Project No.	Project Title	
2021 -01-181	Failure predication in manufacturing at HP Indigo	
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Abstract

The manufacturing process of HP Indigo's digital presses is a complex procedure that includes the assembly of the press from a variety of components that must work together to achieve high print quality. An essential part of the manufacturing process is integrating the Writing Head to the digital press. The Writing Head is an essential component that exists in all digital presses produced by HP indigo. This component is manufactured on a separate manufacturing line and integrated into the digital press at late stages of the manufacturing process. The integration of the WH to the digital press is time-consuming and has a relatively low yields that stand at around 70%. In the event of the WH failure, manufacturing stops and integrators begin the integration of a new WH. Discovering a faulty WH makes the manufacturing time longer and causes the need for rework in the integration process, resulting in higher manufacturing costs.

At the first stage of the project, we analyzed the integration process using a systematic methodology which included problem definition cause analysis and the formulation of the solution. Since previous statistical analyses done by HP were not able to find interesting correlations between parameters of the machine and the result of the WH integration, the solution we suggested was to combine the power of historical data with machine learning technology to better understand, monitor and optimize the manufacturing process**.**

The main goal of this project was to minimize manufacturing time and costs. To achieve this goal, we built a predictive model, to predict whether the WH will succeed in completing the integration process successfully. This model will make the prediction at an early stage of the integration process and indicate the probability of failure. The output of the model will be available to the integration team and support their decision of whether to continue the integration with the WH. The objective of this project is to reduce the amount of WH failures in the integration process, thus reducing the average manufacturing time of digital presses and achieving the goal.

Keywords: HP Indigo, Machine Learning, Predictive Maintenance, Random Forest, Decision Tree.