

A man wearing glasses and a dark shirt is looking at a tablet in his hands. He is standing next to a Siemens SINUMERIK control panel, which features a large screen displaying technical data and a keypad with a prominent red emergency stop button. In the background, another person is visible working in a factory environment.

**SIEMENS**

# SINUMERIK Integrate for production

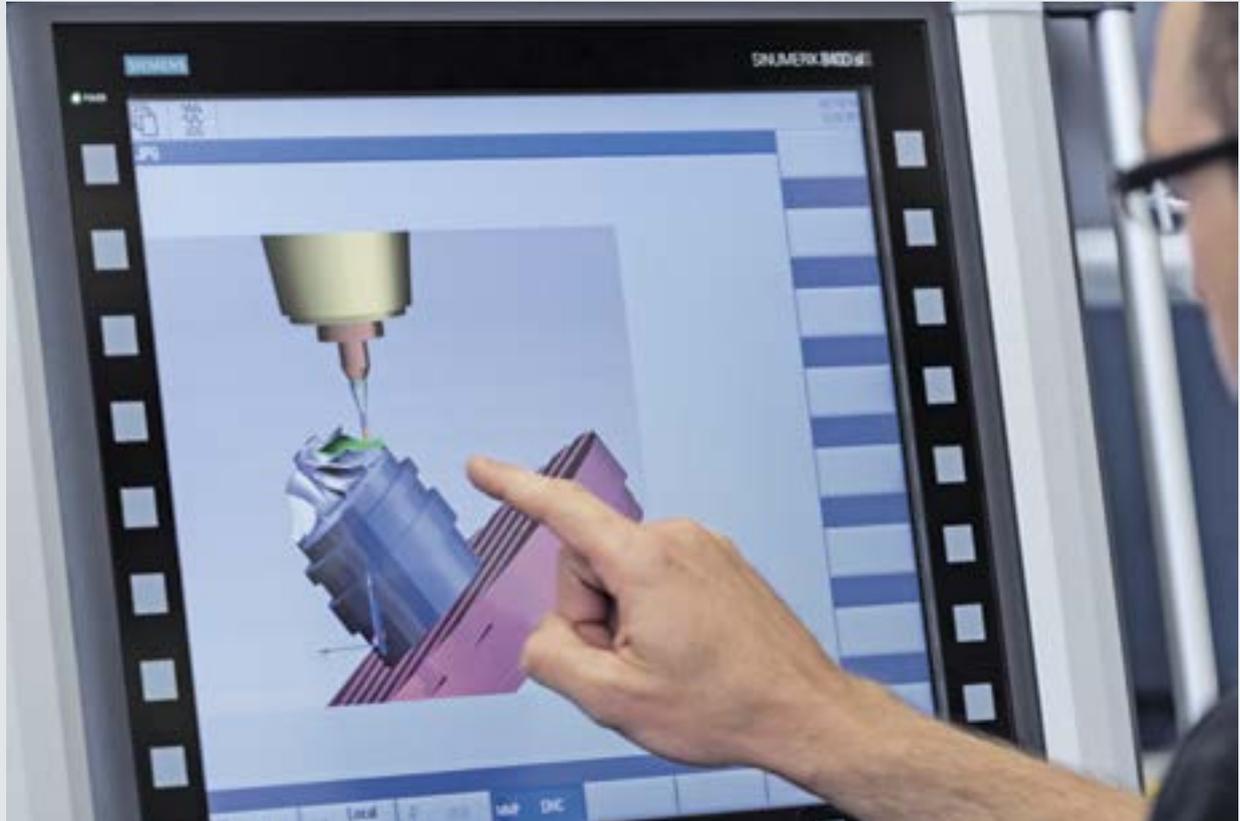
Future-proof IT solutions for machine tools

[siemens.com/sinumerik-integrate](https://www.siemens.com/sinumerik-integrate)



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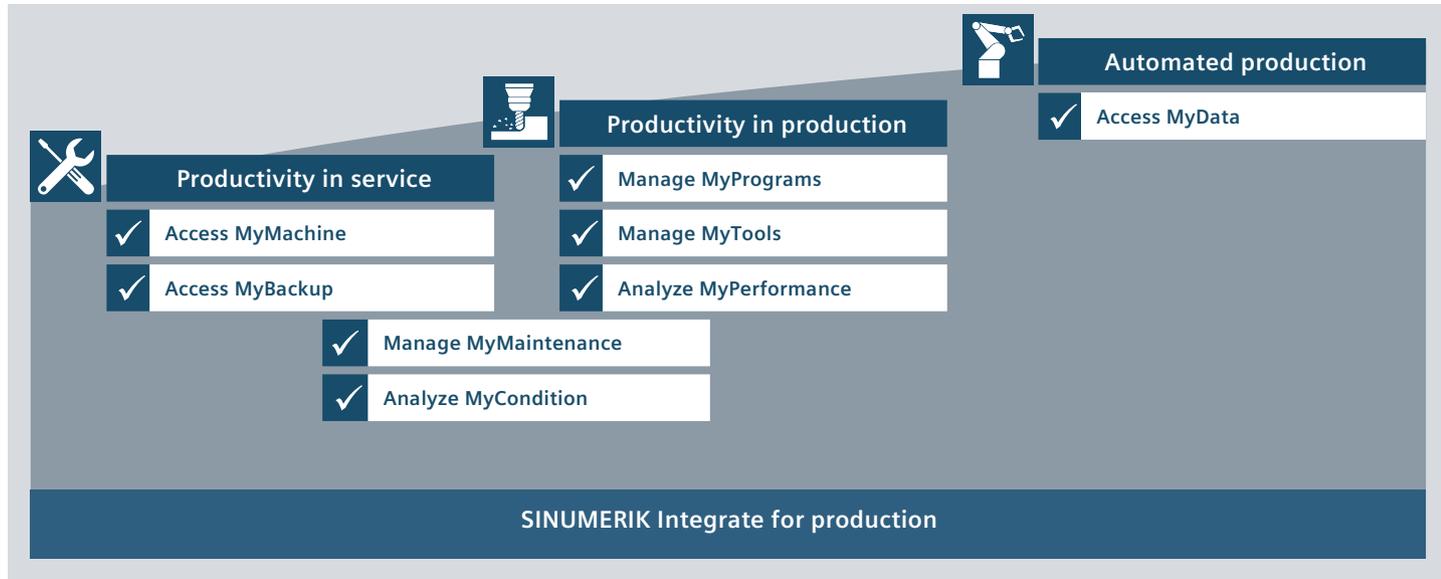


