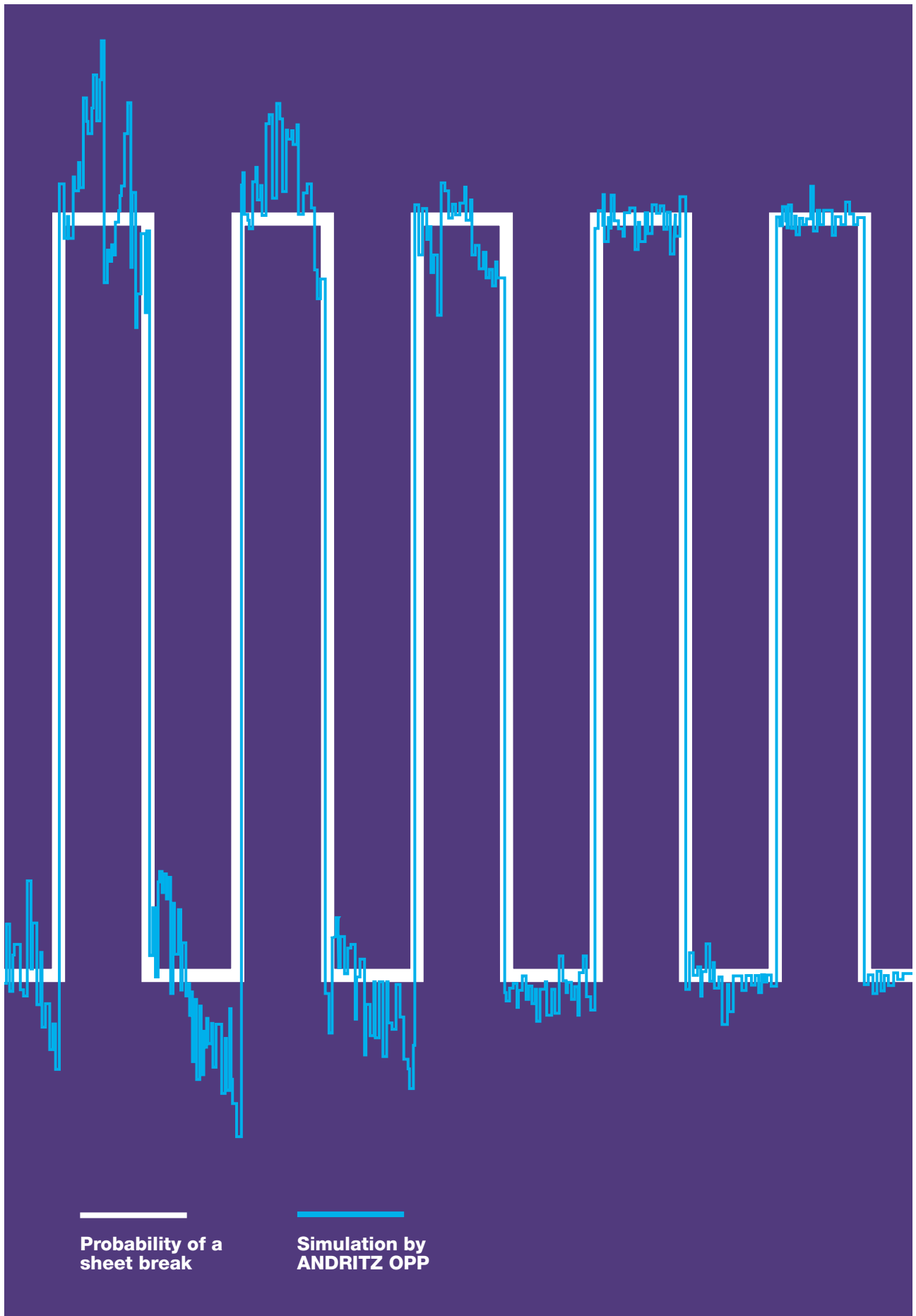


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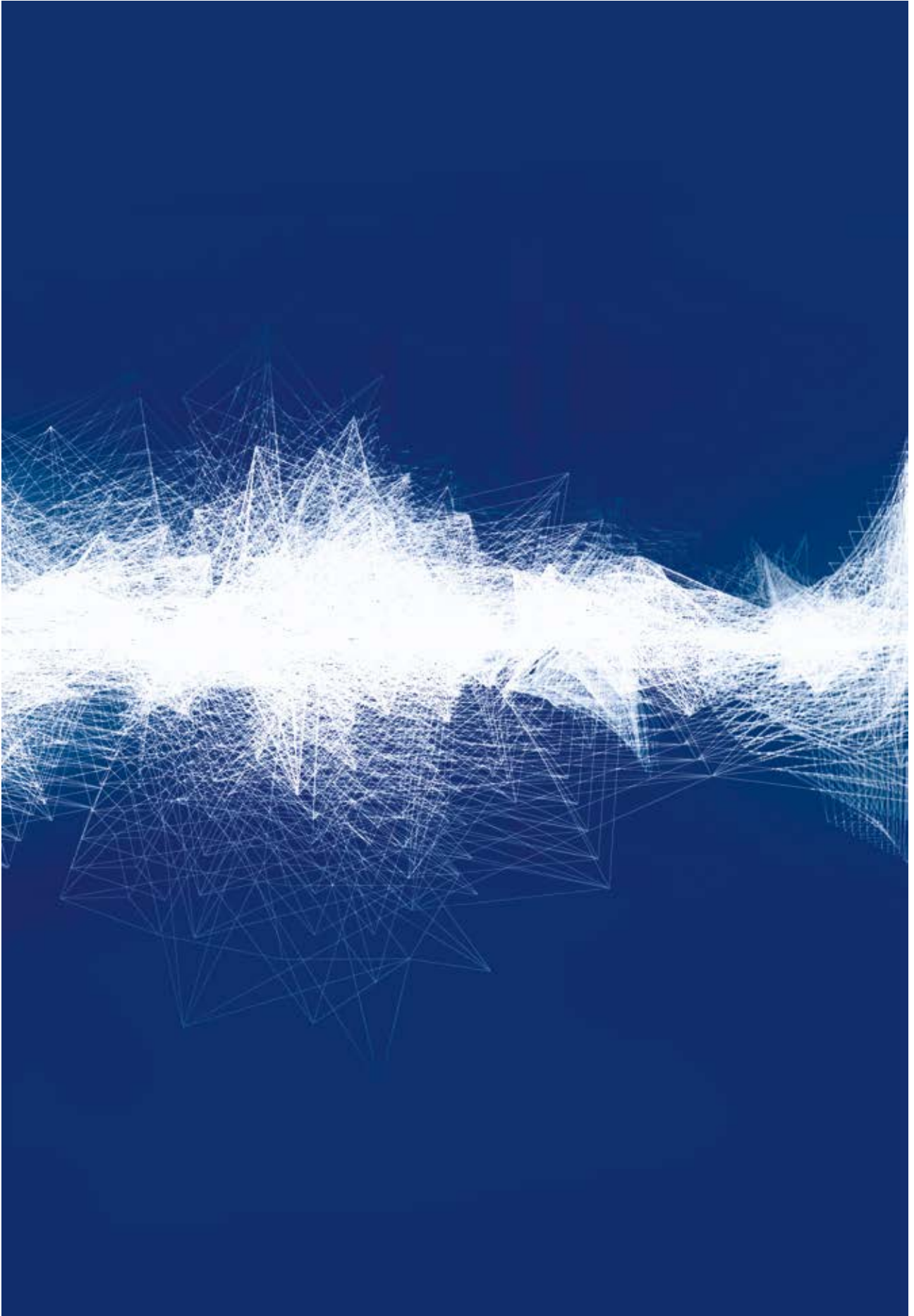
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Sustainably managed eucalyptus plantation in Brazil: The trunks of the trees are the raw material for Fibria's pulp production.



An enormous stream of data flows during production of pulp and paper. ANDRITZ OPP analyzes this data and can thus simulate system conditions on the basis of tried-and-tested calculation models and predict adverse effects on production. OPP “learns” from this and optimizes production, as is shown by the blue line in the diagram. “Machine learning” by means of simulation makes a substantial contribution towards production reliability.

If the paper web breaks during the production process, production must be stopped completely in order to repair the damage. This costs time and money. With innovative systems like ANDRITZ OPP, production outages of this kind can largely be avoided.



