After Sherwood

Crime & Punishment

Shop of the Future

Today's Machining World

THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY

october 2007 volume 3 issue 10

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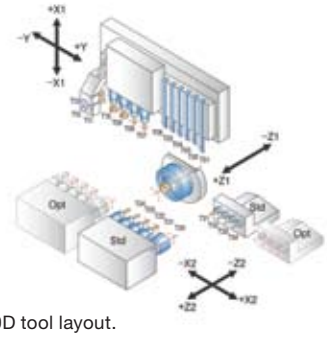

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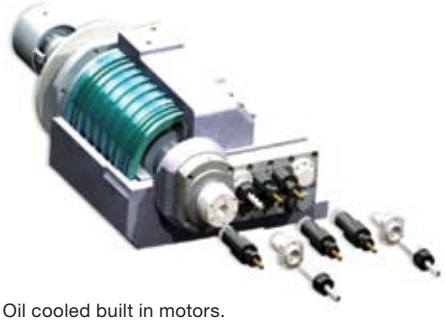

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BPA WORLDWIDE

editor's note

Off-Beat Thinking

We have written a lot on the catalytic power of large cash prizes in *Today's Machining World*. The cover story in July was on Elon Musk, a prime mover of the XPrize for space exploration by private concerns.

The *Wall Street Journal* September 18 highlighted another contest – the Gotham Prize – to jump start novel ideas about cancer research. Robert Goldstein was the prime mover behind the contest as a way to memorialize his mother, who died of ovarian cancer. The prize of $1 million is awarded annually for the "idea" judged to be the "best" for cancer research. Goldstein's idea was to bring in the non-professional who might be able to bring creativity to the oncology field without worrying about patent protection or the derision of peers in the cancer research establishment.

Drug firms are all about establishing barriers for their treatment approaches, and academics are consumed by attraction recognition in the field. This makes "idea" sharing difficult in the real world of oncology research.

Goldstein and his partner in the Gotham Capital hedge fund are trying to use a different model in their Gotham Prize approach. They post selected ideas on the website. They are hoping to reward and publicize off-beat thinkers who can bring stretched and unconventional approaches to the subject without being constrained by trying to refine previous research. The prize money can be spent on anything the winner wants to spend it on.

One interesting idea mentioned in the Journal piece came from a guitar player who postulated that subsonic sound waves might trigger the body's immune response. Another suggested using a math algorhythm to schedule post-testicular cancer examinations.

TMW also continues to scout for creative, off the wall ideas for these pages. We may not cure cancer, but maybe you will.

Lloyd Graff
Editor/Owner

Today's Machining World

October's talent pool.

contributors

Noah Graff has been working at *Today's Machining World* since 2005. He graduated from the University of Wisconsin Madison, majoring in film and history. He is the features editor for *Today's Machining World*, as well as the videographer for *TMW* and Graff-Pinkert & Co., producing training videos on screw machine maintenance and video stories for the *TMW* website. Noah enjoys investing, filmmaking and improvisational comedy. He is also a master of the sacred art of live band karaoke.

Jessica DuLong has gone undercover to a white-power hate-rock festival in rural Georgia for *Newsweek International*, covered college finances for *Rolling Stone*, written about lesbian newlyweds for *CosmoGIRL!*, tallied the benefits of physical risk-taking for *Psychology Today*, and penned a history of engine room technology for *Maritime Reporter and Engineering News*, among other varied assignments. A U.S. Coast Guard-licensed engineer, she also runs five 600-horsepower opposed-piston diesel engines on a retired New York City fireboat.

Lloyd Graff has an M.A. in journalism from the University of Michigan. Lloyd splits his time between buying and selling machinery, writing Swarf and swarfblog and playing Fantasy Baseball on Yahoo. He is married to Risa, a world champion in Tae Kwan Doe. He has three children and a granddaughter who are all above average. One of his life goals is to make 65 consecutive free throws on his 65th birthday.

Barbara Donohue received her mechanical engineering degree from MIT. She worked in design, heat transfer and manufacturing for several years before changing careers to become a journalist. Now she writes about technology and business from her home office in Acton, Massachusetts. When not writing, she sings in a choir, volunteers as a literacy tutor, and is weekend "foster mom" to a yellow Lab puppy named Tikva that is training to become a wheelchair assistance dog.

