Giving shape to tomorrow

Antoine de Saint-Exupery had it right. The intrepid aviator and gifted author once observed: "It is not for us to forecast the future, but to shape it." With de Saint-Exupery's aphorism as their inspiration/the editors of Tooling & Production brought together a cross-section of leaders in metalworking manufacturing to address the key issues of the industry in 2007. Along with so many of their colleagues, these are the people who will shape tomorrow and the days beyond. Each of the participants was asked 1 a specific question fashioned by the editorial team.

Jerry McCarty

Vice President - Sales Fadal Machining Centers

How are machine tool builders ensuring that their customers' capital investments in equipment produce the maximum return?

We see two major trends. First, there's a focus on the life-cycle value of the machine and the total cost of ownership. It begins, of course, with the selection of the right machine. During the years of its use, service support is a major productivity and cost factor. Localized "drive-to-site" response for repair or preventive measures, backed by broader regional/national resources for parts, is now a sought-after approach. Finally, the "end" isn't the end if reconditioning, controls upgrades, and rebuilding services are made practical and cost-effective. To do this, the machine must be designed for upgrade, coupled with the users' exit strategy for it. The result is higher ROI on the initial investment.

The second trend concerns machine capability. Durable-goods manufacturers are opting for machine tools designed specifically for their part production or tool-making equation...machines with no more, or no less, technology than required to reliably accomplish their range of production. If possible, they want to find that "right" level within a standard machine that is custom configured, avoiding the cost of custom-engineered solutions.

Spindle speed is a good example of frequent overkill. We see situations where the stress of 24/7 production tears through an unnecessarily high-speed spindle (20,000rpm) in a year, with spindle replacement costing over $20,000. Use of a slower spindle, with higher rigidity, ends up cutting more parts at less cost because the rigidity allows deeper cuts, and fewer of them. With better tool life.

Cutting feed rates can be increased by adding coolant-through-the-spindle options; when you consider the additional parts that can be made every hour, multiplied by the life of the machine, the value proposition is outstanding.

Other options also have very favorable price/value ratios: probes for in-machine part alignment/setup or part inspection save time. Rotary tables for positioning parts reduce workpiece handling and the related sacrifice in accuracy and quality. Chip conveyors easily pay forthemselves. Pallet changers enhance throughput on higher-volume applications. Virtually all producers see value in high levels of controls capability and compatibility.

The "best" isn't always worth it, however. Medium-volume part producers are becoming more aware of diminishing returns on high investments in the very fastest tool change times, for instance.

A final comment: We are always impressed with the CNC machine-application creativity exhibited by manufacturing companies in such industries as musical instruments, sporting goods, aftermarket wheels, die and mold, and others. As machine tool builders, we are proud to support their imperatives. Fadal Machining Centers, www.rsleads.com/701tp-180

Durable-goods manufacturers are opting for machine tools designed specifically for their part production or tool-making equation... machines with no more, or no less, technology than required to reliably accomplish their range of production.

Rolf Biekert

President and CEO

Trumpf Inc.

You have spoken of businesses meeting customers' requirements by "finding the right balance of speed, flexibility, and quality." With a particular view toward fabrication and laser-cutting technology, give us your view of how that formula will be applied in 2007.

Almost every sector of the American manufacturing industry is facing stronger competition in today's global marketplace. To keep pace, we are all forced to make improvements that move us beyond where we are right now. All types of manufacturers are asking themselves, "What do I have to do to be more competitive?"

There is, of course, no easy answer to this question. But certainly to stay competitive in the face of international competition, manufacturers must meet and surpass the ever-increasing global standards of efficiency, flexibility, and quality.

On one side, high-volume production continues to move overseas, leaving American manufacturers with low-volume jobs for customized products, just-in-time deliveries, and shorter lead times. On the other side, in an overall positive economic cycle, the labor market for qualified manufacturing jobs is getting tighter and tighter. These changes in customer expectations, in combination with the labor market situation, directly affect the manufacturing strategies of our businesses.

