

motion world

The Magazine for CNC Automation

The future of production

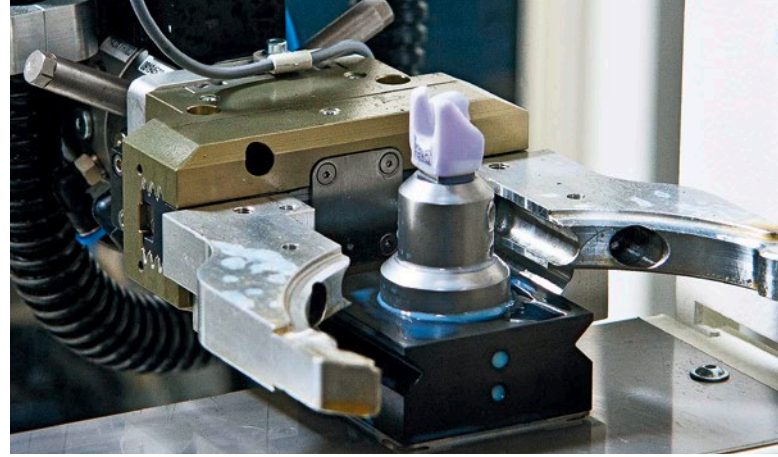
Sinumerik on the road to Industry 4.0

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Production of the future

Particularly in pioneering sectors such as medical technology, Sinumerik offers integration in manufacturing throughout the whole production process – from planning to finished part

Photo: Siemens AG, Tyrone Boyer



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NEW!

With this issue of motion world, you will receive the first issue of SINUMERIK InSight, showcasing our Sinumerik innovations. Enjoy the read!

More productivity in production



Siemens AG, Annette Kradisch

The manufacturing industry is currently under enormous competitive pressure. Shaped by global megatrends such as urbanization, globalization, increasing energy efficiency, and demographic change, the industry must constantly continue developing. Consequently, the demands are enormous: in order to keep up with the competition, companies have to bring new products to market ever more rapidly – products that meet the customers' expectations precisely.

Machine tool manufacturers and operators therefore require technical equipment that can fulfill these demands in a cost-effective and resource-efficient manner. With an integrated portfolio of Sinumerik CNCs for basic machine tools, standardized machine concepts, and premium modular solutions, Siemens offers the appropriate control concept for the economical manufacture of high-quality workpieces to meet any specification. At EMO and Euromold 2013, we will be showcasing intelligent function extensions for all machining technologies, including complete machining by multitasking machines that make operation even easier and machining even more precise and safer than ever before.

Hardware improvements are, however, just one aspect. To ensure higher productivity and efficiency in the future, product development and production processes must also become much more tightly networked. This requires greater integration of software in the production process. Siemens is perfectly positioned to help manufacturers with this process. Sinumerik Integrate for Production is our solution for vertical integration in production automation.

In this issue of *motion world* and in our new supplement SINUMERIK InSight, you can read about our wide spectrum of products and solutions for machine tools. Come and visit us at EMO, Hall 25, booth D33, and check out our intelligent solutions for yourself. I look forward to seeing you there!

Yours,

A handwritten signature in black ink, appearing to read 'J. Zoll'.

Joachim Zoll
Head of the Machine Tools Business Segment



Sinumerik on the road to Industry 4.0

Production of the future

Steadily growing demands on the metalworking industry are making it increasingly important to link the real with the digital world. Sinumerik is playing a major role in building this link.

The manufacturing industry is currently under enormous competitive pressure. To survive in global competition, industrial enterprises must satisfy demands for productivity, speed, and flexibility. Nowadays, that means managing energy and resources more efficiently, reducing time to market, and responding quickly to increasingly sophisticated customer requests.

Well positioned for Industry 4.0

The manufacturing industry has proved that it can handle these challenges and as a result has – once again – experienced a sense of mounting importance. Dr. Robert Neuhauser, CEO of the Motion Control Systems Business Unit at Siemens, explains, “As I see it, the rising awareness of the manufacturing industry’s importance goes hand in hand with fundamental changes in production technologies. In the long term,

they will lead to a far-reaching change in the manufacturing world that can be compared to the industrial revolutions of the past. This change is known in Germany as Industry 4.0 and is often referred to as the ‘Fourth Industrial Revolution.’ Following the three previous industrial revolutions – the introduction of mechanical production facilities, the mass production of goods based on the division of labor made possible with the help of electrical power, and the automation of production processes using electronics and IT – in Industry 4.0, autonomous products and decision-making processes based on cyber-physical systems will control value creation networks in the future – and almost in real time too. The integration of product development and production processes is a key step on the road to Industry 4.0. Siemens has created the perfect system conditions for the parallelization of these processes and is working with the Digital Enterprise Platform on their implementation.”

Siemens offers a broadly positioned range of CNCs with intelligent add-ons that increase productivity, flexibility, and safety in CNC production

Dr. Neuhauser says, "Yesterday, production processes were still automated locally; today, new approaches to the development of machine tools ensure the merging of virtual and real worlds, of the machine design and the fabricated part. Tomorrow, innovative software systems and powerful hardware will integrate the entire product development and production process. That is the basis for the day after tomorrow, for Industry 4.0. No other company is as uniquely positioned as Siemens to shape the future of machine tools and thus of production as a whole."

Target-group-oriented product line

With the Sinumerik product line, Siemens is helping machine tool manufacturers and operators get a bit closer to the vision of Industry 4.0. The initial basis for this vision is the right hardware for each machine concept, from the modular Sinumerik 840D sl premium CNC for high-end machines to the compact Sinumerik 828D and 828D Basic CNCs for standard machines and Sinumerik 808D for entry-level machines. Joachim Zoll, Head of the Machine Tools Business Segment at Siemens, confirms, "The Sinumerik line is therefore positioned to be broader and more target-group oriented than ever before."

Future production models, however, also require higher productivity and efficiency, with simplified machine operation and simplified production sequences at the same time. Siemens has therefore developed Sinumerik solutions for machine tools that enable machine manufacturers and machine operators to implement intelligent production concepts by using aligned machine operation, technological expertise, and IT integration in production.

Intelligent machine operation

For all machines and technologies – from the simplest turning and milling machines to multitasking applications – users get a familiar user interface with Sinumerik Operate. The consistency of Sinumerik Operate's operating structure and look and feel allows operators to find their way around every Sinumerik CNC quickly, regardless of variations in technology. But will intelligent machine operation be necessary at all in Industry 4.0? Zoll confirms that it will: "Humans will always remain an essential part of production. This is why we want to keep on optimizing Sinumerik Operate so that we provide the user on the CNC with targeted support in carrying out his or her tasks." As a result, the manual machine function, for example, guarantees flexibility even in highly automated production environments. Where necessary, it permits use of the handwheel to machine work- ➤



Joachim Zoll,
Head of the
Machine Tools
Business Segment,
Siemens AG

"Humans will always remain an essential part of production. This is why we want to keep on optimizing Sinumerik Operate so that we provide the user on the CNC with targeted support in carrying out his or her tasks."



Dr. Robert Neuhauser,
CEO Motion Control
Systems, Siemens AG

"As I see it, the rising awareness of the manufacturing industry's importance goes hand in hand with fundamental changes in production technologies; in the long term, they will lead to a far-reaching change in the manufacturing world."

Product Lifecycle Management

Real and virtual worlds merge in Index's virtual machine, which is an exact physical replica of the real machine. A machine tool developed in this way works up to 10% more effectively and comes to the market decidedly faster.

