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Artificial Intelligence-based Autonomous Control for Process Industry Improvement: A Case Study for Chemistry Control for Tissue Mill

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Problem/Challenge: The goal of this project was to autonomously control a part of a tissue mill's continuous manufacturing process using artificial intelligence and predictive analytics to reduce raw material consumption while maintaining the product quality within the specification limit. The project objective was to overcome the challenge within the operator's ability to act quickly with the dynamically changing manufacturing processes and deliver continuous process improvement with autonomous chemistry control.

Solution: The ProcessMiner AutoPilot real-time predictive system solved the problem by making recommendations and prescribing solutions for the paper mill to minimize raw materials and reduce costs while maintaining both speed and product quality.

During the onboarding process, the ProcessMiner system connected with the manufacturing plant's data stream to initialize and deploy an adaptive and evolving artificial system. The system was ready to go as soon as the platform was launched.

The results were unprecedented in manufacturing (as quoted by the plant) achieving a 25% reduction in wet strength chemical and 98% adherence to the target specification. Autonomous manufacturing using AI with machine learning allowed for improved product quality, optimized use of raw materials with reduced water and energy consumption. Using a closed-loop controller in conjunction with quality parameter predictions, the mill was able to control its strength chemistry autonomously to ensure optimal chemical feed and adhere to target parameters.

Primary authors: Dr RANJAN, Chitta (ProcessMiner); PAYNABAR, Kamran (ProcessMiner)

Co-author: HAMMOND, Kate (ProcessMiner)

Presenter: PAYNABAR, Kamran (ProcessMiner)

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