

## Case Study

# IMPROVE SAFETY AND ASSET RELIABILITY VIA PREDICTIVE MAINTENANCE

Canvass AI has collaborated with a large oil and gas operator to decrease production losses by deploying predictive maintenance. The partner company was successfully able to predict >80% of failures with sufficient advance notice for planned maintenance and with zero false alerts. Resulting in significant cost savings, estimated to be between CDN \$50,000-\$75,000 in direct repair costs and increased production by 3-10 days.

# 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

The large oil and gas operator faced heavy production losses year after year due to frequent equipment breakdowns particularly in their separation and transportation units. Unplanned downtime meant costly emergency trips, spare parts & production disruptions. Improving asset and system reliability is a key initiative for the company and the reliability engineers had a list of top priority critical equipment they needed to proactively maintain to improve asset utilization and productivity.

The problems were diverse across different equipment types such as multiple high-speed disc centrifuge separators frequently experienced unexpected nozzle failures, while crushers and conveyors had motor and bearing breakdowns.

## Challenges

Zero False Alerts was the target for solution performance to build confidence with the maintenance team. Canvass AI workflow allowed for better data cleansing and applied best AI techniques to solve the problem.

Real-time, secure connectivity. High frequency data processing and predictions were needed to meet the scheduling requirements for planned maintenance. The data connectivity needed to be real-time and secure.

Changes to SOPs needed to be managed and rolled out. This was simplified by Canvass AI Platform's intuitive workflow designed for the industrial workforce and complemented by Canvass teams onboarding program designed to gain support and trust from the maintenance team.

<https://www.canvass.io>

# Application Brief:

Predictive Maintenance solutions with the Canvass AI Platform were applied to key process and mechanical equipment including centrifuge separators, crushers, and conveyors to prevent unplanned downtime, improve asset reliability, safety and productivity at an upstream oil production facility of a large oil and gas producer.

## Enablers

The large oil and gas operator faced heavy production losses year after year due to frequent equipment breakdowns particularly in their separation and transportation units. Unplanned downtime meant costly emergency trips, spare parts & production disruptions. Improving asset and system reliability is a key initiative for the company and the reliability engineers had a list of top priority critical equipment they needed to proactively maintain to improve asset utilization and productivity.

The problems were diverse across different equipment types such as multiple high-speed disc centrifuge separators frequently experienced unexpected nozzle failures, while crushers and conveyors had motor and bearing breakdowns.



## Solution

The Canvass Platform's Predictive Maintenance solution was used to contextualize and analyze all relevant data including power draw, flow, temperature, ambient conditions and maintenance logs for each asset. Solutions were implemented, tested and validated on one asset at a time before moving on to another for immediate ROI which increased exponentially as the solution extended to cover more assets.

The platform identifies precursor data patterns that lead to a breakdown, and the solution models provide early prediction and prescriptions to ensure timely maintenance resulting in smooth operations, longer asset life and safer conditions.

The Canvass AI Platform processed all sensor measurements with a high frequency and achieved high accuracy predictions with 0 false alerts.



# Implementation

Process engineers, reliability engineers and asset operators were the main stakeholders and domain experts who worked closely with the Canvass AI team. Additionally, an industrial solution architect worked as the mentor to guide the group.

The implementation started with offline analysis of multiple years of operational data and maintenance logs with recorded failures of individual assets. Using the Canvass AI Platform, engineers configured the predictive maintenance solution for these mechanical assets. The initial predictions of failures were validated to prove the performance and accuracy of the solution.

The Canvass AI Platform was then connected to real-time data using Canvass AI Live through secure data protocols. Over time the implementation was expanded to include more assets.

## AI Solution Architecture:

Canvass AI Platform was used to ingest historical plant data, ambient and log data, and to cross reference outliers, such as scheduled downtime or maintenance, with the operating log. Domain experts were guided by the intuitive Canvass UX to analyze and contextualize the data to align with known events such as breakdowns and maintenance.

Using readily available forecasting techniques in the Canvass AI Platform, the solution was able to predict >80% of failures with sufficient advance notice for planned maintenance and with zero false alerts. Furthermore, Canvass AI's Explainability feature was used to capture the root cause of each failure. The model explanations were actionable and helped the stakeholders preemptively troubleshoot the issue in a timely manner to prevent unexpected breakdown of the assets.

The use of the Canvass AI platform makes every solution scalable to more assets, people, processes and data.

Building new models based on the data from sensors on individual assets took less than a week using Canvass AI. At present the solution has been scaled to support multiple mechanical assets.

The solution is also able to learn and discover new root causes that could result in failures or other disruptions. As the solution expands to cover more root causes, assets and processes, stakeholders are relying more on AI to optimize operations and maintenance activities.

# Impact

Preventing breakdowns in a timely manner is a priority for the company. Today, it is experiencing smoother maintenance schedules and operations, increased productivity and potentially extended asset life.

Each prevented breakdown is estimated to save between CDN \$50,000-\$75,000 in direct repair costs and increase production by 3-10 days. By accurately predicting breakdowns in a timely manner, the operations team responds with few quick hours of maintenance that typically require no spare parts. Scaled across all the assets to be covered by the Canvass AI solution, the benefit is estimated at multiple millions of dollars saved annually.

## Are you Ready to Understand your Data?

Implementing predictive maintenance technologies can alleviate unexpected and costly downtime, detect problems before they happen, upkeep an accurate maintenance schedule, and improve safety throughout the workplace for technicians and operators. Canadian manufacturing companies are able to increase productivity and reduce cost by understanding their equipment and employ scalable solutions. Is your company ready to take the next step? Learn more today by connecting with the Canvass AI team.

### **Canvass Analytics Inc.**

[info@canvass.io](mailto:info@canvass.io)

14 Duncan Street, Suite 202.

Toronto, ON

M5H 3G8

