Eldorado Brasil
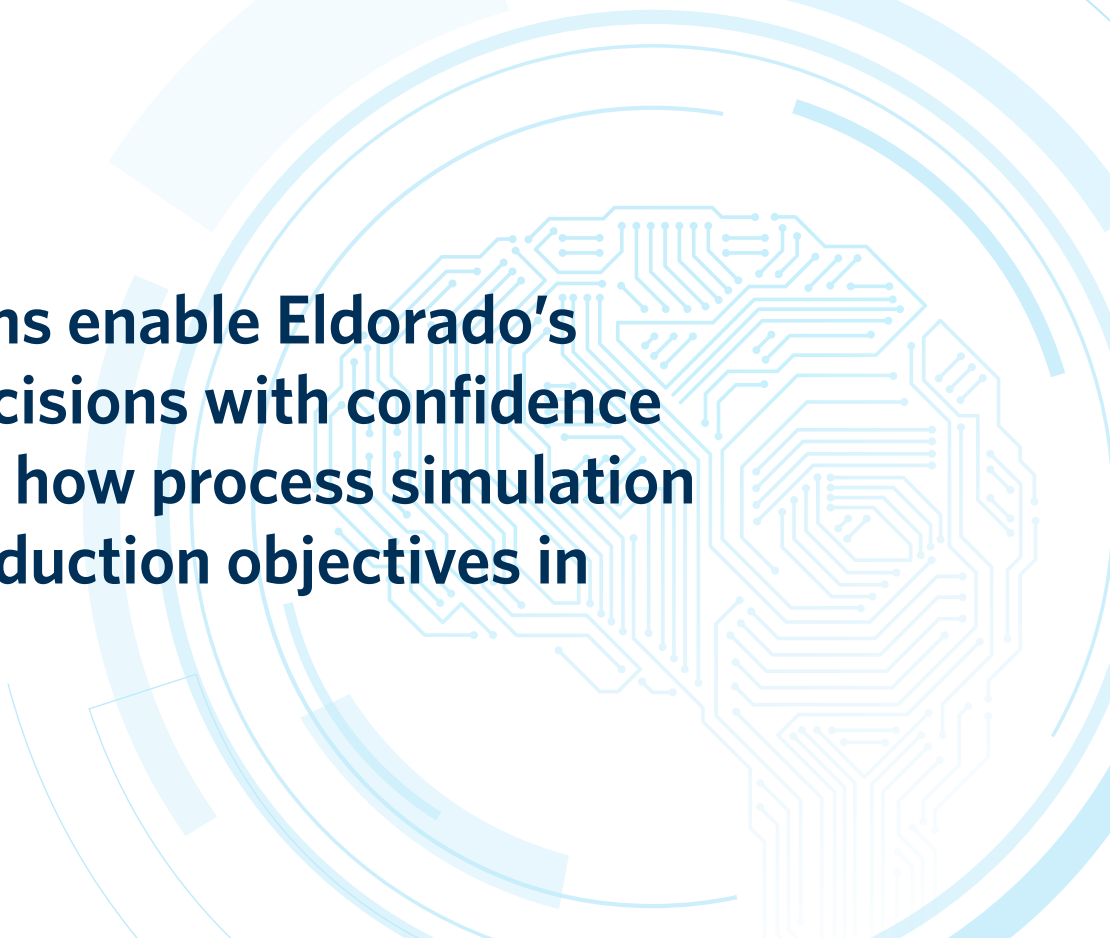
Brazilian Pulp Producer Improves Planning, Decision-Making with Industrial AI

AspenTech's solutions enable Eldorado's planners to make decisions with confidence while demonstrating how process simulation can help achieve production objectives in the pulp industry.

CHALLENGE

- Operational data provides limited insights to optimize pulp processes and achieve production objectives.

- Feedstock quality variations have a significant impact on the production and consumption of chemicals in the pulping process.

SOLUTION

- **Aspen AI Model Builder**™ to create Hybrid Models for each of the nine different sections of the plant by leveraging process data.

