

SIEMENS



SINUMERIK 840D sl

Open, flexible, powerful — the premium CNC for machine tools

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Answers for industry.





SINUMERIK 840D sl

With its SINUMERIK 840D sl, Siemens Machine Tool Systems is offering an open CNC for modular, premium machine concepts.

With powerful and innovative system functions, SINUMERIK 840D sl addresses an inexhaustible range of technologies.

SINUMERIK 840D sl sets the pace when it comes to complying with global machining trends — making it the preferred CNC to address the demands of the future.

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SINUMERIK 840D sl

Open, flexible, powerful

Offering maximum CNC performance, as well as a degree of flexibility and openness that is absolutely unique in the market, the SINUMERIK 840D sl is the basis for almost any CNC machine. A powerful hardware architecture and intelligent control algorithms — complemented by outstanding drive and motor technology — ensure machining with the highest dynamic performance and precision. The SINUMERIK 840D sl CNC is supplemented by an extensive range of solutions for IT integration. Based upon these innovative, leading-edge solutions, Siemens Machine Tool Systems secures the highest machine availability and maximum productivity.



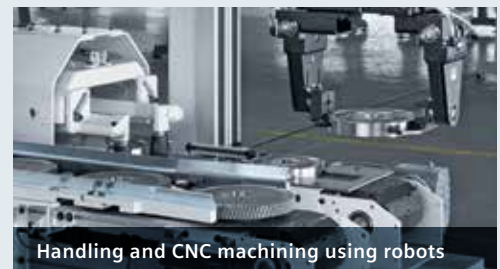


A CNC portfolio for the global machine tool market

<div>SINUMERIK 808D<ul style="list-style-type: none">Technologies: turning and millingUp to 4 axes/spindles1 machining channel7.5" color displayS7-200 PLC</div>	<div>SINUMERIK 828D SINUMERIK 828D BASIC<ul style="list-style-type: none">Panel-based compact CNCTechnologies: turning and millingUp to 8 axes/spindles1 machining channel8.4"/10.4" color displayS7-200 PLC</div>	<div>SINUMERIK 840D sl<ul style="list-style-type: none">Drive-based, modular CNCMulti-technology CNCUp to 93 axes/spindlesUp to 30 machining channelsModular panel concept up to 19" color displaySIMATIC S7-300 PLC</div>
SINAMICS V60	SINAMICS S120	SINAMICS S120 Combi
SINUMERIK 808D	SINUMERIK 828D BASIC	SINUMERIK 828D
Entry-level class	Compact class	Premium class

SINUMERIK 840D sl

Optimum solution for each and every technological challenge



With its premium SINUMERIK 840D sl CNC, Siemens Machine Tool Systems can confidently address every important technology in the machine tool market. At the same time, the SINUMERIK 840D sl sets standards when it comes to combining various technologies to create multi-tasking machines.

SINUMERIK 840D sl — ideally suited to address every application

Over 50 years of experience in the development and production of CNCs is reflected in an almost inexhaustible range of CNC functionality: Kinematic transformations, compensations and generic couplings are standard SINUMERIK 840D sl functions. Together with a state-of-the-art and integrated user interface, as well as the ability to network from the field up to the company level, a control system is created for a unique range of technological applications — from individual part production on the shopfloor, up to large serial production in industrial manufacturing environments.

Turning and milling — setting standards

Turning and milling at the limit is just one of the strengths of the SINUMERIK 840D sl. As standard, it has powerful drilling, milling, turning and measuring cycles, integrated setup functions, as well as specific CNC editors for turning and milling applications. Packed with this functionality, the SINUMERIK 840D sl sets the pace in the market for high-speed 5-axis milling centers. The same is true for turning centers with B-axis and highly productive multi-spindle applications.

Technologies combined in one machine

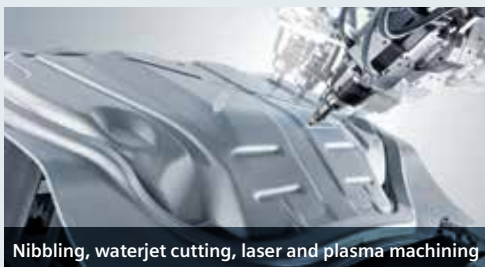
Decades of experience with individual technologies combined in one CNC kernel and in one graphical user interface: the SINUMERIK 840D sl is the ideal CNC for state-of-the-art multi-tasking machine tools. It sets standards for modern turn-milling and mill-turning applications. This is true today, and will remain this way tomorrow.



Gear machining



Grinding



Nibbling, waterjet cutting, laser and plasma machining



Multi-tasking

A case for customized standard technologies

The skill sets of a particular machine tool builder when machining certain types of components impact technologies such as grinding, gearwheel machining, as well as laser machining. The SINUMERIK 840D sl also fully leverages its expertise. A wide range of basic CNC system functions in the background is perfectly adapted to the particular strengths of the machine through the open operating architecture.

Beyond the machine tool itself — special technologies and more

The range of applications that the SINUMERIK 840D sl addresses doesn't just stop where a classic machine tool ends: robotic handling, transfer lines, rotary indexing machines, with or without the tool. The SINUMERIK 840D sl clearly proves its performance wherever precise and dynamic path motion is required.

Open for new fields of technology

With compile cycles, an open platform feature in the CNC kernel, the SINUMERIK 840D sl offers an extremely high degree of flexibility that can be adapted to any technological requirement. Its high system flexibility makes the SINUMERIK 840D sl the CNC of choice, even when it comes to addressing completely new fields of manufacturing technology. For example, tape laying and composite machining applications for the aerospace industry. As a result, the SINUMERIK 840D sl is a significant factor in achieving success in future industries.

SINUMERIK 840D sl

Ultimate performance in the premium class



SINUMERIK 840D sl is considered to be the standard in premium class CNC, which is certainly justified. Maximum CNC performance, along with a degree of flexibility and openness that has not been able to be achieved until now, are the basis for almost any CNC machine.

