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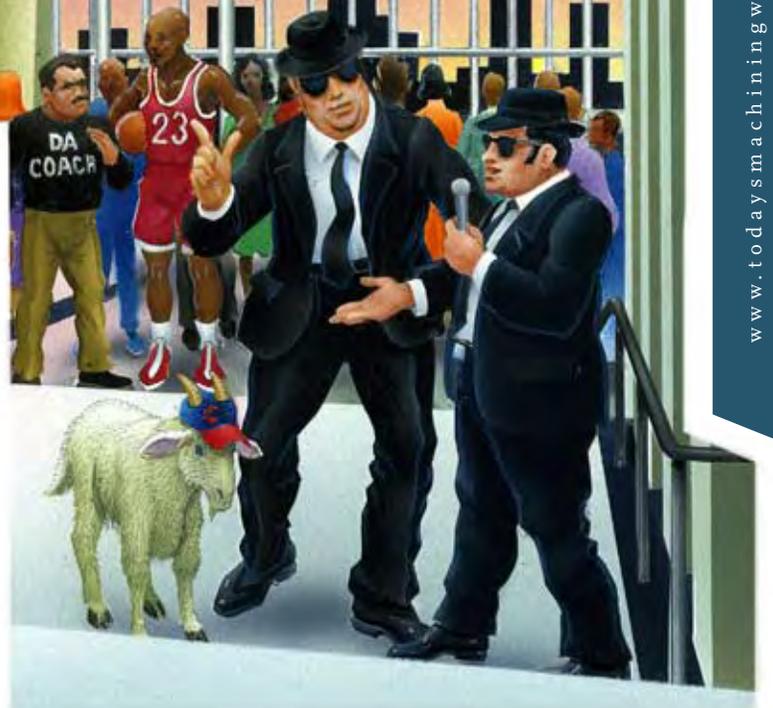
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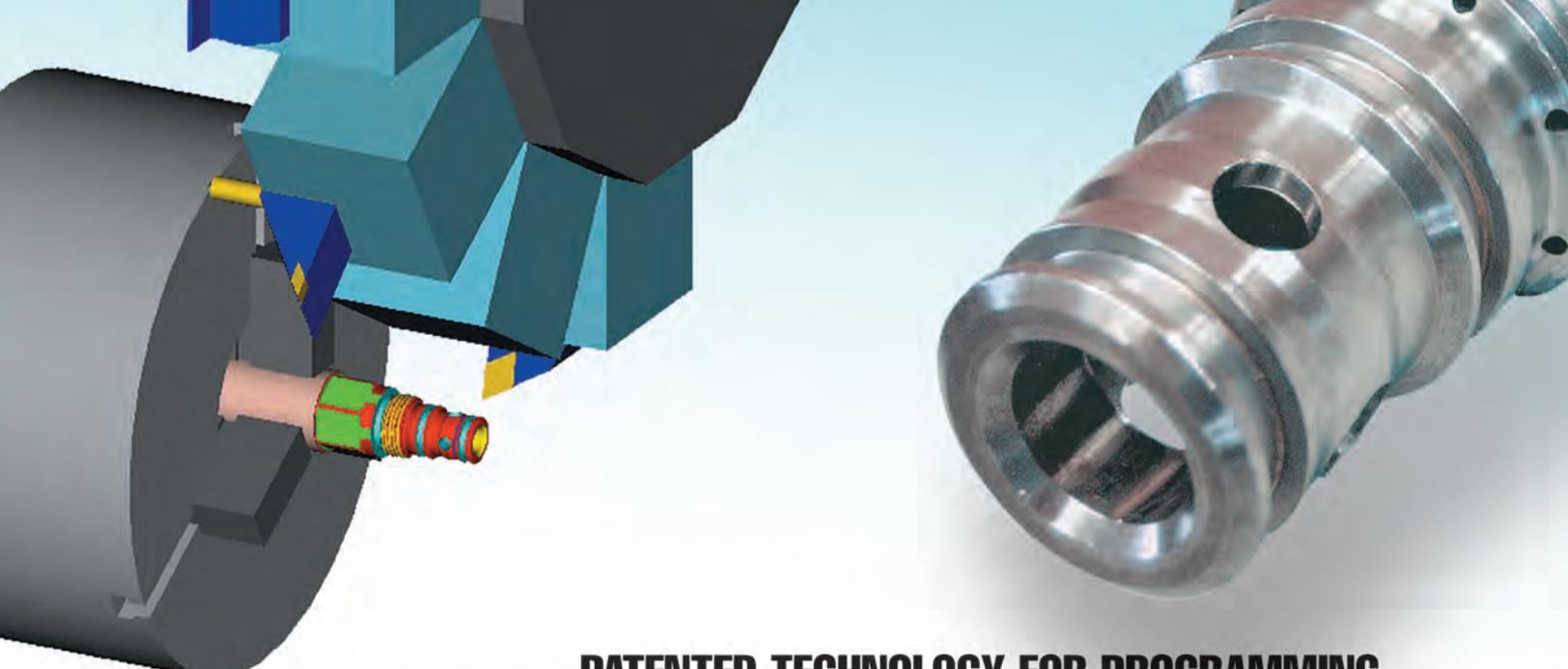
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editor's note

Tourist Thing

IMTS is an exhausting, exhilarating endurance test. But at least it is in Chicago – “that toddling town” that I have always loved.

I invite you to visit us at McCormick Place in our humble booth #A-8040. *Today's Machining World's* strength is its people, and we'll be there to talk and greet. No fancy spread – no Harley, no Corvette, although the Rolling Stones will make an appearance.

Please read the piece about our favorite things to do in Chicago. I limited myself to three in the article, but I'm going to throw a few more options out.

Go to Manny's Coffee Shop on Jefferson and order corned beef on rye. Brisket and pastrami are also fabulous. It's a 10-minute cab ride from McCormick.

After Manny's, try Mario's on Taylor St. for Italian ice. I love the watermelon, but every flavor is superb. The atmosphere is pure Chicago. Across the street is Al's Italian beef– the original store. Best french fries in the city, and some tough ladies behind the counter, so don't stammer on your order.

If you want a wonderful dinner with high energy go to Shaw's Crabhouse. If you want peaceful with great views and wonderful service, go to the Ritz-Carlton coffee shop off the lobby on the 12th floor. It's a marvelous place to celebrate or unwind.

An early morning walk down the lakefront is a gift– but Lincoln Park is a close second, especially if some of the animals are outside at the zoo.

Wrigley Field is my personal shrine, but the Wrigleyville neighborhood has great bars and infectious energy, even if you are agnostic about baseball.

Take the Metra to McCormick Place because it's unbelievably convenient and trains are fun. If there is a concert at Grant Park definitely go, even if they are playing Bartok. It's a memorable night with or without a date.

IMTS is still about the iron, but your memories will be of the people you hung with, and the scenes you breathed in. Come and share it with us.

Lloyd Graff
Editor/Owner

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Jessica, your work on the "Welcome to Warsaw" piece (May, 2006) is superb, and you write as if you are a seasoned professional in the Orthopedics Industry. I visited Warsaw some 20 or more years ago when it was perhaps the only "Bone Screw" capital of the world.

On my first visit, I inquired about a preferred Polish restaurant, only to receive a quizzical look and the response, "We don't have any!" I found this surprising, as I'd seen a statue of General Thaddeus Kosciuszko in many Polish restaurants. During revolutionary war times, Kosciuszko was recruited by Ben Franklin in Paris, served as Washington's Military Engineer, and during a seven year span, was credited with giant accomplishments that resulted in victories. Following the War, Congress promoted him to Brigadier General, granted him 2.5 square kilometers of land in Indiana and gave him a large sum of money. I thought you'd enjoy the Polish connection to American Orthopedics, but if you want to enjoy good Polish food in Warsaw, bring it with you!

Bernard W. Goering
Berea, OH

Happy Trails

My wife, Debbie, and I went to South Africa for the Young Presidents' Organization Global Leadership Conference. We spent time in Johannesburg, Cape Town, the Drakensberg Mountains and the mountains of Cape Point. We rode the Pick N' Pay Cape Argus Cycle Tour, the world's largest mass start-timed bicycle ride, with 30,000 other cyclists. We met South African business legend Raymond Ackerman, founder of Pick n' Pay. He is a visionary business leader, and the Ackerman Family is one of the most powerful in South Africa. He has generated huge value for his customers, his employees, his family and his shareholders. Learning about his business was a huge inspiration. Ackerman was asked about Wal-Mart. He said he admired the way they have delivered value to their customers through lower prices but questions the sustainability of their current

approach to business. Like Sam Walton, Ackerman made his mark by bargaining hard with suppliers and selling products lower than the competition could imagine.

I also visited a couple of machine shops. In Cape Town, I had an "it's a small world" moment. In 2000, one of our large aerospace OEM customers took a group of parts from us as part of a global sourcing initiative. This group of commercial aerospace parts was part of an offset transition package (Offset refers to a process by which aerospace OEM's place work in a foreign country— frequently an emerging market where low cost wages are common— in exchange for selling products— frequently military— to those governments.) that went to a supplier in England... not exactly a low cost country. One of the more valuable parts in the package was made from Stellite, a pricey cobalt alloy. I think the supplier offered our customer a huge discount, possibly even a piece price that was less than the cost of the material. Go figure. Six years later, I was showing our line card to the operations manager at this Cape Town shop, and he recognized that part in one of our historical marketing photos. He showed me first article samples of the parts that he produced for a customer in England. I learned that offsets work in South Africa too, especially now that their economy is open to the world. Labor costs are lower in South Africa, but not like Mexico, India or China. They successfully made the parts, but were unsure if they were willing to take on the risk of a production lot with such huge raw material exposure. If you scrap one part, you go in the hole with a job like that. It was obvious that the English supplier never made money on the job. I saw lots of Haas VMC's, Mazak turning centers and a line of Acme's. These shops had cut their teeth doing work for the South African defense industry, which had been shut off from the rest of the world for years. They developed their own in-country capabilities. In the decade since apartheid ended, the rest of the world has started to discover these suppliers, especially in Europe, but now in the US.

Scott Livingston
Horst Engineering, East Hartford, CT

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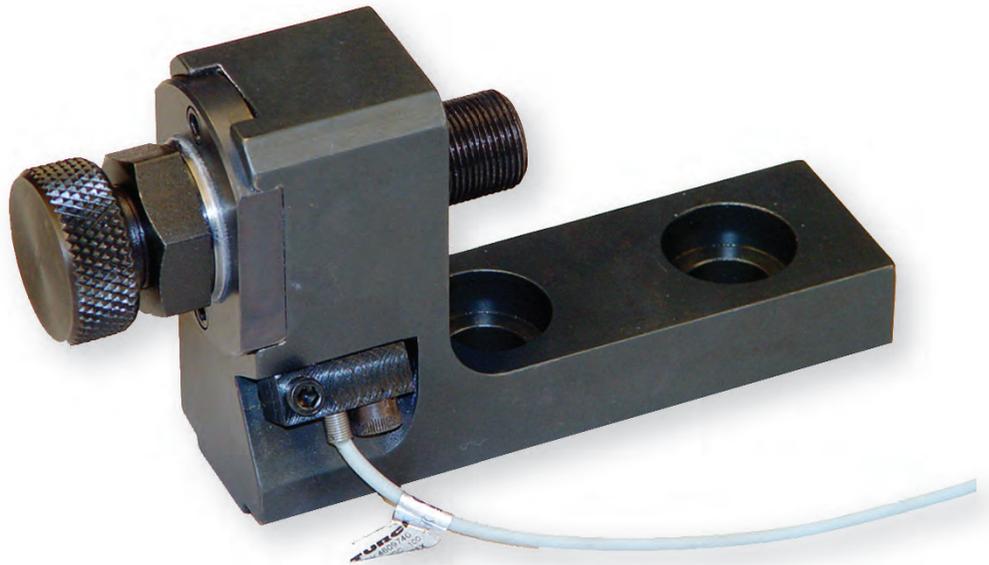
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The Haas File

The allegations and indictments of Gene Haas are serious. This is a whistleblower case of major magnitude. This is not a case that can be easily plea bargained. Ironically, a cocaine dealer or a first offender burglary or assault case defendant may have a much easier time making a deal with a prosecutor than a businessman with impeccable credentials like Haas.

This case may go on for years, which could mean that Gene Haas will be deflected from Haas Automation and his NASCAR team, the two passions in his life.

Bob Murray has taken over the day-to-day reins at Haas. He is known as a capable manager. The company has enormous momentum and is projecting \$700 million in sales in 2007, with over \$100 million profit. If it were not for the indictment, the company would be worth perhaps \$2 billion in an IPO or a leveraged buyout. But the indictment is there. The machining community may never look at Haas Automation exactly the same, no matter what the outcome of the trial. This is a life changing event for Gene and the company.

Personally, I feel terrible for him. He is as tough and feisty and resilient as they come, but fighting the Feds in a case like this will be hugely draining. He may very well beat them in the end and be exonerated, but it will be exhausting.

Haas Automation's detractors have sharpened their knives, and will certainly not be holding back at IMTS.

The company has a superb product blend and the best machine tool sales network in the world. But they are vulnerable now, and the community will be staring like never before, looking for cracks. If Gene Haas can come to IMTS, he should. If not, Murray and the other top managers must present unity and strength at IMTS to enable the company to weather a most serious storm.

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swarf

I saw an old customer at the Detroit airport recently, who asked me most sincerely, "What markets should I look at, Lloyd?" as if I knew. I've thought about it a lot, and here are a few ideas.

Agriculture looks like a big opportunity. The ethanol ramp up is a boondoggle with a 54 cent per gallon of gasoline subsidy, but world political risk finally justifies it. Corn is probably headed to \$3 a bushel, which will put a lot of land back in play. The world still needs food, too, so equipment and irrigation are going to be hot. Aquaculture will continue to grow to meet protein demand, so filtration devices should thrive.

Energy will continue to expand, which means an oil and gas exploration and drilling boom. Coal mining looks even more promising because of coal's abundance and the imperative of hybrid and full electric vehicles. Nuclear will get traction, but it will probably be slower than coal. If oil edges toward \$100 per barrel, oil shale will become viable to develop along with the tar sands in Alberta, which means enormous demand for earth moving and heavy truck.

The fittings business, which looked like a China express a few years ago, is promising again because of the demand for hydraulics in the great infrastructure buildout for energy development, as well as agriculture.

We may see a resurgence in demand for mid-range batch production in volumes greater than CNC lathe range but smaller than Hydromat's sweet spot. Perhaps the day of the sophisticated multi-spindle screw machine is coming back, while the automotive market stagnates.

The medical market is still growing, but the orthopedics field seems to be taking a breath for the moment.

An area of interest is the growth of unleaded materials. For companies that master the chip problems of unleaded aluminum, there will be plenty of opportunity. Composite materials are taking over aerospace and eventually a lot of other areas. Machining composites will mean growth possibilities.

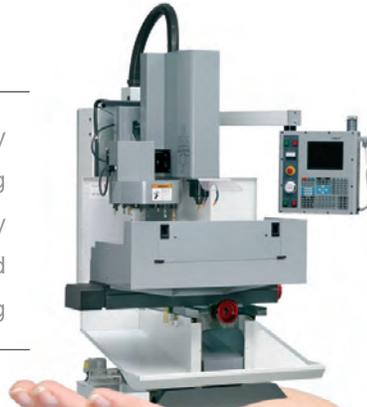
These are all big macro picture thoughts, but there are a thousand niche markets that I could never think of, but you know some of them because they are your personal interests, or you have a friend who happens to play there. There is always growth in those vineyards.

And then there is all that wonderful possibility in your own backyard. I will virtually guarantee that one day a week spent on calls to companies you could roller skate to will bring in an array of interesting work you did not know about.

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When I go out on a story or on a consulting gig, the first question I ask my subject is, "What business are you in?"

I usually receive the "are you an idiot?" look, as if the answer is self-evident. But my question is an honest one, and if the interviewee understands the subtlety of the query it will generally prompt a revealing answer.

I know that if I were asked this question I could answer in several different ways, each of which might suggest issues and opportunities.

So, I will address the question to you now. Are you in the machining business, the precision parts manufacturing business, the solutions for industry business, the knowledge business, the chip cutting business, auto parts, inspection, metal speculation, hot dogs? Your definition of what your company does to earn money and your personal ability to translate it to your employees, customers, lenders, and especially yourself will crucially impact your success.

When McDonald's was in its heyday, the top management of the company understood that they were in the education business. If they successfully taught their managers and franchisees how to run a McDonald's and to train all of their people to get a consistent product from Maine to Macao, the company would be great. They also understood that they were in the real

estate business because placement of their units was a key to their growth. They piled resources into Hamburger University and location picking and they became fabulously successful. If early McDonald's had defined its business as "adding shareholder value in the restaurant management business" as later McDonald's chairmen did, the company would probably have never become an American icon.

Business definition of this sort is difficult because it becomes a nuanced exercise in setting priorities. It requires a shrewd understanding of your strengths and the talents of your staff.