By making use of vertical and horizontal IT integration, one manufacturer of automotive automatic transmissions was able to accelerate series start-up by approximately 50%. Production planning and product development were carried out and optimized based on key figures, thus realizing significant efficiency gains.

The world's most cutting-edge and largest precision optics machine, located in Teisnach, Germany, produces very high-precision telescope mirrors for space exploration. This machine represents the perfect symbiosis between innovative software and powerful hardware. It was designed digitally and optimized virtually, thus guaranteeing the fast market launch of the telescope mirrors it produces.

- » pieces quickly and precisely on a CNC machine tool without having to create a part program.

Intelligent machine operation, however, includes not only the optimal interface between human and machine but also the CNC's power and performance. Sinumerik CNCs have long been setting standards in all aspects of machining performance. Automatic collision avoidance, for example, represents a pioneering approach to preventing collisions in the machine. Machine manufacturers can use Collision Avoidance to easily extrapolate a machine model for collision monitoring on a PC from the machine's existing design data. True to the spirit of Industry 4.0, this capability supports safe machine operation by combining the virtual and the real world.

Technological focus on multitasking and milling

Multitasking machines are the current trend in metalworking because they can be used to carry out simultaneous milling and turning operations on a workpiece in a single clamping fixture. The result is higher productivity, greater accuracy, and lower costs. Due to their complexity, however, these machines place high demands on programming and therefore require an appropriate control system. Sinumerik offers functions that are perfectly tailored to multitasking machines. In addition to Sinumerik Operate's integrative operator interface for all tech-

nologies, mentioned above, the CNC also has transformation functions that make turning specialists out of milling machines and experts in demanding milling tasks out of turning machines, with just a few parameter inputs. Added to this functionality are efficient tool management, standard programming and technology cycles, and CNC simulation that offers maximum process reliability.

Siemens offers the best solutions for milling machines – especially for mold and die construction – with the Sinumerik MDynamics milling technology package for Sinumerik 828D and 840D sl. Sinumerik MDynamics – consisting of technology cycles, measuring cycles, 3-D simulation, advanced surface functions, and ShopMill – offers the machine tool constructor a software package matched to the application as well as offering the end customer a machine with a familiar operating concept. By optimizing and supplementing other functions such as nodding compensation, this system also makes it possible to respond to the demands of special applications.

Sinumerik Integrate enables the networking of production systems

A key topic in Industry 4.0 is IT integration, which is poised to make production facilities even more efficient and productive. For the vertical integration of machine tools Siemens has developed the software suite Sinumerik Integrate for Production. It enables integrated use of data from the corporate level down to the CNC. This and other functions are described in detail in the SINUMERIK InSight supplement.

Sinumerik supports IT integration

Some leading sectors, such as machine construction, the automotive and aircraft industries, and medical technology (e.g., the manufacture of implants), are already using Sinumerik to integrate product and production design. In this set-up, both product development and production planning run digitally on-screen before even a single chip is cut. As a result, it is possible to increase productivity and reduce times to market by up to 50%. IT integration is another step by Siemens in creating the future. ■

INFO

siemens.com/sinumerik

Horkos Corp, Japan

Turnkey solutions made in Japan



The Horkos production line for Kia Motors is completely equipped with Siemens products

Horkos installs a power-saving, environmentally friendly production line for Kia Motors in Slovakia to help the company improve its international market position.

The Japan-based machine tool manufacturer Horkos Corporation supplies automotive-part machining lines and other systems to customers both in Japan and abroad. Horkos is among a handful of line builders capable of providing turnkey systems that include all the necessary accessories, including conveyors and cleaning equipment. Its systems are installed at many sites in Europe. One example is the fully automated machining line for automobile engine parts in the Slovakian factory of Korea-based Kia Motors. It consists of some 30 machining centers, all equipped with Sinumerik CNCs. The line performs drilling, thread-cutting, facing, boring, and various other machining tasks, from rough machining to finishing. The Sinumerik system also controls all conveyors and gantry loaders used to transfer workpieces.

Patented method for delivering cutting liquid

Production lines today must be both highly productive and environmentally friendly, and Horkos designs its lines to achieve sustainability as well as efficiency. Horkos's crankshaft machining lines apply a power-saving technology called iMQL (internal minimum quantity lubrication) that makes them both environmentally friendly and energy efficient. This new and unique method supplies the minimum quantity of lubricant to the tool tip with pinpoint accuracy, which significantly reduces the machining time per workpiece. Why is that? Conventional cutting methods require large volumes of lubricant and a pump of corresponding size to move the lubricant. Using iMQL minimizes lubricant consumption and cuts power consumption.

Pilot plant completely equipped with Siemens products

Configuring an environmentally friendly, power-saving line for Kia Motors presented a major challenge for Horkos since only a handful of the machine tool manufacturers operating in Japan use

Sinumerik CNCs. Even fewer machine tool makers use Siemens products for an entire line. Although Horkos had deployed Sinumerik for its machine tools before, this was the first installation to use Siemens products for the entire machining line.

Renowned technology secures competitive edge

Today, this experience is an asset to Horkos. It even gives the company a competitive edge, as end users worldwide – especially in Europe – hold Siemens products in high regard for their superior quality, flexibility, and support services. The ability to offer machinery equipped with Siemens products gives machine tool manufacturers an advantage as they seek to increase their share of overseas markets. Working together with Siemens as a trusted global partner, Horkos will continue to provide better lines to users in many countries. ■

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Core3D, United States

Accurately manufactured dentures

Core3D uses state-of-the-art ultrasonic robots to manufacture dentures, reducing scrap by 15 percent.

Open Health, a global provider of technical solutions for the dental healthcare industry, was formed by the owners of five international dental lab groups. The milling and technology business, under the brand name Core3D, operates six facilities serving labs, dentists, and educational institutions in 15 countries on three continents.

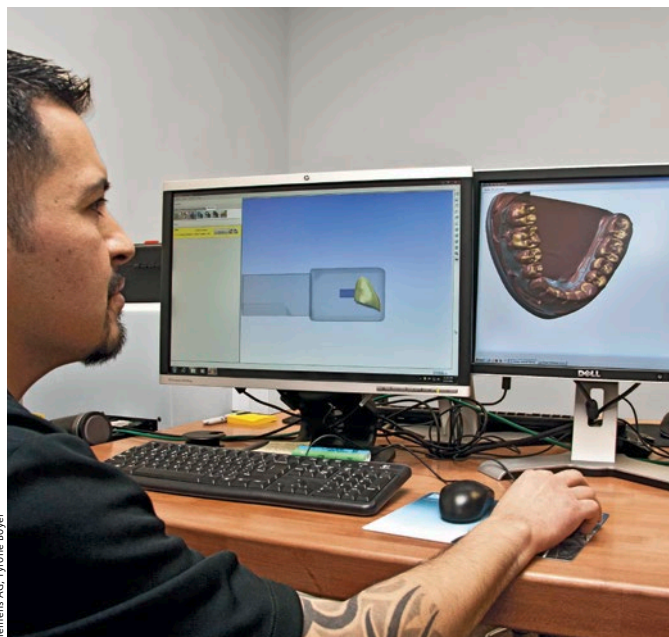
The Las Vegas-based Core3D facility provides a full range of CAD/CAM/CNC machining and finishing services led by technical operators Mark Ferguson,

Danny Palomares, and Drew Hrubes. The Core3D team prepares CAD files developed from data typically gathered with an oral scanning wand or from scans of conventional dental impressions from the patient's mouth. The process of creating the crown, bridge, abutment, coping, or implant, or even a full denture restoration, begins by using specific software to image the impression. The resulting 3-D files are G-coded for transfer to the CNC machine tools at the various Core3D facilities worldwide.

