SIEMENS
Ingenuity for life

Digital Industry Services

Digital transformation in service

siemens.com/digital-industry-services

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Digital Enterprise

The building blocks that ensure everything works together perfectly in the digital enterprise

Digitalization is already changing all areas of life and existing business models. It is placing greater pressure on industry while at the same time creating new business opportunities. Today, thanks to scalable solutions from Siemens, companies can already become a digital enterprise and ensure their competitiveness.

Industry faces tremendous challenges

Reduce time-to-market

Today, manufacturers have to bring products to market at an ever-increasing pace despite the growing complexity of these products. In the past, a major manufacturer would push aside a small one, but now it is a fast manufacturer that overtakes a slow one.

Boost flexibility

Consumers want customized products, but at a price they would pay for a mass-produced item. That only works if production is more flexible than ever before.

Improve quality

To ensure a high level of quality while meeting legal requirements, companies have to establish closed quality loops and enable the traceability of products.

Boost efficiency

Today, the product itself needs to be sustainable and environmentally friendly, while energy efficiency in production has become a competitive advantage.

New business models

Collecting and analyzing machine data enables new, data-based business models to be developed. This lets machine builders sell their customers machine hours instead of machines, and to offer innovative services like predictive maintenance and condition monitoring. Manufacturers benefit from growing flexibility, greater plant availability, and increased productivity.

Increase security

Increasing networking escalates the threat to production facilities of cyberattacks. Today more than ever, companies need suitable security measures.

The digital enterprise has already become a reality

To fully benefit from all the advantages of digitalization, companies first have to achieve complete consistency of their data. Fully digitally integrated business processes, including those of suppliers, can help to create a digital representation of the entire value chain. This requires

- the integration of industrial software and automation,
- expansion of the communication networks,
- security in automation, and
- the use of business-specific industrial services.

MindSphere

The cloud-based open IoT operating system from Siemens

With MindSphere, Siemens offers a cost-effective and scalable cloud platform as a service (PaaS) for the development of applications. The platform, designed as an open operating system for the Internet of Things, makes it possible to improve the efficiency of plants by collecting and analyzing large volumes of production data.

Totally Integrated Automation (TIA)

Where digitalization becomes reality

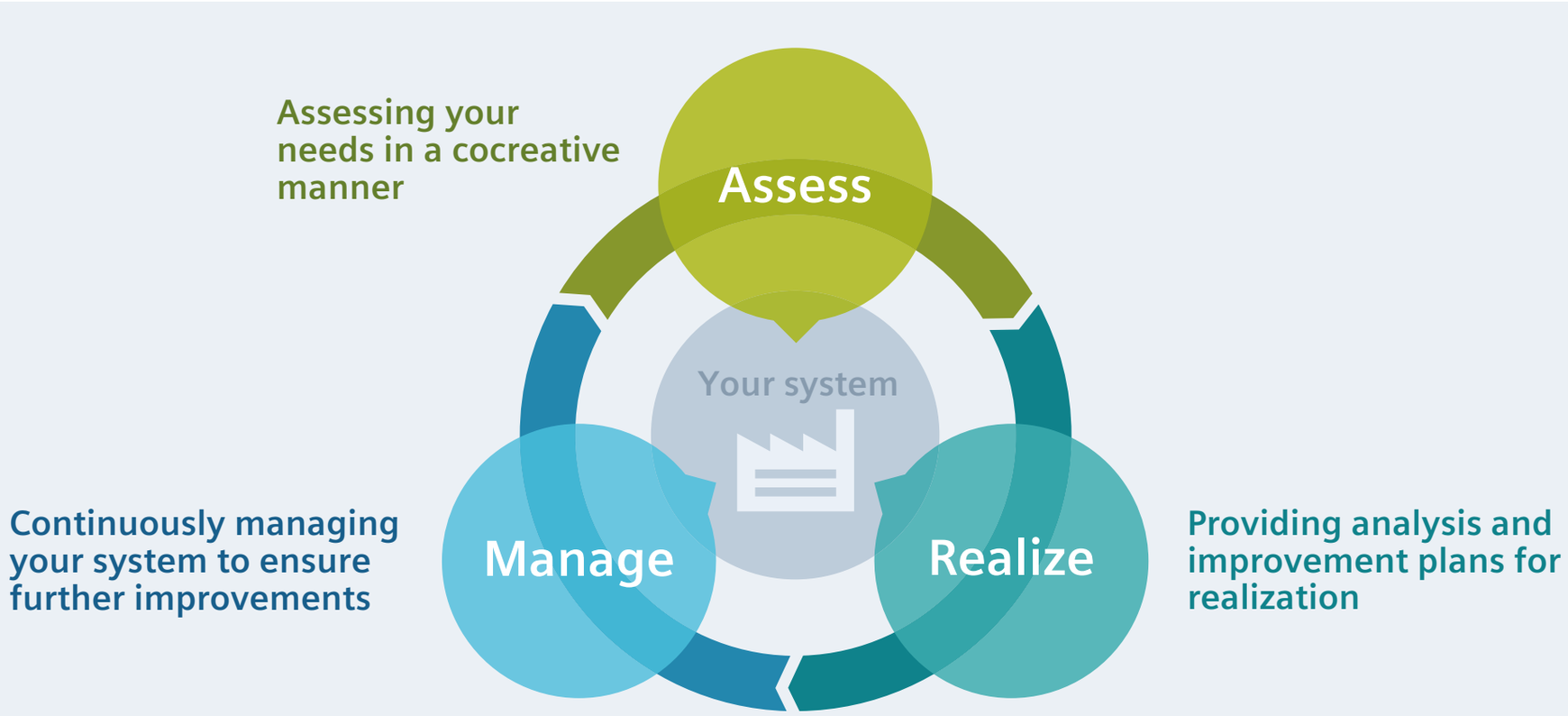
Totally Integrated Automation (TIA) ensures the seamless transition from the virtual to the real world. It already encompasses all the necessary conditions for transforming the benefits of digitalization into true added value. The data that will form the digital twin for actual production is generated from a common base.

Digital Plant
Learn more about the digital enterprise for the process industry
www.siemens.com/digitalplant

Digital Enterprise Suite
Learn more about the digital enterprise for the discrete industry
www.siemens.com/digital-enterprise-suite

Digital Industry Services

Nowadays, digitalization is reshaping the business with new challenges. Siemens Digital Industry Services and Industrial Security Services support their customers in their digital transformation and ensure plant security at the same time. Siemens can be involved right from the earliest stages of planning, engineering, installation, and commissioning all the way to operation and modernization. Siemens enables you to improve the overall equipment effectiveness, as well as your resource and maintenance management. This comprehensive service offering transforms your production and infrastructure systems step by step into the digital world. We analyze Big Data and merge it with data of the physical equipment to create Smart Data. This Smart Data allows you to run your assets in the best possible way – efficient, secure, and flexible.



Siemens helps you to stay at the top of your industry.

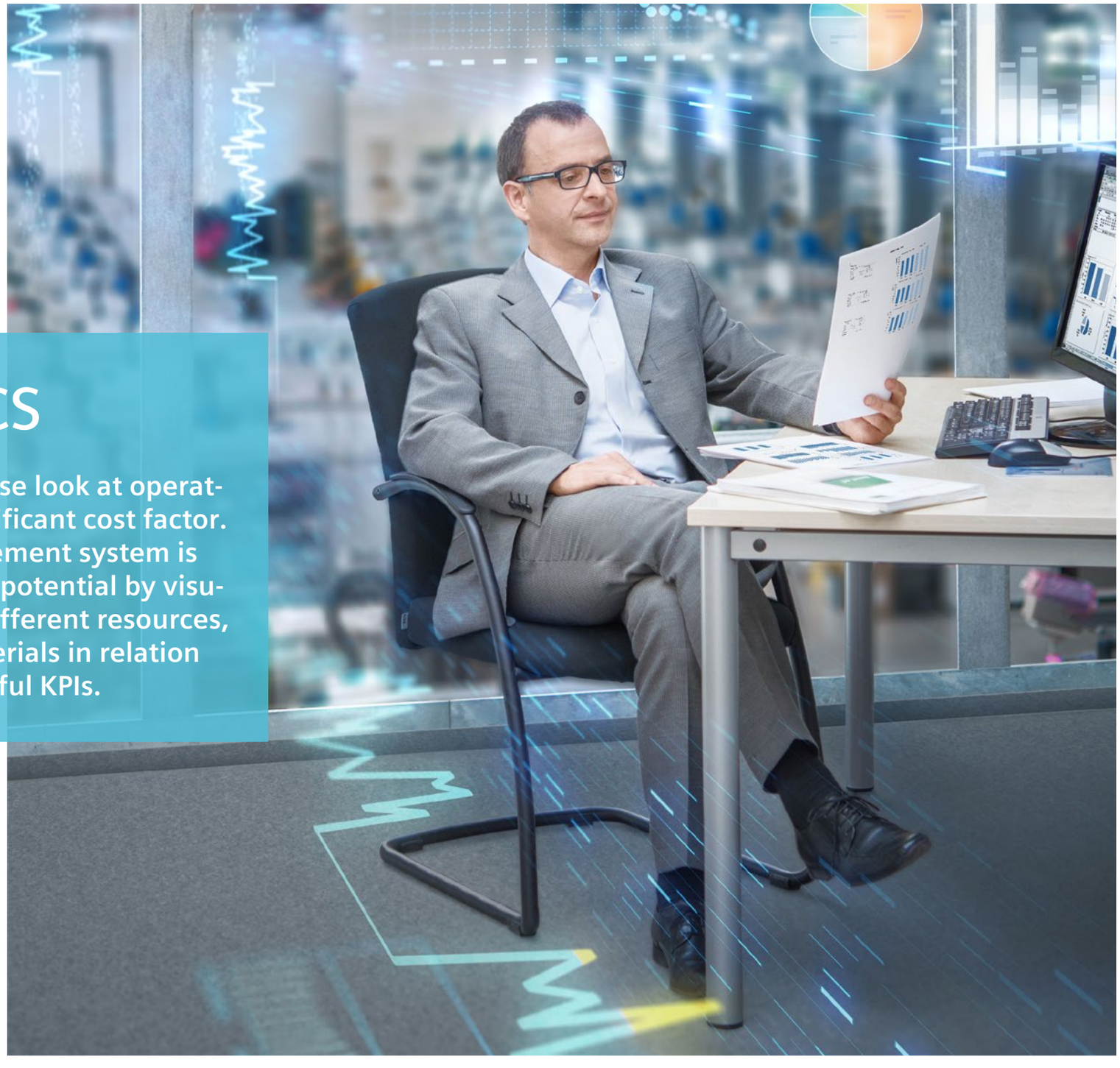
Further information

Newton Sites

Siemens Industry Online Support

Contact phone

Please contact your local Siemens contact partner



Energy Analytics

It is particularly worthwhile to take a close look at operating costs, because they represent a significant cost factor. Here a professional energy data management system is indispensable: It reveals hidden savings potential by visualizing the consumption data of many different resources, such as power, gas, water, and raw materials in relation to production figures based on meaningful KPIs.

Three good reasons for Energy Analytics

Intelligent – Simple – Economical

In addition to automated reports, Energy Analytics also offers you individual analyses from our experts that will lead to cost savings. Take full advantage of all potentials from documenting and analyzing relevant forms of energy to normalization of weather (temperature, pressure) and process data.

Simplicity is our top priority for Energy Analytics. Siemens offers you a cloud based energy data management system that can be installed in just a few steps and takes very little time to use. That gives you the freedom to focus on your core business.

Furthermore, the costs for energy management can easily be added to your operating costs. Pay only for the functions that you need now – and gradually expand your energy data management bit by bit.

With Energy Analytics, energy data management as a managed and cloud-based service, you can use your energy data to generate measurable added value.

One base package and several optional modules offer you a scope of features that precisely correspond to your requirements. In addition, the modular design of Energy Analytics enables you to expand your energy data management system at any time to meet your needs.

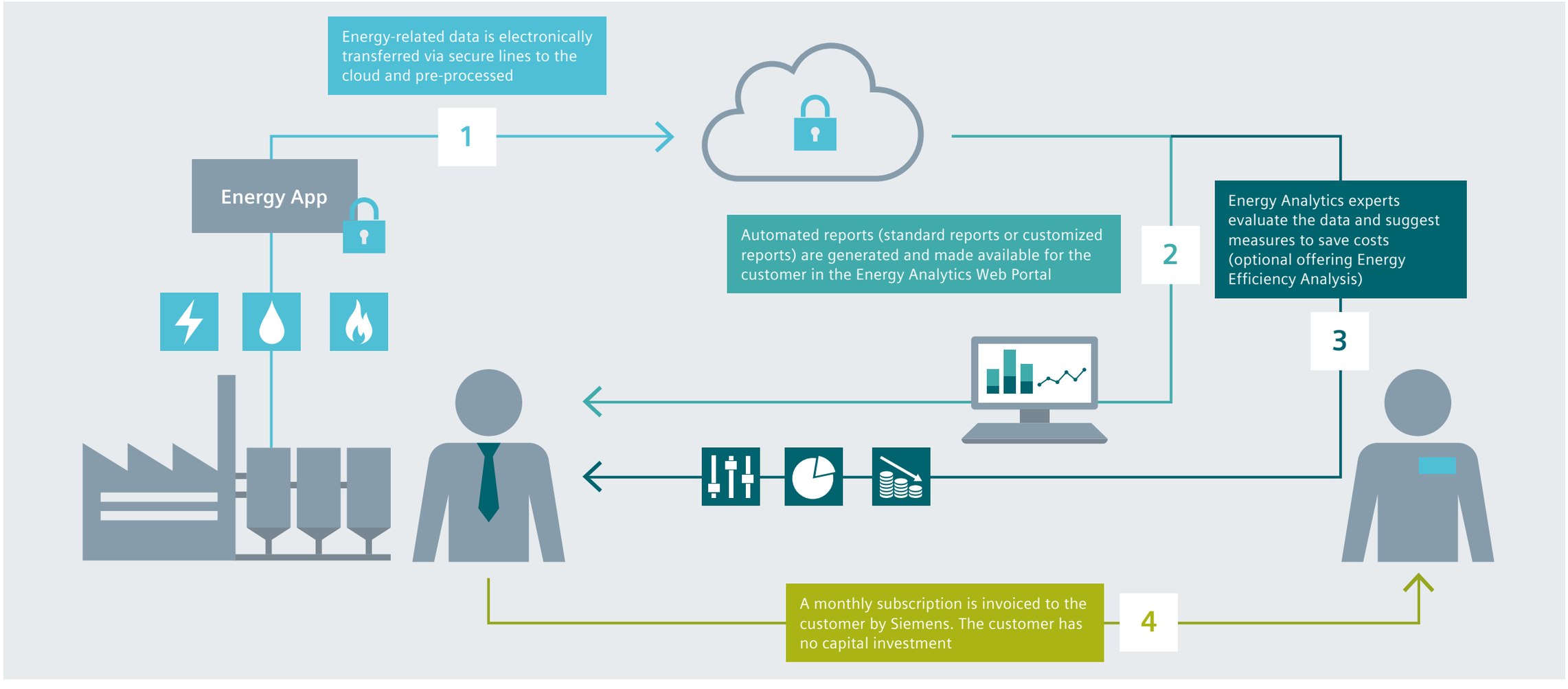
Your benefits

- Cloud based energy management service requires minimal amount of your resources
- Transparency on your energy consumption and KPIs
- Energy cost-saving of up to 5% through reduced energy consumption
- Automated reports to be viewed by and shared with your team and management in your Web portal – anytime, anywhere
- Monthly subscription as OPEX instead of CAPEX

Functionality

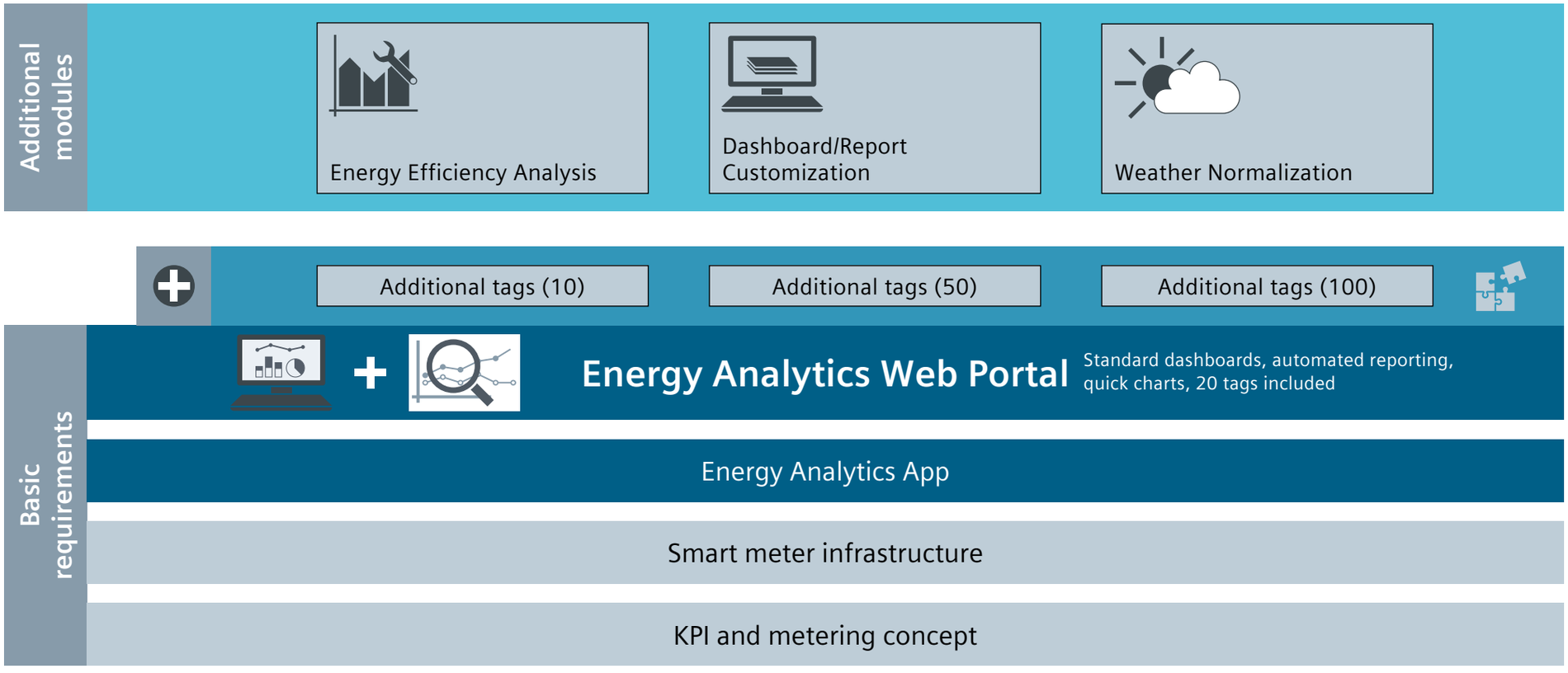
Data is transferred automatically via an encrypted connection, by sending your energy data to the Energy Analytics Web Portal by means of the Energy App. Standardized dashboards can be used to visualize and analyze your data in the Energy Analytics Web Portal.

With the Energy Efficiency Analysis module, Siemens energy experts analyze your data and send the results to you.



Energy data management system made to measure

The basic package includes standardized dashboards, automated reports, quick charts, and comprises 20 data tags that are attached to relevant measuring points in your production. This package makes your energy data transparent and reveals initial savings potential. Depending on the scope of your production and possible potential, additional data tags can be added to expand the functional scope of your Energy Analytics Web Portal (10, 50, or 100 data tags). In addition, you can choose between three added-value modules as part of your energy management system that you can order individually or in a package. These include Energy Efficiency Analysis, dashboards/customized reports, and Weather Normalization.



The Energy Analytics Web Portal

The basic Energy Analytics Web Portal includes the following services:

- Up to 20 tags
- Data acquisition
  - Automatically with the Energy App
  - Manually via the Energy Analytics Web Portal
  - Data recording of 15-minute consumption values
- Dashboards and quick charts
  - Dashboards: up to five dashboards
  - Quick charts: one quick chart per data point
- Automatically generated reports can be downloaded to spreadsheet software

Publication frequency of reports:

Basic report	**Weekly, monthly, and annually**
Management report	**Monthly**

Additional tags

- 10 or 50 or 100 additional tags can be ordered based on the requirement

Features

- Get transparency on energy usage
- Bring all your energy information together onto a common platform
- Determine the distribution of energy costs in specific areas
- Compare different tags via interactive and dynamic charts
- Track your plant's energy profile with time-based energy statistics, e.g. peak demand versus weekday

Standard dashboard creates transparency and consists of a timely scalable bar chart and break-down pie chart. It will be available for each defined tag.

- Reports: one basic and one management report

Additional modules

Energy Efficiency Analysis (one-time service during the two-year contract period, typically after 6–12 months):

- Analysis of energy performance and identification of areas with presumed energy savings
- Analysis of non-productive time periods
- Analysis of the potential for optimizing load scheduling, e.g. to avoid peak load periods
- Analysis of the defined Energy Performance Indicators (EnPIs) – developed and agreed together with the Siemens experts

Dashboard/Report Customization (on-time service at installation and commissioning of Energy Analytics):

- Presentation of analysis for the plant tailored to customers goals and needs
- Comparison of average Energy Performance Indicators (EnPIs)
- Creation of dashboards for multiple locations
- Creation of complex visualizations (e.g. Sankey diagrams [= energy flow diagrams])

Weather Normalization (set up during installation and commissioning):

- Elimination of weather influences on Energy Performance Indicators (EnPIs) and consumptions
- Acquisition of live weather data from the nearest weather station

Order information

Offering	Article number
Energy Analytics Web Portal	9AS2111-1AB11-1AA1
Energy App (requires an IPC to be installed on)	9AS2112-1AA11-1AA1
Additional tags (10)	9AS2113-1BA11-1AA1
Additional tags (50)	9AS2113-1BA14-1AA1
Additional tags (100)	9AS2113-1BA16-1AA1
Weather Normalization	9AS2113-1BA21-1AA1
Energy Efficiency Analysis	9LF1110-8EA20-0AA0
Dashboard/Report Customization	9LF1110-8EA10-0AA0
Basic requirements (KPI and metering concept, smart meter infrastructure)	Cost have to be calculated additionally based on customer requirements

Further information

Siemens Industry Online Support – Energy Analytics

Energy Analytics

Brochure Energy Analytics

Reference at Alcon

Reference at Siemens AG Amberg

Contact e-mail

fa-services.industry@siemens.com

Industrial Network Validation

Industrial Network Validation is a standardized and innovative service offer for validation of PROFINET and PROFIBUS-DP networks.

It contains diverse checks according to planning, hardware, structure, and data and delivers a validation report with suggestions for optimization.

Siemens PROFINET validation – a powerful portfolio

Industry networks are crucial capital assets. Operational procedures within the industry are becoming more and more digital and penetrate all levels of production automation. At the same time the data amount increases with high speed. Hence it's obvious: Functioning communication networks are absolutely crucial and indispensable for companies competing on today's dynamic global markets.

Our INV service helps to avoid unplanned downtimes of production caused by network interruption or failures. It provides transparency of existing communication reserves for upcoming plant extensions. Furthermore, it can be used if a network extension is already completed to ensure it was erected according to the standards of the international PROFINET and PROFIBUS association.

Within our INV offering we can provide for PROFINET and PROFIBUS-DP networks the following services:

- Network design and planning check
- Visual check of network cables and devices
- Physical check of the network structure
- Data check
- Data stress check (PROFINET only)
- Validation report with recommendations for optimization
- Optional packages

Secure productivity of your plant through high availability of the plant network by using our Industrial Network Validation Service!

Functionality

1. Pre-clarification

- Collect the requirements
- Walk-through and fill-in of the provided checklist by Siemens and customer
- Effort estimate based on customer requirements and delivery scope of our envisaged service modules
- Clarification of the entire project execution (schedule, partner, responsibilities, etc.).

2. On-site deployment

- Check of active and passive components in the facility
- Measurement of significant fieldbus KPI (e.g. network load, cycle time, telegram losses, error telegrams) following the given Siemens process structure by means of the Bus Analyzer software
- Online stress test to identify available network reserves and to detect potential error sources.

3. Validation report

- Summary of all performed tests and measurements
- List of all validated systems
- Analysis of measurement results
- Recommendations for actions to optimize the systems
- Description of network reserves

Order information

Offering	Article number
Validation PROFINET	9LF1110-6MA40-0AA0
Validation PROFIBUS-DP	9LF1110-6MA30-0AA0
Validation consulting option	9LF1110-6MA10-0AA0
Complete cable and device check option	9LF1110-6MA41-0AA0
Media Redundancy Protocol check option	9LF1110-6MA42-0AA0
Offline data stress check option	9LF1110-6MA43-0AA0

Further information

Siemens Industry Online Support

CS FA Website

Contact phone

Please contact your local Siemens contact partner

Predictive Services for Presses

Coming soon

Predict and improve your press performance with Predictive Services for Presses

Predictive Services for Presses provide full prognostic of a press or a press line through seamless integration of condition monitoring data and sensor data combined with expert-based and machine-learning-based analytics to identify failure sources, detect anomalies, and predict events of failure before they occur. This enables condition-based maintenance scheduling, which significantly improves efficiency while maximizing press availability.

