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Systems and Solutions for Machines and Plants

July 21 2006



True Six-Sided, Fully Automated Machining

World's Largest Metal Spinning Machine

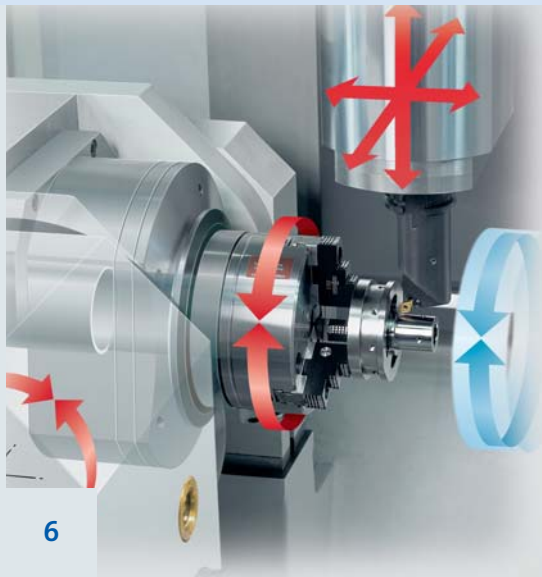
IMTS 2006, Chicago

Solutions for Every Industry



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Siemens will once again exhibit its newest range of products and solutions for virtually every industry at IMTS 2006 in Chicago



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Capable of true six-sided machining, the Stama System 7 milling/turning center is equipped with a Siemens control package



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Dear readers,

This year's IMTS in Chicago will showcase the impressive U.S. machine tool market recovery. After the recession earlier this decade, domestic machine tool production and imports have grown at two-digit rates over the past three years. Aerospace manufacturing plants and job shops in particular keep investing at record-breaking levels.

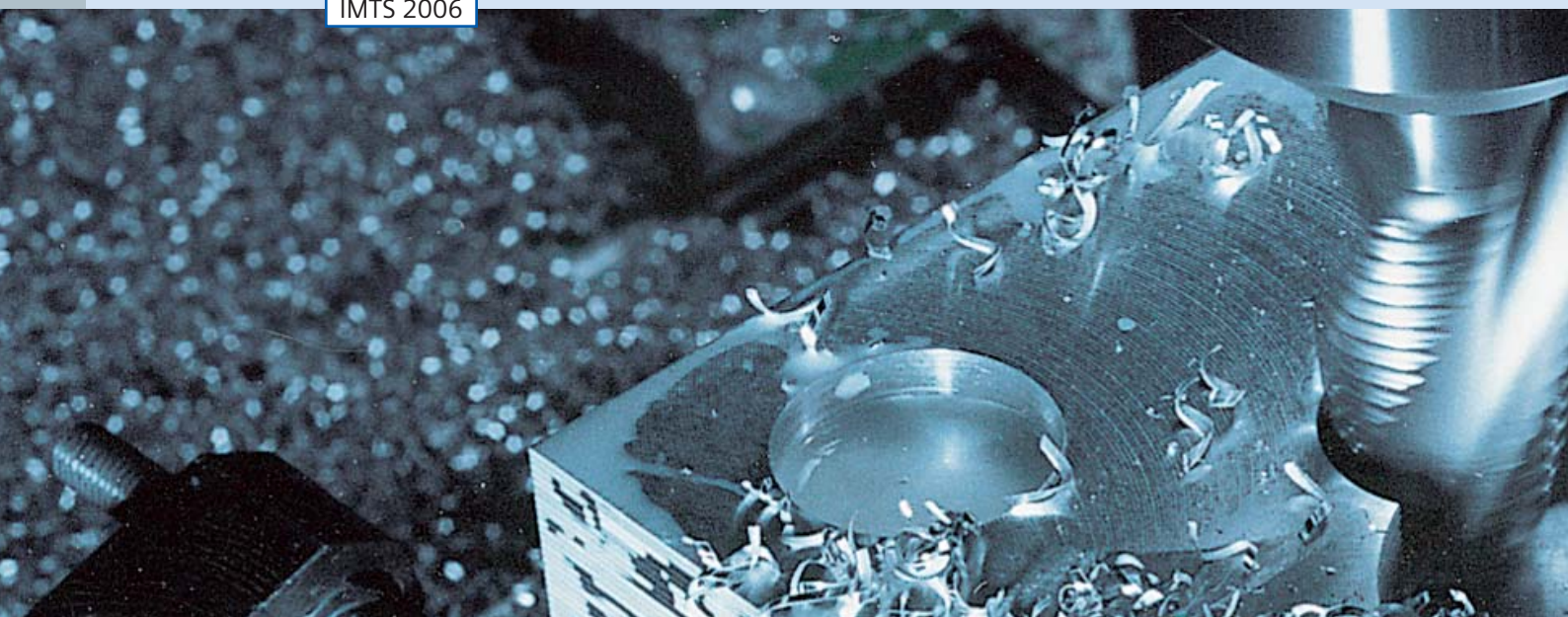
For Siemens, the time is therefore right to introduce our new Sinumerik solution line CNCs and innovative Sinamics drives. After exhibiting the 802D sl at WESTEC and EASTEC earlier this year, we will present the 840D sl at IMTS for the first time in the U.S. Features to help our customers be more competitive in tomorrow's manufacturing environment include a network-centric drive architecture; auto-detection of components via electronic name plates; and one universal, scalable drive hardware for servomotors, linear motors and motorized spindles. The 840D sl is available with PC-based or thin-client front-ends.

Tomorrow's environment is increasingly not only defined by products alone, but also by value-added services to enhance machine tool productivity throughout a machine's entire life cycle. Siemens is a trendsetter in this area and offers a suite of services—many of them unique—for both machine tool builders and end-users. Our Mechatronics consulting specialists, for example, provide dynamic Finite Element analyses to reduce machine design time and to help avoid costly design errors early on. The Sinumerik Machine Simulator enables real machining environment simulation on a lab PC to develop a real PLC code. Virtual Production software simplifies the optimization of machine cycle times and parts surface finish without time-consuming, real-life test runs.

Job shop productivity benefits from our ShopMill and ShopTurn software packages, allowing interactive graphic as well as ISO G-code programming. Also, with setup time being a key issue in small-batch production, our easy-to-use setup features reduce machine downtime to a minimum.

We welcome you to our booth (Lakeside Center, booth D-4208) to witness the latest Siemens innovations during IMTS 2006 in Chicago. See you there!

Wolfgang Rubrecht
General Manager
Siemens Energy & Automation
Chicago



Siemens to introduce its latest solutions at IMTS 2006 in Chicago

Productivity in Motion— Solutions for Industry

"Productivity in motion" is the promise Siemens makes as the world's leading control manufacturer to provide you solutions that not only save time, but also increase productivity. Moreover, Siemens brings its long-standing experience, dedication and ingenuity to every project it takes on—no matter how large or small. At this year's IMTS, Siemens will be presenting its new line of innovative solutions and services for machine tool manufacturers as well as end-users.

The new hardware and software technology headlining at this year's Siemens booth include the latest CNC solutions for the job shop, medical, automotive and aerospace manufacturing industries.

