

SIEMENS



SINUMERIK 840D sl

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

siemens.com/sinumerik

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 — a CNC portfolio for the global machine tool environment



SINUMERIK 808D

- Panel-based compact CNC
- Technologies: turning and milling
- Up to 4 axes/spindles
- 1 machining channel
- 7.5" color display
- S7-200 PLC

SINAMICS V60

SINUMERIK 808D

Entry class



SINUMERIK 828D/ SINUMERIK 828D BASIC

- Panel-based compact CNC
- Technologies: turning and milling
- Up to 8 axes/spindles
- 1 machining channel
- 8.4" / 10.4" color display
- S7-200 PLC

SINAMICS S120

SINAMICS S120 Combi

SINUMERIK
828D BASIC

SINUMERIK
828D

Compact class



SINUMERIK 840D sl

- Drive-based modular CNC
- Multi-technology CNC
- Up to 93 axes/spindles
- Up to 30 machining channels
- Modular panel concept up to 19" color display
- SIMATIC S7-300 PLC

SINAMICS S120
Combi

SINAMICS S120

SINUMERIK
840D sl BASIC

SINUMERIK
840D sl

Premium class

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.



SINUMERIK 840D sl — the 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.



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

It is certainly justified that SINUMERIK 840D sl is considered as the benchmark of the premium class CNC.

Maximum performance, as well as a high degree of flexibility and openness unknown until now are the basis for almost any CNC machine.



Maximum CNC performance

The SINUMERIK 840D sl offers an almost inexhaustible potential when it comes to CNC computational performance as a result of its drive-based, high-performance NCUs (Numerical Control Units), equipped with the latest multi-core processor technology. Performance means a high number of axes in highly modular CNC machines, such as transfer lines or rotary indexing machines. Performance also means the highest precision and dynamic machining performance for high-speed cutting in 5-axis machining centers for moldmaking. Regardless of which premium machine tool is involved, the SINUMERIK 840D sl always secures the highest degree of productivity of the machining process.

Scalable CNC performance

SINUMERIK 840D sl provides various machine tools with the optimum CNC performance. To achieve this, it is available in several performance versions — SINUMERIK 840D sl BASIC, a combination of NCU710 and SINAMICS S120 Combi, is the perfect entry for compact, premium machines. Up to three NCU730, coupled through the NCU Link, provide the highest performance available. They can control up to 93 axes in up to 10 machining channels.

Modular operation



For every operation ...

SINUMERIK 840D sl offers a comprehensive range of operator components — from fixed and mobile operator panels, through machine control panels and handheld terminals, up to CNC keyboards and storage devices. This ensures that the machine operator always has the ideal interface available. The SINUMERIK 840D sl supports operator stations used purely for diagnostics, as well as for multi-channel CNC operation employing the SINUMERIK OP019 operator panel. This premium-class operator panel combines maximum usability, capacitive touch screen technology, the highest degree of protection and outstanding design.

... the optimal operating performance

Based upon flexible hardware, operating performance adapts itself to the application's particular requirements. The complete SINUMERIK Operate graphical user interface runs in one core of the NCU processor — a rugged solution and optimized from a cost perspective. Alternatively, SINUMERIK Operate can be installed on a separate Panel Control Unit (PCU50) under Windows®. This results in a unique level of operating performance and flexibility for customized applications, including the installation of Windows®-based software add-ons.

M:N — the magic word when it comes to flexible machine operation

The SINUMERIK 840D sl is flexible in every regard, and the operating components have a high degree of modularity. With flexible M:N operation, the ability to combine any operator panels with any NCUs, means that the SINUMERIK 840D sl is the perfect fit for state-of-the-art premium tool operation. This also means that in rotary indexing machines or transfer lines, it offers user-friendliness and process reliability.

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 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 powerhouse in the background



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

SINAMICS S120 — the highest degree of flexibility

The SINAMICS S120 is synonymous for performance and flexibility when it comes to machine tool equipment. 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 entire machine ($\cos \varphi = 1$). This is complemented by Dynamic Servo Control (DSC), a unique position control technique to achieve the highest dynamic performance of feed and spindle motors.

