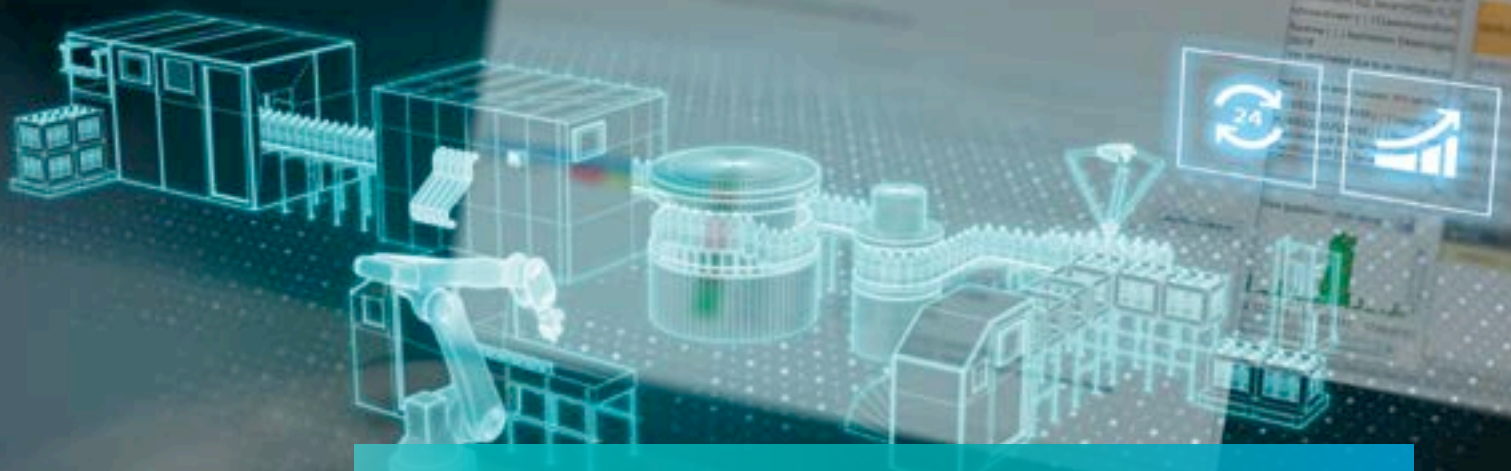



SIEMENS

Ingenuity for life



Preventive System Analysis

Evaluation of diagnostic and system data indicates potential for improvement



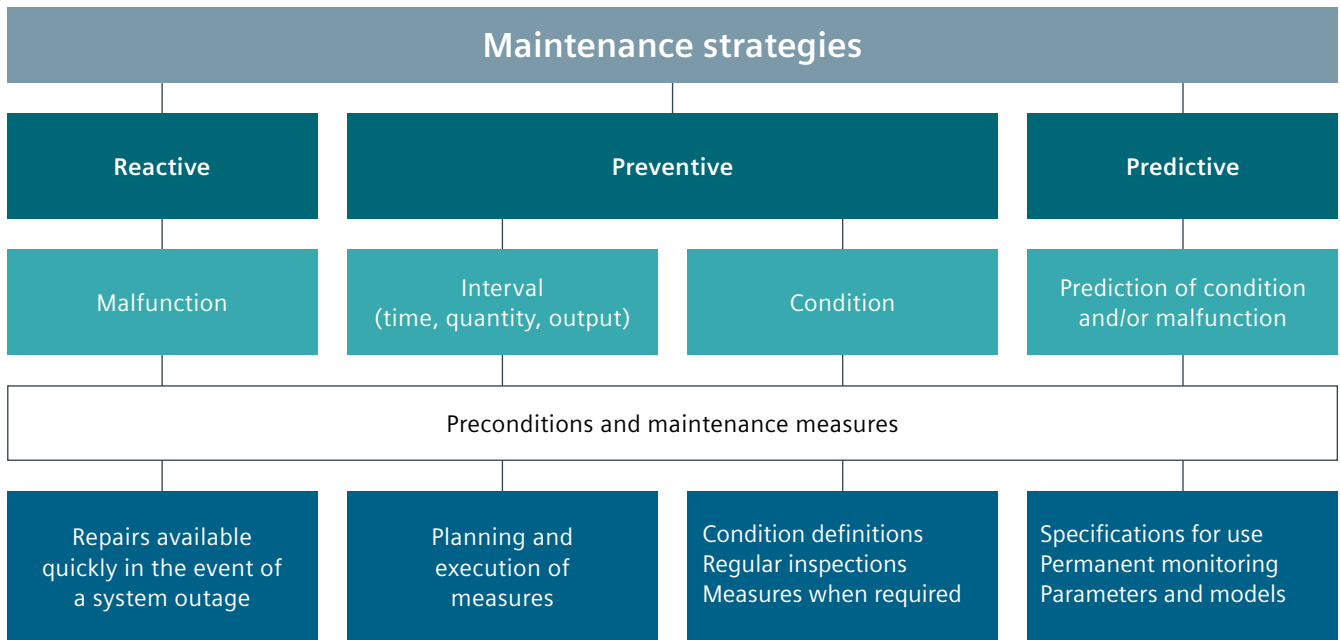
Identify areas for improvement, avoid risks, ensure availability: a threefold benefit for those who regularly perform systematic analyses of their systems.