Job shop

Competitive pressures demand flexible production and reliable quality. Combined with the ShopMill and ShopTurn software packages, Sinumerik CNC technology offers tremendous flexibility and benefits for conventional machining. For this market segment, Siemens is exhibiting the new Sinumerik solution line series of controls, including the 802D sl for small- and medium-sized milling and turning applications; the PC-based 840Di sl; the 840D sl with ShopMill and ShopTurn as well as the new HT8 handheld unit. Also new for job shops: the Siemens 1FT7 servomotors, Weiss spindles and the OP08T operator panel. Milltronics, a machine tool builder from Waconia, Minnesota, will debut its VM20 machine with Sinumerik 840D solution line during live, five-axis machining demonstrations at the Siemens booth.

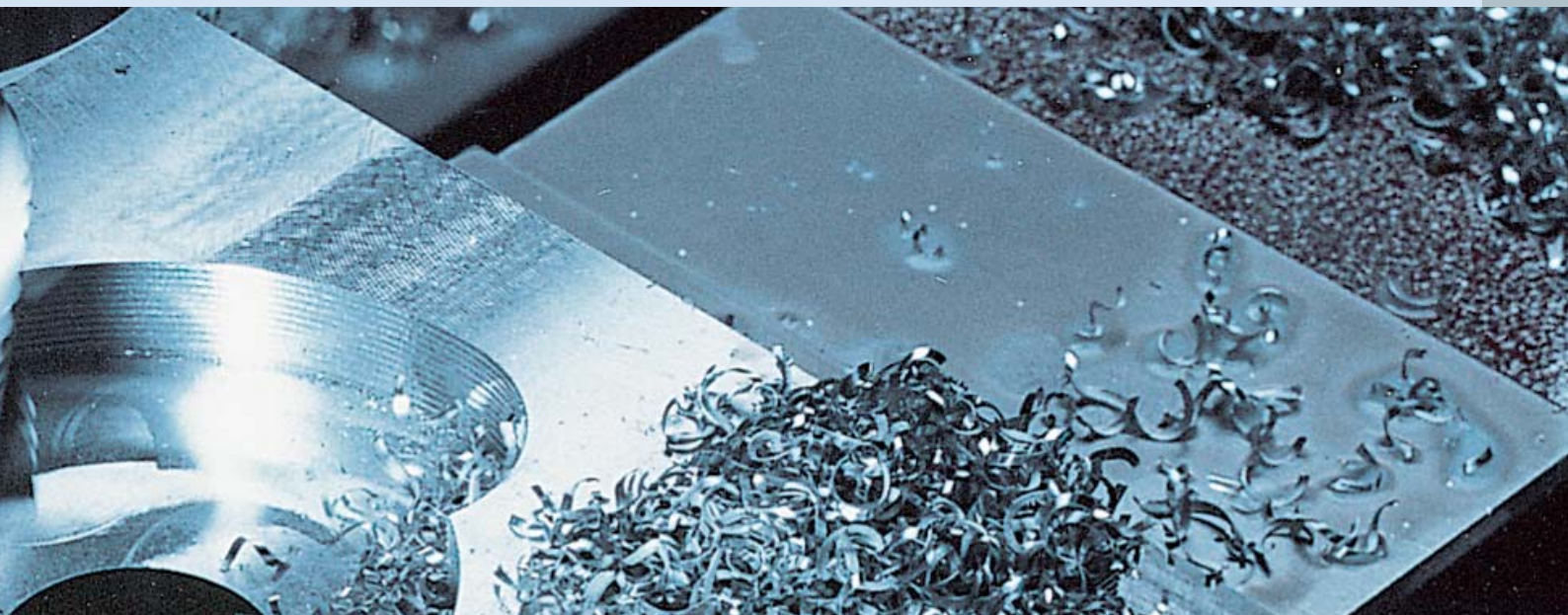
Medical, automotive and aerospace

Witness the advantages of five-axis machining with the Sinumerik 840D powerline. In the medical manufacturing sector, the Ger-

man machine tool builder Stama, a global leader in machine tools, is exhibiting its MC 726 MT machine. Equipped with a Sinumerik 840D, Stama will highlight the precision and performance capabilities of the machine in medical parts manufacturing with live demonstrations.

The Transline System Solution and Sinumerik 840D continue their success in the automotive industry. The Transline system utilizes common hardware and software components to transform the Siemens concept of "Productivity in motion" into real-world applications for total factory automation. Siemens will be presenting the new Transline solution line as part of an exciting interactive display at the IMTS, together with Safety Integrated technology.

Used in combination with Siemens linear and torque motors, the new Sinumerik 840D solution line is also of particular interest for the aerospace industry. With its proven reliability and speed, the 840D continues to be the first choice in high-speed, five-axis aerospace manufacturing. To boost productivity, the control offers aerospace users innovative high-speed features such



as TRAORI, NURBS and Spline Interpolation, without compromising precision or surface finish.

CNC training

At this year's IMTS, Siemens will also be offering demonstrations of SinuTrain, the training and programming software for Sinumerik CNCs. SinuTrain is a CNC simulation training package available on CD-ROM which can generate and simulate NC programs for the DIN 66025 programming language as well as for ShopMill, ShopTurn and ManualTurn. Programs written with SinuTrain can ultimately be used on actual machines, provided that SinuTrain is adapted to the Sinumerik CNC on which the program is to be executed.

Solutions for global services

Siemens exhibits on display at IMTS also include global services solutions for the U.S. machine tool market, among them real-time models featuring ePS Network Services, Virtual Production and Mechatronics Support.

ePS Network Services is an Internet-based service from Siemens that supports maintenance processes while simultaneously forming a platform for cross-company service and support between OEMs and machine operators. Services can be configured on ePS servers over secure Internet connections from anywhere in the world via a standard PC, an Internet connection and a Web browser. As a result, customers are provided with detailed information to localize machine faults much faster, thus enabling a quicker analysis without the need for direct machine access, or in any



way influencing the production process. ePS will demonstrate its Web-based solution together with the Sinumerik 840D on the Stama machine during live demonstrations at the booth.

Virtual Production offers OEMs and end-users higher quality and shorter production times. With the help of a software tool developed by Siemens, the process chain is subjected to a simulative analysis for everything from the CAD/CAM system to the workpiece surface. Instead of resorting to repeated testing on the actual machine, programs can be optimized on the computer—the only exception: the numerical control program, which is simulated on a real machine.