Ultrasonic machining reduces material costs

During the manufacture of dentures, only the most advanced substrates are processed, ranging from conventional yet difficult-to-machine metals such as titanium to the newest advanced materials like glass ceramics. Because these substrates are quite expensive, extreme care is taken in their handling and processing to reduce scrap and minimize operating costs. "Given the inherent wear conditions and high cost of con-

Danny Palomares prepares the CAD files ...



... and translates the cutting paths to the Sinumerik CNC



“The Sinumerik control has been extremely easy to use, and our training time from the builder was minimal.”

Tim McKimson, Worldwide Director of Engineering, Core3D

ventional tooling, Core3D decided to use ultrasonic machining,” explains Tim McKimson, Core3D’s worldwide director of engineering. As a result, the surfaces of even the hardest materials can be machined with the necessary tactile smoothness required for dental implants.

The DMG Sauer ultrasonic machines located at the Las Vegas facility are operated by Sinumerik 840D sl CNC technology. Blanks of material are loaded into a 66-position feeder station and then delivered into the cutting theater. Sinumerik 840D sl recognizes the code on each workpiece pallet, and each job is identified by the patient’s name to minimize the risk of errors. Each tool used is obtained from the 25-position tool changer, and its position is monitored by an integral Renishaw probe. The technicians often load three sets of the tools needed for the 66-piece runs, ensuring virtually 24/7 unattended operation of the machines. Through the capability of the Sinumerik CNC, a remote alarm can be sent when tool breakage or any other off-normal condition occurs during production.

User-friendly CNC speeds up daily operations

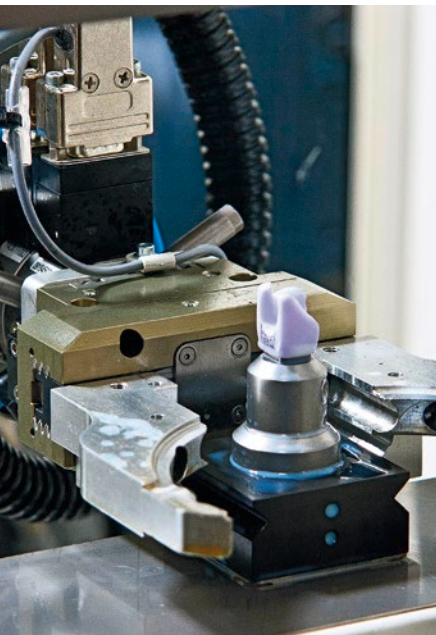
In commenting on the use of the DMG Sauer ultrasonic machines, McKimson notes that it was the machine builder who recommended the Sinumerik control: “They knew we were dental technicians and engineers, not machinists, by nature. The Sinumerik control has been extremely easy to use, and our training time from the builder was minimal.” Palomares, one of the technical operators, agrees. “My training is in the dental lab world, not on machine tools,” he says. “It was a great relief to have such a sophisticated control operate with relatively simple language commands and cycle adjustments.”

Palomares is also responsible for the translation of the lab’s incoming data files, so he is involved from start to finish with most of the projects at this Core3D facility. In a single day, he might use several types of software translating the cutting paths from the dentist’s impression to the Sinumerik CNC on the DMG ultrasonic machines on-site. “The subroutines on the Sinumerik CNC make our job much easier to accomplish and faster to complete,” says McKimson. “Plus, when you add the upside of at least 15 percent reduction in scrap that we’ve realized with the ultrasonics, it’s a real win-win situation for us.”

Proven technology for best results

The company is currently operating nine DMG Sauer ultrasonic machines with Sinumerik controls in the network. “The extremely hard materials can be machined with accuracies in the 2–4 micron range, owing to the combination of ultrasonic technology and the high precision of the Sinumerik CNC,” says McKimson. “In turn, this accuracy has been a significant advantage in reducing scrap at Core3D,” he continues. Despite the fact that all the projects are highly customized based on the individual needs of the patients and the preferences of the labs and the dentists performing the procedures, in the end, the typical project is turned in 24 hours or less. ■

The machine manufactures the denture ... for a fast delivery to the customer



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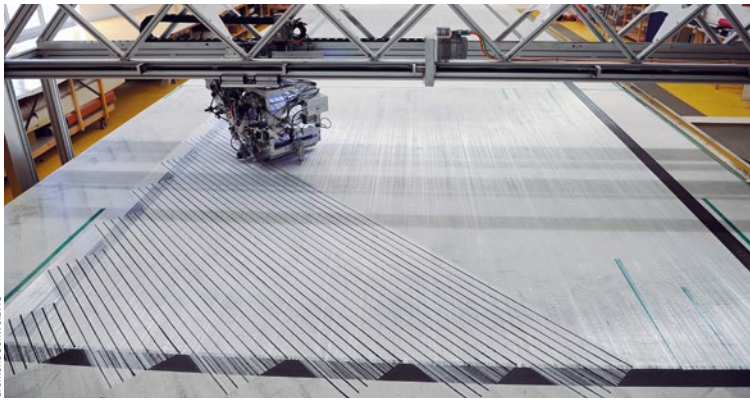
North Thin Ply Technology, Switzerland

The stuff of sailing dreams

The masts of winning boats in international sailing competitions fly ultralight sails of tough carbon fiber composite that are manufactured according to a special process controlled by Sinumerik.

Each individual carbon thread, thinner than a hair, is used first in a sophisticated manufacturing process to produce tear-resistant composite fibers, which are then used to create new materials for innovative applications. This extremely lightweight material, which weighs only 30 g/m², can be processed for many sectors. François Mordasini, managing director of North Thin Ply Technology (North TPT), says, "It can be used wherever weight counts, be it sails, bicycles, skis, cars, aircraft, or wind power plants."

The Swiss company has been researching the new technology since the middle of the past decade and has developed it for use on an industrial scale – from drafting the materials in 3-D design and processing the carbon fibers to developing new production machines for fabrication. The original aim was to manufacture innovative sails for sailing's top league. So in cooperation with the Alinghi sailing team, Gérard Gauthier, head of North TPT, and his team developed a material for ultralight, tough sails that would provide a crucial competitive edge in international ocean sailing competitions.



The production plotter can produce 15 m² of sail area per hour



Sinumerik 840D sl is at the heart of the North TPT machines

Chemistry replaces mechanics

The technology newly developed by North TPT, known as the 3Di process, revolutionized a centuries-old tradition in the manufacture of sailcloth. In this case chemistry replaces mechanical assembly. Instead of being woven symmetrically and pieced together, the microfine carbon fibers are now knitted together as a composite material and wound onto a bobbin. Following design templates from the computer, a plotter – a type of large-format printer – is then used to apply the continuous filament fibers as a laminate like a thin film onto oversized special paper. Specially developed software controls the CNC production machine and turns the design into fabric. The material is reapplied several times in areas that will subsequently be subject to particular stress to reinforce the cloth. Mordasini explains, “All reinforcements are seamless and integrated directly into the fabric. This fulfills every sailor’s dream of having a

sailcloth that remains stable in every direction without any deformation, even under high tensile stress.”

Ready for series production

The plotters are fitted with a Sinumerik 840D sl CNC. Thanks to the excellent networking capabilities of this control and the compact Sinamics S120 drives, the entire control cabinet can travel on the plotter’s bridge. It is possible in a machine with such long traverse paths to keep the cables to the motors of the Simotics S series short, minimizing installation effort. The connection to the master computer and the operating panel, which is outside the traverse area, is via an Industrial Ethernet cable.

