



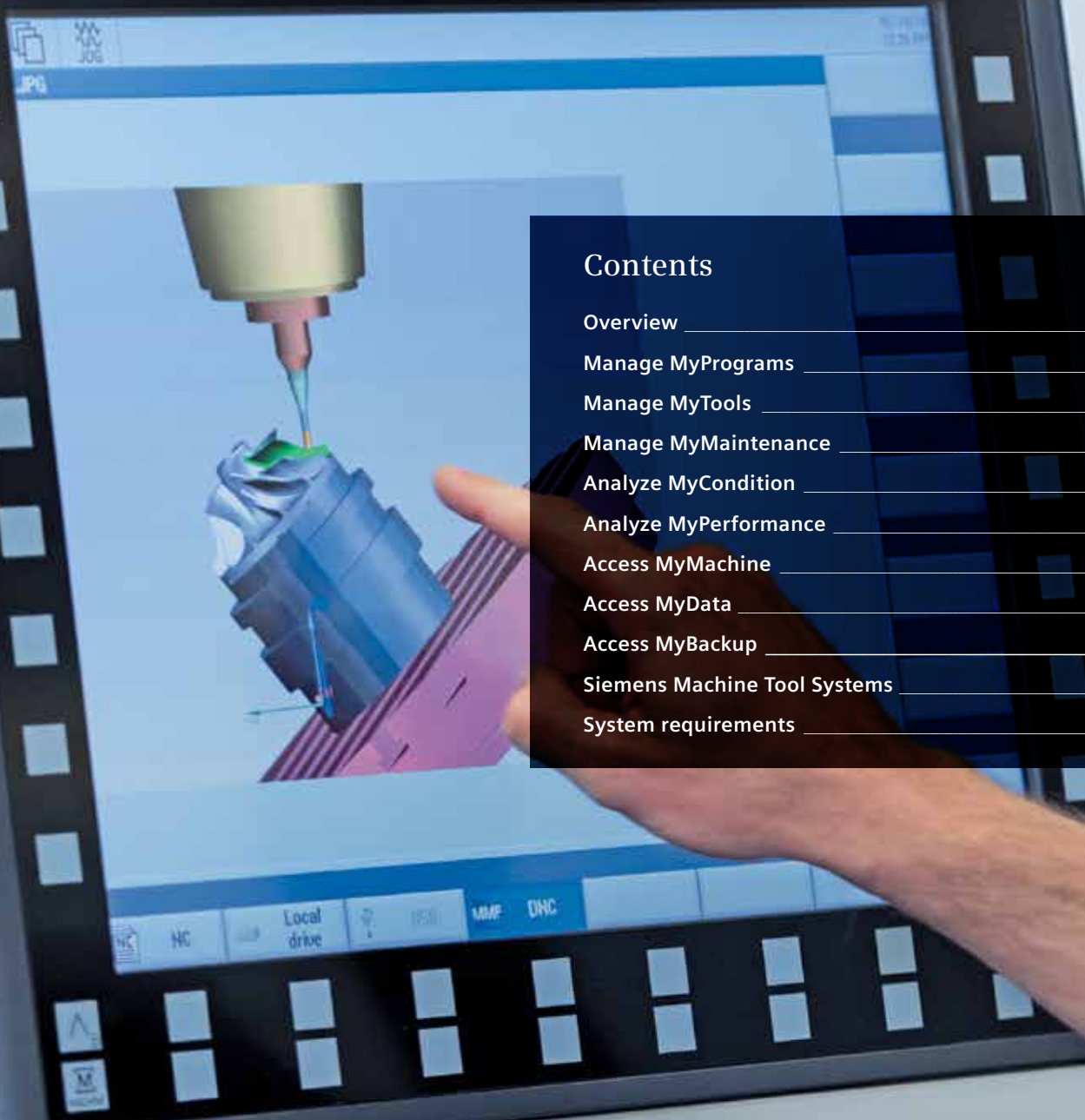
SIEMENS

SINUMERIK Integrate for production

Future-proof IT solutions for machine tools

usa.siemens.com/sinumerik-integrate

Answers for industry.



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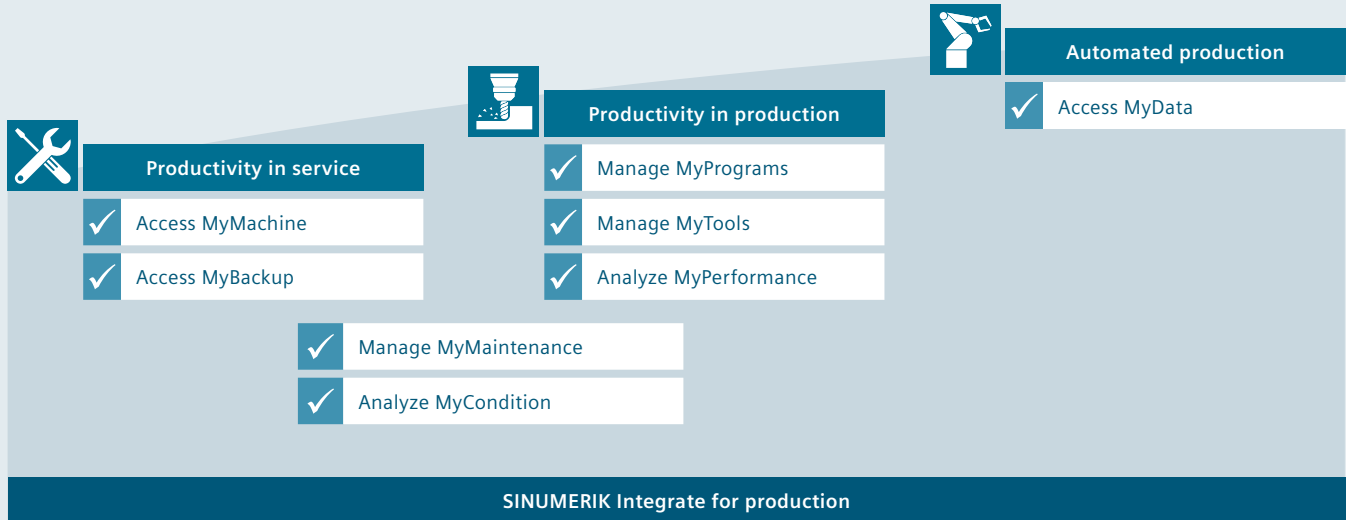


Higher production efficiency through intelligent IT integration

Siemens provides the complete spectrum of IT integration to supplement its CNC technology. This increases productivity in service and production — and extends the automation of the manufacturing environment. Machines communicate with higher-level control and supervisory systems and must be able to be simply expanded to include new functions. On the way to Industry 4.0, the SINUMERIK Integrate product family offers productive solutions to integrate IT into production systems.