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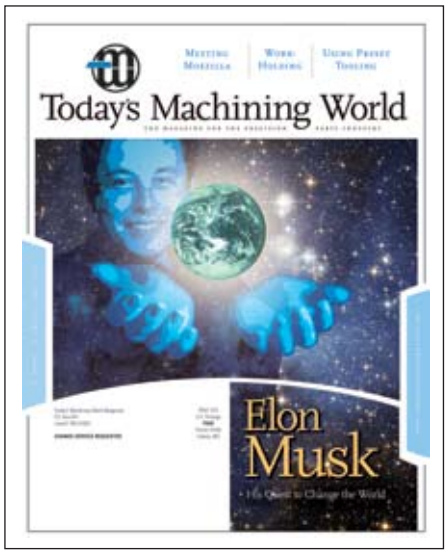

Vision and Drive

I really enjoyed your article on Elon Musk ("Elon Musk and His Vision to Change the World," July, 2007). We need more young people with his vision and drive – which takes me to the shortage of skilled machinists. We are a 60-employee family owned job shop celebrating our 50th year in business. We are a progressive prototype shop offering excellent wages, benefits and working conditions. Our biggest challenge is finding skilled machinists. We had to start our own in house training program, and are currently partnering with the local trade schools. We start with shop tours with the freshman and sophomores, then hire promising juniors for the summer and retain any with the proper work ethic for the senior year co-op. I just wish there were more young people who had the drive and interest to learn the trade.

Your magazine is fresh and always very interesting. I pass it around the office after my wife finishes it.

Paul Ikasalo
F.H. Peterson Machine Corp.
Stoughton, MA

Attitude of Gratitude

I was preparing to write you about another matter when I read your unique piece in the August "Afterthought" column, and just had to express my appreciation. Your Beverly Sills anecdote really hit home for me, as did your personal reflections on the importance of gratitude. In fact, your article inspired me to add a post-it note to my work station that reads: "From drudgery to grateful appreciation."

The writing life can be isolated, for certain, but it's also a privileged life. At least it is for me, in that it has allowed me the luxury of working from home AND being with my young children. Sometimes we all need to be reminded of our blessings. Thanks to your column, I'll have that reminder in from of me daily as I work.

I'm writing to help me spread the word about the Dayton Tooling & Manufacturing Association's third annual Advanced Manufacturing & Technology Show (AMTS), which will be held Oct. 25 & 26 in Dayton, Oh. This show is the largest show of its kind in the Ohio/Indiana/Kentucky regions and reaches one of the most concentrated communities of manufacturing, tooling and machining organizations in North America.

Our show attracts tooling and manufacturing organizations and suppliers from a broad geographic area. The event will also feature its second annual BotsIQ competition to showcase the remote-controlled robotic creations of students from more than 40 career centers and colleges in the region. For more information, please visit the show's website at www.daytonamts.com.

Thanks for your consideration, and for sharing your thoughts and reflections. I really like your magazine.

Janice Saddler Rice
One behalf of the Dayton Tooling & Mfg. Association
Dayton, OH

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CHAMPION
SCREW MACHINE ENGINEERING, INC.

By Lloyd Graff

Photo: Courtesy of Purdue University

Rube Rules

Ferris State University in Big Rapids, Mich., has one of the better advanced manufacturing college programs. Its graduates are cajoled by headhunters and wooed by manufacturing concerns around the country. But the kids who really command attention are the handfull who play in the "Rube Goldberg" contest.

They develop incredibly long chains of mechanical devices which connect to other contraptions in falling domino fashion. Bruce Gregory, who is on the Ferris State faculty, waxes enthusiastically about these kids because they are the ones who love creating unique Rube Goldbergs so much they'd do it just for the heck of it. He says Ferris State won last year's competition and were feted like celebrities and jetted around the country. If you had a choice of hiring an all-A student or a Rube Goldberg champion – who would you take?

I traveled up to Grand Rapids,

Mich., for the SME's Great Lakes Exposition. Attendance was microscopic, which made it great for schmoozing with lonely exhibitors. I talked with people from Chemtool, a lubricants and grease manufacturer, and Grand Northern Products, an abrasives firm in Byron Center, Mich. Both described their business approach clearly. They take a product that the market often deems to be commodity, and they turn it into gold with good research and branding.

If you are selling oil by the gallon, the Chemtool people explained, you will be continually underpriced by the local supplier, who is peddling drums. But if you can document tool life and lubricity, you are changing the definition of the product. They are selling the quality of the machining experience, not pennies per gallon. This enables them to sell their oil around the world, even China, for premium prices.

Steve Carpenter sells Roto-Finish machines and specialty media and slurry for parts finishing. But he says there is no margin in selling bags of pellets. In this business the value-added is gained by "defining the process."

