

## The quest for a world that doesn't breakdown



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ARTICLE



## The quest for a world that doesn't breakdown

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*In the last five decades, maintenance as a practice has evolved to better serve the manufacturing sector in the areas of reliability and availability. However, according to Robert Golightly, senior product marketing manager, AspenTech, change is imminent*



The current approaches, such as run-to-failure, calendar, usage-based, condition-based and reliability centered maintenance (RCM), are less than ideal. There are two key challenges. First, the exact science of when to conduct inspections and service the machines is less than scientific. Second, the current slew of maintenance methodologies focuses on wear and tear as the root cause of failure. That is despite the fact that 80% of degradation and failure in mechanical equipment is process-driven.

However, the reality is that to maximise profitability, processes today tend to be operated close to key limits. This can be detrimental, as process excursions quickly place an asset in an undesirable operating point, where damage or excessive wear and tear to the asset occurs. This means that maintenance decisions need to be further mitigated by better understanding the impact on asset and process. A new generation of analytical capabilities is required to provide deeper insights into the asset, process and interaction between them.

These are now starting to come on stream. McKinsey & Co has observed: "...entirely new and more affordable manufacturing analytics methods and solutions - which provide easier access to data from multiple data sources, along with advanced modeling algorithms and easy-to-use visualisation approaches - could finally give manufacturers new ways to control and optimise all processes throughout their entire operations."

Advanced analytics

In taking a step into the future of manufacturing, the new APM (Asset Performance Management) 2.0 model incorporates the advanced analytics that predict issues and prescribe operator actions. With a holistic view of the process and asset, the Aspen APM software suite combines asset analytics, reliability modelling and machine learning to analyse, understand and guide.

Principles of data analytics and data science enable the reliability strategy, which includes machine learning. A dominant predictive analytics technology in information technology today, machine learning on manufacturing assets requires domain specific knowledge of chemical processes, mechanical assets and maintenance practices. For industrial prowess, machine learning needs to interpret and manage complex, problematic sensor and maintenance event data. Eventually, it can determine the operating conditions and patterns that can have a harmful impact on the asset by capturing the patterns of process operation and merging them with failure information.

However, while predictive analytics can reduce downtime, it is also worth noting that disruption seldom happens in isolation. Instead, dozens of reliability, process and asset issues happen simultaneously. As such, dynamic assessment is increasingly required, as new warnings need to be evaluated alongside other active conditions to prioritise and allocate resources. However, we cannot address everything at once. A system of success is mandatory to address problems and prioritise them according to the level of risk they represent.

With Aspen APM software, each new alarm triggers a recalculation of risk profiles to guarantee that the most up-to-date financial and risk probability assessment is used.

To be thoroughly successful, companies need to adopt a holistic approach in implementation. First, they need to communicate their goals clearly. This helps in effective problem solving. Second, it is necessary for companies to genuinely embrace a data-driven world. Third, they need to differentiate between lagging and leading indicators, as well as how to respond accordingly. Fourth, the right mix of people, technology, strategy and solution is essential. Fifth, companies need to invest time and master the technology well. Sixth, the adopted analytics programme needs to be well aligned with business goals. Seventh, companies need to deploy the appropriate software and hardware to solve problems. Eighth, companies need to execute well and with a keen sense of urgency. With operational excellence and profitability at stake, it is imperative that organisations are successful in developing the best asset performance strategy.

Indeed, it is vital that process companies capitalise on the opportunity.

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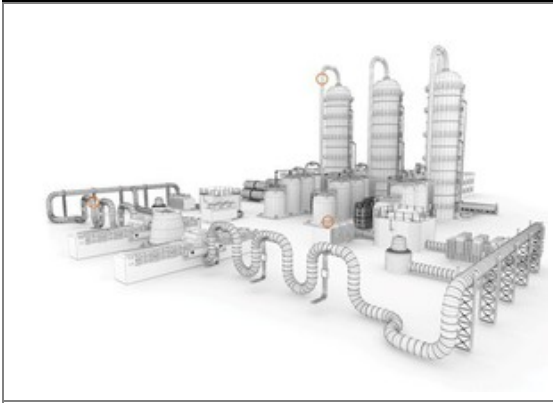
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