- **Aspen Plus**® to model the complete process and calculate the global mass balance to help support monthly planning decisions, leveraging Industrial AI through **Aspen Hybrid Models**™.

VALUE CREATED

- Planners are able to make decisions with confidence.

- The team can evaluate production based on the expected wood quality, supporting raw materials purchase decisions needed to maximize production.

Overview

Founded in 2010, Eldorado Brasil has quickly become a leading producer in the pulp sector, with customers in the Americas, Europe and Asia. The company specializes in high quality pulp used in the manufacture of packaging, toilet paper, paper for printing and writing, and special papers. Eldorado delivers unique solutions, including self-managed forests and self-generated energy from biomass and reuse of resources for carbon reduction, to support sustainability goals.

Overcoming Challenges, Improving Operations

Three top challenges facing Eldorado, like many pulp manufacturers, are feedstock quality, process complexity and a traditional reliance on operational data for optimization. Feedstock quality variations can significantly impact the amount of cellulose produced and chemicals consumed during the pulping process. When considering ways to optimize this process, process engineers must often rely on a limited amount of information, such as density and water content of wood chips. The second challenge is the complexity of pulping—the interconnectedness of fiber production and recovery of chemicals used in the process. Lastly, relying solely on operational data can provide limited insights to successfully optimize pulp processes and achieve production objectives.
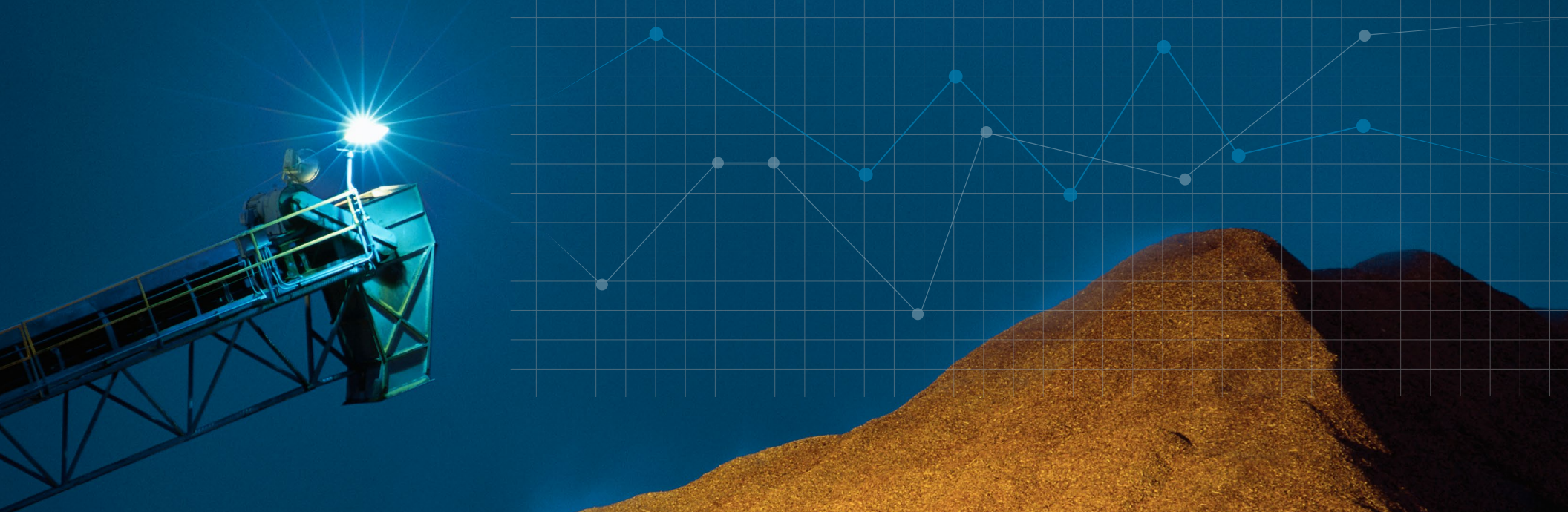
Identifying the Best Modeling Approach
to Address a High-Value Use Case

In a trial using AspenTech products, Eldorado's innovation and technology engineers developed a model of the company's evaporation plant. The model was based on the plant's historical behavior, had the flexibility to manage different configurations and conditions and provided insights to help the team identify steam losses. Due to the complex reactions taking place in the process and the wide variation in the quality of raw materials, Eldorado implemented an Industrial AI approach using Aspen Hybrid Models and Aspen Plus. By combining operational data, AI modeling and first-principles simulations, the team created a model of the plant's process that would calculate the global mass balance. While the model created high value in operations, it is also used for strategic planning decisions.