He has sold huge installations to Harley-Davidson because he understood they were anal about the finishes on their parts. Presentation, looks, feel – this is what makes a Harley a Harley. He is a motorcycle enthusiast himself and he got their preoccupation with finishing. He designed the system and customized the media so Harley-Davidson received the exact look they sought. This hooked him into the company for the long run, selling the disposable products that bagged the ultimate profit on the installation.

If you sell your product by the drum you count pennies. If you sell your media stones by the pound you scratch out a living. Define the process, own the customer, count the money.

I had a chance to talk to some

members of the Hardinge Workholding team, and they told me that the medical market continues to thrive, which came as no shock as the baby boomers hobble to the gym. But they also said that telecom is having a resurgence. This confirmed other straws in the wind I've been observing. ADC in Minnesota is finally turning a profit. Andrew stock is rising and Cisco Systems is having fun in the Wi-Fi world.

The telecom bust of seven years ago has finally run its course. Lucent still can't catch cold but almost everybody else that survived the collapse is doing ok. The Verizon and AT & T buildout is a big reason for the robust environment as they try

swarf

to combat the inroads of the cable giants.

Another factor is the rise of Internet video. YouTube and MySpace hog a tremendous amount of band width and it is only going to grow. The television on the web scenario is just gaining traction, but kids will lead the way. Apple's improved screens and the iPhone web experience are going to propel video, which means more connectors. We probably will not see the buying frenzy that juiced Hydromat's late 90s business and quickened the heartbeat of the Swiss lathe builders, but the re-inflation of the telecom business is welcome news in the machining world.

Hurco Companies, Inc., has

formed a new division dedicated to the Canadian market. Located in Mississauga, Ontario, the headquarters of Hurco Canada, Ltd. is a full-service operation including sales, service, and training. The facility is up and running with a showroom equipped with Hurco machining centers and turning centers. According to Jim Kawaguchi, General Manager of Hurco in North America, the formation of Hurco Canada, Ltd., will enable Hurco to focus on Canadian customers and educate them about the integrated Hurco control.

When I think of Dayton, Ohio,

I conjure up the congenitally inefficient Delphi/GM plants, the yummy chocolate confections of Esther Price and the Paxson family of basketball sharpshooters.

But today Dayton is flying different colors. Delphi is spreading its wings in Poland, Mexico and China. The mammoth monstrosities of Moraine are future parking lots or prairie. John Paxson is running the Chicago Bulls of the NBA. At least Esther Price is still making marshmallow treats.

I recently talked to a client in Dayton, who is trying to

reshape his machining operation to be less dependent on automotive, just like the town. He says the community is struggling to find a new identity. The best hope is probably in grafting on to the Air Force base in town named after Dayton's most famous sons, Wilbur and Orville Wright.

Columbus, one hour's drive down the Interstate, continues to thrive with its confluence of highways, the biggest university in the country and the state capital.

Dayton is just Dayton. National Cash Register is now a faceless NCR. The University of Dayton is Paxsonless. If you want to fly to Dayton, better to think Columbus and drive.

Will Dayton become the bathroom stop between Indianapolis and Columbus? Or will it somehow find a new identity? Will a new Leslie Wexner put it on the world map like he did with The Limited in Columbus? Or will Dayton soon be known as the place where they used to have those fat old car component plants before they demolished them to save on real estate taxes?

Today's Machining World's

"How it Works" piece is on "Shop of the Future" but Jessica DuLong's piece discusses the shop of the past – Sherwood, a division of Harsco Corporation in Lockport, New York. Jessica focused on the stories of people who spent many years on the floor of the plant, and how they found their footing after leaving on their own volition or being forced out in a layoff. One of the keys to building a company to last is finding capable people who will stick around.

I find it fascinating to see moves of the now privately-held Chrysler to build their new management team. When Steve Feinberg, the head of Cerberus Capital Management, put together the bid for the sick piece of DaimlerChrysler, he surrounded himself with high profile car guys. He made a very visible effort to identify Tom LaSorda as his pick to run the firm if he emerged victorious in the bidding. LaSorda is a Detroit lifer whose grandfather was a top organizer for the UAW in Canada. Even though Tom LaSorda was a top manager at Chrysler, he still had family ties with the UAW. Feinberg knew that a blessing from the UAW would be crucial to his lenders because the company was going to push for big concessions in the upcoming contract. The UAW did sign off on the deal before it closed.