New production methods like lean manufacturing help to keep us successful. This approach requires us to eliminate waste, minimize downtime, shorten setup, and streamline production throughout our operations.

To accomplish this goal, we must redefine the requirements of our manufacturing equipment. All processes as well as technologies in our businesses including material management, shop control, and programming - must also be integrated in this improvement process. Machine equipment with highly reliable technology, the flexibility to easily adapt to fast changing requirements of customers, and expandability to accommodate future growth, is well suited to help us meet such rapidly changing market demands.

Shorter product lifecycles and smaller lot sizes, in combination with unpredictability and inconsistency in labor, are not only changing our approach to production; they are

affecting our margins. International competition, compounded by an overall increase in the cost of doing business, requires full utilization of our equipment. To stay profitable and lower any risks, we must generate as much revenue as possible for the fastest return on investment.

"Lights-out shifts" are no longer limited to high-volume manufacturers; they are spreading throughout the industry. Changes in modern machinery and production organizations have made automated production cost-effective and reduced dependency on labor market even in short-run environments.

In addition to flexibility, customers insist on a higher level of quality in products made here in the United States. As manufacturers who face more stringent requirements and higher quality standards, we have to improve our accuracy, repeatability, and process reliability.

In order to compete successfully in and against the world market, manufacturers need to produce a higher quality product with an even greater degree of flexibility and efficiency.

The right set-up of technologies and differentiation in combination with automation can help manufacturing to be competitive anywhere, even in high labor cost areas! Trumpf Inc., www. rsleads.com/701tp-181

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Anthony J. Affuso

Chairman, CEO and President, UGS Corp.

What further value from product lifecycle management software will manufacturers be able to access?

During 2007, manufacturers will access greater value from PLM in several areas that took hold in 2006. Increased revenue, reduced cost, and faster time to market - the hallmarks of PLM value - will be enhanced through a variety of advancements.

*Expanded solutions for small- and medium-size businesses (SMB) - Mid-market customers will access the value that enterprise corporations have leveraged for years. The key to success for the SMB is the availability of proven, world-class software in product design, analysis, manufacturing, and data management that is preconfigured for ease-of-use and rapid deployment.

*A further proliferation of open collaboration and data sharing - Over the next year, 3-D product data sharing and compatibility will continue to converge on widely used data standards that promote openness, multivendor interoperability, and seamless collaboration. In 2007, manufacturers will not tolerate technology that impedes innovation, but instead will demand software applications that can work seamlessly together through a common 3-D language like JT.

*Tighter integration between PLM and the production floor - The key to increased digital manufacturing value in 2007 will be realized by the manufacturers that take advantage of tighter integration between production floor solutions and mainstream PLM. UGS provides a way to automatically link production information back to a company's product and process definition through a common database that ensures a perfect match between "as planned" and "as built" configurations. Over the next 12 months, more manufacturers will discover how this type of integration can improve production performance and enable process improvement.

*Streamlined regulatory compliance - Government and industry regulations, such as RoHS, WEEE, ITAR and many more, continue to proliferate and present a daunting challenge that can negatively affect a company's bottom line. During 2007 more manufacturers will discover that a state-of-the-art PLM system can actually turn the need for regulatory compliance into a competitive advantage. Many of our customers use PLM today to automatically collect, track, and report information that ensures their product launch dates will not be delayed due to non-compliance or lengthy audits.

*More sophisticated simulations - Simulation allows a company to predict how its product will perform under different conditions or how their production floors will operate during production. Continuing advancements in computer-aided engineering (CAE) and digital manufacturing simulation, along with breakthroughs in High Performance Computing (HPC), will enable manufacturers to realize unprecedented simulation power on PLM desktop systems in a standard Microsoft environment.

