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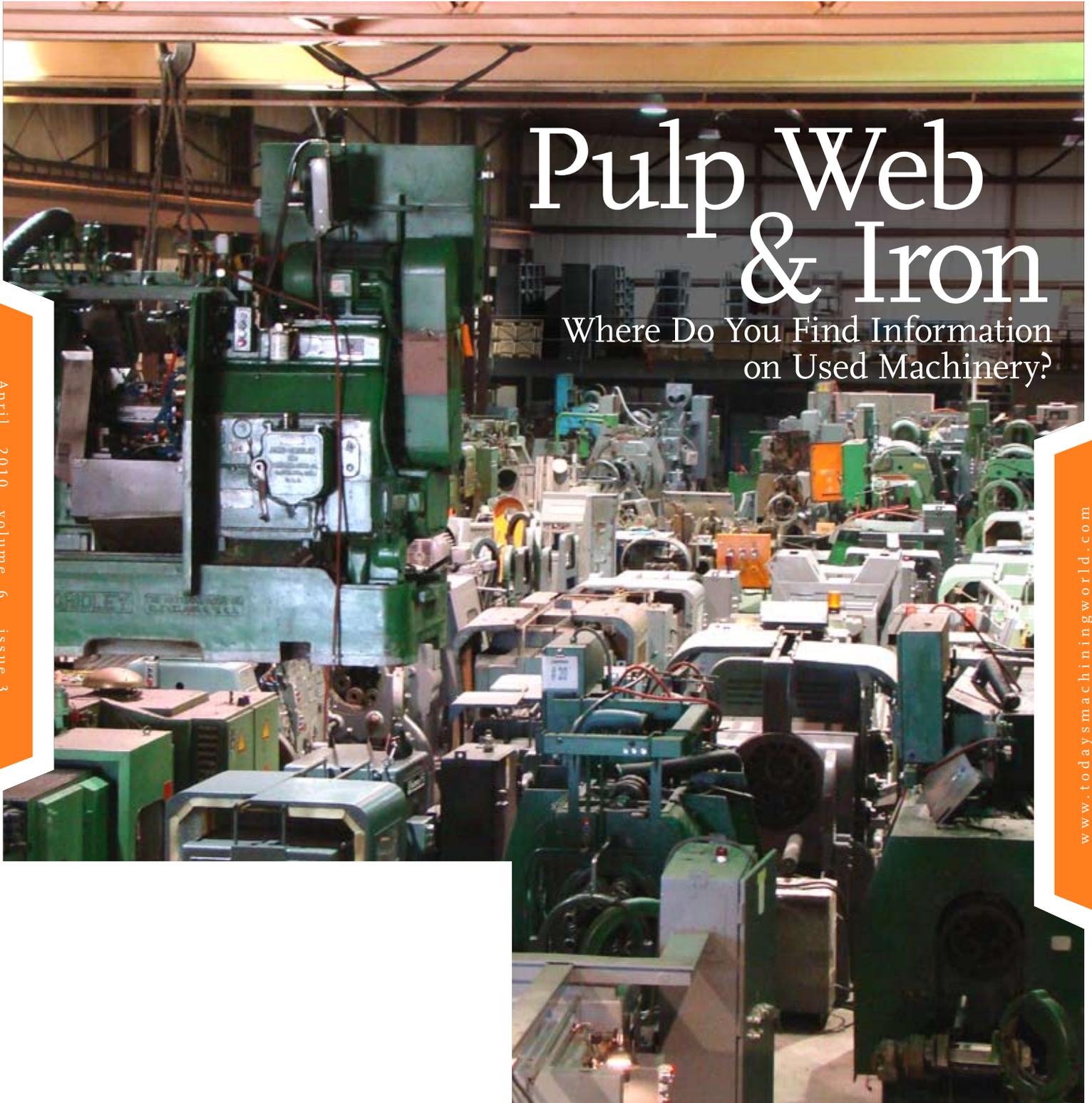
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April 2010 volume 6 issue 3

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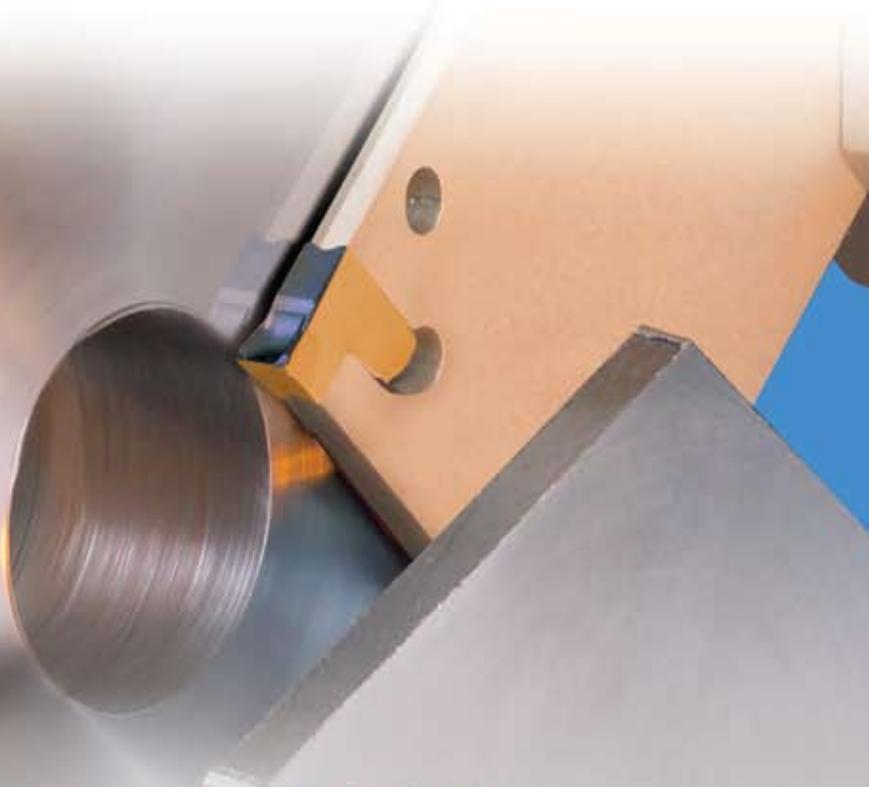




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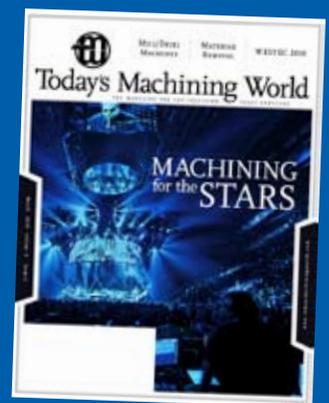
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Lloyd Graff is a true lover of sports. A highlight of his sporting career was a tryout with the Chicago Cubs. Great photo opportunity, but it ended without a contract offer. Aside from baseball his favorite sport is table tennis. He met his wife, Risa, with a ping pong paddle in the pocket of his corduroy sports jacket. “Conversational ping pong” was a way of connecting with his children when all other approaches failed. Sadly, six eye surgeries for retina detachments have limited his ability to cover the backhand side



Emily Aniakou managing editor of *Today's Machining World*, completed a degree from the Eastman School of Music in French horn performance, a year of service at a Bangladeshi orphanage, training at a Zen Center, and most recently, a stint in the Peace Corps in Benin, West Africa. Emily recently drove from Chicago to Salem, Oregon, to help her Mom join her Dad, who moved there recently because of a job transfer. Three and a half days after Emily left her home near Chicago she arrived in Oregon, only to hop on a plane to return to work the next day. Nebraska—painfully long, Wyoming—eerily desolate, Utah—beautiful mountains, Oregon—hills and then the smell of the ocean. What an amazing country.



Todd Toborg, *TMW's* creative director is getting ready to enjoy the warm weather. During his winter hibernation Todd gives up haircuts and shaving in hopes that his beloved Chicago Blackhawks can capture the ever elusive Stanley Cup. But soon he says, soon. Until then, he will transcend into spring by honoring his tradition of attending baseball's opening day for both the southside and the northside teams. Never playing favorites, he has only unconditional love for all of Chicago's sports teams. Go Sox. Go Cubs.



Jerry Levine Jerry Levine worked in the oil business for over 35 years before retiring in 1998 to work on a friend's U.S. Senate campaign. Unfortunately, the friend lost in a close election 50.5 percent to 49.5 percent, so Jerry retired again. Since then he has been an active volunteer in a homeless shelter project in Chicago's south suburbs. The shelter is currently building a 100 unit permanent supportive housing facility. The shelter activity takes up nearly as much time as Jerry's former paying jobs, but provides much greater satisfaction.



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4235 W. 166th Street
Oak Forest, IL 60452
(708) 535-2200

Unleavened
Lloyd Graff
lloydgrafftmw@yahoo.com
(708) 535-2237

Managing Editor
Emily Aniakou
emily@todaysmachiningworld.com

Features Editor
Noah Graff
noah@todaysmachiningworld.com

Web Master
Noah Graff
noah@todaysmachiningworld.com

Creative Director
Todd Toborg / todd t designs, inc.
tmwmagart@gmail.com

Circulation Director
Sue Ravenscraft / RS Media Services
smravenscraft@comcast.net

Custom Reprints Representative
Todd Bair
todd@scoopreprints.com
800-767-3263 ext 308

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editor's note

Pick Up the Phone – and Listen

Sometimes the moves you make to survive end up working for you in ways you don't expect.

At the Graff Pinkert/*Today's Machining World* office we laid off our primary phone answerer and bookkeeper. We had the choice of buying a phone menu software system or answering the phone in an ad hoc way by the folks working in the office at the time of the calls. We decided to pick up the phones.

For me this duty has become a terrific opportunity to connect with clients before they reach Cathy Heller, our spare parts doyen, Rex Maggagnotti, our master of machinery sales, Emily Aniakou, *Today's Machining World's* managing editor or Noah Graff, the features editor.

My usual line when I pick up is a self-deprecating "this is your lucky day, you get to talk to me first." I've found this jocular, tongue-in-cheek approach to be disarming, and the callers are almost always freed up to talk following my greeting. I usually ask questions. I often know something about the caller or their business, and if I don't I look at it as an opportunity to get to know them.

I invariably find something valuable in these conversations—even if it's only the good vibe.

I strongly suggest that you turn off your annoying phone software system at least one day a week and allow your key people to answer the phone and connect with the folks you deal with. You'll be amazed at what you learn—and sell.

Lloyd Graff
Editor/Owner

editor's note



Stopped by Fear

I have been a reader for a long time, and I have been in the machining world since I was born. I grew up in a small manual shop, owned by my father, and had the privilege of learning on a Hardinge DSM59 and a host of other manual equipment. My father always embraced technology and after a mishap in the early 1980s, he recovered and bought eight CNCs in four years in the early 1990s. In the late 1990s he could not ignore his PTSD from Vietnam any longer. He passed the company onto me at a very early age. I had no clue what I was doing, but I learned how to salvage, and ultimately dissolve a company before I even learned to operate one. I was always talented in machining and was able to figure out how to run jobs that our competition at the time was struggling with. We had 11 guys at the time my father stepped aside and I took over. By the end of the first week I was left with a high school friend of mine and a guy that ran the saw, who had worked at McDonalds for nine years prior. It was complete chaos and disaster. I wasn't a mill guy and I didn't know how to run a CNC Mill. So I sat the other two guys down, told them how it was and that the end was probably near unless they gave me 150 percent and were willing to learn things that I would probably not be able to teach them. They agreed. I made the saw guy our operator. I made my HS friend my CNC lathe guy. I made myself everything else. In two days I had my first mill job set up. In two weeks it was second nature.

