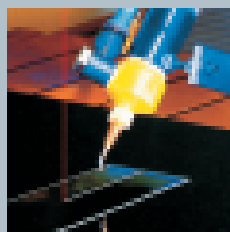


**SINUMERIK 840Di –**  
The Totally PC-Integrated Alternative

# sinumerik 840Di



**SIEMENS**

## Human-machine interface plus NC control – the PC-based single-processor solution: even more open, even more flexible

Modern control systems based on industrial PCs are used in automation engineering with increasing frequency today. Together with a standard operating system such as Windows NT, these control systems play a growing role as open and flexible software and hardware platforms. The user is at home in the familiar PC world. The totally PC-integrated SINUMERIK® 840Di NC control provides you with a PC-based control concept that sets new trends. The main applications to profit from this concept are those where PCs are used anyway or where there is a preference for distributed configuration of the drives and I/Os. Application areas include woodworking, glass, ceramics, packaging, handling, presses, bending, but also different machine tools and machine-tool-like applications. The outstanding feature, next to a high degree of openness in hardware and software, is that on the SINUMERIK 840Di, the CNC control functions also run on the PC processor in addition to the HMI functionality. This means that the NC processor unit required on conventional controls can be omitted. The automation system largely consists of largely standard components: industrial PC with interface card, PROFIBUS-DP, Windows NT operating system, OPC (OLE for Process Control) applications interface and NC control software.





SINUMERIK 840Di can offer you much more. Of special interest is the level of integration of the SINUMERIK family. NC and PLC functions, operator functions and machine data are compatible between, say, a SINUMERIK 840D and a SINUMERIK 840Di, and the relevant NC and PLC programs run on both systems. And since the system is so open, the software applications can also be used on both systems. SINUMERIK 840Di is part of the automation environment of SIMATIC® and SIMODRIVE®.

Openness in hardware and software provides you with a high degree of flexibility and expandability. This makes possible tailored solutions for industry-specific and customer-specific requirements.

#### **Distributed configuration with PROFIBUS-DP**

There is a clearly discernible trend towards distributed systems. Another important feature of the SINUMERIK 840Di is PROFIBUS-DP with Motion Control. This is, after all, the uniform fieldbus for drives and I/O and allows distributed configuration of the entire system. Such a configuration provides the advantage of being able to install drive units and components, such as I/O modules for on/off signals, in the vicinity of the machine. In this way, you can reduce the area needed for the control cabinet and you can make reductions in wiring overhead.

# Openness for your technology software and Windows NT help your production machinery take off

SINUMERIK 840Di is based on Windows so it will be playing it safe in the future too. The Windows NT 4.0 operating system is used as the basis for the SINUMERIK 840Di system software – without modifying the operating system code. There are extremely extensive NC functions, comparable with the SINUMERIK 840D, available for your applications. This really gets your machinery into top gear and ensures flexible adaptation to the different automation tasks.

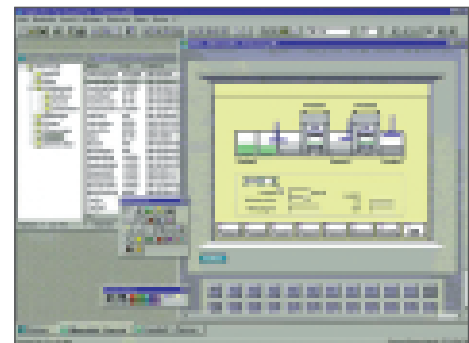
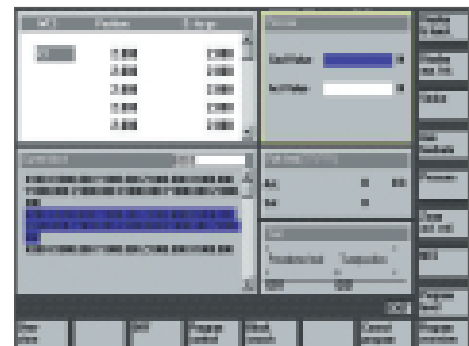
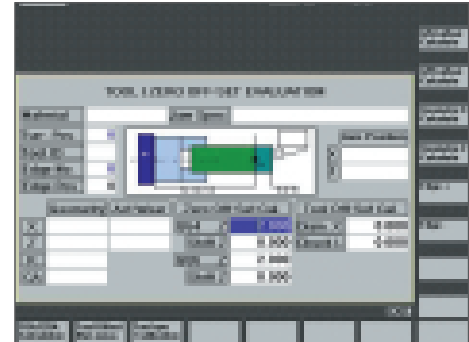
The NC software runs in real time on the industrial PC. Here, we have developed a solution that guarantees extremely reliable execution of real-time tasks without impairing the Windows NT applications. The PLC software runs on the PLC hardware of the MCI board. Like the SINUMERIK 840D, it is compatible with the SIMATIC S7 315-2DP.