Maximum performance

The SINUMERIK 840D sl offers an almost inexhaustible performance potential — thanks to its drive-based, high-performance NCUs (Numerical Control Units) with state-of-the-art multi-core processor technology. This means that up to 93 axes in 30 machining channels can be controlled in the NCU link. Machine tools with fewer axes benefit from the performance of the SINUMERIK 840D sl as a result of the highest degree of machining precision with the shortest machining times.

Demanding turning and milling applications are part of the wide technology spectrum

High-speed milling and turning are two of the strengths of the SINUMERIK 840D sl. The milling spectrum extends from highly productive machining centers for powertrain manufacturing in the automotive industry, up to high-speed 5-axis machining centers for moldmaking in the aerospace industry. The turning spectrum extends from multi-channel 5-axis turning centers with B-axis up to highly productive multi-spindle applications.

Beyond turning and milling applications, the SINUMERIK 840D sl can address an almost inexhaustible range of technologies ranging from grinding and laser machining, through gearwheel, up to multi-tasking machining.

The SINUMERIK 840D sl is even the first choice for new engineering and manufacturing applications including tapelaying and composites for the aerospace industry.



Modular and scalable

In addition to scalable NCU performance, the SINUMERIK 840D sl has a high degree of modularity when it comes to the operating components. With flexible M:N operation, for example, any operator panel can be combined with the NCU making the SINUMERIK 840D sl the ideal fit in the operation of high-end machine tools. With SINUMERIK 840D sl BASIC, the link with the compact SINAMICS S120 Combi drive, even compact machines can be ideally addressed.

Benchmark for open architectures

The openness of the SINUMERIK 840D sl is second to none. Using SINUMERIK Integrate, the CNC can be optimally adapted to the machine's technology, and SINUMERIK Integrate ensures a high degree of flexibility in the production automation environment. For example, the operating system can be supplemented and adapted — even robots and handling systems can be integrated. With the openness in the CNC kernel and in the drive, unique mechanical concepts can be implemented; such as the use of adapted closed-loop control algorithms or specific kinematics transformations.

Communication at every level

Using PROFINET, the leading Industrial Ethernet standard, the SINUMERIK 840D sl is perfectly embedded in the Siemens Totally Integrated Automation (TIA) environment. TIA stands for a unique level of integration — from the field through the production, up to the company supervisory level. The result — every component within the automation solution optimally interacts with one another. This allows you to achieve maximum transparency and availability of the production process.

SINUMERIK 840D sl

The benchmark for open architecture



With system openness that is unique in the market, the SINUMERIK 840D sl optimally fits the machine technology, ultimately creating that all-decisive productivity increase.

Maximum machine technology

The high level of system openness of the SINUMERIK 840D sl gives machine builders the possibility to adapt the control to precisely address their particular technology in the machine — from industry-specific HMIs such as Transline, through completely dedicated user interfaces, up to compile cycles. This architecture has a unique level of openness in the market, in the CNC kernel and in the drive. This allows the SINUMERIK 840D sl to secure the highest level of technological expertise in a CNC machine tool.

The highest degree of production automation

A high degree of system openness offers a high degree of flexibility for production automation. On one hand, machine builders can implement a maximum amount of technology into the machine, and on the other hand, they can upgrade machines to become fully automated production cells. By integrating any handling system or robot, a completely automated workpiece flow is created with user-friendliness and standard operation.

Comprehensive solutions thanks to Solution Partners

As a result of the SINUMERIK 840D sl's system openness, SINUMERIK Solution Partners can expand the CNC to include a wide range of additional solutions, products and services. This means that machine tool builders have the possibility to supplement their SINUMERIK applications with additional ones from third-party suppliers, such as tool and process monitoring systems, measurement systems, as well as tele-service and video monitoring systems.

SINUMERIK 840D sl

Totally Integrated Automation



Totally Integrated Automation (TIA) optimizes the production processes of modern factories using integrated automation solutions from Siemens.

Automation from a single source

Based upon perfectly-coordinated products, systems and solutions, Siemens offers a unique automation portfolio — from SINUMERIK CNCs for machine tools, through SIMOTION motion controllers for production machines, up to SIMATIC PLCs for general automation and process control technology. Beyond machine tool automation, Siemens can completely supply the automation technology and production automation for complete plants and systems. The customer advantage — standard and integrated automation solutions from a single source supplier for a highly productive manufacturing environment.

Totally Integrated Automation offers a unique level of integration

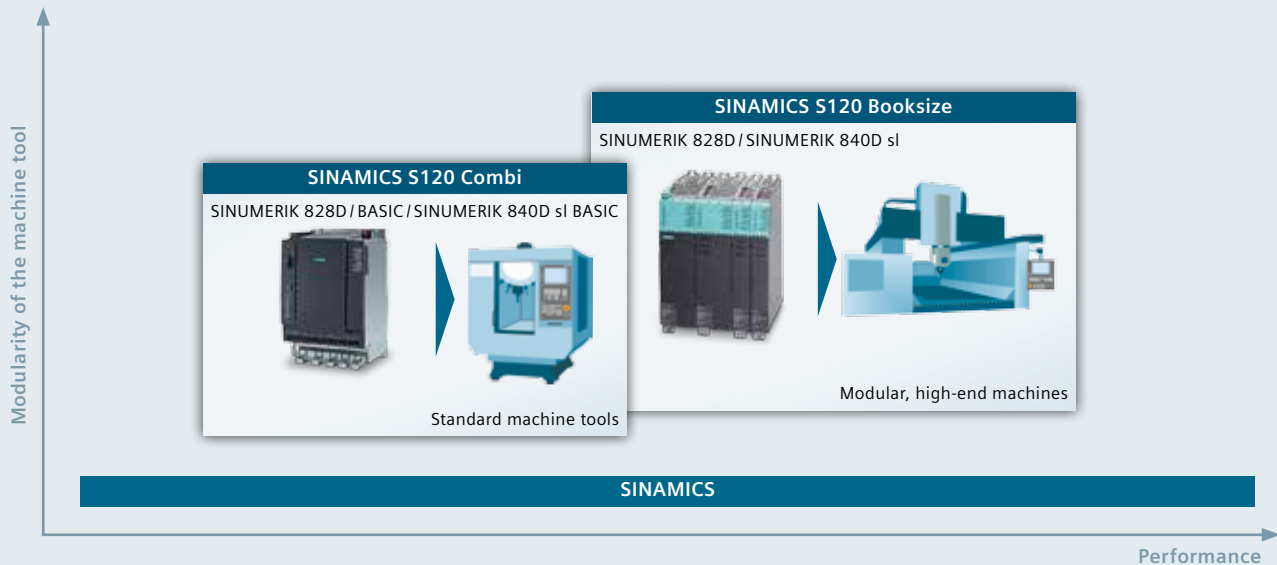
Totally Integrated Automation stands for a unique level of integration — from the field and control level, through production (MES), up to the company's supervisory level (ERP). The result is an ideal level of interaction between every component within the particular automation solution. In the end, standard engineering, as well as standard diagnostics throughout the entire plant, results in significantly higher efficiency and lower production costs.