The last 12 months the shop was open were the best 12 months in the 20 years of the company. The last month in particular. The three of us shipped more in a four-week period than any other week, including those when we had 11 guys. Unfortunately though, the company was too far gone financially.

I decided that we would not go bankrupt. I decided that we could sell out. Sell the machinery, sell the real estate, give back the vehicles and sell the house that my father built with his own two hands to house his family. They would keep the summer house and move there permanently. We sold out. They moved. I stayed behind.

I started my own shop. It was another two years of chaos, but I did it. Ultimately, [I got] screwed on a new Swiss turn. It was on my floor, not hooked up. It was a mess. I could taste success. But it was not meant to be. This time, I had no choice but to go bankrupt. I bounced around from shop to shop for a while and even had a stint selling cars. I wound up at a former customer's shop as their lathe foreman. It wasn't until I was told that since I wasn't family I would never make more than I was making currently that I threw my arms up and joined the army at 23. I felt as though I was out of options.

Over the past two and a half years I have found myself in the field service arena working for a small independent CNC service guy. I love it, dare I say, as much as making chips, if not more. It is the most mentally rewarding job I have ever had. I am able to take my background and fix the equipment that I love so much. I am also able to command trust from the customer and help them make their jobs run faster.

All this changed around the first of the year. I injured my finger. Luckily, it is ok and now healed.

Here I am at another crossroads in life. It has been 10 years since I closed my company, and every day I wish it had been different. Here is my chance. Right in front of me. I have a dedicated customer base, the talent and the business sense, but the funding is an issue. I could ask family. I could go to the SBA. I could. I should. I could some more. But it's truly fear that stops me. The fear that another defeat is around the corner and I would want to throw in the towel, but there are two things that keep me going: My son, and my desire deep inside to succeed and stick it in the face of everyone who has tried to stop me.

I have a NEED, for the manufacturing industry. What am I to do? I feel lost, but find inspiration in the columns of yours. Something needs to break soon, I just don't know what.

Christian

Something on your mind? We'd love to hear it.

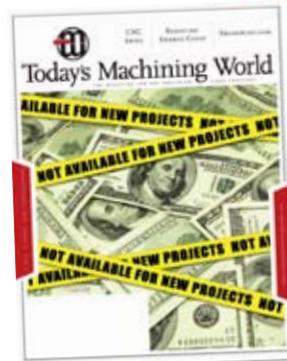
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How to Win the Ball Game

As usual I was very impressed with your January/February issue. It's the only magazine I read cover to cover. I don't want to miss anything. You do an excellent job of keeping us all informed as to what is going on in our industry, but you also give us your expertise and knowledge of the global situation. Your article about EMC Precision Machining was very thought provoking. It will be interesting to see how it plays out. Today none of us are going to win any races if we try to run a popularity contest. Employees don't have to like us, but they should certainly respect us. We should try and be proactive in running our business. The main criteria for being proactive is being ready and willing to accept failure. You don't want to hold back and keep looking for a home run opportunity or

the perfect project, as you'll probably be left in the dust. You'll have a much better opportunity for success if you continually strive for hitting singles, doubles and triples. That's what wins ball games.



John J. Steuby
St. Louis, Mo.

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By Jerry Levine

Game Change

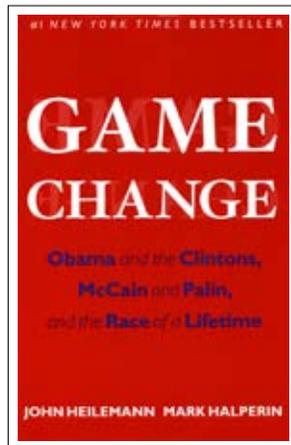
Game Change by John Heilemann and Mark Halperin is the story of the 2008 presidential race, both the primary battles and the general election. In spite of the title, there actually were few true “game changers,” just tough old politics, the economic climate and money, money, money.

The candidates became larger than life celebrities playing in a 24/7 multimedia spectacular. Certain candidates self-destructed, afflicted by scandals, political miscues, lack of money and or lack of energy. In the end Barack Obama emerged the winner, as he was the best-positioned candidate for the times.

Reading *Game Change* I gained a greater respect for the three main characters: Hilary Clinton, John McCain and Obama. However, both John and Elizabeth Edwards come off even worse than they did in the press and the book depicts Sarah Palin as so far out of her league that one has to feel for her. Her collapse certainly hurt McCain, but he lost the election on his own. His mishandling of the economic crisis and the White House meeting in September 2008, along with the country’s desire for someone and something different than George Bush, led to his defeat.

The insight in the book on the personal relationships of the candidates with one another is fascinating. Clinton and McCain were close friends, having traveled the globe together. A story of the two getting drunk together in Estonia on vodka shots is a Washington favorite. McCain was greatly disappointed when she lost the nomination, even calling to console her.

In contrast, McCain and Obama growingly disliked each other. This stemmed from early 2006 when McCain asked Obama to collaborate with him and a small group of reformers on ethics legislation. McCain has a history of working across the aisle on reform issues, such as with Ted Kennedy on immigration, Russ Feingold on campaign finance, and Joe Lieberman on ethics. Obama at first showed an interest in working with McCain but then snubbed him, sending him a letter backing out, but only after first releasing it to the press and muddying the whole bipartisan effort. Obama behaved similarly trying to embarrass McCain in a bipartisan group working on immigration, and a new GI bill where he publicly and quite disingenuously insinuated that McCain was too cheap to help veterans.



It was clear by early 2007 that Obama had begun his run for president and that he knew McCain would be his chief rival. He wasn’t going to give McCain any bipartisan political victories. Obama’s tough-minded political ambition was showing itself.

The ineptness of McCain’s campaign was highlighted in his vice-presidential selection process. McCain clinched the nomination early and had several months to thoroughly vet his running mate. Behind in the polls by double digits, he desperately needed a game-changing nominee. He favored his old friend Joe Lieberman, but both polling research and party elders thought Lieberman would hurt McCain with the party’s base and not gain him

much with independents. The search dragged on, with three thoroughly vetted but unexciting white males on the short list.

But then, just 36 hours before the announcement, from the longest of long lists came Sarah Palin. She was attractive, confident and passed the initial interview, although she had hardly been vetted at all. It was assumed that she had an average governor’s knowledge base, and that McCain’s team could work with her. How little she knew and how little she was capable of or interested in learning, eluded the vetting team.

Initially Palin appeared to be a game changer in the election. Practically overnight McCain soared from 12 to 15 points behind, to dead even with Obama. The campaign planned to use her to take the initiative from the Democrats, but they quickly learned Sarah Palin was not ready for prime time. Her eventual collapse hurt the campaign but was ultimately overshadowed by McCain’s own collapse during the September 2008 financial crisis.

The final irony of the 2008 presidential race was the coming together of Obama and Clinton, reminiscent of Lincoln and Seward. In both cases the newcomer from Illinois defeated the old hand from New York and then appointed them Secretary of State. Seward was a great friend, adviser and support to Lincoln through the darkest days. Obama and Clinton have wonderful role models to follow. 📖

Comments? You can email Jerry Levine at jerroldlevine@yahoo.com



Car Shopping

Recently, both of my adult sons asked for my advice in replacing their 14-year-old hand me down cars. Because they have always driven Graff heirlooms, they didn't know the joys of watching showroom Kabuki, and requested some moral support.

My sons, Ari and Noah, are smart guys but know about as much about cars as I know about the chemistry of laundry detergent. I'm not exactly a car maven, but I listen to Tom and Ray Magliozzi on NPR, so I know more than they do.

We went to the local Auto Mall (a dozen dealers in an industrial park setting). Incidentally, the two sons definitely did not shop together.

We looked at Toyota first because we figured they would have good deals because of the mysterious acceleration malady. Interestingly, both boys (men) thought the Toyota cars were stodgy, except for the Prius. Unfortunately, the Prius was the only vehicle they did not offer a juicy financing package on. We tried Honda next. The dealership was owned by the

same people who owned the Toyota store. We got a salesman who was old (my age) and had only been selling cars for a month. Nice guy, but offered us numbers that only your grandma in Dubuque would consider.

We checked out Ford. They were low on inventory and it seemed like they were doing us a favor to test drive one Ford Fusion. Nice car, fairly good deal, good features. Worth considering. Finally we made it to Hyundai. Neither Ari nor Noah knew much about the Korean contender. I told them to expect a tough sell, and a competitive price.

Both of them had recent experience driving a Hyundai Sonata rental car and had found it satisfying if not sexy.

The Hyundai dealership was bustling while the other three appeared sleepy. This was partially attributable to it having a more compact showroom, but I think the Hyundai dealer made a determined effort to make the place feel lively. The support staff was in the open,

music was playing and there were a bunch of “utility players” milling about.

Our salesman, Chris, was a Danny DeVito clone with knowledge of his product and a buoyant energy. He loved cars and he loved selling them. He told us he owned eight cars including three TransAms and a 1973 Corvette. My sense was he would sell cars nine days a week if he could.

When we wanted numbers, the sales manager, John, who reminded me of a used machinery dealer right down to the extra 40 pounds he was carrying, played his stereotyped role down to the bottom line where he told us he was barely making a dime on the deal.

Noah loved the 2011 Sonata and was willing to pay more for the cool red car that spoke to him. Ari liked the 2011 also, but swayed toward the slightly less deluxe version, although it was still loaded with more features than all of the other models they had tried. Both ultimately bought Sonatas.

My conclusions. Customers are attracted to energy. Hyundai had it, the others didn't. The salesman is very important. A good one moves the ball. A bad one pushes the client out the door. Hyundai is on a roll today. Toyota is reeling. Honda may be complacent and Ford better get some more inventory out to the dealers.

After a devastating year which saw sales drop 70 percent for major world machine tool builders, well capitalized firms like Mori Seiki and DMG are contemplating building machines in the United States. According to the Japanese press Mori and its partner in America, DMG, are expecting to start building machines in a jointly operated factory by 2011. Since both are headquartered in the Chicago suburbs, that appears to be the likely site, though Davis, California, near Sacramento is also in contention. In other news, Industrias Romi S.A., the Brazilian machine tool builder, has made an unsolicited offer for Hardinge Corporation. The offer was \$8 per share, a 46 percent premium over the price on February 3rd, when it was made. This offer is only \$91 million for the company. These two developments are logical efforts by aggressive international firms to get a better foothold in the U.S. It is indicative of long term confidence in American manufacturing. It is also a commentary on the strong yen and euro (despite its current fallback). Hardinge is resisting a Romi bid, but when relatively strong firms like Romi see a Hardinge stock price so depressed, it is an invitation to an attack.

The last time I talked to Brad and Jeff Ohlemacher of EMC Precision Machining they were crowing about convincing President Obama to put on safety glasses before he toured their Elyria, Ohio, plant.

They are back in the limelight after closing a deal to buy fellow fourth generation machining company—Biddle Manufacturing of Sheridan, Indiana.

The Ohlemacher and Biddle (Myers) families knew each other from the Precision Machined Products Association (PMPA), but their fortunes diverged in recent years.

Biddle gravitated toward high production work, buying Hydromats and developing in-house capability in plating, heat-treating, and electrochemical deburring. EMC brought in more CNC equipment while honing an expertise in “emergency machining,” for when customers need a firm to step in when their former supplier fails or suffers an operational blowout.

There is very little customer overlap, but Brad Ohlemacher tells me that Biddle customers seem extremely relieved that a financially strong, technically sophisticated company is taking over the Indiana firm.

Biddle was burdened with big legacy costs, and a bank that was fearful about the sustainability of the company. The selling family was faced with the choice of potential liquidation of Biddle or selling the assets to EMC, which pledged to keep the workforce working—but without the legacy obligations.