Why this service?

- Downtimes in an automotive press line are extremely cost-intensive
- Automotive plants have the need to minimize unplanned downtimes as much as possible to stay competitive in the market
- Press lines are highly critical and can have a huge impact on the overall production cost and effectiveness

Your benefits

- Optimize maintenance scheduling
- Reduce unplanned downtime
- Improve operational performance
- Increase availability
- Enhance product quality

Functionality / services

1. Connectivity

- Assessment and prioritization of failure use cases
- Concept definition and installation of hardware and software for data collection (e.g. sensors, condition monitoring software, edge or cloud setup)
- Customization of analytical model

2. Analytics

Expert-based analytics

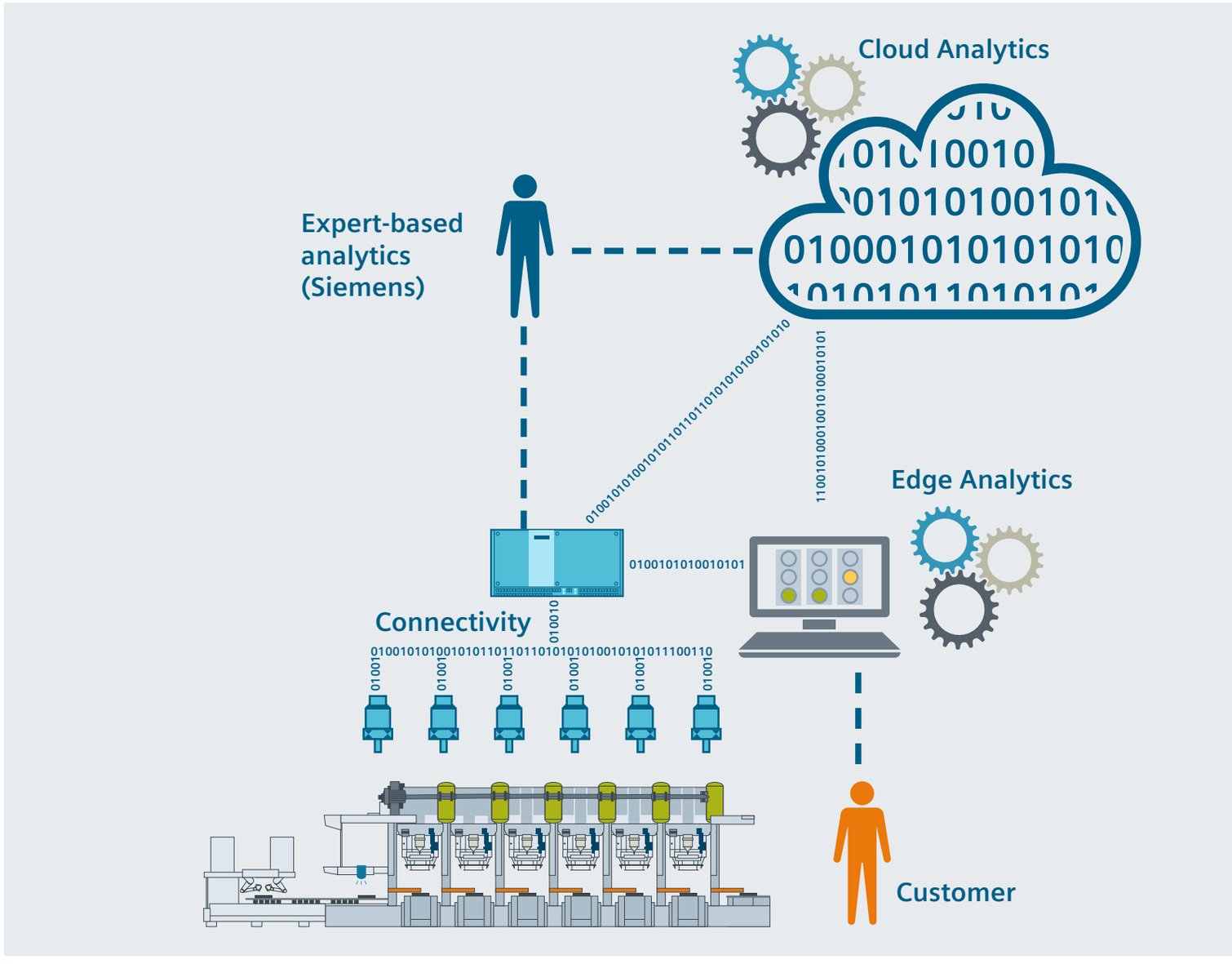
- Definition and configuration of threshold values
- Customization of dashboards
- Creation of reports
- Root-cause analysis

Cloud/Edge analytics

- Detection of anomalies
- Prediction of failures
- Notification of failures in advance via dashboards

3. Maintenance

- Based on required maintenance activities, matching services can be provided, e.g. spare parts supply, modernization and retrofit, integral plant maintenance



OEE Analytics

OEE Analytics enables improvement of the overall equipment effectiveness through concept definition, installation of data acquisition setup, cloud-based OEE transparency, and expert analytics for OEE diagnostics.

Coming soon

Why this service?

- Equipment failures cause production inefficiencies and downtime
- Base for effective plant maintenance is to have transparency over all assets
- The customer is often too busy or not able to backtrack through events analyzing what caused the problem

Your benefits

- Transparency about quality, availability, and performance of machines
- Identification of potential for improvement in overall equipment effectiveness
- KPI-based production planning and machine optimization possible

Functionality / services

1. Concept definition and MindSphere connectivity

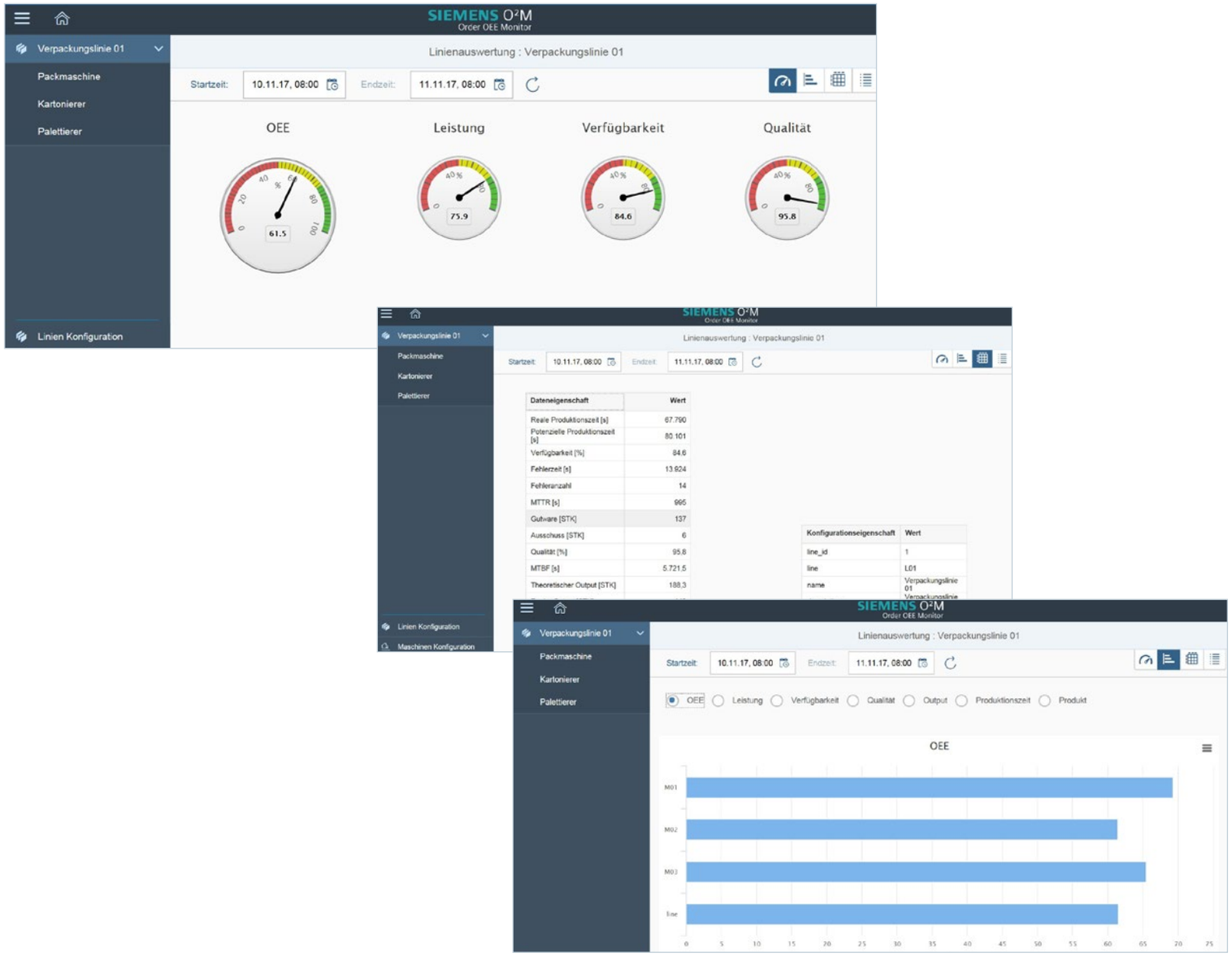
- Evaluation of data collection and cloud connectivity requirements
- On-site installation of the needed hardware and software
- Fast and effective data mobilization from assets to the MindSphere cloud

2. OEE visualization from line to machine level

- Data modeling and preprocessing of the input data to the OEE KPIs
- Mapping of machine data to the MindApp order OEE monitor
- OEE dashboard including performance, availability, and quality for selected time frame and machine/line

3. Expert analytics for OEE diagnostics

- OEE trends analysis and comparison of similar facilities over time
- Recommendation for OEE improvement measures at machine/line level



Remote Learning @SITRAIN

Remote Learning@SITRAIN offers digital knowledge and information transfer through worldwide remote access to exclusive training devices and our certified trainers.

Why this service?

Remote Learning@SITRAIN is the innovative answer to the growing demand worldwide for SITRAIN training courses.

This form of digital knowledge and information transfer makes it possible to attend training courses with certified course instructors and access exclusive training devices because the participants are connected with the instructor and/or the training device by remote access. This way, export knowledge is made available to everyone right on the training device!

Your benefits

- Expert knowledge via remote access
- Learn digitally
- Independent of on-site training devices
- Reduce costs
- Training environment and contents via remote access

The digital transfer of knowledge and information is an integral part of professional training today. SITRAIN supports this trend with the development and execution of Remote Learning@SITRAIN. This technology offers customers and colleagues throughout the world the ability to attend training courses and access training devices by means of a remote connection to the trainer and the training device. Siemens has the necessary hardware and software in-house to provide Remote Learning@SITRAIN and make the necessary infrastructure and technology available to the customer.

SITRAIN offers an extensive remote portfolio that is continually being expanded. In the following, we present a few use cases that can be executed with Remote Learning@SITRAIN.

I Classroom training with remote access to training devices and virtual machines

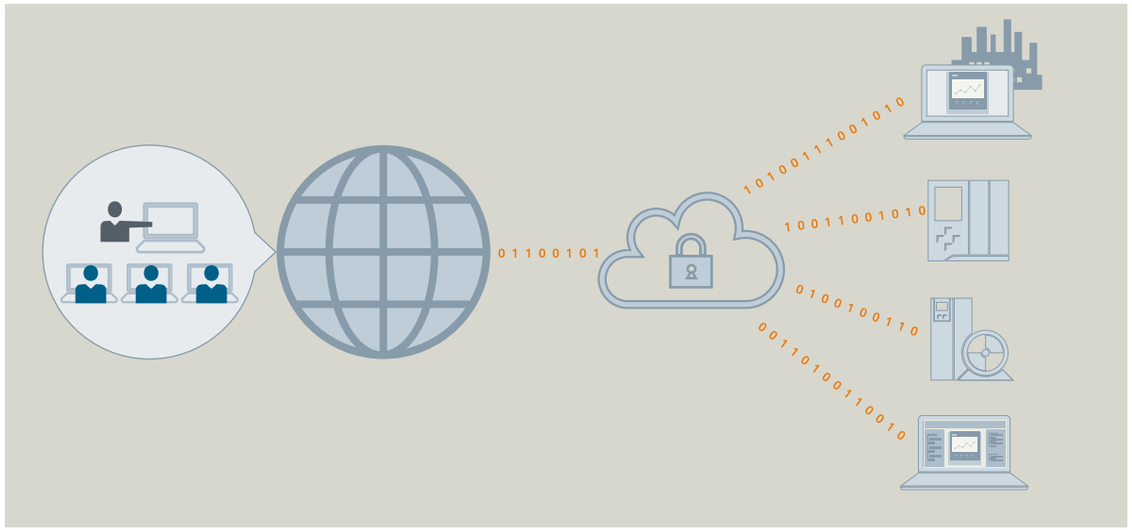
II Online instructor-led training with remote access to training devices and virtual machines

III Online self-paced training with remote access to training devices and virtual machines

Elements / use cases

I Classroom training with remote access to training devices and virtual machines

Course participants gather in a training room with the trainer and access training devices located at SITRAIN via remote connection.



II Online instructor-led training with remote access to training devices and virtual machines

Participants and trainers are in different locations but are connected with each other online. Together they access training devices or virtual machines located at SITRAIN via a remote connection.

Service details

III Online self-paced with remote access to training devices and virtual machines

This type of training takes place without a trainer. Participants are distributed worldwide and access training devices or virtual machines located at SITRAIN via a remote connection at various scheduled times.

This technology offers customers around the world the ability to participate in training courses and access training devices via a remote connection with the trainer and the training device.

Siemens has the necessary hardware and software in-house to offer Remote Learning@SITRAIN and make the necessary infrastructure and technology available to customers:

- Exclusive training devices
- Certified experts
- Detailed, high-quality training materials in PDF format
- Flexible, location-independent courses

Limitations of Remote Learning@SITRAIN

- Remote Learning@SITRAIN is only conditionally suitable for courses with hardware-based exercises (hands-on training)
- Remote Learning@SITRAIN is not suitable for repair courses.

Order information

SITRAIN also offers various classroom courses in the form of remote courses. The portfolio is being expanded continually.

Please send your inquiry about remote courses or further information to

remotelearning.industry@siemens.com

Further information

Website Remote Learning@SITRAIN

Website SITRAIN – Training for Industry

Contact e-mail

remotelearning.industry@siemens.com

Training for TIA in the Digital Enterprise

Challenges faced by industry today include being faster in the market and reacting more flexibly to market changes. SITRAIN enables our customers to take on the challenges and to benefit from the full potential of digitalization.

Why this service?

- Gaining an overview of products and functionalities of Totally Integrated Automation (TIA) in the Digital Enterprise
- More real application and less product-related trainings based on the Digital Enterprise scenarios for the discrete automation
- Usage of innovative learning methods (tablet, e-learning, video, virtual learning)

Your benefits

- Possibility to do the first steps within digitalization for the discrete automation
- Increasing productivity by using the scenarios for digitalization in the discrete automation
- Improving competitiveness by benefits of digitalization for the discrete automation

Training overview

Introduction Compact (DI-INTROC)	1 day
Automatic execution of engineering tasks (DI-AUTOEN)	5 days
Introduction to Standardization (DI-STAND)	1 day
Virtual Commissioning for Machines (DI-VIRTCOM)	5 days
TIA Portal Openness Programming 2 (DI-OPEN2)	2 days

siemens.com/sitrain-digitalization

Digital Drive Train Services

Identifying weak points at an early stage, rapid trouble-shooting, ideal planning of maintenance and servicing activities, optimizing stocks of spare parts – these are all benefits that you get as a plant operator if you want to be kept informed about the status of your drive systems at all times. Digital Drive Train Services provide you the support you need.

Ensure high availability of your drive train

Digital Industry Services for motors and converters

Minimize unscheduled downtimes. Plan downtimes in advance. Significantly reduce downtime costs. Optimize your energy costs. Digital Drive Train Services add a further dimension to our traditional service offerings. In addition to the hardware, connectivity, and platform, you can also use the associated Digital Industry Services throughout the entire drive train. Our Digital Drive Train Services are made up of a range of services that you can use on a modular basis, entirely in line with your needs.

Your benefits

Digital Drive Train Services enable you to:

- Shorten unplanned downtime by enhancing troubleshooting activities with Remote Services
- Minimize unplanned downtime and plan downtime in advance by optimizing maintenance activities with continuous Condition Monitoring Services
- Optimize the asset performance by managing assets based on performance KPIs with Improvement and Optimization Services

Siemens keeps your plant running at top performance and provides you with all the opportunities that digitalization has to offer.

Functionality

Portfolio

The Digital Drive Train Services consists of various digital service portfolio elements, classified under these three areas:

1. Remote Services
2. Condition Monitoring Services
3. Improvement and Optimization Services

Remote Services

Shorten unplanned downtime
by enhancing troubleshooting activities

Condition Monitoring Services

Minimize planned and unplanned downtimes
by optimizing maintenance activities

Improvement and Optimization Services

Optimize the asset performance
by managing assets based on performance KPIs

Drive Train Analytics

Remote Support
(incl. on-call service)

Remote Diagnostics

Mobile Diagnostics

Energy Performance Contracting
(Energy Analytics as option)

1. Remote Services

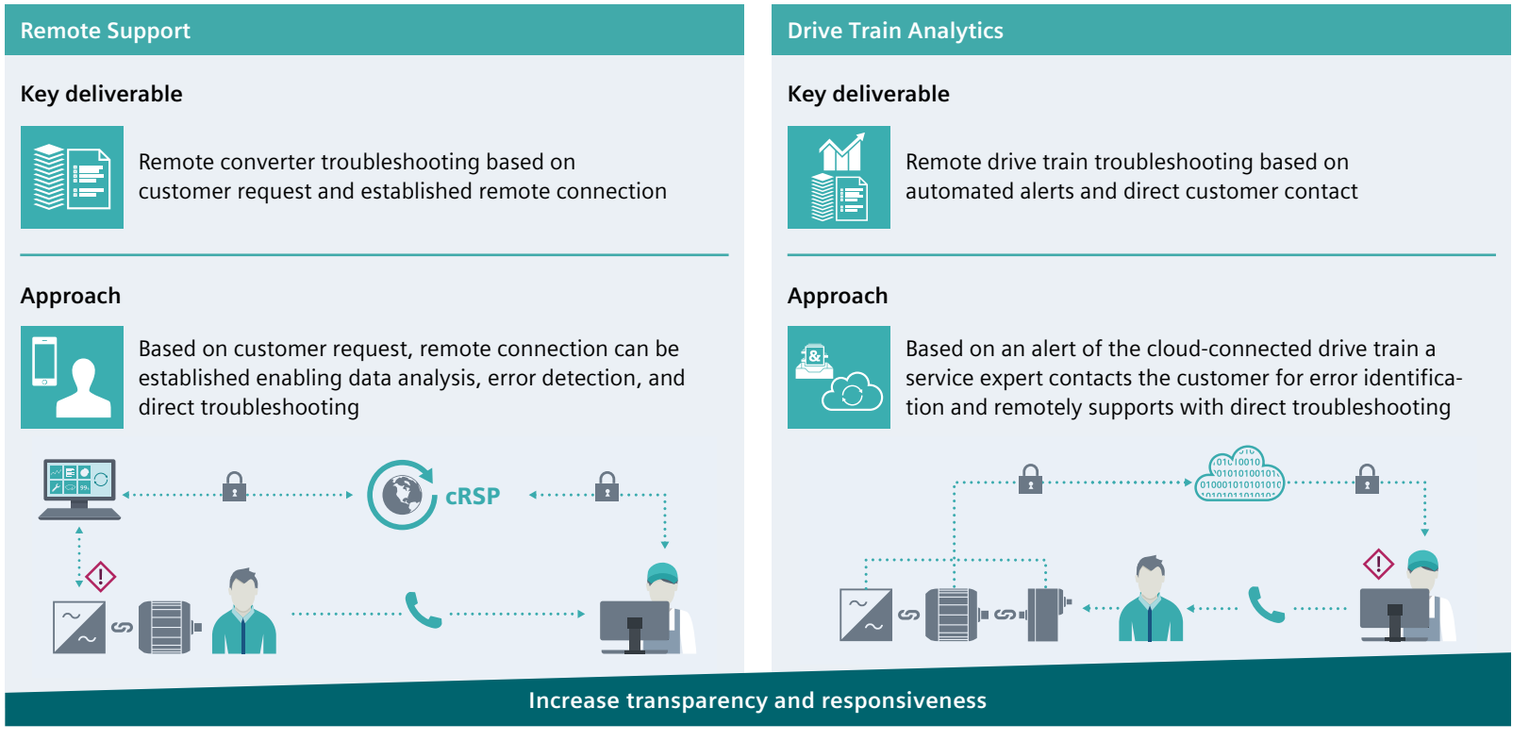
Shorten unplanned downtime

High availability levels are essential for complex drive systems. With the high degree of electronic and electrical components, frequency converters can suffer from disturbances and faults, endangering the drive train availability and resulting in potentially significant financial losses due to interruption of the production process.

With Remote Services, Siemens is offering a new type of on-call service. A direct link to the customer's system – via remote or cloud connection – can be established when a fault occurs. All analysis, diagnostic, and intervention options can therefore be utilized within a very short time.

Available service offerings:

- Remote Support for LV/MV converters (see here)
- Drive Train Analytics for HV motors and MV converters (see here)



2. Condition Monitoring Services

Minimize unplanned and planned downtimes

Drive components, such as motors and converters, are frequently subject to high loads and stress levels. Depending on the service life and load, they are subject to different levels of attrition and wear. Frequently, this operating load cannot be identified with the naked eye over long periods of time – above all with electronic components, so that failures and unscheduled downtimes can occur with incalculable financial losses.

Consequently, it is important to be able to estimate correctly the state of the various components and their loads at all times.

Continuous condition monitoring makes it possible to detect changes in their operating condition at an early stage so that countermeasures can be taken promptly. Siemens is offering a portfolio of Condition Monitoring Services with standardized or customized solutions for any size of plant.

For Condition Monitoring, and its related services, there are three alternatives to choose from, depending upon the connection options, or on the requirement placed on continuity, transparency, and responsiveness.

Available service offerings:

- Mobile Diagnostics for LV/HV motors and LV converters (see here)
- Remote Diagnostics for LV/HV motors (see here)
- Drive Train Analytics for HV motors and MV converters (see here)

Mobile Diagnostics

Key deliverable

One-time expert report including specific service recommendations

Approach

On-site measurement conducted by a service expert with mobile measuring equipment on customer demand

Remote Diagnostics

Key deliverable

Regular expert reports with predefined alerts and trend-based service recommendations

Approach

Permanent measuring equipment captures data locally. For analysis, the data is transferred via a highly secure remote connection

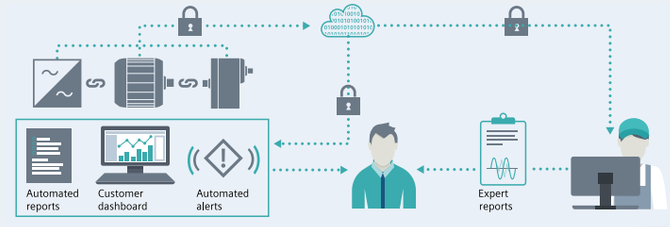
Drive Train Analytics

Key deliverable

Continuous condition analysis with automated alerts, dashboards, automated reports, and services (optional)

Approach

Permanent measuring equipment captures data using a highly secured link to the cloud



Increase continuity, transparency, and responsiveness

3. Improvement and Optimization Services

Optimize the asset performance by managing assets based on performance KPIs

Raising competitiveness by increasing productivity is the most common and recurring challenge in industry. The options for investment outside of your core business such as energy efficiency improvements are a possible lever, but savings uncertainty is a common showstopper for these projects. In addition, when given a narrow investment choice between a production-related project versus energy efficiency, the decision is always clear.

What if there was a way to make an energy efficiency project more certain than a core-business opportunity? And rather than having to make a choice, what if you could invest in both opportunities? Energy Performance Contracting for drive applications from Siemens does just that.

Energy Performance Contracting for drive applications pays for optimization measures through savings in energy costs. The projects are implemented according to a four-step process with low risk for our customers thanks to the promised savings.

Available service offering:

- Energy Performance Contracting (EnPC) (see here)

Service details

1.1. Remote Support for LV/MV converters

Fast downtime recovery by expert support via remote access connection

Based on a customer request, a Siemens expert will establish a remote cRSP connection. Using this connection, the Siemens expert is able to analyze all data stored on the converter and identify the failure reason and consult the customer on how to bring the converter back into operation.

With the customer's permission, the Siemens expert can even implement parameter and setting changes directly using the cRSP connection.

