



SIEMENS

Ingenuity for life



The background image shows a large industrial machine tool, possibly a CNC lathe or mill, in a factory environment. The machine is white and blue, with a control panel on the left. The scene is overlaid with digital graphics, including a blue line graph showing data from 2016 to 2018, a speedometer-like gauge, and binary code (0s and 1s) floating in the air. The overall color scheme is dominated by blue and white, with a dark background.

Digitalization for production with machine tools

CNC shopfloor management software

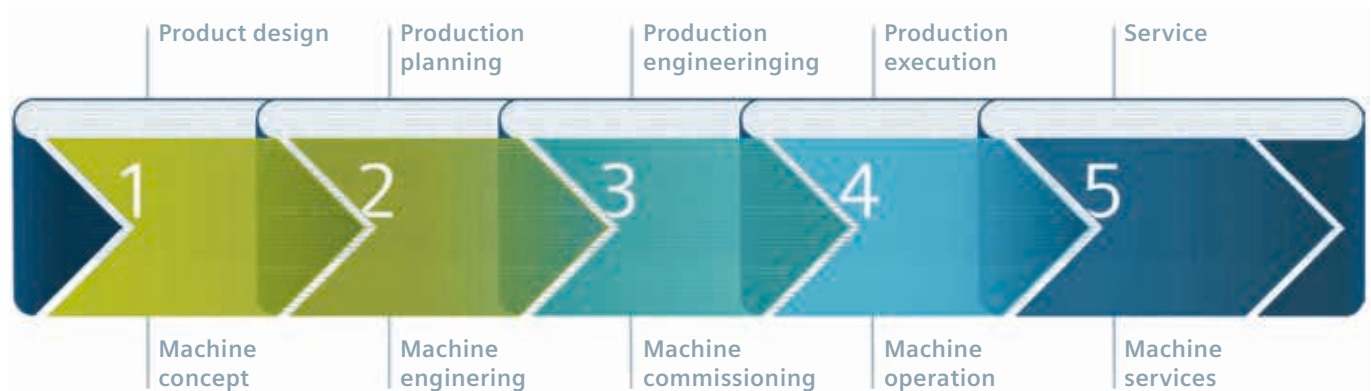
usa.siemens.com/machine-tool-digitalization

Achieve higher productivity with CNC shopfloor management software

Digitalization solutions for the building and operation of CNC machines

Through digitalization, machine tool builders and CNC machine users can respond more flexibly to market demands while simultaneously boosting their manufacturing productivity. CNC shopfloor management software specifically addresses these requirements. It facilitates the management, analysis and optimization of your machines—no matter the control system.

Machine tool user perspective



Machine tool builder perspective

For machine builders, the digitalization portfolio extends from the machine concept, through engineering, up to commissioning and service. For manufacturers who use CNC machines in their manufacturing, the range of digitalization solutions addresses the complete value-added chain. This starts with product development and production planning—up to actual production and digital service.

We offer machine builders digitalization solutions that extend from the first idea of a new machine, up to its operation, and ongoing optimization. By applying all the possibilities offered by digitalization, you benefit from new business potential.





Increased engineering productivity

Go quickly and flexibly from your idea to the machine

As a machine builder, you have two main objectives—on the one hand, you have a higher degree of efficiency and flexibility during the development phase, such as the virtualization of the development process—and on the other hand, supplementing portfolios to digitalize your customers manufacturing processes.

Boosting productivity and efficiency during the machine development process

It's becoming increasingly more important to be able to flexibly respond to change requests and individual customer requirements. Short delivery times are facilitated by more efficient mechanical and electrical development.

The digital twin increases flexibility

With digitalization, a virtual machine model is created very early in the development process. This digital twin supports the optimization of the new machine design with virtual commissioning, marketing the machine, running-in parts during production—all the way up to machine retrofit and even service. You'll save time, you'll increase the quality of your machines, and you'll become even more flexible.

Virtual CNC commissioning shortens the commissioning time of the actual machine

You can significantly shorten the machine development process when using the NX Mechatronics Concept Designer. Through virtual commissioning, the capital-intensive phase of actual commissioning can be

significantly reduced. To achieve this, the digital twin is linked with the real SINUMERIK CNC to test and optimize machine functions under almost actual conditions.

A virtual environment for increased safety and security

Virtual commissioning offers you maximum safety and security. Potential damage to the real machine during commissioning or running-in can be avoided. In addition, machine users can already test their part programs at this early stage.

Manage MyMachines for machine builders

Manage MyMachines is an application for MindSphere—the Cloud-based, open IoT operating system from Siemens. It collects data in the Cloud and provides a customized overview of your machine's status. Improved service processes are also extremely important.