The basis of the manufacturing process is a work top measuring approximately 22 m × 5 m, which can be adjusted in three dimensions to replicate the complex shapes of a sail. The production plotter developed by North TPT can thus produce 15 m² of sail area per

hour and work top. Each sail is unique with regard to its special geometry, structure, and aerodynamics, depending on whether it has been designed for ocean routes and long distances or for use in regattas and on lakes. North TPT has been working closely with the world’s largest sail manufacturer, North Sails, headquartered in the United States, since 2010.

3Di process has a future

The 3Di process is undergoing further refinement in Switzerland, where production machines are being developed, constructed, and validated for various sectors to suit customers’ needs. On the engineering side, North TPT is supported by Patrice Laffay and his company, Informatique & Technique Sàrl. North TPT has already gained experience outside the sailing world with ultralight touring and racing skis. Negotiations with other sectors such as Formula 1, the automotive industry, and wind and solar power look promising. Mordasini sums up: “In addition to excellent technology skills, a partner’s reliability and credibility are hugely important for projects of this type. This is why we decided on Siemens when developing our machines. Siemens also has experience in markets that are potentially important to us, such as aircraft construction, aviation, aerospace, and wind power.”

Technical highlights

- Sinumerik 840D sl CNC for control of the plotter’s five axes
- Sinamics S120 drive system with Simotics S servomotors for jolt-free movement of the portal over the sail’s surface
- Sinumerik OP 08T operator panel for operating the plotter outside the traverse area
- Sinumerik Operate user interface, which is edited on the CNC
- Master computer that calls up the plotter’s traversing programs using OPC and simultaneously records the production process for quality assurance

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Knuth Werkzeugmaschinen GmbH, Germany

Cost-effective entry-level CNCs for contract manufacturers

Medium-sized machine tools manufacturer Knuth has fitted a cycle turning machine with Sinumerik 808D. The machine is impressive for its across-the-board precision, productivity, and price.



Manufacturers of machine tools do not usually state exact sales prices. It is often impossible to do this because the type and equipment of the individually configurable machines are very different. Knuth Werkzeugmaschinen GmbH differs from other manufacturers on this point because the construction of its machines is as transparent as their price. Machines

for drilling, turning, milling, and grinding are as much a part of the range offered by the family-owned company from Germany as cutting systems and systems for other types of sheet metal working. Virtually all machine categories are offered as manually operable or CNC controlled. Yet the Sinumerik 808D CNC is being installed more and more often in Knuth machines.

Increasing demand from Europe and Asia

Sales consultant Mike Kutzner explains, "We have not set our sights primarily on high-end applications. It is much more a case of supplying contract manufacturing companies in machine, systems, and tool construction with reliable and affordable technology." The market for

this is huge and offers massive potential for growth. According to Kutzner, "In our northern German homeland as well as in Holland and Scandinavia, we are noticing increasing demand from sub-contractors for wind and biogas plants. However, we are also receiving an increasing number of orders from southern Germany, the rest of Europe, and Asia." The machine tools are developed jointly by German and Chinese engineers. They are produced and pre-assembled in China. There they also pass through various acceptance tests that are conducted according to German standards before they are brought to Knuth's headquarters in Wasbek. The final acceptance of each individual machine is carried out in Wasbek so as to fully comply with German and European quality standards.

High-quality and affordable machine tools

The German-Chinese coproduction enables Knuth to offer high-quality machine tool technology at competitive prices. One example of this is the Numturn 420 CNC cycle turning machine – also fitted with the Sinumerik 808D CNC. Particularly for companies and departments that have previously worked only with manual machines, the Numturn 420 represents the perfect entry into the world of CNC due to its precision and productivity. The positioning and repeat accuracies on



Each part of the Knuth machine with Sinumerik 808D produced in China is subjected to final acceptance again in Germany

the x-axis are around 0.02 mm and on the z-axis around 0.015 mm; the rapid traverse rates in the x and z directions are around 4,000 and 8,000 mm/min, respectively. In addition to induction hardened and ground bed guidance tracks, the high-grade ball screws and servodrives also contribute.

According to developer Markus Jankowiak, "Even if only small series are to be manufactured, the relatively small additional investment in the CNC version of the machine quickly pays for itself. And as the operators still have handwheels available, they nevertheless feel secure on the machine." The master electrician goes on to say, "Thanks to the clearly laid-out CNC operating structure, it usually isn't long before they give in to the temptation of Sinumerik 808D." The basis for this was created with the Sinumerik Operate Basic user interface, which has many familiar Windows functions. The G-code language with convenient cycles, including the contour cycle, is used for programming. This enables the contours entered to be converted automatically into stock removal operations and executed. The integrated thread-cutting cycles with which internal and external threads can be created are equally useful.

Jankowiak stresses, "The entry-level CNC has a lot to offer in terms of quality

too." This is because the same NC kernel is used for Sinumerik 808D as for Sinumerik 828D and 840D sl. The CNC therefore computes with 80-bit Nano^{FP} accuracy, not least because this prevents internal rounding errors. The precision and productivity of the CNC and machine are correspondingly high.

Easy-to-use Sinumerik 808D

According to Jankowiak, however, Sinumerik 808D offers even more advantages. For example, every purchaser receives the free PC version of "808D on PC." CNC novices can use it to gain initial programming experience on a normal PC. At the same time, experienced users can create executable programs on external workstations and check them via 2-D simulation while the machine is still producing other components. The developer says the Start-Up Assistant is equally helpful. It guides the operator step by step through commissioning of the machine so that errors can be eliminated. Jankowiak stresses, "I don't know any other CNC supplier that makes this so convenient."

Facts of Sinumerik 808D

- CNC system for entry-level turning and milling machines
- Configured as a panel-based CNC controller
- Up to 3 axes + 1 spindle in one machining channel (turning), or up to 4 axes + 1 spindle in one machining channel (milling)
- Sinumerik Operate Basic user interface
- Semi-servo solution with Sinamics V60 drive system and Simotics S-1FL5 servomotors
- S7-200-based PLC with 72 inputs / 48 outputs
- Training software 808D on PC

INFO AND CONTACT

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The Sinumerik 828D-controlled Bridgeport GX 1000 machining center displays impressively high precision and surface quality



Siemens AG

Umetec Gerätebau GmbH, Germany

High-tech materials precision machined

Umetec's core business is the production of high-quality components for surface-coating systems, using state-of-the-art machining centers. The Sinumerik 828D CNC performs precision work.

Umetec Gerätebau GmbH, based in Germany, has established itself as a supplier of individual parts and assemblies in high-vacuum technology. A large number of companies in the packaging and medical technology industries, as well as in the aviation and aerospace field, use the company's products in surface-coating systems. Perfectly functioning CNC-controlled machining facilities are indispensable if the company is to reliably complete its just-in-time orders.

The company now has five machining centers, all of which are equipped with state-of-the-art Sinumerik CNCs.

Unitech machines guarantee quality

Umetec, which specializes in the production of individual parts and very small-lot production of medium-size components, machines a variety of materials. According to production manager Mirko Kretzschmar, the high surface qualities to be achieved on sealing surfaces are a particular challenge for the machining centers. Before purchasing the first machine tool, managing director Hans-Rolf Schwalfenberg made a series of in-depth comparisons: "A high level of reliability, quality, and good service with the best possible price/performance ratio were important to us.