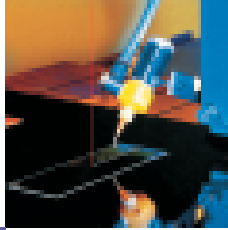
## HMI Siemens-style: simple and user-friendly

Just like the other SINUMERIK systems, you can expect all-round user-friendly handling from the 840Di variant. The following software tools are included as standard:

- ◆ SINUMERIK 840Di Startup including the following:
- ◆ Startup tool for the controller (SinuCom NC)
- ◆ Startup tool for the SIMODRIVE 611 universal drive system (SimoCom U)

The preinstalled SINUMERIK 840Di Startup is used primarily for simple first-time startup of the machine. Startup is a Windows program for easy entry into the SINUMERIK 840Di and it enables simple operator procedures as well as the creation and selection of user programs. There is one startup tool each for the controller and for the SIMODRIVE 611 universal drive system. These are Windows-based tools. SinuCom NC is a user-friendly, graphical tool with which the controller/machine can be started up simply on input of the relevant data. SimoCom U is a simple startup tool with user prompting. Clear, informative screen forms with plaintext information and help texts make SimoCom U an easy-to-use tool for starting up your drive.





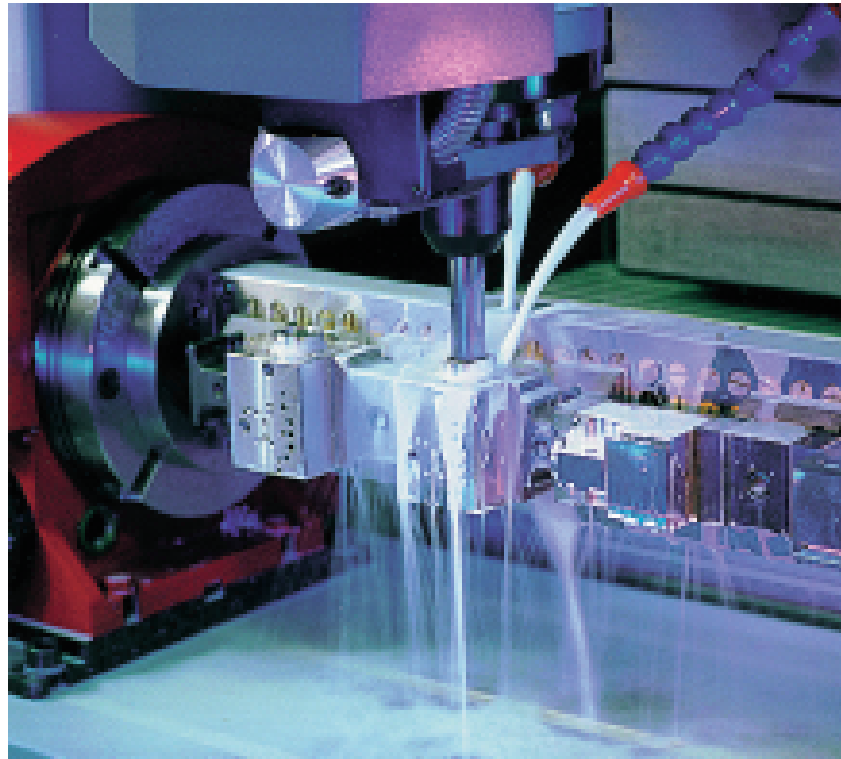
### Everything under control with the HMI building block system

We offer a range of software packages that provide extra flexibility in the solution of customized tasks with SINUMERIK 840Di. For operator input, programming and parameterization, there is the HMI "building block system". Conceived as an open architecture system, you can choose between different levels, depending on requirements. The system software contains the following as standard:

- ◆ OA copy license for the HMI programming package (OA = Open Architecture)

The following are optional:

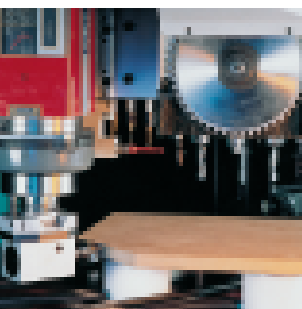
- ◆ SINUMERIK HMI Advanced-Standard user interface for machine tools
- ◆ HMI configuring package
- ◆ OA copy license for HMI configuring package
- ◆ SIMATIC ProTool/Pro configuring software
- ◆ HMI programming package



The SINUMERIK HMI Advanced standard interface for machine tools is ideal for users in the machine tool sector.

A special advantage is provided by the SIMATIC ProTool/Pro configuring tool with the HMI configuring package. With this, you can create your own technology-specific user interface without the need for software engineering skills.