This could be a great deal for Brad and Jeff, who called me after celebrating with a single malt scotch at a bar in the Indianapolis airport. They've been looking to expand and diversify their machining portfolio since the recession took hold. With their strong banking relationships they felt they could successfully pick up a distressed but viable company that would compliment EMC's strength in super fast turnarounds.

I expect to see a lot of deals like this over the next year as the thirst for sparse capital pushes good companies like Biddle into the arms of financially able companies like EMC Precision Machining.

Alan Beaulieu of the Institute for Trend Research spoke at the Precision Machined Products Association (PMPA) Management Update and gave his economic predictions for the next couple of years. Beaulieu is not just any dismal soothsayer. He specializes in looking at the manufacturing world and correctly predicted the dramatic recession we are just poking out of today. He is quite confident we are in a sustained recovery, which will gain momentum through next year. He sees 2012 as a seesaw year. The most

surprising aspect of his talk for me was his prediction of significant inflation by 2011. Beaulieu suggested an inflation rate of 6.5 percent next year, pushed by a surge in commodity prices. Beaulieu sees commercial lending by banks gradually easing. In his view, banks want to lend but are being restrained by government examiners who are working at cross purposes to the avowed intent of the administration to expand credit for small business. Beaulieu sees us at a classic inflection point of opportunity to buy residential real estate. In his view, we have six months to get a historic discount on real estate. His admonition was to buy a condo or a house either to use or rent out as soon as possible because both price and interest rates are going up soon. He had some interesting political and economic views as well. He sees Russia as a crumbling mess with a dying population and extremely low birthrate (1.1 children per family). He sees the euro headed back to parity with the dollar. He recommends buying gold and sees copper prices reaching for the moon because of Chinese demand. His top categories for growth are medical, food, energy (he likes wind), security and water. He is very bullish on India. The best thing about Beaulieu's talk—he didn't hedge his bets.

Last March it looked like the economic world was falling apart.

It is worth recapitulating the past year to understand where we've been and where we are going.

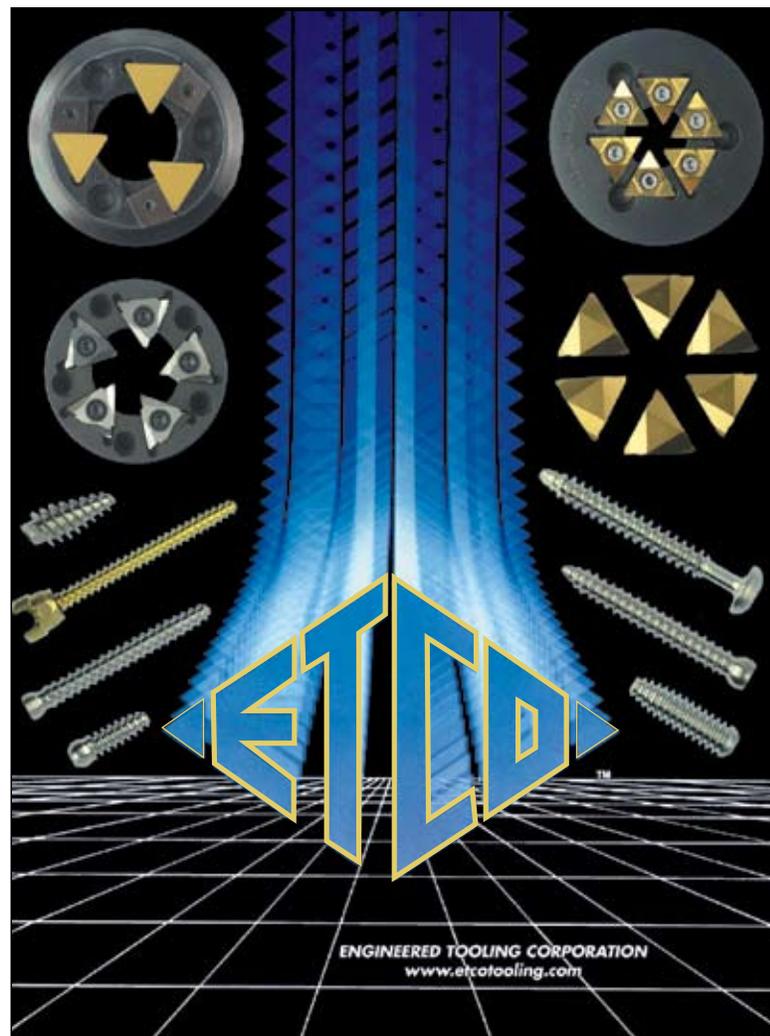
The carnage has been awful. Real unemployment, if you include the discouraged, part-timers and avowed unemployed, is around 17 percent. This is enormous human pain.

In the machining world we have lost 15-20 percent of the contract shop capacity in this recession. That is a lot of fiber and bone still un-autopsied because it happened so quickly.

Our homes have fallen in value by 25-50 percent, if we still own them. Our factories are almost unsellable and foreclosures are happening even faster today than a year ago. The property market is swamped with distressed real estate and hardly anything new is being built. Some of the biggest shopping mall owners are in bankruptcy. The Obama stimulus package was a political boondoggle, and California and Illinois, etc. can't pay their teachers.

If we want to see the glass half empty we have a lot of leaky to look at. But people who look backwards to see the future do so at their own peril.

The stock market is murdering the bears now, recovering everything it has lost in the past year. Manufacturing is



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recovering as companies rebuild inventories and success becomes a self-fulfilling prophecy. Cars are selling at a 13.5 million a year rate in March as Toyota's mess becomes everybody's opportunity to gain market share. Consumers are rushing to buy goods at Family Dollar, Kohl's and Williams Sonoma—in other words, from low to high.

Believe it or not shops are starting to buy Acme Gridley 1 5/8" RB8s and Cincinnati centerless grinders.

So the sky did not fall. We are still standing, or at least struggling to get up from our knees.

Spring has arrived. Thank God.

I was watching the new Ron Howard series "Parenthood" on a Saturday night when my cell phone rang with a call from the 602 area code (Phoenix). One of the key threads in the show is a story about a boy diagnosed

with Asperger's, a step on the autism spectrum. The caller was the daughter of a first cousin who went on to breathlessly recount the story of my cousin, Don, being hit by a car at 4:30 a.m. that day and being killed. I had written an "Afterthought" awhile back about my relationship (or lack of) with Don, who ran away from a high school English class we were both taking, 48 years ago. I never saw Don again after that. He suffered a psychotic break that day I learned, and was placed in a psychiatric ward after my Dad literally chased him down on the University of Chicago campus. Donnie and I were not close, but we played ping-pong and softball. We were kin. His family was a crumbling mess, but I didn't know that at the time. I had no idea Don was a fragile vessel. When the vicious English teacher humiliated him in class that day and Don bolted out of the class I was stunned by the teacher's callousness, but I was also stunned that Don reacted by running out of the room and the building. It was all so crazy. It was my intro to emotional



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illness. Don's life with schizophrenia ended at 4:30 a.m. that Saturday with the impact of a Honda Accord going 42 miles per hour, according to the police report. He had no wife or children. The story in the *Washington Post* said he was "an eccentric man" who frequented a nearby shopping center. Don's niece, Elizabeth, was looking for a place to bury him. She asked me if he could be buried in a plot my father had bought in the late 1960s. I didn't know what to say to her. As close as I had been to death 18 months ago, I had no burial plans, nor did my brother or sister or our spouses. I didn't like having to deal with Don any more in death than I did in life. For 48 years I could not get that terrible day in English class out of my head. And now I have to live with the image of Don Graff's "eccentricism" walking into the Honda on a four-lane highway at 4:30 a.m.

Last month *Today's Machining World* ran a controversial cover sheet asking you, our readers, to contribute money to defray the cost of your subscription.

It was a risky gambit for a for-profit business-to-business magazine to ask for contributions ala National Public Radio. We left ourselves open to derision by skeptical readers and sniping by competitors saying we were shady or arrogant.

But we did it and it was successful. We've received a decent bit of money so far and a lot of wonderful feedback from both readers and advertisers. We got some nasty comments too, but we're used to that. Everything you do in business is a risk. My father used to tell me that when you don't know what to do "shoot wild, you might just hit something good."

Thank you to the wonderful folks who contributed, and also thank you to those who took the time to tell me it was a dumb idea. Keep reading my friends. 🍷

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▲ Advanced Antivibration Components (AAC)

A new series of air spring vibration mounts from Advanced Antivibration Components (AAC) features vibration isolation for low frequency machines. Air springs use elasticity of air as an isolator, which acts as a soft spring. They have no moving parts and are therefore maintenance free. These mounts handle a wide range of loads simply by changing the inner air pressure. These mounts are featured at the AAC eStore where you can order online, request a quote, download CAD models, check stock, plus view catalog and technical pages.

For more information, please visit Advanced Antivibration Components (AAC) at www.vibrationmounts.com.

▶ LMC Workholding

LMC Workholding announces Richter's installation of a large C-Form Type 5-3 steady rest for a Heyligenstaedt HeynuTurn 2500 machine. This steady rest's capacities include a center height of 61.8", a 70.9" maximum diameter, maximum workpiece weight of 30 tons and rollers that are 5.1" wide. Steady rests turn long shaft type workpieces where cutting can create unstable conditions or cause the parts to bend or deflect.

For more information, please visit LMC Workholding at www.lmcworkholding.com.



▲ Exair Corp.

Exair's new PVDF Super Air Knife provides a laminar curtain of air that can be used to blow off, clean and dry in highly corrosive environments not suitable for stainless steel. The PVDF Super Air Knife is ideal for use in the manufacturing of solar cells, lithium batteries, semiconductors, medical devices and processes that include electroplating, transfer of acids, caustic chemicals, brine and solvent recovery.

For more information, please visit Exair Corp. at www.exair.com.

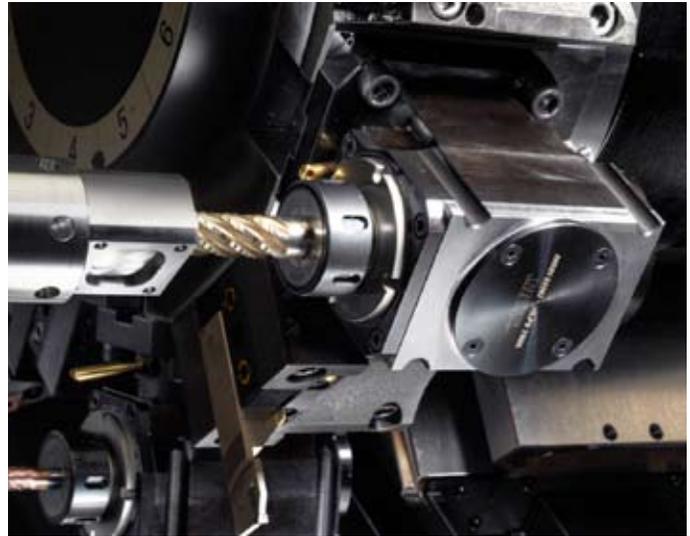


fresh stuff

► Lyndex-Nikken

Lyndex-Nikken offers a wide range of live and static tools for Mori Seiki CNC lathes (NL and DuraTurn Series) and multi-axis machines (NZ and NT Series). Lyndex-Nikken/Alps is the original equipment manufacturer and supplier for Mori Seiki live tooling. Lyndex-Nikken/Alps live tooling provides the latest technology for mill-turning operations. Special features of these live tools include ground surfaces, eccentric bearing nuts, protective labyrinth seals and tool bodies made of the highest tensile and compression nickel chrome molybdenum alloys. This enables Lyndex-Nikken/Alps tools to offer high accuracy, strong gripping torque and thermal control under high-speed rotation.