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A huge amount of data is produced during production processes. With modern computer technology, it is possible to understand and analyze the complexity and dynamics of this data and optimize the entire production process, as well as reducing adverse effects on production as best possible. ANDRITZ provides active support to its customers here.



ANDRITZ
Automation

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Augmented reality applications are already part of the daily routine in the pulp and paper industry. They enhance supply and functional reliability in many industrial processes. ANDRITZ offers a series of IIoT solutions. At the Aracruz mill, augmented reality is being tested in parts of the bleach plant.

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Many years ago, ANDRITZ developed a successful process that has been proven on the market to detect anomalies in pulp and paper production at an early stage by analyzing a large amount of production data. The so-called Optimization of Process Performance (OPP) system makes a substantial contribution towards optimization of the production process, for example by predicting and avoiding sheet breaks in the dryer.

Paulo Silveira, Industrial and Engineering Director at Fibria, reports on why his company is profiting from this IIoT application.

Mr. Silveira, companies are confronted again and again with the challenge of increasing their productivity. What is Fibria's approach here?

We have been working specifically on optimizing the processes in our mills for some time now. Here, we have tried various solutions, such as cloud and cognitive computing, big data analytics, and IIoT. As part of these efforts, we have been using ANDRITZ's OPP system for many years.

What advantages does Fibria gain from these technologies?

Our processes have become much more stable, so our mills are available for a longer time and operations are smoother. We can increase productivity, lower operating costs, and reduce the level of pollution from industrial effluent. All in all, the technologies make a considerable contribution towards enhancing production reliability.

What is the role of OPP in this process?

Our factories are usually located away from the large cities. So if something is not working, it is difficult to bring the necessary experts to our facilities quickly. ANDRITZ OPP helps us with this: The system continually evaluates a variety of data to predict certain events and how production will evolve. In this way, we can detect potential failures before they occur. And if there are any problems, we can provide the information and data required quickly and easily to the employees on site.



Wafer-thin and incredibly fast: paper web during production at Fibria.

How does it work exactly?

The system uses two core technologies: Smart sensors and big data. Smart sensors are mainly responsible for collecting the data. The ANDRITZ equipment is fitted with microsensors that measure pressure, temperature, vibration, flow, and signs of wear, for example, which is basically everything that can influence the paper production process and the lifetime of a machine. These data are collected and analyzed, which brings us to the second technology: big data. An analysis of the data shows us, for example, how a plant will react in two, three, or four hours.

How has OPP affected production?

Our processes have become much more stable; the availability of our equipment and machines has increased. And our spending on energy and chemicals has been reduced. In addition, we can react faster if we have to intervene in the production process. But generally, the need to do so is less frequent. For example: The OPP system allows us to estimate the whiteness of the paper one hour in advance. If the expected value does not match the default setting, we can make corrections in good time. This means that less waste is produced, and we can save resources and enhance productivity.

What are the advantages of this system over other comparable tools?

I think there are several factors that contribute towards its success: a local team with a great deal of specialist knowledge, good technical support, and performance-related remuneration. In addition, OPP is continuously developing further. It has potential. And OPP could be used at other critical points in the production process as well.

Was it very difficult to integrate the system into your factory production flows?

The biggest challenge was to convince the teams in the factories of the advantages and possibilities of the system. ANDRITZ's task was to demonstrate that the system is really effective and contributes to a significant improvement in performance. Initially, we only planned to use OPP at our mill in Aracruz, but we were so pleased with the results that, in 2011, we decided to implement it in the other mills as well. OPP makes an important contribution towards improving our process control.

What plans do you have for IIoT applications?

We expect to be able to further increase efficiency and productivity due to faster processing and linking of data using augmented reality and big data. In addition to the tools mentioned, we are also working with data mining, fuzzy logic, and neural networks.

What do you expect here from ANDRITZ?

As a specialist in this field of knowledge, we expect process initiatives from ANDRITZ. This means that we would like to have solutions that do not arise simply from our specific needs, but also offer us completely new alternatives. ANDRITZ is a valuable partner for us in this respect.

Paulo Silveira

Industrial and
Engineering Director
Fibria



Paulo Silveira has been working in the pulp industry for over 30 years and lives with his wife and two children in São Paulo.

»ANDRITZ OPP has made our processes more stable and increased our equipment availability.«