## Higher production efficiency through intelligent IT integration

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 production 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.

# Future-proof investment in scalable software

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

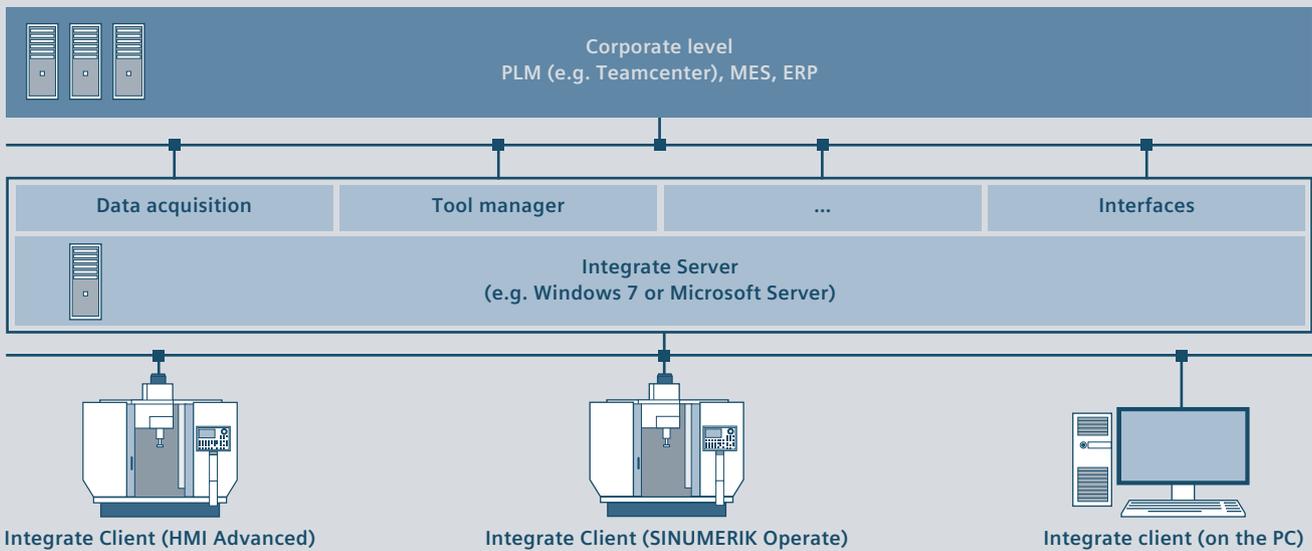


## Investment protection and investment security with SINUMERIK Integrate

A typical production environment exists for several years or even decades. In this time, the IT infrastructure is undergoing continuous change, while the machines 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 the fact that the 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 local solution for a single machine. After installation on the Integrate server, SINUMERIK-controlled machines can be simply 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 the actual 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 various applications.

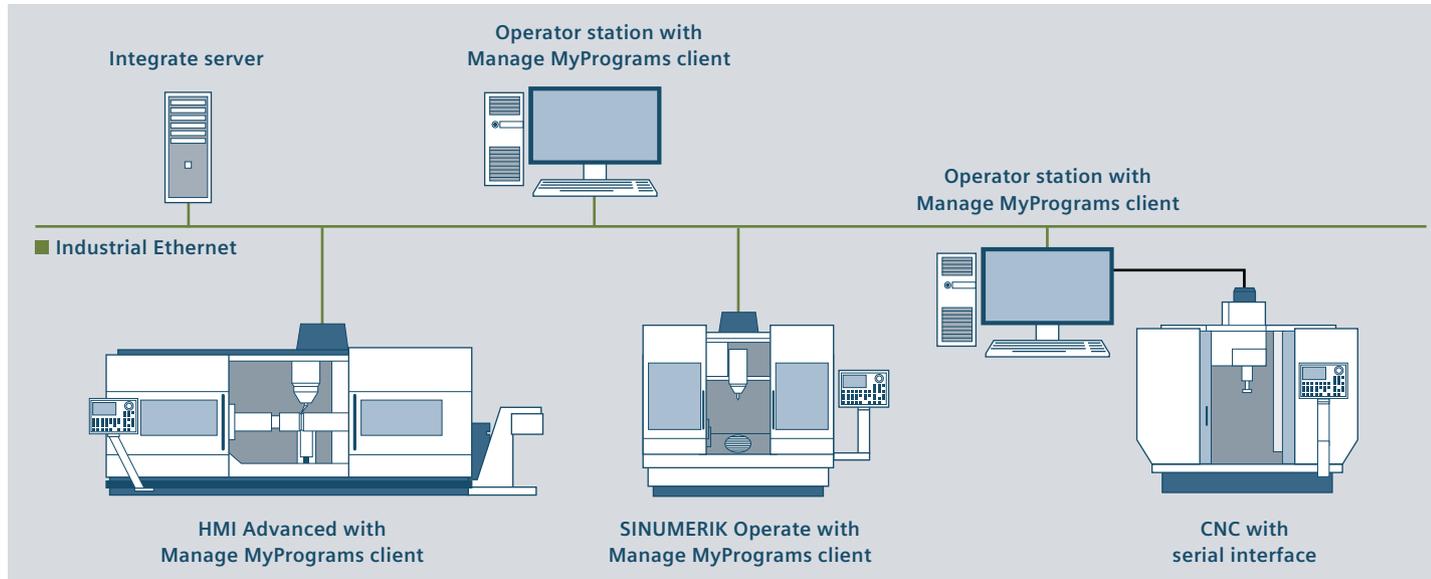
If machines are connected with the server, then the new functions can be simply loaded into them. This is where the level of integration and seamlessness of the Siemens portfolio pays off, as PLM and MES systems can also be easily connected to improve productivity even more. This secures cost advantages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