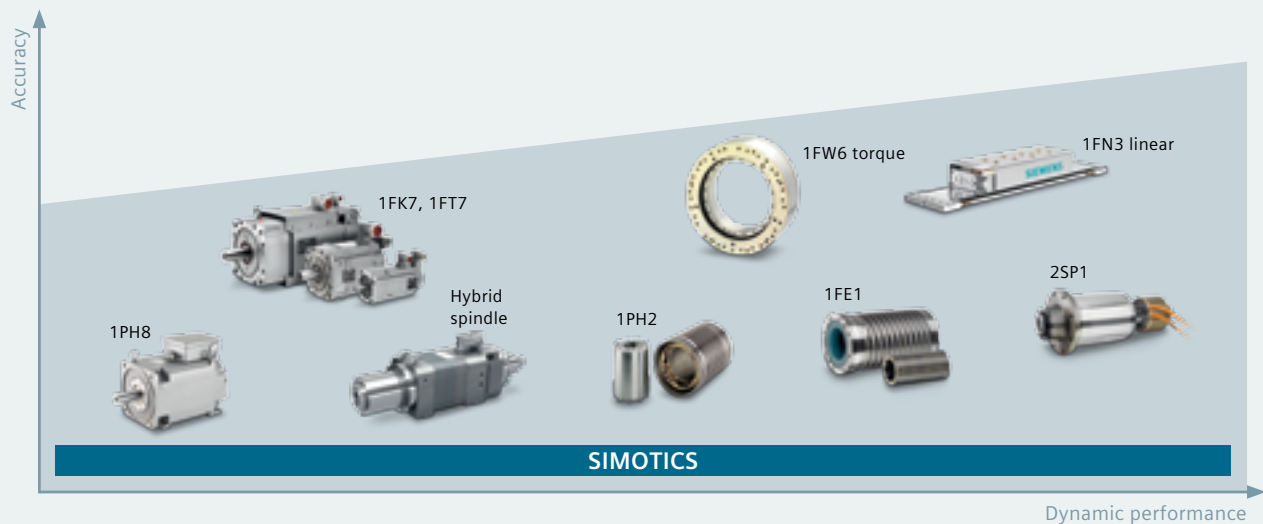
SINAMICS S120 Combi — the ideal solution for standard CNC machines

SINAMICS S120 Combi combines the performance of the modular SINAMICS S120 in a compact, rugged design. Here, one 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 platform to equip compact, standard machine tools with a spindle power of up to 15 kW and up to 5 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 nameplates — 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.

www.siemens.com/sinamics



SIMOTICS motors are the horsepower for the SINUMERIK CNC and the SINAMICS drive in the machine offering the highest precision and dynamic performance.

SIMOTICS servomotors

High standstill torques, high maximum speeds and smooth-running characteristics make SIMOTICS servomotors the ideal feed drive for machine tools. 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. This means that these motors can be installed anytime space is restricted.

SIMOTICS linear and torque motors

Going beyond the conventional rotary motor principles, the SIMOTICS range of motors encompasses dynamic linear and torque motors, too. When using SIMOTICS 1FN3 and 1FN6 linear motors, elasticity, play and friction, as well as the natural oscillation of the machine drive train, can almost be completely eliminated. Beyond this, with SIMOTICS 1FW6 torque motors, completely new machining technologies can be addressed, such as turning on milling machines (also known as multi-tasking).

www.siemens.com/simotics

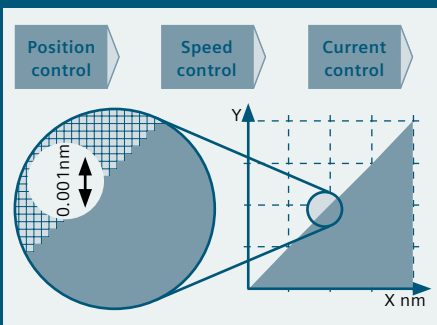
Spindle solutions from Siemens

Siemens has supplemented its long-standing tradition in electric motor production to include a high level of expertise in spindle manufacturing through Weiss Spindeltechnologie GmbH. As a result, Siemens Machine Tool Systems can offer a wide range of spindle solutions from a single source. The result is a portfolio that supports each spindle solution type, starting with the classic 1PH8 mounted spindle motors and 1FE1 built-in spindle motors, through mechanical spindles, up to hybrid and 2SP1 motor spindles.