SINUMERIK Integrate for production

Future-proof investment in scalable software



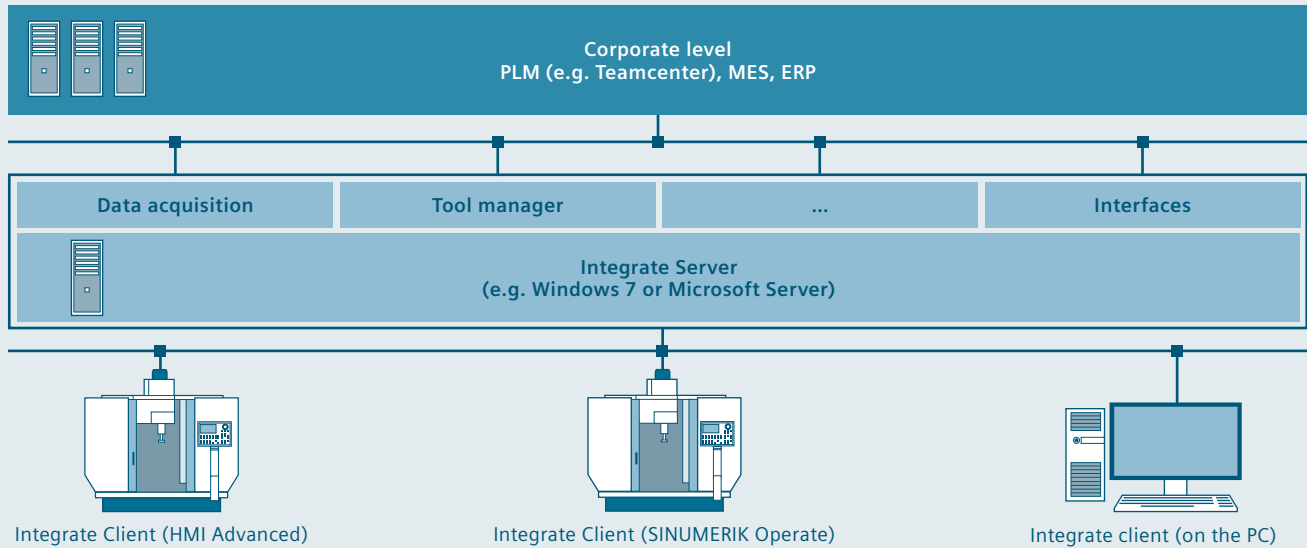
The potential for increasing productivity in the CNC environment lies in networking systems and machines. To do this, production data must be captured and clearly evaluated. With SINUMERIK Integrate, Siemens offers a central platform that provides useful modules for analysis and data management — for individual machines and networked systems.

Investment protection and investment security with SINUMERIK Integrate

A typical production environment lasts for several years or even decades. During this time, IT infrastructure is undergoing continuous change, while machine tools remain almost unchanged. At the same time, new requirements frequently arise, which can be satisfied by expanding the software functionality — if at all possible without modifying the machine-related software itself. With SINUMERIK Integrate, resources can be networked, and processes and production data centrally managed. Data security is guaranteed across the board. This is achieved by encrypting data before it is transferred — and machines can be operated with the appropriate firewalls.

Scalable stand-alone and client-server solutions

SINUMERIK Integrate is a client-server solution that is typically used in a local or distributed area with machines. Individual SINUMERIK Integrate applications can also be used as a solution for a single machine. After installation on the Integrate server, SINUMERIK-controlled machines can be easily integrated as clients in an IT network using the HMI Advanced or SINUMERIK Operate user interfaces. The complete software package is from a single source — the individual applications are enabled using straightforward installation and licensing procedures, so that the system can be easily scaled to address your requirements.



Link to the corporate level

SINUMERIK Integrate allows machine tools to be simply networked in higher-level IT systems of the production environment. The software runs directly on the CNC, acquires all data from the CNC and PLC and provides this data for use in other systems. A central server provides the various applications.

If machines are connected to the server, then the new functions can be simply loaded into them. This is where the seamless level of integration of the Siemens portfolio pays off, as PLM and MES systems can also be easily connected to improve productivity even more. This secures cost advantages — both in the initial capital investment and in operation.

One platform — many advantages

SINUMERIK Integrate is a central platform that can be used to increase end-user productivity or increase the service efficiency of machine tool builders. In addition, the automation level of the production environment can be expanded. Through optimized production, more parts can be produced, while reducing mistakes — for example, as a result of incorrect CNC programs, missing tools, high energy usage and increased material and tool inventories.

Manage MyPrograms

Network-wide organization and NC program management



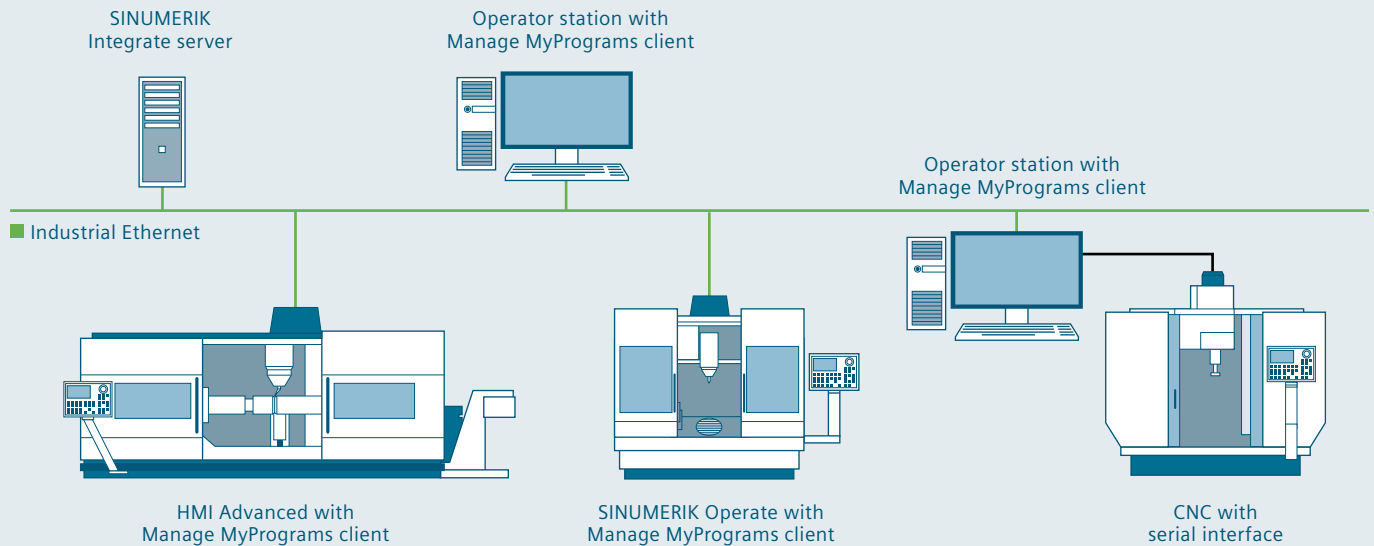
With Manage MyPrograms, SINUMERIK Integrate provides a powerful solution to efficiently organize and manage CNC programs throughout your network.