You may define your business as the "skillful development of long-term personal relationships with clients," or you may believe that in a cut-throat world of global outsourcing and vagabond purchasing agents such relationships are not worth cultivating. In this case, you may define your business as "refining machining and business approaches to produce the least expensive products in the world." Either business definition may be valid, but they will dictate different allocation of resources.

Are you in the job shop business or do you develop products for others? Perhaps you define your firm as a service business which sells services by the hour to other manufacturing companies. Are you selling hours or are you selling parts? Your definition will help you make decisions about who you hire and where you locate.

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swarf

At the Graff-Pinkert machine tool business, my brother Jim and I struggle with the company definition. Jim prefers a definition that would define Graff-Pinkert as a speculator on the values of used turning equipment around the world, while my primary definition of the business is to provide intelligent turned parts solutions to companies around the world. Reconciling these significantly different views of the company has been difficult through the years, and sometimes confuses our employees, customers, and competitors.

For me *Today's Machining World* is in the business of producing a fascinating, provocative monthly business publication which focuses on the North American precision parts industry. "Fascinating" and "provocative" trump short-term financial goals, but economic success enables *TMW* to continue to pursue its primary business.

If you run a business or do a job, your life will be easier if you can answer the question clearly and succinctly.

"What business are you in?"

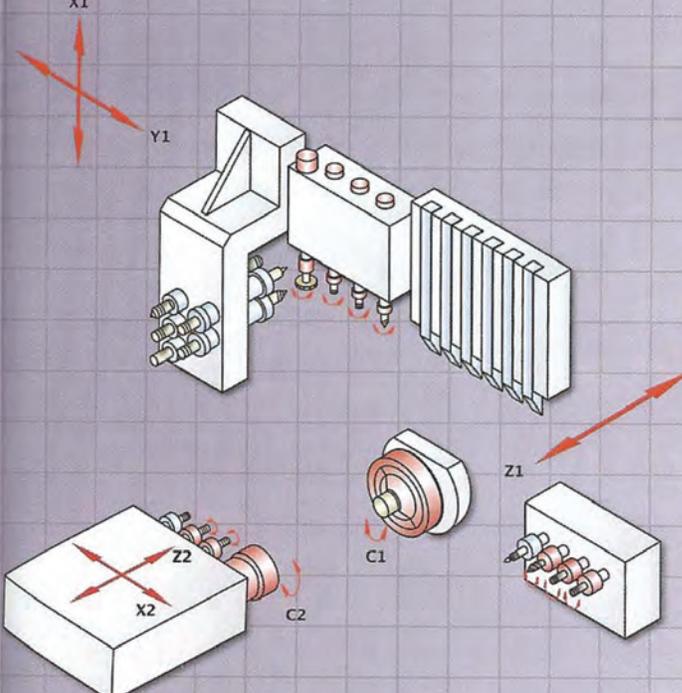
My team, the Chicago Cubs, are having an absolutely miserable season except for one player, pitcher Carlos Zambrano.

Zambrano is a young player with immense talent, but he also has a fabulous passion for the game. In a recent game against the Mets, Zambrano was working on a no-hitter through five innings (not unusual for him). The weather was extremely hot. He came to bat with two outs in the bottom of the fifth and hit a slow roller that he beat out with a maximum running effort to first base. On hot days pitchers rarely run hard to first because they are saving themselves for the mound – but not Carlos. And Carlos Zambrano is a huge kid – 6'5", 265 pounds, so he is no gazelle. With the crafty left-handed, future Hall of Famer, Tom Glavine pitching for the Mets in a scoreless game, Zambrano then decides to steal second base. In the scripted world of baseball this is absolutely crazy – so nutty you know the manager of the Cubs would never have ordered it in a million years. The throw to second beat Zambrano easily but he slid hard and knocked the ball out of the glove of the shortstop covering second. After all this, the next batter made an out and the Cubbies did not score, but Zambrano had shown his teammates that he was playing all-out, even if they were playing like lifeless frogs.

Carlos Zambrano lost his no-hitter the next inning, and probably dissipated some of his stuff from the sprints in the previous inning. But the Cubs rallied to win the game 9-2 in one of their



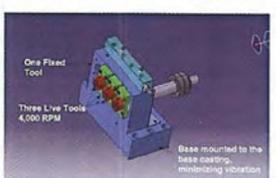
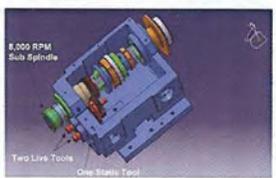
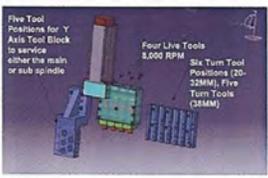
Front: Paul, John Back: Bill, Ed



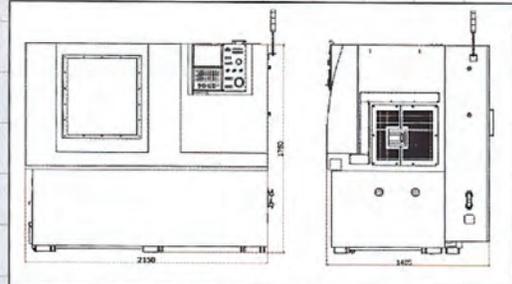
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best efforts of the year. This was no accident. The Cubs' star pitcher had led by example. He inspired this pathetic collection of losers to raise their game. They were embarrassed to "mail it in" when the team's young star showed he would do anything to win.

We see this in business, in the military, in organizations. The leader has to show the passion for the game of a Zambrano if he expects the troops to follow. You see it in baseball with the great managers like Bobby Cox, Tony LaRussa, and Jim Leyland. They will not tolerate lack of effort, and they are always totally into the game. A "player's manager" like the Cubs' Dusty Baker allows "star" players to loaf on the bases and it gradually affects the whole team.

For a fan of the game it is inspiring to see a young player with charisma and zest go out and defy the enveloping ennui and dejected nonchalance of his teammates and say with his talent and his effort, "I'm going to win, with you or without you, so you might as well join me."

I am no devotee of the "chick flick," but I highly recommend "The Devil Wears Prada" with Meryl Streep and Stanley Tucci. It is a comedy, and a product placement fest, but it artfully tackles the difficult topic of work/life balance with touching sensitivity. Meryl Streep plays Miranda, the tough-as-granite editor of *Runway* magazine, a "Vogue" like fashion book. Stanley Tucci is her fastidious, all-knowing number two, while Anne Hathaway is the idealistic ingénue trying to make it in New York publishing hell. They play upon the stereotypes in an amusing way, as Hathaway's almost frumpy Midwestern look goes from blah to Blahnik to please the local fashionistas. Miranda, Streep's icy tyrant of an editor, is gradually seen as a sympathetic perfectionist whose personal life is a mess.

The redeeming feature of this formulaic plot is the wrenching choices that the primary characters must make between career and everything else. The movie spoke to me because I have struggled to find a lifestyle that accommodated my love of family with my passion for business and lust for "success." As I look back on my own life of work, I am sympathetic to Streep's Miranda, who struggles with regret, but in the end is faithful to her true love – her work, *Runway*, fashion. She knows who she is and is totally committed to her commitments. She will never settle for "ok."



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book review

BY JERRY LEVINE

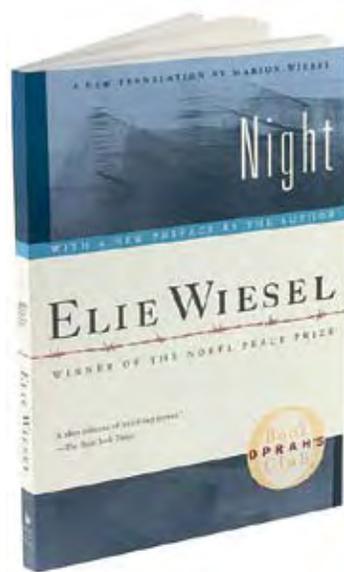
NIGHT

Night by Nobel peace laureate Elie Wiesel has come back to the top of the best seller lists, probably because both Oprah and Chicago's Mayor Daley recommended it for their book clubs. You can add me to that list. However, I reread Night because of another prominent person – Iranian President Mahmoud Ahmadinejad– who, even though he denies the Holocaust, solemnly pledges to bring on another one. In Night, Wiesel cynically comments, “Hitler was the only world leader who kept his promises to the Jews.” Wiesel equally vociferously proclaims, “Never Again!” and, along with King Abdullah of Jordan, is currently organizing a peace mission of Nobel laureates to keep Ahmadinejad from fulfilling his promises.

Sadly, during the Holocaust the worst deniers were the victims themselves. They couldn't believe such evil could take place, and went along in total denial until, as Wiesel states, “We were in the trap up to our necks.” Along the way Wiesel lost his family, his innocence and even his faith in God. His conversion came the night he (then 15 years old) and his family were unloaded from cattle cars in the middle of the night at Auschwitz. They, along with thousands of others, were marched up to Dr. Mengele for selection. An SS officer gave the order, “Men to the left! Women to the right!” Eight short words. Yet at that moment, not quite realizing it, Wiesel parted from his mother and his two baby sisters forever.

As he and his father moved forward they approached a huge pit with gigantic flames leaping out. A truck pulled up to unload babies to throw into the fire. He thought he was sleepwalking. It had to be a bad nightmare. How could this be possible and the whole world keep silent? Wiesel writes, “Never shall I forget that night, which turned my life into one long night. Never shall I forget the faces of the children. Never shall I forget those moments which murdered my God and my soul and turned my dreams to dust.”

Wiesel and his father survived the selection that night; his mother and sisters did not. He and his father were assigned to the same work camp. As the abominable conditions degraded many of the prisoners, their care for one another helped maintain their sanity. However, a few months later, Wiesel's father failed another selection. As Wiesel was being taken off to work, his



father was taken off to be killed, but miraculously his father convinced the Nazis that he was still useful and was alive when Wiesel returned. Wiesel writes, “Others, however, are remembered in the wreaths of smoke continuously rising from the chimney.”

After nearly a year, the Red Army approached and Auschwitz was evacuated. Father and son were part of a 50-mile forced run at night through freezing cold and snow. Wiesel had an infected foot and only one shoe. Slackers were shot and left dead at the side of the road. The only nourishment for two weeks was melted snow. At each rest stop they take turns sleeping – one asleep while the other stood guard, lest they both fall

asleep too long and freeze to death, as so many others did. Despite Wiesel's best efforts, his father died just as they reached a new concentration camp. Once again the front approached and the Nazis began evacuating the camp, but a resistance movement rose up and the SS fled. Later that evening the first American tanks arrived.

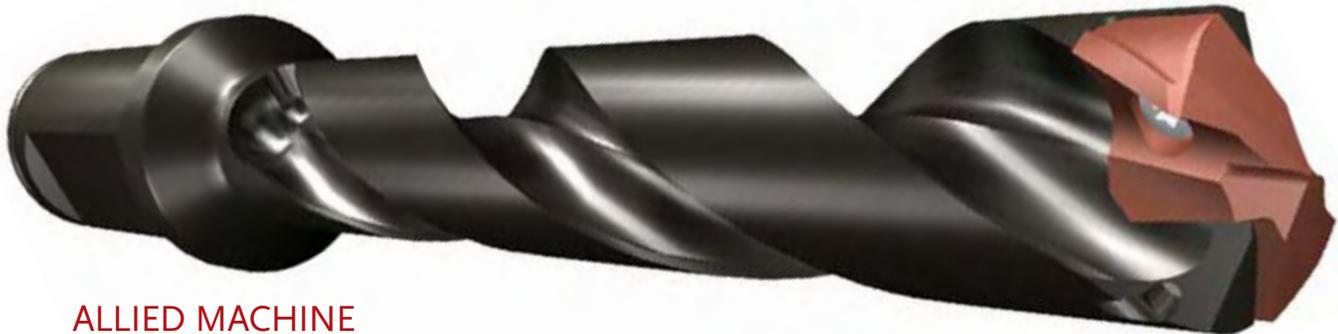
His only reaction to freedom was to eat – no thought of revenge or family – only to eat. Three days after liberation Wiesel saw himself in a full length mirror for the first time since he entered Auschwitz a year earlier. He writes, “From the depths of the mirror a corpse gazed back at me. The look in his eyes, as they stared into mine has never left me.”

Everyone should read Night. It will never leave you.



Comments? You can email Jerry at jerrollevine@yahoo.com.

book review



ALLIED MACHINE & ENGINEERING

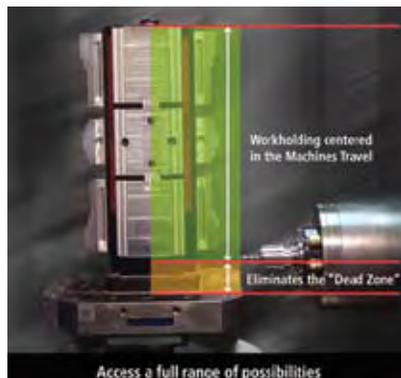
Allied Machine & Engineering Corp. (AMEC) has announced that GEN₃SYSTM, AMEC's newest, and most advanced drilling system, will be showcased and demonstrated. Among the various upgrades, GEN₃SYSTM offers a patent pending geometry, engineered to provide improved chip formation, increased penetration rates, and a longer tool life. AMEC will initially offer two types of proprietary carbide, coated with AMEC's exclusive AM200® coating to ensure optimum tool performance. GEN₃SYSTM holders will be available with a helical flute and flanged shank.

BOOTH E-2448

CHICK WORKHOLDING

Chick will be running QwikChange Challenge races. Individuals will compete by racing head to head to clamp and change parts for the fastest times (current record is 39 seconds). Each heat winner, as well as the fastest time of the day will win prizes. The fastest time for the whole show wins a deluxe grand prize. Additionally, Chick will have an electronic kiosk in the booth to supply show goers with fast and easy workholding information. The kiosk will display Chick's Workholding Packages, allowing users to find their optimal workholding solution simply by inputting their machine make or model. Visit Chick for the world's first look at Chick's new products and to race against the best in the Qwik-Change Challenge.

BOOTH E-2869



CHIRON AMERICA

Among Chiron's highlights will be two CNC milling machines featuring barfeeders. The company's Mill 800 Vertical Machining Centers will be demonstrated with several new productivity enhancers. These include: milling from bar, turning from bar, a high capacity tool changer, a +/-100 degree swivel head, and a trunnion table for 4- and 5-axis machining. Additionally, the FZo8KS Tilt VMC will also be shown making parts from bar. With the Mill 800, milling from bar employs a 100mm thru-hole to feed bar stock to an indexer for five-sided machining. When the five sides have been completed, the part is automatically picked off the indexer and the sixth side is finished. Maximum diameter stock for turning from bar is 2.5" (65 mm). Turning from bar is well-suited to producing medical parts, tool holders, and small cutting tools.

BOOTH A-8435





BOSTON CENTERLESS

Boston Centerless will exhibit AccuRod® precision ground bar stock for close tolerance machining applications. AccuRod® material is finish ground to your exact specifications. Tolerances to .000050". Stocking programs are available. Inventory includes a variety of materials such as stainless steel, titanium, and aluminum, as well as pre-heat treated materials. The AccuRod® Division offers one-stop raw material and grinding capabilities that are unmatched. The PinGage Division manufactures ultra-precise gages including thread and gear measuring wires, cylindrical plug gages and lapping services.

BOOTH E-2478



DAVENPORT MACHINE

Davenport Machine will demonstrate the the Davenport HP multi-spindle with Cucchi Bar Loader, featuring threading, back drilling and back tapping. The machine will also Showcase CJ Winter's new Quick Change Tooling. Davenport manufactures the Servo B and Model B multi-spindle screw machines and is a leader in new product development for Davenport machines and tooling. CJ Winter Machine Technologies and Davenport Machine are divisions of the Brinkman Products Group, and strive to support the worldwide demand for precision tooling and technical support services by providing quality products, innovative ideas and leading-edge technology.

BOOTH A-8595

BIG DAISHOWA

BIG Daishowa Seiki and BIG Kaiser Precision Tooling Inc. will introduce Air Power Spindle, an air-driven tool offering maximum spindle speeds of 80,000 RPM, and can be used on existing machining centers to provide enhancements to surface finish quality, extended tool life, and reduced wear on high speed spindles. The new product minimizes thermal displacement in the Z-axis for top precision. The spindle produces very low vibration by perfect dynamic balance and low noise design (less than 65 dB). Also new is the Fullcut Mill FCR. The new FCR's geometry expands capabilities in multi-functional milling, achieving supreme milling performance for ramping, helical milling, shoulder milling and peck-drilling operations.

