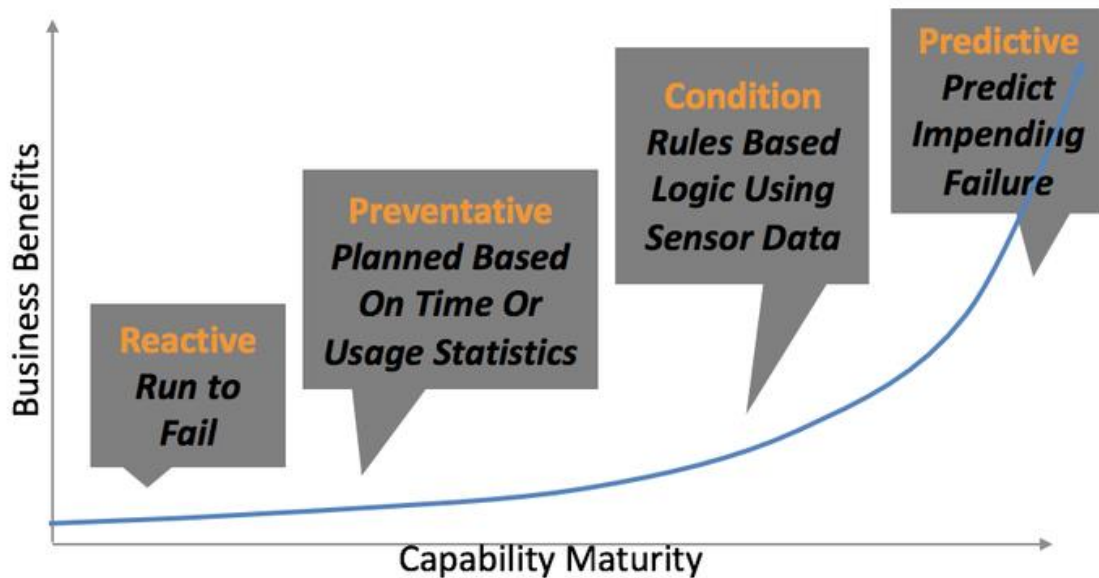


Assets & The active Life Cycle - PdM



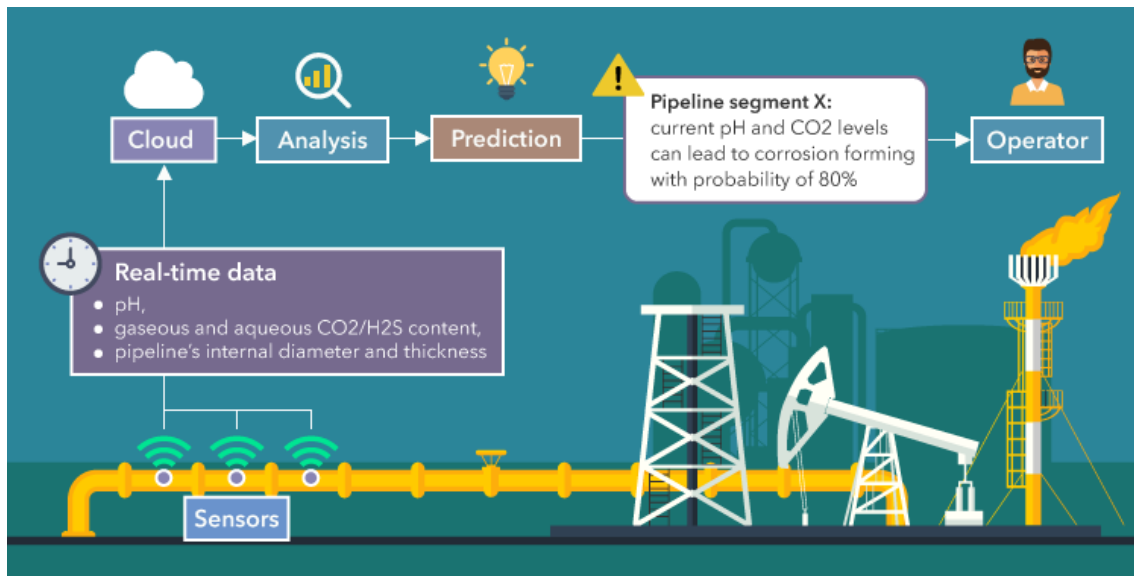
For industrial companies, downtime can be exceptionally expensive, while maintenance itself can be time-consuming and resource intensive. It's no wonder then that the concept of predictive maintenance (PdM) has become one of central promises of the industrial Internet of Things in recent years.