But soon after the ink dried, Feinberg and associates brought in the infamous Robert Nardelli, the recently deposed despot of Home Depot to be the top dog at Chrysler. Nardelli is a tough – many say arrogant – vet-

eran of General Electric, who seemed to get everybody mad at him at the retailer.

And then early in September, Cerberus lured Bob Press, the American Prince of Toyota, to handle marketing and dealer relationships. To me it looks like LaSorda has dropped way down in the batting order. Probably Feinberg wants LaSorda to negotiate with Ron Gettelfinger, who he knows well. If LaSorda gets the deal Cerberus and its lenders are banking on, he might be retained. But with the Dynamic Duo of Nardelli and Press, LaSorda probably feels like he has one foot out the door.

I was shocked by the Press hire. He is 61 years old with 37 years at Toyota. He is the only Westerner on the Toyota Corporation board. His record is fabulous and he must have substantial wealth. Why take a job with the #4 carmaker in America under Nardelli and Feinberg?

My guess is that he has a Lee Iacocca fixation and relishes the chance to ride the next K-car or Mustang to the rescue. If Nardelli pisses everybody off and LaSorda walks, Press would likely run the show. Then we might really see the Toyota approach in manufacturing excellence brought to an American car company.

The Robert Nardelli and Jim Press hirings bring up a big question that applies to your shop, my shop, everybody's shop of the future. How much do you pay for top talent?

Nardelli got $200 million when he got the boot at Home Depot. Press accumulated enormously valuable Toyota stock holdings and built prestige unmatched in the American automotive world. These guys are A-Rod caliber free agent signings. If you are Chrysler, how do you justify the acquisition of these two high profile guys when you could have hired top notch talent for a fraction of the money and then had plenty left over to buy important bench strength?

For Stephen Feinberg, the head of Cerberus, the buyout firm that acquired Chrysler from DaimlerChrysler and his lenders, who put up $8 billion for the risky deal, there is an imperative to show the market, the dealers, the workers, the UAW and the suppliers that he is playing for keeps. When you bring in Nardelli and Press, you explicitly throw down

the gauntlet to all. These two guys have proved their bona fides before they ever buy homes in Bloomfield Hills.

But they still have to put numbers on the board for a company whose big product is still prosaic mini-vans. For men of this stature, who have been super successful hired guns for their entire careers, the big lure has to be equity in the newly private firm. And for the Cerberus partners who borrowed over 90 percent of the acquistion money, giving up equity to the primo managers is a good bet, because if they produce profits at Chrysler and enable it to go public in three years, the payoff for the investors will be fantastic.

But what about the small company trying to make money selling to the Chryslers and Toyotas? It is not floating an IPO in three years. It is probably not heavily leveraged. How does that firm lure top talent into the fold?

The approach, which I think most small businesses use, is to hire young people and try to develop them into stardom. This seems like a sensible method because it does not kill the salary structure of the business. But in today's world, young people usually leave for new challenges after they get a taste of success.

Another style is to lure somebody in their prime who has been cut by another company undergoing restructuring. This can work, but shifting cultures, especially going from a big company to a little one with established pecking orders can be fraught with danger. And, the owner of the small firm which is hiring must sift through a ton of embellished or fraudulent resumés hoping to find real candidates. It is hard to find the time.

Headhunters can cull potential candidates but their goal (making a fee) may not synchronise with that of the small company owner.

Then there is the issue of money. The financial expectation of the potential hires may have little relationship with their ability to contribute to your small business.

But the possibility still exists that by luck or skill, you may find somebody who looks like the perfect fit – but he or she wants a piece of the action. I think this presents a really tough call for small business owners, even those who have no family members in the wings.

The message of the very smart guys at Cerberus who went out and enticed a Nardelli and Press with the only financial incentive they never had in old corporate America – significant equity – if the succeed – is one that we should think about very seriously. 50 percent of something is always better than 100 percent of nothing.

Mattel deserves the media

lynching it's getting – not because Big Bird now bleeds lead paint – but because its management has been so greedy and short-sighted to move virtually all of its toy manufacturing to China and cede production control to outsourcers.

For a branded toy like Mattel sells, the profit margins are immense whether they make it in Mississippi or Manchuria. If the production cost is more than 20 per cent of the Wal-Mart price I'd be shocked. So what if it costs Mattel 10 to 20 percent more to make toys domestically, would that be a crime to the bottom line?

But when the corporate idiots in Los Angeles allowed their Christmas fate to be determined by desperate managers in the Pearl River delta, they were playing roulette with their precious brand. This is simply dumb, yet we are seeing this kind of corporate stupidity reach a pandemic.