### One platform – many advantages

SINUMERIK Integrate is a central platform that can be used to increase the productivity of end users – or increase the service efficiency of machine manufacturers. Further, the automation level of the production environment can be expanded. Through optimized production, more parts can be produced, and also mistakes reduced – for example, as a result of missing tools, incorrect CNC programs, high energy usage along with inventory levels of material and tools.

# Manage MyPrograms – network-wide organization and management of NC programs

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



**The challenge: provide programs on time**  
Machining certain workpieces on a machine tool requires preparation, which is executed in different work steps, 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 series in the production environment. Manage MyPrograms is a scalable solution, used in a standard fashion under the SINUMERIK Operate interface. Further, there are seamless and integrated solutions such as Teamcenter for managing all of 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. Further, 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 production planning. Centrally managing NC programs save time by being able to set up new production batches faster. Further, it means a higher degree of reliability for the interaction between operators and production planning.

#### User-friendly

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

#### Transparent

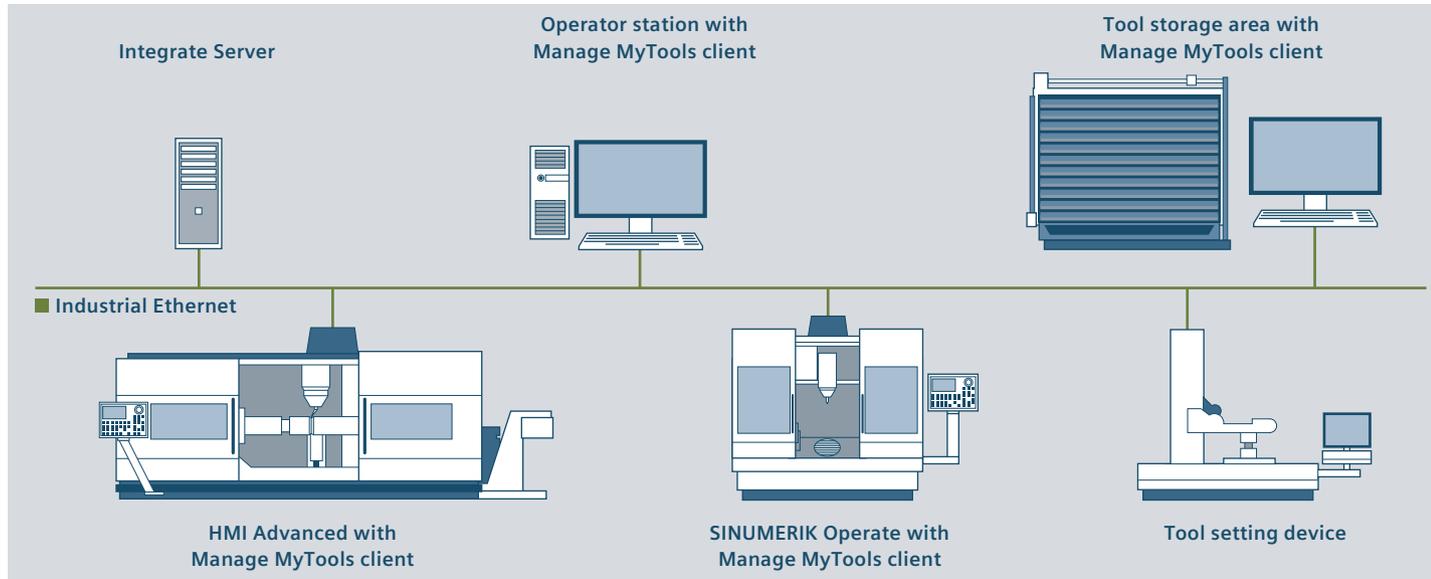
- ✓ Additional production information is managed (e.g. workpiece drawings, clamping specifications) for a paperless production environment

#### 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 operations, 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. This is because in addition to the important and appropriate NC programs, clamping, measuring & testing resources as well as blanks, machines can only run productively if the correct tools are also available.

## The solution: scalable application with a standard operating concept

Manage MyTools offers centralized tool data management. The server as well as SINUMERIK 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 operators to seamlessly send the appropriate data to the various machines.