BOOTH E-2005

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Sept 6-13, 2006 – Chicago, IL

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EDMUNDS GAGES



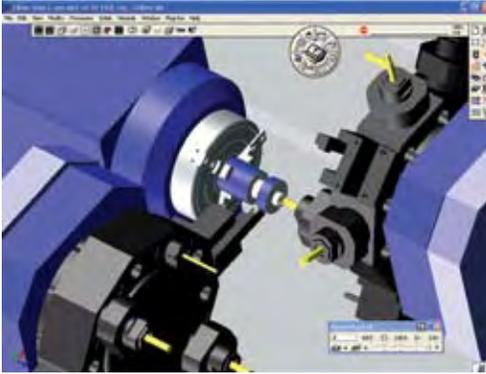
Edmunds Gages will feature an automatic measuring system with an integrated part handling robot. "In operation," explains Jack Gaughan, Manager of Custom Gaging at Edmunds, "the robot will take an automotive piston part to six different gaging devices, each measuring different features. We will measure areas such as the pin bore, the OD for size and roundness, and the groove thickness and location. We will also perform match gaging in which the robot will pick up the piston, find the mating pin, and place the matched set onto an assembly rack." The system will incorporate all of Edmunds Gages' dimensional measurement technologies including air gaging, electronic gaging, vision gaging, and match gaging. Additionally, the demonstration will showcase the company's latest Windows® based computer software technology.

BOOTH D-4338

GIBBSCAM

Gibbs and Associates will be introducing enhancements to the GibbsCAM Machine Simulation option. GibbsCAM's Machine Simulation capability supports accurate simulation and validation of a CNC program's machine tool motion, including 5-axis simultaneous milling machines. The version of GibbsCAM

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Machine Simulation adds support for turning, mill/turn and multi-task machine tools. Machine tools models can be built and setup like the real machine tool, then the CNC program is simulated to validate it prior to running the CNC program on the actual machine tool.

BOOTH D-3001

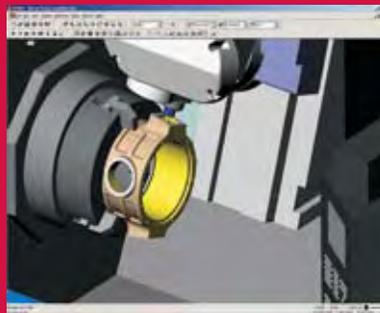
HAAS AUTOMATION



Haas Automation, Inc. will be showcasing the TM-1P Toolroom Mill from Haas Automation, Inc. The reliable 7.5 hp vector drive spindle spins to 6,000 rpm and uses standard 40-taper tools. Rapids and cutting feedrates are 400 ipm, double that of the non-enclosed TM-1. The machine's 30" x 12" x 16" travels and a 57.75" x 14.5" T-slot table provide plenty of room for workholding and larger parts, and a 10-pocket tool changer is standard.

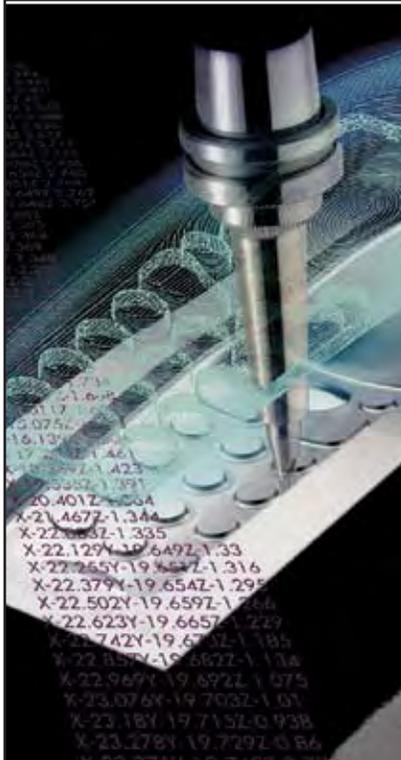
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JET EDGE

Jet Edge, Inc. will conduct live waterjet-cutting demonstrations on Jet Edge's High Rail Gantry System utilizing the high-powered iP60-60 intensifier pump, AquaVision Di® motion controller, and the new Digital Readout for Multi Head Positioning. Show participants can see Jet Edge's new iP60-50 intensifier pump in action. The iP60-50 intensifier pump is rated for 60,000 psi. The iP60-50 intensifier pump provides easy access for all service and maintenance. It features non-threaded high-pressure components in the high-pressure cylinder.

BOOTH B-6252



HYDROMAT

Hydromat Inc. will exhibit four Hydromat Rotary Transfer machines. EPIC R/T machines feature Full CNC programmability, quick and easy changeovers – typically 1-3 hours. Hydromat will also feature the Legacy 25-12, which divides cutting operations and disperses them over 12 individual stations. Each of the independently controlled toolspindle units works simultaneously. The precision ground Hirth ring assures table accuracy and reliability from station-to-station to within .0002".

BOOTH A-8127

HURCO COMPANIES

Hurco Companies, Inc., will introduce WinMax Control Software, with a new Windows® based interface, and more than 25 new, patented features. The VMX42SR, Hurco's newest 5-Axis Vertical Machining center, has a swivel head with a horizontal rotary table. Hurco will launch a new performance series VMX line including a standard 12,000 rpm spindle and 1,378 ipm rapid traverse.

BOOTH 8117



fresh stuff



INDEX

INDEX will introduce its new V160 vertical grinding and machining center, which incorporates ID/OD grinding, auto loading, and hard turning with automatic in-machine wheel dressing and in-process gauging. Chucking capacity is 160 to 200mm, respectively 6.5 in. to 8 in DIA. For OD grinding the spindle accepts grinding wheels up to 400mm/ 16 in. diameter. For ID grinding, various types of high precision ID grinding spindles are available with speeds ranging from 40,000 to 100,000 RPM.

BOOTH A-8358



BARRETT/ KINEFAC

Kine-Spin/Barrett Division of Kinefac has developed a new portable unit for effectively removing solid contaminants from coolant and lubricant

fluids used in grinding, lapping, honing, wire drawing, deep drawing, and other metalworking processes. It removes the abrasive swarf, material coating residue, tramp metal particles, and similar contaminants. The Centrifuge and the new Clari-Clean centrifuge bowl cleaner are mounted on a cart and supplied with an 8GPM circulation system.

BOOTH B-6303

KELLER PRODUCTS

Keller Products will be featuring new low cost pump/skimers for individual machine tool sumps, which remove tramp oil and suspend solids from the coolant and aerate the coolant by continuous

recirculation at high flow rate of 180 gallons per hour. The new TKO separators are single sump skimmers which utilize a high flow rate 1.2" air-operated diaphragm pump.

BOOTH B-7539



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MARUBENI CITIZEN



Marubeni Citizen-Cincom Inc. will feature the 7-axis L20 Series lathe, with full servo axes. The R07 specializes in the fast and efficient machining of tiny precision parts up to 7mm in a compact design that saves floor space. The rotary guide bushing unit performs metal cutting at speeds up to 12,000 rpm. The sub-spindle delivers 10,000 rpm. The rotary tools are now a part of the gang tool post. The Citizen CAV Bar Loader is engineered for use exclusively with Cincom Swiss-type turning centers.

BOOTH A-8560

MC MACHINERY



MC Machinery Systems, Inc. will feature Mitsubishi's MD+PRO. The machine comes standard with .006"~.012" wire capable

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automatic threading, and is capable of a full servo B-axis indexing option. Also featured is the 4-axis Waterjet Suprema's software with Intelligent Tapering Control, which corrects the natural tapering of the cut. Through the CNC it inclines the water jet up to ± 6 degrees while pointing the jet towards the cutting direction. Roku-Roku will show the HC-658 High-Speed Vertical Machining Center.

BOOTH D-4202

MIKRON MACHINING



Mikron Machining Technology will present the Mikron NRG-50 Rotary Transfer Machine. The machines are designed for cylindrical and prismatic parts with an edge length of up to 50mm or alternatively 35mm diameter and 70mm length. The machining units available consist of vertical or horizontal with 3 NC-axis each, a unit with four-axis as well as a single axis unit. Mikron will also showcase the Multistar CX-24 rotary transfer machine, tooled up with 3-axis CNC machining units. This is composed of standardized modules configured with 1, 2 or 3 NC axes, allowing operations in the vertical upper, lower, lateral and inclined positions.

BOOTH A-8567

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Booth D-3001

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- Multi-Task Machining
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NORTH AMERICAN TOOL CORP.

North American Tool Corporation will be showcasing Special Taps, Dies, Gages, and a wide array of special threading tools. Gaylee Corporation manufactures ultra precise solid carbide and carbide-tipped circular thin saws, and Bitner Tooling Technologies manufactures a vast array of tooling, specifically subland tooling (drills/reamers), circular and dovetail form tools, and combination tools.

BOOTH E-2250



MITSUI-SEIKI

Mitsui Seiki will feature the 6CN jig boring machine with an X, Y, Z envelope of about 40 in. x 30 in. x 12 in. (1020 mm x 760 mm x 300 mm). Mitsui's horizontal machining center will be the HU63A-5X, with a work envelope of about 35 in. x 31 in. x 31 in. (900 mm x 800 mm x 800 mm). The horizontal CNC machine holds 0.00012 in. true position (ISO 230-2) through all linear axes, and 0.001 degree resolution on B and C rotary axes. The company will also demo its Vertex 550-5X with automatic load/unload equipment.

BOOTH A-8018



MORI SEIKI

The Mori Seiki booth will feature more than twenty machines. The company will be unveiling the NT5400 DCG™/1800SZ mill-turn machine, NMH6300 DCG horizontal machining center, NX3000 DCG production machining center and the NMV5000 DCG 5-axis machining center. Mori Seiki will be demonstrating automation with its NZ-S1500 DCG 2-turret shaft lathe, NL3000Y/750 CNC lathe and NH4000 DCG horizontal machining center featuring a CPP system.

BOOTH A-8400

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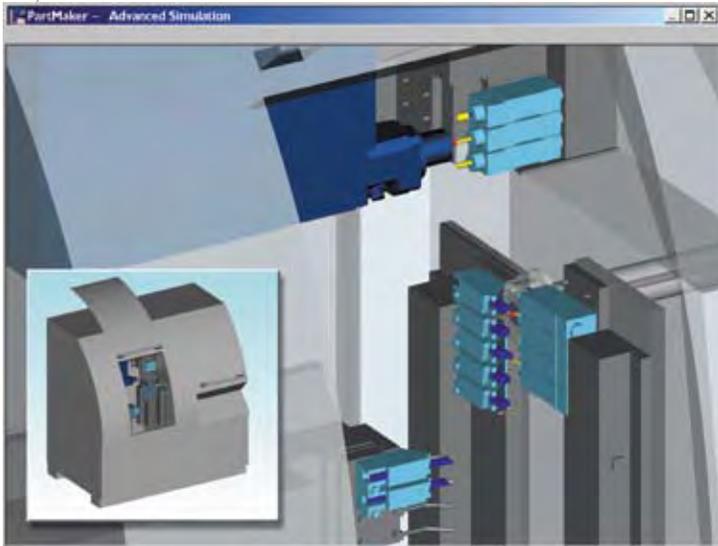


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PARTMAKER/IMCS

PartMaker Software/IMCS Inc. will unveil a preview of its latest version of PartMaker Software for programming CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes. This version will feature a new full machine simulation module which allows the user to view a photo realistic 3D model of the machine for which they are programming a part. This new simulation module will provide improved error checking and collision detection to PartMaker users by allowing them to perform an even more robust machining simulation than currently offered in PartMaker.

BOOTH D-3106



ROMI MACHINE TOOLS

Romi Machine Tools, Ltd. will be featuring their "E" series of turning centers, which offer turning, boring, milling and tapping in one setup. It can be configured with one or two spindles, C axis, Live tools and a Y axis. It offers a swing of 25.6", a maximum cutting length of 15.75", a cutting diameter of 11.02" and a distance between spindles faces of 30.71".

BOOTH A-8343



ROYAL PRODUCTS

Royal Products will be exhibiting an expanded line of Filtermist Mist and Smoke Collectors. The current Royal Filtermist FX-Series improvements include greater efficiency, improved airflow, lighter weight and reduced maintenance requirements. Units are available in four sizes ranging from 275-1200 cfm and range in price from \$1,380-\$2,240. The Royal Filtermist can be direct-mounted, suspended from a factory ceiling, or mounted on a variety of stands and brackets.

BOOTH E-271



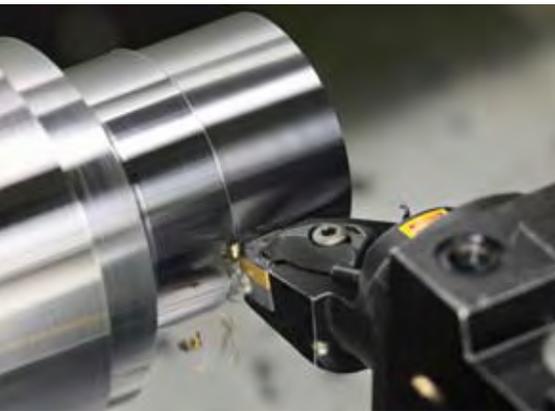
REGO-FIX

REGO-FIX's Tooling & Workholding Systems pavilion will showcase its new powRgrip system. powRgrip uses a tool-holder and collet that allow for high clamping forces equal to or greater than shrink-fit style holders. The system takes less than 10 seconds to press in a tool or remove it from the holder. REGO-FIX will also highlight its Zero-Z short toolholder, which allows for more z-axis stroke and greater work piece size. REGO-FIX's ER collet system will also be on display, as well as its Toolmaster TM10 Presetters.

BOOTH E-2623

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SANDVIK COROMAT



Sandvik Coromant will be displaying two new milling grades, GC1030 and GC4240. GC1030 uses a unique PVD coating to improve wear resistance. GC4240 contains an entirely new substrate and CVD coating to offer high security. Sandvik Coromant's CoroMill 365 tool uses a strong, stable cutting body and precision ground inserts to achieve high metal removal and feed rates. The extra close pitch cutters use a wedge clamp design to achieve excellent production economy. Additionally, the CoroMill 365 features inserts with up to 8 cutting edges.

BOOTH A-9216 & E-2305

SPERONI/BIG KAISER



Speroni and BIG Kaiser Precision Tooling Inc. will introduce the new STP-35 Basic and STP-35 EzVision Systems. The system has an extended z-axis height to accommodate tools up to 20 inches in length. The system has display resolution of .001mm (.00004") for added precision. Also on display are Integrated Automatic Mechanical Clamping HSK Spindles for Speroni Models STP-34, STP-35 and Esperia tool presetter machines.

BOOTH E-2005

August 2006

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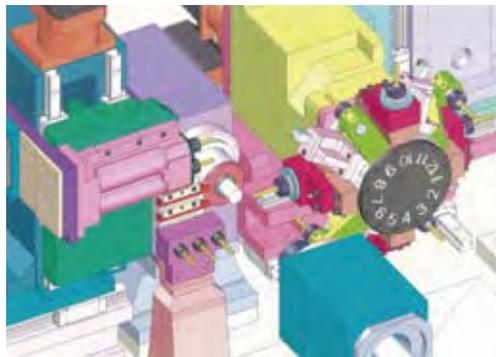
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TORNOS TECHNOLOGIES

Tornos Technologies' new DECO 20s Swiss-type machine is a "mirror image" machine, having almost an equal number of tools available for both the main and counter spindle. Both tool systems have three fully independent axes. A total of 22 tool positions are available. The powered or "live" tooling can perform milling and drilling operations in addition to turning. Up to 15 different operations can be carried out on the 20s. Special attachments can be added to perform operations such as thread whirling, polygon milling, etc.

BOOTH A-8140



TSUGAMI

Rem Sales will debut Tsugami's BH38SY, joining Tsugami's recently released BE19, and the U300 vertical machining center with integrated pallet pool. A combination turret / gang machine, the BH38SY combines all of the benefits of a traditional Swiss turn with the flexibility and capability of a turret machine. The BH38SY has 38mm main spindle capacity and a two axis sub spindle. The BH38SY's 15HP main spindle has been constructed with Tsugami's double-spindle design.

BOOTH A-8701



TECHNARA TOOLING SYSTEMS

Tecnara Tooling Systems is introducing the Reven RECOJET-1® oil mist separation system. The vortex separation system requires no filter replacement. The RECOJET-1 works for machining centers, CNC lathes, Swiss-type CNC lathes, EDMs and cutter grinders. The filter system is sound-attenuated for very quiet operation.

BOOTH E-2061



TOYODA

Toyoda Machinery will showcase a new line of vertical machining centers, horizontal machining centers, tool storage systems, and grinding technology. The BM-1200 Vertical Machining Center's iron base is paired with four Y-axis box guideways. Many high-torque and direct-drive spindle configurations are available in CAT 40 or CAT 50 tapers. The FH450-S is 40-taper HMC, has a significantly larger work envelope yet consumes minimal floorspace. The FH-S increases throughput by pairing high spindle speeds with faster non-cutting operations.

BOOTH A-8018



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State-of-the-art technology. Up to nine-axis, includes gang tool/turret type tool posts and angular drilling/milling operations for endless machining capability and versatility.