Your benefits

The expansion of the on-call service by the Remote Support gives the customer the following advantages:

- **Shorten unplanned downtimes** by faster access to expert analysis and thus faster converter troubleshooting
- **Reduced service intervention cost** by less and faster on-site services and a high rate of first-time-fix
- **High data security** by state-of-the-art security standards (ISO 27001 and CERT-certified) and full customer control

Click here for further information

2.1. Mobile Diagnostics for LV/HV motors and LV converters

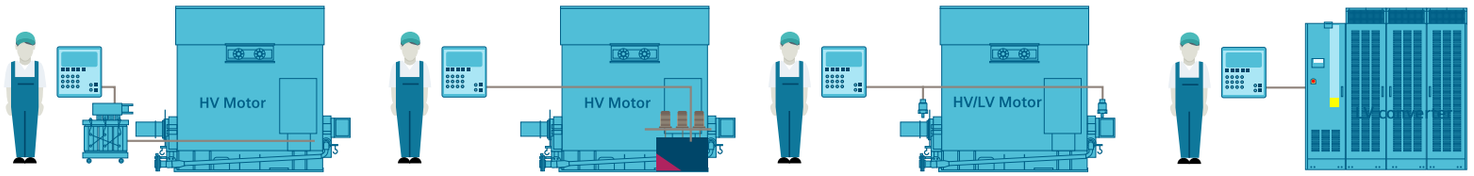
On-site measurement by a service expert with mobile measuring equipment

For Mobile Diagnostics, a Siemens service expert conducts an on-site measurement using mobile measurement equipment.

After the on-site measurement is conducted, the collected data is analyzed and an expert report containing all relevant findings and related recommendations is provided.

Your benefits

- **No permanently installed** measuring equipment required
- **Higher plant availability,** e.g. with PD measurement by **reducing the risk** of winding failure **downtimes by up to 75%**
- Performing the measurements in operation enables **scheduling of required maintenance activities** in an **upcoming downtime** (e.g. on-time spare parts ordering)



Mobile Diagnostics for motors: Offline partial discharge	Mobile Diagnostics for motors: Online partial discharge	Mobile Diagnostics for motors: Vibration measurement	Mobile Diagnostics for converters: Components check
Measurement	**Measurement**	**Measurement**	**Measurement**
• Offline partial discharge (electrical winding system)	• Online partial discharge (electrical winding system) • Temperature (thermal wear profile)	• Bearing vibration (roller bearing) • Inspection data and visual check	• Transformer current • DC-link symmetry and leakage current • Fiber optics emitting power
Requirements	**Requirements**	**Requirements**	**Requirements**
• HV motor (>3.3 kV) • Access to the motor • For measurement the motor must be switched off and in cold condition	• HV motor (direct online and > 3.3 kV) • One-time installation of hardware components during shutdown, which enables measurement during operation	• HV/LV motor with roller bearing • Definition of measuring route • Access to motor during operation	• LV converter (SINAMICS S120, G130, G150, S150) • Access to the converter • Converter must be switched off for measurement
Deliverables	**Deliverables**	**Deliverables**	**Deliverables**
• Identify, localize, and evaluate weak points in winding insulation systems • Detailed condition report including maintenance recommendations	• Identify, localize, and evaluate weak points in winding insulation systems • Detailed condition report including maintenance recommendations	• Identify, localize, and evaluate weak points in the bearings • Detailed condition report including maintenance recommendations	• Optical inspection, component measurements, and error/failure log analysis • Detailed condition report including maintenance recommendations

2.2. Remote Diagnostics for LV/HV motors

Early error identification with regular condition monitoring

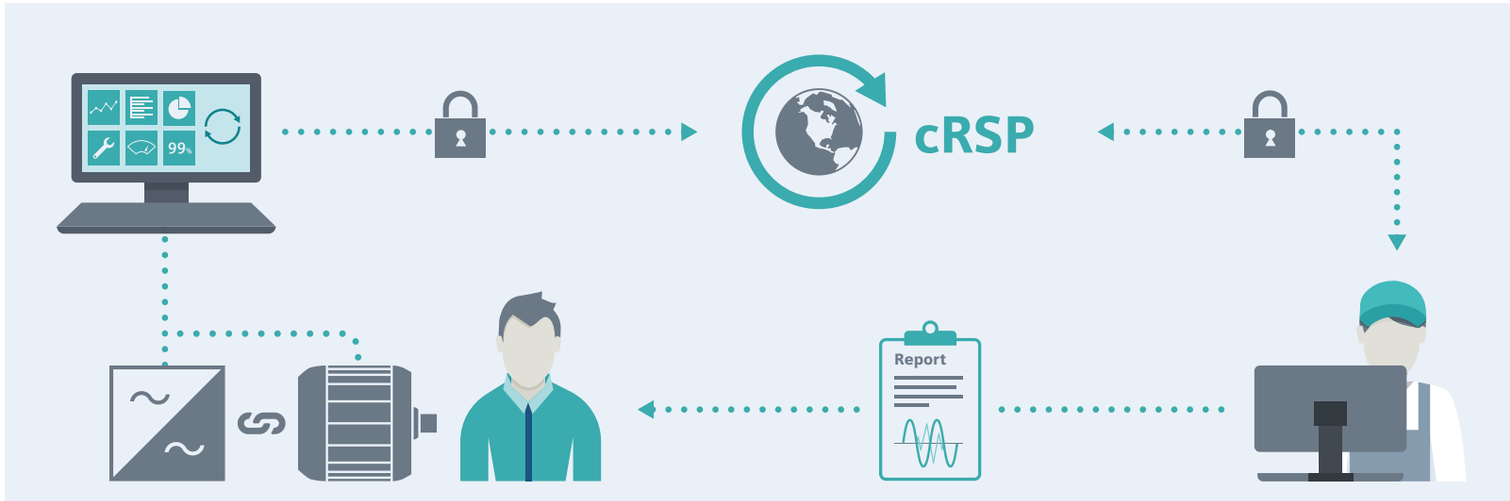
Remote Diagnostics is based on a system of permanently installed measurement devices as well as remote access for Siemens experts.

Throughout the operation, the condition monitoring system located within the customer's plant is collecting relevant status data, while the implemented alarming system is able to identify deviations of key parameters.

With the approval of the customer the Siemens expert can remotely access the historical data of the condition monitoring system.

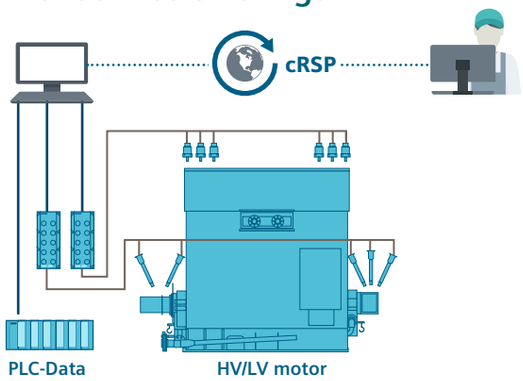
Based on this data an expert report is generated.

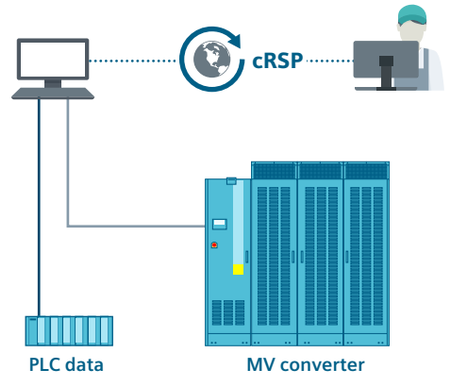
This report contains status analysis as well as service recommendations.



Your benefits

- **Early error identification** with **regular monitoring** incl. trend recognition for **minimized unplanned downtimes**
- **Alert notification** on identified irregularities **enabling specific failure prevention measures**
- Performing the measurements in operation enabling scheduling of required **maintenance activities** in an **upcoming downtime** (e.g. on-time spare parts ordering)





Remote Diagnostics for motors

Measurement

- Bearing vibration (roller bearing)
- Housing vibration (sleeve bearing)
- Shaft displacement (sleeve bearing)
- Temperature PLC data / process data

Requirements

- Remote connection
- One-time installation of hardware components during shutdown, which enables continuous measurement during operation

Deliverables

- Identify, localize, and evaluate weak points in the bearings, in the base frame, in the alignment of the shaft and in the process which influences the motor
- Regular detailed condition report including maintenance recommendations
- Failure-based detailed condition reports, including recommendations

Remote Diagnostics for converters

Measurement

- Input
- Power supply
- Control unit
- Power module / power cell
- Cooling unit
- Output
- PLC data / process data

Requirements

- Remote connection
- SINAMICS SM150/SL150 (metals and minerals applications)
- One-time installation of hardware components during shutdown, which enables continuous measurement during operation

Deliverables

- Identify, localize, and evaluate weak points in the converter and in the process which influences the converter in troubleshooting situations
- Failure-based detailed condition reports, including recommendations

2.3. Drive Train Analytics for HV motors and MV converters

Cloud-based monitoring of the entire drive train to minimize downtimes

With Drive Train Analytics, the customer has a state of the art remote services and condition monitoring platform which can identify, localize, and evaluate weak points at a very early stage.

Automated alarms and expert services can prevent failures and help to increase the availability and uptime of the plant.

As a cloud-based system, the customer can also benefit from the Web-based customer dashboard ensuring high status transparency on the condition of the customer's entire fleet and the constantly improving data analytics.

Drive Train Analytics consists of various elements.

The data collection takes place at the heart of the operation – the drive train itself.

Sensors on the motors and gearboxes as well as the converter CPU itself provides all relevant parameters to the Drive System Connect unit.

This industry PC collects and packages all data for a secure transfer into the cloud.

State-of-the-art security measures ensure the secure data transfer.

Within the cloud, the received data is continuously analyzed and evaluated.

The generated transparency can be monitored by the customer with the Web-based Drive System Analyzer dashboard.

In case of identified weak spots or errors, automated alerts are triggered, and operators and the maintenance crew can be informed directly.

Automated reports are also available, containing all relevant measurement parameters over the time frame of the report.

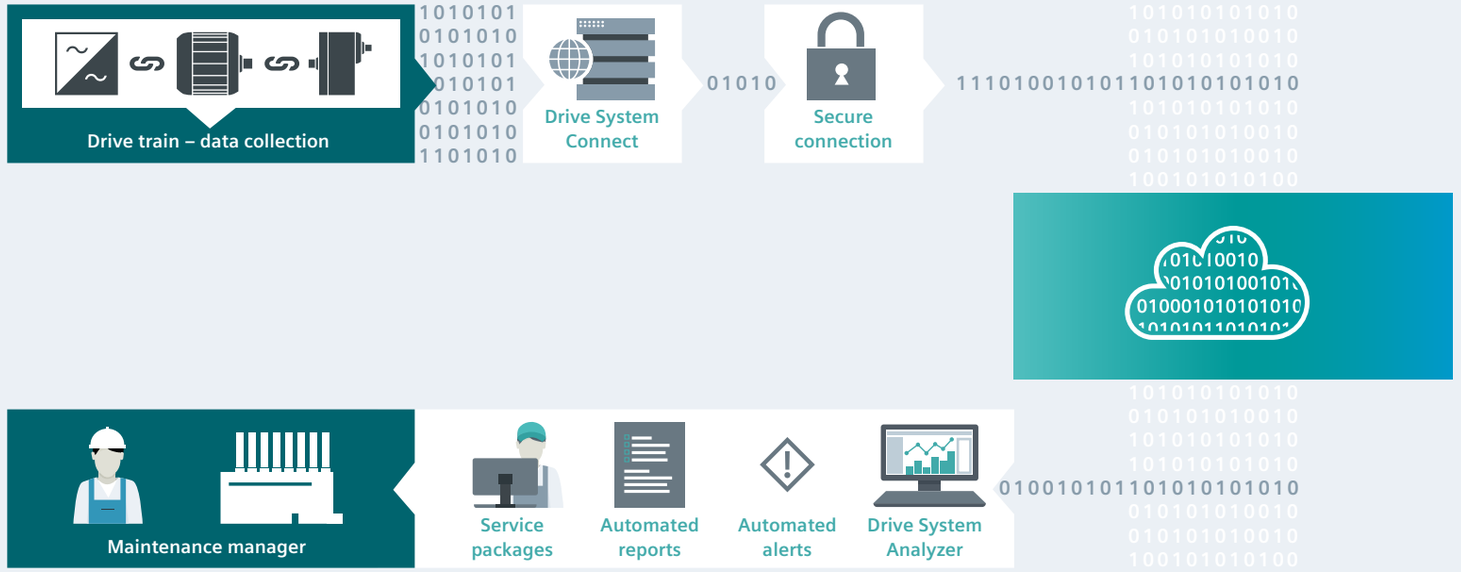
Additional service packages are available to further improve the diagnostics or to support the customer in critical stages.

Based on the transparency and analysis of Drive Train Analytics, our service experts can help the customer to get the highest performance and availability out of the drive train.

Your benefits

- **Early error identification** with continuous monitoring incl. automated reports for minimized **unplanned downtimes**
- **Automated alert** notification enables **specific failure prevention** measures
- **Cloud-based analytics** enabling real time fleet transparency with continuously improving data analysis

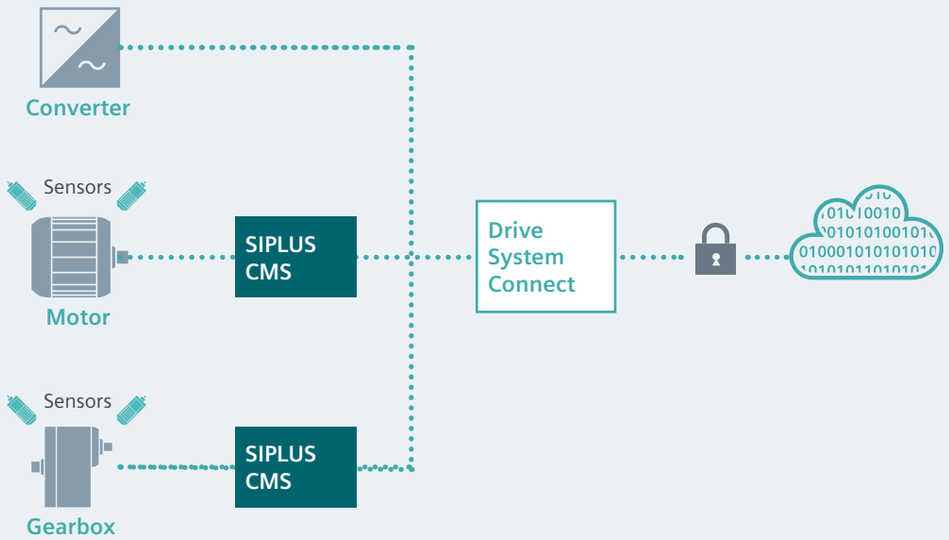
Drive Train Analytics – your digital approach for the next generation of condition monitoring



The connectivity within Drive Train Analytics is based on standardized and preconfigured components, allowing a fast and smooth connection of all converter interfaces, motor or gearbox sensors, and CMS devices with the Drive System Connect unit.

We offer a wide range of secure connection possibilities ensuring state-of-the-art safety standards, while at the same time offering the flexibility to adapt to the respective security requirements of the customers IT and plant infrastructure.

Drive Train Analytics > Drive System Connect
Easy connection with standardized preinstalled equipment



- Easy connection of cloud-ready **SINAMICS** converters via an **already installed interface**
- **Motors** and **gearboxes** can be connected with **existing** or newly added **sensors** and a **SIPLUS CMS module**
- **Drive System Connect** is a pre-installed **"ready to use" Industry-PC** for data and transmission to the cloud using a **secured** Internet **connection**

With the Drive System Analyzer we are offering a Web-based tool for visualization of all relevant status information from the fleet overview, into the specific asset status overviews and further into the asset health condition levels.

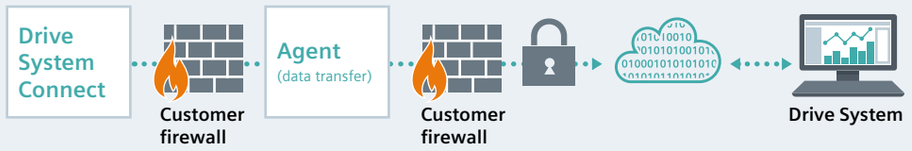
The tool is a standardized platform with regular updates and improvements.

Drive Train Analytics > secure connection
Holistic security concept based on state-of-the-art safety standards

Example 1: Internet connection

Example 2: Cellular network

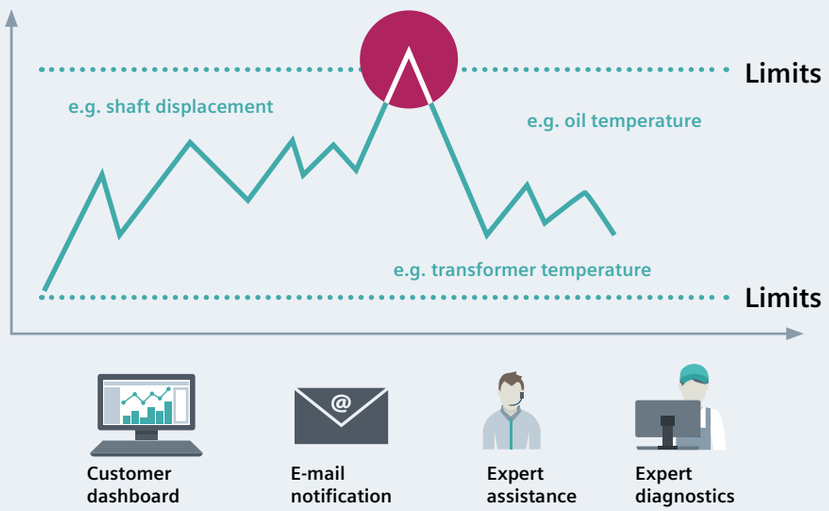
Example 3: Cellular network



- **Confidentiality**
  Defending information from unauthorized access, use, and disclosure
- **Integrity**
  Data consistency by avoiding unauthorized or undetected **modification**
- **Availability**
  Permanent and instant access to the data

Complying with security standards and governmental recommendations
(ISO/IEC 27001, ISO/IEC 27002, BSI)

Drive Train Analytics > automated alerts
Direct automated notifications in case of any irregularities



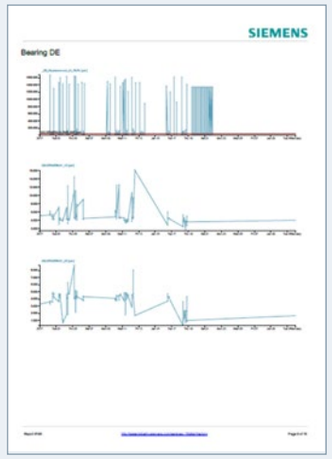
- Continuous analysis of defined drive train measurement points in **comparison to predefined limits**
- In case of an exceedance of such limits, an **automated alert is triggered**
- Alerts are visualized within the **Drive System Analyzer dashboard**
- **E-mail notification** can be sent to a predefined distribution list
- As an option **on-call expert assistance** can be provided

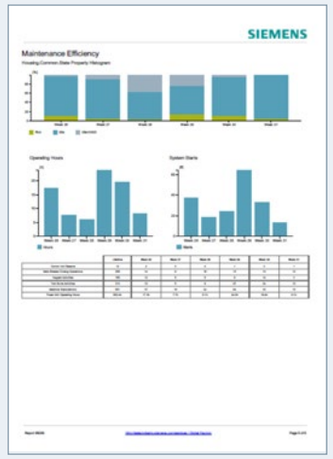
The continuous analysis includes the comparison of predefined parameter limits with the actual data.

If such a limit is reached, an automated alert is triggered.

This can be seen in the Drive System Analyzer dashboard, communicated by e-mail, or directly lead to expert assistance or diagnostic.

Drive Train Analytics > automated report
Receive automatically generated status reports each month



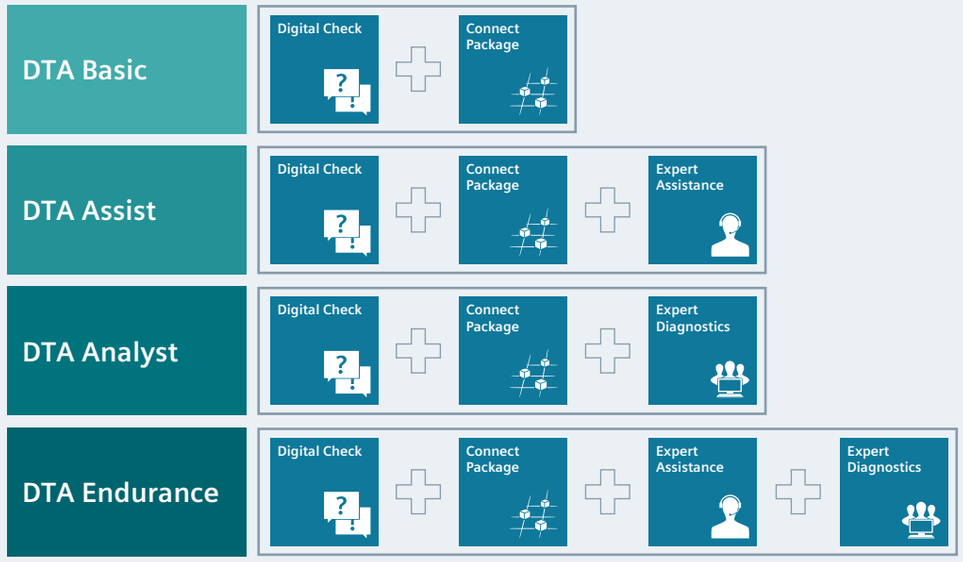


- **Monthly report** on health condition of the respective asset
- **Most relevant KPIs and events visualized** in detailed charts for the respective time frame
- **Standardized report structure** for each asset type (e.g. converter)

In regular cycles, automated reports are generated and stored within the Drive System Analyzer dashboard.

They contain a wide range of measurement parameters over the time frame of the individual reports.

Drive Train Analytics > service packages
Predefined service packages addressing specific customer needs



- **Digital Check:**
  IBase assessment, digital concept, and specification
- **Connect package:**
  Hardware, software, and mobilization services
- **Expert Assistance:**
  Alert management, on-call service, and on-site support
- **Expert Diagnostics:**
  Connection check, event analysis, and preventive analysis

We are offering four different service modules which can be ordered in predefined DTA Service Packages.

The first service module is called “Digital Check.” It contains the assessment of the respective customer installation, including, for example, the already existing sensors. Based on this assessment, a digital concept is generated defining all elements needed to fulfill the customer’s demand.

Finally this module also includes the detailed specification of all customer-specific hardware and software requirements.

The second module “Connect package” contains all required hardware and software as well as the installation and commissioning of these.

Those two modules combined reflect the “DTA Basic Package,” offering the customer a high level of transparency on the condition of hi/her assets.

The third service module is called “Expert Assistance”.

This module provides all services the customer needs in case of an unplanned downtime and reflects the “Remote Service” aspect of DTA. It contains alert management as well as on-call service and on-site support, in combination with the first two modules it represents the “DTA Assist Package.”

The fourth module is called “Expert Diagnostics.”

This module contains expert-based “Condition Monitoring Services” within the automated Drive Train Analytics scope. The core content of Expert Diagnostics are the expert reports which can be generated on a regular basis or as a consequence to a specific event.

In combination with the first two modules “Digital Check” + “Connect package” it represents the “DTA Analyst Package.”

The Package “DTA Endurance” contains all four modules and provides the customer with all features and benefits available in relation to Drive Train Analytics.

3.1. Energy Performance Contracting

Optimize the asset performance by managing assets based on performance KPIs

Energy Performance Contracting for drive applications finances your optimization measures from the savings you make in power costs. The projects are structured to ensure that only a part of the savings are used for the service component, and the balance of the saving remains as a direct benefit for you.

Holistic consideration of the entire drive train. Focus on rotating equipment (pumps, fans, and compressors) operating with inefficient mechanical controls (bypass, dampers, IGVs, etc.):

Control
- Bypass
- Throttle
- Inlet vane
- etc.

Motor
- LV motors
- HV motors
- Application-specific motors

Mechanics
- Couplings
- Transmissions
- Application-specific gear units

Application
- Pumps
- Fans
- Compressors
- etc.

Precondition: applications with sufficient energy-saving potential

Damper

Variable speed drive

Optimization of the entire system from control to application lead to savings of 20–60%

The projects are implemented in a four-step process with low risk for our customers thanks to the promised savings:

1. Evaluation of drive applications based on existing data. Our specialists propose a package of measures coupled with the projected savings.