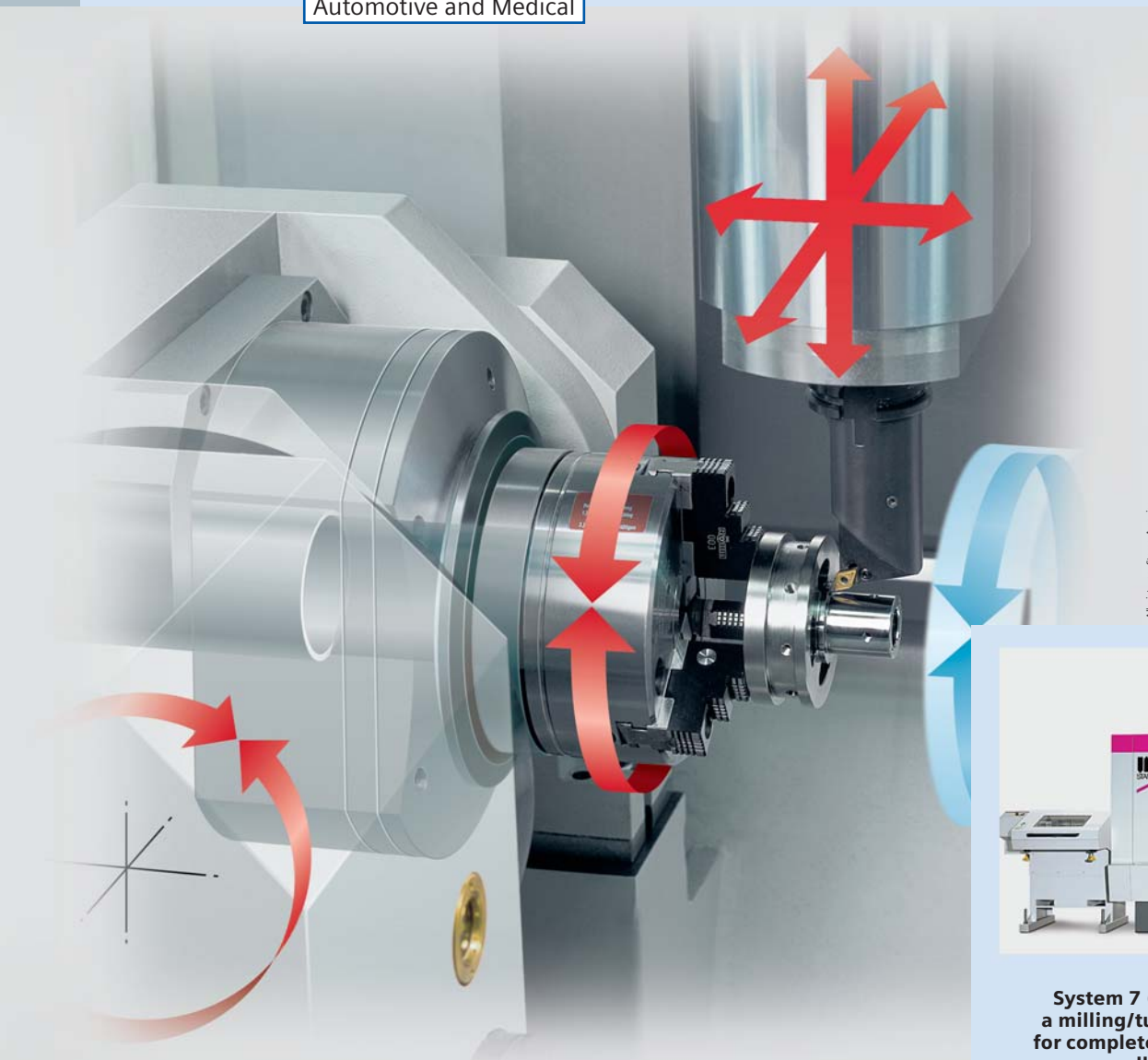
Mechatronics Support enables OEMs to design their machines in cooperation with

Siemens experts—everything from the initial machine conceptualization to the final completion. This offers machine tool builders the opportunity to combine forces with Siemens staff, i.e. with the experts of their control and drive technology supplier. Working closely with the OEM's engineers, the Siemens experts provide assistance in developing innovative ideas and end-user-specific machine concepts which are precisely tailored to their needs. Each solution comes equipped with state-of-the-art Siemens CNC technology and top-notch functionality. ■

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The System 7 from Stama combines five-axis machining with trunnion-mounted twin spindle technology for vertical or horizontal machining

All pictures: Stama America



System 7 (MT Series) from Stama, a milling/turning machining center for complete six-sided machining of small and medium batch runs

Siemens control package expands Stama milling/turning center performance range

Rising to the Occasion

In developing the new System 7 milling/turning center of the German machine tool builder Stama, the control solution proved particularly challenging.

The innovative machining center combines a single five-axis milling spindle with one or two turning spindles and trunnion-mounted workpiece positioning, thus enabling true six-sided, fully-automated machining of blank bar stock or from a chuck. The successful turnkey package supplied by Siemens included a Sinumerik 840D with NCU 573.5.

With over 4,000 machines in use worldwide, Stama America, the North American affiliate of Stama Maschinenfabrik GmbH based in Schlierbach, Germany, was interested in building a highly flexible machine capable of milling, drilling, thread cutting, external/internal turning, facing and contouring, that would offer more customers the ability to also use it on shorter runs. Short setup and changeover times were distinct goals of the System 7 design team. Therefore, the control selection process became all the more complex, Gerhard Ulmer, director of sales at Stama, recalls.

"Further compounding our challenge," Ulmer comments, "we had a great demand for a high degree of accuracy under production conditions, because our automotive and our medical customers require it. 0.02 millimeters true position under

1.67 Cpk conditions are typical for our twin-spindle machines.”

Extending twin-spindle applications

The inherent advantages of twin-spindle machines include a smaller footprint, power savings, increased productivity and a reduction in overall cost per part. Thus, the machines are ideally suited for fewer and longer production runs. While Stama's Tier one automotive and other customers fit this profile exactly, the builder sought to design a machine also suited for its Tier two/three automotive, as well as its high-precision, short-run customers.

From the very beginning, the considerations of the Stama design team were

unit) 573.5—a CNC with an open architecture and PC-based design capable of handling up to 31 axes and 10 channels. Siemens motors, power supplies and drives were also part of the System 7 turnkey package, as was the TRAORI software suite of Siemens. The software, which is based on transformation orientation, drives the cutting motions relative to the position of the workpiece, not the NC program. With the help of this “look ahead” function, it also speeds up cutting time and overall finishing time on the part. This is an especially critical feature for Stama's automotive customers and the complex materials cut for Stama's medical customers. Gerhard Ulmer observes, “We did some modifications of

robust and safety qualities, which are essential for the medical market especially. “When cutting cobalt chromium, Nitinol (nickel titanium) and other alloys widely used in the production of medical implants, surgical tools and instruments, tool wear is quite common.” Up to 30,000 tool changes a day are not uncommon, according to Ulmer, who cites the rigidity of the System 7 frame and the out-of-tolerance tool detection capability of the CNC as key features for the medical customers Stama serves worldwide.

Reliable support

In Ulmer's opinion, the cooperation with Siemens engineering played a particularly



High-precision medical implants, surgical tools and instruments are made on the Stama System 7, often from very hard-to-machine alloys such as cobalt chromium and Nitinol (nickel titanium)

driven by the main concern of its customers: namely, how to devise a solution that would allow twin-spindle and single-spindle work to be processed economically on the same machine. Clearly, the machine would require a very high level of motion control, accuracy and multi-function capability. Customers needed the option to machine one piece simultaneously with two spindles, run separate smaller parts on each spindle independently or to change tooling on one spindle while the other is machining (zero-based tool-changing). And, for true six-sided machining, one spindle would need to function as the rotary actuator for the workpiece. To pack all of these features into a single machining center and not price it out of the competitive market was a major concern for the Stama team.