ECAS-12/20
Revolutionary dual control (numerical and motion), high-speed turning facilitates secondary machining, with capability to produce complex geometric components. Unprecedented productivity, precision and operability.



NEW!
ECAS-32T
Eleven-axis machine with ten position twin turret/eight position back-working tool post designed for complex machining and high productivity. Has a huge variety of tools, versatile multitasking operations, up to three tools in a cut "simultaneously" and Star's new Integrated Control System. This is truly a WINNER in today's market.

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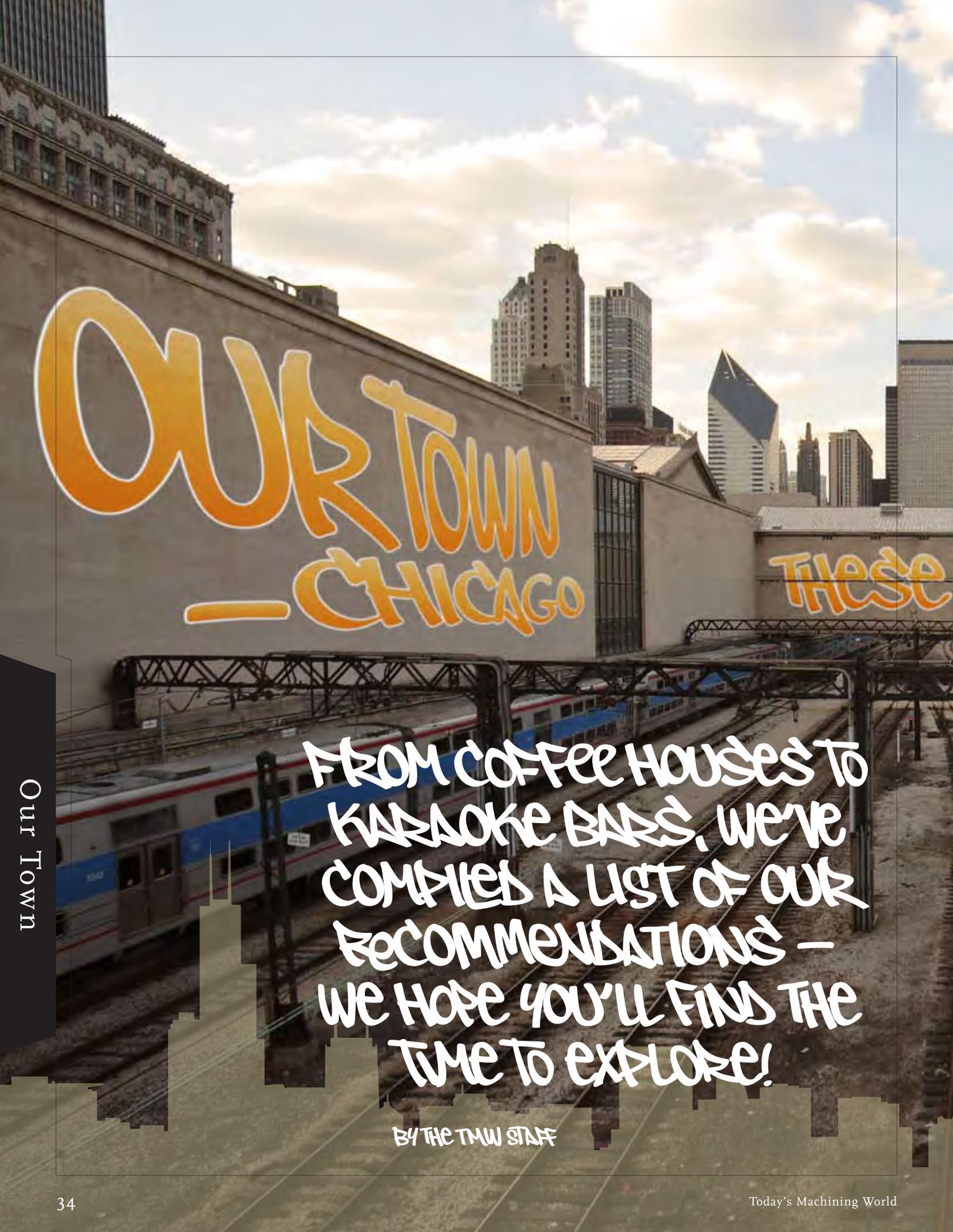
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FROM COFFEE HOUSES TO KARAOKE BARS, WE'VE COMPILED A LIST OF OUR RECOMMENDATIONS - WE HOPE YOU'LL FIND THE TIME TO EXPLORE!

BY THE TMW STAFF



Suffice it to say when it comes to Chicago, the staff of *Today's Machining World* takes their favorite places quite seriously. Four of the five of us are Chicago born and bred; Rob Bocok, our art director, was born in Vienna, but has made Chicago his home since infancy. We all love to romp through ethnic neighborhoods, explore off-the-beaten path restaurants, spend time people-watching and celebrate the diverse city we love.



LLOYD'S 3 CHICAGO FAVORITES:

Julius Meinl: (3601 N. Southport) For coffee at 7:30 a.m. on a Sunday. I will often drive 50 minutes on the expressways just to sit and sip perfect coffee, munch beautiful croissants and eat two exquisite soft-boiled eggs in china egg cups. Give me the Sunday *New York Times* and the *Chicago Tribune* sports page, and I'm good for three hours of weekend bliss.

Music Box Theatre: A three-minute walk from Julius Meinl's at 3733 N. Southport is the Music Box Theatre. This movie house is a throwback with a slightly seedy charm. The choice of films is eclectic – independent, foreign, classics, vintage. You have a good chance to get lucky no matter what you pick. None of these flicks will be playing in Paducah. After the movie, mosey back to Julius Meinl for a cappuccino and an incredible chocolate chip cookie or two – or three.

North Avenue Beach: The beach at North Avenue is an all-time favorite hangout. The people watching is intoxicating. Rollerblades, bloggers, joggers, families out for a stroll, women just making the scene, Frisbee flickers, volleyballers, fishermen, old ladies in big hats, teenagers showing off, six-pack abs following six-pack toters – and the chess players. There is a covered chess pavilion. The competitors bring rooks, bishops and timers, and seamlessly blend into the tableau. Sweet.

JULIUS 3 CHICAGO FAVORITES:

The Chicago Firehouse Restaurant: Close to IMTS, the Chicago Firehouse restaurant sits at the corner of 14th Street and Michigan Ave. Built in 1905, it still has the original tin ceiling, glazed tile walls and the fire poles. The yellow brick and limestone structure was built for some of Chicago's famous families like the Marshall Fields, the McCormicks and the Palmers. The steaks, the seafood, the surf and turf – all fantastic, as is the extensive American wine list. On weekend nights, there's usually live entertainment. (Dinner 'til 10:00 on weeknights, 'til 10:30 weekends).

Favorite street: Randolph Street between Ashland and the Chicago River (aka The Warehouse District) – is chock-full of great restaurants. Choose from: Blackbird (French-American with award-winning chef Paul Kahan at 619 W Randolph), Marché (French Brasserie at 833 W. Randolph), Red Light (Pan-Asian at 820 W. Randolph), De Cero (Mexican at 814 W. Randolph), Sushi Wabi (842 W. Randolph) and Vivo (Italian at 838 W. Randolph) – you can't go wrong. But cap off the evening at the Chicago Chocolate Café (847 W. Randolph), which is open 'til midnight on weekends. Gaze at the chocolate fountain but definitely indulge in the chocolate fondue.

Grant Park/Millennium Park: Stroll, learn, people watch, enjoy free music in the park, dine, take Chicago in... nothing beats this area! It's got everything – art, music, architecture, gardens and entertainment. Grant Park houses Buckingham Fountain– catch the light show from 9:00 to 10:00 each night. A 935-foot winding steel bridge connects Grant Park to Millennium Park. Inside Millennium, feast your eyes on the Jay Pritzker Pavilion, the Crown Fountain, Lurie Garden and of course, Anish Kapoor's Cloud Gate structure, aka "The Bean." Free: yoga and Pilates on September 9th at 8:00 a.m.; the Lyric Opera of Chicago at 7:30 September 9th and Steppenwolf Theater's "Citizens of the World" on September 11th. Eat at The Park Grill inside the park at Michigan and Washington for outdoor dining with a casual but delicious menu.

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ROB'S 3 CHICAGO FAVORITES:

The Hoagie Hut: From the name to the napkins, absolutely nothing is fancy at The Hoagie Hut. The prices are cheap, and the service sometimes reflects that. Let's face it, you aren't going to the Hoagie Hut for atmosphere or attention. You are going to the Hoagie Hut for the best tasting cheese steak hoagie on this planet. With tons of variations on the original and all the sides you could imagine, you cannot go wrong eating here. I make it a habit to go whenever I feel my arteries aren't clogged enough. While you're in the area, stop in at the Elbow Room to get a drink and listen to some local live music. (2580 N. Lincoln Ave., Chicago 773-248-0900 Mon – Thur 10:30 a.m. to 12:00 a.m. Fri – Sat 10:30 a.m. to 1:00 a.m.)

Sal & Carvao: From the Portuguese words for “salt & charcoal,” Sal & Carvao is a Brazilian Churrascaria, or steakhouse. Sal & Carvao serves a wide variety of all-you-can-eat, slow roasted, salt-seasoned meats, all personally carved tableside. Do not let the all-you-can-eat angle throw you; this is no Golden Corral. While enjoying your meal, make sure to order a traditional Brazilian caipirinha, a delicious alcoholic beverage made almost entirely of alcohol. (739 N. Clark St., Chicago 312-932-1100 - Mon – Sun 4:00 p.m. to 10:30)

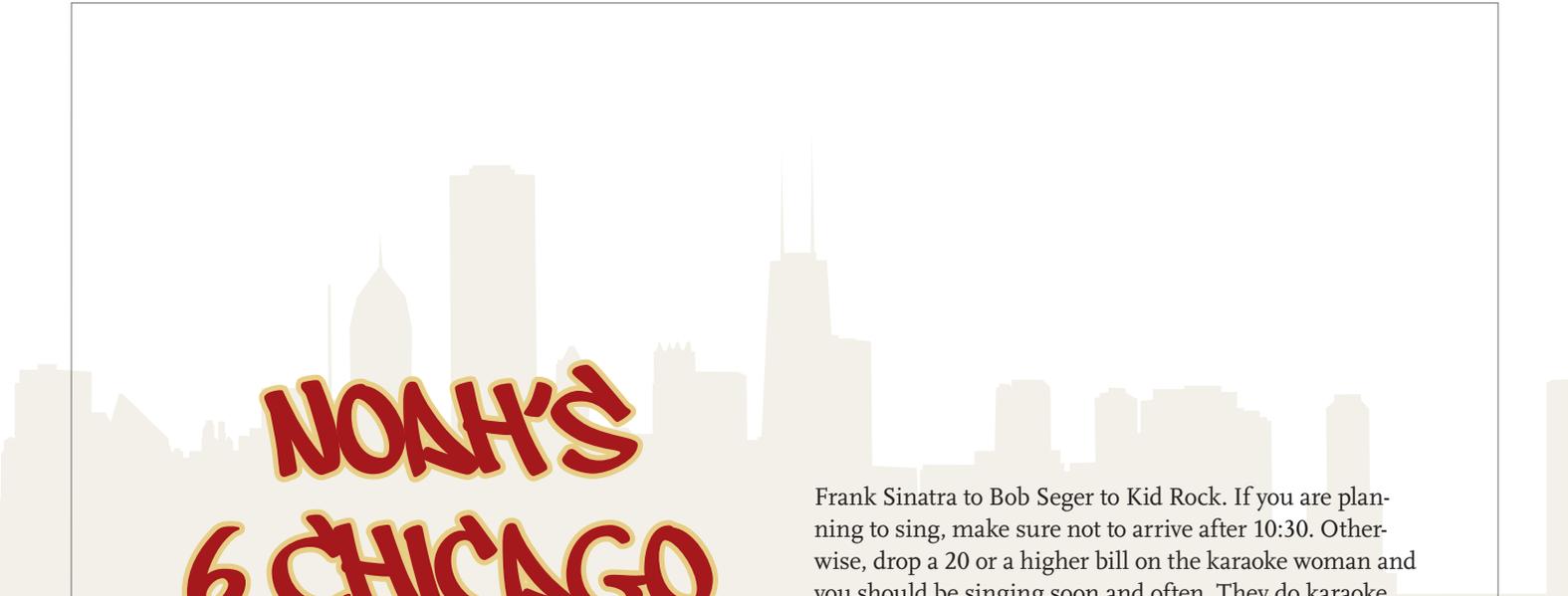
Erie Café: This is one of those converted restaurants, formerly a meat packing plant on the north branch of the Chicago River. Erie Café is a classic Chicago Italian steak house with great views from the large outdoor riverside dining area. For six consecutive years, Erie Café was rated “excellent” by patrons in the Chicago Area Zagat Survey. The steaks, seafood, veal, pasta and signature desserts are amazing. Erie Café is a must when coming into the city. (536 W. Erie St. Chicago 312-266-2300)

DAN'S 3 CHICAGO FAVORITES:

Santorini Restaurant: The list of great Chicago Greek Restaurants runs several pages, but Santorini sits right at the top. Outstanding seafood – The black sea bass and char-broiled octopus are as good as you'll find anywhere. And as you'd expect at a top notch Greek restaurant, the lamb dishes are superb. A warm and lively atmosphere, professional service and reasonable prices make Santorini a winner. (800 West Adams 312-839-8820 Hrs: Sun-Thurs 11am – Midnight; Fri & Sat 11am – 1am)

Schaller's Pump: If you want a real taste of Chicago – literally and figuratively – this is your spot. Boasting the city's oldest liquor license (1881), Schaller's is steeped in Chicago political, social and athletic lore. Located a couple of blocks from U.S. Cellular Field (i.e. Home of the White Sox) and directly across the street from the offices of the 11th Ward Democratic Organization (think Mayor Daley), Schaller's is an easy 10-15 minute cab ride from most downtown hotels. Still run by 3rd and 4th generation Schallers, this Chicago gem will slake your thirst (name your beer), satisfy your hunger (try the \$8.95 steak sandwich) and give you a true Chicago history lesson. (South Halsted 773-376-6332 Hrs: Weekdays 11am – 2am; Saturday 4pm – 3am; Sunday 3pm – 9pm)

Museum of Science and Industry: Chicago has several world class museums including the Field Museum, Art Institute and Shedd Aquarium, but you're in Chicago for the International Machine Tool Show, why not visit the museum that celebrates industrial and scientific achievement? You'll find ongoing exhibits like a working coal mine, the captured WWII German Submarine U 505, the Henry Crown Space Center and the Omnimax Theater just to name a few. The museum's building itself housed the Palace of Fine Arts from the 1893 World's Fair. After your museum tour, have lunch or dinner at Piccolo Mondo, located directly across 57th Street in the historic former Windermere Hotel. (57th Street & Lake Shore Drive 773-684-1414 Hrs: Mon – Sat 9:30am-4pm; Sunday 11am-4pm)



NOAH'S 6 CHICAGO FAVORITES:

Al's Italian Beef: Originally started in 1938, Al's Italian beef is hands down, the best Italian beef in the world. For those who haven't had it, Italian beef is a Chicago delicacy. It is comprised of a long bun filled with shredded beef marinated in a mouth watering gravy. True beef lovers have the entire sandwich dipped into the gravy and then have it topped off with sweet and/or hot peppers. There are hundreds of places to get beef in Chicago, but Al's is the best because of its truly unique flavor. The French fries are fabulous too. The fries were voted into the list of top ten fries in the United States. (1079 N. Taylor Street, & 169 W. Ontario)

Spacca Napoli: This is the only pizza I've had in the United States that even resembles the pizza I ate when I was in Naples, Italy. The pizza is flat and cooked in a wood burning oven. Unlike other wood burning oven cooked pizzas, Spacca Napoli's stays soft, true to Naples pizza form. Unless you go to Southern Italy, it is doubtful you will ever have pizza like this. The pizzas have excellent toppings, including buffalo mozzarella, fresh egg plant and cherry tomatoes. The owner, who learned the pizza trade living in Naples, flew several Neapolitans across the Atlantic just to build his oven up to specs. The place is crowded, so be ready to wait (you can munch on free focaccia, cheese and wine in the meantime). One more thing – they only serve pizza! That's their secret to getting it right, so don't expect them to have spaghetti. (1769 W. Sunny Side Ave.)

Louie's Pub for Karaoke: I'm a regular at this neighborhood joint. Drinks are cheap, people are very friendly, and there are some serious, and ridiculous karaoke singers. There is a good song selection – everything from

Frank Sinatra to Bob Seger to Kid Rock. If you are planning to sing, make sure not to arrive after 10:30. Otherwise, drop a 20 or a higher bill on the karaoke woman and you should be singing soon and often. They do karaoke every night of the week. (1659 W. North Ave.)