What does this mean for you?

To remain competitive, plants need to be highly productive, efficient, and flexible in the way they operate. Preventive System Analysis helps minimize risks and avoid potential problems before they occur – meaning identify the causes, not just the symptoms.

Automation system software is especially critical for a plant's productivity, and that's where Preventive System Analysis comes in – with inspections in accordance with DIN 31051, from the recording system and diagnostic data to comprehensive data analysis and recommended maintenance.

Comparing industrial maintenance strategies



Industrial maintenance terminology

DIN 31051 divides maintenance activities into four basic categories:

- Inspection
- Preventive maintenance
- Repair
- Improvement

Conversely, DIN 13306 defines the terminology for the strategy or concept of maintenance. The current standard distinguishes the categories shown in the graphic above.

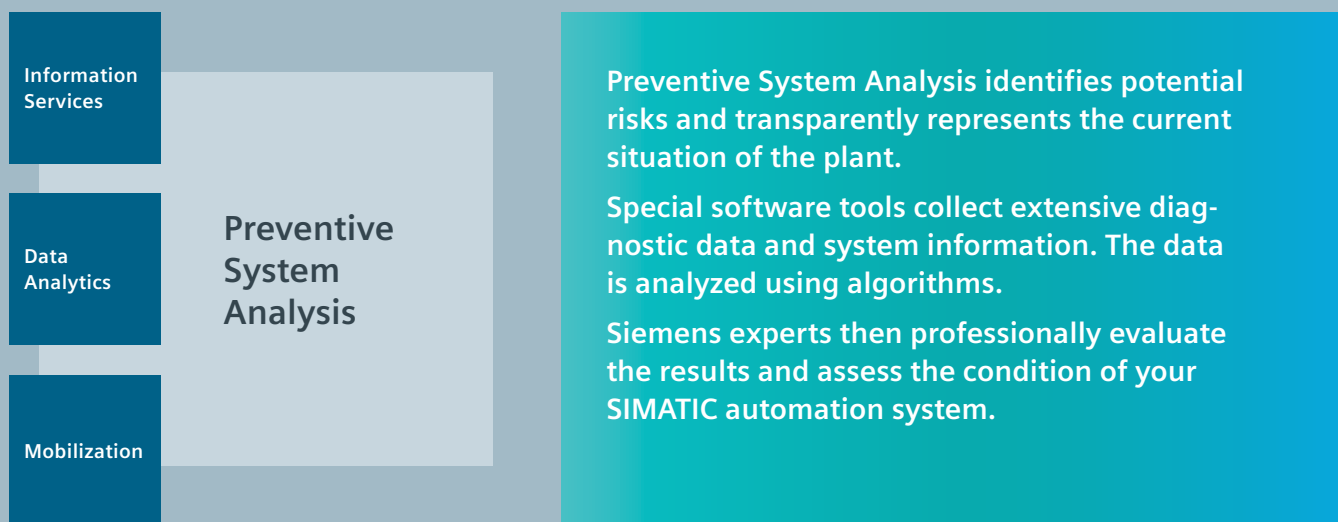
The practical implementation of a maintenance strategy for a complex plant can, of course, include mixed forms tailored to meet the differing maintenance requirements of the components in question.

Prescriptive maintenance

Advances in digitalization are also allowing maintenance strategies to be refined. Prescriptive maintenance delivers potential solutions that represent the best possible maintenance measures for the current machine or plant condition.

This includes running through “what-if” scenarios with a range of options and analyzing the results in each case. Automated maintenance measures are also conceivable using artificial intelligence, either centrally or directly focused on the item requiring maintenance.

Identify vulnerabilities and areas for improvement



Preventive System Analysis identifies potential risks and transparently represents the current situation of the plant.

Special software tools collect extensive diagnostic data and system information. The data is analyzed using algorithms.

Siemens experts then professionally evaluate the results and assess the condition of your SIMATIC automation system.

Mobilization module

The Mobilization module is a prerequisite for the next steps in Preventive System Analysis.

The online Data Collector is a tool in the SIMATIC Assessment Suite that conveniently collects and structures the required system data.

This data can be gathered from either a local or a networked system.

This is normally done on-site by the end user, if required by regional Siemens service providers.

The compiled system data is made available to Siemens experts for the next stage of "Data Analytics".