www.siemens.com/spindles

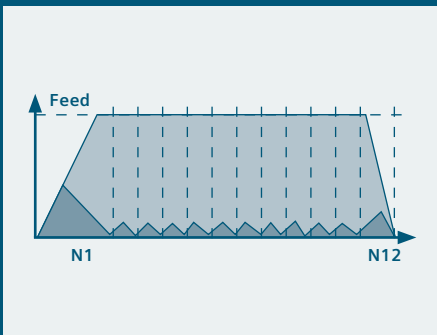
SINUMERIK CNC performance — the machining standard

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



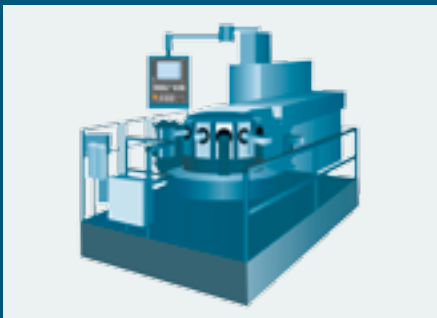
The highest precision

SINUMERIK CNC and SINAMICS drives compute with a high-performance 80 bit NANO^{FP} accuracy. This eliminates rounding errors and offers an extremely high internal computational accuracy in the complete controller circuit. Further, dynamic pre-control ensures that the following error is 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 in the drive — and as another feature, noise immunity 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 velocity, but the performance of the CNC. Here, SINUMERIK with the feature, Advanced Surface, represents the ideal solution — Advanced Surface stands for state-of-the-art control algorithms, such as Look Ahead or dynamic compression of linear and circular blocks in 5th degree polynomials (NURBS). This means that machines equipped with SINUMERIK can be operated up to their physical limit.

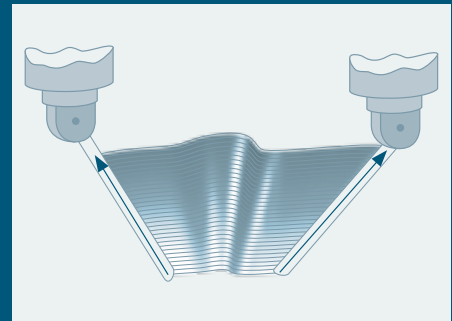


The shortest idle times

Especially in larger 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 and asynchronous sub-programs (ASUBs), SINUMERIK provides the optimum solution. For example, the loading of equipment can be implemented without having to make time-consuming modifications to the PLC adaptation control.

Kinematic transformations

SINUMERIK is the perfect CNC solution when it comes to handling 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. In addition, the SINUMERIK 840D sl supports every type of special transformation 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 in machine tools: 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 entire lifecycle of the machine — from design to operation. For example, users have intelligent functions at their fingertips, such as being able to analyze the energy costs associated with a workpiece. By simply pressing the key combination Ctrl + E, SINUMERIK helps save energy.



www.siemens.com/sinumerik/ctrl-energy

Protection for people and the machine with SINUMERIK Safety Integrated

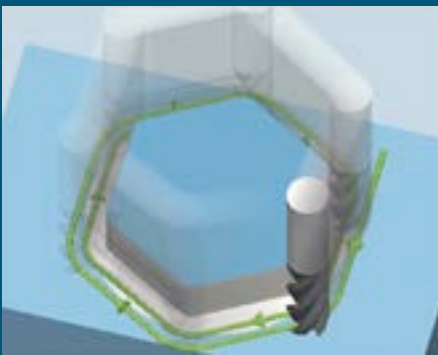
Siemens Machine Tool Systems is the pioneer when it comes to protecting people and machines. SINUMERIK Safety Integrated has set the standard for safety technology integrated into CNC machines for almost two decades. Here, intelligent system functions facilitate easy operation of the machine — for example, machine setup with the protective doors open, securing the highest degree of safety for both the machine operator and the machine itself.