For more information, please visit Lyndex-Nikken Inc. at www.lyndexnikken.com.



▲ Kennametal Inc.

Kennametal Inc. announces the launch of the WIDIA Products Group with WIDIA™, WIDIA-Hanita™, WIDIA-Rubig™, WIDIA-Manchester™, WIDIA-Clapp-DiCo™, WIDIA-GTD™, and WIDIA-Circle™. This announcement culminates the enterprise's long-term multi-year brand and channel strategy, with aims to improve access to WIDIA metal cutting products and services to customers worldwide, focus the company's engineering and marketing investments, decrease the number of stock-keeping units (SKUs) and build a robust distribution brand.

For more information, please visit Kennametal Inc. at www.kennametal.com.



▲ MAG

MAG introduces a volumetric error compensation (VEC) system capable of analyzing and correcting positioning errors in all machine-tool axes simultaneously to achieve machining accuracies on large parts. The MAG VEC methodology reduces the time to determine needed error compensations from days to hours and integrates both linear and rotary axes into the tool point compensation process, according to Jim Dallam, MAG's VEC product manager. The multi-axis VEC was conceived especially to improve machining accuracies for large machines.

For more information, please visit MAG at www.mag-ias.com.

► Makino

Makino announces the new F-Series vertical machining center designed to provide stiffness and rigidity for chatter-free cutting, agility for high-speed/hard-milling and accuracies for tight tolerance blends. The smaller F3 features X, Y, and Z-axis travels of 25.6", 19.7", 17.7" respectively, a 33.5" x 19.7" table and a maximum workpiece size of 33.5" long x 19.7" wide x 17.7" tall. By contrast, the larger F5 features X, Y, and Z-axis travels of 35.4", 19.7", 17.7" respectively, a 39.4" x 19.7" table and a maximum workpiece size of 39.4" long x 19.7" wide x 17.7" tall. Both the machines have a table load capacity of 1,432 pounds and a 30-tool magazine provides capacity for a wide array of tooling.

For more information, please visit Makino at www.makino.com.



◀ Master WorkHolding Inc.

Master WorkHolding Inc. of Morganton, N.C., announces the release of the newest member of their fixture component family, the hydraulically actuated position and retention pin (H-PRP). Building on the popular (PRP) patented design, it utilizes a metal-to-metal seal to eliminate contamination from entering the mechanism. MWH has developed the dual-purpose hydraulic version to first snap the workpiece into position and then, once hydraulics are actuated, clamp the part for machining.

For more information, please visit Master Workholding at www.masterworkholding.com.

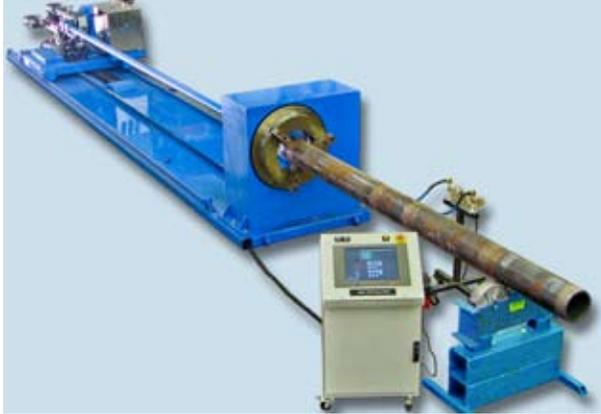


► Motoman

The powerful, high-speed MH-series robots have a flexible design, allowing them to be used for a variety of applications, including coating, dispensing, material cutting, handling and welding. The long reach of the MH50 model and the extended reaches of the MH50-35 and MH50-20 make these robots ideal for processing large parts. In many cell layouts, the extended reach models can eliminate the need for an external track, decreasing system cost and simplifying programming. Internally routed cables and hoses maximize system reliability, minimize interference and facilitate programming.

For more information, please visit Motoman at www.motoman.com.

fresh stuff



◀ Nook Industries

Custom automated and robotic equipment manufacturer, ARC Specialties, Inc., in Houston, Texas, has developed a cladding technology that controls this corrosion to safely extract and process sour crude. The KLADARC advanced TriPulse™ Hot Wire Gas Tungsten Arc Welding (GTWA) system leverages oscillation welding to deposit a metallurgically lined (or clad) two-layer corrosion-resistant alloy (CRA/Alloy 625) overlay on clad pipe up to 20 feet in length and inside diameters up to 30". Ultimately, this patent-pending technology reduces oxide inclusions and iron dilution in the cladding process—thus mitigating the corrosive effects of H₂S.

For more information, please visit Nook Industries at www.nookindustries.com.

▶ Northfield Precision Instrument Corp.

Northfield Precision Instrument Corp., a designer and manufacturer of precision workholding chucks, introduces their Model 1000 10" diameter "Pitch Line" chuck. This chuck grips the O.D. of 9" diameter helical gears. The pins are mounted in a loose fitting housing so they can float. The pins pick up the pitch diameter and the jaws grip the O.D. of the pins. The pitch is measured over pins, so it is gripping the same way it measures. The Model 1000 has two "pin cages," one for a left hand helix and one for a right hand helix. The pin cages are changed out by removing three mounting screws.

For more information, please visit Northfield Precision Instrument Corp., at www.northfield.com.



▶ Sandvik Coromant

Sandvik Coromant's CoroBore 825 features a coupling design that integrates an elliptical interface that absorbs tangential and radial forces. To achieve maximum flexibility, the CoroBore 825 accommodates three cartridge sizes, each with its own slide extension. The slide extensions are placed between the cartridge and cross slide to allow for back boring and to extend the maximum diameter when boring forwards. All cartridges use triangular inserts and -2 degree lead angles. The CoroBore 825 is available for hole diameters ranging from 0.75" to 38".

For more information, please visit Sandvik Coromant at www.coromant.sandvik.com/us.





Pneu-Dex from Chick places multiple parts on the table.
Photo courtesy of Chick Workholding Solutions.

Getting a GRIP

Sure, any old vise can hold the part on a machine table, but a well-thought-out workholding scheme can help you squeeze more chip-making time out of every shift.

Certain basic principles apply to workholding, whether you're using your father's 6-inch manual Bridgeport vise or an intricate hydraulic fixture. Dr. Edward De Meter, professor of industrial and manufacturing engineering at Pennsylvania State University, University Park, Pa., does research on workholding. He outlined the basic functions of any workholding method as follows:

- *Repeatably locate the workpiece with respect to your data reference frame.*
- *Restrain rigid-body motion of the workpiece—hold it down so it doesn't fly off the table.*
- *Impart overall structural rigidity—prevent the fixture and workpiece from being a source of chatter.*
- *Hold the workpiece without excessively distorting it.*
- *Accommodate dimensional variability in the raw workpiece—often an issue with castings, forgings or weldments.*

Many types of workholding devices, from simple collets and vises to complex fixtures, will perform these basic functions. But “workholding is not just holding the part,” said Wendy Kuch, product manager at Chick Workholding Solutions, Warrendale, Pa. “It's a significant part of efficiency [in your machining operation].”

The workholding method is part of your whole machining system: the machine, the tool, the program, the operator and the workholding. All the parts have to function together in an effective way if you're going to make the most profit from your machines. The key is maximizing the work you're being paid for: removing material—making chips. To do this, you optimize the tooling, feeds and speeds. You'll also want

to minimize the amount of time the spindle is idle. That's where your workholding choices can pack a big punch. A workholding scheme can help increase your spindle time by:

- *Minimizing load/unload time.*
- *Allowing load/unload off the machine—pallets and fixture plates can be removed from the machine so load/unload can be done offline.*
- *Placing multiple workpieces on the machine table. This “amortizes” tool change time over more parts and can reduce machining time per part.*
- *Giving access to as many surfaces as possible so machining can be completed in as few setups as possible. This reduces handling time and the opportunity for mis-loading parts that later have to be scrapped.*
- *Minimizing changeover time between jobs.*

“Customers concentrate on getting the latest carbide tools and coatings, but sometimes an improvement in workholding can improve the spindle-time efficiency even more,” said Paul Swann, president of Chick Workholding Solutions. In one case, he saw a customer changing from a 1950s-style vise to a 2-station Chick Qwik-Lok vise increase machine throughput by 30 percent, he said. “The investment was \$1000, a very small expenditure for a big return.”

In another case, a change of tooling improved throughput by 25 percent, Swann said, but on the same job, a new workholding scheme increased throughput by a factor of three.

The biggest gain he has seen was “a five-fold increase on a machining center, with the same tool, tool path, feed, and speed. The only thing that changed was the workholding,”

how it works

Swann said. Originally, a single workpiece had been held in a conventional vise and machined one face at a time. It had to be clamped and unclamped six times.

In the new workholding scheme, three Chick Pneu-Dex four-sided indexers were mounted on the machine table. Two workpieces were clamped in vises on each face of the Pneu-Dex units. These vises allowed machining of three surfaces of a clamped part.

The result was 24 workpieces on the table, three surfaces machined in each cycle and five times as much throughput on the machine. The time savings came from handling (two clamping processes instead of six) and “amortizing” any machining cycle overhead, such as the tool-change time, over the 24 workpieces.

Workholding tailored to your needs

A wide variety of specialized workholding devices is available. You may find that a whole new approach to workholding—such as a vacuum table—would serve you well, or maybe a new type of collet or vice could meet your needs.

To hold thin-walled or delicate parts during turning, you can use a force-limiting chuck. The FL force limiting step chuck from Hardinge, for example, uses springs to limit the clamping force without having to manually adjust the drawbar force.

FlexC vulcanized collet heads, also from Hardinge, fit into an adapter and provide fast changeover using a special wrench. They have a wide gripping range to allow for stock variation. The rubber that fills the space between the segments of the collet helps keep chips and sludge out of the spindle area.

A vise with quick-release jaws that slide forward and back allow fast load/unload. The One-Lok single station CNC vise from Chick also offers a quick-change jaw system, which allows jaw changes with the turn of a single locking screw.



Top: Abrasive diamond grippers from Fixtureworks hold smooth or slippery workpieces with minimum clamping pressure.

Photo courtesy of Fixtureworks.

Bottom: The Kurt 5-axis clamping system allows for the larger head clearance required on large 5-axis machines.

Photo courtesy of Kurt Manufacturing Company.

Besides collets, vises and other workholding devices, a lot of different accessories are available that can fine-tune your workholding to do exactly the job you need it to do.

For a better grip without having to apply a lot of force, you can use special grippers available from Fixtureworks, said Justin Gordon, general manager at the Fraser, Mich., company. To protect a polished surface or hold a delicate part, you can use grippers with a textured urethane surface. Grippers with a high coefficient of friction offer the hold you need with lower force. Fixtureworks also offers grippers coated with an abrasive diamond layer, which provides high friction for secure holding with relatively low clamping forces.

Some vise designs feature quick-change jaws, which help speed setup when changing over to a new job.

The Hydramax hydraulic piston vise jaw system available from Kurt Manufacturing Company, Minneapolis, Minn., provides one jaw with four to 12 hydraulically-linked

pistons, which automatically and independently adjust when you close the vise, said Steve Kane, sales and marketing manager for the industrial products and engineered systems group. This allows you to hold multiple parts in a single vise, or to clamp castings or irregularly shaped parts. The opposite jaw is machinable aluminum, enabling you to provide pockets for locating the other end of the workpiece or pieces.

Finding savings

Looking at your process with fresh eyes can help you see opportunities to streamline machining a particular part.

