AMAZON – PROCESS RELIABILITY

Improving Reliability to Ensure Operational Readiness

Student Team:
Gonzalo Enrique Luna Jacobs – Master of Business Administration
Priti Singh – Master of Engineering in Global Automotive and Manufacturing Engineering

Project Sponsor:
Conrad Hernandez – Reliability Manager, Amazon Logistics

Faculty Advisors:
Hyun-Soo Ahn – Ross School of Business
Albert Shih -– College of Engineering

Amazon Logistics (AMZL) is the fastest growing division within Amazon, as this business unit fulfills the final mile commitment of accurate and timely deliveries. Strategically, AMZL is the closest Amazon gets to its customers by delivering millions of parcels to doorsteps seven days a week. This is possible through the AMZL Reliability, Maintenance, and Engineering (RME) group that ensures process and equipment reliability to operations.

To ensure Operational Readiness of the Last Mile, the last step of Amazon's package delivery supply chain, the Reliability and Maintenance Engineering team is strategically developing a competitive advantage by deployment of proactive reliability solutions. The RME teams support the fast growing number of delivery stations that complete the customers experience by sorting, routing, loading, and finally doorstep delivery by developing a competitive advantage through proactive reliability solutions.

To support these efforts, the Tauber Team worked to analyze the vast reliability data and build a Reliability Index Scoring tool. In order to do that, the team conducted stakeholder interviews and analyzed historical metrics data. The RIS tool utilizes quantitative and qualitative metrics to assess Delivery Stations' Operational Readiness in four focal areas - Equipment Maintainability, Process, Human, and Equipment Reliability. In addition to showing the reliability status of every Amazon asset, this tool deploys a machine learning model that predicts the likelihood of disruption that affects workplace safety and on time delivery. An automated online dashboard will help in identification of specific reliability focal improvement areas. The outputs will quickly guide the user, in order to facilitate reliability tactics.

The tool will utilize reliability inputs to minimize rolled volume and downtime at delivery stations by 10% through correctly predicting 87% of incidents that cause safety and financial risk. The dashboard will ensure continuous improvement through highlighting the weak areas for each site, which will serve as a Forward-Looking indicator through a "Risk Event likely" forecast.