Finally, as we look to where PLM will grow, we also see a greater acceleration of PLM adoption by non-traditional industries in 2007, effectively expanding PLM value to a much wider universe of product producing businesses. UGS Corp., www.rsleads.com/701tp-182

John Israelsson

President

Sandvik Coromant

In 2007 - regardless of the segment of the metalworking industry a company is in - what are the key strategies to increasing productivity so as to compete on the global level?

If one looks at manufacturers that are truly excelling in the global market, a common theme emerges quite clearly. They are companies that constantly strive to improve their processes. This type of thinking should be automatic for any company that wants to maintain and increase its global competitiveness. Technology is advancing too fast for a manufacturer to stick to the status quo simply because a process is efficient and productive by yesterday's standards.

When evaluating their processes, it is absolutely imperative that manufacturers realize that the lowest-priced option almost never results in the least amount of costs. This is a lesson that is somewhat easier to remember when evaluating large purchases, but many forget to apply it to smaller items, such as consumables.

For the past several years, Sandvik Coromant has shared its model of Manufacturing Economics, showing the effects of tooling on the cost of finished components. Because cutting tools make up such a small fraction of overall part cost, changes in their price or tool life have only a negligible effect. At the same time, tooling plays a dramatic role in productivity, which has a very large impact on part cost. Manufacturers with high global competitiveness tend to implement this kind of thinking across the board, concentrating on opportunities for large savings instead of chasing nickels and dimes.

Another focal point for manufacturers is the selection of suppliers that support constant re-evaluation and enhancement of processes. Sandvik Coromant offers customers the Productivity Improvement Program (PIP), a tool that provides comprehensive evaluation of the productivity of machining processes. With today's rate of technological

innovation, it is vital to choose suppliers that are prepared to supplement a manufacturer's efforts at continual improvement.

Furthermore, if a manufacturer intends to offer products on a global level, it is important to partner with suppliers that have a global presence and mentality. It is typically difficult, time-consuming, and inefficient to drag local suppliers along when a company decides to go global.

Lastly, to succeed on a global level, a manufacturer must know and protect its core competencies. For many companies, this must first require comprehensive self-examination to determine core strengths and weaknesses. If a manufacturer performs a substantial amount of work outside of its core competencies, it is wise to evaluate whether overall costs would be reduced by outsourcing to a company that specializes in that area. Sandvik Coromant, www. rsleads.com/701tp-183

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John M. Cachat

Founder, Chairman

IQS Inc.

Where exactly will quality software - including software used for compliance efforts -progress during the next year?

There are two aspects to this question - a cultural issue and a technical issue.

First, the cultural issue. Quality management is now a mission-critical business challenge because companies cannot compete on price or delivery anymore. The only differentiator left is quality. The internal cultural problem that remains as a barrier to operational excellence is the mindset that quality is the responsibility of the Quality Department and that is basically inspection, SPC, and calibration stuff. Every top manager needs to review in detail the quality management specification for his industry (ISO9000, TS16949, AS9100, ISO13485, etc). Top management must understand that the current quality standards cover the entire product lifecycle and that implementing cross-company processes result in significant cost reductions.

The new role of the quality professional is to provide the organization with a seamless, integrated view of the business. The quality organization must provide the answers that cannot be found in financial and ERP systems. Management must have information at its fingertips to answer the questions from the accounting system: For example, why is this part cost higher than estimated? Management needs answers to the questions from the ERP system: For example, why are these parts on hold in receiving or why can't we ship the parts?

Now the technical issue. The automation of quality-management systems has not been given the attention it deserves because of the cultural issues stated above. Therefore, most companies are trying to automate complex business processes with e-mail, spreadsheets, and home-grown or stand-alone software tools. The success of Enterprise Resource Planning (ERP) software was based on the concept of a single software tool that centralized non-integrated systems (accounts payable, accounts receivable, purchase orders, receiving, shipping, etc).