How does predictive maintenance work?

Predictive maintenance uses condition-monitoring equipment to evaluate an asset's performance in real-time. A key element in this process is the Internet of Things. IoT allows for different assets and systems to connect, work together, and share, analyze and action data.

The Difference between Predictive Maintenance and Preventive Maintenance

Preventive maintenance has involved inspecting and performing maintenance on machinery, regardless of whether the equipment was in need of maintenance. This maintenance schedule is based on either a usage or time trigger. For example, a heating unit is serviced every year before winter, or a car requires scheduled maintenance every 5,000 miles.



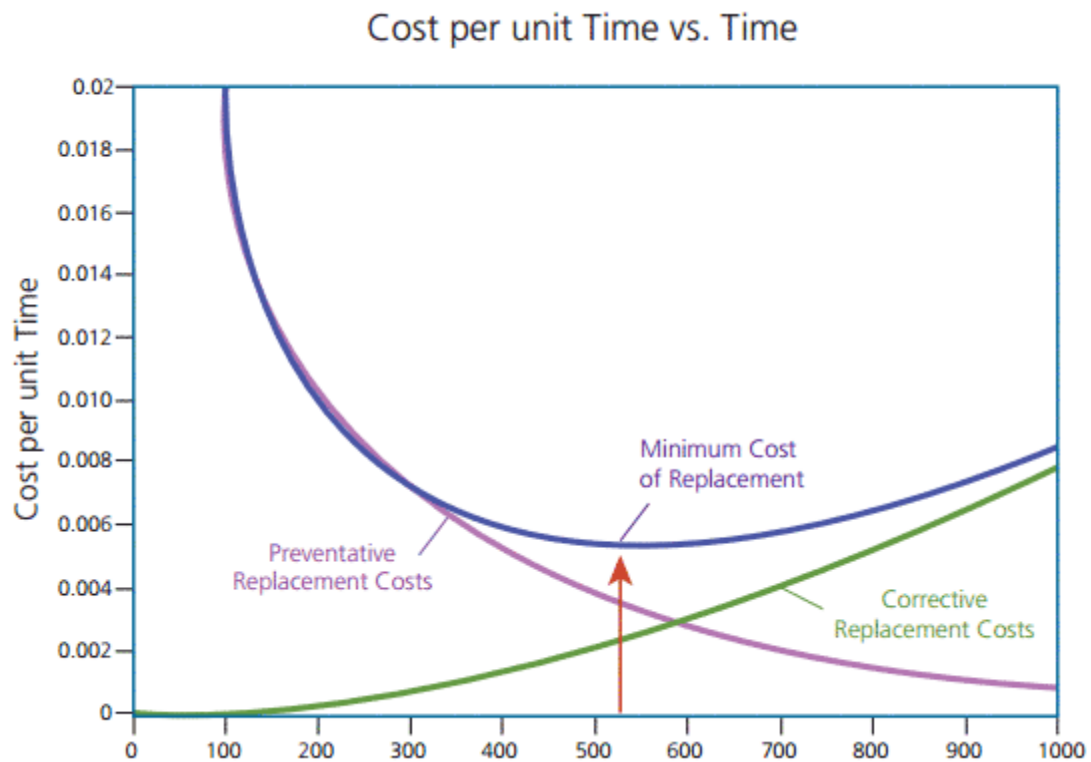
Predictive maintenance (PdM) involves the execution of system checks at predetermined intervals to analyze equipment health. These controls are usually in the form of continual data collection (i.e., temperature, light, pressure, and sound/vibration) from equipment through the use of sensors. The results of these checks determine whether maintenance activities are required.

The advantages of predictive maintenance are tremendous from a cost-savings perspective and include minimizing planned downtime, maximizing equipment lifespan, optimizing employee productivity and increasing revenue. Another advantage of predictive maintenance is its ability to transform both a maintenance team and an organization, as implementing PdM allows asset managers to improve outcomes and better balance priorities such as profitability and reliability.

The most effective way to determine where a predictive technology can be used is through the facilitation of a Reliability Centered Maintenance (RCM) analysis. This process will identify the potential failures and allow for the selection of the best strategy and technology you can implement to minimize the chance of one of those failures actually happening.