When it came to the latter, even back then I was impressed by the Sinumerik-controlled Bridgeport GX 1600 by Unitech.” Umetec has since added to its equipment: a total of four Bridgeport milling machines and one Hardinge GS turning machine by Unitech are now in use. The Bridgeport GX 1000 three-axis vertical machining center was acquired at the end of 2010. Lutz Geppert, Unitech sales engineer, points out that “the linear guides used in the Bridgeport GX 1000 provide optimum stability and long-term accuracy. Consequently, this machine achieves high levels of repetition and positioning accuracy.”

Flexibility thanks to uniform control technology

Both the machine’s properties and those of the CNC used are crucial to manufacturing productivity. The company therefore chose Sinumerik 828D. Production manager Kretzschmar explains, “As all our machine tools are Sinumerik-controlled, we can deploy our employees flexibly.”

With its state-of-the-art processor technology and software architecture, Sinumerik 828D delivers extremely high precision, thanks to what is referred to as 80-bit nano accuracy. As a result, it is possible to eliminate rounding errors in the software and guarantee exact path guidance. The control system is equipped with the Sinumerik MDynamics milling technology package so that its performance can be utilized to its full extent. It ensures that the relevant surface quality and precision required can be achieved within the shortest possible machining times. The key to this is in the new Advanced Surface intelligent path control, which includes an optimized look-ahead function, among other things. Kretzschmar confirms, “As a result, we can always obtain the accuracy our client needs.” Equipped with the Sinumerik Operate user interface, the screen is similar to that of a standard PC. This is why Kretzschmar is also delighted with the new machine’s operator-friendliness.

Workpieces made easier

As the Umetec skilled workers carry out 90% of the programming of their milling machines externally, there is only limited need for Sinumerik Operate’s advantageous programming methods. However, the Hardinge GS 200/66 turning machine is a bit different. Employees like to use ShopTurn, the graphically animated step sequence programming, which is simply designed and quick to operate. It is also possible to switch at any time to programming in the new programGuide. The production manager considers the standard measuring and swivel cycles (Cycle800), which enable workpieces to be set up effortlessly in set-up and automatic mode, particularly convenient for the milling

machines. The Animated Elements function offers a different type of entry support. Umetec craftsman Eric Ziltz explains, “The planned machining operation comes to life with animated graphics when the tool is selected.” Kretzschmar adds, “It’s particularly helpful for new employees, as this means they can carry out the programming procedures intuitively.”

Sights set on five-axis technology

Managing director Schwalfenberg follows developments within the industry very closely to ensure the success of Umetec Gerätebau GmbH. He explains: “The trend is toward larger, more complicated systems. As a result, the individual parts and assemblies we are required to produce are getting larger and more com-



“Sinumerik 828D is particularly easy to operate thanks to Sinumerik Operate.”

Eric Ziltz, Craftsman, Umetec Gerätebau GmbH

plex.” He sees this not so much as a problem but as a challenge: “We have space for more machines. We have already purchased a new Unitech five-axis milling center – of course it also has a Siemens CNC: Sinumerik 840D sl, actually.” ■

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Mubea Systems S.A., Belgium

Precise machining centers for trains

Sinumerik 840D sl helps Mubea Systems tailor its products to the needs of customers in the fast-growing mass transportation market.

Mubea Systems S.A., an enterprise with family ties to the Haco Group, manufactures a complete range of four- and five-axis CNC machining centers especially designed for the various machining tasks required in manufacturing the exceptionally long aluminum and steel profiles used in transport systems such as high-speed trains, trams, and underground rail systems.

Cost-effective production and speedy delivery

Mubea selects exclusively high-quality components and software to provide flexible and reliable CNC machines for the transport industry. Its product line includes the four-axis Alu-Flex gantry, the five-axis

Profile-Flex C-frame, and the five-axis Multi-Flex gantry. "At the very top of our product line is the five-axis Mega-Flex," says Frank Havegeer, CEO of Mubea Systems. "It's a unique profiling machine center with a patented double x-axis, providing higher dynamics and improved capacity. Thanks to an extra, double vertical clamping device on the column, the Mega-Flex meets the highest standards in machining speed and finishing accuracy."

Like all Mubea machines, it is supplied in 30- or 60-m lengths, with one or two heads that work either together or separately. This twin-head solution offers even more speed and flexibility, allowing us to meet the needs of the transport industry: speedy delivery, cost-effectiveness, and quality."

Mubea Systems produces machining centers for the machining of long aluminum and steel profiles used in transport systems



“Sinumerik 840D sl provides all the accuracy, scalability, and performance our customers need, while offering great value for money.”

Frank Havegeer, CEO, Mubea Systems

To enable the milling of long profiles for customers, Mubea Systems relies on the open control architecture of Sinumerik 840D sl

Consistency provides for continuity and stability

Sinumerik 840D sl, in combination with the advanced Sinamics S120 drive technology, is the preferred control solution for all Mubea machines. Having used power line before, Mubea wanted to upgrade to solution line in October 2012. “Even while we were taking our first steps in the world of aluminum and steel extrusion, Siemens immediately understood our ambitions,” Havegeer recalls. “We have enjoyed their support and dedication ever since.” Besides CNCs, Mubea also relies on Siemens for other components such as Sirius low-voltage equipment and Sitop power supplies. According to Havegeer, the positive experiences with the Sinumerik CNC were key to realizing the upgrade to solution line – along with the option to create continuity and stability across the company with one integrated system. “Sinumerik 840D sl provides all the accuracy, scalability, and performance our customers need, while offering great value for money,” says Havegeer.

The implementation of the new system took less than two weeks. Dirk Algoet, who is responsible for engineering and automation at Mubea, considers the openness and flexibility of Sinumerik 840D sl to be its biggest assets. “We deliver our machines with custom-made CAD/CAM software,” Algoet explains. “It offers dynamic programming characteristics and allows our customers to easily control their machines, using helpful 3-D profiles.” Thanks to the open systems architecture of Sinumerik 840D sl, Mubea can now easily incorporate its competence and expertise into the end product. The result is a uniform and user-friendly interface for operation, programming,

and visualization. “The systemwide openness of Sinumerik 840D sl enables us to develop better machines for our clients,” summarizes Algoet.

Expansion of the product portfolio planned

Mubea Systems has regional offices in Belgium, Germany, the United States, Canada, and China. It delivers machining centers in 10 countries, amounting to an export rate of 99 %. Needless to say, international customer support is of paramount importance to the company. “We have qualified personnel who visit clients when, for example, tailor-made machinery is needed,” says Kris Rosseeuw, who is responsible for service at Mubea. “For everyday technological issues, however, the Siemens service contracts offer a huge advantage.” Around the globe, customers can count on fast and sound support by Siemens engineers, making Mubea Systems a partner they can rely on.

In the coming years, Mubea will further expand its product line, mainly focusing on five-axis machines and developing new machinery for high-speed cutting of solids in aluminum and new materials like titanium. “We are continuously developing our product portfolio to explore new markets,” marketing director Jim Bogaert explains. “Drawing on Siemens’ expertise and the extensive support we already receive, we are confident that we can rely on Siemens as a trusted partner in the future.” ■

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Fill Gesellschaft m.b.H. Maschinen und Anlagenbau, Austria

High-performance machining

Machine and plant manufacturer Fill is taking a major step toward standardization and modularization with its new generation of syncromill F complete machining centers. CNC Sinumerik 840D sl type 1B makes the machines future-proof.