“One of the greatest tools is video,” said Chick’s. Set up a video camera where it can see the machining area. Run the program without a workpiece in place and record the whole cycle, including the part loading and unloading processes. Then, watch to see when the tool is cutting and when it’s not. You may be surprised at what you see.

Light Activated Adhesive Gripping

A new technology for fixturing complex workpieces



Above Left to Right: A LAAG fixture. A workpiece mounted in a LAAG fixture, ready to machine.

Photos courtesy of Pennsylvania State University.

At the Department of Industrial and Manufacturing Engineering, Pennsylvania State University in University Park, Pa., Prof. Edward De Meter has developed a new workholding technology designed to solve fixturing problems with complex and/or delicate parts. Light Activated Adhesive Gripping (LAAG) is a conceptually simple approach, using adhesive to hold a workpiece to a fixture.

The LAAG process works like this: provide a fixture composed of a base plate and standoffs that locate the workpiece at as many points as needed. In strategic locations, provide flat-topped grippers that clear the workpiece by about 0.003". Each gripper has a ceramic core that can transmit ultraviolet (UV) light. Place some UV-curable adhesive on the tops of the grippers and set the workpiece into place. Shine intense ultraviolet light through the center of the grippers to cure the adhesive, and the part is fixed to the base plate, ready to machine.

After machining, release the workpiece from the grippers

by simply lifting up on it with a tool, or twist the grippers to break loose the adhesive. Use hot water or other means to clean any adhesive residue from the grippers and the workpiece. Then you're ready to do it again.

Though the adhesive provides 6000 psi of grip, no clamping forces are applied to the part, so LAAG holds the workpiece in its free state, without any deformation. For delicate parts, the twist-off release method can be used, which subjects the part to very little stress.

No vise or other fixture covers any part of the sides of the workpiece, so LAAG allows access to the top and all sides of the part. If you need access to the bottom of the part, you can use a fixture plate with a cutout/picture-frame configuration.

LAAG is ideal for complex, low-volume parts for which you don't have specialized fixturing. Parts that are extremely complex to hold, impossible parts you can't hold mechanically, parts that start out as castings, or forgings where the geometry may vary. In a

conventional workholding setup, if you can hold them at all, complex parts may require an operator to spend 15-25 minutes setting up clamps and adjustable supports, De Meter said.

Master Workholding, Inc., Morganton, N.C., offers a commercial version of the LAAG system. The basic equipment to get started with LAAG—a setup station, special UV lamp, etc.—costs \$20,000 to \$25,000, according to Keith Cline, engineering manager at the company. Once you have the setup in house and learn to use the LAAG process, however, you can put together a fixture for \$6,000 or \$7,000, he said, where a hydraulic fixture to hold a complex part can run \$30,000.

"We've had customers come in and say, 'There is no way we can machine this in one setup—we're using seven or eight setups,'" Cline said. Using a picture-frame fixture plate on a trunnion to allow access to the bottom of the part, some of these customers have indeed been able to machine the whole part in one setup, he said.

how it works

Your machining center may feature one-second tool changes, but the total chip-to-chip time for swapping a tool out of and into the spindle may be many times longer. Chick's Swann said he had seen chip-to-chip times of up to 11 seconds for tool changes. When you view the video, pay special attention to all that happens during a tool change.

An unexpected discovery from watching videotaped time studies, Swann said, was that it took four times as long to blow the chips off a setup than to clamp and unclamp the part. His company and others offer vise products with a fully sealed base to keep the chips out.

Making the most of your workholding

Many shops use whatever workholding device they happen to have or whatever comes with a machine, said Sue Draht, marketing/customer service manager for workholding at Hardinge Inc., Elmira, N.Y. "They make the application fit the workholding, instead of making the workholding fit the application."

Giving some thought to your workholding method can make a big difference in your profitability. You may end up using some of the many standard workholding products available, modified versions of them or even custom fixturing.

People often forget to take into account their workholding needs when they purchase a new machine, Kurt's Kane said.

The workholding could be a complete package supplied with the new machine, said Rick Schonher, product manager for workholding at Hardinge Inc. If purchased at the same time, it can be included in the financing. With the FlexC collet program, he said, he has recently found customers requesting a quote when they're purchasing a machine.



Above: The FlexC vulcanized collet system from Hardinge.
Photo courtesy of Hardinge Inc.

If you encounter a challenging application or suspect that an existing process could be improved, it can pay off to consult with workholding suppliers to see if a new or existing product could do the job. "If we can get in on the initial [production planning]," said Draht, "we can sometimes offer solutions they didn't think about because they didn't know products were available."

Though fixtures and vises and chucks and collets may seem like passive participants in the machining process, they can help you get more production out of your machines and make a big difference in your bottom line. 

Videos

To find these videos, go to www.youtube.com and search the company name:

Chick Workholding Solutions, Fixtureworks, Hardinge, Kurt Workholding, Master Workholding

Hardinge FlexC Collet Systems

www.youtube.com and search for "Hardinge FlexC Collet"

Kurt Workholding

www.kurtworkholding.com/downloads/video.php

Master Workholding Light-Activated Adhesive Gripping

www.masterworkholding.com/laag.html, click on "Video Demonstration"

For more information:

Chick Workholding Solutions: www.chickworkholding.com

Fixtureworks: www.fixtureworks.net

Hardinge Inc.: www.hardinge.com; www.shophardinge.com

Kurt Workholding: www.kurtworkholding.com

Master Workholding, Inc.: www.masterworkholding.com, www.masterworkholding.com/pdfs/laagexample.pdf

Process Mechanics/Workholding Research Laboratory at Pennsylvania State University: www.ie.psu.edu/research/ResearchLabs/ProcessMechanicsWorkholding.html

Tooling U workholding online learning: www.toolingu.com/dept-100-workholding-training.html

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- 1" RAN6 Thrd., Spindle Stop 1965
- 1 1/4" RA6 Thrd., Pickoff/Back Finishing 1967-86 (5)
- 1 1/4" Thrd., Spindle Stop, Pickoff 1967-81 (3)
- 1 1/4" RA6 Direct Drive, 4-axis, Servodriven, Thrd., Pickoff/Back Finishing, Remain -2000 (2)
- 1 1/4" RB8 Thrd., Pickoff/Back Finishing thru 1978 (4)
- 1 5/8" RBN8 Thrd., Pickoff/Back Finishing 1971 ReB. 2000
- 1 5/8" RBN8 Thrd., Ream, Gov't 1969
- 1 5/8" RB8 Pickoff, 6 c/s, Shelf, 1970-67-66 (3)
- 1 5/8" RB8 Logan Hi-Lo ReB & Updated 2000
- 1 5/8" RB8 ReB & Updated 1998 thru 1974 (5)
- 2" RB6 Thrd, Ream, 1980-1970 (2)
- 2" RB6 Cucchi Loader, Thrd., Gov't 1980
- 2" RB8 Thrd., Pickoff/Back Finishing, ReB. 2000 1973
- 2" RB8 Thrd., 1970-69-61 (3)
- 2 5/8" RB6, Ream, Recess thru 1976 (6)
- 2 5/8" RB8 Logan Hi-Lo, Thrd., 1966 (2)
- 3 1/2" RB6 Thrd., Ream, 1966-55 (3)
- 4" RB6 Reaming, 1971

ACME CHUCKERS

- 1 1/4" RA6 Collet Chucker 1980 (2)
- 1 1/4" RA6 Collet Chucker, Spindle Stopping 1981
- 1 5/8" RBN8 Collet Chucker mag & Loader 1972-68 (2)
- 2 3/8" HSC High Speed Chucker 1972 (2)
- 5 1/4" RAC6 Spdl. Pos. Thrd., Chucks 1980-70 (2)

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- Hydromat HW 45-12 Bar Loader 1997
- Hydromat HB 32/45-16 Bar Loader 1998
- Rismatic 16 Station 1990
- Buffoli CNC 10 Station 2000

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- 3/4" Loaded 1986 (2)
- 3/4" Cucutti Loader, Thrd., Pickoff 1997

NEW BRITAIN

- #51 Threading Thru. 1979 (4)
- #52 Pickoff, Threading, 1973
- #812 (6) Slides, Chip Con., 1977
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By Lloyd Graff

Pulp Web & Iron: Where Do You Find Information on Used Machinery?

Surplus Record Records the Past and Present of the Used Machinery Business

Behind Tom Scanlan's desk at the office of *Surplus Record* in downtown Chicago sits an old manual Royal typewriter. It's a reminder to Tom of the roots of the information business his grandfather started 87 years ago to help transform the "junk" business into a more prestigious "machinery" business.

Surplus Record is a stubby 5" x 8" monthly digest of thousands of listings of used machinery offered for sale by dealers. Sixty-five thousand copies hit mailboxes each month, and the publication has more than double that number on its well-massaged circulation list. It also has around 60,000 listings on its Web site, which averages about 7,000 searches a day in its database.

But Tom told us the typewriter served another purpose during the height of Internet bubble hysteria when he was listening to offers to buy the family company almost weekly.

Scanlan said that *Surplus Record* was an attractive business to the dot-com guys because of its content. "They had more money than anyone in the machine tool world had ever dreamed of. These were the fastest talking, most educated and unknowledgeable guys about the machinery business. We were pretty far along on the Internet, but I wanted to soak up all the knowledge I could get out of them. So when these guys in their 20s and 30s came in, I hid all of the computers and modems and pulled out the old Royal and carbon paper so they would think they could transform our business. Some of those guys were so arrogant," Scanlan recounted.

Tom ultimately did sell the business to Ariba Corporation in

2000. "It was a family decision. I have two sisters and a brother who were not in the business. If I had owned *Surplus Record* 100 percent, I never would have sold it."

But Tom has continued to run the firm while remembering its Royal typewriter origins and investing heavily in the data systems that make the company relevant in 2010.

Noah Graff and I wanted to get Tom Scanlan's take on the used machinery industry that he and his family have been immersed in since machine buyers would hop on the New York Central sleeper from Cleveland to check out the Kearney and Trecker mills on Lake Street in Chicago.

"My grandfather would walk down Lake Street hustling ads. The dealers would often be loading or working on the machines. He would urge the guys to put on a jacket and tie so the customers would have more respect for them," according to Tom.

The senior Thomas Scanlan helped start the Machinery Dealers National Association (MDNA) in 1941. The association's office was at *Surplus Record*, and housed its first board meeting there. "Josephine Corcoran, who became my step grandmother, was the first executive secretary of the MDNA," Scanlan recounted.

Tom has a long perspective on the machinery business. Fresh energy came into the business when the World War II veterans got to sell war assets to other veterans who were starting up in manufacturing. They rode the Korean War build-up and infrastructure build-out in 1950s and 1960s into the Vietnam War. Tom said Vietnam fueled the machine tool business, but listings in the magazine went down because dealers had no



Above: Tom Scanlan, president of *Surplus Record*, with his manual Royal Typewriter.

Left: Tom Scanlan, president of *Surplus Record*, in front of the Lyric Opera of Chicago, which shares the same building as his 87-year-old used equipment listings company.

Photos courtesy of Noah Graff

“We had an attractive business to the dot-com guys because of our content. They had more money than anyone in the machine tool world had ever dreamed of.”

inventory to advertise.

During the 1970s business grew moderately. Tom’s father diversified into chemical, oil and gas processing machinery listings, which compensated for slackness in metalworking. The oil boom in the seventies saw the development of the Texas and Oklahoma machinery markets.

In the 1990s Tom was running the business and watching the movement of manufacturing, first to Japan and then China. *Surplus Record’s* business grew slowly as more brokers entered the machining business. More transparency was coming into the business as pricing became less of a mystery, traditionally known only by stocking dealers in the old dealer fraternity. eBay was starting to be a factor and auctions were becoming a preferred way for firms to dispose of equipment.