The control solution of choice: the Sinumerik 840D with NCU (numerical control

their software for the particular needs of our customers, but the base model and the flexibility of the CNC package made Siemens the only choice for Stama on the System 7. It's the first true control package for a mill/turn machine in the world.” According to Ulmer, customers have reported throughput time savings of 30 percent minimum on the System 7 as compared to their previous machines or methods.

Up to the challenge

As a result, Stama was able to achieve the desired programming for the single or twin spindles in all configurations. Ulmer remarks, “It doesn't matter if the machine is running as a five-axis mill or a lathe. Other CNCs we considered had to switch their operational mode, while the Sinumerik 840D can run any program seamlessly.” He favorably notes the control's

important role during the development process on the new milling/turning center. “The Siemens engineering staff was in-house at Stama from the outset. We had previously worked with another CNC supplier and never received such service. I can say without hesitation that the Siemens CNC was key to the development of the System 7, as well as for our System 8, designed for the larger workpieces and chucks. It was a true example of simultaneous engineering on our part and theirs to devise the best result.” ■

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Siemens technology integral for world's largest metal spinning machine at Fiba

Production on a Grand Scale

The OSC-24300, built by MJC Engineering and Technology of Huntington Beach, CA for the Fiba Technologies production site in Westboro, MA, is capable of spinning steel tubes up to 24 inches in diameter with a 1.5 inch wall and 40 feet long into pressure vessels for the industrial gas and chemical markets, making it the world's largest metal spinning machine of its kind. At the heart of the enormous machine measuring over eighty feet: MJC's Spin CAD software and a Sinumerik 840D CNC with HMI software.

In addition to the U.S. government and industrial gas distributors throughout the U.S., Fiba Technologies, founded in 1958, ranks major industrial and specialty gas as well as chemical suppliers among its customers worldwide. The company specializes in pressure vessels, tubes and other industrial equipment for storing and transporting high-pressure and liquefied gases and chemicals.

The machine for this particular application, the OSC-24300, spins the ends of large steel pipes to fabricate an unfired, seamless, integrally forged pressure vessel. Driven by a 300 horsepower motor and weighing over 125,000 pounds, the giant machine incorporates a tube handling system as well as an automated induction heating system. Each tube is spun with a necking-in and/or bottom forming operation performed at each end.

Hand-in-hand communication

The Spin CAD software of MJC is a Windows-based operator interface software that allows the machine programmer to generate spin passes on a computer using "point and click" technology. All machine functions and editing are controlled and stored with the help of Spin CAD. Once the program is complete, Spin CAD generates a G-code program that the Sinumerik 840D CNC utilizes to form the part.

A Sinumerik 840D CNC was configured for two-axis control, Z and rotation onboard



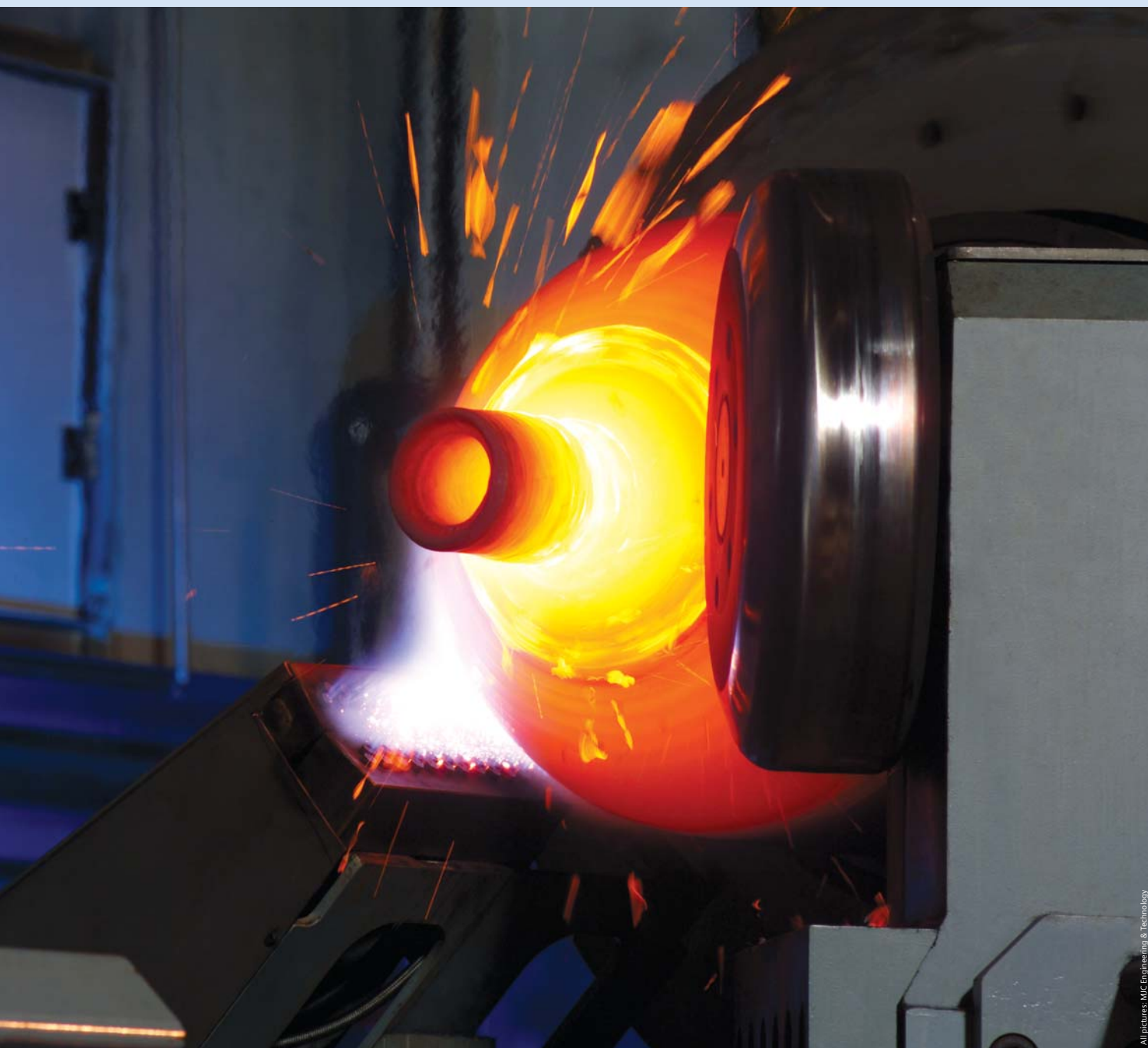
MJC's Model OSC-24300 at Fiba Technologies spins and forms tubes into pressure vessels over 40 feet long



An induction heating system and shaping tools close the end of the steel tube for seamless integrity

the massive machine. To simplify the programming, the rotation axis uses a standard hydraulic cylinder with feedback converted from inches to degrees of rotation. Both axes are powered by a Siemens HLA Module, while Profibus communications handle the data interchange between the CNC system, operator panel and PLC.