Approximately 80 million cylinder heads are manufactured worldwide each year. Of them, 16 million are produced on machines by Fill Gesellschaft m.b.H. Maschinen und Anlagenbau in Austria, as are 150 million chassis components. Today, one in three

cars worldwide includes parts that have been produced on Fill machines. Fill has also made a name for itself in the aviation, wind power, sports, and construction industries. This was made possible, among other things, by the new complete machining centers.

High level of standardization and modularization

Previously, Fill's activities had been shaped by the metal machining technology of special machine construction. Even back then, partial solutions had been developed with a view to their reusability, but with the new generation of syncromill machining centers, Fill is implementing a high level of standardization and modularization in high-performance machine tools. According to Markus Gadringer, product manager at Fill, "The level of customization possible will continue to remain high. As a general contractor, we will still assume responsibility on behalf of our customers for the product design from rough casting to installed finished part." However, the effort required to retool for the production of different parts will be significantly reduced – an advantage for Fill customers that should not be underestimated in view of production batches that are getting smaller and the increased frequency of new designs.



Gadringer

"Thanks to the modularity and scalability of Sinumerik 840D sl type 1B, we can design our high-performance machining centers perfectly as modular production machines."

Markus Gadringer,
Product Manager, Fill Gesellschaft m.b.H.



Fill uses the high-performance, flexible Sinumerik 840D sl type 1B CNC for machining demanding materials

nection of any devices that are not required and a low-voltage DC link that is active only when it is needed. Sinamics S120 drives also feed the braking energy back into the grid. Fill uses Sinumerik Ctrl-Energy, a range of solutions for the energy-efficient operation of machine tools. The machine is fitted with a Sentron PAC4200 power-monitoring device with which it is also possible to establish a connection to external devices and the building services management system via the Fill CC control system to increase overall energy efficiency even further.

Collaborative development of technologies

In-depth knowledge of the current status of development is required to make optimum use of the control system. Gadringer explains, "We therefore consider Siemens to be more than a supplier, rather a partner involved in the development of the syncromill family. This accelerates software development, and it is also very important for a company like Fill to integrate state-of-the-art technological developments into its machines to make them future-proof."

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Sinumerik supports machining diversity

The first member of the new family of machining centers is the syncromill F – a high-performance, highly dynamic, and flexible machining center specifically for hard-to-cut materials. The excellent cost efficiency of the syncromill F is the result of not just its high cutting performance. Handling of the workpieces in two specific clamping fixtures that are alternately pivoted into the machine space using a rotary table is another feature. This enables loading and unloading of workpieces parallel to machining without opening the actual machine space. The tool carriers are linked via rotary tables to a quick-change system that minimizes retooling times when changing to a different tool. A 48-space tool magazine arranged above the machining unit ensures short chip-to-chip times. Even for the existing generation of syncromill machining centers, Fill had decided on Sinumerik CNC inside the machines due to the high demands made on machining diversity.

To make the new machine generation future-proof, it also employs this CNC, more precisely Sinumerik 840D sl type 1B, which is perfectly suited to complete machining. With its high performance due to multicore technology, scalability, openness, and network capability, the universal and flexible CNC sets standards in precision and flexibility.

Energy efficiency is important

The performance and precision of the drives from the Sinamics S120 line, which are used to activate the servo- and spindle motors, are equally important to the success of the syncromill F. Gadringer stresses, "It is not only the perfect interaction of control and drive technology that is important for the high dynamics with which large masses are moved in around 15 driven axes in the new machining center. Energy efficiency is another important criterion for our customers." As a result, the syncromill F has, among other things, energy-saving operating modes with discon-

New CNC generation for mold and die construction

Fit for the future

Improved milling technology, higher surface quality, higher computing power, and easier operation increase profitability in tool and die construction.



Enhanced numerical control and HMI functionality and even more powerful CPUs increase the productivity of High-Speed Setting Cycle832 machining with Sinumerik

The productivity of machine tools depends largely on the functionality and performance of their control systems. The new generation of the Sinumerik system now offers various extra performance enhancements for tool and die construction. Both operation and programming have also become even easier, meaning Sinumerik-controlled machines and their operators can now be deployed even more flexibly.

NC functions improved for three- and five-axis milling

In the case of NC functions, further improvements have been made to the Advanced Surface intelligent

path control and to some components of the Sinumerik MDynamics milling technology package. Look Ahead level II harmonizes not only the speed profiles but also the acceleration and jerk profiles of adjacent milling paths. The overall more homogeneous machining of adjacent milling paths thus achieved leads to higher surface quality and increases the average feed rate due to better utilization of the machine dynamics. The result is a reduction of cutting times by 5%–10%.

The new Orison (Orientation Smoothing On) NC function for five-axis simultaneous milling also enhances speed and quality. It smooths the rotary axis movements for workpiece orientation. During five-axis milling of curved contours, the machine dynamics

are highly stressed by the orientation movements of the rotary axes that align the workpiece with the relevant contour. These irregularities in the machining cause visible marks on the workpiece surface and noticeable losses in machining time. With Orison, the orientation movement is continuously and predictably interpolated and executed within the specified production tolerances. The result is more harmonious movement of the tool tips.

Even if the tool comes to a sudden stop in the middle of the machining process and remains stuck in a drilling hole or a thread – for example, due to a power failure – it is possible to resume production quickly thanks to the new generation of Sinumerik software. The Retract function has been expanded so that all the axes involved also perform coordinated interpolation in JOG, thus enabling easy retraction of the tool – not only in the three-axis but also in the 3+2-axis and five-axis range with the swivel cycle active (Cycle800) or via the Traori TCP function.

Significantly easier operating and programming with Sinumerik Operate

The current version of the Sinumerik Operate user interface consequently reflects the enhancements made in the NC core. For example, in High-Speed Setting Cycle832 (HSC) it is now possible in five-axis operation to immediately specify the orientation tolerance for the rotary axes when roughing and finishing. Those familiar with HSC can therefore use the new orientation tolerance for the five-axis Orison function directly via the cycle screen and data entry support. In line with the Retract function, which has been expanded on the NC side, it is now even easier to deal with unexpected faults via the operator interface, thus speeding up the resumption of machining.

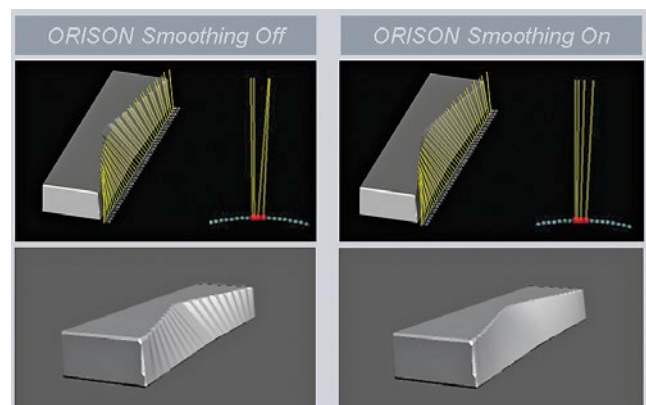
Simulation of the measuring cycles and the five-axis programs is also easier and more convenient now – thanks to expanded control options via mouse and shortcut keys in the simulation view. This feature particularly benefits the operators of machines fitted with the new, more powerful NCUs of Sinumerik 840D sl type 1B. These use multicore processors, have continuous access to Profinet, and are thus more efficient. For the operator, this means considerably smoother operation and significantly higher simulation speeds. The die construction quick view, for speedy visualizing of complex part programs, has also been expanded.

