

PREDICTIVE Maintenance with SAP

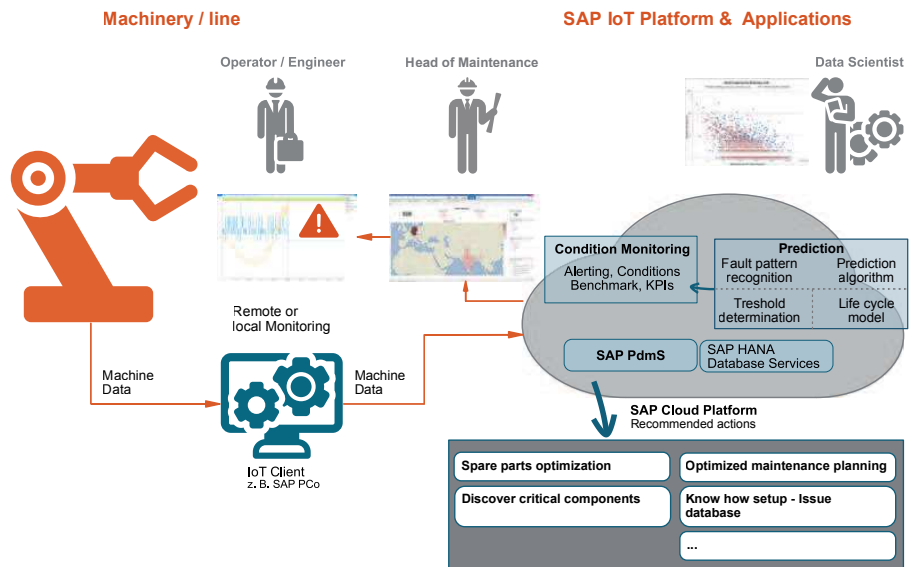
SAP Predictive Maintenance and Service (SAP PdMS)



The transition from reactive to predictive maintenance has many advantages. By analyzing large amounts of operational machine data in correlation with business data, you gain new insights into the history and trends of your products, machines and systems. The SAP Predictive Maintenance and Service solution helps you to better predict and plan maintenance and repair work to significantly reduce planned and unplanned downtime. For example, various studies assume a potential for 30 % lower maintenance costs and 70 % fewer unplanned downtime.

With SAP Predictive Maintenance and Service, you can monitor machine conditions, calculate machine health states, proactively order spare parts, optimize spare parts planning and better predict the scheduling of maintenance personnel.

The principle of predictive maintenance



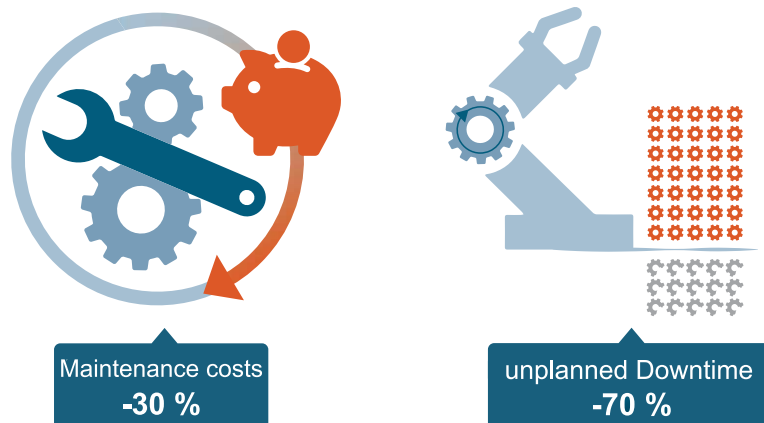
Service description

Based on the powerful “in-memory computing” technology of the SAP Cloud Platform, SAP Predictive Maintenance and Service provides operational data and analytical analysis on a single platform.

SAP Predictive Maintenance can be used as an entry-level solution for *condition-based maintenance* for remote monitoring and can then be successively extended as a *predictive maintenance scenario* using forecasting models and expanded analyses.

The SAP Cloud Platform is used to record sensor data (Internet of Things, IoT), and with the integrated Control Center, it can monitor and analyze equipment. Using the predictive analytics models provided or the support of data specialists, statements can be made about machine conditions, allowing steps to be taken in a timely manner.

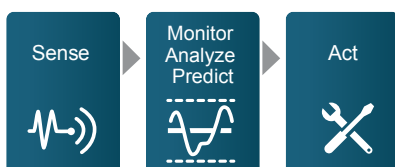
SAP Predictive Maintenance and Service is available as a cloud solution and as an on-site installation. The price is determined by the number of machines and saved data volumes.