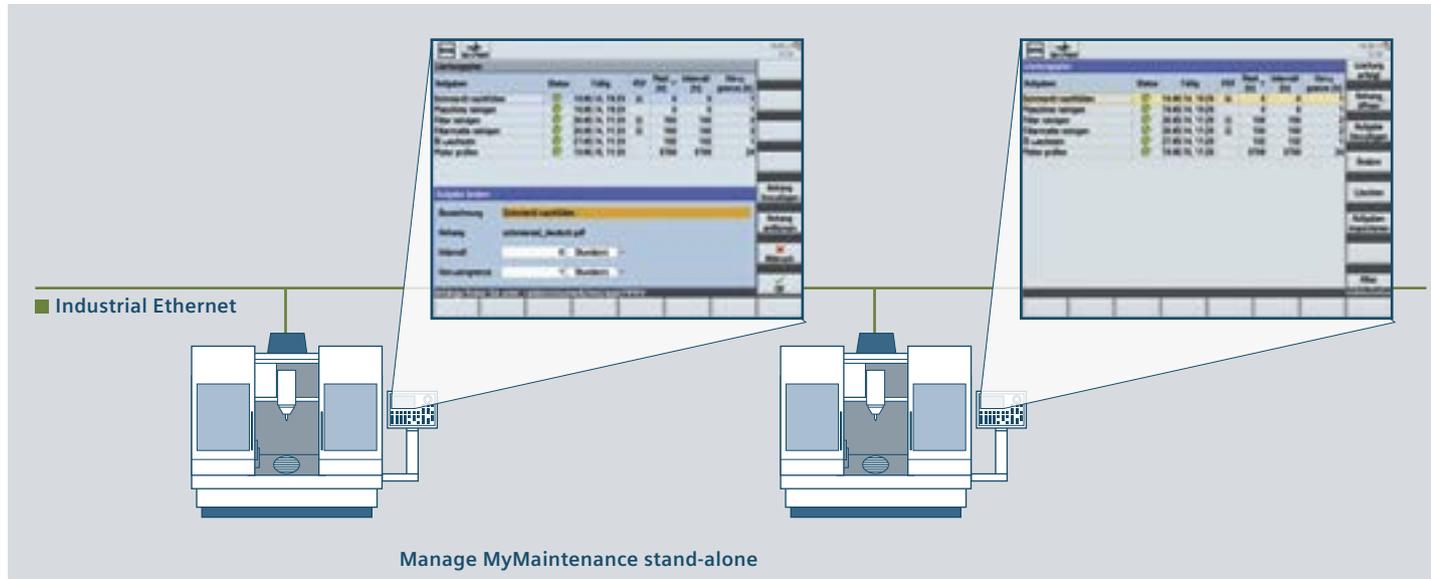
**The advantages: better planning based on up-to-date information**

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 lifetime. Worn tools and those required for machine are therefore taken into consideration in plenty of time when planning pending production jobs. Tools and tool master data can be managed and organized throughout the complete production environment using the additional link to Teamcenter. The advantage: The 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 it faster to set up machines.

- 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 non-scheduled downtimes

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

## The solution: preventive service maintenance

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



### The advantages: planning – focusing on the essentials

The significant benefit of Manage MyMaintenance is that the machine signals in plenty of time if a predefined maintenance measure is to be performed. As a consequence, users can actively prevent problems, which, in the worst-case scenario, could mean that the machine grinds to a halt. Maintenance at the machine is transparently provided in the form of maintenance descriptions in a PDF format that can be freely generated.

#### User-friendly

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

#### Clear and transparent

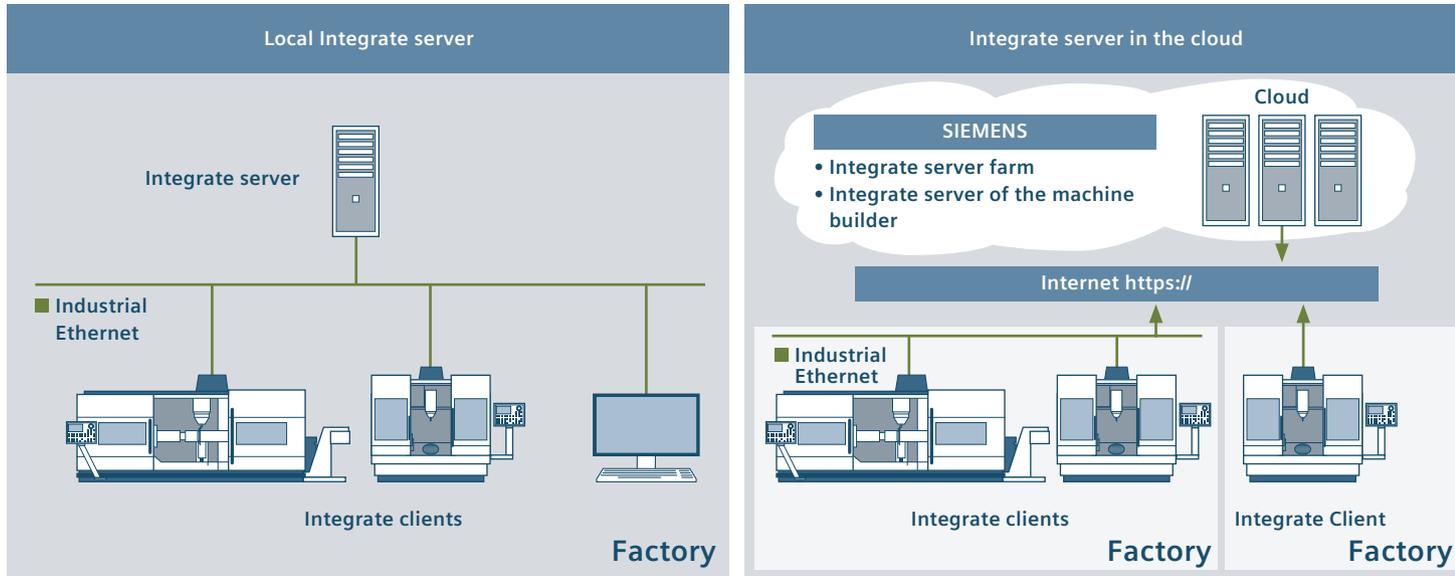
- ✓ Maintenance activities are listed in chronological order

#### 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 maintenance of machine tools.



## The challenge: avoid machine failures

Going beyond standard maintenance tasks, condition-based maintenance of machine tools in all sizes of factories helps avoid non-scheduled machine failures. 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 the productivity in production. When appropriately configured, condition monitoring can prevent non-scheduled failures and as cost-efficient tool, 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 Integrate server in the cloud, Analyze MyCondition creates the basis for predictive machine maintenance for machine manufacturers. A local Integrate server offers a platform so that machine users can increase their production 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 finally 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 on the detailed history of the machine tool, detailed analyses can be performed remotely. Specific documentation instructions can be added to the technique in order to save time and to leverage prior experience. Availability and productivity of the machines are boosted as a result of the precise condition monitoring.