Piece: Not too far from Louie's. This is a larger place, where on the weekends you can do live karaoke! They have a full band that backs you up. There is a bit of a smaller song selection and no teleprompter, but you get to study the lyrics of the song while you're waiting and read them on a piece of paper while you're singing. It's really a fantastic experience having a full band at your back while you croon some Elvis or rock out to some Guns and Roses. The place has great pizza too, and Piece's beers have won medals at both the World Beer Cup and the Great American Beer Festival. (1927 W. North Ave.)

Carol's Pub: In this raucous Country/Western biker bar, you will find everyone from hillbillies to hipsters to yuppie Lincoln Park women. The place gets crazy late on weekends because it's open until 5:00 a.m. Saturdays and 3:00 a.m. Fridays. The dance floor is packed and the band plays until dawn. (4659 N. Clark St.)

Japonais Restaurant and Lounge: I recommend the lounge at Japonais if you're looking for a young, good looking, upscale crowd. It has a classy, interesting décor with a beautiful terrace for enjoying a balmy Chicago evening. The restaurant's fusion French/Japanese cuisine is intriguing, but I find the food a bit overrated and pricey (even to avant-garde sushi standards). (600 W. Chicago Ave.)



One last thought: Gino's East, home of our legendary Chicago pizza, just moved back into its original location at 162 E. Superior St. It's more gorgeous than ever. Go write on the walls and have the best pizza in town!

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“Gentlemen, Start Your Machines”

Each summer, SkillsUSA challenges young machinists with a grueling, day-long vocational Olympics

“Any more for precision machining?”

It is 7 a.m., and the massing crowd of sleepy eyed young adults fidgeting outside of Bartle Hall, Kansas City’s sprawling convention center, parts for a few last minute arrivals. Herding everybody inside for the escalator ride up to the awaiting competition arena on the exhibition hall floor, SkillsUSA volunteer Bob Parent eyes some six dozen high school and secondary school state winners, all clad in the prescribed khaki uniform. He’s checking, too, for work boots and safety glasses, which many wear A-Rod style, perched atop the visor of a baseball-style cap.

“If you do not have your safety glasses, you will not get in upstairs,” Parent informs the contestants. The color drains from the face of a panic stricken redhead, who approaches sheepishly. Parent allows this “teaching moment” to drag on, preserving his threat until everyone is assembled on the periphery of the cordoned off area of the trade show-like array of competitive SkillsUSA venues marked Precision Machining Technology. Then, as a few of the competitors relinquish cell phones and calculators, which the competition prohibits, he pulls the redhead aside.

BY JOHN GROSSMANN

“You go to work without your tools, your boss is going to send you home,” Parent counsels, and then reaches into a pocket for a pair of glasses reserved for just such an emergency. “You’ve come all this way, so we’re not going to send you home.” He stresses, however, that points will be deducted from the young man’s score.

Make no mistake. This is a serious competition. Gold, silver, and bronze medals await the winners of this annual national machining Olympics, and during the last minute briefing, set jaws and anxious glances reflect the pent up tension. Like Food Network Iron Chefs still unapprised of the chosen feature ingredient as they enter the kitchen stadium, these budding machinists don’t know, until they turn over their blueprints, what they’ll be asked to make. Here, too, the clock ticks ominously. They have 80 minutes at each of six stations – drill/grind/bench; milling; turning; CNC-milling; CNC-turning; and process control – and in the first three mentioned challenges, that includes clean up. Judges, they’re told, will subtract points for metal filings left behind. One more indicator of the seriousness of the day’s doings: no one wears a name tag or any indication of what state he represents, so not to influence the judges in any way. (The 2006 precision machining competition brought only male contestants to Kansas City, but some years, a woman has earned a trip to the nationals.)

Their only visible ID is a tag, which displays a number and their particular schedule for the day, a schedule that rotates them in groups A-F, through the six stations from 7:30 a.m. to 4:55 p.m., with a short break for lunch and a brief morning and afternoon break. All head for their first assignment, and at precisely 7:30, a horn sounds. Blueprints flutter right side up. Hands grasp awaiting bars of steel and reach for scribes and calipers. Machines begin to hum.

Clausing Industrial has provided fourteen 15” lathes, a like number of milling machines, seven drill presses and seven surface grinders. Haas has shipped in a CNC turning center, a CNC milling center and 28 CNC simulators. The L.S. Starrett Company has provided measuring tools. Sandvik Coromant Company has sent cutting tools. Other companies have chipped in with raw materials and a long list of prizes. All told, chaired by the National Institute for Metalworking Skills (NIMS), more than a dozen companies have loaned and donated more than a million dollars worth of equipment and materials.

Standing at one of those Clausing lathes, 17-year-old Jason Lee begins his turning assignment. Lee, from Glen Burnie, Maryland, flew on an airplane for the first time coming to Kansas City for the competition. He attends a Vo-tech high school in the mornings; in the afternoons, and full-time in the summer, he runs CNC lathes at Holmatro Incorporated, a maker of rescue equipment, including the Jaws of Life. When he graduates, Lee plans to remain at Holmatro as an apprentice and attend a local community college at night. On display on a shelf in his bedroom at home are a ball-peen hammer and a vice, the first two metalworking projects he made in ninth grade, when the profession first began to grab him.

“You can make stuff out of metal so fast,” he said the day before on the competition floor, after familiarizing himself with the machines he’d be using, as allowed by the rules of the competition. “With wood, you have to glue something and let it sit overnight. With metal, you can throw a tool bit in there and start cutting it right down.” Lee confided that he didn’t find the state competition he won to qualify for this national SkillsUSA championships especially hard. “But my classmates thought it was pretty tough,” he added with a smile.

A few lathes away, Nick Skuban, a night student at Oakton Community College in northern Illinois, is thinking: “How am I going to hold this when I cut it?” Skuban, who wears an earring in each ear and his black hair gel-glistened, holds a piece of 1¼” bar stock, about three inches long. He sees, from the blueprint, that it will require drilling, boring, threading and turning – seven diameters in all. Moreover, Skuban realizes what some of the contestants will not: that he’d best start by putting the “threaded end” in the chuck, saving the threading for last,



Left: Contestant Jason Lee



after flipping the piece.

Skuban didn't sleep well last night. His mind turned nearly as fast as the lathe, anticipating challenges and thinking back to last year's competition. Like many, he's a return competitor. He competed as a high school senior in 2005, groomed for the SkillsUSA competition by Bill Noyes, his machine tools instructor at McHenry High School. Skuban placed fourth last year, and now, more experienced as a full-time employee at Nypro Mold in Gurnee, Illinois, he figures he's got a great chance to medal in the post secondary division. At a 5:30 a.m. breakfast with Noyes, Skuban did some last minute boning up on startup lines and safety lines for the CNC portion of the competition.

Why put in all this effort? Why enter the SkillsUSA competition? "I'm constantly testing myself," he says, explaining he was repairing bikes at seven or eight, taking them apart and putting them back together, trying to make them better. He learned early on he was good with his hands. But, of course, that's only part of precision machining, only part of what today's six challenges assess. "I want to see what I can do under pressure," he continues. "Can I go faster? If I messed something up, why did I do it? It's always to improve myself. I'm doing this for me. This is my chance to prove myself."

Craig Wade, beginning his competitive day on the pro-

cess control portion of the test, is also a SkillsUSA veteran. His first assignment requires him to use an expanding hole gauge to first replicate, and then measure (within .001") the diameter of several holes in a Swiss-cheesed sample block. Competing last year, as a high school senior from the small Maine town of Peru, Wade finished ninth. His Skills advisor, John Bolduc, an instructor at Southern Maine Community College, has like many such mentors, accompanied his student to the championships. He calls Wade "a star student, a leader in my class," who came to him with several other students and asked that a SkillsUSA chapter be restarted on the campus. Wade, too, is already working in the trade, at a plastics components producer in Westbrook, Maine.

"Your first time here, you have no idea what to expect," Wade says. "You've heard stories of how big the SkillsUSA competition is, but you don't really know until you get here."

Indeed, precision machining is but one of dozens of championships at this year's three-day gathering. Nearby, others compete in automotive repair technology, aviation maintenance technology and diesel equipment technology. Medals are also awarded for cooking skills and baking prowess, masonry, plumbing and cabinetmaking. Cosmetology claims a chunk of the exhibition floor. So does criminal justice (where one test focuses on finger-



Left: Contestant Nick Skuban

prints), web design and nail care. In all, 84 competitions and some 4,700 competitors fill an area the size of 11 football fields. And among them, running the competitions, are more than 1,000 technical committee members and judges from the represented industries. Begun in 1967, and initially known as VICA (Vocational Industrial Clubs of America), the annual affair has grown from three events and 54 competitors to what's billed as the single greatest day of industry volunteerism in America. The total number of volunteer hours for organization, set-up, running the contest and tearing it down is estimated at 56,000.

The impact on the competitors takes many forms. Says Wade: "Last year, I hadn't really worked much on a drill press, so I worked on some this year. The job contacts you get from coming here, and telling people you've been to it, that means a lot on a resume. You get to meet new people, get to see new techniques you've never seen before, different ways to do things. Before today, I'd never seen a Haas CNC machine."

SkillsUSA attracts ambitious, dedicated and talented young adults and helps motivate and mold them into leaders and top performers in their chosen field. "If this competition had been around when I was a kid, I would have thought I was in heaven," says Al Frink, Assistant Secretary at the U.S. Department of Commerce, who

trained briefly as a tool and die maker. Frink has come to the Skills championships, and specifically to the precision machining competition, because he's well aware of the need to pump new blood into an unmistakably graying profession. The night before, addressing those gathered for the Precision Machining Technology Championship Volunteers Dinner, Frink spoke:

"The average age in manufacturing is in the mid-fifties. Twenty years ago it was probably in the mid-thirties. We're seeing our highly skilled, machine-capable employees being offered more money to stay on instead of retiring – because it's so hard to replace them. 'Fred, you've been thinking of retiring, but I can't afford to lose you. I'm going to give you this to keep you on.'

"But that only lasts so long. It's just a Band-Aid, unless we drive from the bottom up and get young kids to see the opportunities. Where is the future of machining in this country unless we stay competitive? I think we have to have basic skills and capabilities. I would not like to see those anywhere but in the U.S. I think we have to excite the kids, and that's what is so good about this competition. I think it's exciting," said Frink.

Certainly it's thrilling to Paul Huber, president of Comex and president of the NIMS board of directors. "When I saw my first Skills competition, when I saw so many young kids concentrating so hard, putting their minds on one item only, to be the champion, it brought tears to my eyes."

As the day progresses and the groups rotate through their assigned stations, the finished (and in many cases, three-quarters, or half-completed) items collect by contestant numbers on task-specific tables topped with a roulette-like numbered grid. Situated close to the cordoned off edge of the competition floor, these tables, attract the attention of passersby, but especially the gaze of parents and advisors.

Looking at square #35, Bolduc can see that his charge, Craig Wade, is going to get marked down a bit on his turning score. "He launched it," Bolduc says, explaining, "when Craig went to cut it, he didn't have it tight enough, and it came right out of the chuck." A slanted scar on the part suggests as much. After the competition, Wade will praise the Skills challenges as a test of ability at the various machines, but also as an exercise in critical thinking.

"Today, on the grinding part, there was a dimension that seemed to go off in space – and actually, what you had to do was use a gauge pin [among the provided tools] that was there and measure that pin [and using trigonometry, determine the proper grinding angle]," he says, before addressing his turning mishap. "You've got to learn to think ahead, like on the lathe, where if you started on the small end, you ran into troubles, which I did." He laughs at the memory of his airborne part. "That's definitely

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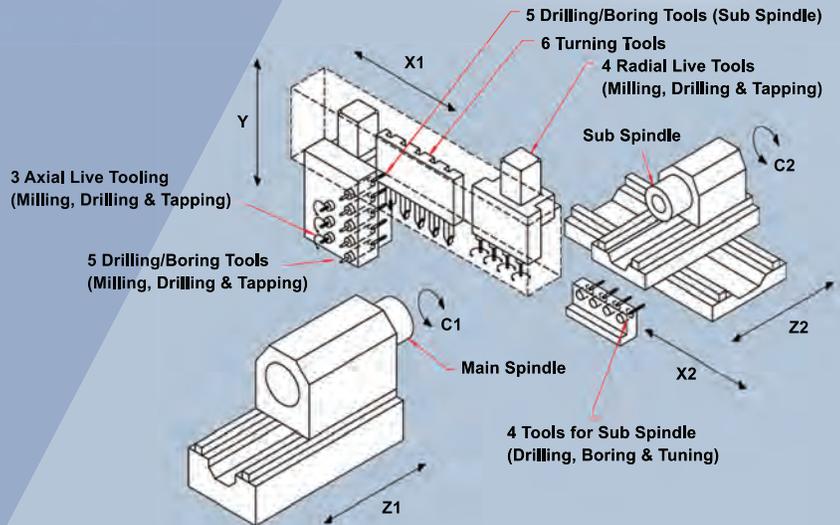
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etched in my mind. I will always remember that.”

One station in the process control portion of the competition adds yet another element to the learning experience provided by SkillsUSA. Squeezed in among several quality control check rotations, which call for such tools as micrometers, digital height gauges and telescoping gauges, there’s a mini, mock job interview, for which points are also awarded. For those yet to apply for a job, and those in need of better job interview skills, the session offers a helpful dress rehearsal.

Darrell Bryant, an operations program manager at Honeywell in Phoenix and a SkillsUSA judge for 22 years, points to still more benefits of the competition. “For some, it might be the first opportunity they get to work on really good machines. A lot of schools have used equipment that’s often pretty old and worn out. Here, they get to walk in and get a view of what a real machine shop in the industry would look like – and I think it allays the fears of many parents, who still think vocational training is back alley dirty work.

Some years, Bryant says, a handful of points out of a total of 800 (120 of which come from a four-hour written test taken the prior day) separate the top three finishers in the precision machining technology competition. The top 10 finishers often fall within a range of 10 to 15 points.

In this machining Olympics, competitors don’t learn if

they’ve medalled until the following evening, when all of the various SkillsUSA winners – hundreds of them – are called to the stage in a grand closing ceremony. Jason Lee’s name was not called. Nor was Nick Skuban’s. Lee, who later learned he placed 29th, says, “I’ll definitely try to make it back next year. No doubt in my mind. The competition was excellent.” Skuban, who finished ninth, vows to learn from his mistakes and try even harder, and take another shot at medalling in 2007.

A big believer in the value of the competition, Skuban says he also hopes to volunteer as a judge at the high school level state SkillsUSA competition back in Illinois. In doing so, he would be giving back to a program that his advisor, Bill Noyes, continues to champion, even after recently concluding a 33-year career as a high school machine tools instructor. “I sent a lot of kids through SkillsUSA, including my son,” Noyes says. “It becomes a focal point for students, a reason to learn, a reason to study.”

Craig Wade did make it to the stage. He collected a silver medal in the post-secondary division. Soon after he returned home to Maine, his local paper, the *Rumford Falls Times*, prolonged his cloud nine experience. Wade didn’t even have to open up the paper to see his picture and read about his second place finish at SkillsUSA. He was front-page news.





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A continuing column in which we ask smart people to discuss their views on topics related to the future of manufacturing.

BY NOAH GRAFF

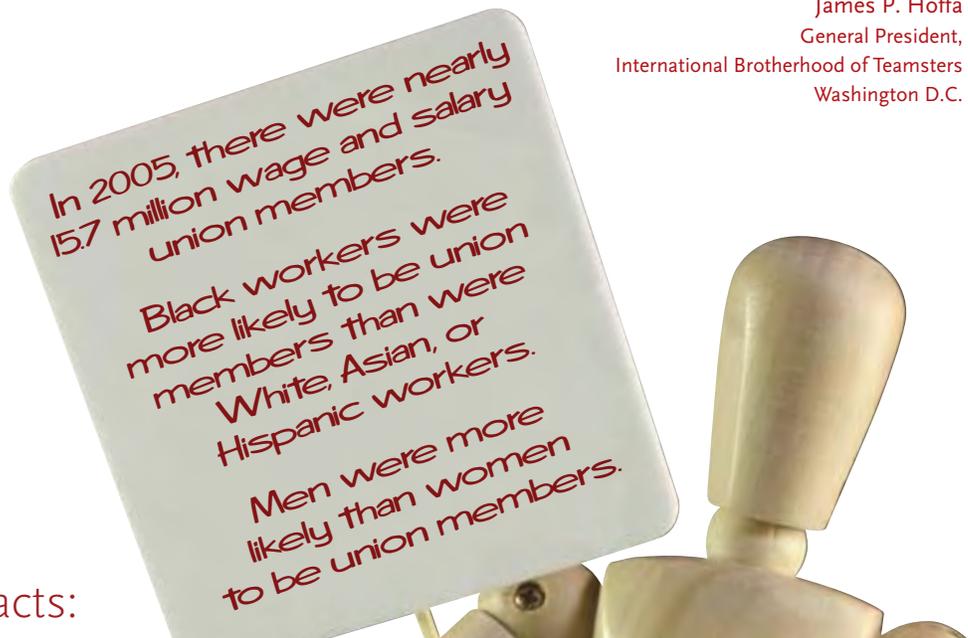
next

Labor union membership of the United States workforce has declined from a high of 20.1% in 1983 to 12.5% in 2005 (the same percentage as 2004). The ailing U.S. auto industry is forcing the UAW to reduce worker benefit demands significantly, and in June, 48,000 UAW workers at GM and Delphi took buyouts.