SINUMERIK 840D sl — a strong element in the TIA chain

SINUMERIK 840D sl fits into the Totally Integrated Automation concept perfectly. The integrated SIMATIC S7-300 PLC offers the necessary flexibility and networking capability. With PROFIBUS and PROFINET, open standards, proven worldwide are available for complete industrial communication — from distributed SIMATIC ET 200 I/O modules, up to SINUMERIK Integrate for integration into the production level.

SINAMICS and SIMOTICS

The powerhouses behind the scenes



Siemens is simply world-class when it comes to drive technology — and therefore has outstanding drive solutions for machine tools.

SINAMICS S120 — the highest degree of flexibility

SINAMICS S120 is synonymous with performance and flexibility when it comes to CNC machines. In addition to a wide range of motor modules up to a power rating of 300 kW, there is also an infeed unit with a controlled DC link. This ensures the shortest spindle acceleration times and facilitates perfect reactive power compensation for the complete machine ($\cos \varphi = 1$). This is complemented by DSC (Dynamic Servo Control), which represents a unique position control technique to achieve the highest dynamic performance of feed and spindle motors.

usa.siemens.com/sinamics-s120

SINAMICS S120 Combi — the ideal drive for compact CNC machines

SINAMICS S120 Combi combines the performance of the modular SINAMICS S120 in a compact, rugged design. Here, an infeed and up to four motor modules are integrated in one housing. By intelligently expanding the system to include two more motor modules, the SINAMICS S120 Combi is the ideal drive for compact, standard CNC machines with a spindle power of up to 15 kW and up to five feed axes.

DRIVE-CLiQ — the digital high-speed data highway

All SINAMICS S120 and S120 Combi drives, as well as SIMOTICS motors and encoders, are connected to the SINUMERIK 840D sl via the high-speed DRIVE-CLiQ interface. This means that the CNC knows the electronic name plates — i.e. the relevant power and production information — of every connected component. In addition to automated commissioning, DRIVE-CLiQ ensures optimal diagnostics, faster service and efficient maintenance.



SIMOTICS motors represent the driving force for the SINUMERIK CNC and the SINAMICS drive in the machine with the highest precision and dynamic performance.

SIMOTICS servomotors

High standstill torques, the fastest speeds and smooth-running characteristics make SIMOTICS servomotors the optimal feed drive for CNC machines. A high degree of protection, strong bearings and a vibration-free design mean that these synchronous servomotors have outstanding reliability. High-quality magnetic materials result in a very high power density — and therefore very small motor dimensions. As a result, these motors can be installed in extremely tight spaces.

usa.siemens.com/simotics-s

SIMOTICS linear and torque motors

Going beyond conventional rotary motor principles, the SIMOTICS range also encompasses linear and torque motors with a high dynamic performance. When using SIMOTICS 1FN3 and 1FN6 linear motors, elasticity, backlash and friction, as well as natural oscillation of the machine's drivetrain, can almost be completely eliminated. Based upon SIMOTICS 1FW6 torque motors, completely new technologies can be addressed, such as turning on milling machines — also known as multi-tasking.

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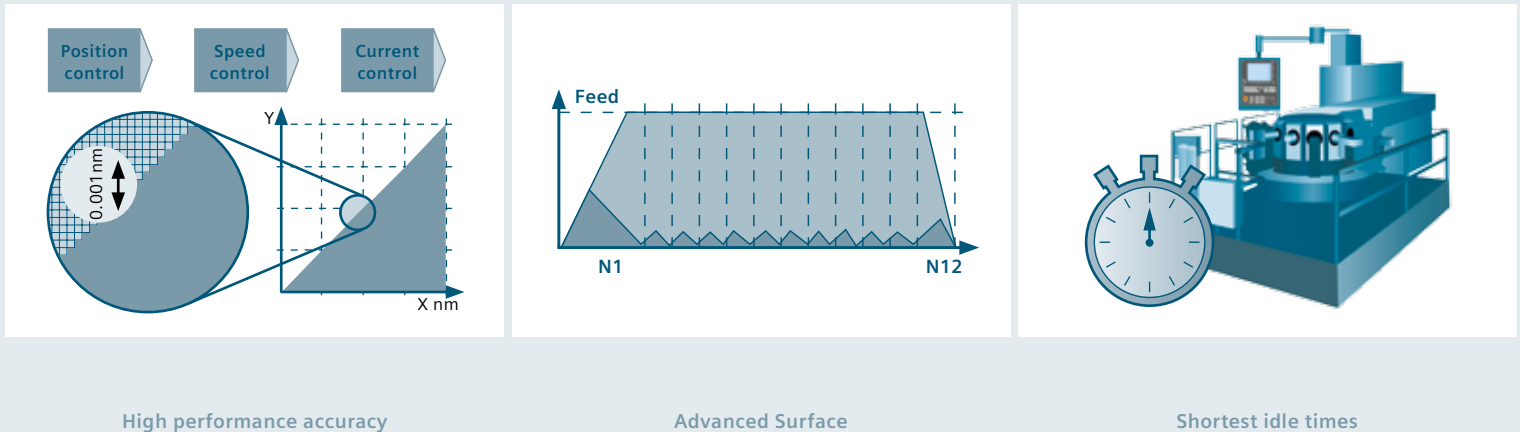
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Spindle solutions from Siemens

Siemens has supplemented its long tradition in building electric motors to include a high level of expertise in spindle manufacturing with Weiss Spindle Technology. This allows us to offer you a wide range of spindle solutions from a single source. The result is a portfolio that ideally supports each spindle solution type. This portfolio starts with the classic 1PH8 mounted spindle motors and 1FE1 synchronous built-in spindle motors, through mechanical spindles, up to hybrid and 2SP1 motor spindles.

