



# Achieving peak industrial efficiency with predictive maintenance



**BOSCH**

**Customer:** Bosch Digital Twin Industries

**Industry:** Manufacturing

**Country:** Germany

**Bosch Digital Twin Industries is transforming machinery performance with an integrated asset management solution powered by edge AI**

Bosch Digital Twin-IAPM solution drives significant improvements in industrial equipment operations by minimizing downtime, reducing maintenance costs, and cutting energy consumption. Powered by edge AI, this technology predicts equipment failures, resulting in improved operational efficiency, increased business margins, and greater environmental sustainability.

## Powering modern society through innovative products

Founded as the Workshop for Precision Mechanics and Electrical Engineering, Bosch has consistently led with innovation. Today, the company is a world leader in building the machines and engines that power modern society and enhance everyday life, and it is committed to reducing complexity and conserving resources.

“We’re motivated by the desire to develop sustainable products that are invented for life — that spark enthusiasm, that improve quality of life, and that help conserve natural resources,” says Prahallad CR, head of technology & innovation at Bosch Digital Twin Industries. “The point is always to take away complexity and make people’s jobs easier.”

It was this motivation that led Bosch Digital Twin Industries to recently develop a groundbreaking digital twin-in-a-box on integrated asset performance management (IAPM) solution. This tool enables organizations to create dynamic software models — or twins — of their physical industrial assets and continuously monitor them by using the combined advantages of edge and cloud.

With edge AI-enhanced insights, users can predict failures, simulate scenarios, and make data-driven decisions, leading to reduced downtime, optimized energy use, and increased asset lifespan along with cost savings.

**“Imagine a machine that tells you what spare parts it will need in the next 30 or 60 days — and interacts with you almost like a human would. That’s exactly what we make possible with our solution.”**

– Prahallad CR, Head of Technology & Innovation, Bosch Digital Twin Industries

## Keeping large industrial assets running with maximum efficiency

Bosch Digital Twin Industries’ focus on innovation and value creation has intensified as sectors embrace automation and digitization.

Recognizing the challenges its energy production, utilities, and industrial manufacturing customers were facing in predicting and preventing unplanned maintenance, the company identified the need for an advanced asset management solution. As their machinery grew more complex, these customers were struggling to prevent surprise breakdowns and unexpected downtime in their large industrial assets — such as mining conveyors and chemical reactors, wind power parks, energy grids, and more.

That meant they were losing valuable time, money, and resources. Organizations also lacked the tools to identify inefficiencies and respond quickly to problems, risking costly disruptions along with negative impacts on overall productivity and profitability. In heavy industries such as steel, asset failures can likewise pose serious safety risks to employees.

In response, Bosch Digital Twin Industries developed a digital twin-integrated IAPM solution specifically designed to optimize the operations of large industrial assets and prevent such risks.

“Imagine a machine that tells you what spare parts it will need in the next 30 or 60 days — and interacts with you almost like a human would. That’s exactly what we make possible with our solution,” says Prahallad. “We wanted to help

### Vision

Transform industries by providing solutions that optimize asset performance, enable planned downtime, and support sustainable operations

### Strategy

Build an integrated asset performance management solution with real-time edge AI to enhance operational efficiency and reliability

### Outcomes

- Reduces unplanned downtime and maintenance costs by enabling predictive maintenance
- Increases operational efficiencies with real-time edge insights, easing team workloads
- Optimizes resource use, reduces energy consumption, and extends asset lifespan



**“HPE helped us to radically simplify deployment methods for our solution. Without these, it would be much more difficult for our customers to quickly adopt our solution at scale.”**

– **Prahallad CR**, Head of Technology & Innovation, Bosch Digital Twin Industries

organizations overcome operational bottlenecks and limitations, enable robust operational continuity, and unlock the full potential of their machinery and equipment.”

## **Real-time insights and seamless operation**

Bosch Digital Twin Industries has advanced the real-time data processing and analytics capabilities of its IAPM solution by integrating edge AI, enabling immediate responses without the latency of cloud processing.

The addition of an edge server and reduced reliance on cloud connectivity has enhanced the twin-in-a-box’s ability to operate anywhere, making it highly beneficial for industries managing distributed assets in remote or low-connectivity areas. This approach is particularly important for critical infrastructure customers who are restricted from moving to the cloud.

By reducing reliance on cloud connectivity, organizations can also scale more easily by lowering infrastructure and bandwidth requirements. This helps avoid the high costs typically associated with scaling cloud services.

Bosch Digital Twin Industries chose HPE ProLiant DL380 Gen11 Servers in a ruggedized enclosure with HPE Ezmeral Unified Analytics Software to power its solution.

“The way I think of it, HPE is building the road, and we are creating the vehicles that drive on it — where the vehicles are our digital twin software. By joining forces with HPE, our solution can deliver predictive intelligence via reliable edge AI capabilities that seamlessly connect environments,” says Prahallad.

Bosch Digital Twin Industries also integrated HPE Aruba Networking solutions for added flexibility. This gives organizations the freedom to choose between an edge-wired solution or a ruggedized, secure wireless solution when they install the twin-in-a-box.

“HPE helped us to radically simplify deployment methods for our solution,” shares Prahallad. “Without these, it would be much more difficult for our customers to quickly adopt our solution at scale.”

## **Enhancing reliability and enabling predictive maintenance**

With its IAPM solution in place, Bosch Digital Twin Industries is significantly enhancing its customers’ ability to monitor and optimize their industrial processes. Drawing on real-time data, organizations get instant insights into asset health, maintenance needs, and performance trends, which simplifies decision-making.





Bosch Digital Twin Industries' solution also simplifies the jobs of its customers' employees by reducing operational complexity and enabling proactive interventions. For example, teams gain the timely engineering insights they need to help them reduce unplanned downtime and maintenance costs, and conserve energy. They also gain real-time business insights to understand asset criticality and plant efficiency, reduce failure mitigation costs through predictive maintenance, and run assets and machines at optimal utilization levels.

Additionally, Bosch Digital Twin Industries is empowering organizations to contribute to a more sustainable future. Customers using the company's solution gain precise knowledge of likely breakdown scenarios — for example when their machines are likely to overheat. This enables them to operate equipment more efficiently, conserve energy resources, and extend the lifespan of their assets.

As Prahallad emphasizes, "We've strengthened our role as a technology leader by staying true to our mission of reducing complexity and enhancing reliability."

## Explore more

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## Solution

### Hardware

- HPE ProLiant DL380 Gen11 Servers
- HPE Aruba Networking solutions

### Software

- HPE Ezmeral Unified Analytics Software

### Services

- HPE Services