The challenge — provide programs on time

Machining certain workpieces on a machine tool requires preparation, which is executed in different worksteps, such as NC programming, planning, production planning, etc. To manage several part programs, a solution is required that organizes the files and distributes them to the correct machines.

The solution — managing NC programs throughout the network

Using Manage MyPrograms, CNC program data can be managed throughout the factory. This facilitates detailed planning of workpieces, jobs and serial production on the manufacturing floor. Manage MyPrograms is a scalable solution, used in a standard fashion under the SINUMERIK Operate graphical user interface. Additionally, there are seamless and integrated solutions such as Teamcenter for managing the production-relevant master data and resources, which are integrated in a common database.



The advantages — process reliability through central program management

Manage MyPrograms supports a paperless production environment, as programs and additional product information are simply sent to the machines in the form of attachments (e.g. drawings) from the production planning department. It is ensured that the machine operator only sees the information relevant for production itself. With a click, he can access instructions and start machining, as well as edit the program and add comments. These changes can also be returned to the production planning team. Centrally managing NC programs save time by allowing you to set-up new production batches faster. This means a higher degree of reliability for the interaction between machine operators and production planning.

User-friendly

- ✓ CNC programming data for a group of machines with different control types is centrally managed

Transparent

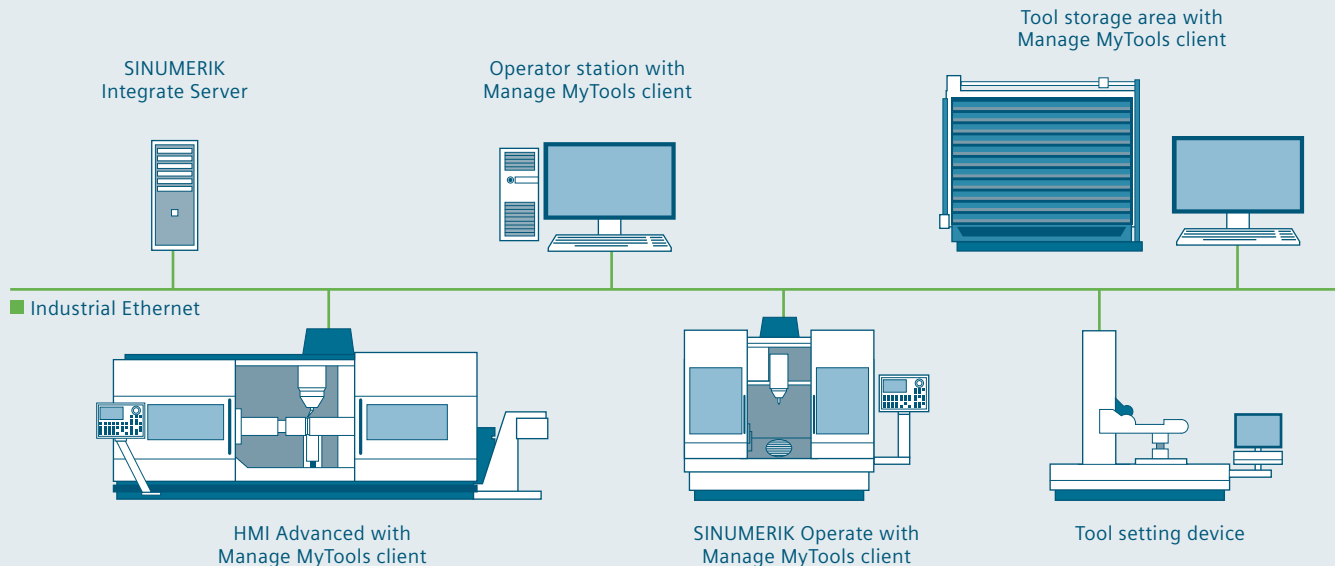
- ✓ Additional production information is managed (e.g. workpiece drawings, clamping specifications) for a paperless production environment

Reliable

- ✓ Managing release IDs and additional file attributes for a high degree of process reliability for distributed roles in the production landscape

Manage MyTools

Managing the tool loop



With Manage MyTools, SINUMERIK Integrate offers an integrated and seamless software solution to manage the tool loop.

The challenge — providing tools on time

In state-of-the-art production facilities, fewer and fewer machines are considered a stand-alone solution. If several machines are to be efficiently operated, then the tools required must be centrally and transparently managed. In addition to the NC programs, clamping, measuring and testing resources, as well as blanks, CNC machines can only be productive if the correct tools are also available.

The solution — scalable application with standard operation

Manage MyTools offers centralized tool data management. The server and the SINUMERIK CNC can be accessed. Manage MyTools is a scalable application — and the functional scope is available on the latest generation of SINUMERIK 840D sl, as well as on earlier versions of HMI Advanced. This functionality allows machine tool operators to seamlessly send the appropriate data to the various machines.



The advantages — better planning based upon up-to-date information

The central server ensures that the machines are continually synchronized to obtain a comprehensive overview of the tools with up-to-date information about the remaining tool life. Worn tools and those required for machining are taken into consideration with plenty of time when planning production jobs. Tools and tool master data can be managed and organized throughout the entire production environment using the additional link to Teamcenter. The advantage — the machine operator can plan the tools required for the particular machining job directly at the machine, either manually or automatically. Manage MyTools helps to optimize resources and make machine setup even faster.

Efficient

- ✓ The tools required for production jobs are quickly and efficiently determined