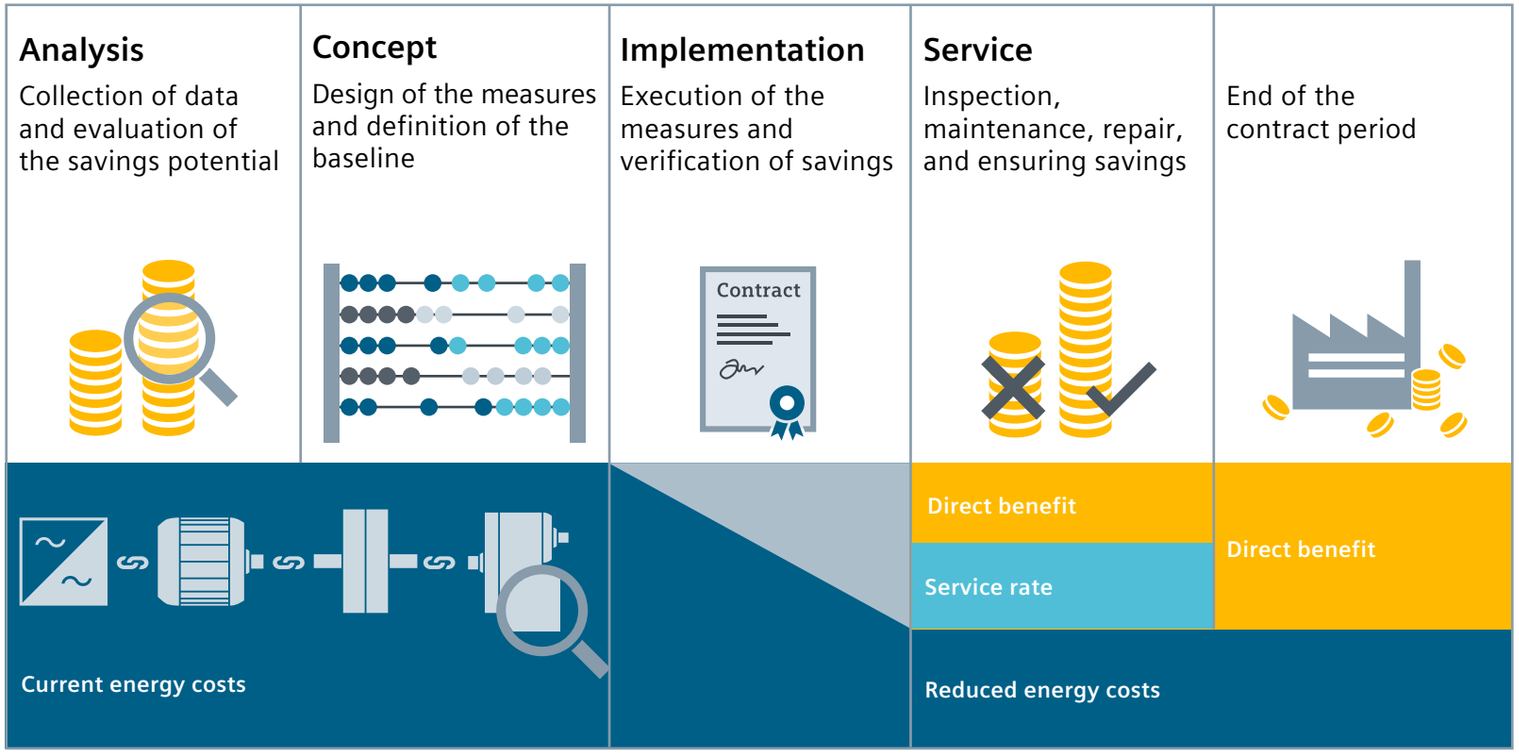
2. Analysis of the selected measures based on a provisional agreement. Detailed energy-use measurements are used as the basis for precisely determining the baseline and engineering the measures. If it becomes apparent during the concept development phase that the promised cost savings cannot be achieved, you may terminate the project at no cost.

3. Implementing the optimization measures. Upon acceptance of the project, the actual savings will be measured and compared with the baseline from the concept. If the agreed goals are reached, the promised savings will have been achieved. Otherwise, Siemens will compensate the customer.

4. As part of this service, new energy savings are verified regularly and the drive systems are maintained to ensure the savings continue in the future.

Your benefits

- Realization of **significant energy savings from 20–60%**
- **No CAPEX spending** needed
- **Reduction of CO_2** emissions



Contact

Our offering is tailored to your requirements. We offer the solution best suited to your process and service needs.

Please contact your Siemens contact partner closest to you.

Further information

Website

Customer reference

servicecenter.industry@siemens.com

Please contact your local Siemens contact partner

Digital Motion Control Services

Short description of the services

Digitalization is one of the major challenges industrial production is facing today – but it offers many advantages at the same time. Machine tool manufacturers and users also benefit from increased availability, quality, and efficiency. We are there as a skilled partner to assist our customers on their path to digitalization. Our Digital Industry Services create new opportunities to achieve lasting improvements in productivity. Connecting machines and installing the right software creates transparency for your data and processes.

Why this service?

A comprehensive service portfolio offering powerful solutions

We offer a broad range of services across the entire value chain: Digital Motion Control Services help machine users identify untapped potentials for optimization and improve production with integrated IT processes. Our experts are there to provide advice and guidance: for demand analyses and the resulting concepts for solution architecture and specifications and actual implementation. Traditional services are an important foundation for continuous and lasting improvement to your manufacturing processes.

Your benefits

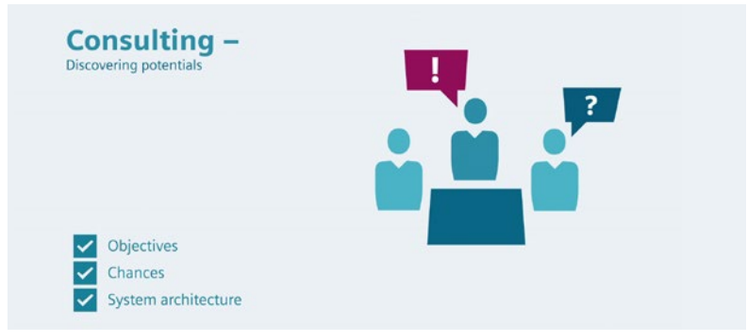
- Improved productivity
- Increased machine availability
- Cost savings
- Improved sustainability of your production processes
- Optimization of asset and resource management

Functionality

We are there as a skilled partner to assist you on your path to digitalization

Consulting	Digitalization Check	Digitalization Preparation	Implemen-tation	Data and Process Analysis	Optimization	Maintenance
						
Discovering potentials	**Gaining transparency and certainty**	**Creating the preconditions**	**Connecting machine tools**	**Deriving optimization activities**	**Improving manufacturing processes**	**Ensuring availability of your IT system**

Service details



Discovering potentials

As part of our professional consulting, we work with you to determine your goals and identify the individual opportunities that digitalization will offer. The focus is on optimization of your production. The result is a concept tailored to suit your needs. We also perform a technical review of the plant and the underlying system architecture to determine potentials for digitalization. On this basis we identify the right modules of the digitalization software.

Our offerings

Digital Basic Consulting

In the Digital Basic Consulting workshop we identify the specific opportunities that digitalization offers to you. The results of this workshop is a requirement specification that can be used to create quotations. Digitalization Basic Consulting is available for one of the following CNC Shopfloor Management software modules: AMP*, MMP*, MMT*, MMM*, or SFI RM*.

Digital Extended Consulting

For consulting on further software modules, we offer Digitalization Extended Consulting.

Starter Workshop Analyze MyCondition (AMC)

In this Starter Workshop we introduce the functionality of AMC, including the creation of a sample machine. After this workshop you are able to configure further machines in AMC.

Your benefits

- Comprehensive consulting tailored to your needs
- Concrete recommendations on how to utilize your opportunities of digitalization

* SINUMERIK Integrate
Analyze MyPrograms (AMP) | Manage MyPrograms (MMP)
Manage MyTools (MMT) | Manage MyMachines (MMM)
Shop Floor Integrate Resource Management (SFI RM).

Gaining transparency and certainty

To enable you to benefit from a connected world of machines, you need a comprehensive data inventory and assessment of your hardware. That's exactly what Digital Motion Control Services does. We give you concrete recommendations to ensure that your machines are optimally connected to the IT system in your manufacturing facility. This provides transparency about how well-suited your systems are for digitalization, and you gain confidence in your machine fleet.

Our offerings

Digitalization Check as a Service

The service is provided on-site by the Siemens organization. Data inventory and assessment of your hardware are evaluated standardized by a trained Siemens technician and without downtimes. After that, one of our experts evaluates the ability of your machine park to be digitalized. The final report gives you a transparent overview of how to connect your machine park.

If certain machines are not yet ready for digitalization in their current state we recommend individual measures in order to ensure their digitalization capability. This supports decision makers in setting the course for their digital future.

Your benefits

- Detailed overview of the digitalization capabilities of each machine
- Greatest possible transparency of the incurred costs for the digitalization preparation
- Clear digitalization roadmap for each line of machines by year and investment

Creating the preconditions

By implementing the recommendations from the digitalization check, we update your machine tools to the state of the art and get them ready for digitalization. If necessary, we can make your machine fleet completely digitalization-ready using software updates, hardware upgrades, or retrofitting.

Our offerings

Digitalization Preparation – Software Update

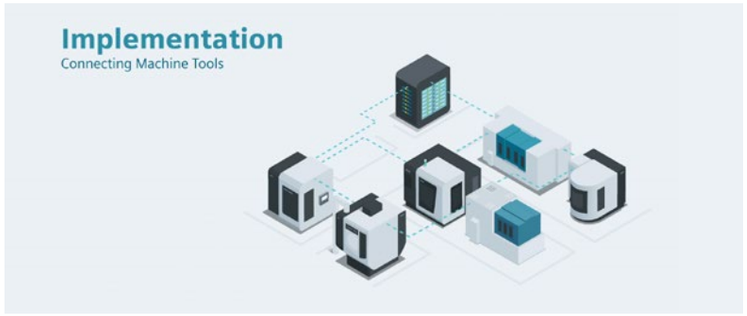
Digitalization Preparation includes an offering for software updates to create the preconditions to connect the machines to SINUMERIK Integrate or MindSphere. For specific software versions the update of the SINUMERIK 840D sl system software is conducted by the Siemens organization on-site – comfortable, standardized, and at a fixed price.

Retrofit for machine tools

If the mechanical components in a machine tool are still in good shape, but the machine in the current state can not be connected, we get it ready for digitalization with a retrofit. In addition, this can significantly reduce cycle time and improve quality.

Your benefits

- Machine compatibility with SINUMERIK Integrate and MindSphere
- State-of-the-art technologies for reasonable investment
- Right connection strategy even for your oldest machines



Connecting machine tools

We start the process of digitalizing your manufacturing facility in consultation with you and by implementing the defined digitalization concept. The necessary software modules from the CNC Shopfloor Management Software Suite are installed, appropriately configured, and put into operation on-site. Your machines are connected to the higher-level IT system during this stage. Connecting makes the data accessible at any time, for example in MindSphere. This transparency forms the basis for further analysis. As a result, your manufacturing becomes even more efficient and profitable, and quality is assured. If required, a training program can be provided for the completion of this phase.

Our offerings

Server installation and configuration
We install and configure the necessary basic software on your server.

Additional user stations
Additional user stations can be added upon request. This includes installation, configuration, and testing of an additional client of an operator panel.

Machine installation
We install and test the basic software at the machine including software backup before and after installation.

Application configuration for AMP/AMC/MMM/MMP*
We configure the software applications, test their functionality, and the machine interface.

Application configuration MMT*
We configure our software application, set up the OEM data, test the tool flow and functionality.

Connection to presetter
We configure and test an interface to one presetting device.

Training for AMP/MMT/MMP/MMM*
In our trainings you become familiar with setting up our applications, using their functionalities, and learn about basic troubleshooting.

Expert training AMC*
Once you are familiar with the basic functionalities of AMC*, our expert training helps you to further optimize the parameter assignment and to set up automatic tests.

Administrator training
In this training you learn how to administrate your system.

Your benefits

- Quality implementation done by experts with many years of experience for fast start
- High transparency of machine data enables you to run your machines more efficiently and profitable
- Comprehensive training modules enable you to utilize the full potential of our applications

* SINUMERIK Integrate
Analyze MyPrograms (AMP) | Analyse MyCondition (AMC) | Manage MyMachines (MMM) | Manage MyPrograms (MMP) | Manage MyTools (MMT)

Deriving optimization activities

Discover your potential for optimization and improve your OEE (overall equipment effectiveness). If required, we'll perform the entire data analysis for you, or show you how to profitably incorporate the information from the analysis into your maintenance process. Based on the analysis, we'll advise you on actions you can take to extend machine service life, save costs, and improve quality.

Our offerings

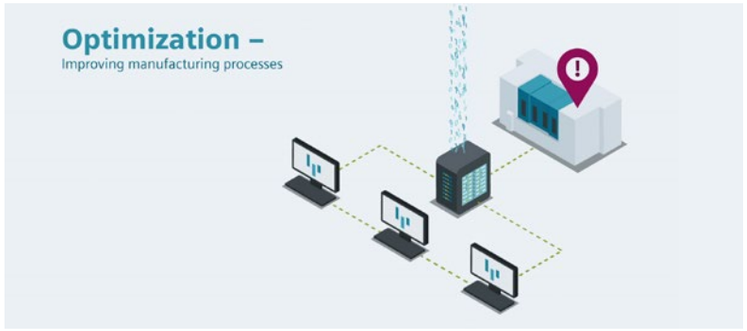
Data and Process Analysis

As part of this service, the Siemens consultant will provide support in customizing the SINUMERIK Integrate modules AMP* and/or AMC* for the production process. Subsequently, the Siemens consultant will work with you to analyze the data and define actions for continuous improvement. The implementation and effect of the recommended actions will be evaluated in ten subsequent sessions within a period of three years and documented in a service logbook. With this approach, improvements can be achieved iteratively, one session at a time.
The Siemens consultant will provide support for increasing availability, increasing quality, or lowering cost. The specific focus of the optimization measures will be defined by you.

Your benefits

- Optimal usage of AMP* and AMC* identifies optimization measures
- Reliable avoidance of unscheduled machine downtimes
- Early recognition of bottlenecks and improvement of machine utilization
- High transparency due to the service logbook

* SINUMERIK Integrate
Analyze MyPrograms (AMP) | Analyze MyCondition (AMC)



Improving manufacturing processes

We offer the right solutions to enable you to make the most of the potentials identified for the optimization of your machine fleet – and turn them into specific benefits for your production system. The main elements here are our traditional services like spare part and repair services, service contracts, modernization activities like upgrades, retrofitting, and productivity improvement.

Our offerings

Retrofit for machine tools

If the mechanical components in a machine tool are still in good shape, but the control or drive technology is no longer state-of-the-art, CNC retrofitting will often be much more economical than investing in a new machine. Moreover, retrofitting can significantly reduce cycle time and improve quality.

Service contracts

Short response times and the fastest possible repair by qualified service specialists: Motion Control service contracts guarantee the availability of your machine. With our modular offerings we meet your specific requirements. Service contracts are available for both machine manufacturer and machine users.

Spare part and repair services

We are offering end-to-end spare part strategies to deal with outages – or to improve your spare part management preventively. The service includes delivery, replacement or repair, product upgrades, functional testing, general overhauls – all with minimum inventory requirements.

Productivity improvement

See here (own chapter)

Your benefits

- Preventive measures to secure your investments
- Maximum quality and safety standards direct from the original manufacturer
- Increased machine availability

Ensuring availability of your IT system

We take care of system maintenance for you to ensure a high level of availability. This includes database management and software updates, for example. With the appropriate contract in place, we monitor the IT installation around the clock and make sure you have a stable system you can rely on.

Our offerings

Database Services

A Siemens consultant will support you in backing up, maintaining, and updating the SINUMERIK Integrate database. You decide on how and when the service will be provided both remotely and on-site. Six sessions over a period of three years will be scheduled with you. As part of the service, a selective data backup of the SINUMERIK Integrate system will be performed. This service also includes memory optimization and a log file analysis. If required, the database backup will support you if a system function restore becomes necessary.

Your benefits

- Increased system availability and reduced unscheduled maintenance and downtime
- Early recognition of system instabilities
- Reduced start-up cost after database loss

Order information

Consulting

Discovering potentials

Digitalization Basic Consulting
6FC8530-0CC00-0EA0

Digitalization Extended Consulting
6FC8530-0CC01-0EA0

Starter Workshop AMC
6FC8530-0CC02-0EA0

Digitalization Check

Gaining transparency and certainity

Digitalization Check as a Service
6FC8530-0DC00-1EA0

Digitalization Preparation

Creating the preconditions

Digitalization Preparation Software Update
6FC8530-0DP00-0EA0

Implementation

Connecting machine tools

Server installation and configuration
6FC8530-0SS00-0EA0

Connection to presetter
6FC8530-0AC04-0EA0

Additional user station
6FC8530-0AC05-0EA0

Application configuration
AMP 6FC8530-0AC00-0EA0
AMC 6FC8530-0AC03-0EA0
MMM 6FC8530-0AC06-0EA0
MMP 6FC8530-0AC02-0EA0
MMT 6FC8530-0AC01-0EA0

Machine installation
6FC8530-0AS00-0EA0

Administrator training
6FC8530-0TT04-0EA0
Expert training AMC
6FC8530-0TT03-0EA0

Training
AMP 6FC8530-0TT00-0EA0
MMM 6FC8530-0TT05-0EA0
MMP 6FC8530-0TT01-0EA0
MMT 6FC8530-0TT02-0EA0

Data and Process Analysis

Deriving optimization activities

Data and Process Analysis
6FC8530-0MM01-0EA0

Optimization

Improving manufacturing processes

Retrofit for machine tools on demand

Productivity Improvement on demand

Spare part and repair services – MLBF's available

Repair Service Contract 2.0 – MLBF's available

Maintenance

Ensuring availability of your IT system

Database Services
6FC8530-0MM02-0EA0

For middle FY18 the target is Europe, China, and the USA.
A worldwide rollout is planned for FY19.

Further information

Consulting | Implementation
Siemens Industry Online Support
Website

Digitalization Check
Siemens Industry Online Support
Website

Digitalization Preparation – Software Update
Siemens Industry Online Support
Website

Data and Process Analysis
Siemens Industry Online Support
Website

Brochure

Optimization

Retrofit for machine tools
Siemens Industry Online Support

Service contract
Siemens Industry Online Support

Spare part and repair services
Siemens Industry Online Support

Productivity Improvement
Siemens Industry Online Support
Website

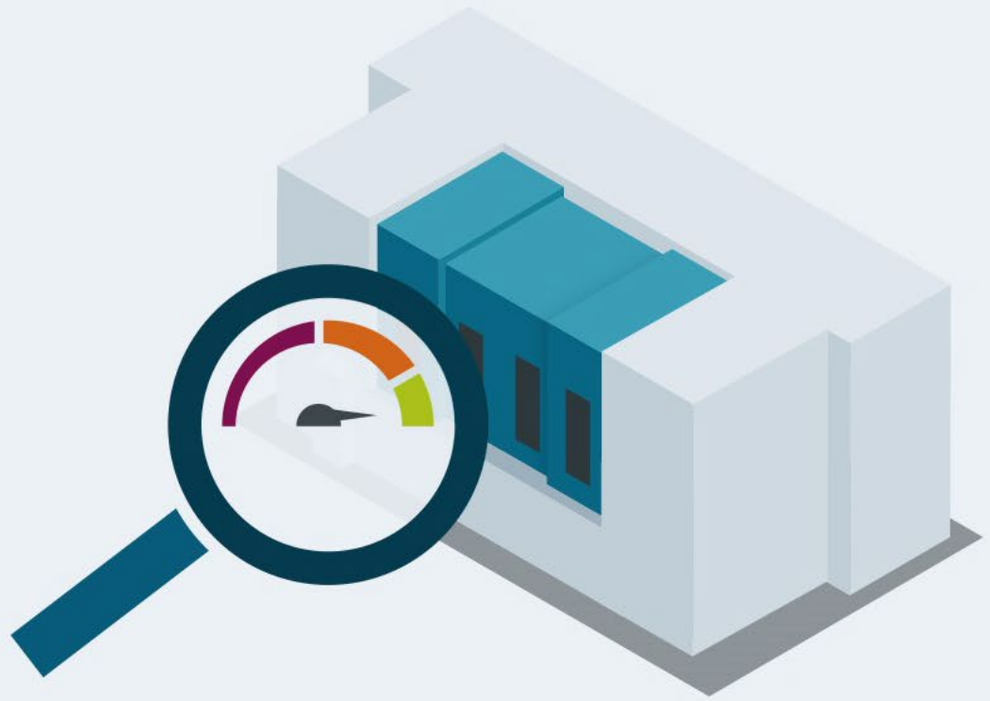
Maintenance – Database Services
Siemens Industry Online Support
Website

Our offering is tailored to your requirements. We offer the solution best suited to your service needs.

Please contact your Siemens contact partner closest to you.

Contact e-mail
MotionControlServices.industry@siemens.com

Productivity Improvement



Short description of the service

This service is aimed at increasing the productivity of bottleneck machine tools with SINUMERIK 840D. Your productivity can be improved by up to 20% and can also be precisely predicted. Or do you have a capacity problem in manufacturing, but it would take too long to have a new machine delivered? Productivity Improvement removes bottlenecks in production by reducing the processing times of a workpiece. The goal is to shorten the processing times and to optimize the NC program cycle times.

Why this service?

The productivity improvement creates more capacity in production and helps the machine user reaching the needed performance.

Productivity Improvement, if ...

- ... you have a bottleneck machine
- ... the delivery time of a new machine would take too much time
- ... you would like to reduce investments in new machines

Your benefits

- Minimum machine downtime during the conversion period
- Certainty of investment for the customer

Service details

Your way to productivity improvement: from individual consulting ...

Inform and consult

- Service portfolio
- PI at capacity bottlenecks
- Solutions
- Use cases

Collect information

- Situation of utilization
- Installed base
- Machine data (NC-archive ...)
- Run time of a reference workpiece

Check

- Possibilities for optimization HW/SW
- Estimate PI potential (support/simulation by Competence Center Germany if required)

Offer

- Customized offer

... to the execution on-site

Optimization

- Optimization in the laboratory
- Simulation with tools

Execution on-site

- Assembly HW/SW
- Start-up, optimization on-site at the machine
  - Clock cycle
  - Drive system
  - NC program

PI finalization

- Confirmation of the optimization at a reference work piece

Productivity improvement with continuous savings every year

Sales Sales and technician/specialist Technician/specialist

For an individual offer and more detailed information regarding Productivity Improvement please contact your Service counterpart.

Further information

Siemens Industry Online Support

Website

Brochure

Our offering is tailored to your requirements. We offer the solution best suited to your service needs.

Please contact your Siemens contact partner closest to you.

Contact e-mail

MotionControlServices.industry@siemens.com

SINUMERIK Virtual Commissioning Services

Virtual Commissioning reduces time to market and optimizes commissioning by eliminating an actual prototype. This approach enables close cooperation in parallel between mechanical development and electrical engineering, rather than sequentially as has been the case in the past. Long before the machine is actually built, its virtual twin can be connected to a real controller and used to commission the controller in a virtual environment. This reduces commissioning time on the real machine by as much as 70%.

Shortening commissioning time

Consulting – Implementation – Training

With requirements for flexibility and efficiency increasing all the time, individual automation solutions need to be implemented faster despite their growing complexity.

STEP 1 The consulting service offers a reliable estimate of the specific project in terms of its feasibility and outlay and allows demand-based decision-making.

STEP 2 Our experts handle implementation based on the recommendations from the consulting service. State-of-the-art software tools are used to develop a spatial and mathematical model of the machine's behavior. The necessary software is licensed by our Service organization for the duration of the project. We work closely with you to virtually test the commissioning scenarios agreed on during the consulting phase in order to identify potential faults and clear them at an early stage.

\+ Optional: If a faster delivery time and faster innovation cycle due to process parallelization are desired not just for specific projects, the training by experienced service representatives offers the best introduction to the comprehensive approach of SINUMERIK Virtual Commissioning.

Your benefits

Up to 70% faster

The SINUMERIK Virtual Commissioning Services help shorten the real commissioning time for machine tools controlled with SINUMERIK 840D sl by as much as 70% – while simultaneously reducing the risk of damage. SINUMERIK Virtual Commissioning Services help identify faults at an early stage so that they can be cleared, allowing users to reliably plan and meet delivery deadlines. Demand-based use is ensured through our project-specific services.

SINUMERIK Virtual Commissioning Services don't require any investment in software and licenses. Our Service organization takes care of the licensing for the duration of the project.

Functionality

SINUMERIK Virtual Commissioning Services enable commissioning tests to be shifted from SINUMERIK-controlled machine tools in the real world to computer-based simulation systems. This allows flexible testing of the automation solution regardless of the availability of the real system, risk-free working even in critical ranges, and optimization of the engineering process regarding time and safety. SINUMERIK Virtual Commissioning Services are divided into consulting, implementation, and training, whereby Virtual Commissioning training is offered independently of consulting and implementation.

STEP 1

Consulting

Consulting includes the execution of a project analysis regarding the technical restrictions and the time and cost of virtual commissioning. In cooperation with you, a project is conducted on the basis of a set of guidelines. Afterwards, we carry out an evaluation. The results of the evaluation are presented to you and handed over in the form of a digitally signed document with a unique reference number. You can decide on the basis of the project analysis whether to have Siemens AG implement the SINUMERIK 840D sl "Hardware-in-the-Loop" Virtual Commissioning simulation solution.

