

AI-Driven Predictive Analytics Powers Machine Health

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Machine builders often remotely monitor the equipment they sell to their manufacturing customers, but it probably does little good. IIoT sensors collect enormous amounts of raw data about equipment health and performance. But it isn't organized in a way that either machine builders (OEMs) or their customers can create a transformational impact on their process.

As a result, manufacturers can experience frustrating breakdowns on the factory floor. And machine builders miss out on opportunities to learn how their equipment is used and develop offerings that can significantly increase service revenue.

Applying advanced predictive analytics to the torrent of machine data opens a world of new possibilities.

OEMs can create AI algorithms that optimize machine performance in real time and reveal which equipment might fail and when, allowing technicians to fix machines before a breakdown. They can offer this help through as-a-service contracts that provide a steady source of income—and apply the same predictive models they use for their machines to determine optimal pricing.

#Edge applications, #PredictiveMaintenance, and as-a-service business models represent a new, more efficient, and more profitable future for #machine builders. @TCS via @insightdottech

“As they progress in their digital transformation journey, manufacturers are looking for ways to improve efficiency, extend the life of their equipment, and especially, to monetize data,” says Senthil Kumar, business head, connected products and services at [global IT services company Tata Consulting Services \(TCS\)](#). “Today’s IIoT technology allows them to achieve these goals.”

Improve Service with Predictive Maintenance

Using predictive analytics allows manufacturers to keep their equipment in better shape, cutting down on expensive service visits and providing customers with more uptime.

For example, a construction equipment manufacturer continued to receive customer complaints about downtime. Remote monitoring alone won’t solve problems like these. Applying predictive analytics to the data is the key to success.

“That is where we jumped in and said, ‘Instead of just having you monitor the equipment, why don’t we run analytics in real time?’” Kumar says.

To set up real-time problem detection and failure prevention, Equiptix collected historical machine data and ran models predicting weaknesses and break points for 10 different subsystems in the company’s excavators. It demonstrated the reduction of downtime 50% for that subsystem. The company now plans to extend Equiptix to another nine subsystems.

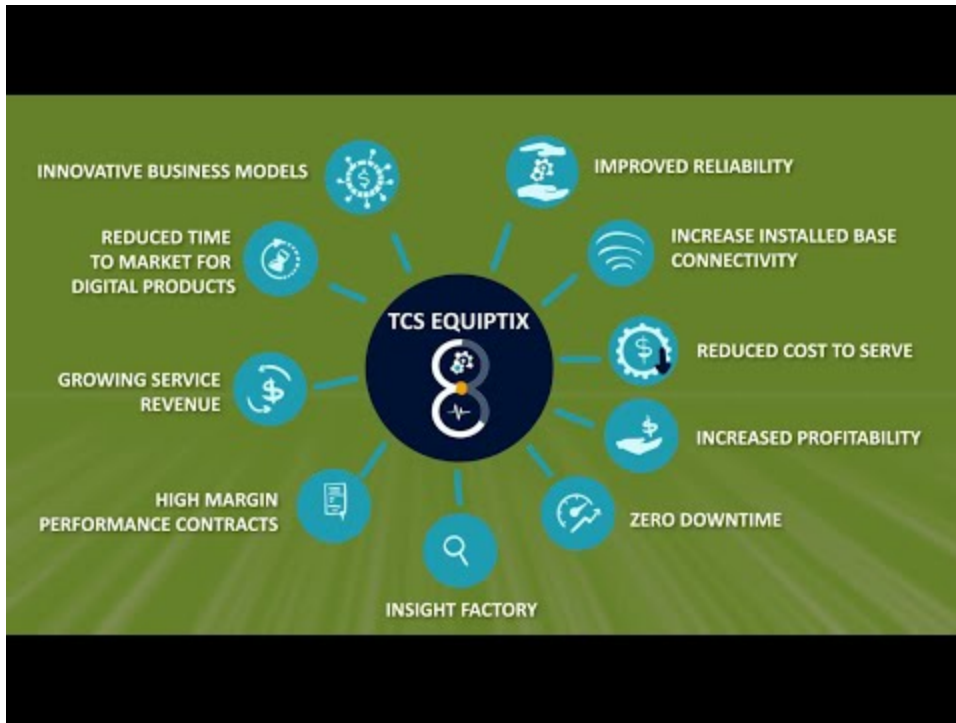
Anticipating problems also saves the equipment manufacturer money on service calls. “Using data collected from their installed base, they can plan service visits in advance, instead of running out when they receive a call,” Kumar says.

AI-Powered Predictive Analytics Optimize Service Contracts

Analyzing data from hundreds or thousands of customer machines over time gives OEMs the confidence they need to offer the gold standard of customer service: performance guarantees.

“In the past, manufacturers tried to sell customers software designed to help them improve machine performance, but it was never successful,” Kumar says. “Customers want to know, ‘What’s in it for me?’ They want something that moves the needle.”

Performance contracts take away the headaches of managing complicated software and give customers results they can count on. In conjunction with real-time condition monitoring and predictive maintenance, they represent a new business model for manufacturers—one that provides a steady source of income from services, as explained in the comprehensive video below (**Video 1**).



Watch Video At: https://youtu.be/cVg_NHAaxfY

Video 1. The TCS Equiptix platform enables machine builders to offer condition monitoring, predictive maintenance, and performance-based service contracts. (Source: TCS)

Service contracts also involve risks from variables outside the manufacturer’s control, such as weather, transportation problems, fuel costs, and the pricing of competitors’ offerings. Equiptix simulation models analyze all these factors to create contracts that are attractive to customers while providing manufacturers with an acceptable level of financial risk.

“We ensure that each contract is profitable, and all risks are managed properly,” Kumar says.

Equiptix also examines all the digital products a manufacturer makes and identifies opportunities for creating new service contracts, helping to expand sources of reliable revenue.

Unleashing the Power of Edge Applications

In addition to preventing breakdowns and enabling service contracts, analyzing machine data allows manufacturers to optimize ongoing machine performance for specific customer uses. “People want to process information at the edge, but most equipment today does not extract enough data to run the analysis,” Kumar says.

Working with TCS engineers, manufacturers can select the right data needed to create and deploy targeted performance-enhancing applications.

Edge applications provide TCS customers with complex capabilities—such as machine vision, mixed reality, and digital twins—in real time. High-performance Intel® processors allow customers to use these services on edge machines without connecting to the cloud. They can boost efficiency, improve quality control, and tweak machine processes in simulation before companies spend money to deploy them in the field.

“That’s the power of the edge,” Kumar says.

A New IIoT Frontier

Edge applications, predictive maintenance, and as-a-service business models represent a new, more efficient, and more profitable future for machine builders. Getting there will take time, but manufacturers are starting to make the changes they need to reap the rewards.

“It’s not just a matter of technology—you’re changing the whole business model,” Kumar says. “It’s a long journey, but we are already seeing a lot of traction.”