

Predictive maintenance benefits for the freight logistics industry

Maximizing asset availability begins with in-depth real-time maintenance insights



Highlights

- Orchestrate parts, equipment, personnel and facilities proactively
 - Reduce unscheduled downtime to minimize maintenance expense
 - Integrate data without high traditional data warehouse costs
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Overview

Whether your fleet includes trucks, aircraft or container ships, freight logistics companies like yours depend on every asset to perform without failure. Dependable operation is required to keep customers satisfied, prolong the life of each asset and deliver revenue without interruption. Unexpected, unplanned asset downtime can impact more than just revenue. It can damage your on-time performance and give shippers a reason to look elsewhere for service.

Because assets are increasingly generating more data, your company is in the perfect position to exploit that data with predictive maintenance analytics. Today's sophisticated analytics models continually monitor asset activity looking for even the smallest variation from the expected. You can discover what is happening, determine why it is happening, predict what is likely to happen and prescribe the best action to take in advance.

Gain a competitive advantage using big data and analytics

Big data is today's modern marvel. But capturing and storing data is just the beginning. Today's advanced analytics technologies and techniques enable organizations to extract insights from data with previously unachievable levels of sophistication, speed and accuracy.

Analytic tools can be especially useful in helping freight operators refine data to determine what information is most valuable for optimizing business outcomes. Today, you can integrate new and existing sources of



data without the high costs associated with a traditional data warehouse environment. Big data and analytics also enables more rapid capture and integration of time-sensitive data from numerous varied sources including fixed sensors and instrumented equipment.

Real-world success: Analyzing event data to reduce derailment risks

Although this U.S. Freight Railroad installed roughly 1,400 physical fault detectors along its rail network extending tens of thousands of miles, internal systems couldn't adequately analyze the 50,000 detector messages being created per day. This bottleneck deprived them of the very intelligence they needed to minimize accidents.

The company built a solution that uniformly ingests and normalizes multi-formatted data generated by various sources. Thousands of events are analyzed against rules related to wheel temperatures, train movements and other metrics, and prioritized according to severity. The most critical events trigger severity-based alarms, helping speed the removal of potentially dangerous cars.

As a result, the solution helped reduce the cycle time of new detector inductions by 50 percent. In addition, the company expects to improve confidence intervals by more than 90 percent by minimizing false positives and identifying fault sources wherever they occur.

Apply predictive maintenance analytics to improve asset performance

Predictive maintenance analytics solutions can capture sensor data in real time and integrate it with data from visual inspections, manual measurements, videos, operational data and more.

Big data and analytics solutions can help make the most of this disparate variety of information to improve asset availability and service levels, reduce risk of unplanned service delays and outages, and implement smarter maintenance planning. For example, you can:

- Gain improved visibility into asset health and extend asset life.
- Reduce the high costs of unscheduled maintenance.
- Forecast maintenance parts and labor costs more accurately.
- Increase warranty recoveries.
- Determine the root cause of failures for any type of asset.
- Reduce excessive or unplanned downtime of equipment in the field.
- Integrate information from increasingly sophisticated and disparate assets.
- Deliver insights to front-line employees so they can make better decisions at the point of impact.

Real-world success: Analytics can reduce breakdowns and improve productivity

A large European container terminal needed to maintain thousands of assets, from super cranes to small parts for vehicles. 80% of maintenance work was previously aimed at fixing breakdowns. Every time a crane broke down, it slowed throughput and cost money.

Using a predictive asset management and maintenance solution, the terminal operator now better manages maintenance as well as related processes such as procurement and spare parts inventory. Technicians can proactively diagnose potential problems and take preventive action to avoid breakdowns.

As a result, the company has increased preventative maintenance by 10 percent and has reduced breakdowns by 10 percent. They have also achieved full traceability and advanced reporting to help simplify regulatory compliance.

Predictive maintenance can keep assets performing while reducing costs

Using the insights available through a predictive maintenance solution, freight operators can maximize asset performance and productivity while reducing many associated maintenance expenses. Predictive maintenance allows proactive asset maintenance or repair on your schedule to help minimize disruptions to normal operations instead of forcing you to react to sudden, unexpected breakdowns.

Using a predictive maintenance strategy, it's easier to preserve capital by reducing the number of spare parts required. Better insights into when and where parts are needed helps reduce expensive expedited shipping costs for spares. It can also save storage expenses while helping reduce capital set aside for the cost of the parts themselves.

