



## Best Practice in CNC

The integrated system platform of the Siemens SINUMERIK CNC system family has now been extended with the compact class

SINUMERIK

Answers for industry.

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# The CNC Family SINUMERIK

The suitable solution for all technologies



With the SINUMERIK 828D machine tool controller, the new CNC system for the compact class, Siemens completes its unique, integrated system platform for all CNC tasks. Whereas the entry class is occupied by the already proven SINUMERIK 802 product family, the SINUMERIK 840D sl universal, flexible CNC system represents the premium class.



Upper Image: With SINUMERIK workpieces can be programmed fast and simply.

Lower Image: The new Compact-CNC SINUMERIK 828D.

The financial crisis has also left deep marks in the machine tool market. Forecasts still assumed that the production decline in 2009 could be limited to "only" 15 percent – largely thanks to running projects and the order overhang from year 2008. In the meantime, it is clear that the production decline for both the German and the European machine tool industry this year will greatly exceed the forecast 15 percent. For an industry sector that in the past five years could achieve ever new record profits, such a situation is associated with extremely large challenges.

Innovative concepts for manufacturing-oriented industry sectors provide the best chances to come relative unscathed through the crisis. Such concepts include workshop manufacturing, tool and mold making, aerospace, energy engineering and the automotive industry or the medical engineering. All these industry sectors will only be able to realize their future-oriented projects with new and innovative machine tools. This is true, not only for swarf-forming procedures such as milling, turning and grinding, but also for shaping or laser cutting. The automation and drive engineering is one of the decisive factors thereby.

With its SINUMERIK controller family, Siemens offers automation solutions with the high potential for increasing productivity. This potential is provided, in particular, by its technical integration, robustness, openness, modularity, scalability and its simple handling that is unique in the complete market for electrotechnical machine equipment.

The integration in a contiguous CAD/CAM/CNC chain allows the controllers of the SINUMERIK family to make full use of the productivity progress already in the product design and in the production preparation. However, not just this: The implementation times also become significantly shorter – a decisive advantage in times in which the time-to-market ever more often decides the success of a machine idea in the international competition.

## One solution for all machine tool applications

The core components of the SINUMERIK platform are the CNC controllers themselves. Every machine manufacturer finds the appropriate machine tool controller for the requirements of the machine operating company – from the entry class through to the premium class for sophisticated solutions. The SINAMICS S120 drive family, in conjunction with appropriate motors, is available for all these solutions with regard to the drive.

Even the SINUMERIK 802D sl controller, which as smallest controller, represents the entry class, offers all required functions for the 3-axis workpiece production. The complete control is used as operator panel controller, normally in 3-axis milling machines, but also in turning and grinding machines. The universal and flexible SINUMERIK 840D sl CNC system in the SINAMICS S120 design for up to 31 axes represents the high-performance side or the premium class of the Siemens CNC controllers.

Distributed, scalable, universally open, interconnectable and with a broad functionality makes it suitable for use in almost all technologies. The SINUMERIK 840D sl controller sets standards with regard to dynamics, precision and integrability in networks.

### Power package for the workshop

"Compact, powerful, simple – simply brilliant": With this slogan, Siemens presented its new CNC controller of the SINUMERIK 828D compact class at the EMO 2009 in Milan. It is tailored exactly to the requirements of compact machine tools as they are typically used in the workshop. The presumptions for the development were compact dimensions, high performance, a particularly simple operation and a significantly reduced system complexity. The SINUMERIK 828D controller is suitable for sophisticated mold forming functions and for inclined-bed turning machines with a tool turret. Consequently, driven tools, a Y-axis and a counter-spindle machining belong obviously to the basic configuration. Two particularly compact design variants – with horizontal panel-keyboard layout and with vertical panel-keyboard layout – make it easier for the user to operate the machine despite the small dimensions. Both variants are equipped with a 10.4" TFT color display and a full CNC keyboard with American QWERTY layout.

Not only the very hard-wearing cast magnesium operator panel, but also the protective foil covering the short-stroke keys of the CNC keyboard and the omission of parts subject to wear, such as fans or hard disk, ensure the robustness and ease of maintenance of the new CNC controller. The integration of state-of-the-art non-volatile RAM memory modules allows the permanent storage of the user data, also without costly backup batteries.

### Highly-productive, precise and expandable

With the 80-bit nanofp precision, the SINUMERIK 828D, and also the SINUMERIK 840D sl, offers maximum hardware performance and system functionality, even in the compact CNC segment

This allows the realization of machine concepts with a precision in the order of 0.1 µm.

Furthermore, for the first time, the new compact CNC provides the power of state-of-the-art PC and mobile wireless technology.

A graphical operator support with moving picture sequences (Animated Elements), an integrated graphical online help and data communication via USB, CompactFlash (CF) card or network are only a few of the outstanding characteristics.

Another highlight is the "Easy Message" function with which the SINUMERIK 828D controller can send information via SMS about the operating state of the machine or maintenance information to previously defined persons. To use this functionality, you require only an option in the form of a GSM modem. This allows the availability of the machine to be increased significantly at low cost.

### Highlights for the compact and premium class

The SINUMERIK MDynamics technology package provides both the new SINUMERIK 828D CNC and also the SINUMERIK 840D sl CNC controller with new technology-oriented solutions for milling. With the SINUMERIK MDynamics technology package, Siemens bundles the complete know-how associated with milling with powerful CNC hardware, intelligent CNC functions and the unique CAD/CAM/CNC process chain.

For the premium class controller, SINUMERIK 840D sl, SINUMERIK MDynamics is available both as 5-axis and as 3-axis variant. The new SINUMERIK 828D system with its milling-specific system software already contains the 3-axis version of SINUMERIK MDynamics in the basic configuration. Common to all variants is the "Advanced Surface" functionality with which innovative computing algorithms for the speed control of the axes ensure mirror-smooth surfaces coupled with significantly reduced machining time. Cost-intensive, extensive manual corrective work so becomes superfluous.



Upper Image: The proven CNC for standard applications SINUMERIK 802D sl  
Lower Image: The proven CNC for sophisticated/demanding applications SINUMERIK 840D sl

Another highlight in conjunction with the SINUMERIK 840D sl and SINUMERIK 828D CNC controllers is the new, consistent SINUMERIK Operate user interface. This transforms the previous HMI Advanced, ShopMill and ShopTurn user interfaces into a single, consistent user interface with configurable functionality for both mass production and workshop production. The representation in the modern Windows style is clear, intuitively operable and so guarantees the highest-possible user-friendliness. Irrespective whether work-step programming with the ShopMill (for milling) or ShopTurn (for turning) operating programs, SINUMERIK high-level language with Programguide or an integrated ISO dialect interpreter – irrespective which programming type the operator chooses, the SINUMERIK 840D sl and SINUMERIK 828D controllers with the new, consistent SINUMERIK Operate user interface offer unique advantages for each of these: For example, short programming, setup and machining times or maximum flexibility.

### **Unique system platform for the automation of machine tools**

The SINUMERIK 802 system family, and the SINUMERIK 828D and SINUMERIK 840D sl controllers, form a unique, consistent system platform for the automation of machine tools used as basis for the implementation of economical solutions for all production-oriented industry sectors. Irrespective whether in the workshop production, in the tool and mold construction, in aerospace, in the automotive industry or in medical engineering – Sinumerik controllers handle all manufacturing tasks: From the piece production through to mass production, from very simple parts through to workpieces of highest complexity and precision.

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Further information according to the topic:  
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