**Productivity boosting**

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

**Powerful**

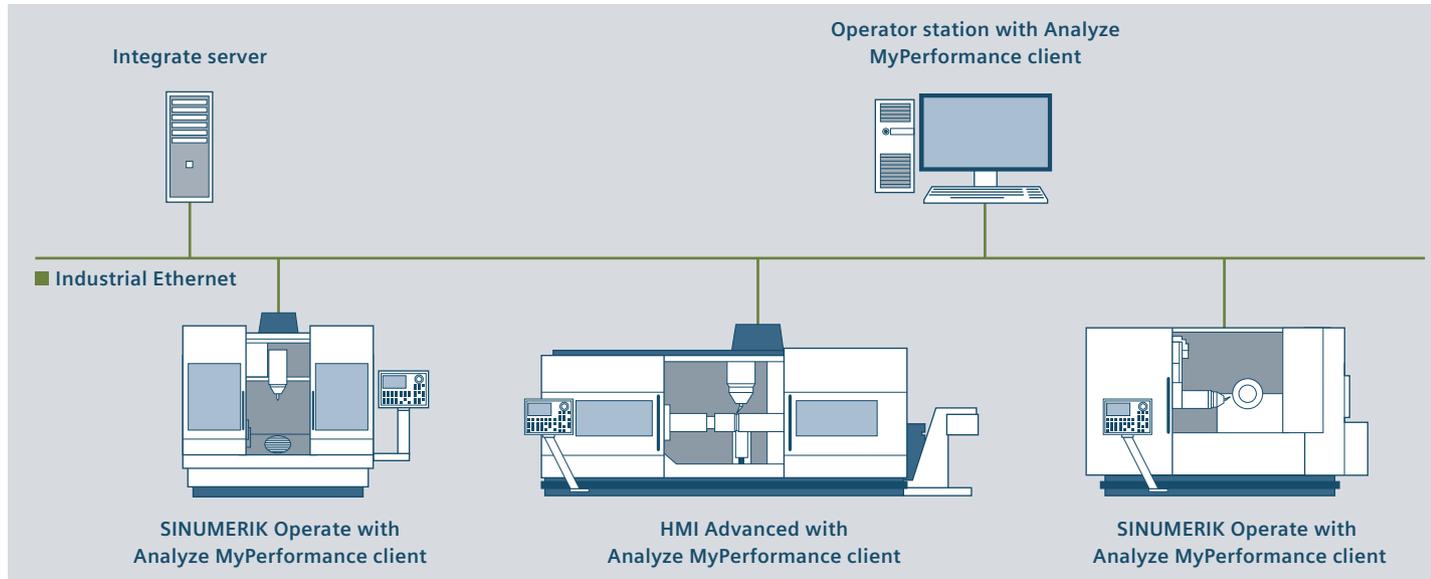
- ✓ Comprehensive machine test scenarios
- ✓ Diagnostic data is acquired as a function of the condition
- ✓ Automated service and maintenance workflows