SINUMERIK Operate — the state-of-the-art graphical user interface for the 21st century

SINUMERIK Operate offers the highest degree of operator-friendliness at the machine — setting the standard for efficient machine tool operation.

www.siemens.com/sinumerik-operate



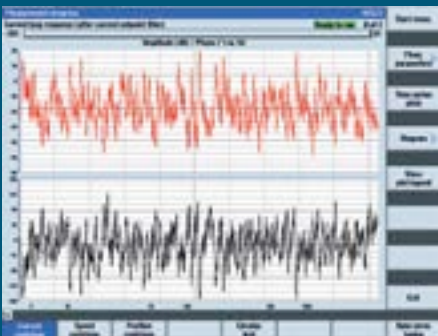
Interactive input with Animated Elements

With Animated Elements, SINUMERIK Operate makes it very easy to enter parameters. Animated Elements completely redefine what graphical programming and operation really mean — using a unique display with movie-like image sequences.



Intelligent JOG mode

In SINUMERIK Operate, the intelligent JOG mode provides graphical, interactive support when setting up turning and turn-milling machines. This means that a tool can be simply loaded with just three clicks. Face turning of a blank or boring soft clamping jaws is 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.



Optimization and diagnostics onboard

Auto Servo Tuning (AST) functionality permits machine axes to be optimized automatically with just one click. This ensures maximum machine precision over the entire lifecycle of the machine. To ensure that machine failures do not result in enormous production losses, onboard bus diagnostic tools are available for drive, peripheral and network components, as well as a high-performance trace function to record and diagnose NC, PLC and drive signals.

SinuTrain for SINUMERIK Operate

This training software brings SINUMERIK Operate almost to reality on the PC, including the animated machine operator panel. Expertise gained in the training course can be easily transferred into your day-to-day work. SinuTrain facilitates offline programming at the PC, and NC programs can be transferred directly to the CNC.

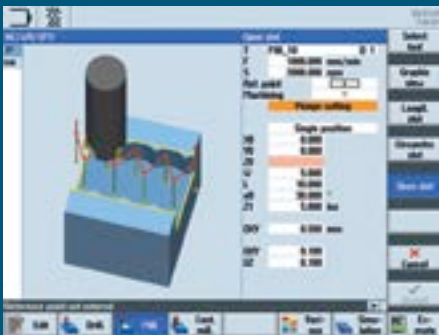
Thanks to SINUMERIK Operate and the original SINUMERIK CNC kernel, all operating and programming processes can be used without any restrictions — and CNC programs can be executed.

www.siemens.com/sinutrain



SINUMERIK Operate — perfect for every programming task

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



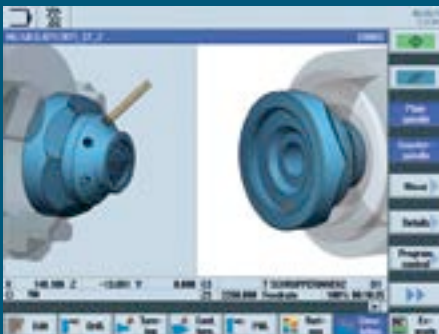
For large series ...

Shortest machining times for large serial production and with the highest flexibility for special applications — SINUMERIK CNCs 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 method of programming.



... and small serial production

For small series and individual parts, programming time is a decisive factor in productivity. When it comes to this discipline, ShopMill and ShopTurn machining step programming is unbeatable. Here, machining operations such as drilling, centering, plunging and pocket milling are shown in the form of machining steps. CNC programs are extremely compact and easy-to-read, even for complicated machining operations. 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.