Besides working with the well-known pdf, png, bitmap, and jpeg formats, the new system version is also capable of displaying html files from drives or data-storage media such as a CF card or USB or net drive. The measuring cycle features of Sinumerik CNCs have also been expanded. All measuring cycles have animated graphical elements that intuitively

highlight their precise function and parameter assignment in programGuide or in ShopMill work-step programming. As a result, it is considerably easier to use even the more complex functions of the measuring cycles. Furthermore, the machine geometry itself can be measured with a touch-trigger probe and calibration sphere. With Cycle995 and Cycle996 it is possible, for example, to detect angular deviations of the spindle in relation to the machine axes and compensate for errors while the process is running.

Integrated added value

The CNCs have been perfectly suited to mold and die construction applications since the introduction of the Advanced Surface intelligent path control and the



The new Orison function delivers higher surface quality and exploits machine dynamics better

clever combination of all functions and cycles relevant to demanding milling operations in the Sinumerik MDynamics milling technology package. With the latest generation of the Sinumerik Operate user interface and the high-processing-power CPUs of Sinumerik 840D sl type 1B, this line of CNCs now delivers additional competitive advantages – for both the manufacturers of milling machines and the construction of machine tools and dies. ■

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Siemens AG

Once turning work is complete, the Rotamill can switch automatically to an NC milling head or a grinding head for the next machining steps

Cytec Zylindertechnik GmbH, Germany

Multiple machining in one clamping fixture

Cytec Zylindertechnik uses a hybrid machining center with an innovative interchangeable head system in mold and die construction. The premium Sinumerik 840D sl CNC ensures rapid switching between machining processes.

The development and construction of key components for the machine tool industry have been the focus at Cytec since the company was established around 30 years ago. The German company was initially involved mainly with cylinder technology but then grad-

ually expanded its range of products to other components. The company made yet another technological leap after establishing a partnership with the German machine tool constructor Edel. This culminated in the development of the Rotamill hybrid center.

Stephan Weuthen, managing director of Cytec Zylindertechnik GmbH, says with conviction, "The future of mold and die construction lies in complex hybrid machining. Tools and molds are becoming increasingly complicated and must meet the highest requirements

with respect to precision. This can be achieved reliably and productively only if the workpieces are produced in one clamping fixture." This is possible only with machines that in addition to simultaneous five-axis milling can perform turning and grinding tasks. The new Rotamill hybrid machining center controlled with Sinumerik 840D sl is designed to do just that. Weuthen explains, "The Sinumerik 840D sl CNC is perfect for us, and together with experts from Siemens we carried out all the application adjustments within a year."

High-precision turning thanks to innovative machines and control technology

The emphasis in mold and die construction is on milling technology. It is frequently necessary, however, to carry out additional turning tasks that place maximum demands on roundness and precision. It used to be necessary to spend precious time reclamping on separate turning machines to do this. Loss of accuracy then went hand in hand with disadvantages in terms of productivity and cost. Not so with a hybrid machining center such as the Rotamill. Constructed in vertical portal design, the machine cell is extremely rigid. The Rotamill is very flexible due to its large traverse paths, and thanks to the high feed force in the linear x, y, and z axes and its high speed values, it is also highly productive.

The direct-drive turning/milling table integrated into the machine bed achieves speeds of up to 200 min^{-1} , thus creating the important basis for additional turning and grinding operations. It has a central through-hole that can be used for clamping cylindrical workpieces. Cytec has solved the challenge posed by the high lateral torques that occur when machining with turning tools in two ways: the high-speed bearings of the milling head are stabilized with a spindle clamp and three interchangeable heads are integrated in the Rotamill. A tool station can be fitted with a real turning spindle for any turning operations. Very high levels of roundness accuracy are achieved as a result when turning. Weuthen explains, "It is now very easy to switch from one machining head to

another." The change can be stored in the CNC program of Sinumerik 840D sl – it then runs automatically in less than a minute. Managing director Weuthen is pleased to report, "At present, only Siemens is able to supply this key function, which makes working with the Rotamill extremely easy. We were also immediately impressed by the latest technology features, such as the Sinumerik Operate user interface and the Sinumerik MDynamics milling technology package." For example, Advanced Surface, with the high-speed cycle Cycle832, which is included in Sinumerik MDynamics, is the perfect complement to Cytec's interchangeable head system. The operator can use it to achieve the optimum combination of service quality, machining speed, and accuracy at all times.

Uniform user interface maps milling and turning tasks in a similar manner

Thomas Paulsen, assembly manager at Cytec Zylindertechnik GmbH, also sees the new user interface by Siemens as a clear advantage: "Sinumerik Operate is integrated and clearly laid out – a factor that is very important, particularly for hybrid machining centers. Ultimately,

the changeover from milling to turning makes great demands on the know-how and imagination of the machine operator." With Sinumerik Operate, the operator has a choice of various programming methods and can switch back and forth between them at will: ShopMill, programGuide, and ISO code – this is an advantage for hybrid centers such as Rotamill, as all the milling and turning cycles are available in programGuide. The skilled operator is also supported by graphical displays and animations. Sinumerik Operate, for example, offers a structured tool list that can be individually configured by the user. If the user nevertheless selects an inappropriate tool, the error is displayed via active technology monitoring, and he or she can correct it immediately. ■



The Sinumerik 840D sl CNC enables changeover from one machining head to another in less than one minute

Siemens AG

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WorldSkills Leipzig 2013

Out-and-out winners

This year WorldSkills, the world championships of industrial and technical professions as well as trade and service professions took place in Germany for the first time in 40 years. The entrants in the metal-cutting professions relied on tried-and-tested technology: all the CNC machines were fitted with Sinumerik CNCs.

From July 2 to 7, 2013, more than 1,000 young people from 53 countries and regions came together in Leipzig's trade fair hall to determine the world champion in each of their disciplines. The professionals had previously demonstrated in national qualifiers that they were the best in their disciplines. More than 200,000 visitors from all over the world followed the exciting event live.

The right equipment for success

The booths of the metal-cutting professions in hall 2 were dominated by intense concentration and discipline. CNC turning and milling machine operators were alternately poring over drawings, programming in CAM, and standing at their machines. The demands on the entrants during these two competitions are enormous: they have to produce highly complex, imaginative parts on three days: once from aluminum and twice from steel, in two-sided and three-sided machining. They produce the parts based on a paper drawing that is programmed using the CAM system Mastercam and transferred to the machine. What counts here is selecting the right tools and finishing within the time specified.

In addition to the individual skills of the professionals, a good result depends on the best possible equipment. As the official partner of WorldSkills, DMG / Mori Seiki provided more than 30 turning and milling machines for

the fields of CNC turning and CNC milling, the demonstration skill Plastic Die Engineering, and the team competition Manufacturing Team Challenge. Jörg Harings, head of training at the DMG / Mori Seiki Academy and an observer of WorldSkills for many years, explains, "We selected the appropriate machine for each field with respect to accuracy and stability because the requirements vary considerably from one discipline to the next. Now that the competitions are over, it's possible for us to say that we were spot on with our choices. Of course, every machine also depends crucially on the right control system." DMG / Mori Seiki equipped all the machines with Sinumerik 840D sl and the Sinumerik Operate user interface. Harings states three main reasons for this: "It was important to us to have a control system that has an international standard. By that, I mean that it can be found in any country. It should also be universal, which means it should cover both milling and turning technology. The third reason was that it should be particularly operator-friendly – Sinumerik meets all three requirements."