These trends continued into the post 2000 decade. Tom sees the distinction between dealer and auctioneer dissolving as the Web software to conduct auctions has come down in price. Several dealers have morphed into auctioneers while maintaining traditional used machinery distribution firms. New dealers are selling used, and some used machinery firms have added new machinery lines. Scanlan used to shun auction ads,

now he takes them gladly.

Surplus Record continues its dealer protection policy by refusing listings of machinery for sale by end users. Scanlan travels one or two days a week visiting his dealer clients in

their offices and maintains cordial relations with the MDNA, despite a 41-year annoyance that the association his family helped start became his competitor through its *Locator* book and database.

Scanlan views eBay and its close ties with Google as major competition. eBay’s auctions have been debased by piracy and manipulation, but it is still a significant machinery advertising medium, though Tom regards its listing organization as confusing and less effective than his own.

Surplus Record has pulpy bound volumes of the monthly magazine prominently displayed for visitors who come to its offices. Tom believes in the value of the printed listings and has eight employees assiduously working on mail circulation daily. But he knows that the whole enterprise depends on the Web.

Surplus Record is a hybrid family business—run by a third generation Scanlan, but owned by a publicly held Internet firm. Many of its customers are multi-generational family firms. The machinery business that *Surplus Record* has always been a part of is iron based, information dependent and family driven—as it has been for 87 years. Pulp, Web, used machinery and Scanlan continue to flourish together.



An iron ore mine site reclaimer.
Opposite: A young man at work in the precision machine shop, HUFRA.
To watch a video inside the HUFRA machine shop in Ghana, West Africa, visit www.youtube.com/user/HUFRACT

African Lean: Pioneering Precision Machining in Ghana, Africa

By Emily Aniakou

In 2007-08 I spent a year in Benin, West Africa, as a volunteer with the U.S. Peace Corps. Although Africa is easy to write off as a hopeless mess, there's an important culture and movement toward economic change fueled by locals and West African nationals living abroad that is not visible in the calamity-focused news.

Michael Frank, the COO and founder of HUFRA, a precision machining company in Accra, Ghana, in West Africa, is one of those people. He has made it his mission to bring precision machining technology to his homeland by establishing one of the first CNC job shops in West Africa. Frank finished his Masters degree in manufacturing engineering in Russia and worked for 10 years in Britain. He now splits his time between his family in the UK and his homeland of Ghana, trying to get his fledgling business up and running.

Frank is attempting to do what thousands of immigrants worldwide are doing without notice from the international press—bring technology, opportunity and education back to their homelands. For instance, thousands of Turks who labored as machinists in Germany have returned to Turkey and started job shops. Today Turkey has a well-developed manufacturing core with many shops sending product back to Germany.

But does Frank have a fighting chance at being successful in Africa? At this stage of development in West Africa, with its ever-present economic, political and religious tension, is it possible to make a precision machining business not just function but thrive?

Imports from China currently fill most of the need for precision metal components in West Africa, and the product is cheap and abundant. A lack of machine-ready raw materials make startup costs for a manufacturing business enormous and on-time delivery of product difficult. The



workforce, although willing, must be trained from scratch in the art and science of machining. Frequent power outages, a lack of replacement parts and too few trouble-shooters make every small issue blow up—for example, a breakdown can require calls or even a trip to the UK for a new control. Also, steel bars must be shipped by 40' container, a significant upfront expense.

But Frank is trying to make it all work, and claims honorable intentions. "I decided, because of the poverty in Africa, to set up some technology in Ghana," he said during our phone interview as he was traveling to the UK to search for more startup capital.

Frank has fundraised and spent about \$1.8 million so far, primarily on machines, the HUFRA building, which is located in a tax-free zone set up by the Ghanaian government, and salary for the company's 22 employees.



Left The Hufra Precision Machining Company located in Accra, Ghana, West Africa.

Photos courtesy Michael Frank

recruits about \$200 per month, experienced workers \$300-\$400 per month and technically trained people and engineers \$700-\$1000 per month.

Frank's assertions that few people want to invest in Africa ring true in my experience. Working on Peace Corps projects, volunteers often ran up against the same wall—no funding, no projects. It was normal for volunteers to solicit money from family and friends back home to complete their projects. But most found that surprisingly difficult.

For Frank this lack of startup funds has been especially frustrating. "The Chinese are there [investing]," he said. But the Chinese aren't socially minded do-gooders like Frank would like them to be.

So far he has about 10 major investors, including non-profits, government grantors and interested individuals. It's

a hard sell when his records show no profits since HUFRA officially began in 2006, and even harder when you hear him speak of the lack of the bare necessities that are needed to make sophisticated machinery work smoothly.

Frank intends to create satellite locations in other countries in West Africa after he gets the Ghana location

up and running smoothly. But his seemingly honorable intentions to create employment and develop the skills of the locals may be just that—honorable intentions. Frank himself admits, "The project is big, but my [financial] backbone is slim."

He speaks of designing machinery to improve food production, create employment and reduce poverty with such passion one wants to believe he can do it all—raise \$10 million in capital, train all the "chaps" in West Africa, and heck, conquer the AIDS epidemic in his spare time. But it doesn't seem totally realistic. The world is plagued by a recession, Africa's reputation as a place for investment is dismal and the infrastructure to successfully run a business as sophisticated as precision machining may not be fully in place in West Africa for years to come. 

The company has four CNC machine tools; a 4-axis milling machine, a 3-axis milling machine, a 2-axis lathe with a bar feeder and a 2-axis long bed lathe for machining parts for the mining industry.

About 70 percent of the company's business comes from the mining industry, which is booming in West Africa because of the region's abundance of natural resources, including gold, diamonds, petroleum and iron. Earth moving equipment for the mining industry is hydraulic and HUFRA has contracts to make glands, pistons and bolts including large bolts designed specifically for mining. He also has orders for cutting shafts from chrome rod. HUFRA also make bronze and stainless bushings with complex oil grooves for AngloGold Ashanti, the second largest gold mining company in the world.

Frank has taken on the responsibility of training his workers from scratch. With no programs in Ghana to train a CNC-based workforce, Frank went to the local polytechnic institute and found technically-minded young men he could train, including two university "chaps" and one experienced mechanical engineer.

With obvious pride, he said that training these young men has been one of the largest successes of the project. He has been able to show his clients, funders, the Ghanaian government and local non-profits that Africa is a source of trainable, hard-working and technically able workers.

Not to mention, they work for cheap. Frank pays his new

“ Frank has shown his clients, funders, the Ghanaian government and local non-profits that Africa is a source of trainable, hard-working and technically able workers. ”

TC



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WICKMAN

5/8" 6-spindle, thdg., pickoff, 1981
1" 6-spindle, 1985 (10)
1" 8-spindle, 1980
1-3/8" 6-spindle, 1967-1979 (3)
1-3/4" 6-spindle, 1978 w/spindle stop
1-3/4" 6-spindle, 1965, 1984 (4)
1-3/4" 8-spindle, 1970
2-1/4" 6-spindle, 1962, 1973-79 (3)
3-1/4" 6-spindle, 1978
1 3/4" 6 spindle, 1978
5-5/8" 6-spindle, 1978

ACME

1" RA6 1956 (2) thread pickoff
1" RAN6 1970
1-1/4" RA6 1978-61 (9) - some
w/threading pickoff
7/16" RA6, 1975 (2)
1-1/4" RB8, 1981 (2)
1-5/8" RBN8, 1979, thdg., pickoff (3)
1-5/8" RB8 thdg., pickup '68-72 (5)
2" RB6, 1967
2" RB8, 1966 (2)

CNC MACHINING CENTER

Haas EC400, 2004
Milltronic RH33 2007
Doosan 3016LD 2007

INDEX

MS25 x 6 sp. 1980 (3)
G200, 1997, Index
G300, 1997, Index
ABC 60mm Index 1996
B60, 1985
C-24 1980

SCHUTTE & GILDEMEISTER

SF51, 1985-79 (3)
AS-14, 1975 (2)

SWISS

Star SR20, 1999
Tornos 125 3sp (15)

HYDROMATS & ROTARY TRANSFER

V8 Trunion (1995)
HW 25-12, 1985, 1994, 1997
HB45-16, 1989 - '97
HS16, 2001
Rismat 154-16 1990
VE 20/80 QC unit
36-100 Recess unit
Gnutti FMF 15/100 28.1305, 1997
Gnutti FMF 15 UA/100, 1991
Gnutti FM 15/100-op sp, 1984
Govro Nelson, 1998

EUBAMA

S-20, S-12
S-8.1 1999
S-12, 1998

ESCOMATICS

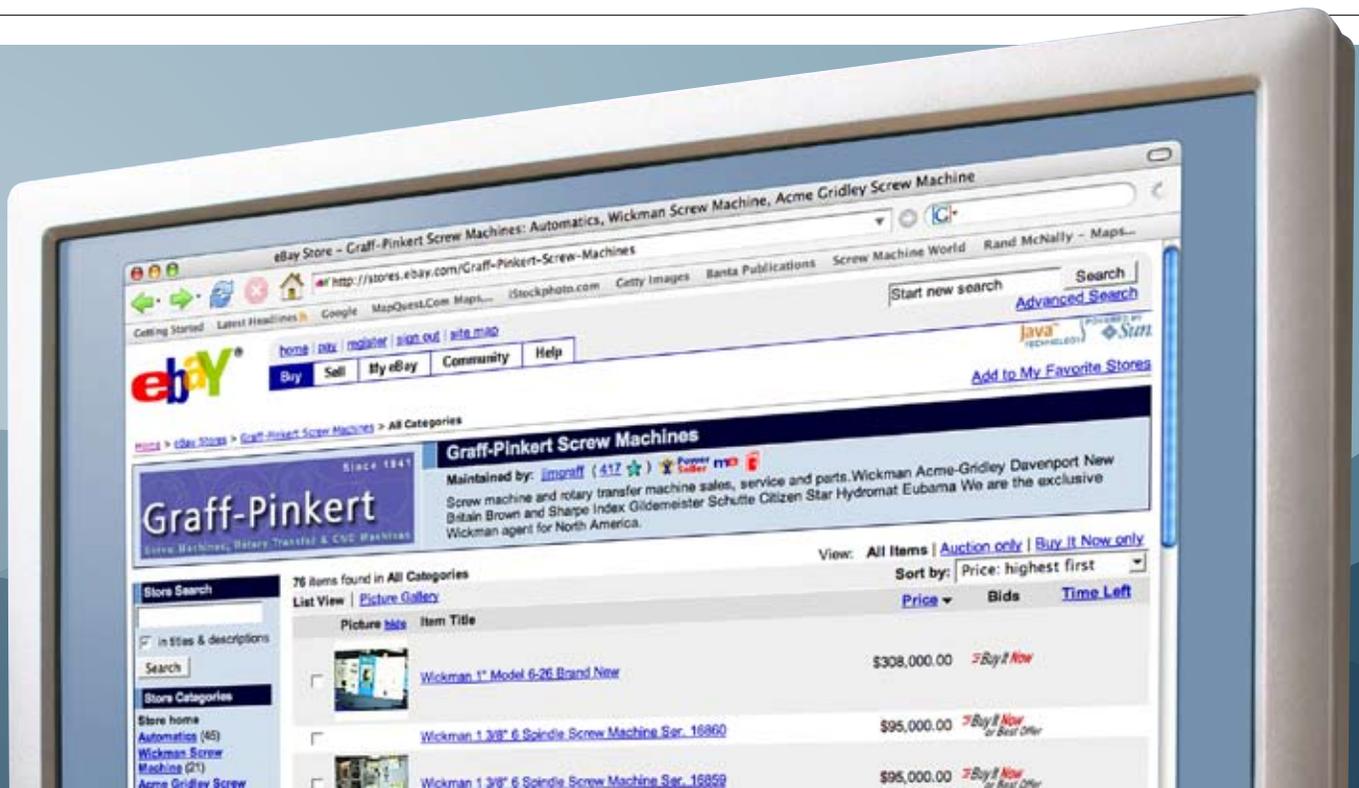
D9 (2), 1995
D6SR (2)
D-2, D-4, 1975

MISCELLANEOUS

2 5/8" RB6 spindle bearings
New repair parts- 3/4 RA8, 1-5/8 RB8
Reed B-13 thread roll attachment (1)
3-1/2 RB6 thdg. attachment
IMG recess 1-5/8" RB6 (2)
C&M Wickman pickoff 1" and 1 3/4"
Hydromat recess unit and flange 36-100
Siemens varispeed motor off Wickman
Wickman thread chasing 5/8" - 3 1/4"
Wickman pickoff 1" and 1 3/4" x 6
Smog hog air cleaner SG-4S-H
100's Acme cams - cheap
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Cinco 15 centerless
Crystal Lake Grinders

WICKMAN AND INDEX

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WITH NOAH GRAFF

shop doc

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 can also check out the Shop Doc Blog at www.todaysmachiningworld.com.