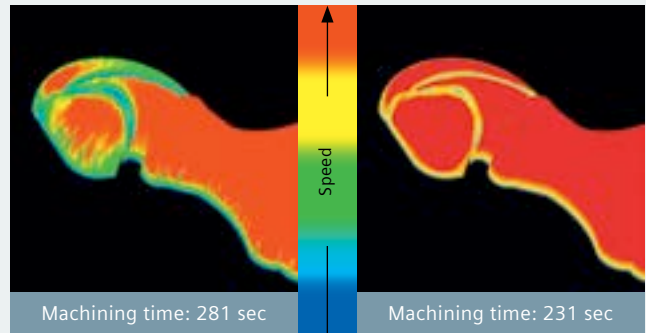


CNC for safe and reliable processes

SINUMERIK CNC simulation guarantees maximum process reliability and safety as the real geometries of the equipped tools are always used. It goes without saying that the simulation shows the exact image to be machined. Whether face or peripheral surfaces, swiveled workpiece planes or even when machining in several machining channels — SINUMERIK CNC simulation simulates every machining type. Using the fast moldmaking view, even very large part programs can be displayed on the screen within seconds.

SINUMERIK MDynamics — synonymous for perfect workpiece surfaces

SINUMERIK MDynamics features cutting-edge operation with unique technology cycles making it the ultimate in shopfloor programming, high-quality CNC simulation and motion control.



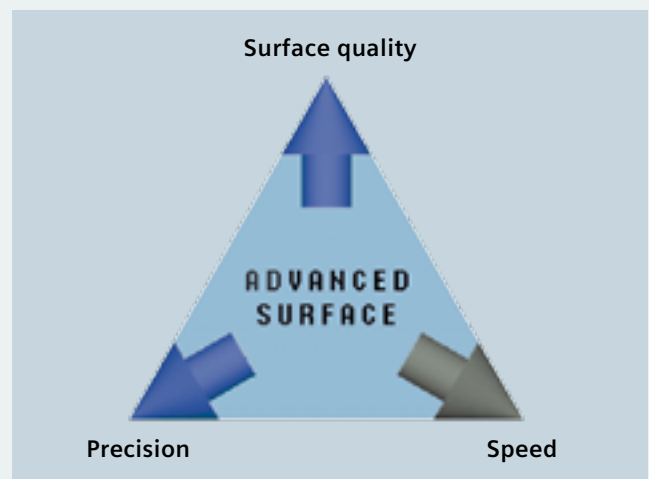
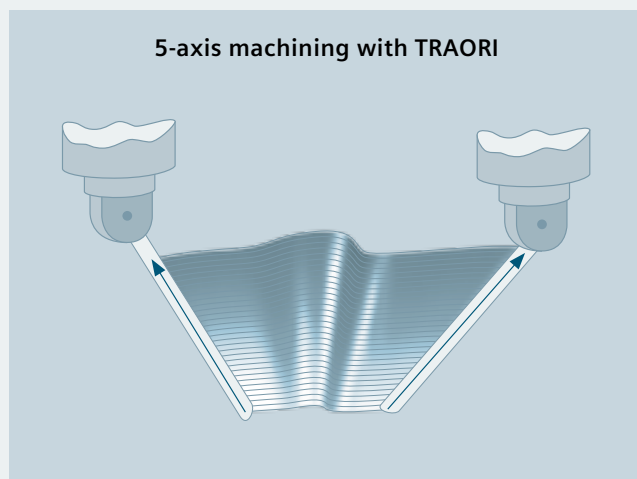
Advanced Surface gets the most out of the machine
Advanced Surface is synonymous with milling to the physical limits of the machine. State-of-the-art look ahead algorithms and intelligent block compression ensure maximum machining speed with the highest surface quality and precision — for 3-axis, 3+2-axis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

5-axis machining at the highest level
SINUMERIK CNCs offer the optimal 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 machining operations in tool- and moldmaking, as well as in the aerospace industry.

High-Speed Settings
The user-friendly High-Speed Setting cycle simplifies the parameterization of moldmaking application. Using just a few parameters, the SINUMERIK CNC is set to the particular machining task — roughing, finishing or semi-finishing, as well as the required machining tolerance.

