Siemens

Condition monitoring for manufacturing plants and machines

Solution brief

How MindSphere's out-of-the-box capability can amplify your business

Understanding where to find new value

Staying competitive in modern manufacturing requires businesses to not only offer the highest quality product, but also maximize operational efficiencies across a global value chain.
A constant challenge that pressures profitability in the manufacturing industry is unplanned downtime from critical asset failure. This challenge stems from the lack of transparency into machine performance on the factory floor to predict and prevent asset failures. One way that companies can minimize risk of unplanned asset failure and damage is condition monitoring. Condition monitoring is the process of monitoring a specific asset's parameters including alarms and notifications on key performance indicators (KPIs) for anomalies against defined control ranges to provide performance transparency and inform when assets need to be inspected. Monitoring requires accurate and continuous input data from a wide variety of sensors and parameters in real time or near real time.

Expanding performance, visibility and insights with MindSphere

With newly available Internet of Things (IoT) sensor data, condition monitoring can alert plant operators not only when irregularities occur, but also before they happen, to prevent failure on the factory floor across multiple facilities. As a cloud-based, open IoT operating system, MindSphere offers use-case specific applications and solutions using sensor data to provide condition monitoring. With MindSphere, your information technology teams and developers don't need to program IoT solutions from scratch. The proven sophisticated, features and capabilities delivered with MindSphere can be easily extended to meet company needs.

Tackling the IoT connectivity challenge

With MindSphere's end-to-end solution, companies can hit the ground running with minimal or no infrastructure investment, no existing resource disruption or operational downtime. To begin your IoT journey, MindConnect provides secured connectivity layer linking machines, products, plants and systems to MindSphere. MindConnect offers flexible, open connectivity solutions including software and hardware options for connecting both Siemens and non-Siemens assets to MindSphere. You can begin immediate condition monitoring – even with legacy equipment. Many field protocols are supported out of the box, and a wide range of hardware connectivity agents bridges the gap for other protocols.

Immediate monitoring of machines

As part of MindSphere core offering, Fleet Manager provides an overview of assets configured in MindSphere, so users can quickly search for all assets and focus on

Solution focus

relevant issues based on user-defined parameters. Companies can also configure rules to automatically monitor assets and create follow-up requests, such as email notifications, when the operating parameters of a machine or fleet of machines reach a predefined state. To complement Fleet Manager, MindSphere offers Visual Analyzer as an option to provide rich data visualizations and complex algorithmic tools integrated in one user interface.

Scale analytics as your business grows

Manufacturers have unique data sets, operational processes and business drivers that require rapid access to actionable results. MindSphere provides the flexibility to expand capabilities over time. MindSphere's global partner ecosystem is ready to drive and support your IoT strategy. Through the MindSphere store, MindSphere applications are available for download and use with an expanding library of offerings.

When needed, MindSphere provides developers extensive flexibility to develop, test and operate applications with access to a dedicated development space within MindSphere for your development team or third-party partners. Using scalable and cost-effective cloud infrastructure based on Cloud Foundry along with native cloud accessibility, developers can leverage re-usable services and components including parsing, analytics, and visualization to accelerate deployment by accessing the open MindSphere Application Programming Interfaces (APIs).

Solving real-world problems with condition monitoring

MindSphere tackles the condition monitoring challenge for manufacturers by enabling a cost-effective solution that connects automation and production assets to collect operational data that can be analyzed and visualized in MindSphere. This solution enables transparency into operational performance via alarms and notifications on KPIs in a browser-based dashboard.

Consider the case of a major food manufacturer who sought to improve the quality of mass-produced items with the help of MindSphere. In addition to improved quality, the company wanted fewer redraws (scrap), faster iterations, and a better understanding of the correlation between production and R&D. MindSphere enabled this customer to start with a scalable setup option at a low cost to immediately begin monitoring its machines. With MindSphere, the company monitors machines, collects data across multiple systems and compares product definition against manufacturing execution system (MES) results. With device connectivity through MindConnect software and hardware solutions, the customer has a live stream of IoT data flowing into MindSphere. Fleet Manager, as part of MindSphere core offering, enables the customer to view metrics, alarms, and notifications on KPIs in a user-friendly dashboard. Alarms will notify when defined production metrics are going astray, such as a production run with a high amount of scrap. MindSphere not only provides condition monitoring, but also gives plant operators and maintenance staff a centralized view of operational performance.

Summary

The trend toward digitalization of the world's industrial plant facilities is already in motion, and companies must get started quickly to remain profitable and competitive. Now, operators can connect, collect and analyze data from aging as well as leading infrastructures to immediately monitor machines in one centralized location.To benefit from increased operational transparency and machine uptime, contact your local Siemens representative or global partner, or visit the Siemens MindSphere website to learn more.

Siemens
www.siemens.com/mindsphere

Americas +1 314 264 8499
Europe +44 (0) 1276 413200
Asia-Pacific +852 2230 3308

© 2018 Siemens AG. Siemens, the Siemens logo, MindSphere, MindAccess, MindConnect, MindApps and MindServices are trademarks or registered trademarks of Siemens AG. All other trademarks, registered trademarks or service marks belong to their respective holders.
69741-A11 4/18 A