

# Identifying Defects Early: The Power of Predictive Maintenance



A huge range of issues has the potential to delay, disrupt, and derail manufacturing operations. If you can identify these issues at the earliest opportunity, you can maintain an efficient production process.

Traditional monitoring methods struggle to pick up issues such as performance deviations, short-term disruptions, and the failure of critical components such as filtration membranes.

Our approach to predictive solutions provides a proven answer to this problem.

## The Challenge

Our predictive maintenance software was tasked with improving the efficiency of a facility's filtration system. We monitored the existing process from the outset and discovered various issues, including:

### o Subtle Performance Deviations

The traditional monitoring methods in use prior to MontBlancAI's involvement were failing to catch minor fluctuations until productivity had already suffered.

### o Late-Stage Membrane Failures

Defects in filtration membranes were only identified after the membrane cracked and completely failed.

These issues resulted in a halt to production that lasted several days. New membranes had to be ordered, delivered, and replaced, which had a huge impact on the facility's operation.

MontBlancAI offered a data-driven solution based on predictive maintenance.

# The Solution

The facility deployed MontBlancAI's advanced machine learning models to detect anomalies and promote predictive maintenance faster and more effectively. This almost immediately transformed the way the facility monitored its processes and equipment. Our non-intrusive predictive maintenance tools delivered immediate visibility without disrupting operations.

## ○ Real-Time Process Anomaly Detection

ML models were trained on historical production data to establish normal patterns and control limits. They then monitored live data to detect deviations instantly, alerting teams to subtle disruptions previously overlooked. MontBlancAI ensured rapid responses to anomalies, preserving process stability and output quality.

## ○ Predictive Maintenance for Membranes

Overlaid pressure curves from multiple batches defined standard performance declines. This ensured that the AI could spot early warning signs, including accelerated pressure drops and inconsistent loop behavior—days before failure. Early detection allowed preemptive maintenance, preventing costly defects and downtime.

## The Outcome

After just a few weeks, it became obvious that our AI-powered intelligent manufacturing software had transformed the facility's operations.

### **Faster Response to Anomalies**

Real-time alerts ensured key personnel could take immediate action, minimizing downtime and disruptions.

### **Early Defect Detection**

Predictive insights were able to identify membrane issues several days earlier than the average, just a few weeks earlier. As a result, the facility was able to avert multiple failures.

### **Reduced Downtime**

Proactive maintenance seriously reduced unplanned stops and raised the overall batch quality.

### **Enhanced Visibility**

Clear, site-wide insights across batches and equipment streamlined decision-making and promoted accountability.

## Key Takeaways

The intelligent manufacturing solutions delivered by MontBlancAI revolutionized the facility's approach to maintenance. Once a cutting-edge predictive maintenance solution was introduced, the team didn't have to wait until failure before acting.

We learned a lot during the course of this project, including:

## ○ AI Uncovers Hidden Risks

We exposed subtle anomalies through real-time ML analysis, proving that seemingly small production issues can have big impacts.

## ○ Early Detection Saves Costs

Predictive maintenance caught membrane defects early, slashing downtime and quality risks.

## ○ Non-Intrusive Tools Maximize ROI

Our intelligent manufacturing platform's seamless integration delivered powerful insights without costly system overhauls.



## **Claim a Significant ROI with Our Predictive Maintenance Solution**

We empowered a facility to catch anomalies and defects early, boosting reliability and efficiency.

Our proven platform can do exactly the same for you!

Let MontBlancAI's AI-driven insights do the same for you. Contact us today to unlock your production's full potential!