Users wishing to integrate their own high-level language applications are allowed access to the control data required for those applications by the COM/OPC application interface.



## With future-proof hardware

### Exploit the freedoms of the PC world

Open, rugged, simple – system advantages that pay. Because the hardware basis of SINUMERIK 840Di is a genuine industrial PC with MCI board. When compared to standard PCs, this provides significantly higher functional security thanks to industrial quality. That means higher ambient temperature, higher level of mechanical stress and electromagnetic compatibility (EMC) in accordance with industrial requirements, as well as development according to strict SIMATIC and SINUMERIK requirements. DIN ISO 9001, standardized type tests and a “run-in test” guarantee a high degree of reliability.



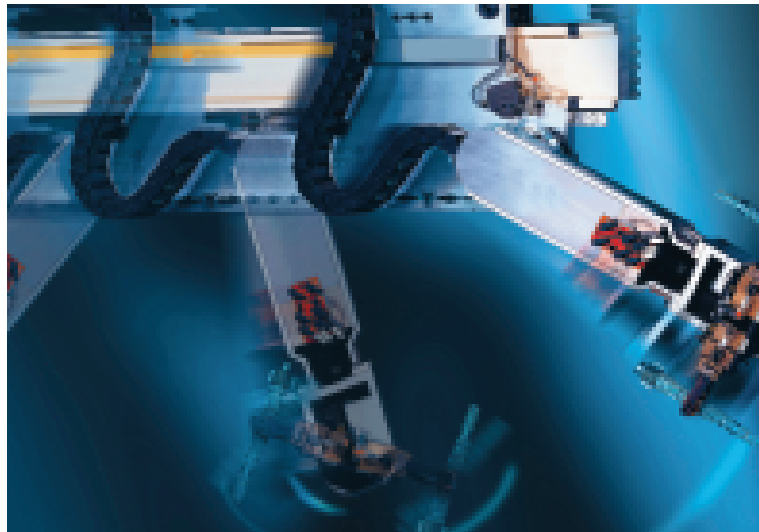


In the basic version, the hardware of the SINUMERIK 840Di comprises the industrial PC and an interface board with integral hardware PLC, the MCI board. You can choose between two PC variants, depending on the application. The first is the PCU 50, a rack-mounted PC with shallow installation depth. The rugged steel housing with under-pressure ventilation has a hard disk with specially mounted shock protection. In addition, there is a number of interfaces for the most varied requirements. There is an optional external 3.5" diskette drive as well as memory expansion.

The second variation is the PCU 70 with greater installation volume to accommodate several PC cards.

### **Everything on-board for optimal communications**

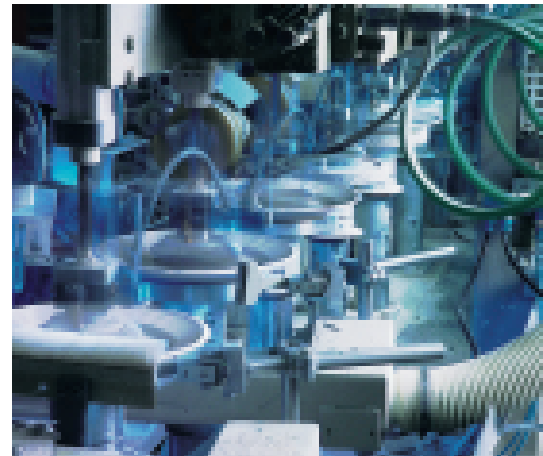
The MCI board is a PCI plug-in card. This module comprises an integral SIMATIC S7 315-2DP PLC-CPU as well as interfaces for MPI (multi-point interface) and PROFIBUS-DP. The 840Di is connected to the drives and the I/O via the PROFIBUS-DP interface. The SIMODRIVE 611 universal and SIMODRIVE POSMO can additionally be connected as the digital drive system. When using the ADI4 interface module (Analog Drive Interface for 4 axes), analog drives such as SIMODRIVE 611 can be used. And the SIMATIC DP ET 200 module range is available for the I/O. (See SIMATIC documentation for connection prerequisites).



The new operator panels from the SINUMERIK range (OP 010, OP 010C, OP 010S, OP 012, OP 015) are used. In addition, a mouse and standard keyboard can be connected, as well as other monitors via the VGA interface.

### **Options for user-friendly handling**

The MPI interface of the MCI board provides flexibility with regard to device connections. It is used for optional connection of a machine control panel, a hand-held operator/programming device or an external programming device for the SIMATIC S7 PLC. Also optionally available is an MCI board extension. You can connect four high-speed digital I/Os, two measuring pulse sensors and two electronic hand-wheels via this board.



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