



**Aspen Mtell[®] Delivers Higher Throughput,
Greater Asset Availability and Lower
Maintenance Costs for Veracel**

Quick Implementation

of solution and recovery of initial investment (under 3 months)

Significant Reduction

in production losses and maintenance costs expected

Rapid Scaling

to 12 additional assets, then 20, and finally, enterprise-wide

CHALLENGE

As a result of unplanned downtime, Veracel faced production losses.

SOLUTION

Aspen Mtell, AspenTech's prescriptive maintenance solution, was selected and deployed to detect impending failures and avoid unplanned downtime.

VALUE CREATED

- Opportunity to recover initial investment in just three months
- Increased asset availability resulting in improved throughput of the plant
- Actionable insights helped keep delivery commitments



Introduction

Located in Bahia, in eastern Brazil, Veracel Celulose, S.A., is an agro-industrial company, integrating forest, industrial and logistic operations to produce an average of 1.1 million tons of pulp each year. Veracel takes an active role in restoring the Atlantic rainforest in Bahia. The company has been working consistently to improve the availability of its assets with a goal to reduce production losses from unplanned downtime. Traditional maintenance practices have been unsatisfactory for Veracel, especially recently, given the volatile economic conditions facing today's pulp and paper manufacturers.

On one hand, these companies are encountering price pressures due to declining demand for traditional paper products such as copy paper. Conversely, there has been increased demand globally for both paper packaging as a sustainable alternative to plastics, driven by e-commerce and for paper tissue, accelerated by the COVID-19 pandemic. These huge increases in demand mean pulp and paper manufacturers require that their equipment run more efficiently and for longer spans of time without the need for constant maintenance oversight.

Capturing Value Through Prescriptive Maintenance

Veracel continues to lead in the adoption of Industry 4.0 technologies. In 2020, they invested in several digitalization projects to improve asset availability and to reduce maintenance costs. Faced with production losses due to unplanned failures, Veracel partnered with AspenTech to detect asset failures using artificial intelligence and machine learning. Veracel deployed AspenTech's prescriptive maintenance solution, Aspen Mtell, with these objectives in mind: keep maintenance costs under control, increase availability and run assets with greater confidence to achieve higher throughput.

Aspen Mtell uses historical data to understand "normal behavior" of an asset and maintenance data to find key failure events. It deploys Machine Learning Agents to monitor assets 24/7 and alert when potential failures or anomalies are detected, weeks or even months in advance.

Veracel chose to focus on its most critical assets first—a vacuum pump and primary screening equipment—both of which had a frequent history of failures and were significantly contributing to product loss.

The vacuum pump experienced multiple high current and vibration events prior to its failure. While these events were addressed by the maintenance crew, the cause of failure was unclear—that is, until Aspen Mtell detected the event signature 32 days ahead and clearly identified issues related to the liquid ring seal. Such early alerts allow for proactive inspection and adjustment of process parameters to avoid equipment damage and increase production.

The primary screening process is a critical step in cellulose production for Veracel as it removes impurities from the pulp. A sudden increase in vibrations in this process had triggered inspections by maintenance crews. These vibrations ultimately resulted in shaft breakdown, affecting production capacity. Aspen Mtell was able to identify failure signatures by looking at data both upstream and downstream of the asset and provide a lead time of 47 days to maintenance crews in advance of potential issues. As a result, crews are able to plan and prioritize their time on critical tasks.

“AI- and ML-based Aspen Mtell has helped improve margins through production loss avoidance. Early warnings have enabled better maintenance planning, reduced maintenance costs and increased throughput to meet market demand. Mtell is now an important part of our Reliability Risk Management Process.”

-Ari da Silva Medeiros, Industrial Director, Veracel





Reduced Greenhouse Gas Emissions and Carbon Footprint

Veracel requires massive amounts of power, heat and steam for wood processing—920 GWh power, steam and heat is generated onsite in an auxiliary boiler by burning biomass, which would have been otherwise discarded as waste. Veracel also burns black liquor, a byproduct, in the recovery boiler to generate additional power and heat. The auxiliary and recovery boilers are essential to Veracel as any power generated not only supports internal operations and a nearby community but also helps lower greenhouse gas emissions and reduce environmental impact due to renewable feedstock usage.

Using existing data, Aspen Mtell was able to provide early warnings of potential high vibration events in the recovery boiler fan up to 59 days in advance. Aspen Mtell ensures higher boiler availability and consistent power generation while avoiding expensive emergency maintenance activities.

Integrated with Company's Existing Maintenance Strategy

Veracel has a well-structured Reliability Risk Management program. Integrating Aspen Mtell with this program has resulted in increased collaboration between reliability, maintenance and operations teams. Alerts from Aspen Mtell are reviewed, validated and prioritized by the reliability team. Recommendations are generated for the Operations & Maintenance (O&M) teams. O&M performs actions based on the insights generated by Aspen Mtell, thereby closing the alert loop. By integrating Aspen Mtell with their existing maintenance strategy, Veracel expects a significant reduction in production losses and maintenance costs.



Conclusion

Asset availability is key to remaining competitive in cost sensitive industries such as pulp and paper. Using both process and mechanical data, Aspen Mtell successfully detected impending failures up to 59 days in advance, providing financial benefit to Veracel through production loss avoidance. Early warnings enabled better maintenance planning, reduced maintenance costs and increased throughput to meet market demand. Aspen Mtell is now an important part of Veracel's Reliability Risk Management Process.

Aspen Mtell was deployed in less than two months and is currently monitoring 12 assets, including pumps, filters, screening equipment and drum washers. Quick implementation leading to recovery of the initial investment within three months, has enabled Veracel to scale the solution across 20 additional assets with a goal to extend the protection enterprise-wide in the near future.





About Aspen Technology

Aspen Technology (AspenTech) is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets safer, greener, longer and faster.

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