**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.

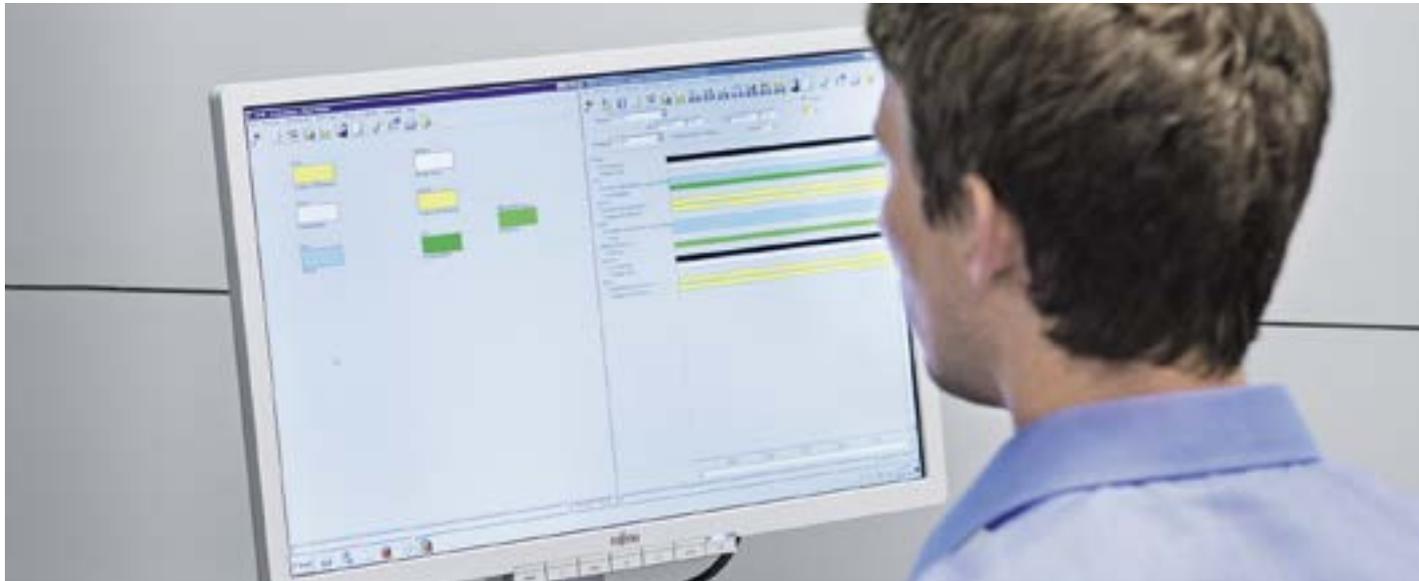


## The challenge: calculating productivity

Today, in state-of-the-art production facilities, many machines and systems are interlinked 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, performance and quality of machines is absolutely crucial. If this data is incorporated in the calculation of the overall equipment effectiveness (OEE), this represents an important parameter regarding the productivity of the complete 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 in the production landscape. Further, the application is in a position to evaluate the operating data from all types of machines. This also applies under conditions that are typical for large production facilities. Machines from a wide range of manufacturers are interfaced with all possible concepts and technologies.



### The advantages: reliable acquisition of machine data for transparent production

Analyze MyPerformance allows a set of predefined 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 consequence, a precise distinction can be made between production, setting up, maintenance and other activities – and technical problems. Based on correctly determining the machine status, Analyze MyPerformance can supply reliable data regarding the effectiveness of the complete plant or system. Analyze MyPerformance therefore provides a comprehensive overview of the total productivity in the production landscape, and helps to identify bottlenecks, determine fault causes and to take the appropriate corrective measures.

#### Performance boosting

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

#### Transparent

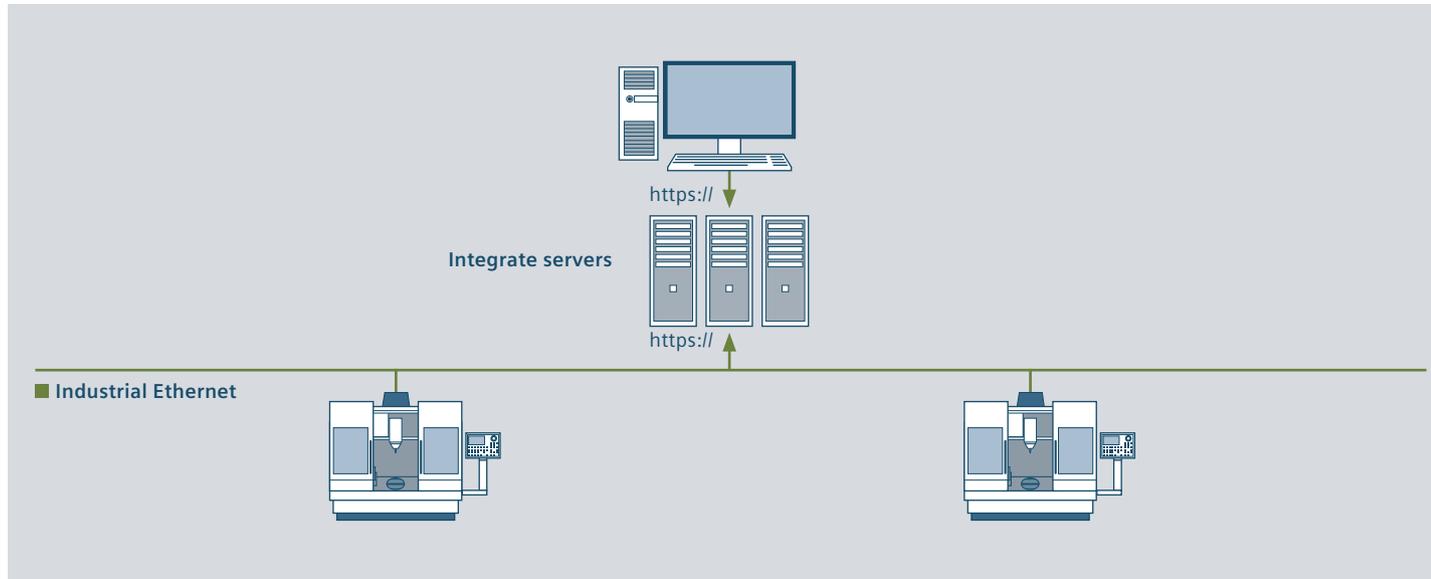
- ✓ Wide range of evaluation options – from system images up to analyzing the reason for the fault and system availability