Easy operation makes work much easier

The entrants in the competitions were impressed by the system's ease of operation. It is particularly important in the tense atmosphere surrounding the competition to have a system that

makes work much easier. It was no problem at all for Roland Wolbers from the Netherlands. He had never had anything to do with a Sinumerik CNC prior to his training for WorldSkills. His conclusion was that "Sinumerik is easy to understand. Once I'd got the hang of ShopTurn, everything just ran like clockwork." With more than 500 points and a medal for excellence, the Dutchman even took a place in the leading group. The Sinumerik Operate user interface also ensured a quick initial training period. Young people are already familiar with its Windows-style look and feel from working on PCs. In addition to this, all its work steps are very intuitive, so even the untrained quickly manage to get along with it. This was confirmed by Julian Arango, Colombia's entrant in CNC turning, who had never worked with the CNC or the machine before. Most of the competitors, however, had already familiarized themselves with the CNC in the run-up to the competition. In addition to taking part in a training camp run by the DMG / Mori Seiki Academy, they had the opportunity to practice with the Sinutrain training software.

WorldSkills São Paulo 2015 on the horizon

"After the match is before the match!" This also applies to WorldSkills because after the FIFA World Cup 2014 in Brazil, the next WorldSkills will take place there, too. More than 1,000 competi-

Sinumerik Operate

- Universal user interface for all technologies
- Easy Windows-style program handling
- Extensive diagnostic options
- Clearly arranged tool management
- Integration of customer-specific technology cycles
- Intelligent, self-checking cycles
- Easy set-up

Want to know more about the new functions of Sinumerik Operate? Simply take a look at our SINUMERIK InSight supplement.

tors and more than 1,000 experts from more than 60 countries are expected at the first WorldSkills competition in Latin America, which will be held in São Paulo from August 11 to 16, 2015. Tobias Brockfeld and Johannes Rudolf, the German entrants in CNC turning and CNC milling, can definitely recommend taking part in this competition to their colleagues. They say, "We thoroughly enjoyed WorldSkills despite the pressure, and they have helped us to grow both personally and professionally." Even without a place in the leading group, they still feel like out-and-out winners.

PHOTOS AND INTERVIEWS FROM WORLDSKILLS ONLINE

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Thousands of visitors from all over the world celebrated the winners at the WorldSkills closing ceremony



Maximum concentration: every movement counts when working on the machine and the CNC



The CNC Sinumerik 840D sl with the Sinumerik Operate user interface makes operation easier for the entrants

Weiss Spindeltechnologie invests in Maroldsweisach site

Optimizing production and service

Weiss Spindeltechnologie GmbH, a subsidiary of Siemens, is expanding its headquarters at its site in Maroldsweisach. As managing director Claus-Peter Lehnert explained on the laying of the foundation stone, this will create the basis for further growth: "We have reached our limits with the space currently available. This expansion is necessary to cope with ongoing high demand in the medium and long term."

The existing company building, which covers 6,880 m² will be enlarged by 2,350 m² in total. The extension to the building will make it possible to further optimize our production and service processes, thus increasing the company's productivity. Managing director Lehnert stresses, "In the future, the German and European machine tool industry in particular will benefit from our ability to provide an even better and faster supply of high-quality engineered motor spindles. On



Frank Meyer (building owner), Wilhelm Schneider (mayor of Maroldsweisach), Dr. Jürgen Kantowski, Claus-Peter Lehnert (both from Weiss), and Rudolf Basson (Siemens) are pleased about the start of building work on the extension

top of this, we are also planning to satisfy the Asian growth market with new product lines."

weissgmbh.com
siemens.com/spindles

Mazak in-house exhibition in Düsseldorf

Integrated solutions and regional support

During an in-house exhibition from July, 3 to 5, 2013, focusing on the topic of automation, Yamazaki Mazak Deutschland GmbH presented a total of eight exhibits from the fields of turning, milling, multitasking,

and laser machining in its Technology Center Düsseldorf. Innovative automation solutions were showcased jointly with its partners Cellro, Kuka, and Robojob. Joachim Herberger, managing director of Yamazaki Mazak Deutschland, says, "The large number of visitors and in-depth technical discussion at this year's inhouse exhibition show that the positive development in this area is sustainable and tangible." The huge Integrex e-670 H II multifunctional machine with a Sinumerik 840D sl CNC proved to be a real visitor magnet. It can be used to machine workpieces up to 4,000 mm long and with 3,000 kg loading weight. Roller guides are installed on all linear axes of the e-670 H II for high stiffness values. In addition to the Integrex e-670 H II, Mazak also has other machine models with Sinumerik 840D sl in its range. These are currently the VTC 800/30 and VTC 800/20 SR five-axis machining centers plus the Variaxis i-600 five-axis machining center. Other new Mazak machines with Sinumerik CNCs will be presented at EMO 2013 in Hannover.



A large number of people involved in production at a practical level were particularly interested in the exhibits shown at the in-house exhibition

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New app

Easy CNC



The easy-to-use Sinumerik CNC is now easier to learn. This iPad and iPhone app contains all the current Sinumerik training manuals and will ensure that you always have the latest updates. No more heavy books to carry! This app gives you access to over 4,000 pages of vital CNC training lessons and content in the world's most portable format. In addition, a handy G-code compatibility tool lets you quickly find compatible codes for Siemens and ISO

G-codes. The glossary feature is your reference guide to CNC terminology. Web links to CNC social media feeds open doors to our online user community. Download the Easy CNC app for iPhone and iPad for free.



It is also possible to download the Easy CNC app from bit.ly/UPVkrw

Easy CNC

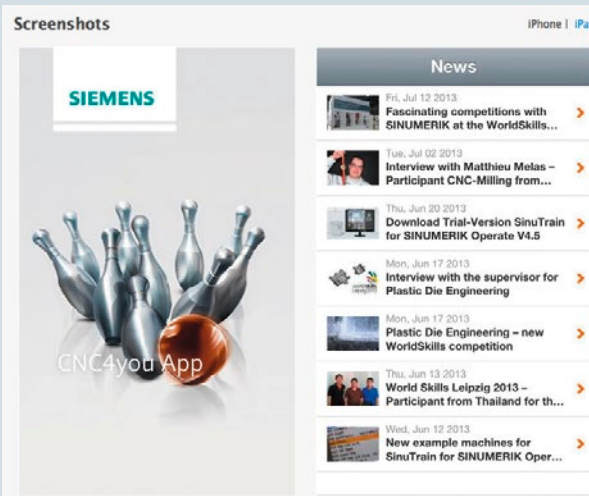
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Always up-to-date

CNC4you app



With the CNC4you app, designed for both iPhone and iPad as well as the Android operating system, users always have direct access to the most important news and information from their CNC community. You will be informed immediately if a new individual workpiece is released, when a new test version of Sinutrain is available, or if events are taking place in your area. There is also detailed information about the extensive range of basic and advanced training courses offered for ShopMill and ShopTurn. The informative *CNC4you* magazine can be opened, read, and downloaded directly to a smartphone or tablet as a pdf.

Download the app free of charge at: siemens.com/cnc4you-app

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The Siemens logo is displayed in a bold, teal, sans-serif font. It is positioned in the upper left corner of the advertisement, set against a white rectangular background that partially obscures the main image of a CNC machine.

SIEMENS

The background of the advertisement is a high-quality photograph of a CNC machine in operation. The machine is a large, industrial-grade lathe or mill, with its metallic components and complex structure clearly visible. The lighting is bright, highlighting the precision of the machinery. In the background, two people are standing near the machine, providing a sense of scale. The overall image conveys a sense of advanced manufacturing technology.

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