SINUMERIK CNC performance

The machining standard



SINUMERIK controls set standards relating to every aspect of machining performance. Whether precision and speed, reducing cycle times or energy efficiency and safety — SINUMERIK CNCs set the pace.

The highest precision

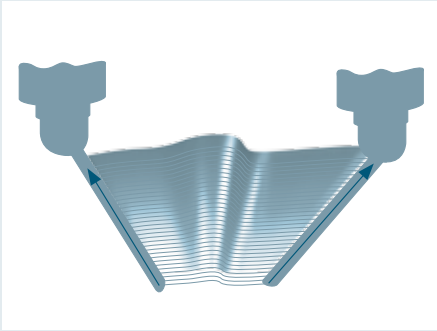
SINUMERIK CNCs and SINAMICS drives compute with high-performance 80 bit NANO^{FP} accuracy. This eliminates rounding errors and results in an extremely high internal computational accuracy in the complete controller circuit. Feed forward control ensures that errors are almost completely compensated — and jerk limitation reduces stress on the mechanical system when axes accelerate. Thanks to Dynamic Servo Control, SINAMICS drives offer additional position control — and as an additional feature, disturbance resistance for the machine control.

Maximum speed

When machining many CNC blocks in the shortest time, for example, free-form surfaces, the machining process itself no longer defines the speed, but the performance of the CNC system. With the Advanced Surface feature, SINUMERIK CNC offers you the ideal solution. Advanced Surface stands for state-of-the-art control algorithms, such as Look Ahead or the dynamic compression of linear and circular blocks in fifth degree polynomials (NURBS). This means that machines equipped with SINUMERIK controls can be operated at their physical limit.

The shortest idle times

Especially in large serial production, idle times, where the machine is no longer productive, represent a critical productivity-inhibiting factor. Here, with its synchronous architecture and intelligent functions, such as synchronized actions or asynchronous sub-programs, SINUMERIK provides the optimal solution. For example, the loading of equipment can be implemented without having to make time-consuming interventions in the PLC.



Kinematic transformations



SINUMERIK Ctrl-Energy



SINUMERIK Safety Integrated

Kinematic transformations

SINUMERIK CNC is in its element when it comes to the handling of complex machine kinematics — from the classic face / peripheral surface transformation for turning machines through multi-side machining in swiveled planes, up to dynamic 5-axis transformation in tool- and moldmaking, as well as in the aerospace industry. The SINUMERIK 840D sl supports every type of special transformations up to milling with robot kinematics — therefore paving the way for advanced machine tool applications.

Energy efficiency with SINUMERIK Ctrl-Energy

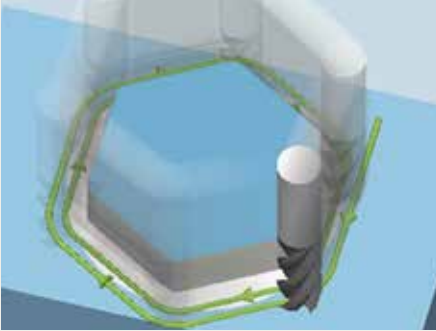
Siemens Machine Tool Systems sets the standard when it comes to energy efficiency — SINUMERIK Ctrl-Energy encompasses a wide range of high-efficiency drive / motor components, CNC / drive functions, software solutions and services. SINUMERIK Ctrl-Energy offers energy-efficient solutions over the machine's entire lifecycle — from the design to the operation of the machine. Users have intelligent functions at their fingertips, such as the ability to analyze the energy costs associated with the workpiece. SINUMERIK CNC helps you to save energy by simply pressing the Ctrl + E shortcut key.

Protection for people and machine with SINUMERIK Safety Integrated

Siemens Machine Tool Systems is the leader when it comes to the protection of people and the machine. SINUMERIK Safety Integrated has set the standard for machine tool safety technology. Here, intelligent system functions permit user-friendly operation of the machine. For example, machine setup with the protective doors open — this provides the highest degree of safety for machine operators and the machine itself.

SINUMERIK Operate

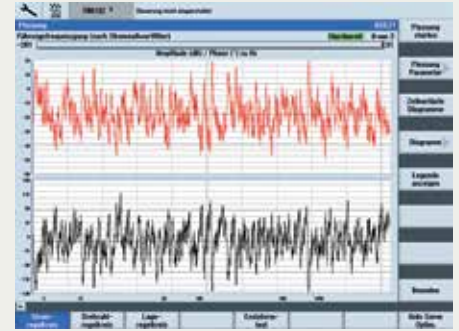
The state-of-the-art operating system for the 21st century



Animated Elements



Intelligent JOG mode



Auto-Servo Tuning (AST)

SINUMERIK Operate offers you such an easy-to-use graphical user interface that's setting the standard for efficient machine tool operation.

Interactive input with Animated Elements

With Animated Elements, SINUMERIK Operate makes it very easy to enter parameters. Animated Elements completely redefine what graphical programming and operation truly mean — using a unique display with moving (animated) image sequences.

Intelligent JOG mode

In SINUMERIK Operate, the intelligent JOG mode provides graphical, interactive support for every typical setup function for turning and milling machines. This means that a tool can be simply loaded with just three clicks. On lathes, face turning of a blank or boring soft clamping jaws are directly realized in the intelligent JOG mode — without having to generate a part program. This means that non-productive times are reduced to an absolute minimum.