Transparent

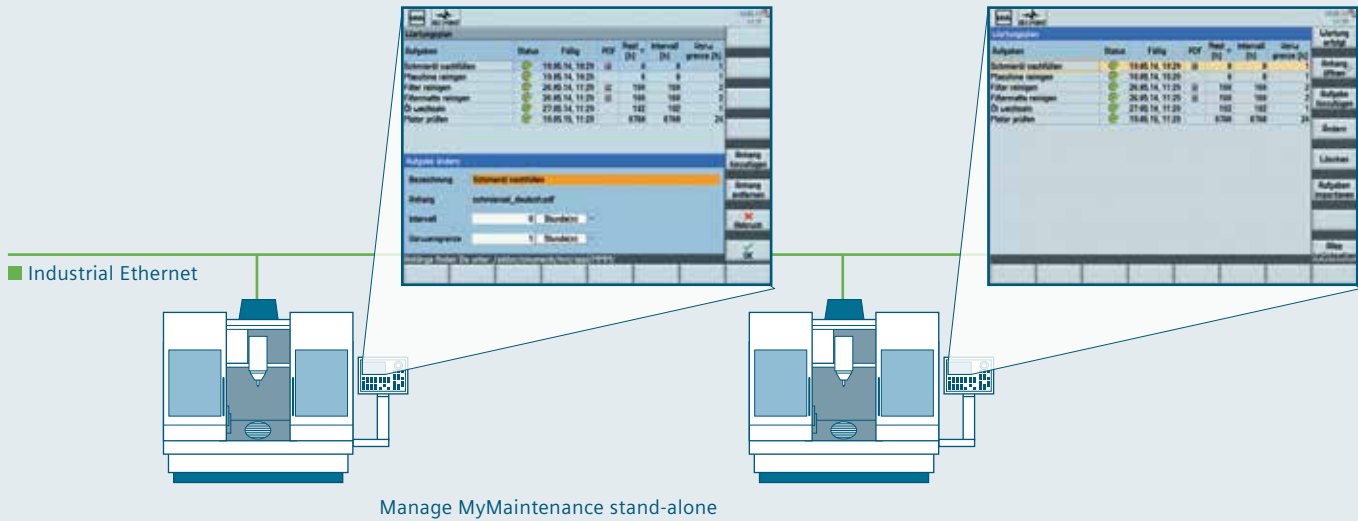
- ✓ Tools are managed throughout the complete factory

Reliable

- ✓ The tools required are mapped against the magazine assignment of the machines and the tool storage area
- ✓ Reliable, automated equipping dialog

Manage MyMaintenance

Integrated maintenance planner



With Manage MyMaintenance, SINUMERIK Integrate provides a maintenance planning tool integrated in the control to perform maintenance work on the machine at the appropriate intervals.

The challenge — avoid unscheduled downtimes

Avoiding unscheduled machine downtimes in manufacturing facilities is becoming increasingly important in the areas of service and maintenance. The focus is upon a scheduled and standardized approach. This also creates the basis for very different maintenance strategies depending upon the size of the facility. The clear objective is to prevent unpredicted repairs, as well as time-consuming and costly downtimes.

The solution — preventative service maintenance

Manage MyMaintenance is a maintenance planning tool integrated into the CNC system. It issues time-synchronized notifications about pending activities so that preventative service and maintenance routines can be put in place. In addition to the maintenance scenarios of the machine tool builder, Manage MyMaintenance allows the end-user to define additional maintenance scenarios. The software can be activated and used directly at the CNC's user interface.



The advantages — planning and focusing on the essentials

The significant benefit of Manage MyMaintenance is that the machine signals in plenty of time if pre-defined maintenance is to be performed. As a result, users can actively prevent problems, which, in worst-case scenario, could mean that the machine comes to a complete halt. Machine maintenance is clearly provided in the form of maintenance descriptions (as a PDF) that can be quickly and easily generated.

User-friendly

- ✓ Integrated maintenance planner for straightforward and user-friendly definition of maintenance tasks for the machine

Clear and transparent

- ✓ Maintenance activities are listed in chronological order

Informative

- ✓ Detailed maintenance descriptions are visualized in the PDF format

Analyze MyCondition

Condition-based maintenance of machine tools



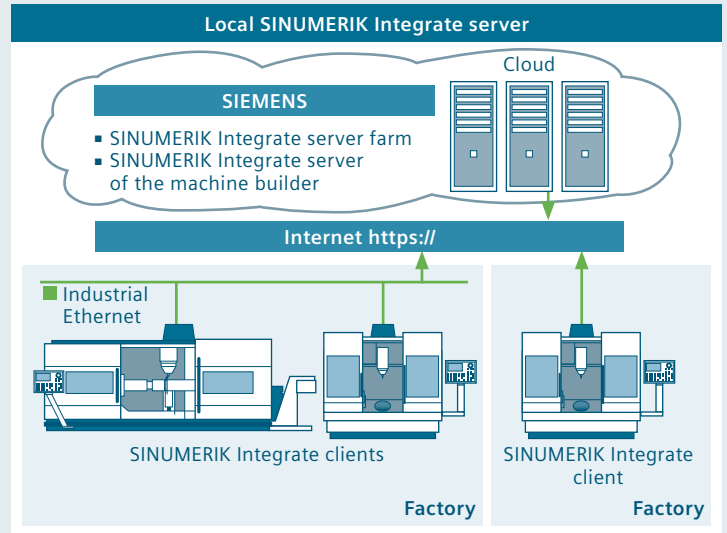
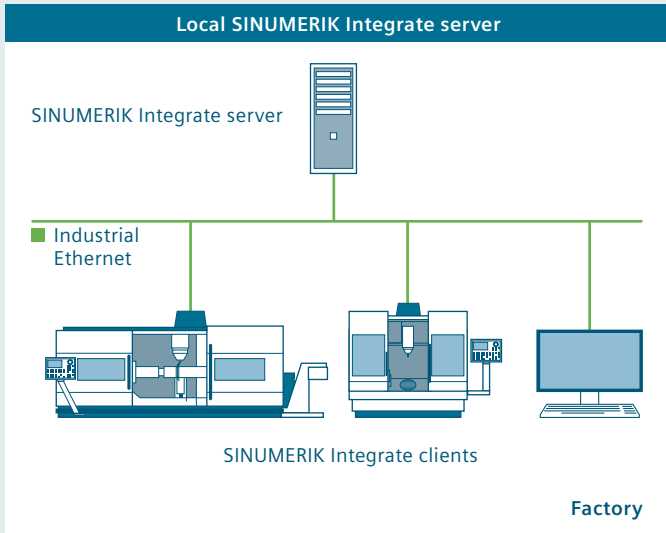
With Analyze MyCondition, SINUMERIK Integrate provides a progressive technique for condition-based machine tool maintenance.

The challenge — avoid machine failures

Going beyond standard maintenance, condition-based machine tool maintenance helps avoid unscheduled machine downtime — no matter the size of your factory. A solution is required in order to analyze the complex data that has been acquired, to monitor the status of the CNC machines in detail and ultimately, to increase manufacturing productivity. When appropriately configured, condition monitoring can prevent unscheduled downtime and can support smooth, disturbance-free machine operation.

The solution — permanently monitoring machine states

At an early stage, Analyze MyCondition indicates machine values that could indicate a problem. This forms the basis for efficient, remote service functions that can be automated, and which can already intervene before a problem actually occurs. As SINUMERIK Integrate server in the Cloud, Analyze MyCondition creates the basis for predictive machine maintenance for machine tool builders. A local SINUMERIK Integrate server offers a platform so that end-users can increase their manufacturing productivity.