STEP 2

Implementation

On the basis of consulting, SINUMERIK Virtual Commissioning Implementation is conducted by qualified specialists. This involves developing a spatial and mathematical behavior model of the machine using cutting-edge software tools. Software licensing for the project period is provided by our service.

Afterwards, the commissioning scenarios are agreed on in close collaboration with you. The risk of cost-intensive damages and delays in delivery can be significantly reduced by SINUMERIK Virtual Commissioning Implementation.

+

Training

If faster delivery times and innovation cycles through process parallelization are required not just for specific projects, training by experienced service representatives offers the best introduction to the holistic implementation of SINUMERIK Virtual Commissioning.

SINUMERIK 840D sl Virtual Commissioning Training includes a two-day training course for the SINUMERIK 840D sl "Hardware-in-the-loop" Virtual Commissioning simulation solution at the customer's premises with a maximum of four participants. We provide a demonstration system which shows the solution development process on the basis of a sample project. Additional workstations including the necessary licenses need to be provided by you.

Order information

SINUMERIK Virtual Commissioning Services is divided into three items.

SINUMERIK 840D sl Virtual Commissioning Consulting	Your specific project is analyzed on-site, checked regarding suitability for the SINUMERIK 840D sl “Hardware-in-the-Loop” solution, and the implementation overhead is estimated. As consulting result, you are provided with a document that describes the supported commissioning scenarios and the associated modeling costs.
SINUMERIK 840D sl Virtual Commissioning Implementation	On the basis of the consulting findings, implementation of the Virtual Commissioning solution is initiated for the specific project on a daily basis by our service, which also provides all required licenses.
SINUMERIK 840D sl Virtual Commissioning Training	Experienced service employees train your employees in a two-day training course in the use of the SINUMERIK 840D sl “Hardware-in-the-Loop” Virtual Commissioning solution. Training takes place at your premises using a demo system provided by the service.

Link Industry Mall

Offering	Article number
SINUMERIK 840D sl Virtual Commissioning Consulting	6FC8530-0VC00-0EA0
SINUMERIK 840D sl Virtual Commissioning Implementation	6FC8530-0VR00-0EA0
SINUMERIK 840D sl Virtual Commissioning Training	6FC8530-0VT00-0EA0

Further information

Siemens Industry Online Support

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Industrial Security Services

Industrial cybersecurity is based on several lines of defense and a comprehensive approach. To make this complex topic easier for you to manage, Siemens offers a coordinated portfolio of solutions specially adapted by our automation experts for use in securing industrial facilities.

Ensure comprehensive protection of industrial plants

Defense in depth protection from internal and external cyberattacks

Your productivity and safety depend on the availability of your automation equipment. Do not allow a security event to affect your operations.

Industrial Security Services are a requirements-based approach to provide long-term protection of your industrial control systems (ICS).

All levels must be protected simultaneously – ranging from the plant management level to the field level and from access control to data integrity. This is why our approach to comprehensive protection offers defense throughout all levels – "defense in depth." This concept is according to the recommendations of ISA99/IEC 62443 – the leading standard for security in industrial applications.

Protect productivity

Protection against

- External incidents thanks to rising connectivity
- Internal misconduct
- The constantly changing threat landscape

Reduce costs

Costs

- Reduce costs of qualified personnel
- Reduce costs of essential security technologies

Comply with legal requirements

Compliance with/establishment of

- Reporting obligations
- Security expertise
- Minimum protection

Your benefits

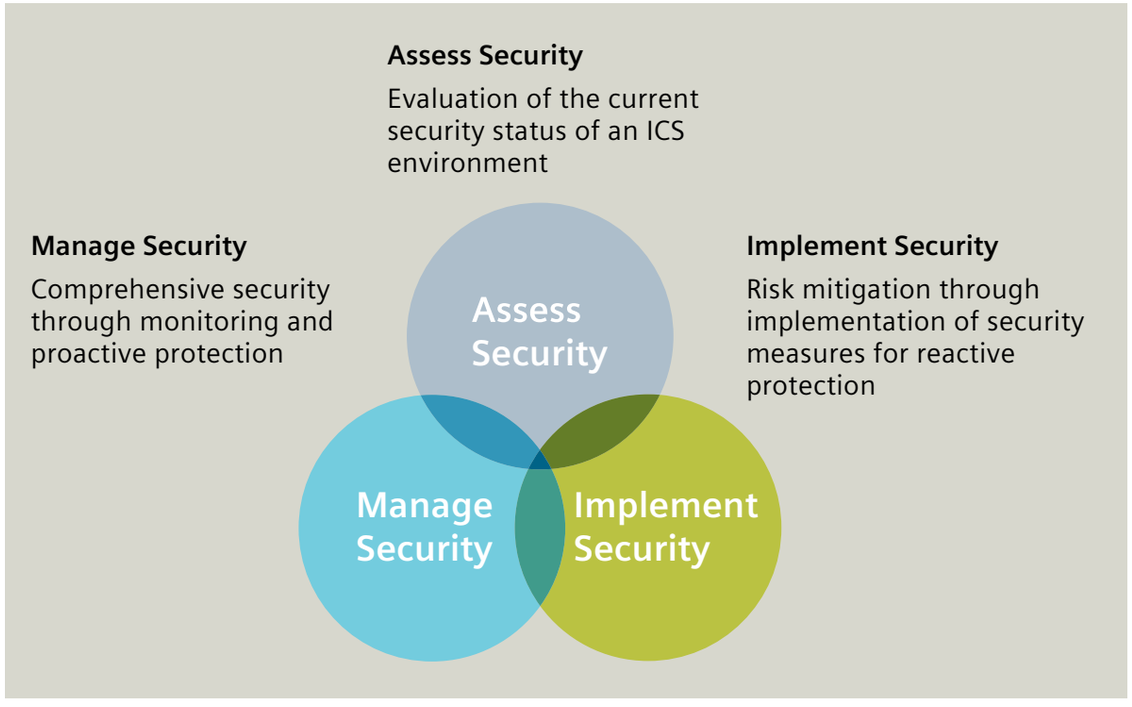
Industrial Security Services help you to:

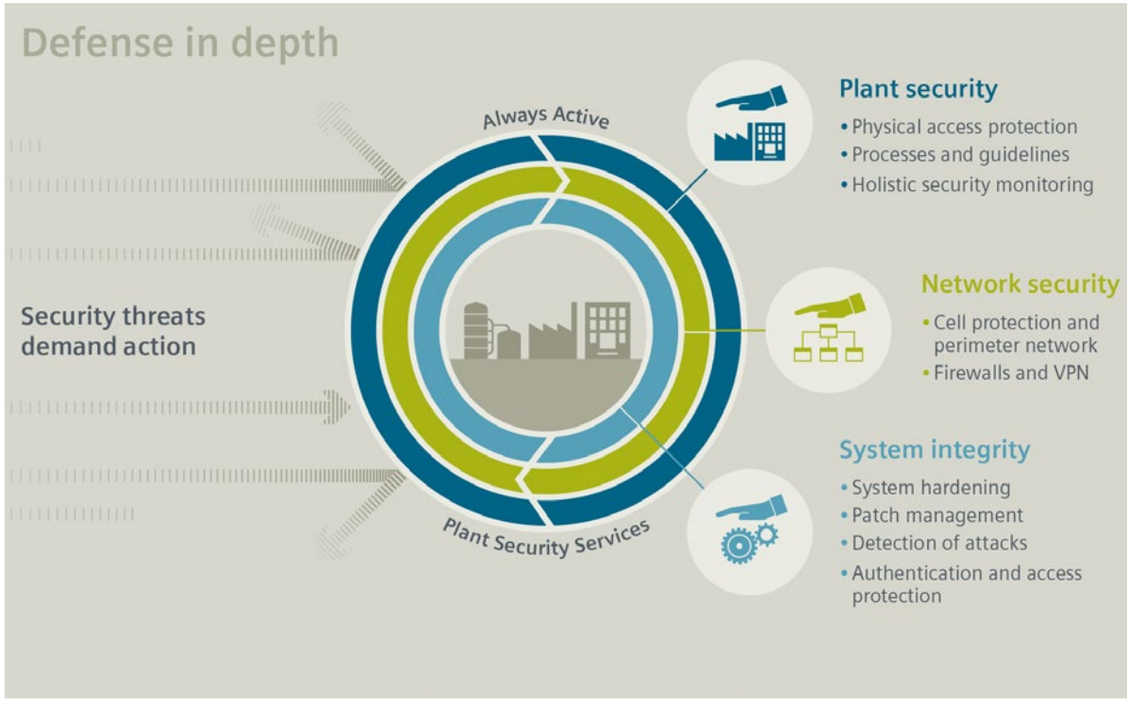
- Protect the availability and productivity of your manufacturing systems and processes.
- Comply with local, international, and industry-specific standards and regulations.
- Monitor and safeguard your assets.
- Have peace of mind that your plant assets are secure throughout their life cycle.

Functionality

Portfolio

The Industrial Security Services address multiple layers of the industrial facility, following defense-in-depth principles as outlined in the IEC 62443 standard. The portfolio elements can be broken down into three areas reflecting the maturity of your security program.





Service details

1. Assess

Covers a holistic analysis of threats and vulnerabilities, the identification of risk, and recommendations of security measures to close the identified gaps to reach your target security level.

Available assessment offerings

- Quick Check: Choose the **Industrial Security Assessment** for a 1-day onsite analysis using Siemens automation and security expertise to ensure your system complies with the IEC62443 and ISO27001 standards.
- Thorough check: Choose from the **ISO27001 Assessment** or **IEC62443 Assessment** to receive a thorough evaluation of your site against the best known standards in security and security of Industrial Control Systems (respectively).
- Deep analysis: The **Risk and Vulnerability Assessment** takes a deep, time-intensive analysis of your industrial environment including data collection from the floor.

2. Implement

When you have identified the assets in your industrial facility and the security gaps to reach your target protection levels, you are ready for risk mitigation through implementation of security measures. These elements include:

- Industrial Security Consulting
- Automation Firewall – Next Generation
- Security Awareness Training
- McAfee Antivirus
- Application Whitelisting
- Windows Patch Installation
- System Backup
- Industrial Security Monitoring
- Industrial Anomaly Detection

Industrial Security Consulting to assist in Policy Development and proper Network Segmentation using **Automation Firewall – Next Generation.**

Rollout of **Security Awareness Training** to all plant personnel.

Endpoint Protection of all your devices with installation of **McAfee Antivirus** and **Application Whitelisting**, easily coordinated with the ePolicy Orchestrator.

Windows Patch Installation to keep protection current on known vulnerabilities.

System Backup for fast recovery in the case of an incident.

Implementation of **Industrial Security Monitoring** to give a real-time overview of the security events in the plant systems.

Industrial Anomaly Detection will give transparency to the network communications taking place within your system and provides oversight to any abnormal behavior. This includes autonomous asset identification of monitored equipment.

3. Manage

Covers continuous monitoring and **updates** of security controls, patch and vulnerability management, and incident handling following best practices from the IEC/ISA 62443 and NERC- CIP standards. The Manage portfolio elements include:

- Industrial Security Monitoring
- Remote Incident Handling
- Security Vulnerability Information
- Patch Management
- Antivirus Management
- Industrial Anomaly Detection

Management of **Industrial Security Monitoring** and **Industrial Anomaly Detection** via establishment of remote or on-site cybersecurity operations center.

Remote Incident Handling by experts from Siemens to support the next steps when a security event or anomaly in your production systems is identified.

Security Vulnerability Information support for the handling of software and hardware vulnerabilities in your production equipment and software applications.

Patch Management for maintaining your approved SIMATIC PCS7 Microsoft patches.

Continuous virus protection, scanning, and updating of signatures with **Antivirus Management**.

1.1. Industrial Security Assessment

Assessment approach built on Siemens expert knowledge in automation systems and aligned to the best known International security standards – IEC 62443, ISO 27001.

Developed using experience gained conducting assessments at many types of facilities worldwide.

- Available for **Siemens** and **third-party** systems
- **One day** on-site analysis
- Coordinated by a **security consultant**
- **Questionnaire-based checklist** to identify and classify risks
- Compact report containing recommendations for **risk mitigation measures**

1.2. IEC62443 Assessment

Assessment of compliance with IEC 62443 international standard (Industrial communication networks – Network and system security)

- **Focus** on parts 2-1 **"Establishing an industrial automation and control system security program"** and 3-3 **"Security for industrial process measurement and control – Network and system security"**
- Available for **Siemens** and **third-party** systems
- **Two days** on-site
- Coordinated by a **security consultant** and a **security engineer**
- **Questionnaire-based checklist** to identify and classify risks
- Up to 30 pages report containing recommendations for **risk mitigation measures**

1.3. ISO 27001 Assessment

Quick assessment of plant security according to the ISO 27001 international standard (Information Security Management)

- On-site workshop incl. questionnaire-based checklist:
  - One day on-site
  - Coordinated by a security consultant and a security engineer
  - Typical attendants: management and customer's responsible for production, IT security and physical security, maintenance staff, engineering staff, ...
- Offline evaluation of the results: analysis, risk identification and classification, definition of risk mitigation measures, and prioritization of actions (based on cost/benefit scenario)

Up to 30 pages report containing recommendations for risk mitigation measures

1.4. Risk and Vulnerability Assessment

Identify, classify, and evaluate risks for a risk-based security program

Report (~100 pages) including:

- Project documentation:
  - Scope description
  - Current network topology
  - Current system architecture
  - Risk analysis and scoring methodology

Findings:

- Network topology analysis results
- Installed base data analysis results
- Evaluation of system criticality results (likelihood and business impact)
- Risk classification and risk level including scoring
- Training needs

- Risk mitigation measures for each finding
- Management presentation as a first step to establish a security road map

Vulnerability	Risk score
Flat network architecture / No DMZ available	8.1
Flat network architecture / No network segmentation	8.1
Unsecure / Not controlled remote activities	7.4
No system hardening / Unneeded applications and services installed	7.1
Unpatched operating systems	6.8
Obsolete antivirus database	6.6
Windows firewall not active	5.6
Uncontrolled USB interfaces	4.8

Table 1: Risk scoring (direct risks) according to CVSS

Red (7.5–10)	– Unacceptable risk; urgent action is necessary
Orange (5–7.5)	– Unacceptable risk; action is required
Yellow (2.5–5)	– Acceptable risk; subject to management approval
Green (0–2.5)	– Acceptable risk; no action required

2.1. Security Awareness Training

Cybersecurity knowledge transfer from a shop-floor perspective

Customer's challenge

- 91% of the security incidents in 2015 consisted of stolen credentials by using phishing e-mails[1]
- Only 3% of targeted individuals reported the phishing e-mail[1]
- 70% of all security incidents are caused by human error[2]

Common approach

- No cybersecurity training at all
- Cybersecurity training for the office environment focusing on classic IT-security topics

Our solution

- SITRAIN training
- Web-based, one-hour training
- Generate security awareness for the staff:
  - Introduce current threat landscape in industrial control system environments
  - Describe how to handle risks
  - Help identifying security incidents
  - Includes a final test
- Available in German and English – further languages on request
- SCORM[3] compatibility for simplified integration into other e-learning software

1 Source © Verizon 2016

2 Source © Ponemon Institute Research 2013

3 Sharable Content Object Reference Model

2.2. Industrial Security Consulting

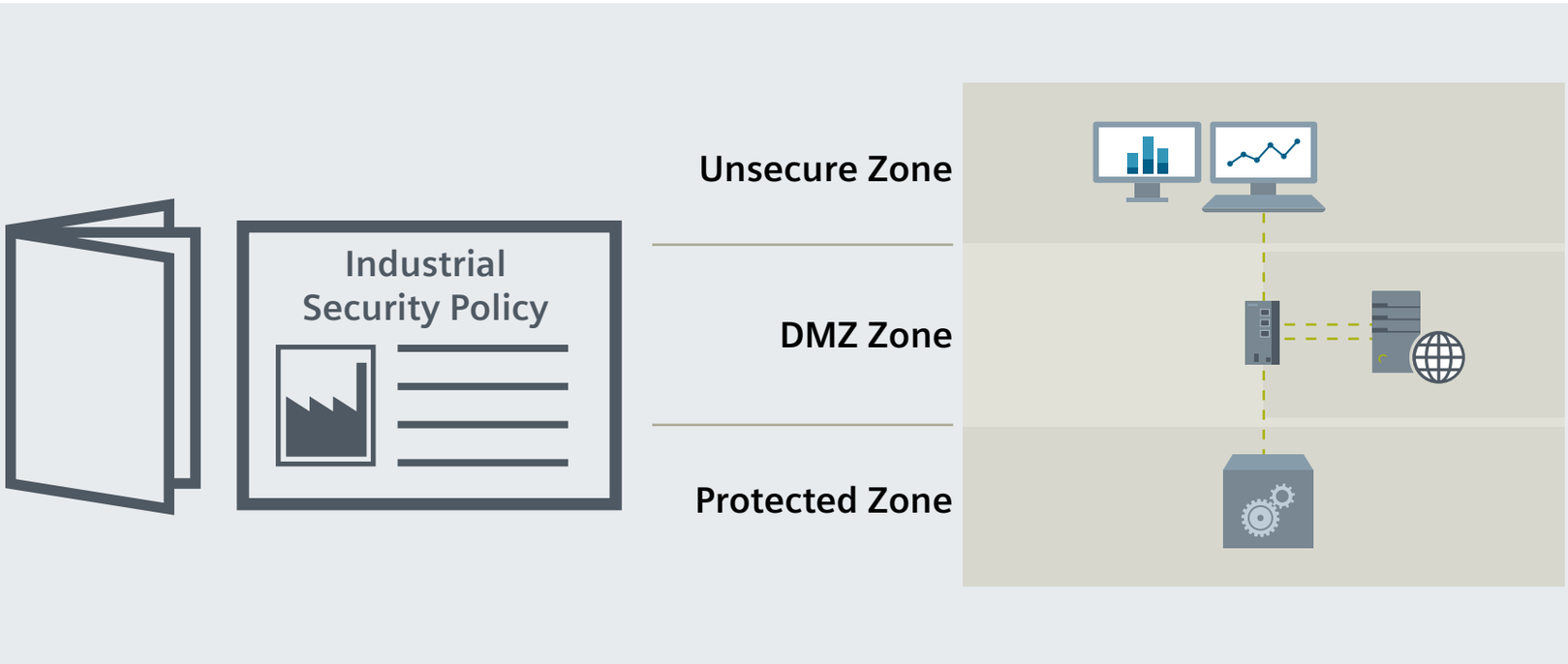
Provide support for ICS policies and secured network design

Policy Consulting

- Establish new or review and enhance existing policies, processes, procedures, and work instructions which influence security on the shop floor
- Integration with enterprise cybersecurity practice
- Examples: Patch and backup strategy, handling of removable media

Security Consulting

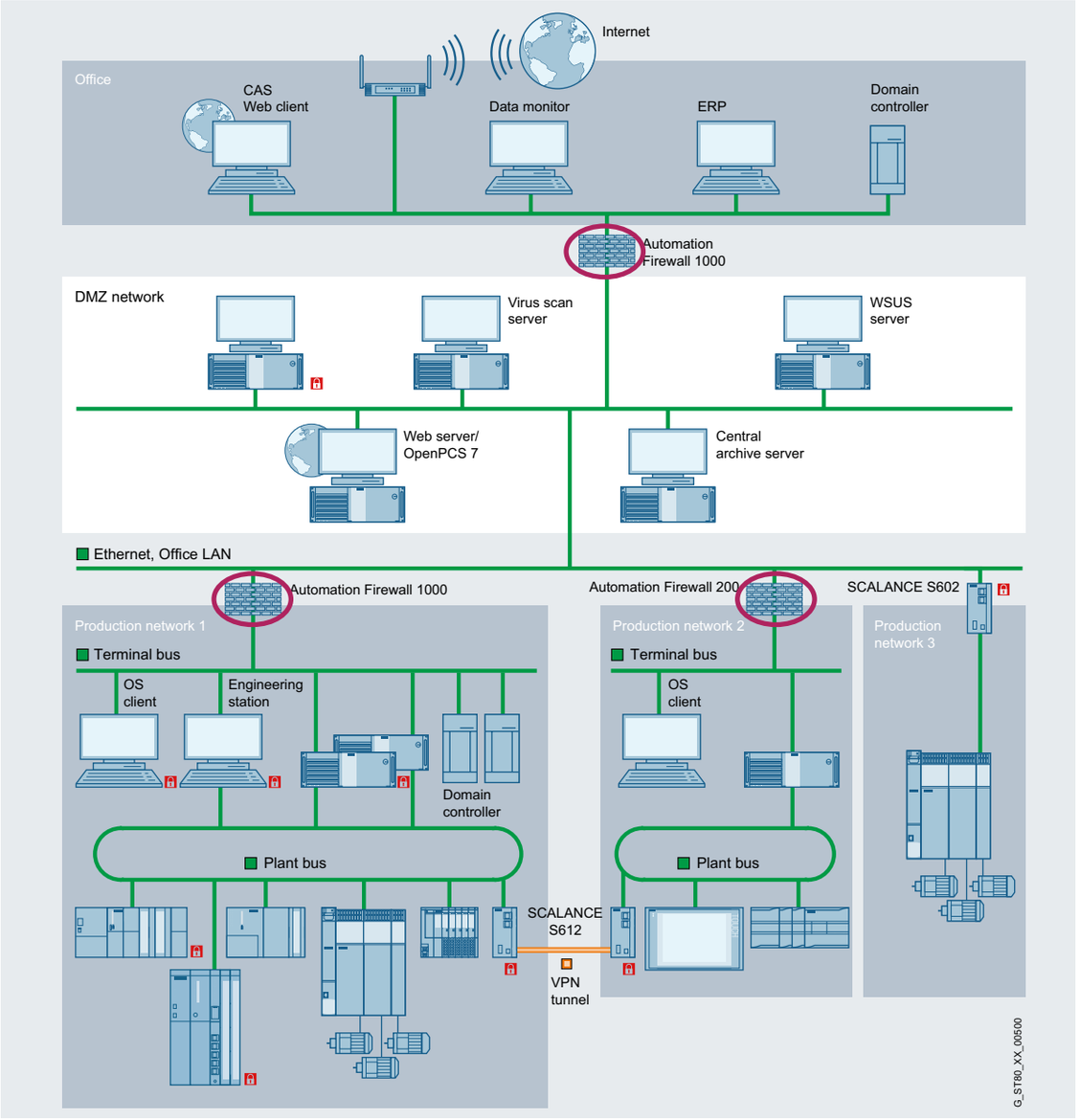
- Cell segmentation in security cells support based on IEC 62443 standard or SIMATIC PCS 7 and WinCC security concept
- Design and planning of a perimeter protection network: DMZ network (demilitarized)
- Perimeter firewall rule establishment / review and implementation



2.3. Implementation: Automation Firewall

First line of defense against highly developed threats

- Both offerings: Automation Firewall – Classic (Secureguard) and Automation Firewall – NG (Palo Alto Networks)
- Implementation includes Installation, configuration, commissioning and test of firewall system and traffic rules, configuration backup and consideration of customer-specific applications (e.g. fine-tuning of intrusion detection/ prevention system (IDS/IPS))

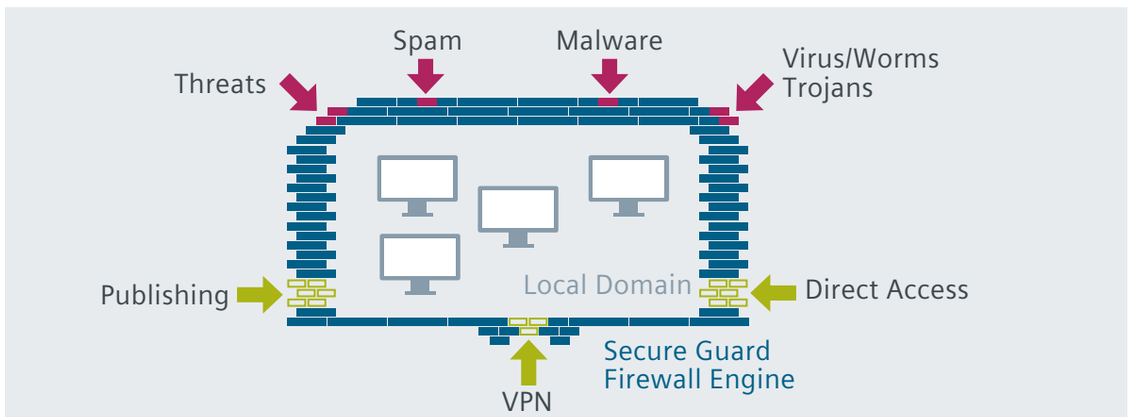


Automation Firewall – Classic

- Perimeter protection is the first line of defense against highly developed threats in accordance with the Security Concept for SIMATIC PCS 7
- Tested and validated in a PCS 7 environment and with Siemens industrial communication appliances
- Listed in the PCS 7 Addon Catalogue
- It can be used as front-firewall and/or back-firewall in line with the white paper “Security concept PCS 7 and WinCC”
- It protects the PCS 7- and WinCC-based automation network from external threats by controlling the access point to the automation network
- Additional services like Perimeter Firewall Installation and/or management support commissioning, continuous operation, and maintenance
- Includes the preinstalled Industrial Wizard which is maintained in accordance with PCS 7/WinCC requirements and simplifies the firewall configuration and commissioning
- Migration wizard for existing Forefront TMG 2010 configurations available