The MJC machine in operation at Fiba is fed by 1,000 ampere of 480 volt power and 250 horsepower of hydraulics



All pictures: MJC Engineering & Technology

overall. A typical setup for a machining job generally involves four simple steps. First, the programmer writes the program on a desktop PC or directly into the machine's CNC. The spin program is then accessed from the Spin CAD software, and the on-board Fiba software generates the G-code file. In the third step, the operator sets the home position on the machine. Finally, the operator activates the part handling device, loads the part to be spun and starts the cycle.

Taking up the challenge

Commenting on the selection process, MJC Vice President Dave Grupenhagen recalls, "Fiba contacted us in late 2002 about build-

ing a machine to spin large diameter steel tubes into DOT-approved pressure vessels used in the compressed gas, chemical and other industries. The high-pressure tubes are typically used on tube trailers and containers to transport CNG, hydrogen, helium and other industrial gases." According to Grupenhagen, Fiba was unable to find a spinning machine manufacturer who was willing to build a machine to their desired size. One company manager even told Fiba it wasn't possible to build a machine on such a scale that would work. "That was all the motivation we needed at MJC," Grupenhagen adds. "Within three months, a preliminary design meeting was held and we

were awarded the contract." The next six months were spent completing the design engineering, which included the tube handling system and automated induction heating system. "All fabrication of major components was done at our Los Angeles facility of MJC and, within eight months after the release of our engineering drawings, the machine was tested using the heaviest steel tube with a 24 inch diameter by 1.5 inch wall and 40 feet long," Grupenhagen is pleased to report. ■

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Sinumerik 840D simplifies
dual-spindle turning center
control at CNC Industries

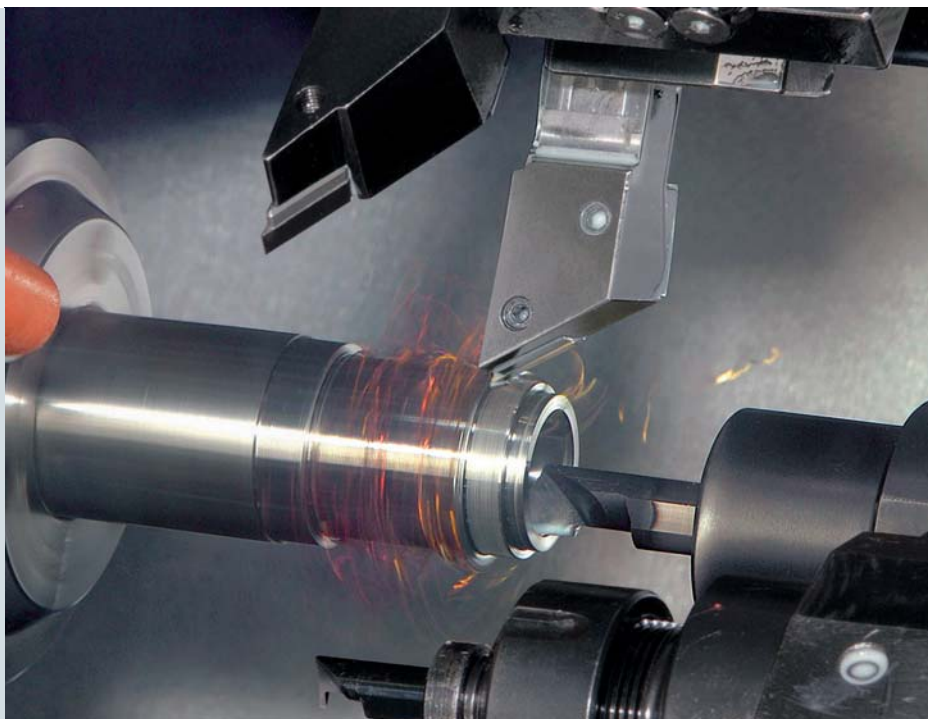
Complex Tasks Made Easy

DMG Twin 32 dual-
spindle turning center
with Sinumerik 840D
powerline CNC

All pictures: CNC Industries

CNC Industries produces high-
precision medical instruments,
mostly from heat-treated
17-4 ph stainless steel

Established in 1977, CNC Industries, a division of X-L Engineering Corporation, is a high-precision, 20-person shop located in Elk Grove Village, Illinois. While the parent company is active in a diverse range of markets, CNC Industries has evolved from primarily being a military subcontractor to its current specialization as a supplier of high-premium, production-run medical instruments. A Sinumerik 840D powerline series CNC has simplified the overall axis and dual-spindle movement control of the company's three DMG Twin series turning centers.



As the name already implies, the shop focuses on CNC machining operations, mostly milling and turning. As general manager Kurt Wendhack explains, "The majority of the work we do today is in stainless steel, primarily heat-treated 17-4 ph." This particular grade of stainless steel has excellent strength and hardness qualities combined with superior corrosion resistance, making it ideal for various medical, surgical and dental apparatus, but also challenging for machines to produce. But then, tight tolerances on short- and medium-run parts are routine for CNC Industries.

Complex, powerful, easy to use

At the heart of the operation are three DMG Twin series dual-spindle turning centers which handle multiple tasks. These turning centers are typically used for high-level machining of bar, shaft and chuck workpieces, and feature a unique work area designed around the dual-spindle configuration. With integrated drives on both the main and counter spindles, the Twin Series turning centers provide indexing of 12x servo turrets with 0.1 second indexing, 1.0 acceleration of gravity, rapid traverse to 1,181 inch per minute and 8,000 rpm spindle speeds.

Overall control of the axis and spindle movement is handled by a Sinumerik 840D powerline CNC. "Combined with a PC-type Windows operating system, the complex and powerful CNC is nonetheless easy to use, and allows us to store our programs right on the machine hard drive, though we maintain back-up files as well," Wendhack points out.

Setup ease and versatility

Setups on multi-function machines such as the DMG Twin 32 models used by CNC Industries can be an arduous task. As a result, the ease with which setup data can be input into the machine's controller played a key role in the company's buying decision. "The functionality of the Sinumerik 840D addressed this concern and made a significant impact on our buying decision," as Wendhack stresses.

The Sinumerik 840D is a sophisticated CNC that offers a wide range of specialized functions for milling, drilling, turning, grinding and handling technologies. The system offers users innovative features designed to increase productivity on the manufacturing floor, especially with respect to the challenging segments of high-speed and five-axis machining.

DMG utilizes a variety of controls with its broad product line of eight turning center

families, though the vast majority uses Siemens CNC units, some with the company's ShopMill and ShopTurn software packages. These complement the DMG suite of software programs, designed especially for the job shop sector, thereby providing faster programming, tool path simulation and machine kinematic data.

An ideal combination

Bob Reed, DMG area sales manager serving CNC Industries remarks, "We have an ideal combination of machine, control and software to offer the customer. The materials they run, combined with their typical production quantities, translate into a real challenge for the machine tool builder. We need to help them optimize their efficiency on the very first part, while providing ongoing flexibility to meet the variety of their workload."

