



Advanced Analytics: Predictive Maintenance



Challenge

Not knowing when your equipment is going to fail means that you need to have employees physically check on your equipment and you also need to run periodic diagnostic tests. There is also a high likelihood that equipment will fail between these routine checks.

Solution

A predictive maintenance solution can identify issues at the source and before they happen. This increases reliability and up-time, and doesn't require periodic checking of equipment and manual execution of diagnostic tests.

Predictive Maintenance Solutions Are Your Safeguard to Foresee Unexpected Work Stoppages

Large industries like oil and gas, industrial automation, and healthcare institutions, are always trying to minimize unplanned maintenance of their systems to reduce any down-time and to maximize the use of their workers. This can be achieved with Internet of things (IoT) and advanced analytical solutions found on [AWS Marketplace](#).

Organizations are looking for ways to realize the value of sensor-based information and to transform it into predictive maintenance insights. Predictive maintenance solutions that provide predictive modeling, reporting, automated monitoring, and alerting give companies the ability to lower maintenance costs and minimize maintenance-related work stoppage of their operations.

Work Stoppages Caused by Passive Technology Methods Ultimately Cost Organizations Money

Most companies today rely on people to perform routine diagnostic inspections and preventive maintenance per fixed schedules. The use of basic monitoring dashboards is limited in scope and provides isolated views. This is a costly, labor-intensive process with little assurance that failure won't occur between inspections. The processes are driven mostly by domain knowledge and biased judgment and can create many false alerts. When failures do happen, companies quickly move into reactive-mode, which is usually inefficient and expensive.

Predictive maintenance solutions can catch issues early and at the source.

What's Behind Predictive Maintenance That Makes It a Must-Have for Major Industries?

Large sets of data from a company's infrastructure allow cloud-based solutions to monitor IT systems. This data scoring yields a statistically validated set of recommended actions that the organization can apply to make preemptive adjustments to hardware settings and/or system governance parameters.

Integrating predictive models into your infrastructure can determine the likelihood of asset failure, and optimize schedules for maintenance procedures. Examples of these predictive models include:

Accelerating time-to-market by enhancing intelligent decision making via predictive data.

Allowing for the clear separation of tasks: model development vs. model deployment.

Permitting predictive models to easily flow from a person's desktop to production where they can be put to work right away.

These components of predictive modeling software include maintenance modules, streaming data from sensors, and feature-based monitoring. Thus, the result is an overall cost savings to infrastructure and uptime remains high.

Monitor Equipment from Anywhere and Anytime with Cloud-based Predictive Maintenance Solutions

Cloud-based predictive maintenance solutions can allow users to have access to them from any computer or mobile device. Predictive maintenance solutions:

- Create logs of pressing maintenance issues and produce predictive maintenance schedules
- Track costs to justify spending and staffing needs
- Stream data from sensors and monitor maintenance modules
- Provide customizable, feature-based monitoring

An Example: Predicting the Failure of a Motor Using Vibration Analysis

Now that you know the basics behind predicting an equipment failure, let's look at an example. In this example, we'll look at how to use the analysis of vibrations to predict failure in a motor. We show a motor beginning at optimal operation, and how the events that occur on the timeline to eventual failure vary based on whether you are using predictive maintenance or preventative/reactive maintenance.

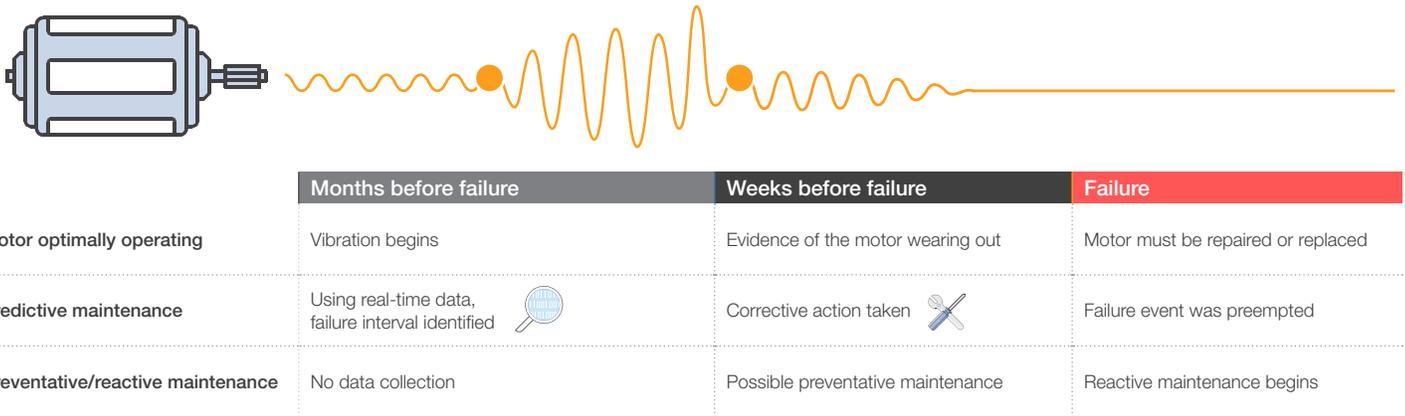


Figure 1: Predicting the failure of a motor

Conclusion

By preventing unnecessary maintenance procedures, predictive maintenance can increase the lifespan of hardware, which helps to optimize productivity. By retrieving device data, problems can be anticipated well ahead of failure. This helps accurately balance labor and inventory levels. With IoT and cloud-based predictive maintenance solutions listed on [AWS Marketplace](#), companies can deploy advanced analytical tools. With these real-time insights, customers can make predictive maintenance a reality.

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