Benefits

Manufacturers, operators and service providers can use the SAP solution to:

- Use remote maintenance to monitor your products or systems
- Detect malfunctions using error management
- Improve quality and performance through early detection of malfunctions
- Reduce costs through unplanned downtime
- Establish new, service-based business models (pay per service)



In three steps to introduction

1. Sense

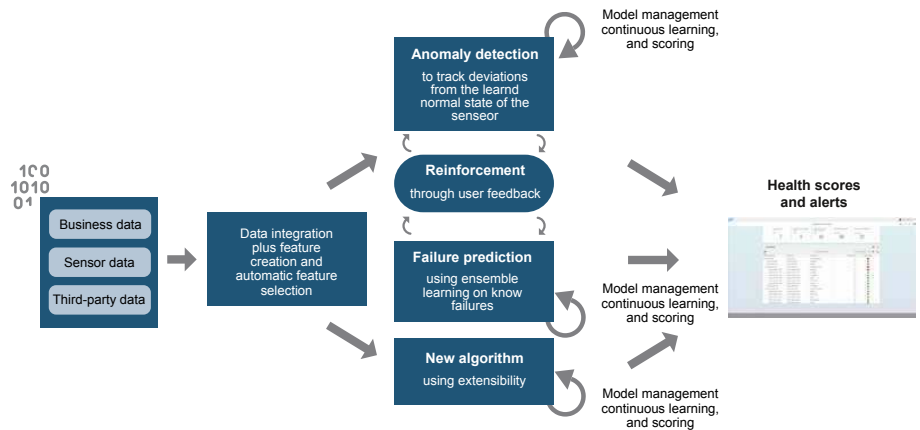
The foundation for monitoring systems is safeguarding connectivity. For this, machines must be equipped with sensors and connected to data collectors. For data collection, SAP Plant Connectivity (SAP PCo) is available from the SAP Portfolio. The SAP PCo supports various protocols and connection possibilities and can therefore be used flexibly. OPC UA has now established itself as the standard protocol.

2. Monitor, Analyze, Predict

The quality of the predictions is largely determined by the analysis models. Data is collected locally (Edge Computing) or centrally in the SAP Cloud. SAP Predictive Maintenance and Service provides integrated analysis services for pattern recognition and machine learning to generate Smart Data from Big Data for a robust early error detection model. In addition to the automatically generated predictive models, it is possible to create your own patterns. The Predictive Analysis Library in SAP HANA, with over 70 functions in combination with in-memory technology, ensure a correspondingly high implementation speed.

The SAP Cloud Platform offers machine learning functions, in particular model management, training, evaluation / scoring, and anomaly detection as cloud-based services.

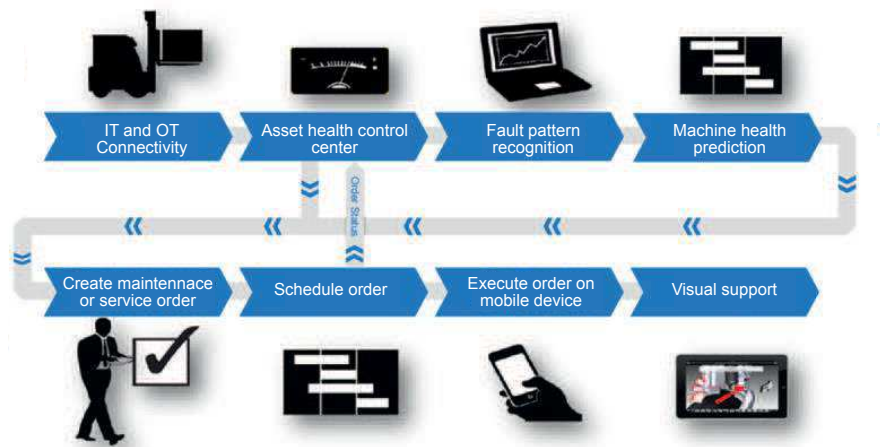
Machine learning



3. Act

Through integration with SAP systems such as ERP and the Plant Maintenance (PM) module, errors can be detected early and maintenance orders can be triggered in a timely manner before machine failure. With Integration in the SAP Asset Intelligence Network (AIN) solution, further automated scenarios such as spare parts procurement are possible.

Integrated processes of predictive maintenance



Licensing model

SAP Predictive Maintenance and Service, cloud version

The Cloud Edition offers a subscription-based pricing model based on the number of devices connected to the platform and the number of measurements, represented by the data volume stored in SAP.

SAP Predictive Maintenance and Service, on-site installation

The version that can be installed on-site (on the premises), offers a perpetual license model in relation to the saved data volume in the HANA database. A basic package is available for smaller projects. This version uses SAP HANA as storage for fast queries and predictive calculations, as well as SAP Sybase IQ for storing IoT Big Data.

<https://en.t-h.de/pdms>



About Trebing+Himstedt

Trebing + Himstedt is an expert in creating MES and IoT solutions on SAP technologies and a strategic SAP Silver Partner for SAP Connected Manufacturing and IoT services from SAP. Trebing + Himstedt places special emphasis on the core topics of plant performance management with KPIs, variant production, product traceability, and predictive maintenance. As an SAP silver partner, Trebing + Himstedt implements and licenses the SAP Leonardo solutions: SAP Manufacturing Execution (SAP ME), SAP Manufacturing Integration and Intelligence (SAP MII) and SAP Plant Connectivity (SAP PCo) as well as SAP Predictive Maintenance and Service based on the SAP Cloud Platform.