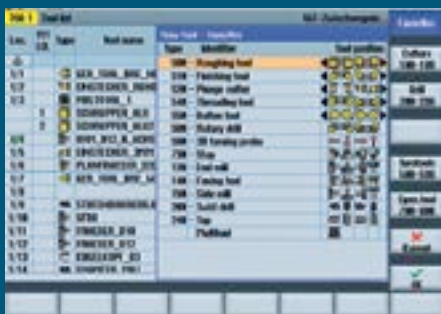
The combination makes the difference
Advanced Surface, High-Speed Settings, kinematic transformations, SINUMERIK Operate for efficient operation and programming, as well as a comprehensive range of technology and measuring cycles, create a unique combination of exciting features for sophisticated milling machines. Outstanding milling performance has a name: SINUMERIK MDynamics.

www.siemens.com/sinumerik-mdynamics



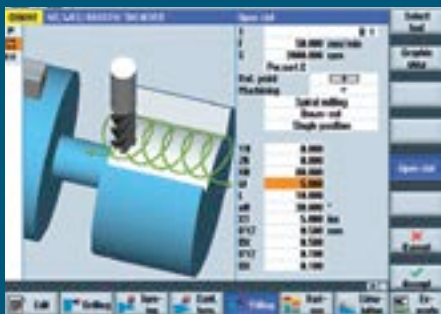
SINUMERIK multi-tasking — substantial in every detail

Multi-tasking made easy — standard CNC functions integrated into SINUMERIK, as well as the uniform look and feel when it comes to operation and programming with SINUMERIK Operate, maximize CNC performance and user-friendliness when it comes to turn-milling and mill-turning operations.



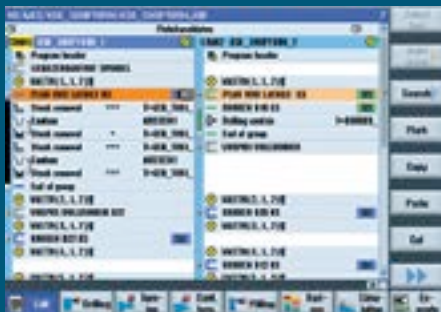
Powerful CNC functions

With just a few parameter entries, intelligent kinematic transformations transform milling machines into turning experts, and turning machines into masters of milling. Together with additional CNC features, such as cross-technology tool management and a 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

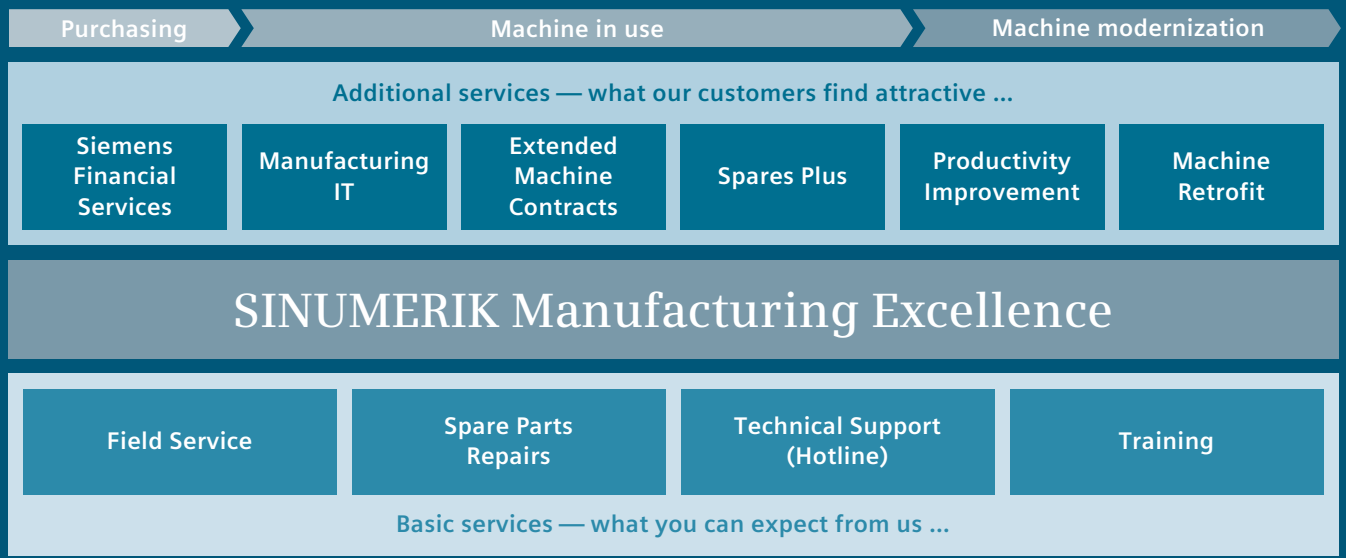
The standard look and feel of SINUMERIK Operate for every machining technology allows several technologies to be combined on one machine — and of course, with the highest degree of standardization regarding operation and programming that is expected from SINUMERIK. In addition, SINUMERIK technology cycles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