Companies will be looking in 2007 to elevate the quality-management-system software to the same level as financial and ERP systems in order to reduce cost and provide a competitive advantage. Quality-management software must have off-the-shelf integration with ERP software and be capable of importing key characteristic data from CAD software. The application of lean and six sigma practices to the business processes required for world-classquality-management systems, as defined in the international standards, cries out for an all encompassing, single software solution. Of course, the technical solution must be accompanied by a robust return on investment analysis, in order to document the cost savings that will in turn help turn around the cultural issues. A free ROI tool is available at www.iqs.com. IQS Inc., www.rsleads.com/701tp-184

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Mike Parker

Director of Marketing and Product Development, Seco Tools Inc.

Seco says it's important to offer more than just an excellent tool. The company talks in terms of "a holistic approach to manufacturing." Please define and expand on that term.

As the manufacturing environment becomes increasingly global and fiercely competitive, it is paramount that suppliers like Seco help prepare manufacturers for future business challenges. Global capability continues to be increasingly important. At Seco, we can provide a commonality of product and standards that apply no matter where in the world a customer is located.

Simply offering a great product is not enough today, however. Manufacturers also need support and services that help them increase efficiencies and productivity. Parts out the door are key to survival given the current trend of sending work offshore. We are helping customers meet these challenges by presenting a holistic approach to manufacturing, where we offer to them a combination of tools, application support, and point-of-use solutions. We feel this is critical to help our customers be competitive and profitable.

We examine every aspect of a manufacturer's' tooling needs to see where we can have a significant impact on its business. We refer to this as Seco Business Solutions, which is an entire offering of service provisions made available to our customers for the sole purpose of placing them and their needs at the center of our focus in an effort to improve their profitability. Seco Business Solutions offerings include, for example, the SecoPoint system, a Web-enabled inventory system which automates and streamlines the processing of tool crib and storeroom transactions at the point of use to reduce fixed costs positively and impact productivity and information flow. Another example is our Productivity Cost Analysis (PCA), which measures a process or workpiece as it moves through production. Each step of the process is examined to find bottlenecks and potential for improvements. Customer requirements are noted and the software is manipulated to achieve the given objectives whether these are reduced costs or increased output. Additionally, we have created our own software to ease the programming of complicated cutting paths for a variety of applications. This software is free to customers.

We strongly feel that having a welltrained and educated work force is absolutely critical to achieving productivity and profitability. We regularly offer free training classes throughout the country to help our customer base keep up on the latest machining techniques.

In 2007 and beyond, we will be concentrating on making things as easy as possible for our customers to increase profitability, and we will do this by supporting our customers through a combination of product and service offerings that encompass every aspect of their tooling needs. seco Tools Inc., www.rsleads.com/701tp-185

Scott Walker

President Mitsui Seiki USA Inc.

What ideas, lessons, and observations can all of us in metalworking manufacturing take from IMTS 2006 and apply to our industry in the new year?

My grandfather was one of the founders of the Society of Manufacturing Engineers, and when I turned over the historical archives to the SME two years ago, one of the old documents outlined the reason for the first tool show held in the United States.

In the early 1930s, buying machine tools was a logistical problem, so the early members of the ASME, as it was called then, had an idea to bring buyers and sellers to one location. It was difficult to convince the builders to bring all of their equipment to one location with their competitors. But the organization took a huge gamble and paid for the show space up front, optimistic those builders would participate and potential buyers would attend. The bet paid off. The first show was a smashing success. The $22,000 initial investment returned SME's first significant profit and made tool shows a viable business venture.

Today's communications technology has changed machine-tool-buying procedures. Many buyers come to the show with a purchase order in hand, or come for their final evaluation and place orders shortly after the show. The idea that IMTS is the showplace to introduce new technology is getting diluted, in my opinion. For builders to develop and demonstrate a truly new innovation every two years is almost impossible. With aggressive sales tactics, provocative graphics, and fresh techno buzzwords, most exhibitors put on a good front. But our prospects are catching on to the "smoke and mirrors." One of the questions I often receive at the show is, "It looks good, but does it really work in a production environment?" Potential end Users love to see new machines, but they appear to have doubts they really will work.