Together with the Twin 32 and integrated Siemens CNC onboard, the company has been able to provide its customers the complete package. Moreover, to date, the controllers have required minimal service and no repairs, Kurt Wendhack is pleased to report. ■

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With ManualTurn software onboard, operators are able to “learn as they go” through the programming cycle



All pictures: Prince Industries

Progressive automation technology helps operators “learn as they go”

Changing the Paradigm

At Prince Industries in Livonia, Michigan, a unique blend of prototype and production work keeps operations in the 30,000 square foot job shop very busy. In the past, the choice always came down to manual vs. CNC machine tools, depending on the anticipated work load and job quantity mixes. One day, a Sinumerik 810D CNC with ManualTurn software onboard from Toolmex Machinery virtually revolutionized operations at Prince Industries.

The company’s customers include a variety of tool and diemakers, aircraft component suppliers, heavy construction equipment builders, energy producers and steel foundries. The shop houses an assortment of milling, turning and grinding machinery of all types, everything from manual to full CNC. A majority of the jobs involve shaft, ID and chucker work, usually in print-to-prototype and small quantity runs.

Learning fast

The predictably greatest challenge Prince Industries faces, according to owner Harold Eklund, is the programming and setup time

on the machines. Founded in 1978, the company has met the challenge in a variety of ways over the years.

However, something happened that would forever change the paradigm at Prince. Eklund saw a Haco TUR630MN with a Sinumerik 810D CNC and ManualTurn software onboard from Toolmex Machinery in Schaumburg, Illinois. He discovered that the machine did not only allow for manual operation in a manual mode, a feature particularly helpful for operators when needing to program from a print directly into the controller, but that the software also offered a “learn as you go” function especially useful for

operators that do not possess extensive G-code knowledge.

Improved control without compromise

The Sinumerik 810D is a compact CNC for drilling, milling and turning applications, featuring full integration with the Simodrive 611 digital drive package. It is said to be an ideal control for cost-optimized machine tools. Eklund explains, "This is the easiest control to program in our shop. Training new employees is especially fast and simple." Because a computer is not needed for G-code programming, generating a finished part has become much faster, and does not result in any loss of accuracy or part quality. "By compressing that time function, we've improved our profitability on a lot more jobs. Personally,

Attention to detail

The machine can handle a 4,400 pound workpiece between centers with a 25 inch swing and a 4.1 inch spindle bore with dual spindle nose. Equipped with high-precision brushless motors and drives, the TUR630MN gives Prince yet another distinct competitive advantage, one that Eklund and his team have come to greatly appreciate: namely, the machine's control panel moves along the entire length of the work bed. While it may appear to be a minor detail, the feature allows an operator complete access to the controls while inspecting even the largest workpiece. "It is just one more time saver and," as Eklund observes, "all of these improvements make a big impact on our bottom line."

the problem with us over the phone to diagnose the situation, and then sent someone out from their Chicago office with the proper parts. Our machine was up and running again the very next day."

Although a specific time-motion study has not yet been conducted, Eklund estimates that using the "learn as you go" progressive automation lathe has resulted in at least a 10 percent decrease in the time-to-part for many of the jobs performed at Prince Industries. Eklund also emphasizes the fact that the Siemens control and ManualTurn software allowed him to keep the same skilled operators running the machine at the improved productivity level.

Tom Kob, division manager for Toolmex, agrees, "The machine fills a void for companies such as Prince which routinely run



Typical parts produced by Prince Industries:
20 inch diameter aluminum motorcycle wheels ...



... and 5 inch diameter and 56 inch long landing gear components

I also like the excellent threading control on the machine," Eklund adds.

The first part on the TUR630MN is done in a teach-in manual mode. After that, the CNC supports the elementary contours, stock removal mode and cycle modes for thread, cut, groove, undercut, drill and thread repair. The machine features a step chain programming function entitled Easy-step that enables simple assignment of graphic symbols to the graphic elements and block commands. Up to 50 undefined elements can be calculated through the on-board contour calculator with contour handwheel. Online simulation is also said to be faster, with more reliable checking of parametric values.

Prince Industries processes all types of materials on the machine, from various tool steels to aluminum and Waspalloy. End-user applications for the parts produced at the facility include anchor components for U.S. naval vessels, ballscrews for military aircraft, forging dies, prototype tooling and massive, one-of-a-kind construction equipment sections.

Reliable and easy to operate

Used primarily for axis movement and spindle control on the manual turn lathe, the CNC onboard has been very reliable. Eklund notes but a single service problem to date, "We burned out a main board and had to call for service. Siemens discussed

prototypes and short quantity jobs. The CNC here does not require knowledge of G-code programming and, as a result, a number of very skilled manual machine operators can remain on the job and get much more accomplished." The reduction in time-to-part is indeed substantial while enabling the operator to progress into the CNC mode in stages. "It has been a very successful machine for us, precisely because it makes such a noticeable difference for companies such as Prince," Kob concludes. ■

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Iowa shop soars on flying optics laser with
new Sinumerik powerline CNC

On the Progressive Edge



A Sinumerik 840D controls all laser power, table motion and cutting bridge X- and Y-axis movement

Siemens AG

DC turbo resonator generates
four kilowatts power output,
enabling the laser to cut different
materials of various thickness

At Janco Industries in Sully, Iowa, Joel Jansen had a thriving business creating various structures out of mild, some out of stainless steel for the agricultural, food processing, food service and construction industries. However, during a visit to IMTS 2004 in Chicago, he saw something that would change his view on his company and its future. That something was the ECHO III flying optics laser from Han Kwang USA equipped with a Sinumerik 840D CNC.

Jansen admits that he had looked into laser cutting in the past, but that the ECHO III from Han Kwang USA, the American affiliate of the rapidly growing Korean laser cutting machine manufacturer, offered some noticeable differences as compared to other units on the market.

drive motor system. Further, the shuttle table system ran at 1,200 inches per minute for enhanced loading and unloading of the workpieces: a real time-saver.

The dealmaker

The Sinumerik 840D CNC, however, with its user-friendly design for PC interface, substantial 10 GB hard drive, 2 MB memory and network-based, remote diagnostic support, proved to be the real "dealmaker," cited by Jansen as an essential element of his buying decision. AC servomotor drives from Siemens also improved the speed and positioning. Training was another critical consideration, as was local support. Finally, the fact that both Han Kwang and Siemens had offices and training facilities in Chicago played a role in making the decision an easy one.

All of these factors combined with the system's small footprint, fast positioning speed, auto focus control for varying the beam target with high precision and, as Jansen observes, "a price that left the other players in the dust," solidified his purchase

0.004 inch accuracy and the acceleration substantial (10 square meters/second or 393 square inches/second), with constant inertial dynamics and, therefore, minimal wear on the rack and pinion assembly.

Quick production-oriented interaction

The Sinumerik CNC controls all of the laser power settings, as well as axis movement and feed rates. With the DNC and LAN interface, the remote diagnostic capabilities allow Janco operators to quickly interact with production control, and even with Siemens personnel over the Internet for direct real-time troubleshooting and assistance.