The advantages — machine states are precisely analyzed

With Analyze MyCondition, users can define what variables are of interest — and under what conditions they should be recorded. This allows customer-specific workflows to be initiated and e-mails and text messages sent. For instance, if a monitored variable reaches an alarm threshold, then an appropriate notification is issued. The cause can be checked via the connection to the server. Based upon the detailed history of the machine tool, precise analyses can be performed remotely. Specific documentation instructions can be added in order to save time and to leverage prior experience. Availability and productivity of the machines are increased as a result of precise condition monitoring.

Productivity increase

- ✓ IT platform for efficient service and predictive maintenance by centrally analyzing the machine condition

Powerful

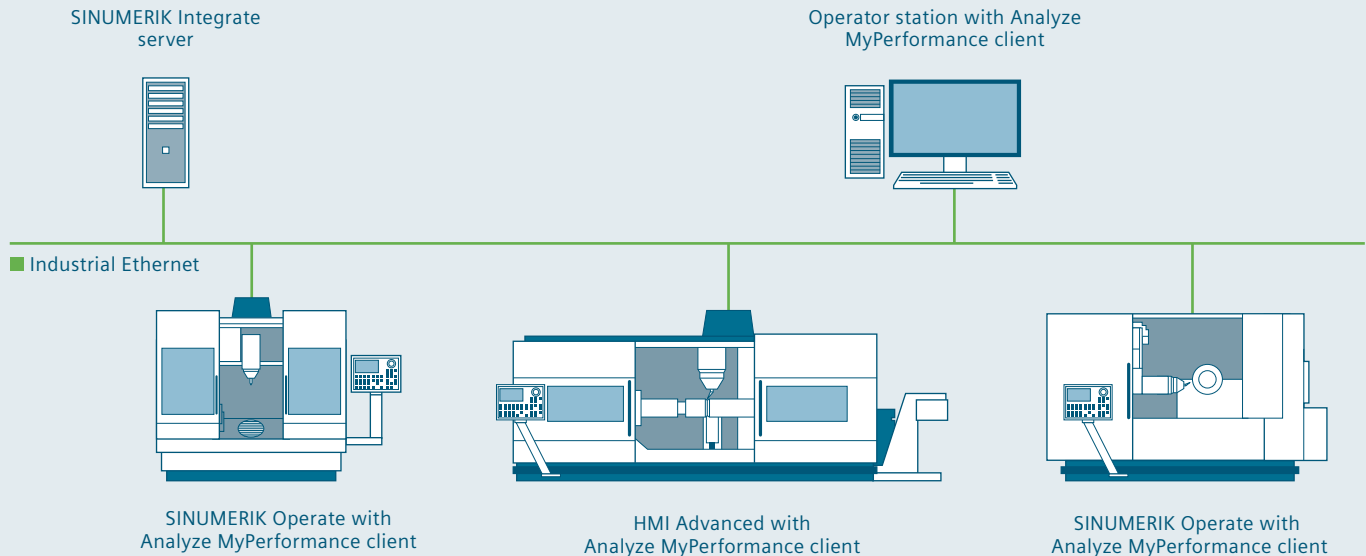
- ✓ Comprehensive machine test scenarios
- ✓ Diagnostic data is acquired as a function of the condition
- ✓ Automated service and maintenance workflows

Reliable

- ✓ Reliable, encrypted Internet-based communication
- ✓ Test results and data are centrally saved

Analyze MyPerformance

Plantwide acquisition and analysis of machine states



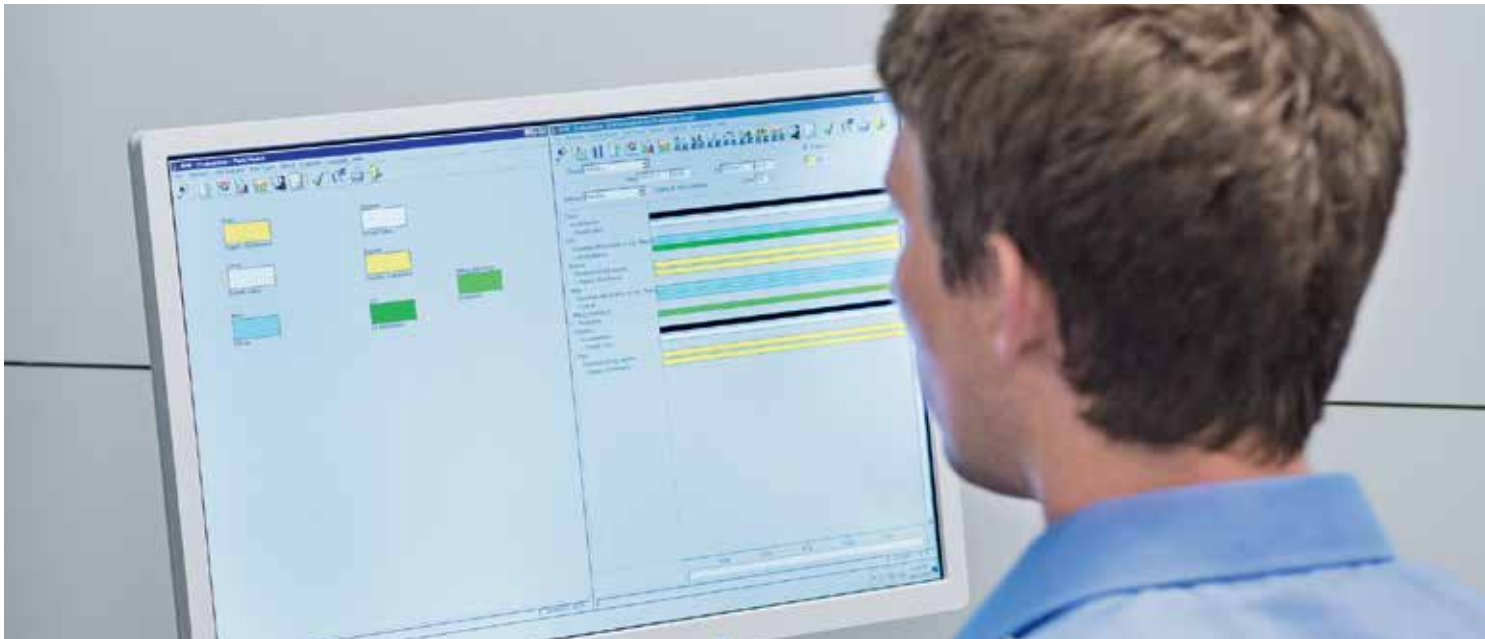
With Analyze MyPerformance, SINUMERIK Integrate facilitates the highest degree of transparency of machine data and states, thus maximizing performance in the production environment.

The challenge — calculating productivity

In state-of-the-art production facilities today, many machines and systems are inter-linked with one another — production with a high degree of vertical integration and fast product changes result in a high degree of complexity. This means that data regarding utilization, availability, machine performance and quality is absolutely crucial. If this data is incorporated into the calculation of overall equipment effectiveness (OEE), this represents an important parameter regarding the productivity of the entire plant or system.