One-click optimization

With its Auto-Servo Tuning (AST) functionality, SINUMERIK Operate offers automatic optimization of control parameters to achieve maximum dynamic performance and accuracy of the machine axes — and with just one click. This simplifies machine commissioning — and the machine can be post-optimized regularly during operation. This ensures maximum precision over the entire life of the machine.

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SinuTrain



SinuTrain for SINUMERIK Operate

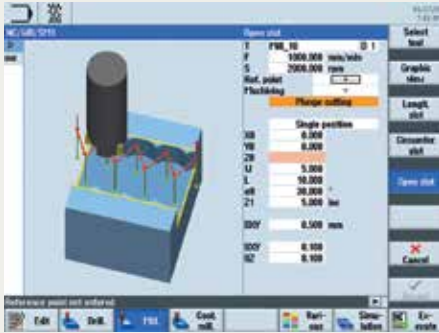
SinuTrain training software makes SINUMERIK Operate even closer to reality on the PC, including the animated machine operator panel. The expertise you gain in the training course can be easily transferred into real life applications. This powerful tool facilitates offline programming at the PC — NC programs can be transferred directly to the CNC.

Thanks to SINUMERIK Operate and the original SINUMERIK NC kernel, there are no restrictions in the operation, programming or execution of NC programs.

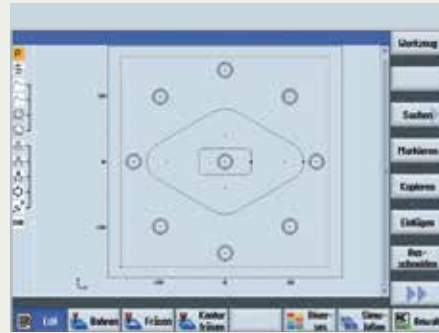
usa.siemens.com/sinutrain

SINUMERIK Operate

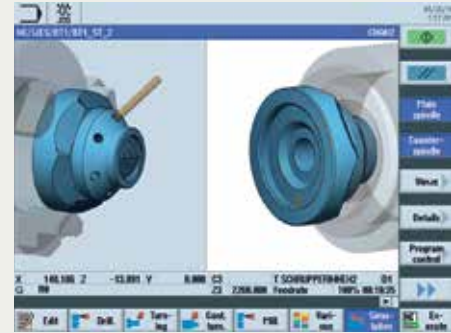
Perfect for every programming task



Large serial production



Small serial production



SINUMERIK CNC simulation

With various programming languages, SINUMERIK supports every CNC programming method that is used around the world — from machining individual parts, up to large serial production.

For large series ...

Achieve the shortest machining times for large serial production and with the highest flexibility for special applications — SINUMERIK controls make this possible with advanced CNC programming based upon high-level language elements. Using programGUIDE, SINUMERIK CNC programs can be easily combined with high-performance technology and measuring cycles. Even classic ISO codes can be programmed. As a result, SINUMERIK is especially attractive for machine operators who prefer this classical programming method.

... and small serial production

For small serial production and individual parts, programming time is a decisive factor — and both ShopMill and ShopTurn machining step programming are unbeatable. Machining operations such as drilling, centering, plunging or pocket milling are shown in the form of machining steps. Even for complicated machining operations, CNC programs are extremely compact and easy to read. Using dynamic broken-line graphics, which are absolutely unique in the market, all of the geometrical elements can be displayed to-scale in the CNC program.

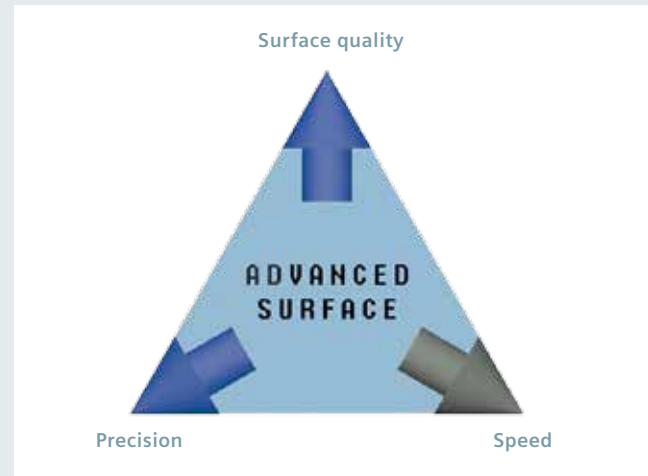
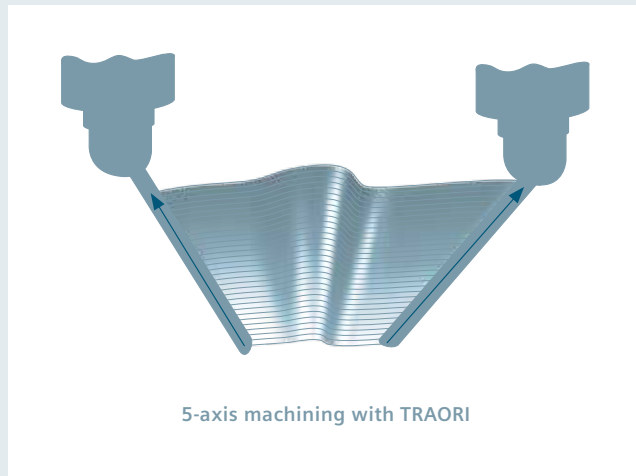
CNC simulation for reliable and safe processes

SINUMERIK CNC simulation guarantees maximum process reliability and safety as the real geometries of the tools are always used. It goes without saying that the simulation shows the precise image of the required machining operation — not just bright, colorful graphics.

Whether face or peripheral surfaces, swiveled workpiece planes or even machining in several channels, SINUMERIK CNC simulation simulates every machining type. With the moldmaking quick view, even very large part programs can be displayed on the screen within seconds.

SINUMERIK MDynamics

Synonymous for perfect workpiece surfaces



When you combine cutting-edge machine tool operation with unique technology cycles, you have the ultimate in shopfloor programming and high-quality CNC simulation — together with premium motion control.