#### 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 remotely accessing machines.



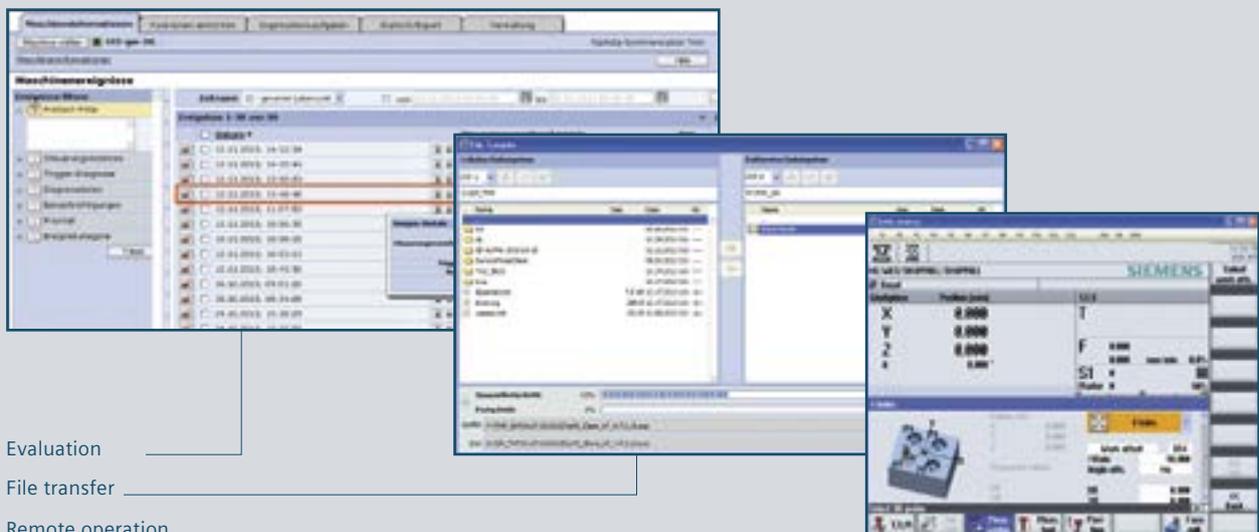
## The challenge: shorter troubleshooting time

The service business of machine tool builders starts when a machine is shipped. Here, the name of the game is to respond to machine faults and alarms in the best possible way and as quickly as possible. If the situation is serious, then the machine itself communicates based on remote diagnostics in conjunction with preventive maintenance functionality. Machine builders no longer have to depend on a customer informing them quickly about important events at the machine. This in turn reduces troubleshooting times – and can prevent situations such as non-scheduled machine downtimes and significant 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 subfunctions.

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 the Remote Step7 function. This allows service technicians to directly access the PLC, allowing problems to be diagnosed and resolved externally.



Evaluation \_\_\_\_\_  
 File transfer \_\_\_\_\_  
 Remote operation \_\_\_\_\_

### 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 operator requires support from specialists, for example, internal experts or the machine builder himself, then he can simply enable access at his user interface. All connections via the Internet from and to a machine tool are encrypted. All operator actions can be recorded during a remote access session. As a consequence, Access MyMachine complies with all security guidelines for remotely accessing industrial machines. In conjunction with Analyze MyCondition, it can also be used for preventive 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 and from the CNC
- Secure**
- ✓ Secure, encrypted communication for remote diagnostics via the Internet

# Access MyData – open software interfaces based on state-of-the-art Internet technology

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

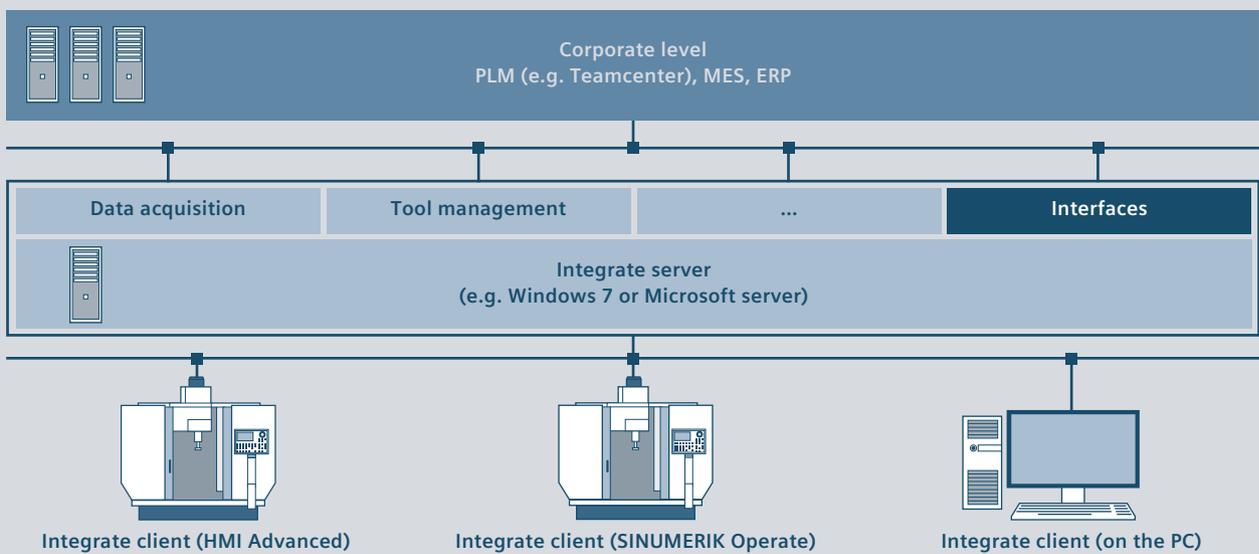


## **The challenge: data interface to higher-level or supplementary software systems**

There are an increasing number of productivity-boosting solutions in the machining environment that are based on the IT networking of CNC systems and machines. The connection to these solutions requires state-of-the-art interfaces. These interfaces must allow extensive access to data – depending on the demand – directly to NC and PLC data or to preprocessed data. The latter can be associated with quite 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 on 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 write and read 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 and transfer part programs.