The solution — from just having an idea to being in the know

Analyze MyPerformance determines OEE parameters from the production environment by acquiring machine states. These form the basis for increasing productivity on the manufacturing floor. In addition, the application is in a position to evaluate operating data from all machine types. This also applies under conditions that are typical for large manufacturing facilities. Machines from a wide range of builders are interfaced with every possible concept and technology.



The advantages — reliable acquisition of machine data for transparent production

Analyze MyPerformance allows a set of pre-defined status information to be supplemented to include customer-specific status data, which is specifically tailored to the situation in a customer's factory. As a result, a precise distinction can be made between production, setup, maintenance and other activities, such as technical problems. Based upon correctly determining the machine status, Analyze MyPerformance can supply reliable data about the efficiency of your entire plant or system. It provides a comprehensive overview of your total productivity — and helps to identify bottlenecks so you can determine fault causes and take the appropriate corrective measures.

Performance boosting

- ✓ Machine productivity is evaluated by determining OEE parameters such as availability, utilization level, performance and quality

Transparent

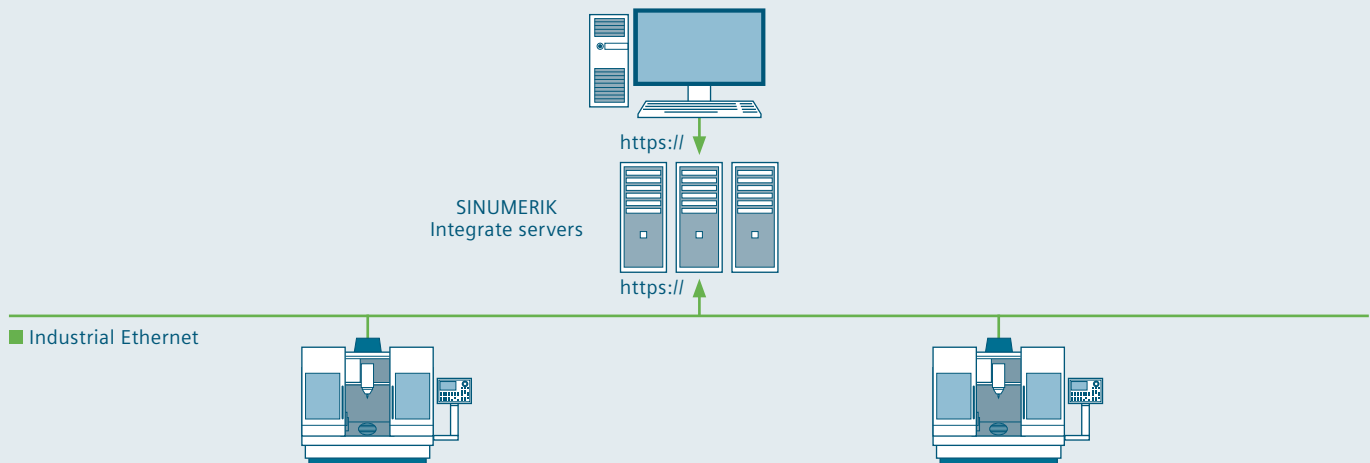
- ✓ Wide range of evaluation options — from system images up to analyzing the reason for the fault and system availability

Flexible

- ✓ From stand-alone solutions for single machines up to client-server solutions for complete groups of machines

Access MyMachine

Flexible remote-access functions



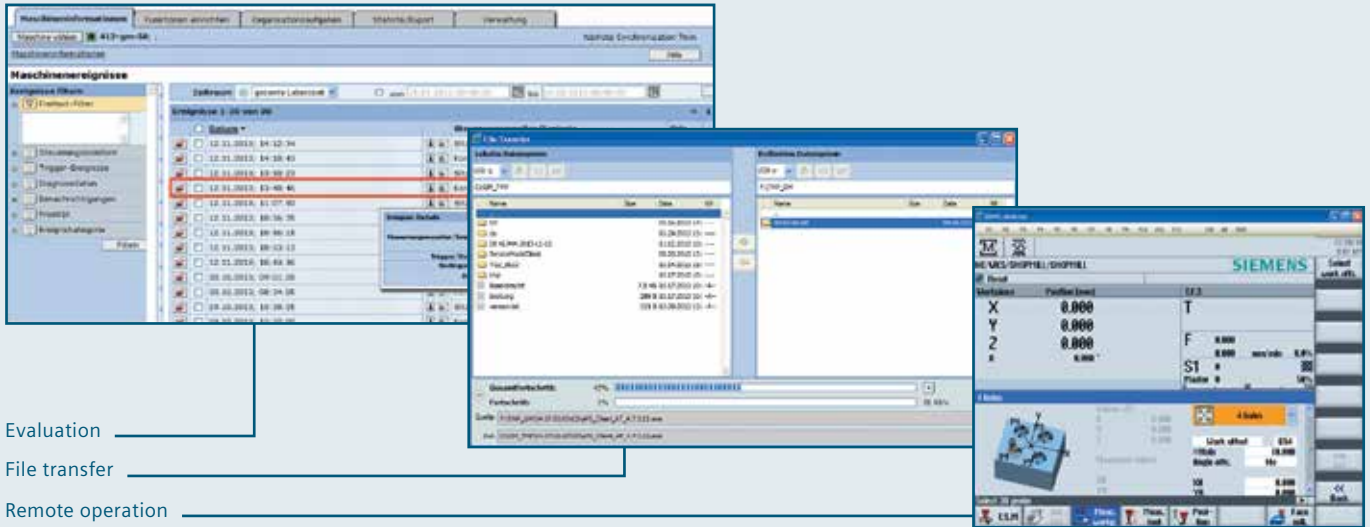
Access MyMachine offers user-friendly secure and reliable functions for remote access to CNC machines.

The challenge — shorter troubleshooting time

The service business of the machine tool builder starts when a machine is shipped. Here, the name of the game is to respond to machine faults and alarms as quickly as possible and in the best possible way. If the situation is serious, then the machine itself communicates based upon remote diagnostics in conjunction with preventative maintenance. Machine tool builders no longer need to depend upon a customer informing them about important events at the machine. This, in turn, reduces troubleshooting times — and can prevent situations such as unscheduled machine downtimes and significant machine damage.

The solution — various types of remote diagnostics and remote access

Access MyMachine was specifically designed to access machine control systems, and extends from remote diagnostics, through remote monitoring, up to remote operation. The single access function includes the remote desktop, file transfer and the session recording sub-functions. In addition, a remote maintenance session involving several, even external participants, is supported using the conferencing function. Users can enjoy the maximum benefit when using Remote Step7. This allows service technicians to directly access the PLC, allowing problems to be quickly diagnosed and resolved externally.