Automation Firewall – NG

- Based on Palo Alto Networks Next-Generation Firewall Appliances
- Palo Alto Networks is a “Gartner Magic Quadrant Leader” for Enterprise Network Firewalls for the 6th consecutive year
- Application layer and stateful inspection firewall, IPSec VPN gateway
- File and data filtering
- Enforces security policies for any user, at any location
- Prevents against known and unknown threats
- High availability (active/active and active/passive) modes



2.4. Implementation: Antivirus Installation

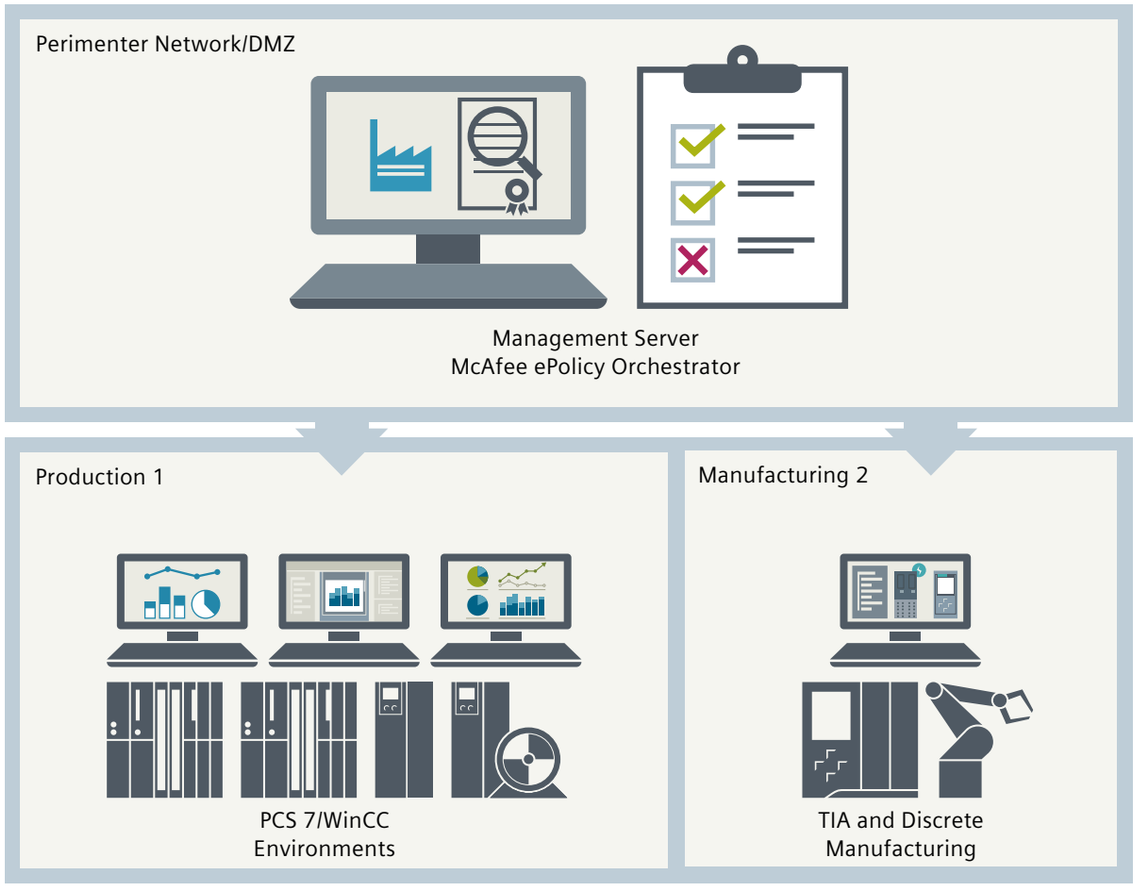
Virus protection solution for malware detection and prevention

Information technologies are used in industrial automation. The number of open standards and PC-based systems has increased enormously in the last years.

McAfee VirusScan protects systems and single files from virus infections, trojans, and other malware by using continuously updated signature files.

Siemens uses McAfee's enterprise antivirus solution to enhance the protection level of shop-floor computer systems for an up-to-date defense strategy against malicious software while not interfering with the operation mode of a plant.

- Installation and configuration of virus protection software (McAfee VirusScan Enterprise Agents)
- Protection against viruses, worms, rootkits, trojans, and other threats caused by malware
- Engineered to lower the impact on OT environments: Depending on automation process needs, detected malware can be removed, moved to quarantine, or simply remain on the system to prevent deletion of files required for the automation process
- Installation of the McAfee ePO* central management console recommended when more than ten antivirus agents installed for easy, centralized operation
- Compatibility consideration for several Siemens products like SIMATIC PCS 7, WinCC, or TIA Portal



2.5. Implementation: Application Whitelisting

Application control to protect against malware and block unwanted applications

With **McAfee Application Control**, only trusted applications are allowed to run on the computer systems. These applications are maintained in a positive list (whitelist). It prevents executions of unknown applications and executables like malware or unwanted applications.

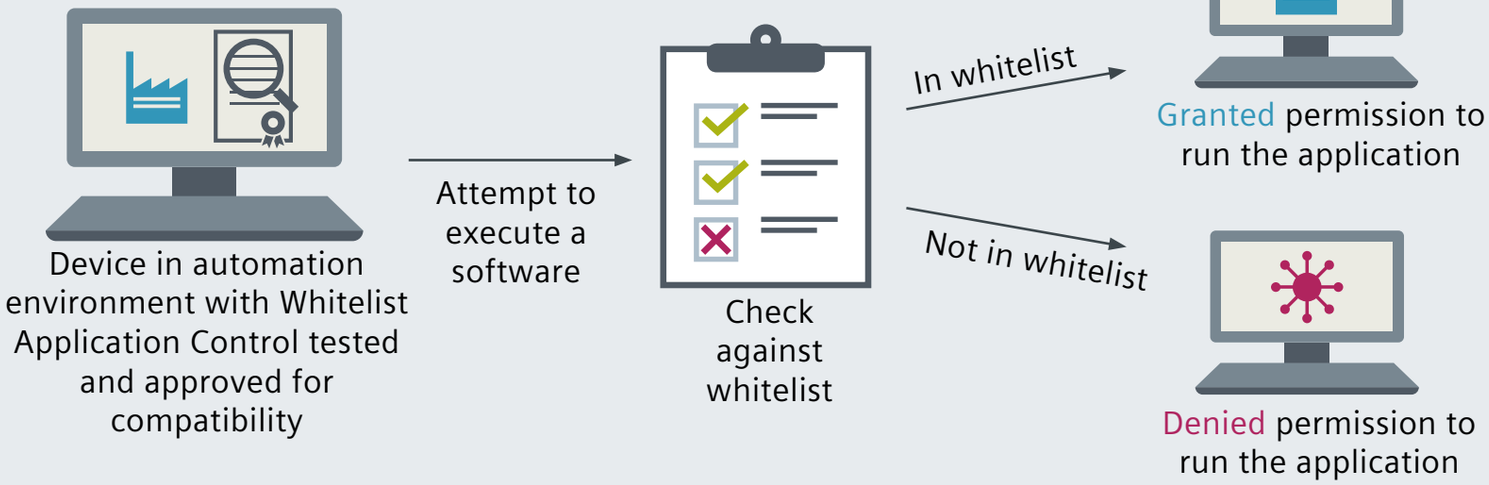
Siemens uses McAfee Application Control to enhance the protection level of shop-floor computer systems.

Application Control is approved for use in different Siemens' software products like SIMATIC PCS 7, WinCC, TIA Portal, and SINUMERIK.

Siemens offers the **McAfee Application Control** adapted to **industrial** security **needs**, meaning you can:

- **Block known** and **unknown** threats (new/unknown viruses, zero-day exploits, system manipulations) and **allow** approved, **trusted applications** to run
- Easily **protect** unsupported legacy/**obsolete systems** (e.g. Microsoft XP)
- As it **requires few resources**, protection of real-time systems, and less powerful devices
- No pattern/signature updates required
- It allows patching without disabling whitelist protection
- Easy, centralized operation via management server

How does Whitelisting work?



2.6. System Backup

Industrial control system backup

- Performance of one-time backup of systems in plant environment
- Symantec System Recovery software procured and owned by customer

2.7. Windows Patch Installation

- Installation of automation-vendor-validated and customer-approved Microsoft® OS patches and critical updates via customer-owned WSUS server
- Consideration of compatibility: patches recommended by the supplier of automation technology and authorized by the customer

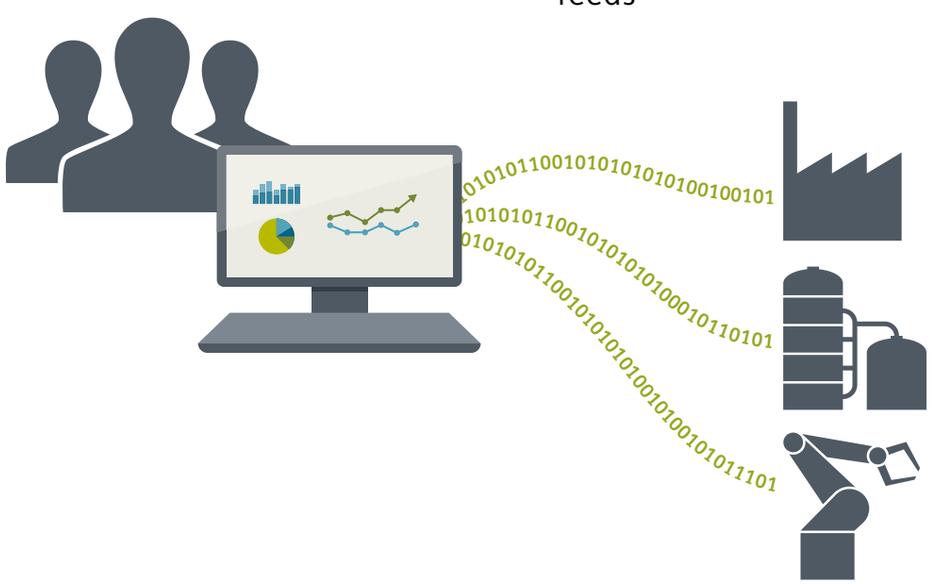
90% of all successful attacks were based on vulnerabilities where a patch was already released

2.8. Implementation: Industrial Security Monitoring

To react fast to potential security threats, indicators of compromise need to be identified fast. ISM is your way to protect your manufacturing business in the digital enterprise.

Transparency on plant security by continuous monitoring and analysis with SIEM

- SIEM is a log-file-based solution to monitor security and identify threats and security-relevant events developed for OT environments



- Installation of SIEM appliances (local appliances as Combo Box available)
- Configuration of specific monitoring scenarios based on system-specific threat vectors and the ICS infrastructure (upon request)
- Immediate notification upon detection of threats and security events
- Real-time and historical correlation of data which enables, amongst others, checking if systems have already been impacted by recently discovered threats (e.g. zero-day exploits)
- Visualization of current security situation and correlation with OT-specific Threat Intelligence feeds

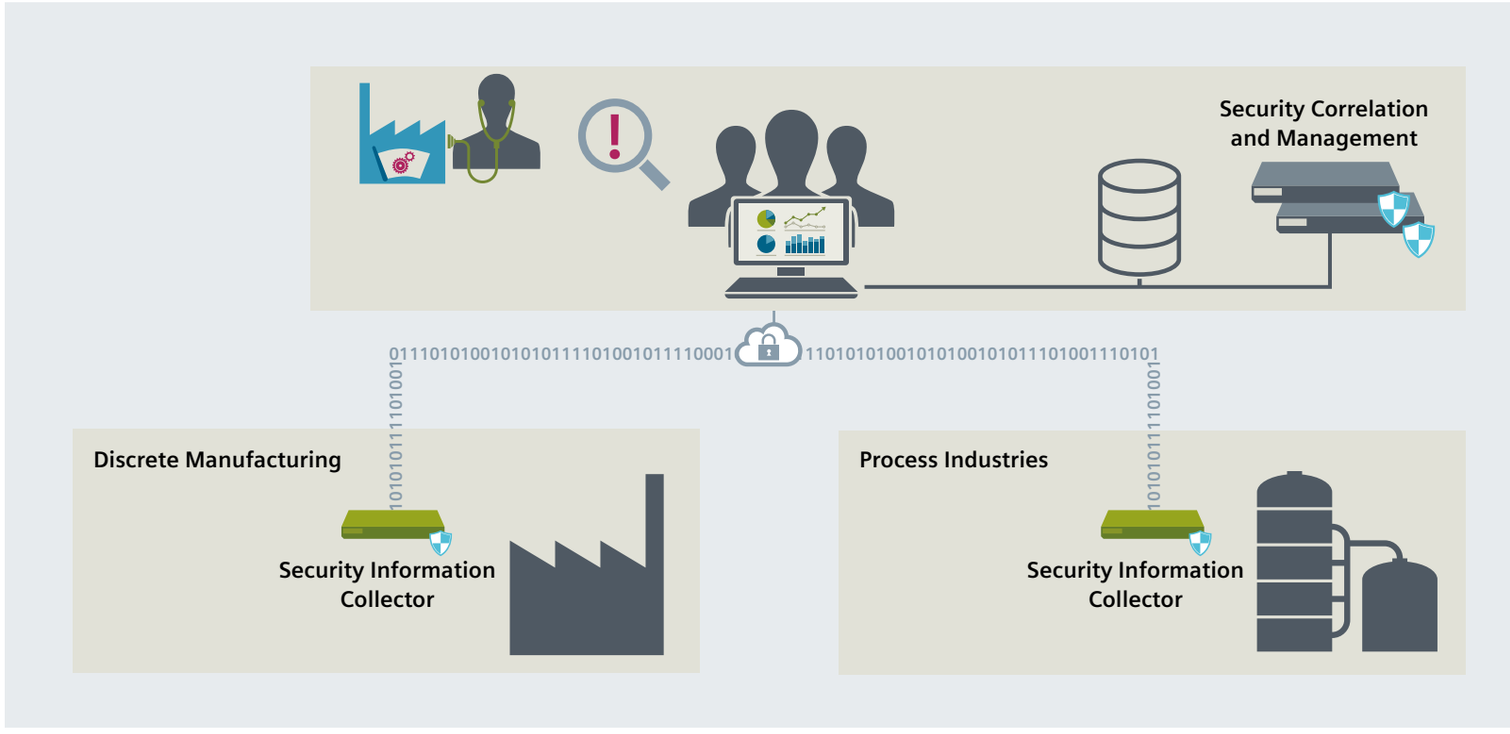
3.1. Manage: Industrial Security Monitoring

Transparency on plant security by continuous monitoring and analysis with SIEM*

Surveillance of the overall security health of your production allows early definition of actions necessary to mitigate the potential risk of becoming a cyberattack victim.

- Continuous monitoring and analysis of shop-floor security
- Correlation with “Global Threat Intelligence“ sources
- Immediate notification upon detection of threats and security events
- Visualization of current security situation through automated status reports

*Security Information Event Management



3.2. Manage: Remote Incident Handling

Fast reaction upon security events

In a 2015 survey, **34%** of Industrial Automation and Control Systems **operators** indicated that their **systems** were **breached** more than **twice** in the last 12 months[1]

44% of them were **unable** to **identify** the **source** of the **incident**[1]

- Siemens experts for Industrial Security perform a root-cause analysis of security events for Windows OS devices in your production systems
- Use of Threat Intelligence mechanisms, malware sandboxing, and raw data gathering tool for root-cause investigations and criticality analysis
- Delivery of report including proposal for remediation strategy

[1] Source © Booz Allen Hamilton 2015

Team of experts

- Root cause analysis performed by Siemens experts for industrial security
- Analysis of root cause and criticality
- Report incl. suggestions how to clean the affected systems

- What shall I do with the system?
- What protects me for the future?

3.3. Antivirus Management

Continuous virus protection for an up-to-date defense strategy

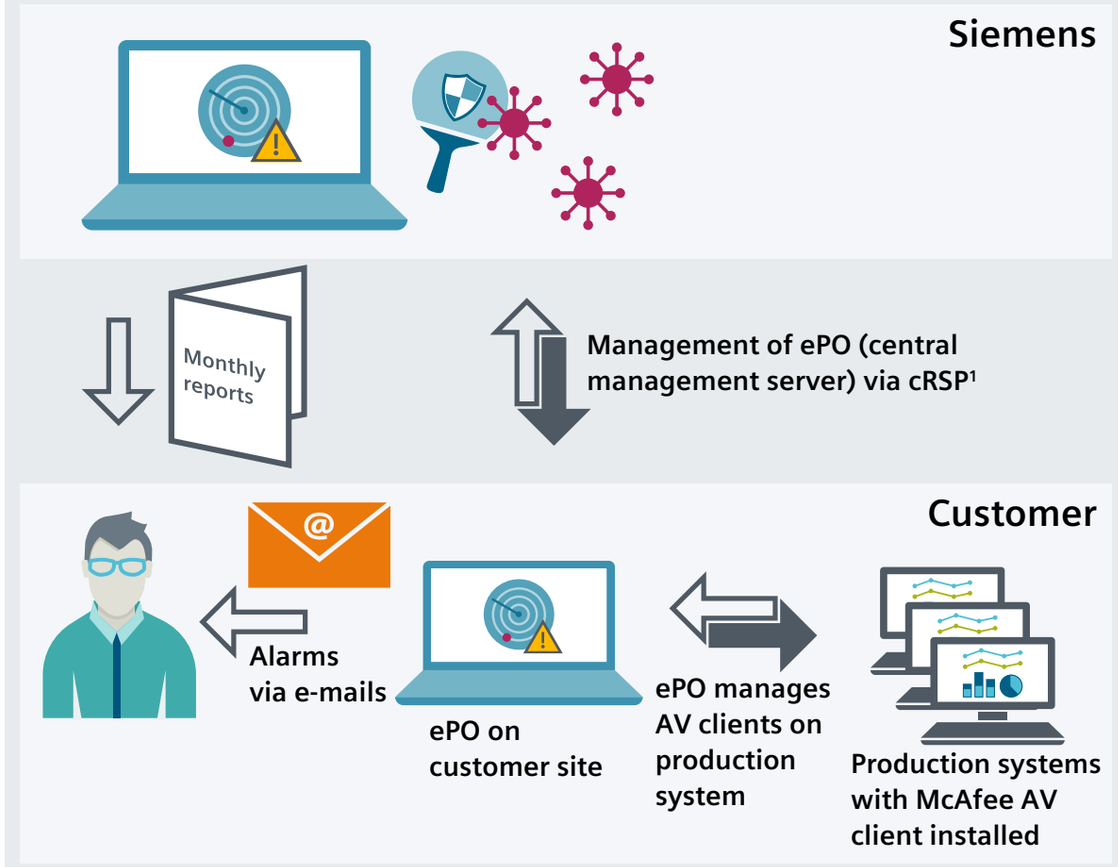
- Update of virus signatures and periodical virus scanning as recommended by the automation software provider
- Centralized management enabled through ePO* console
- Monthly report on plant environment health in the context of malware protection

*ePolicy Orchestrator

Antivirus Management will ease and automate the customer's antivirus management process:

1. Taking care of the installed McAfee antivirus solution
   a) Maintaining the logical groups
   b) Maintaining the ruleset
   c) Deployment of the actual pattern files
   d) Cyclic monitoring of the agent status
2. Adding or removing additional antivirus clients
3. In case of an alarm the alarm will be transferred via e-mail to the customer

Solution architecture



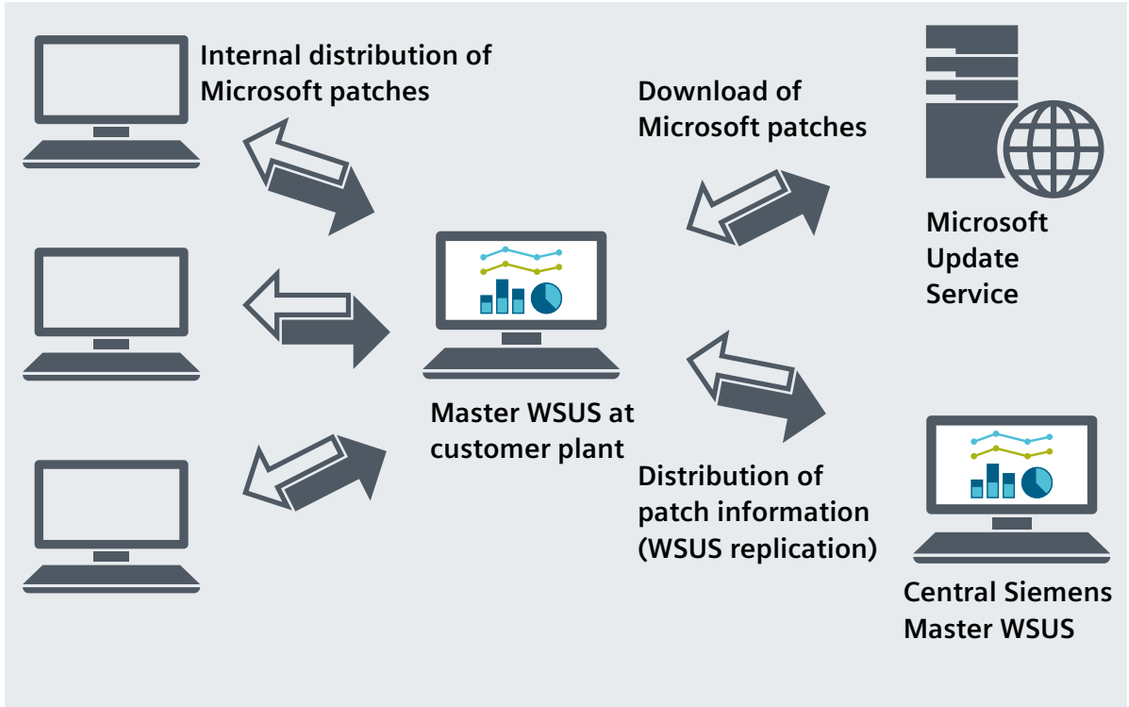
[1] cRSP = common Remote Service Platform

3.4. Patch Management

Managing vulnerabilities and critical updates in Microsoft products, Patch Management is designed combining **Security** know-how with **SIMATIC PCS 7** expertise to **reduce probability of** wrong implementation of patches and its **consequences** that might have impact on plant availability.

The Patch Management Service will ease and automate the customer's patch process:

1. Monthly patch release by Microsoft (Patch Tuesday)
2. SIMATIC PCS 7 compatibility test
3. Release of patches on Siemens Master WSUS: We will provide a central Update Server (WSUS) that provides metadata about patches that have been tested and approved for compatibility with SIMATIC PCS 7
4. Metadata containing information of approved Microsoft patches will be transferred to the customer fully automated
5. Customer gets a notification when new patches have been released
6. Customer downloads approved patches directly from Microsoft. Patch installation will be started on-site



3.5. Security Vulnerability Information

Every day new software vulnerabilities are reported. Currently manufacturers and operators of automation technology with a multitude of different software components struggle to identify if their manufactured or used automation products are affected.