When you know the actual machine and production data—along with any associated historical data, needed changes can be identified and displayed. And based upon expert know-how, possible fault causes can even be identified. This is how new digital business models develop.



Increased shopfloor productivity

Optimizing the performance of your production

As a CNC machine user, it's important for you to intelligently integrate your machines into your production processes. The pre-condition is that planning and production—along with the various machines—are all networked by using the SINUMERIK Integrate platform. This allows you to transfer your part programs and machine data error-free.

Improving your part production and productivity

Seamless and integrated digitalization helps you to handle demand peaks, product changes and new product introductions—all without increasing the complexity of job planning and part production. This is how you reduce errors at interfaces between your various processes as well as rounds of corrections.

Virtual tests simultaneously with real operation

Based upon the digital twin provided by the machine builder, you can plan and optimize all of your production steps before the new machine even starts to run. This reduces your equipping time and increases profitability.

Using the original SINUMERIK software—the “virtual NC kernel” (VNCK)—you can simulate your machining process in the virtual world under almost the same conditions as in the real world. This allows you to optimize your CNC machine in advance.

SinuTrain—the control-identical NC programming station—allows you to create part programs offline at a PC and then transfer them directly to the control.

Optimizing idle times for maintenance and service

Using Analyze MyCondition, CNC machines that are connected to the local SINUMERIK Integrate server can also be monitored using various test and trigger options.

Improvement potential during the machining process

In operation, machine processes are continually checked for improvement potential and then optimized. Analyze MyWorkpiece Toolpath allows part programs to be analyzed and optimized at an early stage so that machines can run efficiently. Using Cloud-based services, you can even analyze data across various manufacturing locations and facilities no matter where they're located.

Manage MyMachines for machine users

The MindApp Manage MyMachines improves reliability, enhances productivity and reduces inspection and maintenance costs. You can fully concentrate on your core business—but at the same time, the states of your machines and their associated history are always transparent.

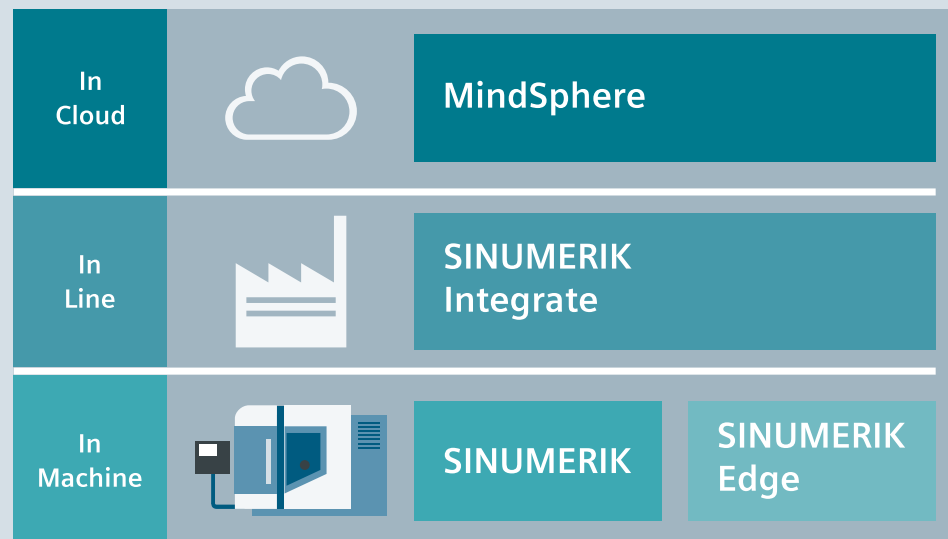
CNC shopfloor management software— The ecosystem

With the three levels—“In Cloud”, “In Line” and “In Machine”—an IT architecture is created that is fit for the future.

These levels correspond to the three platforms—MindSphere, SINUMERIK Integrate and SINUMERIK / SINUMERIK Edge. These levels provide a wealth of tailored functionality that range from the field, all the way up to the Cloud.

This is complemented by the opportunity to create new business models, in service for example. By leveraging digitalization, the unknown potential for optimization can be tapped into so that productivity and competitiveness can be increased sustainably.

An overview of our software packages is available online. Point your web browser at: usa.siemens.com/machine-tool-digitalization





SINUMERIK CNC facilitates a wide range of machining technologies. These extend from milling, turning and grinding—up to multi-tasking, robotics, 5-axis machining and additive manufacturing.

Everything about SINUMERIK CNC
can be found on the web

usa.siemens.com/cnc

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