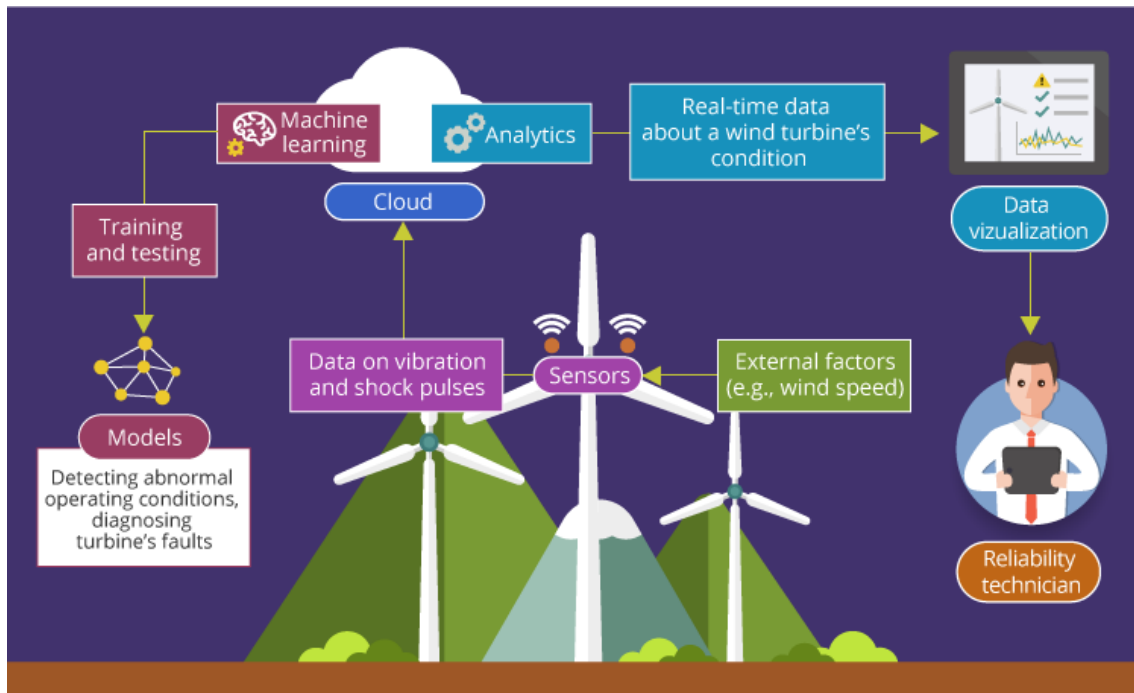
[Aiming to Reduce Unscheduled Downtime](#)

For manufacturers that work on tight margins and even tighter timeframes, unscheduled downtime can be a nightmare. Hoping for the best and waiting for something to break is costly—it's somewhere around 50% more expensive to repair an asset that broke in production than if the problem was identified before the failure.



Although predictive maintenance might be confused with preventive maintenance, predictive maintenance is different. Instead of looking at averages or comparable statistics, it looks at the condition of the equipment in real time. As a result, it can make predictions based on the actual conditions, not averages or suppositions.

Just-in-time manufacturing is the goal for most companies. It means that a company doesn't get stuck with too much inventory and reaps profits faster because it only invests in parts or other components exactly when it needs them. Of course, it requires precise timing—and every element in the value chain needs to be ready when called on. Therefore, a faulty piece of equipment that malfunctions at just the wrong time can cause a company to miss production quotas, lose business or even threaten the safety of a plant.



Looking at Assets Individually and in Groups

One reason that predictive maintenance is a rising trend is that it greatly reduces human errors, which can cause up to 82% of asset failures. As connected assets increase at a dizzying pace due to the IoT, industrial data is overwhelming manufacturers because human beings simply can't absorb and process all of this data. Predictive maintenance that uses data science levels the playing field by applying cognitive techniques for sensor data analysis.

The U.S. Department of Energy shows that implementing a functional PdM program has the potential to yield a tenfold increase in ROI, a 25-30 percent reduction in maintenance costs, a 70-75 percent decrease in breakdowns and a 35-45 percent reduction in downtime.

“As far as maintenance costs are concerned, preventive maintenance costs \$13 hourly pay per annum while predictive maintenance costs \$9 hourly pay per annum, making predictive maintenance a cheaper option” (Ulbert).

PdM itself is a significant competitive advantage. However, getting there requires a professional approach.

Ref. Ulbert, Sebastian, “The Difference between Predictive Maintenance and Preventive Maintenance,” Coresystems, September 15, 2015. Accessed November 2, 2018.