AI 4 Manufacturing Canada

Case Study

HARNESSING AI TO REDUCE GEARBOX FAILURE DOWNTIME

Canvass AI in partnership with a leading Oil & Gas company collaborated to implement and scale predictive maintenance platforms to reduce unplanned downtime. AI-based predictions were used to detect potential gearbox failures approximately 12 to 16 days ahead of any catastrophic occurrences. This application led to six figures cost savings from reduced production loss and repair costs per incident.

CANVASS

Who is Canvass

Canvas Analytics Inc. is building AI platforms specifically for the Industrial sector, catered to leading oil and gas, chemicals and manufacturing companies to unleash the value of data to increase their operational performance, outperform their competitors, and set new sustainability benchmarks.

Introduction

A leading North American Oil and Gas company, focused on providing safe, reliable, and affordable energy, is using Canvass AI to predict gearbox failures within its conveyor belt lines to reduce maintenance costs and prevent unplanned production downtime.

To optimize Overall Equipment Effectiveness (OEE), improve maintenance strategies and reduce unplanned downtime, industrial industries need better insights into their operational data. Maintenance strategies generally fall into three categories: reactive maintenance, preventative maintenance, and predictive maintenance.

Challenges

Production in an oil field is heavily dependent on the availability and reliability of the equipment used on-site. Ensuring the efficient management of gearboxes is just one area that can lead to an entire extraction line being stopped.

The majority of unplanned gearbox downtime is related to bearing issues. Bearing issues eventually result in complete failure of the bearing and gearbox. These issues may be caused when lube pumps lose their ability to be effective, causing gearboxes to generate excessive heat, which require the use of radiators to cool the gearbox.

At times, the radiators cannot effectively cool the gearbox, resulting in elevated temperature alarms and the continuous operation of cooling fans, and ultimately leading to a complete gearbox failure. This issue is a multivariate problem, requiring multiple sensor measurements leveraging AI to predict such a failure with accuracy.

https://www.canvass.io

Application Brief:

Gearbox failures are predicted approximately 12 to 16 days in advance. The application produces six figures cost savings from reduced production loss and repair costs per incident, while consistently meeting demand.

Enablers

With maintenance costs in the Oil and Gas industry ranging from 15-70% of total production costs, companies must develop a well-implemented and scalable maintenance strategy to prevent unexpected downtime, improve the overall reliability of assets, and reduce operating costs.

Using Canvass AI, this Oil and Gas company is using insights from the gearbox failure predictions to effectively enhance maintenance activities, reduce production loss, and increase the operational safety of the gearboxes. Using a minimum amount of data comprising sensor measurements such as ambient conditions, bearing temperature, motor currents, oil temperature, and other process data, and maintenance logs of gearboxes, the maintenance engineer has developed an AI solution that predicts the probability of a gearbox failure within the optimal timeframe to ensure that the gearbox OEE is maximized without jeopardizing unplanned downtime.

Solution

Using the Canvass AI platform, the maintenance engineer is using AI-based predictions to detect potential gearbox failures approximately 12 to 16 days ahead of any catastrophic occurrences. In addition, the models developed in the Canvass platform do not provide any false positive alarms – which is a significant differentiator between AI-based predictive maintenance models and condition-based predictive analytics methods, where users often get many false alerts.

Guided by these reliable predictions, the operator is proactively implementing physical inspections of gearboxes, fixing any issues before an actual asset failure occurs, and reducing unnecessary maintenance activities and unplanned downtime.

With the implementation of the Canvass AI platform, this Oil and Gas company has enhanced maintenance activities to fix issues before significant gearbox failures. As a result, it has reduced production loss due to gearbox failures – leading to hundreds of thousands of dollars in cost savings from production loss and repair per incident.

Ready to Reduce your Downtime?

Reducing maintenance cost and unexpected downtime through digitization will positively enhance Canadian company's competitive advantage. Is your company ready to take the next step? Learn more today by connecting with the Canvass Analytics team.

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