The advantages — conference server with a secure connection

When things get critical, the service department has access to an extensive range of fault diagnostic and troubleshooting functions. If the machine operator requires support from technical specialists, for example, internal experts or the machine tool builder, then he can simply enable access at the graphical user interface. All connections via the Internet to / from the machine tool are encrypted. All operator actions can be recorded during a remote access session. As a result, Access MyMachine complies with all security guidelines for remotely accessing industrial machines. In conjunction with Analyze MyCondition, it can also be used for preventative maintenance.

Flexible

- ✓ Remote diagnostics via the Internet

Powerful

- ✓ The CNC user interface can be remotely operated without any restrictions
- ✓ Any file can be transferred to / from the CNC

Secure

- ✓ Secure, encrypted communication for remote diagnostics via the Internet

Access MyData

Open software interfaces



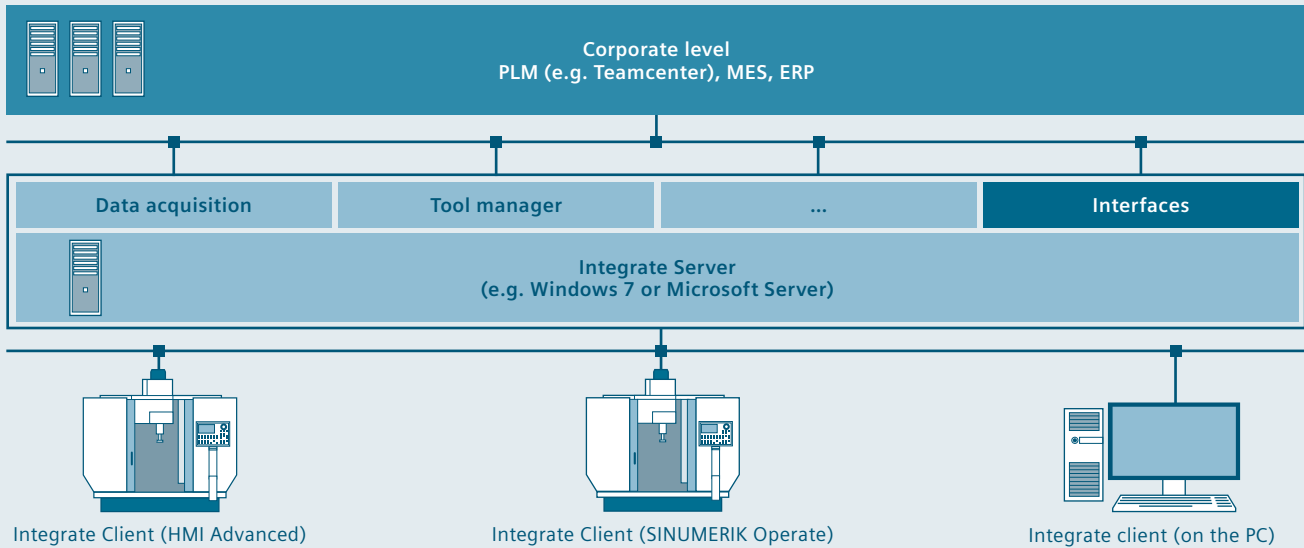
The open, flexible Access MyData interface allows user-friendly data exchange between SINUMERIK Integrate applications and higher-level or supplementary software systems.

The challenge — data interface to higher-level or supplementary software systems

There are an increasing number of productivity-boosting solutions in the machining environment that are based upon the IT networking of CNC systems and machines. The connection to these solutions requires state-of-the-art interfaces, which must allow extensive access to data — and depending upon the demand, directly to NC and PLC data or to pre-processed data. The latter can be associated with specific functions — for example, transferring data from a tool setting device. However, it is important that the data exchange does not disturb machine operation.

The solution — data exchange based upon state-of-the-art Internet technology

Access MyData has open interfaces to quickly and easily access data in SINUMERIK-controlled machine tools. Data and services are made available for higher-level and supplementary software systems. You can directly read and write NC and PLC data using Access MyData. This facilitates information transfer with the main control station software and all types of computers — as well as dynamically connecting machines to any product lifecycle management, ERP or MES system. In addition, special interfaces are available to access tool data, transfer part programs and access machine states.



The advantages — state-of-the-art technology with security

Web service technology as modern, generally used standard is employed. The machine tool networked with the Integrate server makes its data available independent of the manufacturer, operating system, programming language and platform. Integrated security restricts the direct communication of the machine tool to the Integrate server. It effectively prevents the connection and data exchange from disturbing machining. Yet another advantage — additional hardware on the machine is not required as a result of the central SINUMERIK Integrate server.

Flexible

- ✓ Data in CNC control systems is accessed
- ✓ Data and services of the SINUMERIK Integrate application are accessed

User-friendly

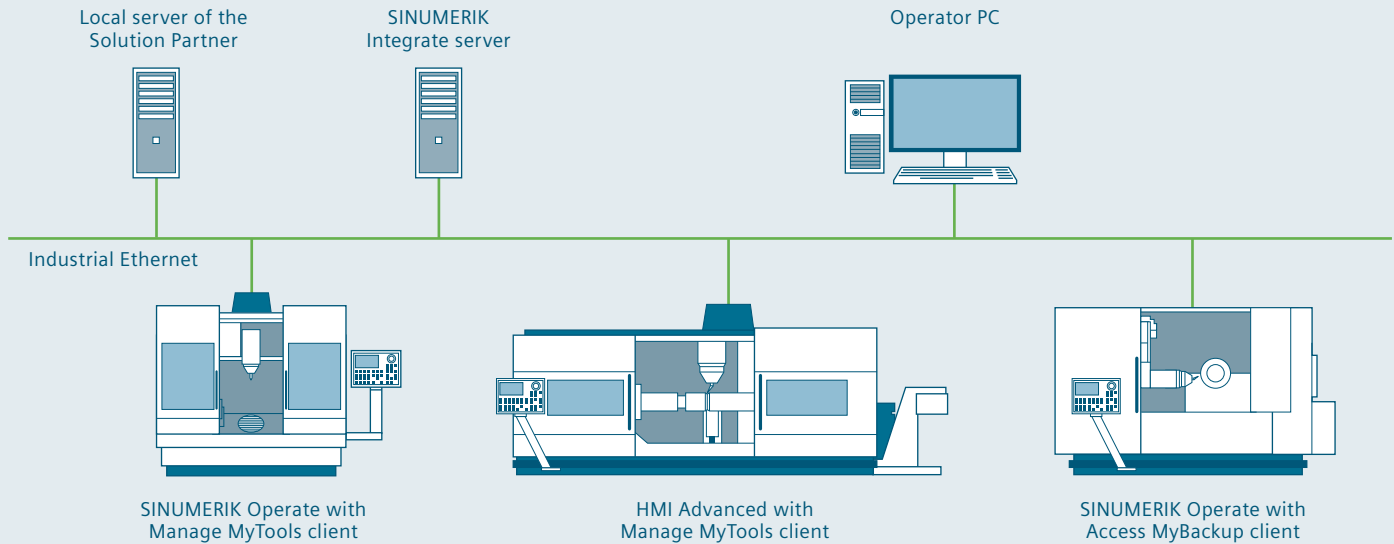
- ✓ State-of-the-art web service technologies are used
- ✓ Industrial standards of the World Wide Web Consortium

Efficient

- ✓ The existing SINUMERIK Integrate client server is used — it can be installed without the need of any additional hardware interfaces

Access MyBackup

Interface to connect data archiving systems



With Access MyBackup, SINUMERIK Integrate offers a solution to securely and reliably archive CNC data throughout the factory.

