



## GSK Creates a Future-Ready Supply Chain with Predictive and Prescriptive Maintenance

“Early and accurate warnings, speed and scalability of deployment, and ease of use were key drivers in choosing Aspen Mtell for predictive maintenance. Aspen Mtell effectively predicts factors causing pharma process disruptions, improving production uptime and avoiding plant deviations.”

- Kevin O’Keeffe  
Head Engineering Primary &  
Antibiotics Manufacturing, GSK

With Aspen Mtell, GSK receives up to  
**35 Days’  
Advance Warning**  
of potential issues

## CHALLENGE

Improve robustness of pharma supply chains by preventing production downtime that affects the delivery of lifesaving medicines

## SOLUTION

Aspen Mtell® for predictive and prescriptive maintenance

## VALUE CREATED

- 35 days’ advance warning of potential issues
- Tens of millions of USD in lost batches avoided
- 50% reduction in lifecycle maintenance costs
- 30 sites across 18 countries covered, multiplying value gained

## Introduction

GlaxoSmithKline (GSK) is a science-led global healthcare company that researches and develops a broad range of innovative medicines and brands. With manufacturing facilities worldwide, GSK's goal is to consistently deliver outstanding quality, service and value to patients and consumers.

The sheer volume of GSK's operations is enormous. Within GSK's pharma supply chain, multiple packaging lines handle upwards of 10,000 batches per year annually, producing 2.3 billion packs of medicine across a network of 30 sites in 18 countries. GSK's pharma supply chain is involved with every stage of production, including providing the assets and infrastructure needed at the manufacturing sites, handling regulatory inspections, and most importantly, ensuring the consistent supply of high-quality products.

On a global scale, GSK's products move through a wide range of machinery and heavy equipment during manufacturing. Protecting these assets and preventing downtime is critical to operations and essential for sustainability, on-time delivery and profitability.





## Preventing Disruptions with the Right Digital Solution

Production failures due to unexpected asset repairs and replacements result in costly downtime that affects the reliability and security of GSK's supply. GSK had been using manually intensive reactive and preventative maintenance methods to monitor production assets across their supply chain. However, these methods had built-in flaws as they weren't consistently reliable in preventing asset failures. As a result, they set a business imperative to revamp their maintenance program by taking advantage of smarter digital solutions that predictively alert operators to possible production issues at an earlier stage.

Aspen Mtell was selected as the solution for its early and accurate warning capabilities, speed and scalability of deployment, and ease of use. Aspen Mtell uses AI, machine learning, predictive and prescriptive capabilities to monitor the smallest changes in the behavior of the equipment (such as temperature, flow or power) and data from previous failures to alert operators proactively when issues start to surface.

The impact of the solution on GSK's business has been enormous. Results at individual sites included dramatic reductions in lifecycle maintenance costs, ample advance warning of potential issues and avoidance of tens of millions of dollars in lost batches. The success stories that follow highlight how GSK realized these results and solved persistent maintenance issues by implementing the solution to its water purification system, a coil saturation problem and mechanical seal reliability challenges.



## Protecting Water Purification Systems Across the Enterprise

A recent breakdown in the water purification system was unexpected, and the massive disruption resulted in a one-week shutdown that spanned across an entire facility. GSK needed to prevent the breakdown from reoccurring, and diagnosing what triggered it with traditional maintenance methods was challenging. Aspen Mtell solved the problem by identifying the root cause in the deionizer equipment and determining the early signs of the asset failing using machine learning from late-stage deterioration patterns. Alerts now provide up to 35 days' advance warning of potential issues. As a result, GSK has ample time to plan any required maintenance without any disruptions to production. The value gained through Aspen Mtell includes cost savings of several million dollars in downtime, and avoidance of 15 lost batches for each episode prevented. GSK has since significantly increased the returns realized by deploying the solution on a global scale to nearly all water purification systems across its manufacturing sites.

## Preventing Lost Batches Due to Condenser Anomaly

Historically, condenser coil saturation had been a leading cause of product loss, impacting the supply chain and customer satisfaction. Aspen Mtell was deployed to address this issue, with significant performance and profitability improvements. By identifying early coil saturation using predictive capabilities, operators now have the lead time needed to remove the batch from the chamber and ensure that the coil is stable before reintroducing the batch. Results from these efforts included a 25% increase in production capacity and tens of millions of dollars saved from batch losses due to condenser saturation.

## Reducing Maintenance and Costs by Ensuring Mechanical Seal Reliability

In line with traditional mechanical seal replacement procedures, GSK proactively replaced seals after every eighth batch to avoid hundreds of thousands of dollars lost per batch. The seals were not at the point of failure at the time of the replacement, so this became an unnecessary maintenance step and cost, amounting to tens of thousands of dollars wasted that could have been saved per seal. With Aspen Mtell and machine learning, GSK was alerted to signs of seal failure well in advance, allowing the replacement time to be extended from every eight batches to every 25 batches. This new predictive and prescriptive maintenance schedule delivered a 50% reduction in associated lifecycle costs, a 60% reduction in CAPEX and a dramatic improvement in overall operator confidence.

## Conclusion: Empowering a Reliable, Future-Ready Supply Chain

With exceptional protection and value realized, GSK's next steps include accelerating the deployment of existing and new use cases enterprise-wide to enable greater operational reliability and a future-ready supply chain. These efforts involve enhancing processes for asset performance management, championing increased use of Aspen Mtell internally and continuing to identify and select applications that will deliver the greatest business impact.

GSK's digital transformation journey goes beyond prescriptive maintenance, and AspenTech is there as its strategic partner. Learn how an [electronic batch records solution](#) is helping GSK speed up release time, improve equipment usage and throughput, and ensure the delivery of high-quality products.

## Benefits Realized Across the Enterprise

- **Speed:** Prevented production disruptions and proactively managed asset maintenance
- **Savings:** Avoided lost batches estimated at tens of millions of dollars
- **Scale:** Multiplied the returns from predictive and prescriptive maintenance across the pharma supply chain
- **Security of Supply:** Improved continuous, on-time delivery of medicines across product lines



### **About Aspen Technology**

Aspen Technology (AspenTech) is a leading software supplier for optimizing asset performance. Our products thrive in complex, industrial environments where it is critical to optimize the asset design, operation and maintenance lifecycle. AspenTech uniquely combines decades of process modeling expertise with machine learning. Our purpose-built software platform automates knowledge work and builds sustainable competitive advantage by delivering high returns over the entire asset lifecycle. As a result, companies in capital-intensive industries can maximize uptime and push the limits of performance, running their assets safer, greener, longer and faster.

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