Here is what I recommend both builders and buyers keep in mind, whether it's preparing for an IMTS or helping your company survive.

The adage "You get what you pay for" applies in the machine tool business. If one proposed solution costs more than another, do your research, but most likely it will work better than the cheaper solution. Further - and here's the real interesting point - it's actually less expensive in the long run for the customer, over the life of the machine. Better components, hundreds of engineering hours, and careful manufacturing techniques all contribute to longer, more productive machine life.

Also, consider developing technological innovation with your machine tool builder or customer. Share in the cost and time it takes to make it work. Be committed to partner until a mutually agreeable end is reached. We are doing more of this at Mitsui Seiki, particularly since we are geared for custom and highly engineered solutions. The results have been excellent for us and for our customers, and they have helped us bring true innovation, not just smoke and mirrors, to IMTS. Mitsui Seiki USA Inc., www.rsleads.com/701tp-186.

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President and CEO BIG Kaiser Precision Tooling

For the longest time, BIG Kaiser has talked of "total tooling solutions." In which direction will those solutions be headed in 2007 - particularly in terms of pricing, service, customized technology, and long-term support?

The concept of "you get what you pay for" is typically present during the purchasing process of capital equipment. However, when it comes to purchasing tooling for that very same equipment, many companies fail to realize the significant impact tool quality can have on a manufacturer's productivity and overall efficiency.

When it comes to purchasing tooling, there is no shortage of manufacturers to choose from. In the tooling industry, technology among the competition is similar. When these technologies appear to be the same, price often becomes the main determining factor in purchasing decisions. Companies that choose to purchase lower-priced tooling are depriving their machines of productivity and negatively impacting their bottom line.

For this reason, it is important that companies are positioned to address specific markets within the industry. At BIG Kaiser, we differentiate ourselves from our competition by offering only the tooling that will support high-accuracy, high-efficiency environments. By securing this niche within the very broad tooling category, we are able to concentrate our business on delivering the best possible products and solutions to our customers, those who recognize the value in purchasing higher-priced, higher-quality tooling.

To support BIG Kaiser's identity within the industry, we have built our brand around our core strengths - our products and our people.

As a manufacturer of precision tooling, we are committed to helping our customers find the most efficient tooling solutions for their business. We do not offer products to fit every price point and every need within the market. Instead, we are focused on delivering only products that are engineered to exacting standards and manufactured with the materials and craftsmanship that enable superior performance.

In addition to delivering superior products, each of our employees plays a critical role in supporting our identity through our actions. BIG Kaiser's engineering staff, customer service department, and sales partners all share the same ultimate goal of providing complete tooling solutions to our customers.

In recent years, manufacturing environments have been trending toward leaner environments, seeking ways to minimize manual operations and optimize efficiency. Our experts are able to take a comprehensive look at a company's processes and applications, and identify ways to maximize production and profits with appropriate tooling, setup, and workholding solutions. BIG Kaiser Precision Tooling Inc., www. rsleads.com/701tp-187

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Brian Papke

President

Mazak USA Corp.

Mazak is known for its commitment to customer service. Ideally, throughout manufacturing in general, how deep should the commitment to the customer be?

The environment for manufacturing today is one where customers are continually under pressure to reduce costs and improve delivery times while producing quality parts. Consequently, they require high-technology machine tools that accelerate throughput, address lean manufacturing goals, and perform reliably. In such an environment, Mazak believes the best customer service is proactive in nature and tied into a total-solutions approach.

The Mazak total-solutions approach begins with innovative product design and advanced technology to provide higher productivity, increased reliability, and reduced maintenance. Furthermore, we are committed to continually investing in our own manufacturing technology to provide customers the advantages of these productivity advancements. This idea that we utilize the machines we sell our customers gives us input to incorporate changes and improvements into our products. This ensures that our customers receive the highest levels of reliability and productivity.

