EWP Mill Increases Press Speed By 4% Using Ai2Infinity's END GAME AI/AML Platform

Background:

A major engineered wood products (EWP) producer identified a pilot project at one of its EWP mills. The project is designed to demonstrate the value of advanced machine learning ("AML") derived prescriptive analytics in optimizing the performance of one of its press assets, thereby optimizing the run rate of the press, reducing downstream defects and, ultimately, maximizing production. The pilot targeted a 1% increase in press speed as a minimum objective of the project. The expectation was that these operational improvements can be achieved through data informed insights using machine learning models informed from historic and real time data. The hypothesis was that the use of machine learning tools can help drive optimization throughout the company's EWP operations.

Objective:

The ultimate objective of the pilot project was to determine the value of AI/AML tools in informing the mill's operating team of step(s) to be taken in real-time to optimize press production while reducing defects. To this end, Ai2Infinity's END GAME AI/AML platform was deployed to collect and analyze data from one of the mill's presses, to answer the following questions:

1) What is our opportunity to increase production volumes?
2) What is our opportunity to reduce defects?
3) What are the key variables that we can change to drive improvement in the results?
4) What can we change on the front end of the process to optimize results?
5) What broader opportunities can be identified for operator efficiency and replication?

The following KPI's were established to measure success:

a. Volume increase due to Run Rate recommendation differential as compared to current.
b. Decrease in defects found.
c. Company satisfaction – How confident is the mill that there are efficiencies to be gained by using END GAME's AI/machine learning derived prescriptive recommendations? Could END GAME be used by the mill should it decide to progress towards a closed-loop solution with the aid of the analytical models?

Project:

The END GAME platform was installed on two virtual machines (VMs) in the mill's PCN and began collecting real-time data, every minute on one VM and every 15 seconds on the other, from the press's PLC. While one-minute data was deemed sufficient for the POC, the project team felt that 15-second data would be desirable if the mill ultimately progressed toward AI/machine learning guided closed-loop control.

END GAME mined the operating data for patterns and correlations in asset performance. END GAME then analyzed the data and discovered the relationships between the key variables to be included in the AML derived prescriptive analytics optimization model. END GAME's prescriptive model is dynamic in nature, tracking approximately 25-30 variables. After END GAME had collected sufficient data to build a reliable prescriptive model, the team began conducting a series of trials to test the reliability of the model against the various operating conditions at the site and the product variations run on the press. The dynamic modelling capability within END GAME seamlessly learned as it encountered different operating conditions and, given those conditions, recommended new set points to the operating team through a dashboard created within END GAME. Once the plant team was comfortable with the recommendations derived from the optimization model, those recommendations were implemented by the operating team.

Results To Date:

The EWP mill increased its press speed by 4%, using the AI/AML generated recommendations from End GAME. This represents a 400% improvement to date on the targeted minimum objective of the project, translating into an approximately $3M increase in productivity for the mill. Prior to this project, the conventional wisdom was that slower press speeds led to fewer defects. END GAME demonstrated that, in most cases, by using prescriptive analytics, press speeds could be increased without a corresponding increase in defects, leading to a direct increase in operating efficiency measured by production volumes.