The challenge — data backup for state-of-the-art CNC systems

Data backup for state-of-the-art CNCs is becoming increasingly more important as a result of the increasing data complexity and the necessity to quickly restore data after a hardware fault. State-of-the-art CNCs require extensive configurations and special settings — and manage, for instance, the NC machining programs. When a piece of hardware fails, this data is lost and must generally be regenerated — a complex and time-consuming process.

The solution — modern interface and integrated CNC clients

The data backup system of certified Solution Partners uses a standard interface to connect to the Integrate server. Data backup requests are distributed to the integrated clients in the SINUMERIK controls via this interface. These clients back-up data according to the selected intervals and machine conditions. To restore the original machine state, e.g. after hardware has been replaced, backed up data is loaded back to the machine. This means that maintenance activities carried out on the machine are optimally supported.



The advantages — automated data backup solution

Through the highest degree of security based upon the well-proven IT infrastructure from Siemens, the control system is accessed via the SINUMERIK Integrate server, which manages secure access via defined user access rights and certificates (https with SSL). Third-party software does not have to be installed on the CNC. The client is already pre-installed on the machines, the data backup logic is subsequently controlled from the central server, which keeps integration costs for machine tools to a minimum. Extended functionality on the local machine user interface has the advantage that the user can access saved backup data from the machine and can manually restore it.

Dependable

- ✓ CNC backups are automatically generated and imported
- ✓ Trackable version allocation and documentation

Optimum partners

- ✓ Implemented using Solution Partners with a high level of expertise when integrating machine groups into IT networks

Secure

- ✓ Data is archived via secure, unencrypted Internet communication

Machine Tool Systems

Siemens — your partner for machine tools



Siemens Machine Tool Systems

A strong partner for the machine tool environment

SINUMERIK CNCs have been setting standards in the machine tool market for more than 50 years. With the power and innovation of a unique and experienced development team in the industry, Siemens is there to ensure that highly productive machine tools can also be implemented in the future based upon SINUMERIK control systems. In addition to innovation, quality is first and foremost, and based upon continuous improvements in development, production and test processes, we ensure maximum availability of software and hardware products.

Global organization

With a closely meshed network of sales, service and training locations, as well as international production facilities, Siemens Machine Tool Systems is optimally organized to globally market machine tools.

The optimum solution for each and every sector

Global trends, such as the continuous population growth and the rising demand for communication resources, are placing new requirements on sectors such as automotive, aerospace, power generation and medical. Siemens Machine Tool Systems is in direct contact with these machine tool markets. This guarantees the optimum product fit for SINUMERIK systems.

Premium IT integration and services

We also supply leading-edge IT integration and simulation solutions to optimally network production and the IT environment. This is supplemented by a sector-specific portfolio of support and services to ensure maximum productivity in production, service and maintenance. As a result, SINUMERIK sector solutions are being employed around the world.

SINUMERIK Integrate

Minimum system requirements

	Manage MyPrograms 2.6 / Manage MyTools 2.6 / Manage MyMaintenance 2.6	Access MyBackup 4.13 / Analyze MyCondition 4.13 / Access MyData 4.13 / Analyze MyPerformance 2.6
Server — local operation		
Processor	From QuadCore 1.4 GHz and higher	
RAM (GB)	4 (per processor)	
Free hard disk space (GB)	30	
Operating systems	Windows Server 2008 R2 SP1 (x64) Enterprise/Datacenter Windows 7 SP1 (x64) Professional/Enterprise/Ultimate	
Databases	SQL Server 2008 R2 SP2 Express/Standard/Enterprise/Datacenter SQL Server 2012 SP1 Express/Standard/Enterprise	
Workstation PC or machine PC		
Processor	From P IV and higher (Windows XP) 1 GHz processor (Windows 7 x32/x64)	
RAM (GB)	512 MB (Windows XP) 1 GB (Windows 7 x32) 2 GB (Windows 7 x64)*	
Operating systems	Windows XP SP3 (x32) Professional Windows 7 SP1 (x32/x64) Professional/Enterprise/Ultimate	
Internet Explorer	–	IE8, 9, 10, 11 (in the comp. mode)
Machine (SINUMERIK Operate or HMI Advanced or machine PC)		
Hardware	MMC103 from PCU50.1 from NCU7x0.2 (from SINUMERIK Operate 2.6 SP1 HF5) SinuTrain 4.5 Edition 2	From PCU50.1 from NCU7x0.2 (from SINUMERIK Operate 2.6 SP1 HF5) SinuTrain 4.5 Edition 2
RAM	128 MB (MMC103)	256 MB (PCU)
Databases	MMT: Microsoft Access (Jet 4.0 SP8) MSDE 2000 SP3a	–
Screen resolution	640x480 800x600 1024x768 1280x768 (Ergoline panel) 1280x1024 800x480 (16:9.6; TP900) 1366x768 (16:9; WXGA [TV]) 1280x800 (16:10; TP1200)	
Minimum bandwidth (kBit/s)		
Server client	64	64
Cloud server / local server	–	512

Everything about SINUMERIK CNC can be found on the web

usa.siemens.com/cnc

Learn more about our machine tool solutions

- › Detailed information and videos about our products and services



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Siemens offers products and solutions with industrial security functions that support the secure operation of plants, systems, solutions, machines, devices and/or networks. These are important components in a holistic industrial security concept. Products and solutions from Siemens are being continually developed under this aspect. Siemens urgently recommends that you regularly inform yourself about product updates. To ensure safe and secure operation of products and solutions from Siemens, it is necessary that you apply suitable protective measures (e.g. the cell protection concept) — and that you integrate every component into a holistic industrial security concept that reflects state-of-the-art technology. Any third-party products that you use should also be taken into consideration.

You can find additional information about industrial security at <http://www.siemens.com/industrialsecurity>. Register for our product-specific newsletter to always obtain regular product updates.

You can find additional information on this topic at <http://support.automation.siemens.com>

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