Han Kwang's Echo III laser provides the customer with auto focus control with 9.5 millimeters (0.375 inches) maximum focal length variation, achieved through air pressure deformation of a hardgold-coated mirror. The 4 kilowatt unit enables material thicknesses to be cut over a wide range, and is thus ideally suited for a job shop such as Janco. Mild steels from 1–20 millimeters (0.04–0.94 inches) and stainless steel from 0.8–12 millimeters (0.03–0.47 inches) are routinely processed at Janco to manufacture the various components the shop provides for its diverse customer base.

Profitable programming

When programming the laser, Janco utilizes its own software as well as the onboard ProDesign program, which automates the programming of sheet metal cutting machines from CAD to the critical nesting function that directly impacts material consumption and a shop's profitability, according to Joel Jansen. Additionally, because the program allows various lead-in/lead-out settings for differing contours, more diverse parts can run simultaneously. This is yet another cost-savings feature.

Han Kwang, which operates a 412,000 square foot facility in Korea, currently markets its machines throughout Asia and North America. The ECHO III laser at Janco can handle workpieces weighing up to 800 kilograms (1,760 pounds). Software updates are performed through direct uploads from the manufacturer, thus keeping Janco equipped with the latest versions of all applicable programs. ■



Janco Industries uses an ECHO III flying optic laser to produce equipment structures and components for the ag, construction and food processing industries

The Panasonic resonator, which generates the laser beam, offered significant upsides in terms of operating and maintenance costs. In addition to the precision flying optics design, it was capable of making more complex metal parts with holes and cutouts in less time with the help of its twin linear

choice. The advantages of the flying optic laser design are several. The optics move in the X- and Y-axis, thus the material remains stationary. Owing to the high precision of the dual Siemens linear motor drives, the positioning is fast (170 meters/minute or 6,693 inches/minute) with

More information:

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Siemens CNC a key factor for excellent customer rating at Model Screw Products

Keeping Standards High

Through the use of Index multi-spindle machining centers, a Clearwater, Florida job shop continues to score high marks with precision hydraulics, aerospace and defense sector customers. Model Screw Products, which employs a staff of 78 at its 42,000 square foot facility, produces various hydraulic components for major OEMs and government facilities. The company relies on Sinumerik 840D technology to control spindle and axis movement of its two six-spindle automatic machining centers.

Founded in 1914 by Hermann Hahn, Index builds various machine tools and machining centers sold under the Index and Traub brand names and marketed to automotive, medical, aerospace, electronic, optic and other precision parts manufacturers worldwide. These include CNC single- and multi-spindle turning machines, near net shape vertical CNC chucks, Swiss Type CNC sliding headstock turning centers, fixed headstock, twin turret machining centers, CNC lathes and heavy-duty CNC turning/milling centers.

Model Screw Products (MSP) typically works carbon steels (4140, 1117, 86L20, 1215, 12L14 and 11L17) and tool steels (A2, S7) on a variety of machine tools, including CNC multi-spindle, CAM multi-spindle, grinding, honing, broaching and diamond finishing. Parts produced at the facility range from shafts and hydraulic ports to rings, collets and caps. According to Tony

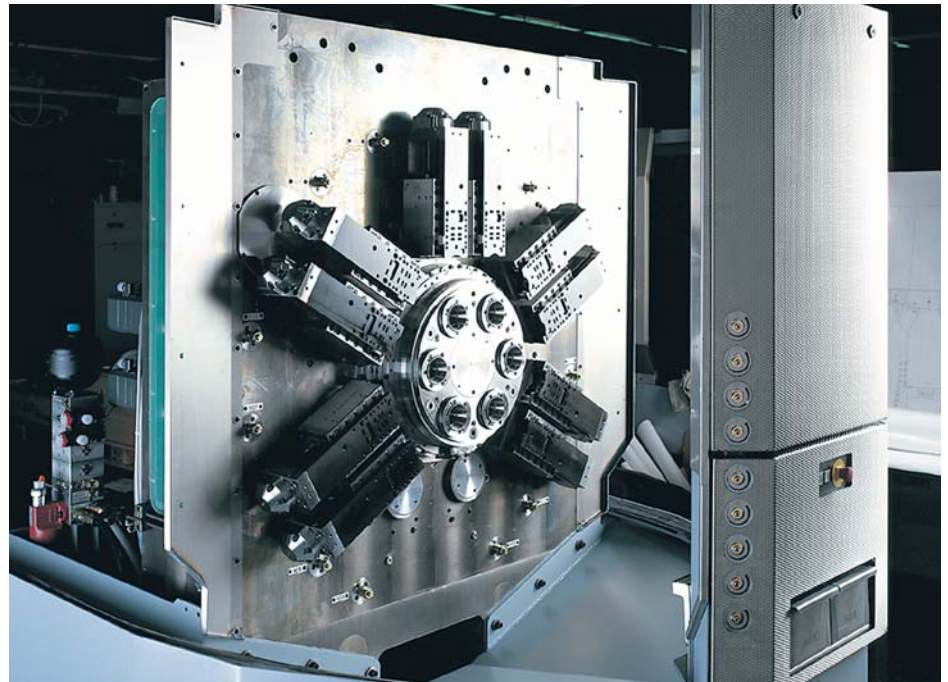
Farrell, general manager at MSP, "Our customers have very high standards, and we accommodate them by maintaining an absolute state-of-the-art machining and quality control operation."