Advanced Surface gets the most out of your machine

Advanced Surface is synonymous with milling to the physical limits of the machine. State-of-the-art look ahead algorithms and intelligent block compression ensure maximum machining speed with the highest surface quality and precision — for 3-axis, 3+2-axis and dynamic 5-axis machining operations.

5-axis machining at the highest level

SINUMERIK CNCs offer the optimum kinematic transformations for modern milling machines — from peripheral surface transformation with slot wall correction for cylindrical workpieces, through statically-swiveled planes for multi-side machining, up to dynamic 5-axis transformations (TRAORI) for demanding tool-, moldmaking and aerospace applications.

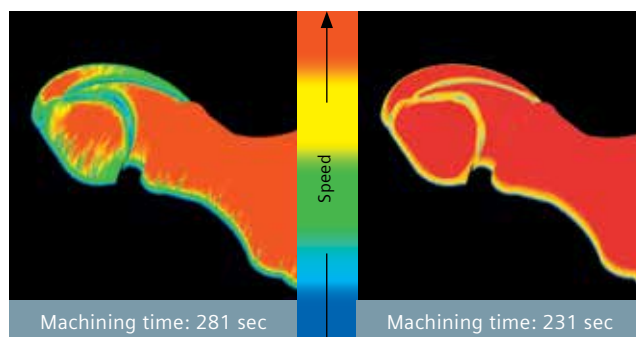
High-Speed Settings

The High-Speed Setting cycle is user-friendly and simplifies the parameterization of mold-making applications — using just a few parameters, SINUMERIK is set to the required machining tolerance and to the particular machining task such as roughing, finishing or semi-finishing.

The combination makes the difference

Advanced Surface, High-Speed Settings, kinematic transformations and SINUMERIK Operate for machine tool operation and programming — as well as comprehensive technology and measuring cycles — create a unique combination of exciting features for sophisticated milling machines.

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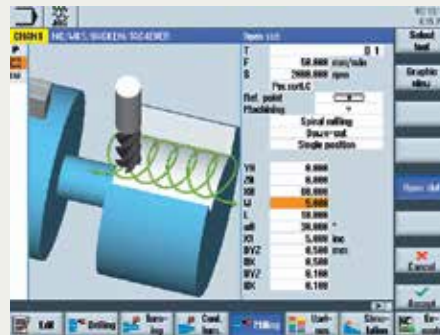


Multi-tasking with SINUMERIK CNC

Important in every detail



Powerful CNC functions



Standard operation



Universal CNC programming

Multi-tasking made easy — the standard CNC functions integrated in SINUMERIK, as well as the uniform look-and-feel when it comes to operating and programming with SINUMERIK Operate, maximize CNC performance and ease-of-use when it comes to multi-tasking turning operations.

Powerful CNC functions

With just a few parameter entries, intelligent kinematic transformations transform milling machines into turning machines — and turning machines milling machines. In conjunction with additional CNC features, such as cross-technology tool management and state-of-the-art velocity control, completely new CNC applications are opened up — from turning on milling machines, up to machining free-form surfaces on turning machines.

Standard operation

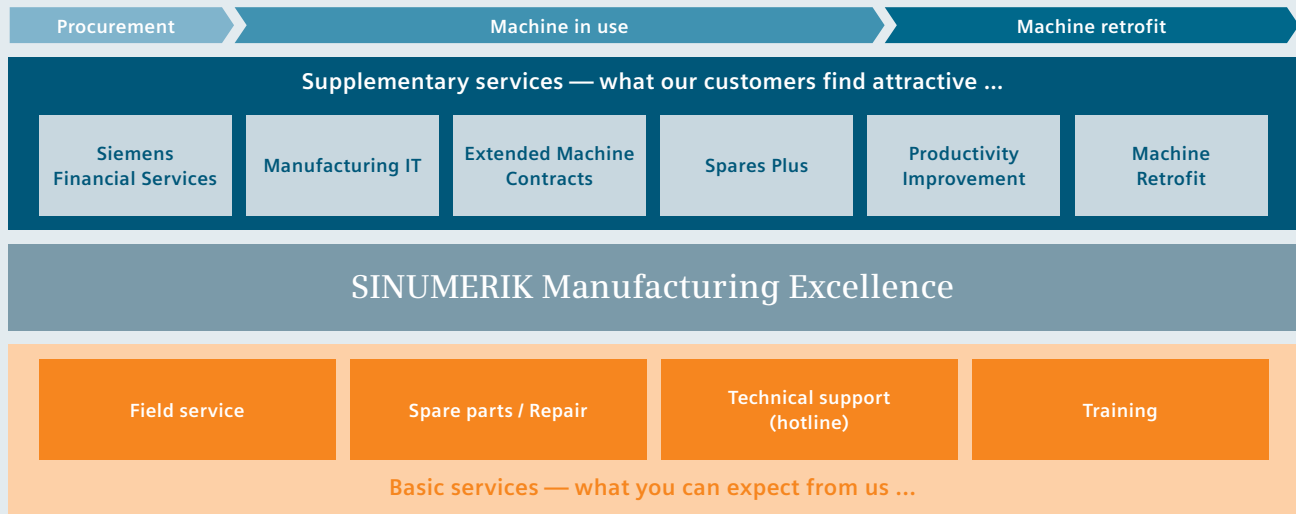
The standard look-and-feel of SINUMERIK Operate for every machining technology allows several technologies to be combined on one machine — and of course, with the highest degree of standardization when it comes to operation and programming that is expected from SINUMERIK. In addition, SINUMERIK CNC technology cycles for drilling, milling, turning and measuring are adapted to the particular multi-tasking machine. As a result, the maximum degree of standardization is achieved for every multi-tasking machining operation performed on a machine.

Universal CNC programming

Comprehensive CNC programming tools that go beyond technology limits ensure that CNC systems are efficiently programmed for multitasking machines — from machining step programming for individual parts, up to multi-channel programming in large serial production environments. Powerful CNC simulation permits part visualization across every technology and offers the highest degree of process reliability and safety for all kinematic versions of state-of-the-art multi-tasking machines.