Data Analytics module

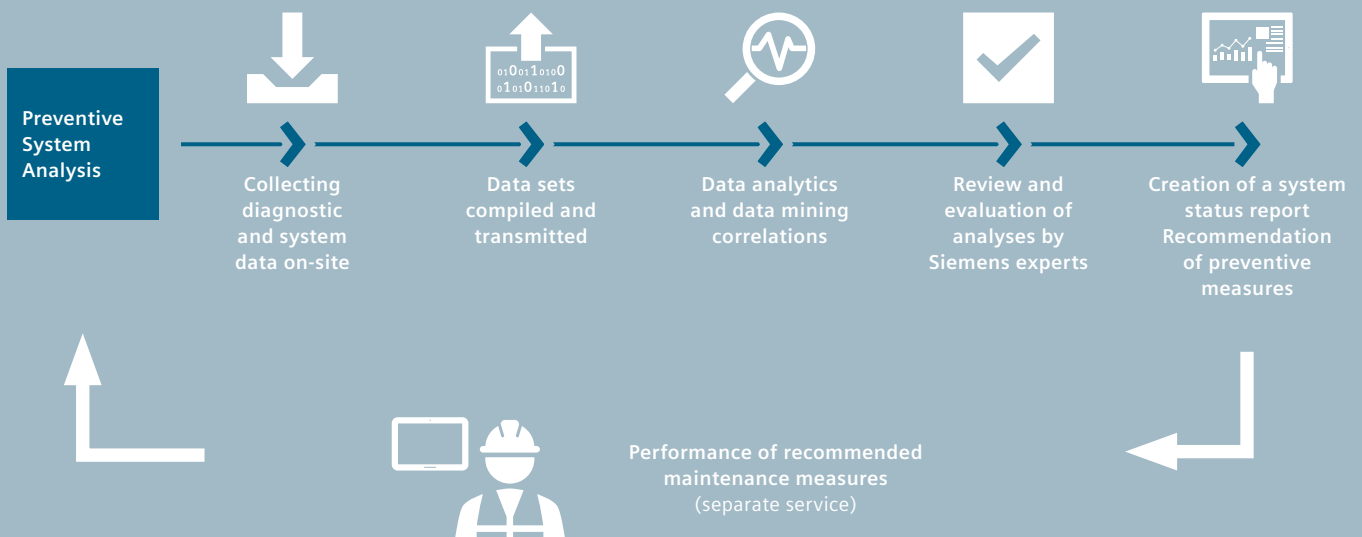
This module provides an analysis of the compiled system data using data processing tools and indication analyses: for example blacklisting, whitelisting, reasoning-based methods, anomaly detection, pattern mapping, and statistics.

The knowledge database brings together information from earlier analyses, insights gained from ongoing developments, and the expertise of "technical support".

Statistical methods used in data mining also help identify potential correlations from the extensive volumes of data.

Based on the results of the electronic checks, experts perform a detailed evaluation and provide specific recommendations.

Ensure system availability with regular system analysis



Process of system analysis

Information Services module

This module generates a system status report based on the results derived from the Data Analytics module.

Siemens experts then professionally evaluate the results and assess the condition of your SIMATIC automation system.

The condition of your system and the actions recommended to minimize risk and optimize system availability are then discussed.

Analysis and discussion of the reports with the customer take place on a quarterly basis.

How you benefit

- Data-based inspection and automated vulnerability analysis optimize preventive maintenance
- For complex software systems, our experts provide you with regular support
- Targeted measures are put in place as necessary to make maintenance more efficient



The benefits for your system

Improved maintenance

There's no such thing as perfect maintenance. It's a complex subject, and demands can change constantly. That's why continuous optimization of plant maintenance is a necessity, not a luxury.

Optimization also means eliminating unnecessary maintenance measures to ensure that available resources are used efficiently.

Preventive System Analysis regularly assesses the diagnostic data relevant to your system, which makes a reliable contribution toward optimizing your maintenance.



Preventing unplanned downtime

The top priority is to ensure plant availability. Unplanned downtime is always associated with maintenance or repairs that would otherwise be unnecessary. This can jeopardize the productivity and cost-efficiency of plant operations.

The rigorous application of state-of-the-art digital technologies ensures that operators have the latest information on the condition of their plant at all times.

Preventive System Analysis avoids potential risks by performing powerful, data-based inspections and automated vulnerability analyses.

Condition-based maintenance

Condition-based maintenance (CBM) is the maintenance when needed. CBM is performed after one or more indicators show that equipment is going to fail or that equipment performance is deteriorating (Wikipedia).

Preventive System Analysis uses precisely this approach to maintenance as required. Plant maintenance occurs at exactly the right time, enabling resources and labor to be used most efficiently. "As required" also means communicating recommended actions after they've been identified to enable the necessary activities to be prepared.



Benefit from Preventive System Analysis

Fast data collection



The efficient, tool-based collection of extensive diagnostic and system information enables the creation of a structured database.

In-depth data analysis



Various analysis modules like blacklisting, whitelisting, reasoning-based methods, anomaly detection, pattern mapping, and statistics make in-depth data analysis possible when used in conjunction with an expert knowledge database.

Transparent reporting



Regular reporting on system conditions creates transparency, and recommendations make it possible to optimize system availability and avoid plant downtime.

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