Dear Shop Doc,

We are running a long aluminum part on our CNC Swiss and have problems with the long stringy chips building up in the machine and getting wrapped around the part. We've tried every "aluminum" insert under the sun and have 2,000 psi coolant, but nothing works. Please help!

Tangled Up in Tennessee

Dear Tangled,

There is a new chip control technology for aluminum that I've found to be very effective. It's a PCD (polycrystalline diamond) insert that has a 3D chipbreaker. Up until now, manufacturers have been unable to produce 3D chipbreakers in the ultra-hard polycrystalline diamond material. A new process has been developed that uses a laser to etch a variety of 3D chipbreaker shapes into the PCD. The inserts are made by Becker Diamont.

They have a video on YouTube that can be found at: www.youtube.com/watch?v=gLRJdMDvbpY. A brochure can be downloaded at: www.ranitool.com/ChipBreaker-rani-lowres.pdf.

On a Swiss I've found that it's the feed rate that is critical to getting the chip to break. In general, a larger depth of cut requires a slightly higher feed rate. On a fixed headstock lathe, you can also vary the depth of cut and the feed rate for optimum results.

Other possible solutions include milling a flat or narrow slot along the length of the cut before turning. I prefer to use a narrow slotting saw to cut an off-center slot along the turn length. A narrow slot has less chance of generating an out-of-round condition on the turned diameters. Milling the slot off of the centerline of the work prevents the slot from hitting the turning insert squarely. The slot being off center along with the rotation of the work causes the slot to hit the insert and travel by it on an angle. This eliminates any pounding caused by the interruption while providing enough interruption to break the chip.

Problems with grooving and cutoff tools can often be solved by using a peck cycle like G75, which is like a peck drilling cycle, but from the cross axis rather than along the Z-axis.

Ultimately these other options add cycle time while the PCD insert will likely reduce cycle time and improve uptime.

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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You will pay more for PCD, but it almost always costs less than a polished carbide insert due to the vastly improved tool life.

Another added benefit is that once you start breaking the chips up, you won't have to empty out the chip bin nearly as often. Those long wiry chips create big air pockets that take up a lot of space.

Dan Murphy
Tsugami REM Sales

Dan Murphy is a regional sales manager for REM Sales LLC., a U.S. Tsugami distributor. He can be reached at dmurphy@remsales.com.



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Ron Dolecek of Lucky Devil Tattoo
in Wichita, Kansas.
Photo courtesy of Ron Dolecek

one on one

Ron Dolecek owns and operates Lucky Devil Tattoo in Wichita, Kansas. He's been creating body art since 1988, and for four years has built his own tattoo machines.



What was your training to become a tattoo artist?

RD: In 1988, there really was no such thing. In the town where I lived there was one crusty tattooer who wanted nothing to do with me, so I was pretty much left to my own vices. Through some misguided attempts on my friends, I eventually became self-taught and found my way to my own tattoo shop. Nowadays there's an official apprenticeship program. That's the common accepted way, and really the only way in.

What goes into building a tattoo machine?

RD: The tattoo machine was patented in 1891 by Sam O'Reilly. He adapted a design from Thomas Edison for an electronic perforating machine. Basically the machine hasn't changed in a hundred years. It's a simple device made up of two electromagnetic coils, which basically drive a spring mounted armature bar up and down to drive the needle. That's the oversimplified version.

Why build your own?

RD: When I first started tattooing, there were few people who offered tattoo machines and there were very few manufacturers and suppliers. Nowadays, there are hundreds of suppliers. You're bombarded with everything from \$12 cheap Chinese knockoff crap to \$500 to \$1,000 handmade instruments that are not only tools of the trade, but often times collectible pieces of art. What led me to it was that I had tattooed for nearly 15 years without understanding the device I was using. I felt like a fraud and decided I needed to know more, so I began asking questions. I got a few breaks from a guy that was building before me. Once I understood the machine and was able to build it, my work changed forever.

How did it change your work?

RD: A well-tuned machine will put pigment in the skin while causing the least amount of trauma, which provides a quick healing tattoo, and ultimately a very bright tattoo. A machine that isn't well tuned will still put ink in the skin, but causes unnecessary trauma, which leads to slow healing, scabbing, peeling and color loss.

Tell me about tattoo removal. What goes into that?

RD: That technology is really starting to come into its own. Even though I am a tattooer, I think it's a good thing. Basically what you have are a couple different frequencies of laser light. There's one known as Q-switched and one known as Yag. Between the two frequencies you can remove almost all colors of pigment—blue and white are among the most difficult and black is by far the easiest. What happens is the laser light penetrates the skin and the energy is absorbed by the ink particle, which then breaks the ink particle into smaller pieces. The body's lymph system carries that pigment away and it's deposited in the liver. The process of removal is a little like getting splattered with hot bacon grease, it's not pleasant.

What do you think of the proliferation of tattoos on athletes?

RD: It's funny, because like Hollywood stars, they have the worst quality tattooing. You'd think that they would seek out the best, but they don't. I've seen portraits that are absolute failures. I think that's what is driving young people to get all this awful lettering and [garbage] all over themselves. Tattooing has gone through a transformation—when I started in 1988, nobody was tattooed, at least nobody cool. Instead of getting tattooed to set you apart from a crowd as an individual, tattooing is now being used as a way to join the crowd.

I'm sure it's good for business, but it changes the meaning.

RD: You're absolutely right. If I had gotten into tattooing for business, I would be happy as could be. But I got into tattooing because I was born with the ability to draw things, and I figured out a job that would allow me to use that ability and make money at it. Basically what's happened is that you have to be a businessman [to succeed]. You have to throw art out the window and make money to make that mortgage—not the ideal situation.

Find out more about tattoo artist Ron Dolecek and his tattoo machines at www.luckydeviltattoo.com.

THE FOLLOWING COMPANIES HAVE PROVIDED
INFORMATION ON CUTTING TOOLS.

product focus

A cutting tool is used to remove metal from the workpiece by means of sheer deformation. In order to last, cutting tools must be made of a material harder than the material which must be cut, and they must be able to withstand the heat generated in the metal cutting process. They also must have a specific geometry, designed so that the cutting edge can contact the workpiece without the rest of the tool dragging on its surface.



▲ Engineered Tooling Corporation

Engineered Tooling Corporation (ETCO) designs, manufactures and markets a line of replaceable, indexable cutting tools for the high precision, Swiss style, CNC machine market. ETCO's 50-degree series allows one style toolholder to do four or five types of turning operations. Many geometries and insert dimensions are available. Part of the 50-degree series is a hi-shear toolholder with specially designed inserts that are used in the turning of aluminum wheels and various brass parts. A .5" tool holder of the hi-shear series with an insert that has a chipbreaker can cut .250 thousandths depth at 90° per minute.

For more information, please visit Engineered Tooling Corporation (ETCO) at www.etc.com.

▶ Genevieve Swiss Industries

Genevieve Swiss Industries recently introduced the UTILIS® Multidec 1600 series thin grooving and micro turning tools capable of work under .125" in diameter. They utilize insert widths from the thickness of a human hair (.0019") up to .108" with cutting edge repeatability within .0004". Ground from premium carbide grades for enhanced tool life in the toughest materials, the 1600 series is available with a variety of coatings.

For more information, please visit Genevieve Swiss Industries, Inc. at www.genswiss.com.



► NTK Cutting Tools

NTK Cutting Tools has expanded its thread whirling system for CNC Swiss lathes, which is widely used for manufacturing long threaded parts including bone screws. The system is available in a 9-insert configuration for high-quality finish with improved productivity and a 6-insert configuration for an economical solution. NTK's unique attachment system allows the insert cartridge to be attached and detached without removing bolts.

For more information, please visit NTK Cutting Tools at www.ntkcuttingtools.com.



◀ OSG Tap and Die, Inc.

OSG Tap and Die, Inc. has released two new performance drills designed for a multitude of materials. The newly designed HY-PRO® CARB 3D and 5D drills have new point and flute geometry that reduces thrust forces and chip size, thereby enabling higher feeds and metal removal rates. The applied multi-layered TiAlN coating resists thermo-cracking from heat, thus improving wear resistance over conventional coatings.

For more information, please visit OSG Tap & Die, Inc. at www.osgtool.com.

► Sandvik Coromant

To meet rising demand Sandvik Coromant has extended its CoroTurn® HP range of turning toolholders with integrated high-pressure delivery capability. The new toolholders can offer up to a 20 percent increase in cutting speed when roughing difficult materials, and up to a 50 percent more tool life when roughing or finishing challenging workpiece materials.

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product focus



▲ Seco Tools

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For more information, please visit Seco Tools Inc. at www.secotools.us@secotools.com.



▲ Slater Tools

A Slater Broach cutting tool can be used on a lathe, horizontal or vertical mill, or screw machine to create the six-lobe form in precision metal products. The contour of the six-lobe design and its ability to provide excellent contact make it a desirable form for fasteners. Common products include multiple aircraft and medical applications, such as bone screws. Broach tools (also known as wobble broach tools) for the six-lobe (or hexalobular) form can now be ordered from stock, improving production and prototype delivery times.

For more information, please contact Slater Tools Inc. at www.slatertools.com.

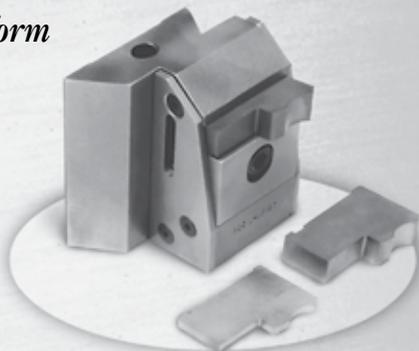
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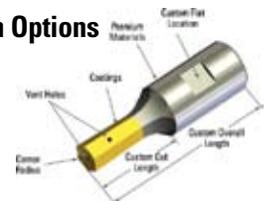


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If you're only reading "Swarf" in the magazine you're missing out! Every week, thousands of people log on to our Web site to read and comment on new articles on current interesting topics. Below are some recent comments from our "Swarfblog" readers at www.todaysmachiningworld.com.

Tattoos in the NBA

Lloyd Graff blogged about his annoyance with the proliferation of tattoos among NBA players. He asked readers, "Do you feel that body ink is symptomatic of a thuggified cult of personality NBA, or am I a hopelessly out of touch Frank Sinatra white guy in a Lil Wayne world?"