The pressure for endless profit increases for publicly-held firms pushes them to make terribly risky short-term bets, like shifting virtually all of their capacity to a counterfeiting culture. When they squeeze manufacturing margins they invite disaster.

Could the lead paint nightmare have happened in the United States? Of course it could have, but the likelihood of it becoming a media event, becoming the huge Christmas nightmare that Mattel is experiencing now would have been much less likely with local quality control.

I did not attend the AMMO

Show in Las Vegas, but I have talked with several people who did, and the consensus is that the show was a commendable first try but it barely moved the needle as a viable trade show.

Joe Smith, the promoter of the event, sold it tirelessly as an alternative, potentially to the fading Westec show. He probably figured that by holding it in Las Vegas he would bring in a national crowd as well as the California, Arizona, Nevada contingent. He coordinated it with the quarterly NTMA national meeting. He did some smart things, though his date coinciding with both EMO and midway between

the Jewish High Holidays was hardly optimal.

Do we need another industrial trade show to go to with the multiple SME get-togethers and the specialty shows like PMTS and FABTECH? I am skeptical, but the users and the exhibitors will vote with their feet.

Frankly, mine already hurt.

Andrea Tajariol of Milan, Italy,

owns ZPS, which makes the Euroturn and Wickman multi-spindle screw machines in Zlin, Czech Republic. Jim Graff was visiting him recently and he revealed that he has purchased a piece of industrial property in Bangalore, India and is considering moving the multiproduction to the subcontinent.

He is frustrated by productivity issues in Czech, which make it hard for him to squeeze out a profit. Eastern Europe is prospering with the spread of the euro and the E.U., which is bringing higher wages and expectations. The post-Communism days of the 1990s are gone and with cheap airline flights and no travel restrictions within the E.U., workers are gravitating to better opportunities where they can find them. Poles and Czechs and Slovaks who have skills and are willing to work hard fly to England to labor on remodeling projects, take their cash and return home. It makes work in the foundry less attractive these days.

ZPS is very busy these days making machine tools for Okuma and other world class brands. Euroturn (Mori-Say) is selling well around the world, but it is a hard line to make money on, according to Tajariol, because it is complicated to build and requires a lot of hand-holding after the sale.

With the land purchase in India he is in a position to build a production facility in a relatively low-cost environment. But his company does not have a lot of management depth, and Andrea is battling degenerative disc problems in his back, which complicates a major business decision of this kind.

Okuma recently had the grand

opening of its THINC Partners facility in Charlotte, North Carolina. This is an ambitious and creative undertaking. The company has put together reciprocal agreements with a host of top shelf tooling and machine tool accessory firms to enable Okuma customers to get the best input on how to maximize their production success. By putting their partners, some of whom compete with one another, under one roof, a client can shop in a supermarket of ideas and hardware while they are in Charlotte. It's a cross between IMTS and Best Buy for machine tools.

Hats off to Okuma for investing in this approach. The payoff will be in how the Partners execute in this environment, but the idea appears to be a winner.

Friday has become the most

frustrating day of the week for those of us who want to connect with their professional peers. It used to be only in the summer when people would leave for a three-day weekend, but it now appears that a lot of Americans are taking the attitude that if nobody else is around they might as well ride the tide.

I think that part of the reason for this European-bred virus (35-hour work week in France) is that we cram our schedules so full that we are reluctant to take long vacations. The three-week holiday is an anachronism, the two-week a rarity and the one-week a luxury these days, so people stretch the weekend to three or four days, often trying to do business while they are running to their supposed respite.

We end up with frustrating Friday for the few people left in the office on the fifth workday. Friday is now voicemail day or email day.

My work depends on connecting with people to gather information and to put together deals. With everybody scattering like frightened birds on Friday I feel like the day has been taken away. I want it back.

By Russell Ethridge

Crime and Punishment

On the same day last August, in federal courtrooms a continent apart, two felons entered guilty pleas as part of plea bargains sure to illustrate the mushy part of how society punishes those convicted of criminal behavior. The hopelessly imprecise task of assessing society's judgment through court sentencing reflects, although imperfectly, a full palate of human behavior and values. Who gets what sanction for doing what to whom is an elaborate and partially unwritten equation with factors deep in the human DNA. In a system with sentencing guidelines and other judicial devices intended to give an air of consistency to the process, it is still the human condition which shapes who and how we sentence. It is not as neat and tidy as "do the crime; do the time."