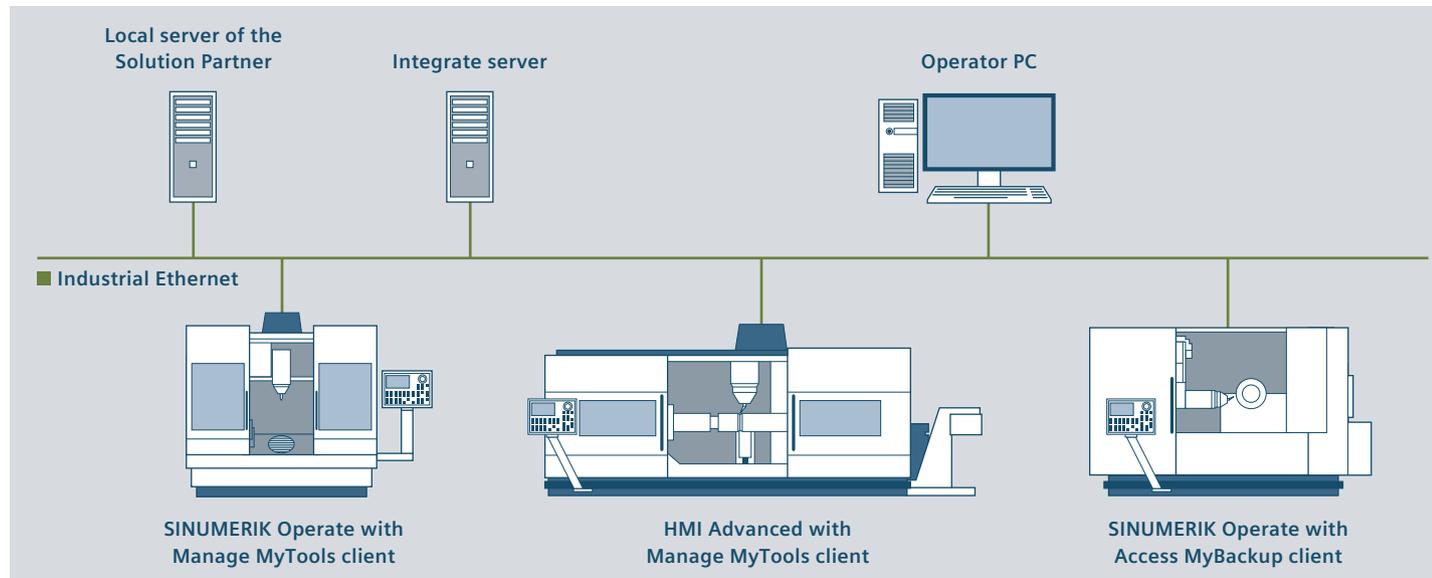
**The advantages: state-of-the-art technology with security concept**

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. The integrated security concept 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 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 Integrate client server is used – it can be installed without requiring any additional hardware interfaces

# Access MyBackup – interface to connect data archiving systems

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



## The challenge: data backup for state-of-the-art CNC control systems

Data backup for state-of-the-art CNC controls 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 CNC controls 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**

Highest degree of security based on the well-proven IT infrastructure from Siemens: The control system is accessed via the Integrate server, which manages the 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 preinstalled on the machines, the data backup logic is subsequently controlled from the central server, which keeps the integration costs for machine tools low. Extended functionality on the local machine user interface has the advantage that the user can access the saved backup data from the machine and can manually restore this.

- | Dependable       |  |
|------------------|--|
| ✓                | CNC backups are automatically generated and imported   |
| ✓                | Trackable version allocation and documentation   |
| Optimum partners |  |
| ✓                | Implemented using Solution Partners with a high level of competence when integrating machine groups into IT networks |
| Secure           |  |
| ✓                | Data is archived via secure, unencrypted Internet communication  |

# Siemens Machine Tool Systems – a strong partner to the machine tool community



## Siemens Machine Tool Systems

### **A strong partner for the world of machine tools**

SINUMERIK CNC controls have set standards for the machine tool market for more than 50 years now. Siemens Machine Tool Systems – with the power of innovation of an experienced development team that is unique in the market – is working hard to ensure that also in the future, highly productive machine concepts can be implemented with SINUMERIK CNC control systems. In addition to innovation, we place topmost priority on quality: by continually improving our development, production and test processes, we ensure maximum availability of our software and hardware products.

### **Global organization**

With its tightly meshed global network of sales, service and training facilities – as well as international production locations – Siemens Machine Tool Systems is optimally organized to support the global machine tool community. Further, Siemens is a pioneer when it comes to sustainability and energy efficiency. This is reflected in the fact that Siemens Machine Tool Systems also has a leadership role when it comes to ensuring energy-efficient equipment for machine tools.

### **The optimum solution for every sector**

Global trends such as the increasing population growth as well as the rising demand for communication resources is resulting in a growing demand for highly productive and innovative machine tools. Based on our many years of sector know-how, SINUMERIK controls always provide the optimum solutions for cost-effective component production in the automotive and aerospace sectors – as well as power generation, medical and electronics. SINUMERIK controls are closely aligned to the requirements of end user markets for machine tools.

### **Premium IT integration and services**

To complement all of this, we also offer leading edge IT integration and simulation solutions for optimally networking production and IT environments. In this way we secure maximum productivity and availability. This is supplemented by sector-specific support and services for maximum productivity in the production, service and maintenance domains. We can optimally support our customers around the globe as a result of our international organization.

[www.siemens.com/machinetools](http://www.siemens.com/machinetools)

# Minimum system requirements for SINUMERIK Integrate

	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
<b>Server – local operation</b>		
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 (max. five machines)	
Databases	SQL Server 2008 R2 SP2 Express / Standard / Enterprise / Datacenter SQL Server 2012 SP1 Express / Standard / Enterprise	
<b>Workstation PC or machine PC</b>		
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)
<b>Machine (SINUMERIK Operate or HMI Advanced or machine PC)</b>		
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)	
<b>Minimum bandwidth (kBit/s)</b>		
Server client	64	64
Cloud server – local server	–	512

## Everything about CNC SINUMERIK:

[siemens.com/sinumerik](http://siemens.com/sinumerik)

**SINUMERIK Integrate**  
facilitates the integra-  
tion of CNC SINUMERIK  
into corporate IT  
networks

› More about our products and  
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