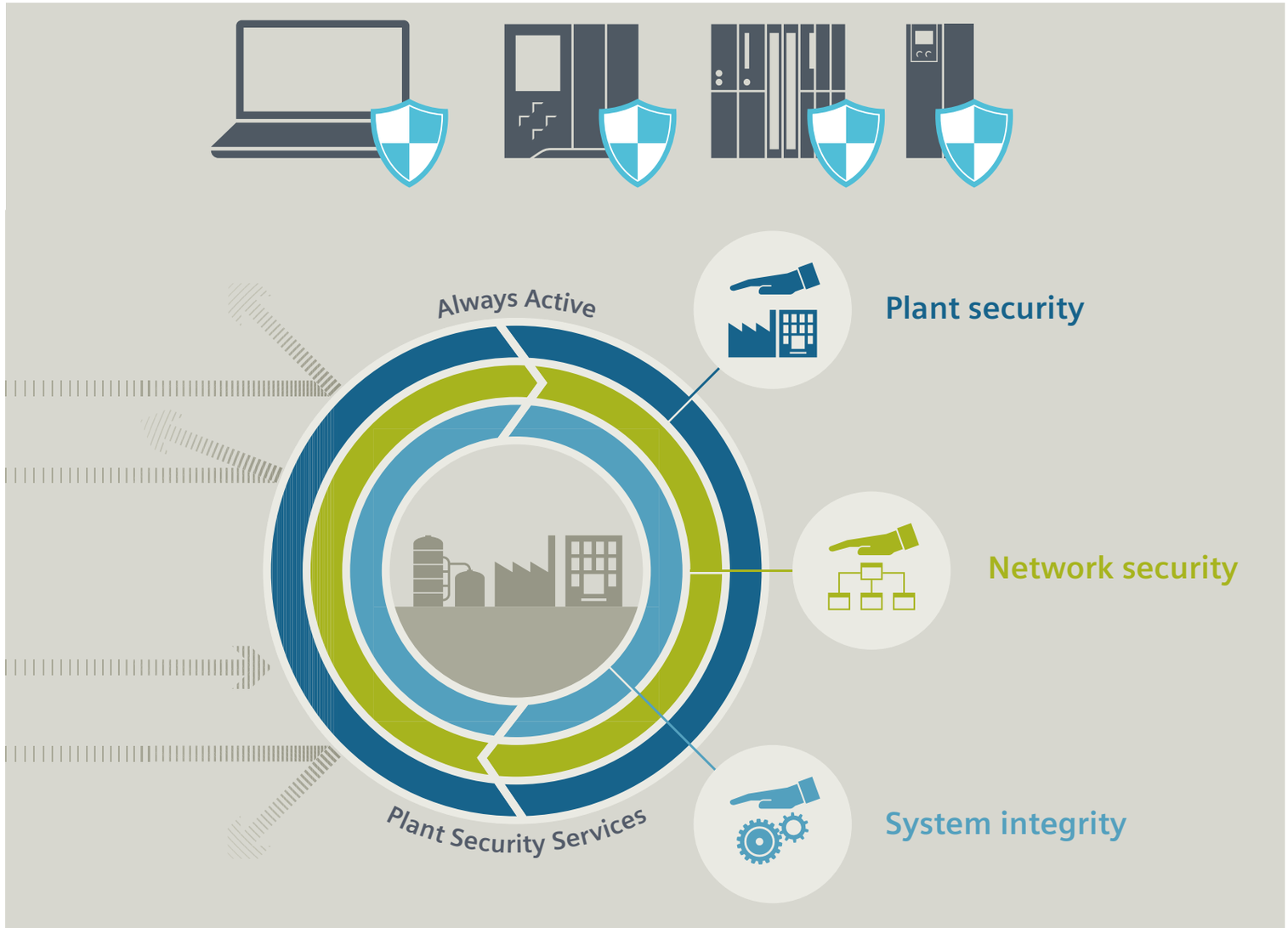
Support for the handling of software and hardware vulnerabilities via MindSphere

- Security Vulnerability Information application is a cloud service to handle the vulnerabilities affecting the industrial components
- Automatic generation of digital Security Bulletins related to vulnerabilities affecting a customized list of the user's ICS components
- The Security Bulletin contains information such as the real-time status of the patches on the user's system, CVSS score and link to the vendor website
- The security advisories cover the vulnerabilities affecting third-party components, Open Source Software (OSS), Commercial Off the Shelf Software (COTS), hardware devices as well as Siemens proprietary products. More than 30,000 components are currently in the database and it is constantly growing.

3.6. Industrial Anomaly Detection

With the Industrial Anomaly Detection a new state-of-the-art security tool for shop-floor environments is available from Siemens. Industrial Anomaly Detection automatically identifies events that do not correspond to an expected pattern or baseline within your control system networks. In doing so, an overview about the current security state of the monitored environment is provided – including Asset Identification and inventory. This can allow for fast identification of threats to your system that may pose a risk to availability.

The Industrial Anomaly Detection is based on Siemens Microboxes (IPC 427E) with corresponding preinstalled Claroty Continuous Threat Detection or Sentryo Cyber Vision software. After the initial commissioning the components can be locally configured and administered via WebGUI. It is a machine-learning system, so the detection rate will be enhanced over time.



Further information

Website

Siemens Industry Online Support

Industrial Security Health Check

Brochure

Reference at Siemens AG Amberg

Webinar Industrial Security and Ransomware

Industrial Threat Landscape Report

Contact phone

Please contact your local Siemens contact partner

Contact e-mail

industrialsecurity.i@siemens.com

Remote Systems as Managed Appliance

Service infrastructure – professionally managed

A powerful IT infrastructure in a virtualized environment – Remote Systems as Managed Appliance is a customized compilation of hardware, software, and service components, delivered as a ready-to-use system.

It provides a customer-own, on-site remote service infrastructure and enables secured communication between a remote operation center and the plant equipment. You need no additional resources in long-term maintenance of this service infrastructure – the maintenance and service is handled by us.

Your benefits

- Ready-to-run – delivery as a preconfigured IT remote system
- IT security – integrated highest industrial security standards
- All from a single source – the all-in-one approach guarantees serviceability of the system throughout its complete life cycle

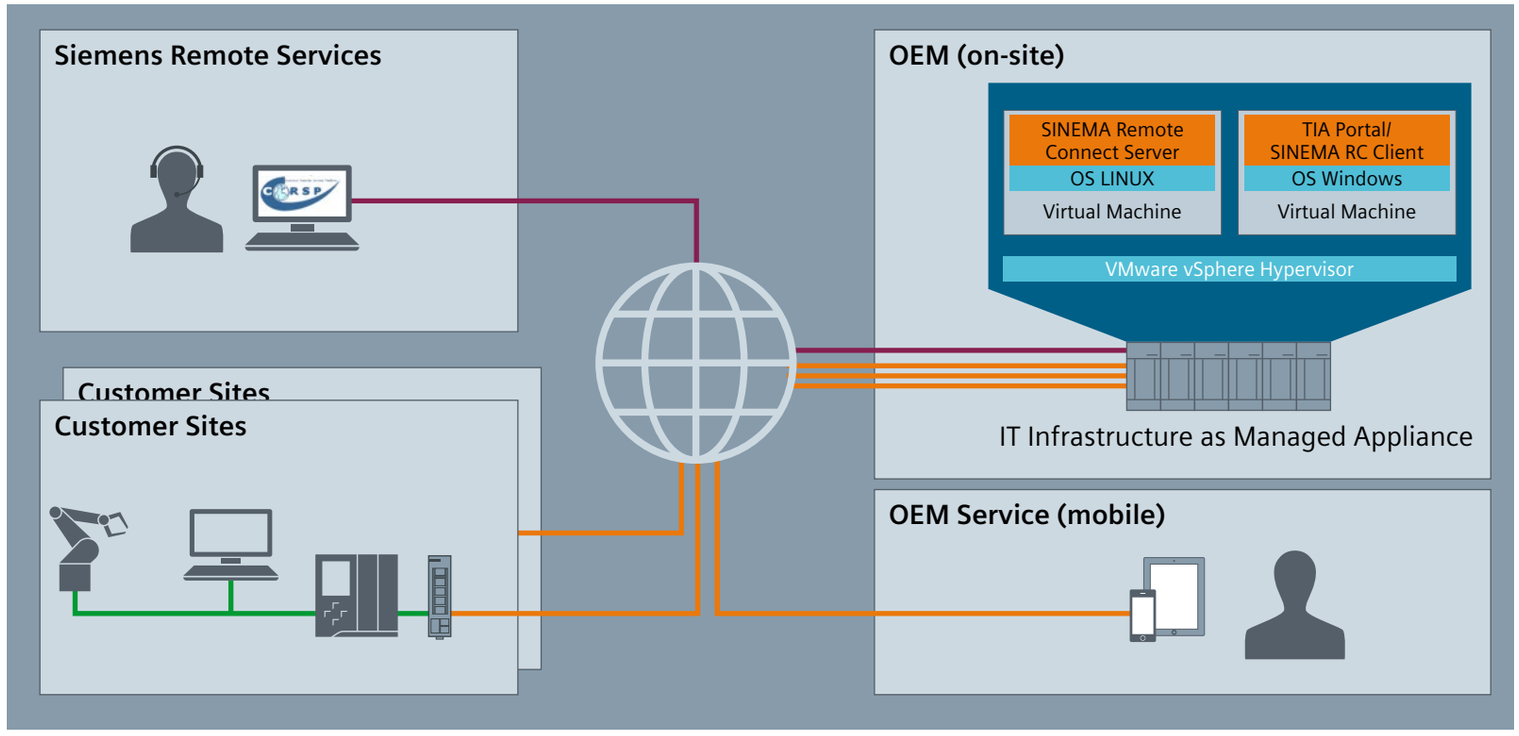
Functionality

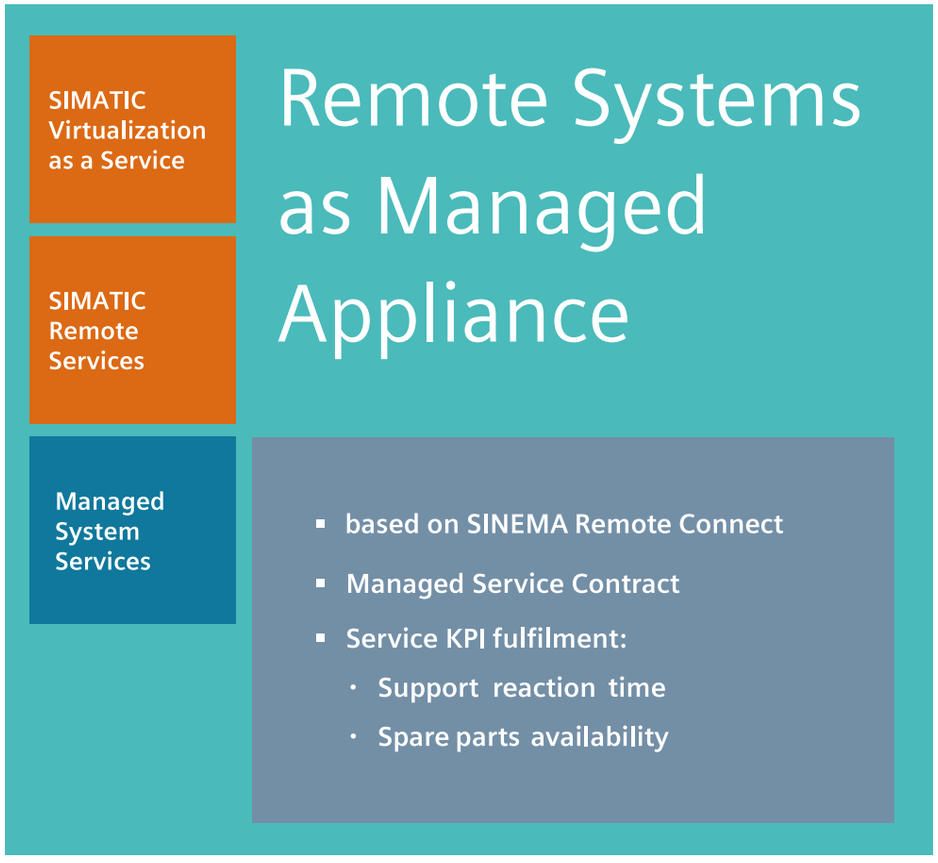
Generally speaking, a Managed Appliance is a combination of hardware, software, and services designed for a specific application. The core of a managed appliance is a powerful IT infrastructure with preinstalled and configured components. Maintenance, optimization, and, if needed, extension of the appliance is part of the life cycle service agreement. A remote access eases the maintenance and support of the appliance.

A ready-to-run complete system (managed appliance) is based on SIMATIC Virtualization as a Service and SINEMA Remote Connect Server. It contains all the necessary services – all from one source!

This service offering includes:

- Set-up of the server hardware
- Configuration of virtual machines and its networks
- Installation and configuration of the operating system
- Ready-to-use installation of the SIMATIC software



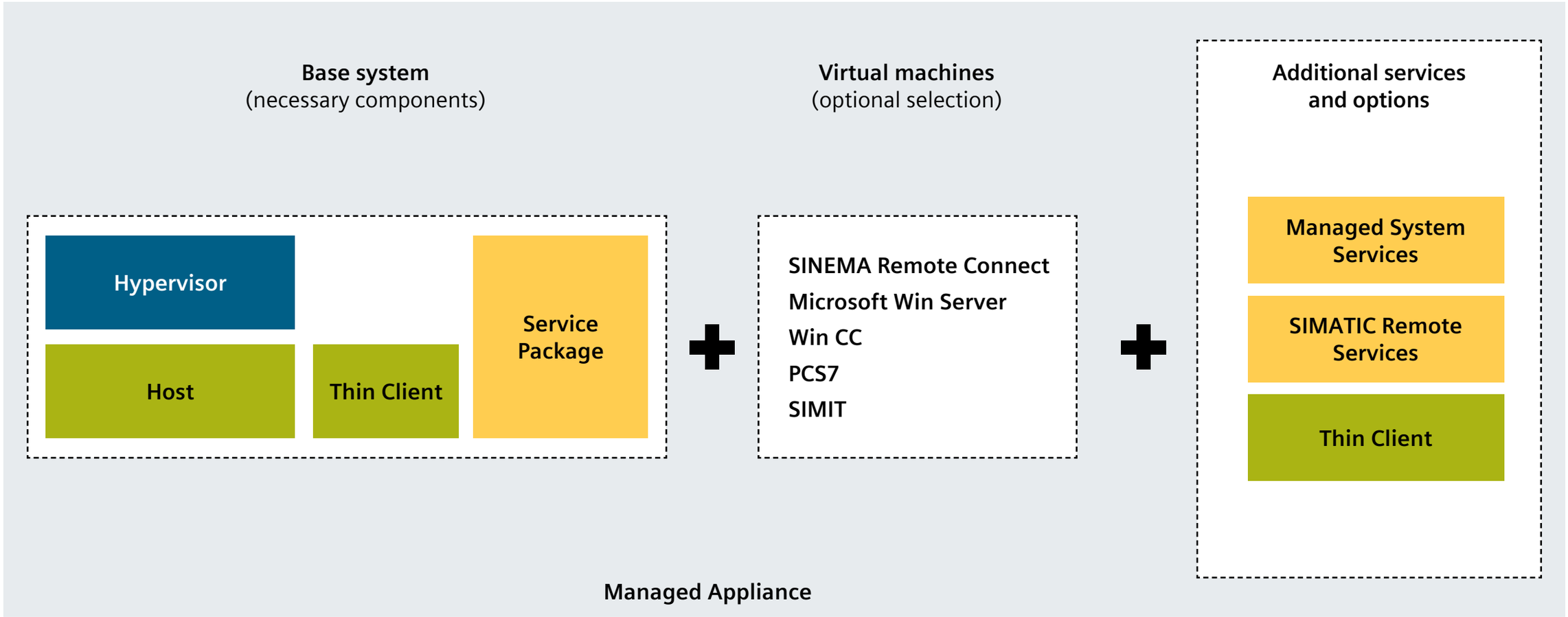


Components of the Remote Systems as Managed Appliance

- SIMATIC Virtualization as a Service – the central virtualized system platform consists of a hypervisor – an HP Proliant DL380 server, and of a management console HP Thin Client with preinstalled VMware vSphere client software. The hypervisor enables parallel operation of various applications on a mutual hardware platform. The software applications are installed on this hardware platform as “virtual machines” – virtualized software applications.
- SINEMA Remote Connect is the software used for secured connections and for user management. This software is also installed on the hypervisor as a virtual machine, in a private cloud area of the virtualized system environment.
- SIMATIC Remote Services provide secure remote access for Siemens system specialists and thus efficient support and fast troubleshooting. The access to the plant takes place via the Siemens “common Remote Service Platform” (cRSP), isolated from the sensitive plant data and with no direct access to the overlying system.
- The Managed System Services bundle and coordinate all support activities related to the virtualized host system. A dedicated support manager is familiar with all the system components and is involved in your service and maintenance processes.

Order information

Overview of the system components and configuration example



Further information

Remote Systems as Managed Appliance

Siemens Industry Online Support

Video “SINEMA Remote Connect in virtualized environment”

Contact phone

Please contact your local Siemens contact partner

SIMATIC DCS/SCADA Infrastructure

Complex IT infrastructures – ready-to-run and efficient

Complex system concepts for data archiving and reporting

The availability and security of data is decisive for complex data archiving processes: It must be reliably recorded with no gaps and stored for a long time. In addition, process data, tags, alarms, and batch data have to be centrally archived in real time. Company-wide production reporting systems further enable the aggregation of relevant process plant information.

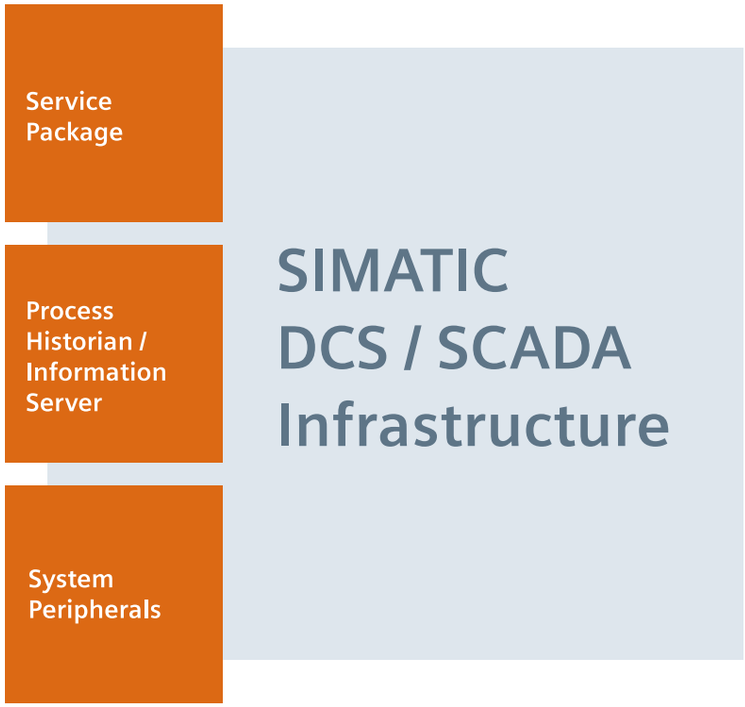
Just as important is the task-specific reporting and visualization of data, as well as the option to flexibly modify the reporting templates.

A complete, prefabricated archiving system makes engineering and commissioning as efficient as possible. Furthermore, the tailor-made services are ensured during the entire life cycle – for all installed components and for the complete system.

Many good reasons for SIMATIC DCS/SCADA Infrastructure

- Fully integrated long-term archiving system Process Historian manages big data and information flow
- Customized configuration of the hardware as well as installation and configuration of the software and the PH database – no additional engineering needed
- Ensures plant productivity through highly available data
- Simple Web-based and location-independent thin client access to historical data
- Customized, complex reporting based on comprehensive reporting engine
- Optimal carefree life cycle services for all installed components – directly from the manufacturer and all from one source

Functionality



Configured Process Historian/Information Server

The customized system is being set up to meet the specific requirements of the application. It consists of a high-performance hardware platform, Microsoft Windows installation and licenses, as well as the installation and configuration of the Process Historian/Information Server applications (without SIMATIC licenses).

System Peripherals

System peripherals include a customized process control keyboard, which enables operation and control of a running production process via the PCS 7 operating station. Installation of the keyboard driver software on the PCS 7 engineering station and client makes it possible to individually configure the keys of the keyboard for various set-up and use cases.

Service Package

The five-year service package includes a dedicated technical expert as one single point of contact, technical support for all the installed components, on-site support in case of hardware failure, as well as coordination and support for third-party components (HP).

Further information

SIMATIC DCS/SCADA Infrastructure

Siemens Industry Online Support

Brochure

Video
“SIMATIC Process Historian and Information Server“

Industry Mall

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SIMATIC Software Platform as a Service

Software engineering – efficient and flexible

Customized engineering cloud infrastructure

Cloud computing makes it possible to provide virtual resources in a central IT infrastructure (cloud) on demand, and to bill only those resources that have actually been used, such as computing power, duration of use, and bandwidths. Combined with various cloud service models, Platform as a Service (PaaS) is the ideal cloud service for efficient programming environments and developer tools.

SIMATIC Software Platform as a Service uses these technologies to provide a SIMATIC software engineering environment in the cloud. It comprises a powerful cloud-based platform with preinstalled and fully configured SIMATIC software applications.

Your benefits

- No installation or configuration effort, neither on the operating system level nor for the SIMATIC engineering software used
- Use of state-of-the-art cloud technologies for site and infrastructure-independent access
- Quick availability of a wide range of different SIMATIC software versions
- Time-limited use of the software according to the “pay per use” principle

Functionality

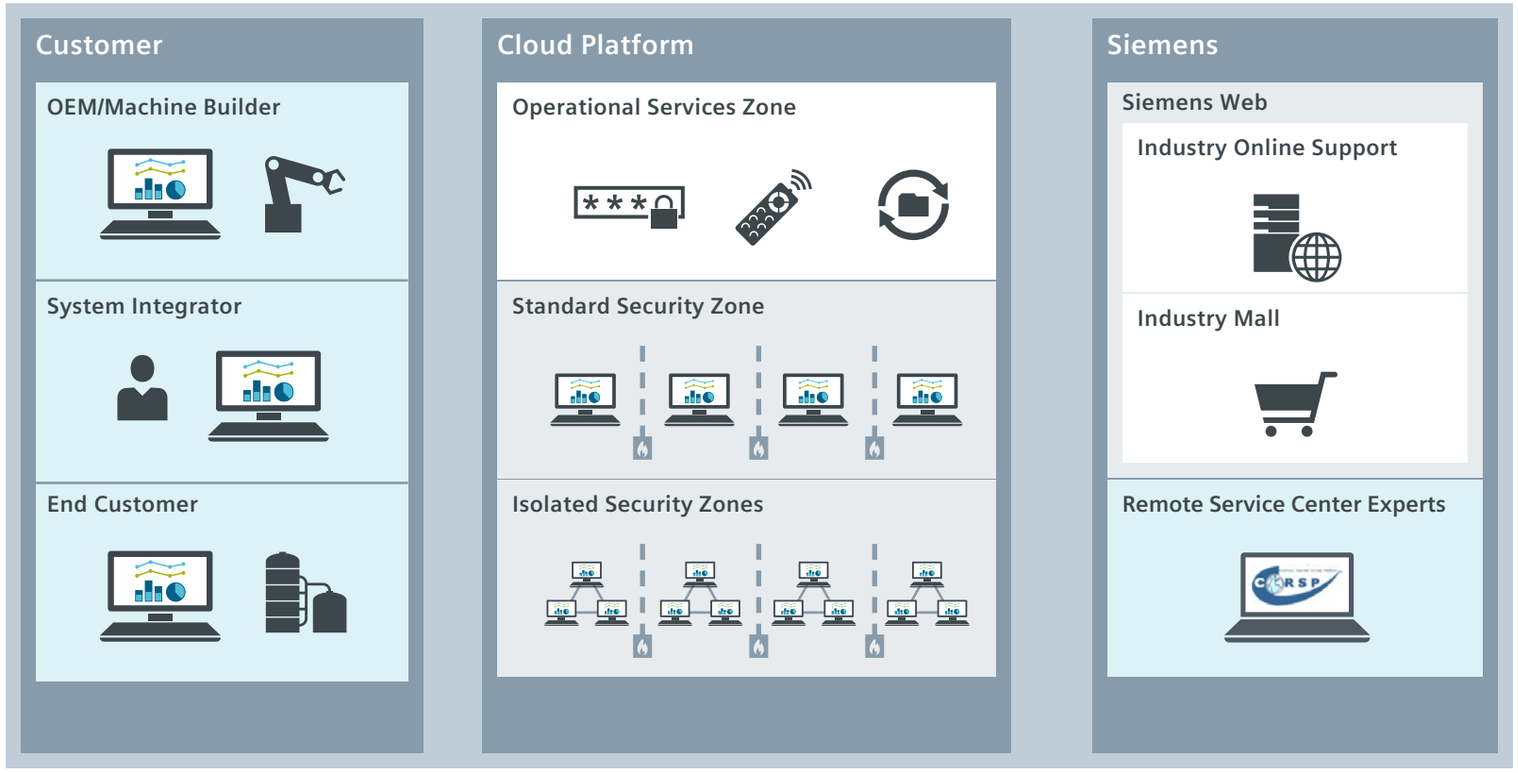
Using cloud computing technologies we provide a powerful IT infrastructure via network, which enables fast access to computing resources, memory, applications, or services from any location worldwide.

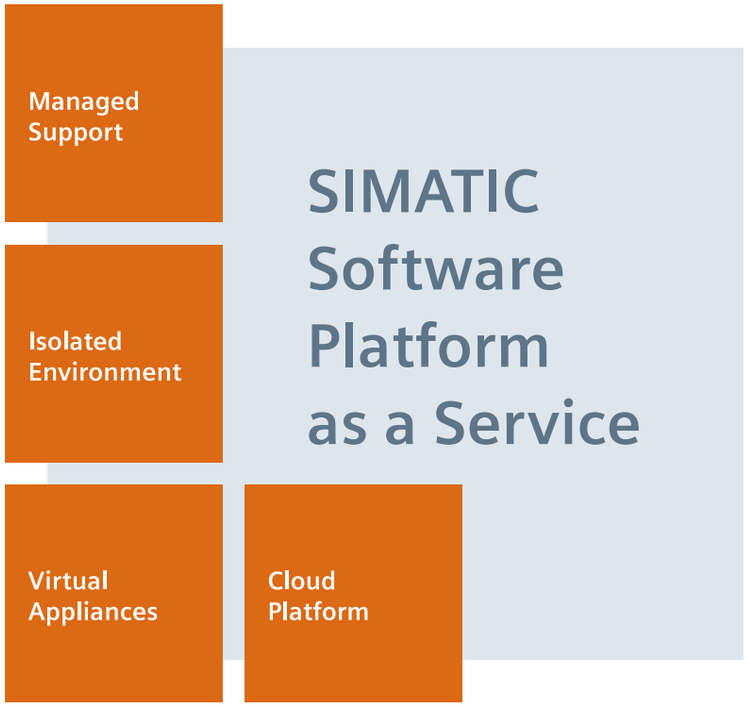
SIMATIC Software Platform as a Service consists of a cloud-based IT platform with preinstalled and preconfigured SIMATIC software application as a “virtual machine”.