SINUMERIK Manufacturing Excellence

Service and support at the highest level



Basic services — what you can expect from Siemens

Field service

As a global company, Siemens Machine Tool Systems also has a global service team to provide fast and expert service, repair and maintenance around the world in more than 60 regions.

Technical support (hotline)

In more than 25 regions around the world, our technical hotline experts answer every question related to SINUMERIK CNC — and of course, in your local time zone and in even your own language.

usa.siemens.com/cnc-support

Spare parts and repair

A tight-knit, flexible and responsive spare parts and repair network in more than 70 regions around the world ensures that replacement parts are quickly available — and at reasonable prices.

SINUMERIK training

SITRAIN offers professional training for the operation, programming, commissioning and maintenance of SINUMERIK controls in more than 30 countries around the world.

Additional services — what our customers find attractive

With a wide range of additional services, SINUMERIK Manufacturing Excellence increases your machine tool productivity — from the initial design, through use, up to machine retrofit and even modernization.

■ Siemens Financial Services

Financial solutions that perfectly fit your needs

■ Manufacturing IT

Process optimization through the implementation of the SINUMERIK Integrate product suite

■ Extended Machine Contracts

Tailored machinetool service contracts that fit your budget

■ Spares Plus

Preventive spare parts management

■ Productivity Improvement

Reduce the cycle times of your existing machines

■ Machine Retrofit

General overhaul of CNC machine tools that gives new life to old iron

usa.siemens.com/cncretrofit

IT integration with Siemens

Intelligent networking in production

In addition to CNC technology, Siemens offers an extensive portfolio for IT integration — from standard data transfer using SINUMERIK Operate, up to PLM data management with TEAMCENTER.



Standard data transfer

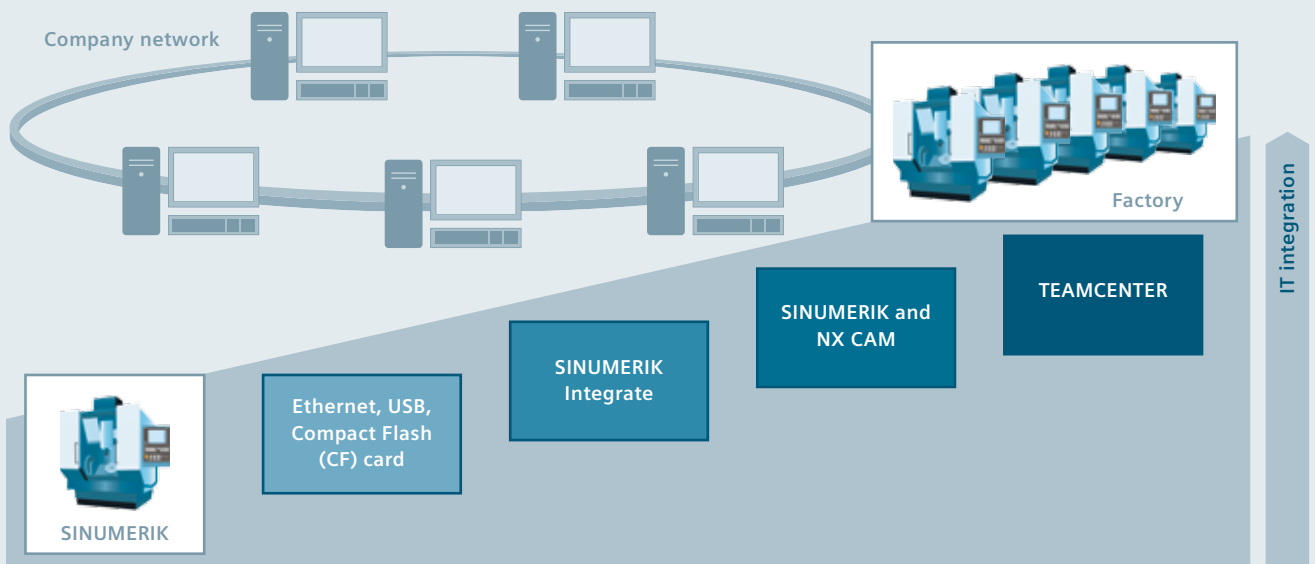
As a result of the LINUX, respectively Windows® operating system, SINUMERIK controls master all of the usual data transfer techniques — such as USB, Compact Flash (CF) card and TCP/IP Ethernet — without the need for emulation or file conversion programs.

SINUMERIK Integrate

SINUMERIK Integrate perfectly integrates SINUMERIK controls into the IT environment of today's plants. This is achieved by using a powerful software suite.

- **Manage MyPrograms**
NC programs are organized and managed throughout the network
- **Manage MyTools**
Tools are managed throughout the network
- **Analyze MyCondition**
Machine states are evaluated for condition-oriented maintenance
- **Analyze MyPerformance**
Machine data and operating states are acquired and visualized throughout the factory
- **Access MyMachine**
Remote diagnostics, from peer-to-peer via LAN to the Internet
- **Access MyBackup**
Interface to backup and assign versions to CNC data
- **Create MyInterface**
Communication interfaces to connect to master computer applications

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SINUMERIK and NX CAM

Using NX CAM, the well-known solution for CNC programming, companies can maximize the production yield of their modern CNC machines. In addition to a wide range of flexible technologies for CNC programming, NX CAM also includes a part manufacturing solution. This encompasses a library of clamping resources, as well as options for data management, process planning and options to directly connect to the shopfloor. Being closely tied to the SINUMERIK CNC results in an integrated and seamless CAD/CAM/CNC process chain — which ensures maximum productivity when it comes to high-quality workpiece manufacturing.

TEAMCENTER

This product from Siemens PLM Software is the central information source for product and process expertise in companies. Thanks to a comprehensive Product Lifecycle Management (PLM) solution portfolio, TEAMCENTER links every station of the product lifecycle to this central source. The portfolio encompasses requirements and engineering process management, simulation process management, as well as production process management. The latter is a single, scalable, reliable and secure source for production information, which supports lifecycle processes from development, all the way through to production.