Relying on advanced CNC technology

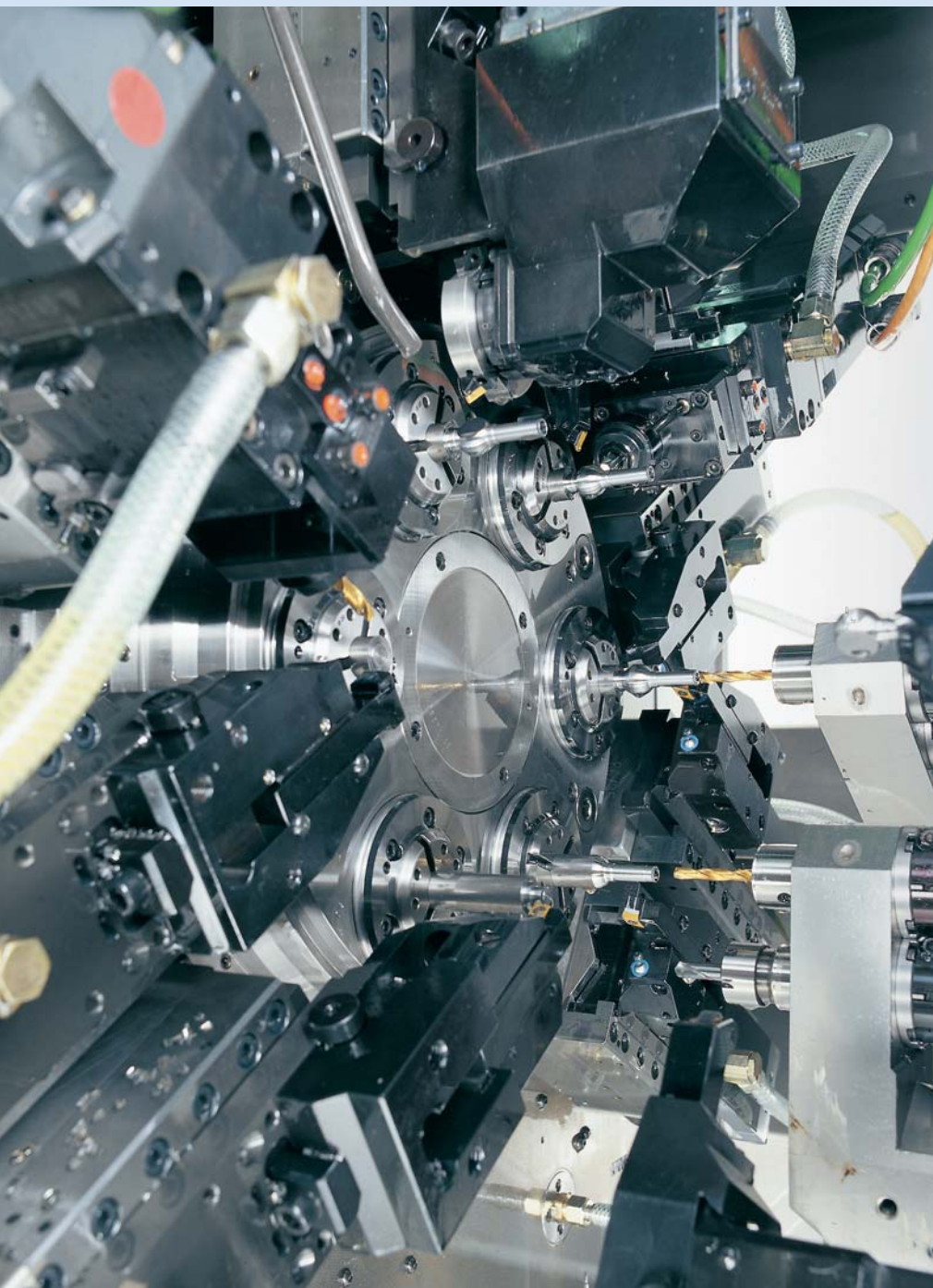
Two of the newest Index machines at MSP have made significant improvements in the productivity, quality and especially the data exchange process at the company, according to Farrell. The Index MS32C and MS32P are both precision CNC, six-spindle automatic machining centers used for 1.25 inch

The work area close up

Index multi-spindle CNC machining centers at MSP are used to produce high-accuracy components for hydraulic systems and defense ordnance



Model Screw Products produces parts ranging from shafts and hydraulic ports to rings, collets and caps



maximum bar and two inch chuck work to produce medium- and high-volume turned parts at MSP. And both feature an advanced CNC, the Sinumerik 840D, to control spindle movement and axis movement, monitor tool wear and to engage various safety options on the machines.

According to Index, Siemens controls are currently used for 99 percent of the axis and spindle motion at Index. "The types of drives and CNC packages we require at Index demand greater control capability for each individual axis and, with Siemens, 31 drives can be controlled with one NCU processor."

Index also emphasizes the memory upsides, "Data programs can be stored on a hard drive for long-term storage while the current programs are being stored and used out of a RAM chip for better and faster access." In addition, the control can be utilized for better tool management.

Comprehensive capabilities

The Sinumerik 840D is a high-level CNC, offering machine builders and end users alike a wide range of specialized functions for milling, drilling, turning, grinding and materials handling. Its capabilities also include nibbling, punching, metal forming

and laser processes. The advanced control offers a variety of additional features to increase shopfloor productivity, especially for meeting the challenges of high-speed and five-axis machining.

Farrell goes on to point out, "These CNC controls allow us to store multiple programs because of their substantial software capabilities. Internet capabilities onboard further allow us to communicate directly with our quality department on SPC (Statistical Process Control) data, as well as with our customers for real-time production scheduling. This enhancement especially has made a tremendous impact on our business."

One MSP operator characterizes the control as very user-friendly with respect to the setup, which uses plain language and "fill in the blank" answers as prompts on the CNC monitor. Troubleshooting is also easier, as is the programmed routine maintenance on the machine, all controlled by the CNC. Thanks to the Internet access, which enables real-time assistance, downtime is drastically reduced.

Meeting customers' needs

Both the end-user (MSP) and machine builder (Index) agree that the support of the CNC supplier (Siemens) was essential for the successful implementation of the high-level control platform into their operations. To verify quality at MSP, every part is inspected using a variety of dimensional, impact and other testing devices. Because the end uses of their components often include high-pressure hydraulics systems and critical accuracy defense ordnance, MSP is particularly sensitive to the QC monitoring and documentation protocols it maintains.

Various members of the Siemens staff, including the Siemens technical field service and engineering departments, assisted Index engineering with the CNC application for the builder's machine tools. A company representative is quoted as saying, "They were there for us whenever needed, striving to meet our needs and to meet or beat all our expectations." ■

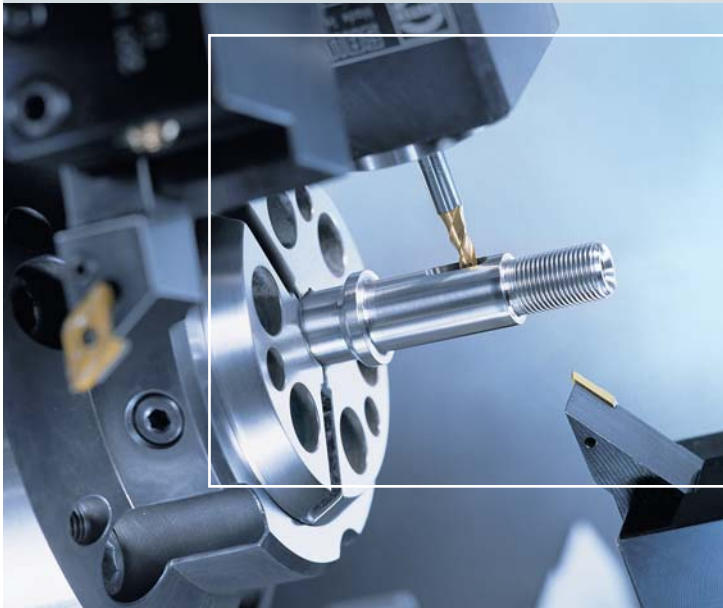
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These and other interesting applications are described in detail under:

www.siemens.com/read-motionworld



A new line of dual-spindle production machines from **DMG (Deckel Maho Gildemeister)**, headquartered in North America (Schaumburg, IL) incorporates Sinumerik powerline technology to offer end-users decided benefits before, during and after machining cycles.



At **aba z&b, Inc.** (Orangeburg, SC), a single Sinumerik 840D CNC replaced three processors and independent operating systems on what is considered to be the world's largest creep feed grinding machine—with highly satisfactory results.



Brooklyn Technical Services retrofit three creep feed grinders with a Sinumerik 802D at the Honeywell Engine and Systems facility in Greer, SC—a measure which proved to be a very cost- and production-efficient solution.

info

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Each workshop (one for operators and programmers and one for maintenance professionals) will allow us to focus on your area of need; bring you more demonstrations; and answer your "how to..." questions in greater depth.

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