Universal CNC programming

Standard and integrated CNC programming tools that go beyond technology limits ensure that CNC systems are efficiently programmed for multi-tasking machines — from machining step programming for individual parts, up to multi-channel programming in a large serial production environment. Powerful CNC simulation permits part visualization across any technology; therefore, offering the highest degree of process reliability and safety for 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 us

Field service

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

Technical support (hotline)

Worldwide in more than 25 regions, our hotline experts answer any question relating to SINUMERIK — and naturally in the local time and local language.

www.siemens.com/industry/onlinesupport

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 control systems in more than 30 countries.

www.siemens.com/sitrain

Additional services — what our customers find attractive

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

- Siemens Financial Services — financial solutions that perfectly fit every budget requirement
www.siemens.com/sfs
- Manufacturing IT — process optimization through the implementing of the SINUMERIK Integrate product suite
- Extended Machine Contracts — customized service contracts
- Spares Plus — preventive spare parts management
- Productivity Improvement — reducing the cycle times of existing machines
- Machine Retrofit — general overhaul of machine tools that give new life to old iron

www.siemens.com/sinumerik/manufacturingexcellence

IT integration with Siemens — intelligent networking in production

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



Standard data transfer

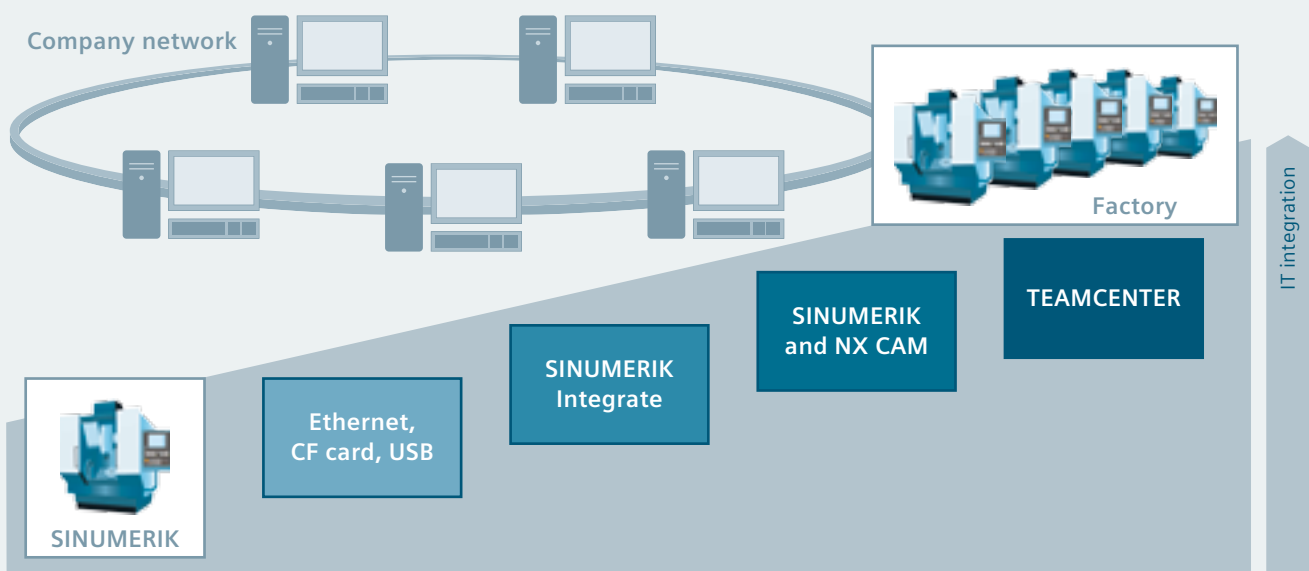
As a result of the LINUX and Windows® operating systems, SINUMERIK CNCs master all of the usual data transfer techniques, such as USB, Compact Flash (CF) card and TCP/IP Ethernet — without requiring emulation or file conversion programs.