Engineers leveraged a comprehensive raw material analysis and Aspen AI Model Builder to develop a comprehensive model for each of the nine different sections of the plant. These nine models were deployed into Aspen Plus to close the mass balances across the complete process.
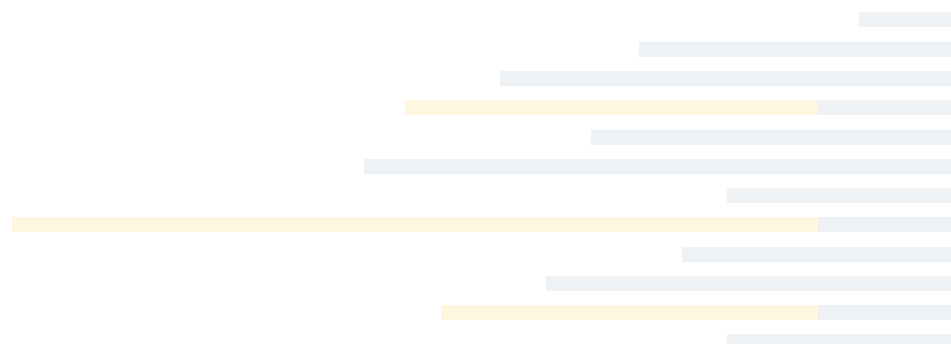
Supporting Planning Decisions with Confidence

Eldorado has been using the process model to evaluate production based on the expected quality of the feedstock and supporting raw materials purchase decisions to maximize production.

At the end of each month, model accuracy is reviewed to confirm that the results are still valid. After using the model for almost two years, Eldorado can now make predictions with a 0.15% error with respect to observed production. This highly accurate model enables planners to make decisions with confidence while demonstrating how process simulation helps to achieve production objectives in the pulp industry.

The model will be recalibrated after a planned revamp to increase plant capacity, enabling the simulation to continue predicting the process under the new conditions.

Expanding the Use of Aspen Plus for Added Benefits

The use of process simulation technology has been well received by Eldorado, especially after its engineering team saw the benefits firsthand. The company is looking to continue using Aspen Plus to develop more detailed rigorous models for the different parts of the process.

The objective is to optimize operations with the help of the models, maximizing pulp production, reducing fiber waste, and minimizing water and chemicals consumption in the process.
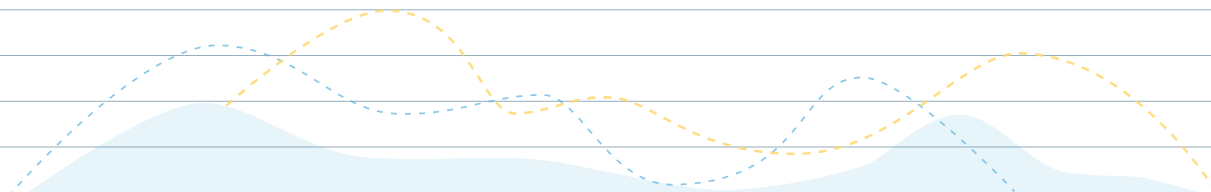
About Aspen Technology

Aspen Technology, Inc. (NASDAQ: AZPN) is a global software leader helping industries at the forefront of the world's dual challenge meet the increasing demand for resources from a rapidly growing population in a profitable and sustainable manner. AspenTech solutions address complex environments where it is critical to optimize the asset design, operation and maintenance life-cycle. Through our unique combination of deep domain expertise and innovation, customers in asset-intensive industries can run their assets safer, greener, longer and faster to improve their operational excellence.

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