The same applies to maintenance personnel. Thanks to more precise insights, crews can be scheduled more accurately, helping reduce or even eliminate overtime expense. Because predictive maintenance gives you insight into probable upcoming issues, it's easier to be sure the necessary skilled personnel are available. Mobile devices can provide technicians with instant access to the technical manuals and parts inventory information that they need for maintenance and repairs.

With a predictive maintenance solution in place, your company can enter into supplier negotiations in a stronger position by providing the data necessary to make better decisions. The solution can provide the procurement team and the suppliers' demand forecasting teams with clean historical data, warranty information, traceability and forecasted demand. The information can quickly be aggregated and used as guidance for mutual agreement on the best pricing and terms for the new contract period.

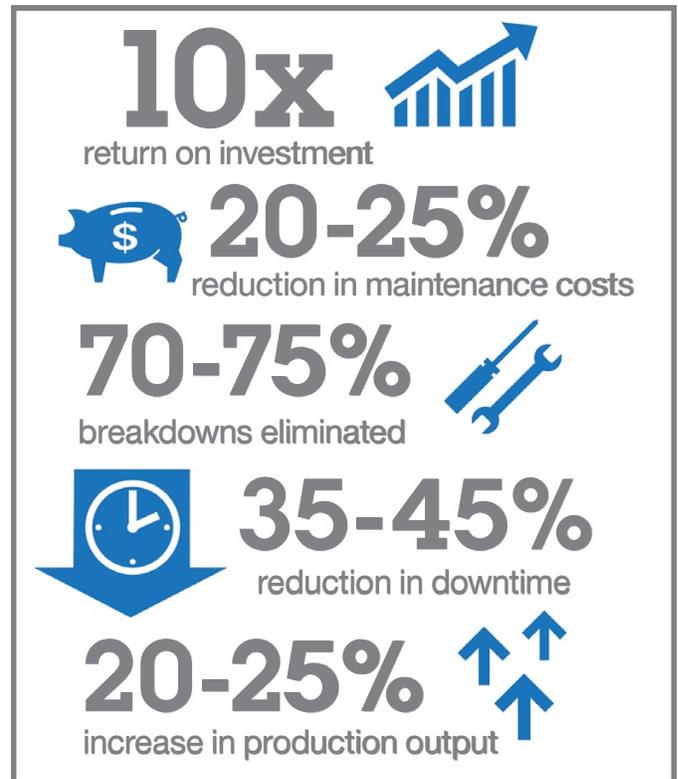


Figure 1. Average improvements of IBM customers that have utilized predictive maintenance solutions.

As illustrated in Figure 1, IBM studies¹ have found that when compared to companies that use traditional approaches, on aggregate those that use predictive maintenance solutions can enjoy significant benefits.

Conclusion

Freight shippers expect flawless service. Now more than ever, your operation cannot afford to be unprepared or surprised by equipment downtime. With a sophisticated predictive maintenance solution in place, you can be more confident assets will perform when they are needed, helping you deliver a better customer experience and maximize every asset's ability to produce revenue.

About the IBM Predictive Maintenance and Quality solution

The IBM® Predictive Maintenance and Quality solution combines the functionalities of data integration, analytics and decision management into one pre-configured, packaged software solution that is easy to install in the majority of IT environments. It can accelerate your return on investment and reduce the need for additional IT service engagements because nearly all of the necessary foundational content is included. In addition, Predictive Maintenance and Quality contains connectors to enterprise asset management systems such as IBM Maximo® Asset Management.

With capabilities to efficiently and effectively analyze structured and unstructured data, the solution delivers benefits in several ways. It can help you:

- Monitor, maintain and optimize assets
- Predict asset or part failure, and optimize maintenance and supply chain processes
- Make critical decisions faster and more accurately

For more information

To learn more about the benefits of predictive maintenance for the freight logistics industry, please contact your IBM representative or IBM Business Partner, or visit the following website:

ibm.com/travel

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¹ These results are based on averaging the ROI of IBM customers that have utilized predictive maintenance solutions. They also appear in an IBM infographic published here: http://www.huffingtonpost.com/2012/09/11/ibm-predictive-maintenance_n_1873701.html?1347826655



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