This engineering environment for the process control system PCS 7 makes it possible to use the engineering software flexibly in the cloud, at short notice, and for a short period of time.

Use cases

- Engineering and test environments
- Software migration and upgrades
- Operator training systems





Cloud Platform

The virtual IT infrastructure in the data center provides all necessary resources such as computing power, memory, and networks. Additionally, it includes user-friendly tools for service management. The cloud platform also consists of functionally separated zones in order to meet various application tasks and requirements.

Virtual Appliances

A virtual appliance consists of a preconfigured operating system and the desired application software. SIMATIC Software Platform as a Service currently offers various SIMATIC PCS 7 versions as ready-to-use virtual appliances. A virtual appliance can also be adapted to individual needs during use, e.g. by installation of additional software.

Isolated Environment

Virtual appliances and the corresponding customer access are made available in the standard security zone. If you need to use multiple virtual appliances together and at the same time, they can be set up in a so-called "isolated environment." Within this isolated security zone, it is possible to set up a virtual network between the single virtual appliances.

Managed Support

- Administration (order processing, access control, user management, software, and template management)
- SIMATIC Remote Support – Siemens technical experts of the Remote Services Center support you while using the cloud platform related to the installed SIMATIC engineering software.

Further information

SIMATIC Software Platform as a Service

Siemens Industry Online Support

Brochure

Video
“SIMATIC Software Platform as a Service”

Industry Mall

Contact phone

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Lifecycle Management Suite

IT-based lifecycle maintenance

IT-based lifecycle management optimizes maintenance

The Lifecycle Management Suite optimizes plant maintenance with planning, implementation, and documentation of all service activities. Based on COMOS MRO, the preconfigured system provides standard operating procedures (SOPs) for Lifecycle Services that are assigned to the existing integrated SIMATIC PCS 7 system components.

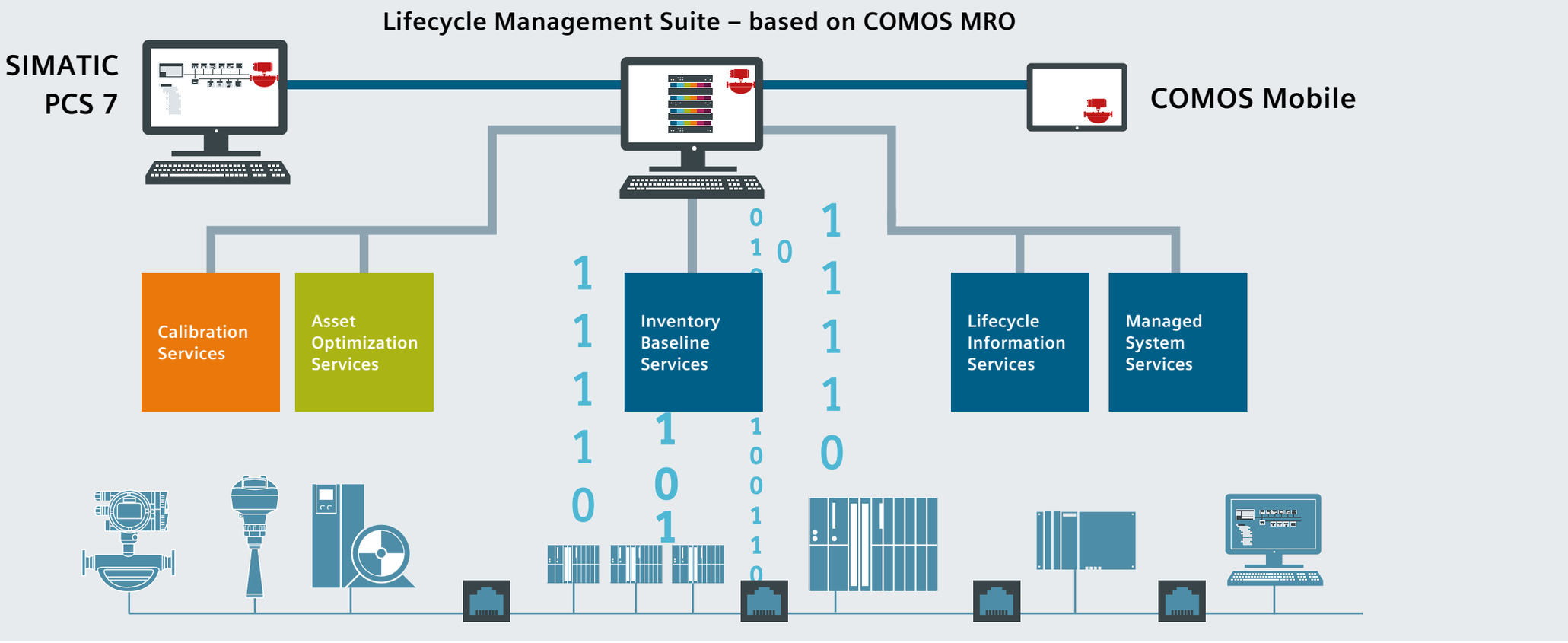
Information about the installed components, system status, product data and its lifecycle status, as well as the service standards are all bundled in the maintenance system. Integration and mapping of all those system data within the Lifecycle Management Suite enables efficient maintenance for various use cases. Maintenance managers, asset managers or field service engineers – all users profit from efficient service and resource planning, obsolescence management, data-based revisions and reporting.

The modular structure of this service offering makes it possible to customize it to the actual requirements of the plant – beginning with “Mobilization”, via “Suite Hosting” to complete “Maintenance Service Management”, Lifecycle Management Suite offers exactly the right solution for your service needs.

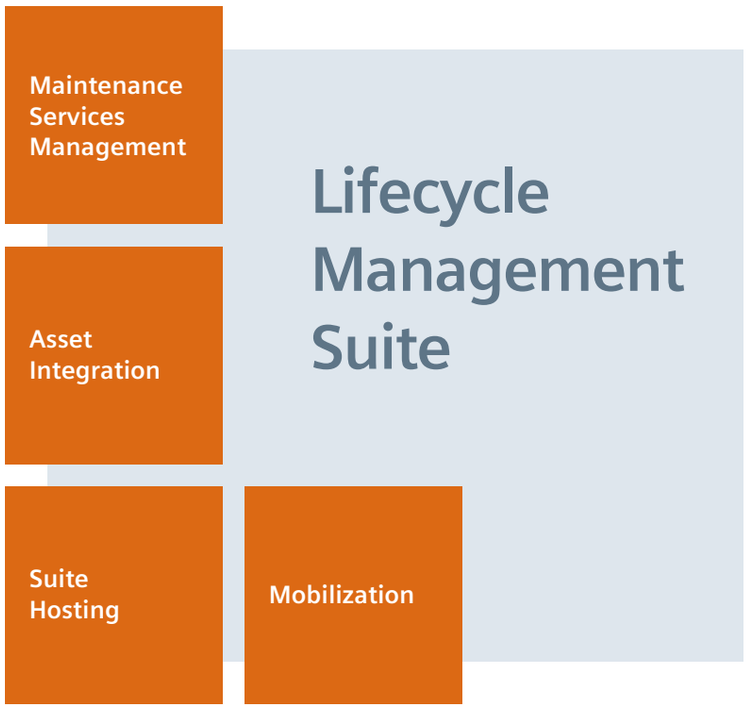
Three good reasons for Lifecycle Management Suite

- Preconfigured CMMS system with imported asset information and service checkpoints
- Consistent data maintenance through integration in a data platform
- Mobile access on site, including maintenance information and documentation in real-time

Functionality



The easily accessed cloud-based Lifecycle Management Suite uses COMOS MRO functionalities for services and maintenance management. It provides service standards and preventive maintenance measures for each product and system.



Mobilization

- Fast set-up of the access area based on the contracted functionalities

Mobilization is a prerequisite for implementation of all other features and modules of the Lifecycle Management Suite

Asset Integration

- Access to the relevant asset management functionalities
- Deployment of customer-specific configuration
- Obsolescence risk analysis
- Transparent and efficient iBase integration
- Tracking of asset status information

Suite Hosting

- Cloud-based COMOS MRO software with technical support and software update services
- User access based on annual subscription model
- Administration of customer-specific software entities, incl. updates

Maintenance Service Management

- Service standards integration
- Real-time mobile maintenance
- Real-time report builder
- Cyclic obsolescence checks

Further information

Lifecycle Management Suite

Siemens Industry Online Support

Please contact your local Siemens contact partner.

Brochure

Industry Mall

SIMATIC Virtualization as a Service

Efficient for virtualization

Your Virtualization Solution

Apart from the preventive maintenance of the hardware platform, it is particularly the maintenance and care of the installed software components which is decisive for the life cycle costs of a PC-based control system. The integration of IT technologies into the industrial environment enables innovative concepts here as well, such as system virtualization.

“SIMATIC Virtualization as a Service” offers a simple introduction into this forward-looking technology.

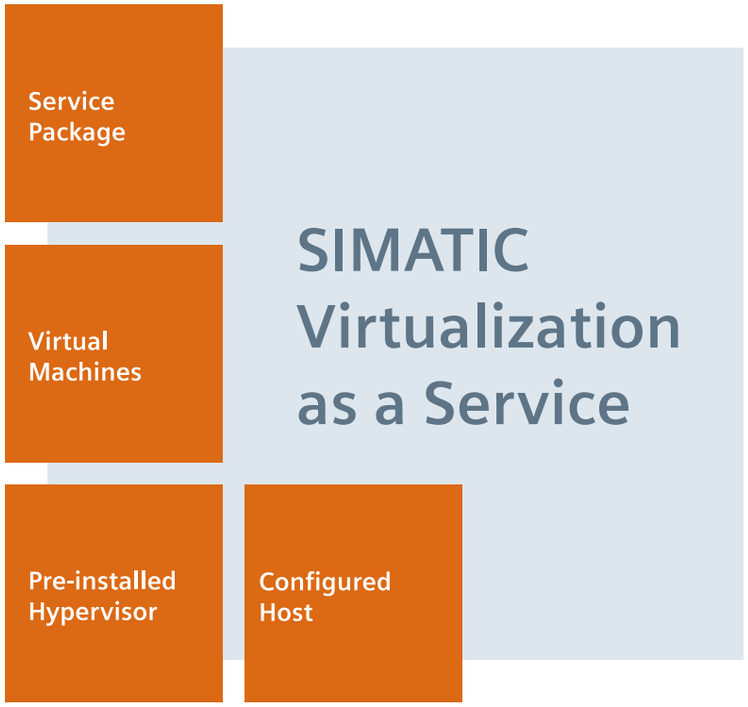
It is a preconfigured and preinstalled virtualized server system, containing all the needed applications as virtual machines, as well as the corresponding services necessary to maintain the virtualized system.

Challenges

- Optimize utilization of hardware resources
- Minimize life cycle costs
- Simplify expensive system updates and plant expansions
- Manage and maintain the IT centrally
- Receive fast and competent service and support
- One point of contact for all hardware, software, and services

Your benefits

- Save up to 75% of energy consumption through reduction of hardware resources
- Up to 80% less rack space required
- The complete virtualized system including the corresponding services – directly from the manufacturer and all from a single source!



Preconfigured Host System

The system platform consists of a powerful server hardware (based on HP ProLiant or SIMATIC IPC) and a management console. The host server is available in different performance classes.

Preinstalled Hypervisor

A virtualization layer that distributes the resources of the physical hardware to the virtual machines (VMs) is installed on the above system platform. VMware vSphere is used as the virtualization software.

Virtual Machines

The SIMATIC software applications are available as ready-to-run virtual machines on the preconfigured system platform. Microsoft Windows Server with activated licenses is preinstalled on each virtual machine. The virtual machines can include individually configurable, unlicensed installations of SIMATIC PCS 7 and SIMATIC WinCC software.

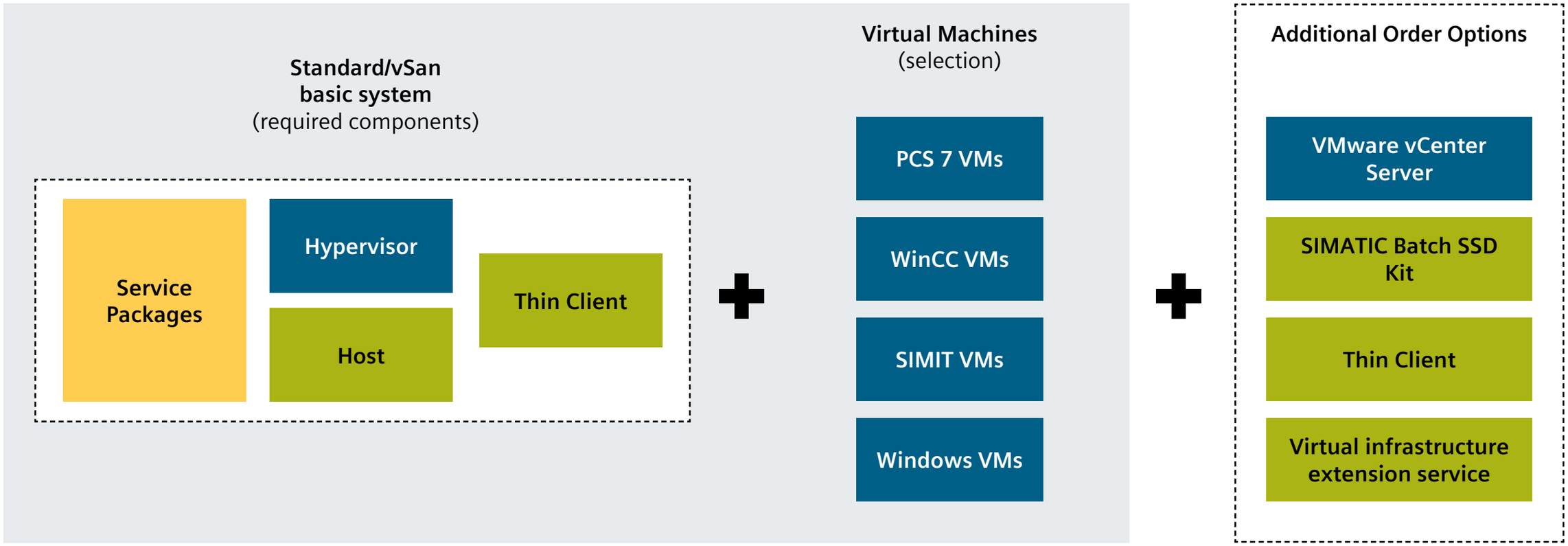
Service Package

The service package includes

- installation and configuration of the system,
- documentation, manuals, and application examples,
- as well as the fast and competent technical support for all the installed components.

Order information

Overview of the system components



Further information

SIMATIC Virtualization as a Service

Siemens Industry Online Support

Brochure

Reference article at Novartis Vaccines

Reference article at Louisiana Sugar Refiners

Video
“SIMATIC Virtualization as a Service”

Industry Mall

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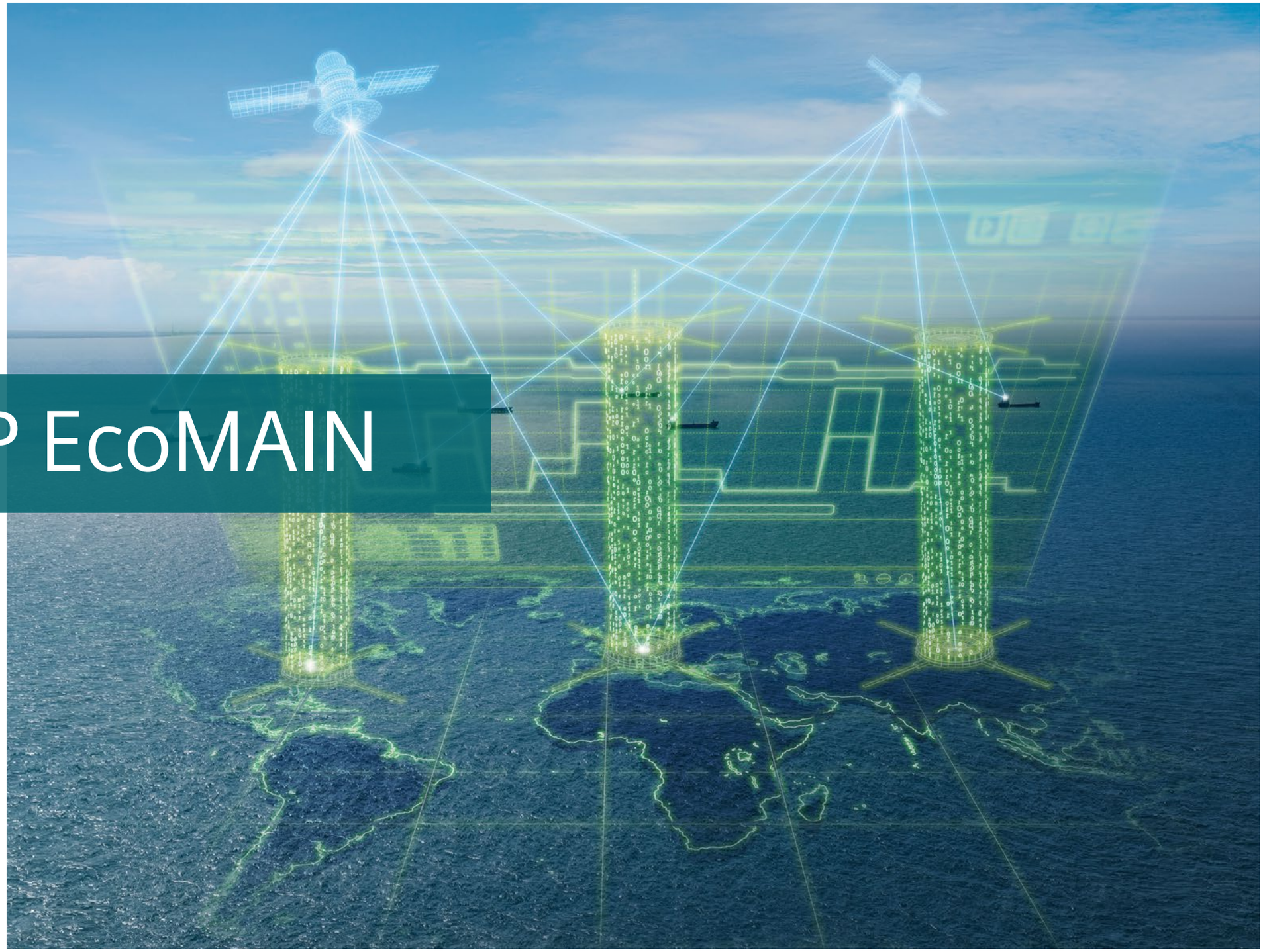
SISHIP EcoMAIN



Why this service?

Ship owners and ship operators rely on numerous software and hardware systems to answer ever more complex challenges in their daily business.

With SISHIP EcoMAIN, they can use data from any number of systems on board in a uniform platform to make better decisions and save costs.

Your benefits

- Fleet Management services requires minimal amounts of your resources
- Transparency of your ship and fleet operation including KPIs
- Costs for unplanned maintenance can be reduced
- Optimization of fuel and maintenance costs
- Automated reports to be viewed by and shared within your team and management in your Web portal – anytime, anywhere
- Improvement of ecological footprint
- Increased availability, reliability, and maintainability of the asset Fleet Management services require minimal amounts of your resources

Functionality

SISHIP EcoMAIN collects the entire ship operational data and consolidates and stores them in a database.

A tailored app helps you optimize energy consumption and emissions by transparently supporting the decisions and addressing navigation (route optimization), power generation, propulsion, trim, waste heat, and HVAC. Other apps support operations with regards to bunkering fluids, service schedules, documentation, and information management, etc.

SISHIP EcoMAIN

The economical multi-application infrastructure network for better fleet performance

This Web-based product is available in different scales. The medium- and full-size system provides an onboard data collection from the various installed systems. The system design is open and allows the collection of operational ship data via industrial standard protocols from systems of different suppliers. All data will be consolidated into a common data format and archived in an onboard database.

Online and historical data can be provided via a standard application interface (API).

Any software application can be installed in virtual machines (VM) on the EcoMAIN server. This open architecture enables the implementation of third-party apps regardless of their operating system.

The digital platforms of individual ships can be combined into a Fleet Management System located ashore. This enables the comparison of the operation of the entire fleet.

Software applications are fed with the required online data respectively historical ship operational data from the SISHIP EcoMAIN database. Software drivers enable a data collection via standard industrial interfaces from various control systems on board.

A Fleet Management System can combine ship data into a land-based fleet database.

SISHIP EcoMAIN Web portal

Standard apps

Data Explorer
Multiple chart generation of online and historical data

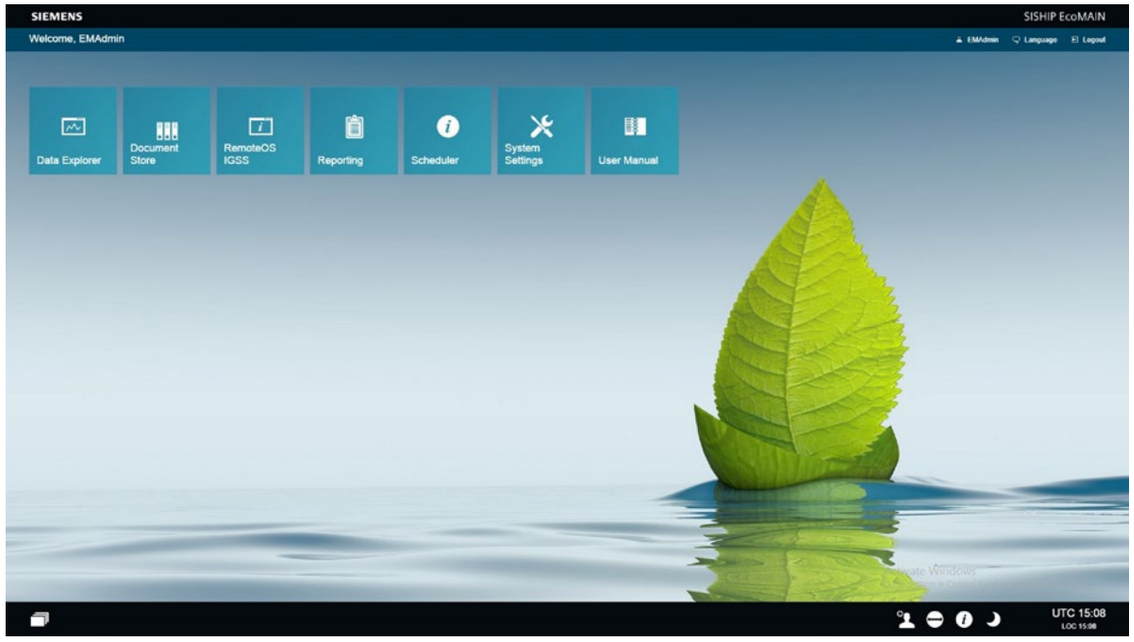
Document Store
Document archive
Ship and fleet document access with full text search capability

Remote OS
Read-only access to the ship automation HMI

Reporting
User-defined reports

Scheduler
Report creation based on events

Remote Diagnostic
Remote access to connected ship control systems for remote diagnostic by a specialist



Service details SISHIP EcoMAIN

A high diversity of efficiency systems from different suppliers can be combined on one platform. This avoids installation of various IT hardware.

A Web-based architecture enables the use of existing computers on board and ashore for HMI purposes.

Remote support can be provided at short notice. This can either solve a problem directly or identify the root cause for a malfunction without sending service personnel to the ship which might be located anywhere on the globe.

SISHIP EcoMAIN can help to increase efficiency of the entire fleet operation by various apps enabling transparent decisions.

	SISHIP EcoMAIN Nano	SISHIP EcoMAIN Mini	SISHIP EcoMAIN Lite	SISHIP EcoMAIN Standard
Hardware	Siemens MindConnect	Siemens IPC	Server Desktop	Server(s) Rack
Max. drivers	1	1	2	5–8 per DCU
Max. tags	25	100	500	Up to 60,000
Max. apps	In cloud	1	2–5	Project-specific
Database	–	1 week	3 months	18 months
Cloud connection	Yes	Yes	Yes	Yes
Remote diagnostic	No	No	Yes	Yes

Further information

Siemens Customer Service Marine Homepage

Demo System: on request

Please contact your Siemens contact partner closest to you.

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