Will labor unions have more or less influence five years from now?

Unions will be more influential because they are the best advocate in this country for workers. In this day and age of corporate greed run wild, working families and their economic security are under attack. Despite these unchecked forces shaping our economy, some things never change: The human desire for dignity and respect. As long as workers are underpaid, overworked or mistreated, there will always be a place for unions. The power that people have when they stand together to demand a better life cannot be exported, downsized or otherwise diminished.

James P. Hoffa
General President,
International Brotherhood of Teamsters
Washington D.C.



the facts:

The unionization rate for government workers in 2005 was 36.5%. The rate for the private sector was 7.8%.

In 2004-2005, 24 states and the District of Columbia recorded lower union membership rates, 23 states registered higher rates, and 3 states had no change in their rates.

Among major private industries, transportation and utilities had the highest union membership

rate, at 24.0%. Information industries had 13.6%, Construction 13.1%, and Manufacturing 13.0%.

Local government workers had the highest union membership rate: 41.9% with members such as teachers, police officers and fire fighters.

Five states had union membership rates over 20.0% in 2005. New York (26.1%), Hawaii (25.8%), Alaska (22.8%), Michigan (20.5%) and New Jersey (20.5%).

In the next five years, many union members will find out that their labor leaders have taken them off a cliff. Union officials continually make themselves less relevant because they demand wages, pensions and absurd work rules that make many union shops uncompetitive. Then you have a few union officials who are trying to use lobbying and pressure tactics to rig organizing rules to end real representation elections so they can get mandatory dues at almost any price. When all is said and done, labor leaders need to become more fair to their members and potential members and either shape up or they'll be shipped out.

Bret Jacobson

Center for Union Facts, www.unionfacts.com
Washington D.C.

Unions' economic influence in the private economy, particularly in manufacturing, will be reduced five years from now. In government employment, unions' economic power will likely increase five years from now. Meantime, the political influence of the combined union movement (both the private and public sector union movements) will remain high because of the numerical strength of public unionism and the income and wealth of the combined union movement. Most of the unions' political influence five years hence, just as today, will be wielded on behalf of the Democratic Party, the de facto labor party of the United States.

Leo Troy

Professor of Economics, Rutgers University
Newark, NJ

Five states reported union membership rates below 5.0 percent in 2005: South Carolina (2.3%), North Carolina (2.9%), Arkansas (4.8%), Virginia (4.8%) and Utah (4.9%)

Texas (with the second largest number of employed wage and salary workers) had less than one-fourth as many union members as New York (the third largest), despite having nearly 1.5 million more wage and salary employees.

Statistics provided by the U.S. Department of Labor

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1-3/4" 6-spindle, factory rebuild
1-3/4" 6-spindle, thdg., 1969
1-3/4" 8-spindle, 1970
2-1/4" 6-spindle, 1973-79
2-1/4" 6-spindle ACW 2004
3-1/4" 6-spindle, 1982
5-5/8" 6-spindle, 1979
6-5/8" 6-spindle, 1979

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1-1/4" RB8, 1956-1979 (3)
1-5/8" RBN8, 1968-thdg
1-5/8" RB8, 1980, rebuilt 1996. pickup
1-5/8" RBN8, 1975, rebuilt 2002
2" RB6, 1979-1985

2-5/8" RB6-1977
3-1/2" RB6, thdg
2-5/8" RB8, 1975 (4), thdg

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SF51 6sp. Schütte, 1981
AF26 8sp. Schütte, 1981 (2)

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Citizen L25, Type VII, 1998
Citizen L-20, 1996, Type VII

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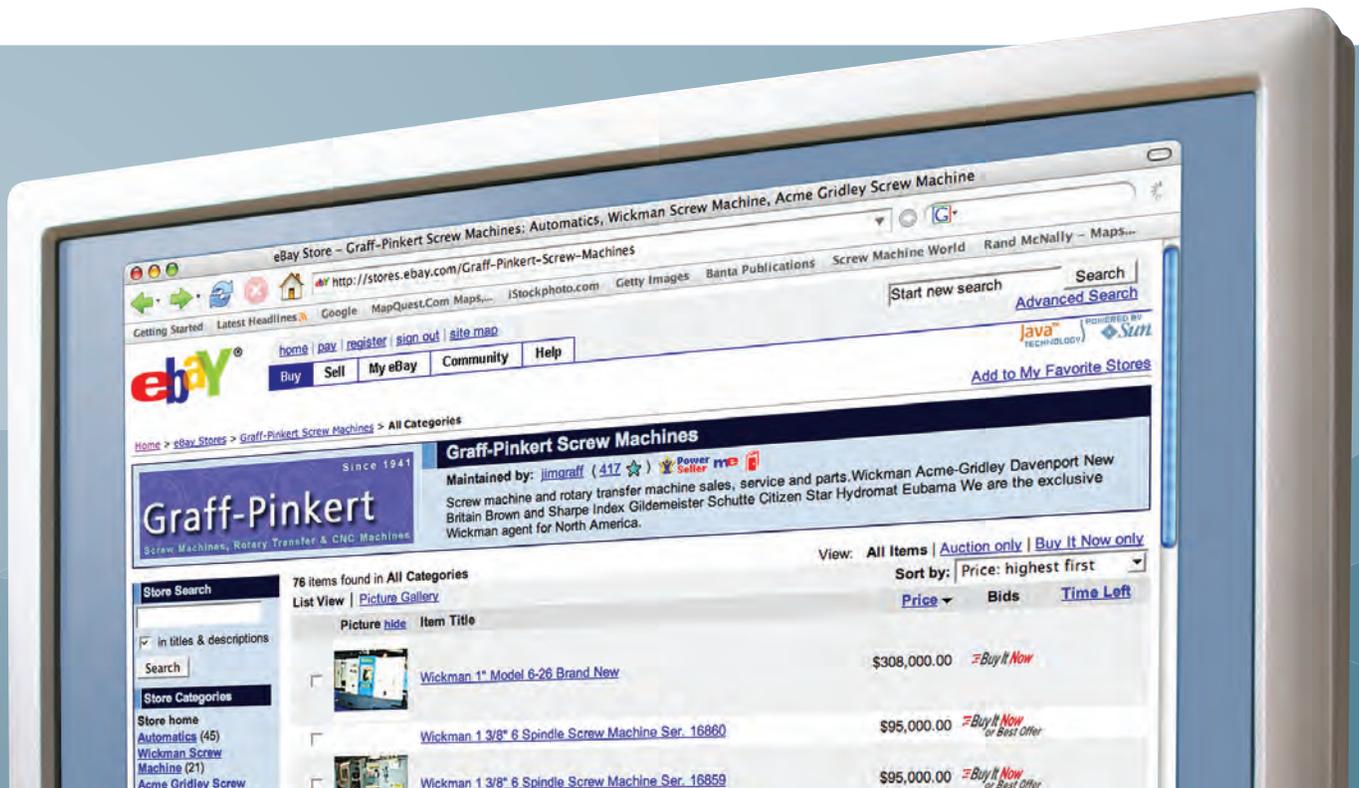
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Patrick & Jodie Gilmore

Husband/wife team

joined Onyx Medical Corporation in 1997. The Memphis, Tennessee-based business was founded in 1990 by Patrick's parents Roger and Laraine Gilmore. The company manufactures orthopedic trauma implants and instruments, and offers turnkey manufacturing and engineering customer services. Their story shows how family businesses can thrive despite a myriad of potential complications.

What did you do before you came to work for Onyx?

Jodie: We were both in high-tech. I worked for Apple Computer.

Patrick: I worked for a company called IDEO product development, in Palo Alto CA. It's a product design company.

How important was it to do something else before joining the family business?

Jodie: I think it was extremely important. That way we brought more than just our educational background. It was critical to have real world business experience, so that we could bring a lot to the table when we joined Onyx.

When you joined Onyx, what did you do to learn the business?

Patrick: I'm in manufacturing, so I worked out on the floor. I made sure I knew how to do every job that was out there. I spent time in each of the departments, and then we as an executive team decided how we wanted to grow the company.

Jodie: I oversee sales, marketing, strategy and business development. The first thing I needed to do was understand the business but also understand the industry and the competitive landscape.

How do you divide the responsibilities at the company?

Jodie: Lorain Gilmore is the president of the company, and Patrick and I work for her. Patrick and I basically split the daily tactical tasks. I do sales, marketing and customer service. Patrick takes manufacturing and operations. Roger and Laraine oversee things like staffing, accounting, H.R. and quality.

What is more difficult, working with a spouse or with parents?

Patrick: Honestly, neither of them is particularly difficult. My wife and my parents are very easy to get along with. We've had a long standing policy of leaving work at work.

Do you ever bring work problems home, or vice versa?

Patrick: I like to talk about the "work Jodie" vs. the "home Jodie." The "work Jodie" says, "Patrick, you need to work harder. We're not getting these parts done quickly enough. The customer needs them." So I'll stay at work until midnight, and then when I come home, Jodie says, "Oh honey, why are you working so hard baby? Come home, spend some time with the house." Other than things like that, I think it goes pretty well.

Do you consider work fun?

Patrick: Absolutely. I wouldn't do it if I didn't love it.

Jodie: We spend way too much time at work not to be having fun doing it.

What do you love the most about the business?

Jodie: The strategy. I see business as being a giant chess game. The whole element of – What is the industry? How it is developing? How is it changing? Who are the competitors? Who are the players?

Patrick: I like to get my hands dirty. I have a lot of responsibility to the company that necessitates me being behind a desk, but I'd much rather be out on the floor making something.

What is one thing you dislike in business?

Patrick: Petty people management issues.

Jodie: When you have everybody working well as a team and suddenly something happens and it seems like people are going in different directions.

If you could be any machine, what would you be?

Jodie: A fighter jet. It would be so amazing to fly and soar, and go that fast in the air, and move and do whatever you wanted to do.

Patrick: The Apollo Capsule. The exploration of the heavens, the mechanical complexity that went into it at the time. Everything that happened to make that work.

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how it works

BY SCOTT LIVINGSTON

Precision Thread Rolling

Squeezing metal into jewel-like threads

At Horst Engineering & Manufacturing Co., one-year old multi-axis Citizen Swiss turning centers and Eurotech multi-axis lathes pump out complete high precision machined components. They turn, they drill, they mill, and they even thread. Yet, in the same small East Hartford, Connecticut factory, Horst Engineering's sister company, Thread Rolling Inc., uses fifty-year old Waterbury, Hartford, and Reed roll threaders to form external threads with a specialized, yet elegantly simple, secondary process. Not all of their machines are antiques. Much of the equipment has been refurbished, and newer machines are mixed in with old. So it is fitting that they make their home in the most historic section of the old factory, where a fifty-five year old wood block floor symbolizes the sixty-year old family business.



Above: Thread Rolling Inc. uses a variety of machine types and sizes to roll threads.

Photos by Alan Grant

Thread Rolling

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Thread rolling is a process that has been around for more than one hundred years and there are machines in service that make the fifty-year old ones look young by comparison. Thread rollers come in a variety of types and sizes, but they all use a mechanism where hardened steel dies are matched and set to penetrate with force in order to reshape the material surface of a round diameter into a thread form. A cylindrical work piece or blank is fed into the machine (manually or automatically) and the dies rotate (cylindrical dies) or reciprocate (flat dies) in order to produce threads in a "chipless" forming process. Every thread form, shape, and size has a unique set of dies which are typically ground from heat treated tool steel (typically Rockwell C 58-62) and procured, rather than made in-house.



Above: A horizontal two die process is suitable for both in-feed and thru-feed rolling.

Right: A vertical three die process is often used when tight concentricity is important.



how it works

Thread rolling is primarily a cold forming process done at room temperature, but a niche does exist for hot rolling when materials are greater than Rockwell C 45, because die life would be seriously compromised. Like centerless grinding, its sister process, the thread rolling process can be in-feed or thru-feed. Thread rolling is the method of choice for high-volume production threading applications. Planetary die roll threaders are capable of forming threads on tens of thousands of parts per hour. High speed vertical or inclined flat die reciprocating machines can also generate high production rates, and horizontal cylindrical two die machines can quickly produce thousands of feet of threaded rod.

A lot of the stuff you get at the local hardware store, like wood screws, lag bolts, and machine screws, were mass produced with the help of thread rolling machines. Acme, buttress, worm, square, and pipe threads are just a handful of unique forms which can be produced by thread rolling; however, machine screw type threads are the most familiar to people in the precision machining industry.

On one end of the spectrum, high-volume automated thread rolling is interesting because of the speed and dimensional stability of the process, but the production of commercial grade fasteners and parts is a relatively ordinary practice. On the other end of the spectrum, there is the very specialized niche of high precision thread rolling, primarily on small batches of parts. Some high technology industries, including aerospace and motorsports, require extremely tight tolerance threads with super surface finishes, and the extra strength inherent in parts made with the forming process. Thread Rolling Inc. uses a combination of vertical cylindrical three-die machines, horizontal flat die reciprocating machines, and horizontal cylindrical two-die machines to produce precision threads.

The focus is on producing the high precision variety of machine screw style threads, concentrating on the standard 60° unified and metric thread

forms most common to the aerospace industry. The most common threads rolled here are Class 2A and Class 3A in UNF, UNC, UNJF, and UNJC forms. “J” form threads have a larger controlled root radius for added strength in the high stress area of a thread and are common to the aerospace industry. Dimensional inspection of high quality threads is different from the commercial variety. Specifications vary, but aerospace and military standards require that indicating type thread gauging be used to inspect the pitch diameter and associated dimensions.

Inspection of pitch diameters are performed with both full form and single element indicating type gauges that are set with thread masters. Thread go/no go ring gages are used for reference only. Standard outside diameter micrometers are used for inspecting major diameters, and optical comparators are used to check minor diameters and root radii. With all of these gauges available on the shop floor, a thread rolling operator can monitor the process and make adjustments quickly. Die wear and other variables can affect the rolling process, but once a machine is set, the process is consistent and repeatable.

Formed threads are preferred for high strength and critical applications like those found in the aerospace industry. Threads that are rolled, especially on heat treated parts, have higher tension, shear, and fatigue strength. No material is removed during the rolling process, eliminating one of the inherent weaknesses of cut or ground threads. The cold formed properties include a higher density of material grains, or molecules, especially where they have been compacted along the lower flank of each thread pitch and in the root of the thread.

Aerospace metals can be difficult to machine and form, so the common threading attachments used on screw machines and lathes for higher volume work



Above: Flat die thread rolling is adaptable for both low and high volume requirements.

how it works

struggle to meet the quality requirements of precision threads. The force required to form threads on heat treated alloy steel or on exotic alloy parts made from Inconel® or Titanium cannot be achieved effectively without using dedicated equipment. Thread Rolling Inc. focuses on threads that are less than 1.500 inches in diameter, but rolled threads are produced on fasteners up to 5.00 inches and even larger. It takes serious force, up to thirty or forty tons of rolling pressure generated by very large machines, in order to move that much material. Some threads are deemed so critical that a destructive testing sampling process is required to microscopically examine each pitch of a thread at 500X.

Properly formed threads require that the dies are exactly lined up, or “matched.” Whether the process uses two or three dies, they must track properly in order to avoid internal defects, such as overlaps, cracks, folds, seams, and craters. The destructive thread inspection method is used to identify internal defects and to verify that the proper material grainflow has been achieved. Representative samples are tested at the beginning of each new set up, and periodically during the course



Above: Aerospace industry specifications require that indicating type gauges be used to measure threads.

of a production run.

The testing process requires that the threads are cut from the rest of the part, bisected longitudinally, mounted in an epoxy resin, ground and lapped to a three micron finish, etched to reveal the microstructure, and microscopically inspected.

The whole process takes a little more than an hour, but requires specialized metallographic preparation and inspection equipment. Because production pauses for testing, a range of machines are required, so the machinists work on several jobs at the same time, alternating between grinding, threading, and testing processes.

Many times, parts are received for service in bulk packaging, but when they are returned with shiny precision threads, they are individually packaged with protectors to prevent damage during shipment. On one recent day, a clerk was packing up a single blue container that was lined with padded foam. The foam insert was die-

cut for a single prototype shaft. This eighteen inch part was thread rolled on both ends. The part had been designed and engineered to accommodate rolled threads. That meant that the pre-roll thread diameters were properly chamfered and ground to the correct pitch diameter, a hypothetical diameter in between the major and minor diameters, which is used to determine thread size. This particular job did not require destructive testing, but set-up pieces were produced from similar material in order to get the machines set. With a one-piece lot size, there is no room for error, and the highly skilled machinists knew this.