Solutions for every industry

Fit for the future

Siemens knows where machine tools will be needed in the future, so we leverage our industry expertise to support our customers to make certain that their businesses will remain successful in the future, as well.

usa.siemens.com/cnc



Aerospace



Automotive

Key industries

Many years of industry expertise is convincing

As a long-time partner to the machine tool industry, Siemens Machine Tool Systems is in the position to address the needs of companies that are operating CNC machines. Based upon our many years of outstanding industry expertise, SINUMERIK controls can always provide the ideal solution for cost-effective manufacturing — for example in automotive, aerospace, power generation, electronics and medical part production.

We are certain that our focus on end-user industries will be proven in the future, as well. Global trends, such as the continuous population growth and the rising demand for communication resources, are leading to an ever-increasing demand for highly-productive and innovative CNC machines.

We are your partner for machine tool automation — including complete manufacturing automation

We have been maintaining direct contact with end-users in our core industries for decades. We know the challenges that they face and the requirements that they place on current and future machines. This expertise flows directly into our product development and guarantees that SINUMERIK controls are closely-aligned to addressing market requirements.

In addition to machine tool automation, Siemens can act as the general contractor for the manufacturing automation of your entire plant. Customers will also benefit from this as a result of integrated and seamless automation solutions from a single source — ultimately helping you to achieve a highly-productive manufacturing environment.



The ideal solution for each and every industry

Every industry has its own specific requirements. Siemens Machine Tool Systems can offer the appropriate solutions — whether standard automation for the automotive industry or special technologies such as tapelaying for aerospace — we have the ideal solution. This is supplemented by an industry-specific portfolio of support services with training and hotline, as well as local service, spare parts and repair. This allows us to ensure maximum productivity in manufacturing, service and maintenance.

Outstanding international support

Our industry solutions are used around the globe and our international organization ensures that we can optimally support machine tool end-users around the world.

We set the trends in manufacturing

Siemens Machine Tool Systems is an innovation leader in the machine tool market. The development of innovative, cutting-edge solutions is a given for us. This is reflected in our leading IT integration and simulation solutions to easily network manufacturing IT, while securing maximum machine tool productivity and availability.

Technical information

	NCU710	NCU720	NCU730
Configuration			
Mechanical design	Drive-based		
Operation with SINAMICS S120 Combi drives	(840D sl BASIC)	–	–
Operation with SINAMICS S120 Booksize drives	•	•	•
Maximum number of axes/spindles	8 (with SINAMICS S120)	31	31
	6 (with SINAMICS S120 Combi)		
Maximum number of machining channels / mode groups	4	10	10
Maximum number of NCUs in the NCU Link	3	3	3
CNC user memory, up to	9 Mbyte	15 Mbyte	15 Mbyte
Additional CNC user memory on hard disk (PCU50)	12 Gbyte		
Minimum block change time	~ 1.5 ms	~ 0.6 ms	~ 0.4 ms
Minimum current / speed controller cycle	31.25 µs		
Display size (TFT color displays)	7.5"/10"/12"/15"/19"		
Maximum number of operator panels per NCU	2	4	4
PLC adaptation control	SIMATIC S7-300		
PLC I/O interface	PROFIBUS / PROFINET		
Axis functions			
Travel to fixed stop with Force Control	•		
Acceleration with jerk limitation	•		
Dynamic precontrol	•		
Advanced Position Control	•		
Dynamic Servo Control in the drive	•		
Interpolation			
Interpolating axes, up to	6 / 8	20	20
Straight line, circle, helix	•		
Splines, polynomials, involutes	•		
Advanced Surface	•		
Look Ahead	•		
Compressor	•		
Couplings			
Synchronous axis pair (gantry axes)	•		
Synchronous spindle / multi-edge turning	•		
Master value coupling / cam table interpolation	•		
Electronic gearbox	•		
Additional machine-specific couplings	•		
Transformations			
Face / peripheral surface transformation	•		
Multi-side machining (3+2-axis machining)	•		
Dynamic 5-axis machining (TRAORI)	•		
Additional machine-specific kinematic transformations	•		
SINUMERIK synchronous architecture			
Synchronized motion actions	•		
Asynchronous subprograms	•		

	NCU710	NCU720	NCU730
Compensations			
Measuring system and spindle pitch compensation		•	
Temperature compensation		•	
Sag		•	
Additional compensations (volumetric, cogging torques etc.)		•	
Tools / tool management			
Number of tools / cutting edges in the tool list, up to		600 / 1500	
3-D tool radius compensation		•	
Unit quantity / tool life monitoring with management of replacement tools		•	
CNC operation			
SINUMERIK Operate		•	
Animated Elements		•	
Operator interface on NCU (Linux)		•	
Operator interface on PCU50 (Windows®)		•	
SinuTrain training and offline programming tool		•	
CNC programming			
SINUMERIK CNC programming language with high-level language elements		•	
Online ISO dialect interpreter		•	
programGUIDE (technology cycle support)		•	
Technology cycles for drilling, milling and turning		•	
Cycles for in-process measurements (with cycle support)		•	
ShopMill / ShopTurn machining step programming		•	
programSYNC (multi-channel operation and programming)		•	
3-D CNC simulation for turning / milling		•	
Channels that can be simulated, up to		4	
Simulation in parallel to the main machining time	–	•	•
Onboard optimization and diagnostics			
Context-sensitive onboard help system		•	
Onboard in the PLC servo and drive optimization (AST)		•	
Onboard signal, bus and network diagnostics		•	
IT integration			
Standard data transfer		RS232C / USB / Ethernet	
IT integration with SINUMERIK Integrate		•	
Safety functions			
SINUMERIK Safety Integrated		•	
Open Architecture			
User interface openness		•	
Openness		•	
SINUMERIK Ctrl-Energy			
Ctrl-E analysis (determining the energy usage of the machine)		•	
Ctrl-E profile (energy management of machine during non-productive times)		•	
Automatic reactive power compensation		•	
Automatic flux reduction for spindle induction motors		•	

– not available

- available (certain functions are available as CNC option, please contact your machine tool manufacturer)

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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