Bill Hopcraft March 5, 2010 at 11:09 am

Machinists are usually people who can make something from just an idea. They can think through a problem and fix things. They can look beyond something's appearance and admire the way it functions. Their stimulation comes not from outside sources, but from that inner spark called creativity. So relax, Lloyd, you're not being racist or showing your age just because you don't like Lebron's tats. You're just showing that you can think for yourself.

Time to Develop Young Machining Talent

Lloyd Graff blogged about the shop owners at the PMPA Management Update who said they were searching for and developing new young talent. He asked readers if they were presently looking to acquire young talent for their shops.

Robert March 3, 2010 at 10:01 am

I have been in the machining trade for over 30 years in manual, CNC and multi-axis. I personally would not recommend this trade to any young person in today's world. There is no respect for machinists or toolmakers.

Miles Free March 4, 2010 at 11:48 am

The key to understanding this is to know that shops are looking for talent, not drones expecting high pay to compensate them for having to work in a factory. Now is a great time to identify talent that will help sustain North American Manufacturing. Our technologies are key to many others. Talented craftspeople are crucial to our industry. If your shop is not one that you would like to see your daughter (or son) work in, you have a problem.

Need a Little CNC Help From My Friends

Lloyd blogged about Hans Peters, a new machine shop owner desperately looking for a sophisticated CNC programmer and setup guy. He asked readers if there was anybody out there who could help Peters.

Steve Beck February 23, 2010 at 1:54 pm

Are you a magazine or a headhunter? Dangerous territory.

Jon Giles February 25, 2010 at 11:08 am

Lloyd, I'm looking for an aging, out-of-touch machinery dealer to run a half-ass "publication" that I use to push my agenda and pretend it is a source for the precision machined parts industry. Know of anyone!?!?

Michael Goldman February 23, 2010 at 11:04 am

There are good machinist/programmers out there looking for work. A person with the qualifications and experience you want would require a salary around 80k. Many available candidates would not want to relocate for fear of the business failing. This may require an even higher salary to entice someone to relocate. If you are offering less than this, it could be the problem.

P. Rutledge February 26, 2010 at 11:49 am

Unfortunately, Lloyd, I agree with a number of those whiners for other reasons than what they were whining about. I disagree with your blog post, not because you singled out a man or brought to our attention a number of people desperate for a solution of their own, which are acceptable and appropriate things. I harmonize with your whiners because your question was, "Is there anybody out there who can help?" and not, "How can any of us can find this help? How can any of us find the job we need or the solution we are desperate for?"



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Missing Numbers

Try to fill in the missing numbers. The missing numbers are integers between 0 and 8. The numbers in each row add up to the total to the right. Numbers in each column add up to the totals along the bottom. The diagonal lines also add up to the totals to the right.

									41
6		3	8		6	8	4	7	45
0	1	5				3	1	3	24
4	5	7	4		8	8	7	5	48
8			5	1	0		7		35
8			4			8	6	1	46
8	8	0	5		8		1		39
	6	8		1		0	7		41
	4	1	0		6	5		0	32
1	7	4		5	8	1	7	5	42
50	43	36	37	28	43	39	45	31	44

Cryptogram Solvers

Answer to the March 2010 puzzle.

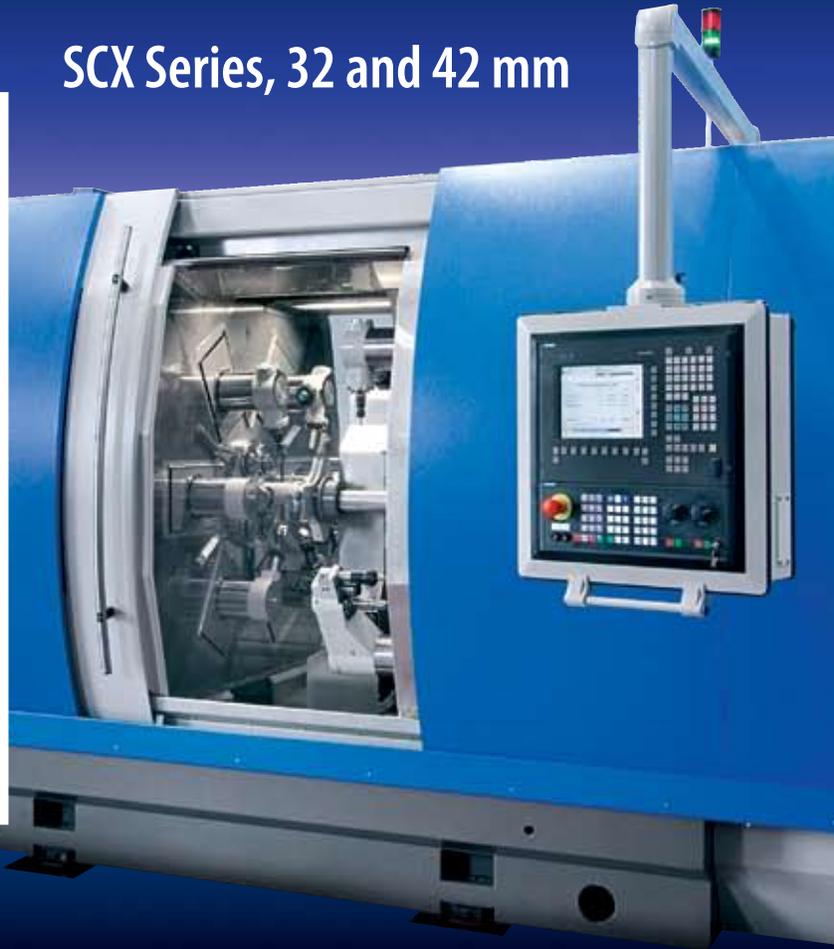
Light travels faster than sound.

This is why some people appear bright until you hear them speak.

Abdul Khatri of Kamet Manufacturing Solutions in Sunnyvale, Cal.; **Ron May** of Hunter Engineering Company in Bridgeton, Mo.; **Larry Mundhenke** of Intra-Cut Tool LLC in Holland, Mich.; **Dean Kent** of Techniques Inc. in Louisville, Co.; **Joel Gray** of Service Industries LLC in Rolling Meadows, Ill.; **Greg Tetric** of Cass Screw Machine Products in Minneapolis, Minn.; **Cara Bradshaw** of MidWest Screw Company, Inc. in Racine, Wis.; **Bruce Renwick** from NAFCO; **Ed Gnifkowski** of Rimco Industries Inc. in Sauk Rapids Minn.; **Steve Taylor** of Global Shop Solutions in The Woodlands, Texas; **Mike Grube** of BFG Manufacturing Services in Punxsutawney, Pa.; **Sheldon Wheaton** of Garmin International; **Greg Toellner** of Custom Components & Assemblies; **David P. Smith** of Electroswitch in Raleigh, N.C.; **Eric J. Rueb** of Northrock Industries, Inc. in Medford, N. Y.; **Chris Hoeker** of International Tool and Machine in Hillside, N.J.; **Ram Chandran** of Muller Martini Mfg Corp. in Newport News, Va.; **Kevin Albright** of Gear Headquarters in Kansas City Kan.; **Jim Brown** of Apogee Machining Services, Inc. in Salem, Mass. **Mike Merrill** of Swiss Automation in Barrington, Ill.; **Douglas Edwards** of BorgWarner Thermal Systems in Fletcher, N.C.; **Jack Steuby** of John J. Steuby Co. in St. Louis, Mo.; **Tina Duffy** of Roman Metal Works in Sarasota, Flor.; **Jim Riddell** of Baker College in Flint, Mich.

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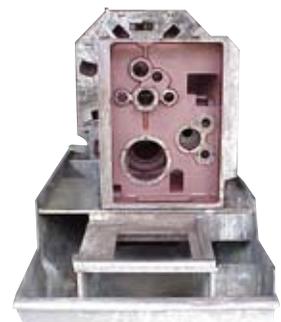
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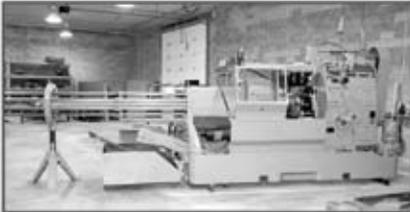


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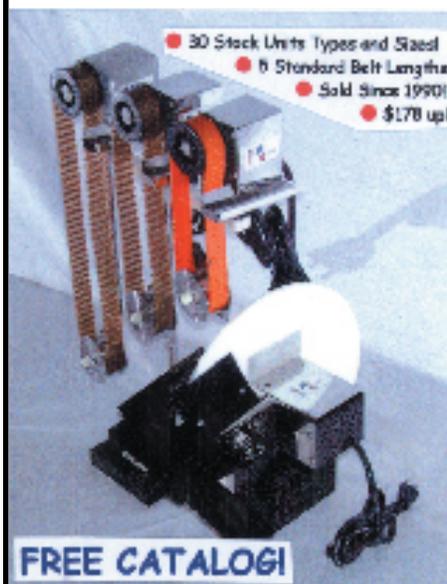


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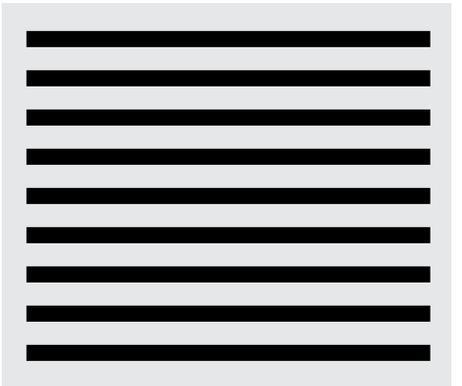
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Bread of Affliction?

I am writing this column one week before the Jewish holiday of Passover. From sun down Monday, March 29th through Tuesday, April 6th I'll be eating unleavened flat bread called "matzah" instead of the yeasty risen bread that I love so much for 51 weeks a year.

Matzah is regarded by Jews as the "bread of affliction" and also as the "bread of freedom." Same constipating stuff with two dramatically different ways to look at it.

I feel similarly about the last two years, affliction and freedom personally and professionally. Two years ago my health was declining, culminating in cardiac chaos during IMTS 2008. It was terrifying to be told I was in heart failure as I was being rushed to the emergency room while having my clothes cut off. The heart attack was my affliction, but it liberated me from denial about my health and my mortality.

The quadruple bypass surgery gave me a new lease on life and a fresh intensity toward living each day. I see life in 3D now. I cry more today. These tears of emotion are much closer to the surface now than before the surgery. Occasionally I feel embarrassed by the tears—some people think men don't cry, or at least shouldn't. I see the tears as a symbol of being freed up to live the unknown number of days I get to spend with the people I love.

On the business side these last two years can be seen as an affliction. I've watched friends forced out of business, and my brother Jim and I have experienced our inventory, which comprises a good portion of our personal assets, melt in value. We've had many sleepless nights and painful days worrying about the health of our business, and doubted our own ability to make it work. We've agonized about cutting employees, and then did it—probably long after it should have been done. We're still standing. Are we still eating the bread of affliction or the flat bread of liberation?

Our monthly expenses have been cut in half. The sled is lighter. I feel grateful for the freedom I have when running a business—to make my own hours, to change course, to work with people I enjoy. Is running your own business an affliction or a privilege? Do you get to do it or do you have to do it?

Do you believe these are choices we the living get to make?

This is the season to ask the tough questions. The matzah I eat is as bland as cardboard, but with jam or butter it is a delightful treat. I'll be enjoying it.

“I cry more today. These tears of emotion are much closer to the surface now than before the surgery.”

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