MOVING FROM DESCRIPTIVE TO PRESCRIPTIVE ANALYTICS USING AI: SUCCESS STORIES IN PAPERMAKING

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ABSTRACT

A new approach to modernizing papermaking operations is available by using artificial intelligence (AI) and predictive analytics to provide real-time measurements and feedback to optimize production qualityand efficiency. Unlike traditional papermaking operations that rely on laboratory tests conducted overtime OR periodically, this approach uses machine learning algorithms that provide instant feedback onkey process indicators. Instantaneous feedback allows operators to make informed control decisions andappropriate and timely adjustments to improve efficiency and reduce off-quality production.

This presentation discusses how AI can be used in papermaking operations, how it can be used to informcontrol decisions, and what its potential benefits are. Specifically, the team will discuss how AI enables predictive analytics by providing real-time understanding of indicators such as speed changes, kappa swings, and chemistry changes. The authors also explore the potential use of AI for utilizing existing data from laboratory tests to further refine predictive accuracy. Finally, the team presents an examplecase study from a large paper mill that implemented this approach and discuss their results, including efficiency gains and quality optimization.

AI and predictive analytics can bring greater efficiency to paper machines. By using wet tensile tests, it is possible to adjust wet strength chemistry for optimization and to adjust strength targets for better control. Moreover, strength, smoothness and basis weight measurements, in tandem with caliper measurements, enable efficient basis weight optimization. Lastly, using predictive analysis for spore tests, which require more than two days to complete, results in more efficient microbiological (MB) control. AI and predictive analytics, when successfully implemented, have great potential to optimize paper machines.

Overall, this presentation provides a comprehensive overview of how AI can be applied for predictive analytics in papermaking operations and discusses its potential benefits for improving machine efficiency and optimizing quality control. It is intended for those who are interested in understanding the impact of advanced technologies on modernizing papermaking.

Keywords: Artificial Intelligence, papermaking operations, predictive analytics, quality control optimization