The highest quality rolled threads are produced from the best quality blanks. For that reason, most of the parts sent to Thread Rolling Inc. are left over-



Above: Metallographic thread specimens must be bi-sectioned, cleaned, hot mounted, ground, polished, and etched prior to inspection.

sized so that the final sizing process can be controlled by centerless grinding. Once the correct size has been ground, typically by a threading associate and a grinding associate working together, the parts are ground to their final size within .0004 inch while holding roundness within .000050. Before thread rolling, the surface finish on the diameter is always better than 32 microinches. Thanks to the burnishing action of the dies, the finish after rolling, especially on the flanks, can be as good as 4 microinches, depending on the material and hardness. Finish is another reason for choosing rolling over other threading processes.

The lack of CNC controls on most equipment means that the process is not as user-friendly as screw machining, turning, or milling. It is difficult to explain to customers that the major diameter actually increases in size when rolled. Some do not want to believe that they can turn their blanks below the major diameter and that their parts will not be scrap. For example a .250-28 UNF-3A thread has a pitch diameter of .2268-.2243 and a major diameter of .2500-.2435. The blank size prior to roll threading will be near the maximum pitch diameter and the material displaced by the dies will form up to fall within the major diameter tolerance.

The folks at Thread Rolling Inc. frequently hear that customers have shied away from jobs requiring thread rolling because the process seems difficult, mysterious, or out of their control. The process is unique, but within the precision forming industry, there are many specialists at the craft. The process just cannot be done as easily as one might expect in today's environment where "do it all" multi-axis machines automatically perform their work. A lot of "feel" is necessary to be a successful thread rolling operator. High precision thread rolling is a hands-on niche process that is here to stay.

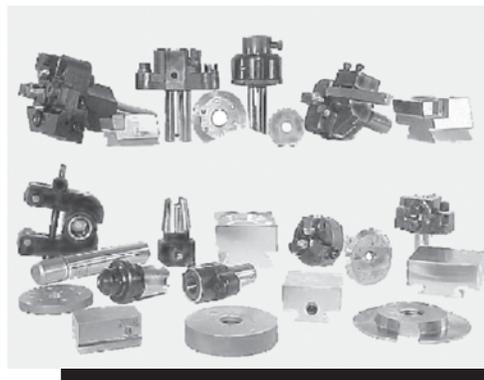


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Scott Livingston is a prior contributor to this magazine. He is President and CEO of Horst Engineering & Manufacturing Co. and Thread Rolling Inc., East Hartford, Connecticut.



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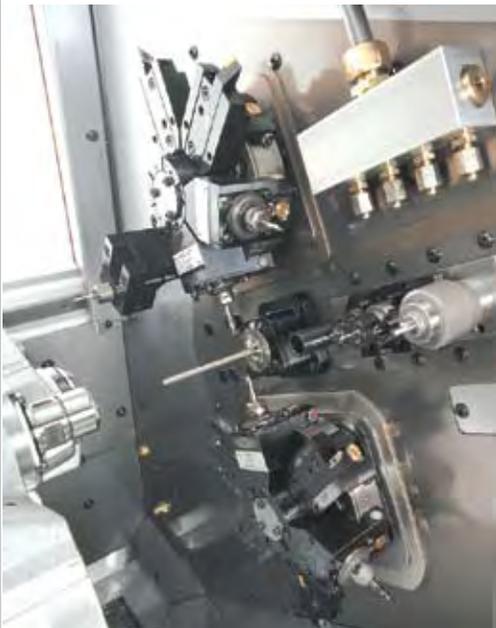
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product focus

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Each month, *Today's Machining World* works to help you understand how the precision parts marketplace works, what's available in the industry, and how you can use available resources, as well as knowledge, to run a more efficient and effective shop. In every issue, we'll feature a product category and focus on equipment key to remaining competitive in our marketplace.

A CNC Swiss lathe has a sliding headstock and fixed bushing that enhances the machining of small, complex, cylindrical parts in one cycle. Their relevance in the turned parts market continues to evolve, as better software, increased spindle speeds, and sophisticated bar loaders enable more applications.



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The fixed headstock version of the TNL is the TNL12K, providing greatly reduced setup times and lower tooling costs for short turned parts. Architecture of the TNL 12 and TNL12K is identical and they share tool holders, chucks and collets. Programming and operation is also the same. The TNL12 maximum bar capacity is 13/15mm (0.5-0.6 in.). The TNL12K handles bars up to 16mm (0.6 in.).

For more information please contact INDEX Corporation at 317-770-6300 or visit the company website at www.index-usa.com.

Tornos

Tornos Technologies' new DECO 20s Swiss-type machine is targeted to medical, automotive, electronics, connector, and general manufacturing companies producing precision parts that are moderately complex and up to 20 mm in diameter. "The DECO 20s addresses a need in the marketplace for a versatile Swiss-type machine that sets up and produces parts quickly, priced at under \$200,000," said Mark Saalmuller, Tornos' Marketing and Communications Manager. "Because of the independent tool systems and spindles, operations can be overlapped to optimize cycle times."

Additional specifications include a maximum part length of 220 mm (500 mm possible). Both the direct drive spindle and the counter-spindle offer power of 3.7 kW (5.5 hp) and a maximum spindle speed of 10,000 rpm. The 20s features the popular Fanuc 30i control; programming software is via conventional ISO G-code or Tornos' dedicated TB-DECO. Programming can be accomplished off-line.



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product focus



Marubeni Citizen



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The R series machines use linear motors to drive the slide and tool posts. This system achieves fast part processes with quick response and quiet operation, as well as eliminating thermal distortion. A scale feedback control system is also used with all axes. Rotary tools are now part of the gang tool post. This allows small-diameter parts requiring complex machining, such as polygon turning and end face drilling, to be machined easily.

For more information please visit Marubeni Citizen-Cincom Inc. at 201-818-0100 or visit the company website at www.marucit.com.

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product focus

KSI Swiss



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MMTC is a USA-owned manufacturer of the KSI products with manufacturing facilities in Seoul, Korea and Westminster, Colorado. KSI Swiss, Inc. is the sales and marketing corporation that distributes and sells the MMTC product.

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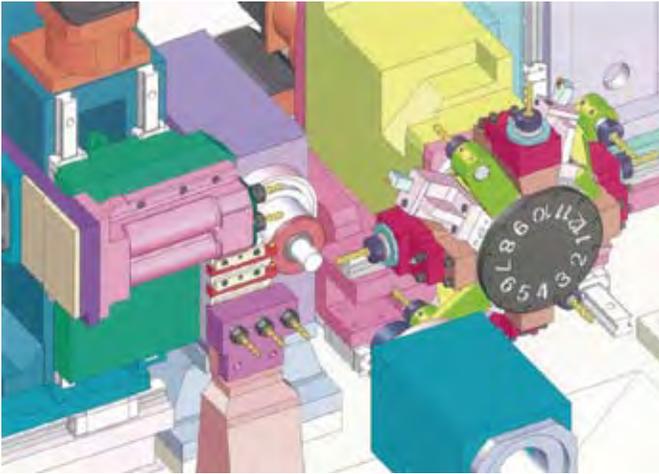


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Rem Sales



Rem Sales offers the BH38SY and Tsugami's BE19, the soon to be released U300 vertical machining center with integrated pallet. A combination turret / gang machine, the BH38SY combines all of the benefits of a traditional Swiss turn with the flexibility and capability of a turret machine. It offers 38mm main spindle capacity and a two axis sub spindle.

The BH38SY's 15HP main spindle allows for maximum metal removal while maintaining the most exacting tolerances. A 10HP, 2 axis sub spindle allows for shortened cycle times. Its solid cast iron base provides superior rigidity and cutting capabilities.

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product focus



Ganesh

Ganesh Machinery now offers the new CYCLONE-25/32 CNC Turn/Mill Centers. The CYCLONE-25 CY performs axial and cross-milling operations on your lathe work. The standard Y-axis allows you to machine all of the milling features that are not on the machine centerline. The fully programmable C-axis allows for full contour milling and engraving capability. Standard with this machine are 18-tools including 7-live driven tools. The Cyclone-25 CY, including parts catcher and chip auger is \$59,900.00.

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For more information contact Ganesh Machinery at 888-542-6374 or visit the company website at www.ganeshmachinery.com.



Hanwha's

Hanwha's CNC Swiss machines includes 3 independent tool posts/2 spindles/3 path; NC WINDOWS XP based operating system; conversational programming for reducing time of tooling and increasing productivity; software for measuring tool automatically (Developed by HANWHA); optimized motors, tools monitoring and 3D simulation; and Collision Prevention System (Developed by HANWHA).

Mechanically, Hanwha machines have built-in motors on main and sub spindle (8.0kW); rotary guide bush with spindle motor; synchronous rotary guide bush unit and main axis; Cs contouring (0.001°) and strong indexing by hydraulic disk brake. These machines also feature minimized exchange time of tools as indexing of the turret by a servo motor. Various Special Tools - polygon, thread whirling, angular driven tools are available to work the complex parts; 10 station turret with bilateral drills, end-mill, double drills; maximum 40EA rotary tools.

For more information, please contact Hanwha Machinery at 262-373-1600 or visit the company website at www.hanwhamachinery.com.



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Dealing with Defects

My company supplies a heat-treated bolt to a lawnmower manufacturer that uses it to attach the blade to a specialized bracket. Our customer called recently because a handful of bolts snapped as the blades were being tightened to the brackets. He wanted to know if there is anything to worry about. The problem seems limited to one particular bolt which is slightly different from the other three used to mount the blade. (We think some bolts in a particular lot got piled up in the heat treat conveyer, and the bolts at the center of the pile were not properly heat-treated. There are probably only a dozen or so affected.) Since there are three other bolts which hold the blade, it seems unlikely the blade will separate from the mower. We are certain the defective bolts are limited to a particular lot, but there is no way to identify easily a defective bolt from the 1000 in the lot, most of which are already in mowers. We estimate recall and rework costs at about \$250.00 a mower, so we are facing the possibility of spending a quarter of a million dollars to replace a thousand bolts, only a handful of which may be defective and even if defective, will probably never fail or injure anyone if they do. If we replace the bolts, the hit to the bottom line won't bankrupt us, but it will really hurt. Should we replace all 1000 bolts?

RUSSELL SAYS:

The basketball saying "no harm; no foul" comes to mind because it is very unlikely that anyone will be hurt. But the ref's call (or no call) in basketball is made during or after the play, when the consequences of the offending player's actions are known. Here, this bolt may fail and injure someone through a mechanism you've not even imagined. Maybe the blade stays tight but the bolt snaps, and the head is launched out of the mower like a bullet. The problem is that you don't know which of the thousand lawnmowers contain defective bolts, and you seem uncertain that the problem is limited to a dozen or so. If you knew where the ten or fifteen defective bolts ended up, you would not hesitate to replace them in the interest of consumer safety and limiting your own product liability. The risk to the ten or fifteen (or more) consumers using those mowers, however, is the same whether or not you know which of the 1000 bolts are defective. Accordingly, the risk to the consumer, not the inconvenience to you, should be your primary concern. There are selfish reasons to consider, too. Your delivery of the defective bolts is a breach of contract,

can ruin your reputation, and put you squarely in the liability limelight if someone gets hurt. You might use this as an opportunity to show to your customer your dedication to quality and your integrity by doing the right thing, even though the right thing hurts your bottom line. You may even lessen the pain if you used an outside heat treater to whom you can point your lawyers. In this case, the decision to do the right thing should not turn on your expense and inconvenience but on making sure that, to the best of your ability, no one gets injured due to your defective part.

Russell Ethridge is a part-time judge and an attorney in private practice in southeast Michigan. The material provided in this article is for information purposes only and does not constitute legal advice.

TMW will explore business ethics monthly. Have an ethics question? email jill@todaysmachiningworld.com.

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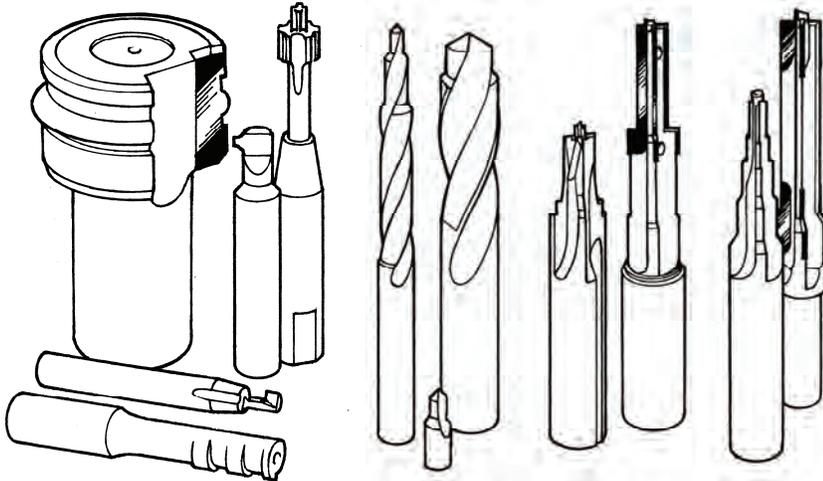
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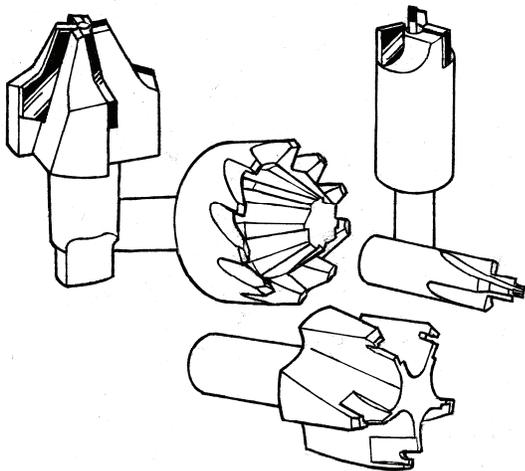
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Noteable and newsworthy information and events for the month of September.

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Mississauga, ON

Sept 26th to the 28th

www.reedexpaca/

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McCormick Place
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Technologies and strategies that could change the way you manufacture, Lean manufacturing practices and applications, Collaboration strategies and tools

September 6-8th

www.sme.org

IMTS

International Manufacturing Technology Show

McCormick Place

Chicago IL

www.imts.com

September 6th - 13th

PMPA

Annual Meeting

The Ritz Carlton

September 30th - October 4th

www.pmpa.org

Amelia Island, Florida

Sept 24th

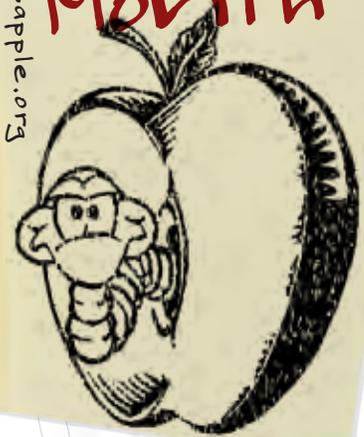
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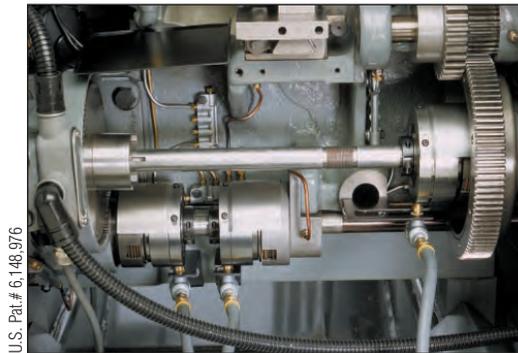
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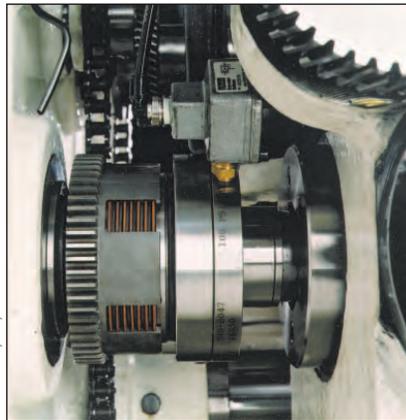
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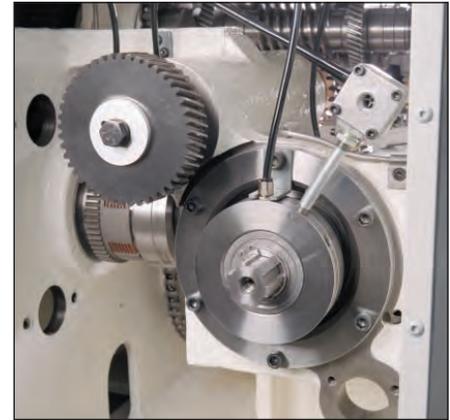
- Increase productivity from 10-20%
- Tools can be positioned closer to the work piece due to repeatable high and low speed clutch engagement
- Better machine utilization - More productivity from existing machines, operators and floor space



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BY JILL SEVELOW

Riding the Town

If you're coming to Chicago for IMTS, you'll need a quick lesson in getting around our city. It's easy – I swear. And I don't just mean taking a taxi!