These product innovations must be effectively implemented on the customer's manufacturing floor in order that the greatest productivity improvements are achieved and our customers maximize their competitiveness. A further example of Mazak's total-solutions approach is our continuous expansion and investment in Technology Centers in major manufacturing markets. Through this network of Technology Centers, Mazak provides customer solutions in process development, turnkey systems, technical seminars, and training so that customers can upgrade their skills and run their equipment to maximum benefit.

Of course, commitment to service to the customer is keeping their machines running. Mazak maintains 24-hour accessibility for technical assistance over the telephone. In addition, Mazak has more than 250 North America factory-trained service technicians on its payroll. Each is equipped with a laptop for immediate access to Mazak's database for parts drawings, service bulletins, and application information in the field. To further reduce customer downtime, Mazak expanded its program of reconditioning key components such as spindles, turrets, and tables to original factory specifications in our Kentucky operations.

When replacement parts are necessary, our achievement ratio is that 97 percent of parts are shipped on the same day as the order. We recently invested $2 million in a new computer-controlled AS/RS system in Florence, KY, to help meet that challenge. This area includes 14 full-time associates in our Parts Call Center to manage order entry and parts processing over the phone, fax, or Internet. We are continuously improving efficiency and commitment to a high amount of parts inventory. This allows us to support every Mazak CNC machine that has ever been imported or manufactured in the United States.

Being a total-solutions provider takes commitment to facilities and skilled people. We are fortunate to have invested in all these key ingredients of a successful service operation. This has given Mazak tremendous flexibility and resources to provide the best customer service wherever it's needed. Our ultimate goal is to raise customer satisfaction through product, technology, and support to the levels consistent with our customers' expectations, and those expectations are rising each and every year. Mazak USA Corp, www.rsleads.com/701tp-189

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Dr. Masahiko Mori,

President, Mori Seiki

You've said that manufacturing is at the "core of the global growing economy," pointing to innovation as the key to moving manufacturing forward. How will manufacturers best benefit from innovation in 2007 and beyond?

Put simply, innovation is the key to all future success. However, with the intensity of today's marketplace, many manufacturers find themselves rushing from challenge to challenge, too occupied with the here and now to adequately prepare a technological strategy for the future. While this state of perpetual reaction may allow for continued survival in the short term, over time it will often lead to a steady decline in capabilities relative to the competition. As the world population continues to increase and global competition becomes even more demanding, manufacturers must develop new ways to achieve efficiencies on every level. From process integration to automation systems, innovation is the answer. The question then becomes, How?

Recent dramatic breakthroughs in machine design now allow for unprecedented levels of efficiency in several ways. Most obviously, machining speed has risen significantly, without requiring any sacrifices in terms of accuracy. In fact, innovations such as Mori Seiki's DCG technology actually provide increased accuracy along with boosting cutting speeds and extending tool life. Advancements in thermal stability and other areas of machine design complement this, producing higher quality parts and opening up opportunities for growth and profitability.

Furthermore, as the technology of multitasking machines has matured, previously unimaginable degrees of process integration have become possible. This allows manufacturers to greatly reduce their quantity of work-in-process, streamlining the flow of parts through their facilities. The ability to fully machine components with a single setup on a single machine has also created the agility to quickly and efficiently respond to shifts in customer demand. For many manufacturers, this has redefined the possibilities and potentials of their operations.

Increased machine performance has also allowed for the development of much higher levels of automation. Through unattended operation, manufacturers are able to stretch their limited labor further, producing greater quantities of products while achieving the lowest cost per part possible.

Moving forward, those who seek out and integrate the benefits afforded by innovation will claim the leadership positions in this ever-changing marketplace. Without that drive for constant improvement, manufacturers risk becoming irrelevant as their competitors soar past them by embracing the growth and profitability that innovation affords. Ultimately, it is innovation that differentiates in a crowded market. Mori Seiki, www.rsleads.com/701tp-188

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