SINUMERIK Integrate

SINUMERIK Integrate perfectly integrates SINUMERIK controls into the IT environment of modern plants. This is achieved 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 entire 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

www.siemens.com/sinumerik-integrate



SINUMERIK and NX CAM

Using NX CAM, the well-proven solution for NC programming, companies can maximize the production yield of their modern CNC machine tools. In addition to a wide range of flexible technologies for programming NC systems, NX CAM also includes a part manufacturing solution. This encompasses a library of clamping resources, as well as options for data administration, data management, process planning and direct connection options to the shopfloor. Being closely tied to the SINUMERIK CNC results in maximum productivity when machining high-quality and demanding workpieces.

www.siemens.com/plm

TEAMCENTER

TEAMCENTER, a product from Siemens PLM Software, is the central information source for product and process expertise in companies. Thanks to the comprehensive PLM (Product Lifecycle Management) solution portfolio, TEAMCENTER links every station of the product lifecycle to this central source. The portfolio encompasses requirement 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 data, which supports lifecycle processes from development all the way up to production.

www.siemens.com/plm

Solutions for every manufacturing industry that are fit for the future

We know where machine tools will be needed in the future. We leverage our industry expertise to support our customers so that their business will also remain successful in the future.

www.siemens.com/machinetools

Aerospace



Years of industry expertise means something

As a partner to the machine tool industry for decades, Siemens Machine Tool Systems is aligned to address the needs of companies operating machine tools. SINUMERIK controls can always provide the ideal solutions for cost-effective manufacturing — for example, in automotive, aerospace, power generation, medical part manufacturing and even electronics. We are convinced that our focus on these end-user industries will also be proven in the future. 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 machine tools.

We are your partner for machine tools, all the way to complete production automation

We continually maintain direct contact to end-users in our core manufacturing industries. We understand the challenges that end-users face and the requirements that they place on current and future machine generations. This expertise flows directly into our product development and guarantees that SINUMERIK controls are closely aligned to address market requirements. In addition to machine tool automation, Siemens can also act as the general contractor for the production automation of your entire plant. Customers will benefit from this as a result of integrated and seamless automation solutions from a single source supplier to achieve a highly-productive manufacturing environment.

Automotive



Medical



Power Generation



Key manufacturing industries

The ideal solution for every manufacturing industry

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

Outstanding international support

Our industry solutions are used around the globe. Our international organization ensures that we can optimally support end-users around the world. Dedicated Technology and Application Centers (TACs) clearly prove our technological expertise and ensure that our CNC software can be applied in daily use.

We set trends in manufacturing

Siemens Machine Tool Systems is considered to be the innovation leader in the machine tool market. The development of innovative, leading-edge solutions is a given. This is reflected in leading-edge IT integration and simulation solutions to optimally network production and the IT landscape. This is our basis to secure maximum productivity and availability.

Technical data

	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) 6 (with SINAMICS S120 Combi)	31	31
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 the 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 online:

www.siemens.com/sinumerik

Learn more about our machine tool solutions:

- › Detailed information and videos about our products and services



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Helpful tips-and-tricks for SINUMERIK users, SinuTrain downloads, tutorials and more:
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