Chicago has a very simple grid pattern, and the number system follows suit. State & Madison is essentially "Ground Zero" in Chicago. There are 8 standard blocks per mile, and a standard block has 100 address numbers, so there are 800 numbers per mile. 800 North State Street is 8 blocks north of Madison on State; 1900 W. Madison is nineteen blocks west of State St. on Madison. Even numbered addresses will be on the west or north side of the street, odd numbered addressed on the east or south side. Got it? Good.

The Metra train that departs right out of McCormick Place will take you north to Millennium Park (Van Buren stop) or Millennium Station at Randolph & Michigan Avenue. Adult one-way is \$1.95. From there you can walk north over the Chicago River bridge directly onto the Magnificent Mile. Shop, eat, peruse – it's highly entertaining and filled with breathtaking stores and fun restaurants. If you keep going, you'll find Water Tower Place, Oak Street – then if you duck under the underpass, you can hit the beach.

Before taking that walk down Michigan Avenue, take the Wendella boat ride cruise found on the southwest corner of the Michigan Avenue bridge. Architecture, sightseeing and sunset cruises are available. Prices start at \$20.

Unfortunately, Labor Day signals the end of the free trolley system running around Chicago, but there's a year-round one to Navy Pier. Pick it up on State Street by Grand or Illinois. Trolleys run every 20 minutes.

For those of you brave enough, there's an excellent train system called the "L," which stands for elevated – which is how part of it runs around the city. Trains run every five to fifteen minutes during the

day and every fifteen to sixty minutes all night (though if you're doing a 3:30 am run, please hold on to your wallet and enjoy some of Chicago's night-owls). Lines are color-coded and denoted by route rather than destination. The Brown line circles the Loop, the O'Hare-Congress-Douglas is the Blue Line, the Evanston Express (North Shore suburbs) is the Purple line; the Blue goes to O'Hare Airport, and the Orange line to Midway.

Chicago's taxis are fairly reasonable - \$1.50 at the start of the ride, \$1.20 per mile and 50 cents for each additional passenger. Cabs can be hailed from

anywhere in the Loop.

Chicago cabs are required by law to take you anywhere in the city, and they are required by the city to take credit cards, although some will resist or tell you their machine is broken. If you need to get a cab back to your hotel from dinner, just ask the restaurant workers to hail you one when you pay your bill.

Most cabbies are honest – but if you have a problem, take down the cab number and report it to the city.

At the end of a long day at IMTS, consider putting your feet up and enjoying a horse-drawn carriage ride. The majority of the hacks wait at the corner of Michigan and Pearson, close to Borders bookstore and the Ghirardelli Chocolate Shop. Chicago Horse & Carriage offers a variety of city tours; \$35/per half hour for parties of 5 or less, \$40/half hour for parties of 6.

However you choose to get around, enjoy "our" city!



Have you got a favorite ride? Looking for antique cars, skateboards, motor-cycles or anything else that gets you around. E-mail your story and photo to jill@todaysmachiningworld.com.



Get the whole story on
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“A lot of shops tell customers, ‘Give us the order and we’ll buy the machine.’

Customers don’t want to hear that. They want you to have experience on that machine.” – Frederic M. Young, President, Forest City Gear, Roscoe, IL

In 1980, after attending several IMTS shows and being amazed each time at the latest gear cutting technology, Fred Young took a deep breath and ordered a new gear hobber.

Today, the average age of Forest City’s equipment is six years. According to Young, continually investing in leading edge technology is the key to keeping the company ahead of the competition. And he believes IMTS is the perfect place to find – and purchase – that technology.

At IMTS 2004, Young spent approximately \$1 million on a new gear and thread grinder that lets Forest City increase their gear size and production capacities.

Young plans once again to search out the latest gear cutting technology at IMTS 2006. And as usual, he’ll bring up to a dozen members of his team so they can see the newest equipment and processes. “If you want to stay ahead of the competition,” says Young, “having the latest technology is the way to do it.”

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shop doc

WITH NOAH GRAFF

Dear Shop Doc,

I have a medium sized turret type 2-axis CNC lathe. I followed the tips regarding the laydown threading systems from last month, and my tool life increased a great deal by using the proper adjustable anvil. However, when using this style of threading system, I still seem to struggle with the smaller diameter threads.

The No-Go Gage we use goes on 2-3 turns when cutting threads under .500 in diameter. These parts are made of low carbon steel (like 1018), and I try to follow the recommended SFM provided by the tool manufacturer. With the coatings typically seen on these tools, it seems the SFM range can be very high, thus resulting in high RPMs. It seems that if we do slow down the RPM, the No-Go Gage doesn't go on as far, but the tool life isn't as good.

We have tried several thread cycle options such as "infeed" variations, depth of cut, etc., but it doesn't seem to change the results.

I'll take thread quality over tool life for now, but is there something I can do to get great results for both?

Loose Ends

Dear Loose Ends,

When you said your lathe was a medium sized turret type CNC, that was a great clue to your problem. When you mentioned smaller diameters, it was another great clue. I think you are starting too close to the thread starting point in your Z axis. When you do that, the turret can't synchronize quickly enough with the spindle.

It's not uncommon for turrets to travel at 300 IPM while threading. To synchronize that much weight with the spindle is difficult at those feed rates. Until the turret and spindle synchronize, the form of the thread may not be correct.

Here's what you should do. Keep the RPM range the tool's manufacturer recommends. Then, do the following equation: $((1/TPI) * RPM) / 400 = \text{Start Point in Z.}$

The result of the equation equals the distance in front of the thread starting point where I suggest you start the Z axis in your threading cycle. By positioning the tool far enough in front of the thread for the spindle and turret to synchronize (calculated from the RPM to achieve the proper SFM for cutting the specific material with the specific grade of carbide), I'm confident you will achieve great thread quality as well as improved tool life.

Good luck!

Jim Rowe
Application Specialist/Medical Accounts
Mahar Tool Supply, Warsaw, IN.

Today's Machining World's "Shop Doc" column taps into our vast contact base of machining experts to help you find solutions to your problems. We invite our readers to contribute suggestions and comments on the Shop Doc's advice. If you consider yourself a Shop Doc or know a potential Shop Doc, please let us know. You should also check out the TMW online forum at www.todaysmachiningworld.com.

Have a technical issue you'd like addressed? Please email noah@todaysmachiningworld.com. We'll help solve your problem, then publish both the problem and solution in the next issue of the magazine.

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'04 **NAKAMURA-TOME Mdl. WT-150** 6-Axis Twin Spindle CNC Screw Machine S/N M151808 w/Fanuc Series 18i-TB CNC Controls, Live Tooling, **LNS Mdl. Q.L. Servo S3** Bar Loader/Feeder, '96 **CITIZEN Type Cincom E32** 5-Axis Twin Spindle CNC Screw Machine S/N W5453 w/Citizen CNC Controls, 1" Cap., '96 **FMB Type Turbo 5-42/4200** Bar Loader/Feeder, '91 **MIYANO Mdl. BNC-34S** Twin-Spindle CNC Screw Machine S/N BN3038Su w/Fanuc Series 0-T CNC Controls, 1" Cap, **MIYANO** Bar Feed, '96 **CITIZEN Type Cincom L-25** 5-Axis CNC Screw Machine S/N V6162 w/Citizen CNC Controls, 1.0" Cap, Live Tooling, **FMB Type Mini-Turbo 4000** Bar Loader/Feeder, '95 **CITIZEN Type Cincom L-20 5-Axis CNC Screw Machine** S/N X8864 w/Citizen CNC Controls, .79" Cap, Live Tooling, **FMB Type Mini-Turbo 4000** Bar Loader/Feeder, '92 **CITIZEN Type Cincom L-20** 5-Axis CNC Screw Machine S/N X7492 w/Citizen CNC Controls, .79" Cap, Live Tooling, **FMB Type Mini-Turbo 4000** Bar Loader/Feeder, '89 **CITIZEN Type Cincom L16** 5-Axis CNC Screw Machine S/N X5207 w/Citizen CNC Controls, 5/8" Cap, Live Tooling, '90 **FMB Type Mini-Turbo 4000** Bar Loader/Feeder, '89 **CITIZEN Type Cincom L16** 5-Axis CNC Screw Machine S/N X5167 w/Citizen CNC Controls, 5/8" Cap, Live Tooling, '89 **SAMECA Type OS2** Hydraulic Bar Feeder, '89 **CITIZEN Type Cincom L16** 4-Axis CNC Screw Machine S/N R3477 w/Citizen CNC Controls, 5/8" Cap., **KITAMURA Spark Changer MyCenter 2Xi** 4-Axis 2-Pallet CNC VMC, '90 **Fanuc Mdl. Tape Drill Mate-Model T** CNC Drilling Center, **HARDINGE Mdl. DSM59** Tool Room Lathe, **RAMCO Mdl. RML-95** Tool Room Lathe, **TSUGAMI Mdl.. T-SPL** Hand Chucker, **UNIQUENESS/CUT KING** 14"x 40" Gap-Bed Lathe, **MBI MILL** Vertical Mill, **K.O. LEE Mdl. S714** 6"x 12" Surface Grinder, **DAREX** Pedestal Drill Sharpener, **ACCU-FINISH Series II** Carbide Tool Lapper, **BALDOR** Carbide Tool Grinder, **DRILL DOCTOR** Drill Sharpener, **BALDOR** Pedestal Buffer, **LINCOLN Weld-Pak 100** 110 Volt MIG Welder/Wire Feeder, **JET** 7" Horizontal Band Saw, **AMROX Mdl.. GD20** 20-Ton Cap Hydraulic H-Frame Press, **ARROW Mdl. F-30/40-1** Refrigerated Air Dryer, **SUPERIOR Mdl. 33-R12** 12-Speed Pedestal Drill Press, **DELTA Mdl. 11-950** 5-Speed Pedestal Drill Press, **WESTWARD** 8" Bench-Top Drill Press, (2) **DELTA** 8" Bench-Top Drill Presses, **MILWAUKEE** 14" Abrasive Cut-Off Saw, '96 **CINCOM Mdl. TP1000** Optical Tool Pre-Setter, **NIKKEN** 4th-Axis 5C Indexing Head for **KITAMURA**, **S-T INDUSTRIES** 14" Optical Comparator, (4) **KURT** 6" Angle-Lock Vises, **CRITERION** Boring Head, **HARIG UNI-DEX** 5C Grinding Fixture, (3) **SCHMIDT** Precision Arbor Presses, **MILWAUKEE** Electric Shear, **COLEMAN** Electric Drill, (1) **CATERPILLAR** 50 Mdl. GC-25 5,000 Lb Cap LPG Forklift, Office Equipment and Furnishings,

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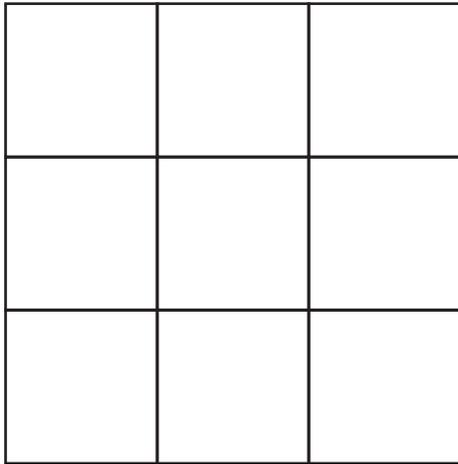
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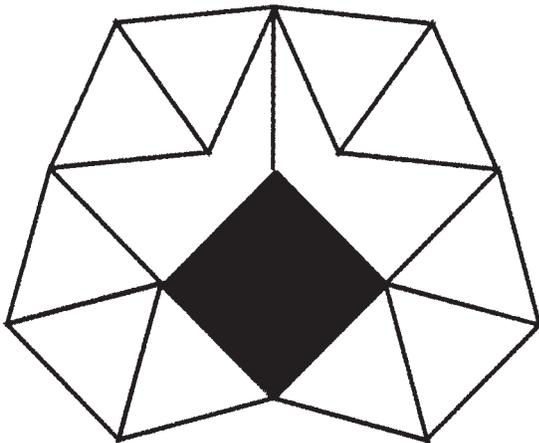
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Well, lots of people had lots of different answers, and we're printing all the names, because their ideas, diagrams and execution gave them an "A" for effort!

Who Linked it up?

Dan Cibuskis of Aurora Air Products in Aurora, IL; **Tanner Mayhew** of Vektex, Inc. in Emporia, KS; **Wolf Blechschmidt** of PDI Tooling in Redmond, WA; **Reinie Zellmann** of Truline CNC in Brookfield, WI; **Chuck Poole** of Britmax Machining in Riverside, CA; and **Gary Paudler** of Forms+Surfaces in Carpinteria, CA.



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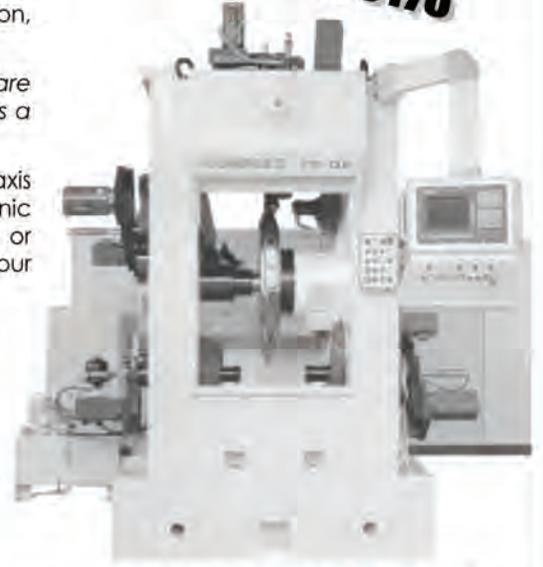
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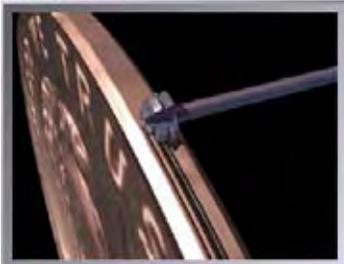
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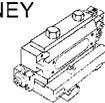
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Athena of the Coffee Shop

I recently attended the Printer's Row Book Fair Chicago—thousands of folks looking for bargain books and prints, others searching out authors and new publishers. I came for the energy and the food, knowing that my nose would find something interesting.

In a coffee shop next to the exhibitor's tents I saw a lady in a flowing robe, silver helmet, wielding a fake knife, hawking her small hard-cover book. As I waited in line to pay for my navel oranges and bottled water, I observed a brilliant example of communication. She was selling a book every few minutes and took an order for ten from a fellow who had read the short book earlier in the afternoon.

Carol Dunitz told me that she is a marketing professional, which I already knew after watching her for thirty seconds. She chose the location because she wanted to draft on the Book Fair, but not pay the rent or compete with the noise. The coffee shop generated people seeking relief from the tumult who were definitely readers. Her goofy costume — Athena, a Greek goddess of strength and power — attracted immediate attention. She approached each person who entered the coffee shop with well practiced shtick about the book, stating that she was the author, the book had been well reviewed in national publications, and 25% of the proceeds would go to the American Cancer Society. She hit several notes, hoping that one or more connected with the bookophiles she encountered.

I plopped down on a comfortable chair (after I bought the book for twenty bucks) to watch a pro work a room. There were a million books to buy that day, but she made hers special because she humanized it. She grabbed my attention with her bright costume. I connected to her happy energy. I resonated with her message about the content of her book, and I liked that she was contributing a piece to charity. Beautiful. If the book clicked at all, it would be gravy.

I perused the dust jacket, which had several testimonials from prominent executives. I browsed the introduction, which told how she came to write the book. It was nice stuff, but watching her sell the book really captivated me.

Carol Dunitz understood real estate. Location, location, location. For what she was attempting, she picked a perfect spot. She was not a billboard trying to attract eyeballs on a highway. She needed quality touches to make a sale. She had to engage her prospects one at a time, so too much volume could hurt her. She needed a consistent stream of people who were not rushing past, making the little coffee shop ideal. She had charmed the shop owner (it was not a chain) into allowing her to use the space for her theatrical, costumed approach. She had a small table to display her books and had a considerable stock of books under the table in boxes.

As I watched her, I realized that she could keep eye contact with her prospects, while projecting to the potential customers who were entering or waiting to pay for their food. Carol Dunitz is a theatre person who is into musicals. She was in touch with her audience that day.

I had already bought my book so I didn't want to exhaust her time. I just wanted to observe a real pro and learn.

After I finished my oranges and had seen her sell a few more copies, I left the shop to do a little more Fair. I tired quickly and headed for my car, but I couldn't stop thinking about the clever performance of Athena of the Coffee Shop.

I went back to my car, picked up a copy of *Today's Machining World* and returned to Carol Dunitz. I gave her the magazine and told her I'd like to hire her as a consultant.

Lloyd Graff

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