After a year of denials and finger pointing at an underling, machine tool magnate and NASCAR team owner Gene Haas admitted in a California federal court to avoiding nearly $35,000,000 in taxes by taking phony business expense deductions. Haas' deal calls for what may be a record for tax restitution and fines, upward of $70,000,000 after interest according to the *New York Times*, and two years in the federal pokey. If the plea is accepted by the court in November – and it could still blow up – the 54 year old Haas will write a very big check and serve 20 months or so.

Earlier that day, an Atlanta federal judge heard NFL star quarterback Michael Vick admit to conspiring to run an interstate dog fighting ring. In papers filed in anticipation of the plea, Vick confessed to being the money guy behind Bad NEWZ Kennels, a dog fighting and gambling operation where underperforming pit bulls were killed. His plea deal calls for one to two years in prison, restitution, and cooperation in related investigations. This deal, too, is subject to the court's approval. For Vick, it wasn't about the money. He didn't profit from the operation. It was about hangin' with your peer group, a group that has always had issues with the justice system and society at large.

Haas mostly avoided broad public interest in his misconduct. Vick's pitiful pose and revived religiosity, however, were all over 24-hour news as animal rights protesters, the talking heads, and the man in the street expressed shock at the treatment of man's best friend. They seemed genuinely aghast that someone, really still a street kid who gets gushing praise and big bucks for playing a game where players are crippled or killed on the field, lacked the social sensitivity not to torture dogs in a country where we buy sweaters and designer food for our pets. Haas committed his $35,000,000 (that's million) crime with a pen. For him, it was about the money – money Haas thought the "system" owed him after he lost nearly $9,000,000 in a lawsuit in which he blamed the judge for the bad result. It

Comments? You can email Russell Ethridge at rethridgelaw@yahoo.com.

took deliberate intent to steal that much and it required the assistance of others. But no animals were sacrificed, and the only one who gambled was Haas on whether he could get away with it. Haas joins the ranks of tax dodgers like the late Leona Helmsley, who did 20 months and wrote a sizeable check, and shopping mall developer and Sotheby's owner Al Taubman, who spent just under a year in the lockup but paid a hefty fine plus a quarter of a billion dollars restitution for fixing art dealer commissions.

As long as you can pay back the stolen tax money (with interest) if you're caught, the harm from unfunded federal vaccine programs, no money for Humvee armor, or higher taxes for the rest of us warrants just about the same jail time as if you'd killed dogs for entertainment. I'll bet dog fighting would not seem so bad if you are in one of those countries where a dead dog meant a menu item, not an indictment. In our instant response society, Whoopi Goldberg got in trouble during the first week of her new job on *The View* for trying to explain Vick's conduct as a southern thing.

Other white collar thieves and miscreants such as Tyco's Dennis Kozlowski and Enron's Jeff Skilling, however, can get much harsher sentences. Kozlowski is doing eight to 25 years, and Enron's Skilling received 24 years and four months. 80-year-old John Rigas probably got a life sentence when he was given 15 years for looting cable company Adelphia, and his son and partner in crime got 20. Jim Bakker got 18 years for stealing from the faithful through his Heritage USA and Praise the Lord ministry, although he was paroled for good behavior after serving nearly five.

For cases in which no one was killed or wounded, these are tough sentences, sentences inspired by the defendant's greed, the deep and irreparable financial harm caused to real people, not just "we the people," and the need of most of us to see the high and mighty laid low for their arrogance. These sentences are more like those given to the guy who takes a few dollars and some cigarettes and beer during a convenience store hold up. He'll also get serious time but for reasons very different from arrogance and greed. The threat of violence strikes at the essence of human existence. The loss of personal physical security, the violation of the threshold to the castle, the gun to your head, is worth the same punishment as the unrepaid looting of hundreds of millions from shareholders using a pen. You can never return or repay peace of mind, and judges really have only two tools at sentencing; time and money. Most defendants only have time.

It is not just the result that influences punishment. The victim's status, the defendant's state of mind, and societal value judgments come into play. You are just as dead when you're killed by someone running a red light as you are if a hit man takes you out, but the hit man will get life while the negligent driver will get little or no jail, if charged at all. That is unless he kills a construction worker whose industry has a good lobby. In many states he'll get more time because of his victim's status as a road worker than someone who kills a tire changer, even though both deaths resulted when the driver reached to change a CD and drifted on to the shoulder. Still, the victims are dead in every case just the same. Drug laws with long mandatory sentences are examples of harsh sentences for what is essentially consensual commercial activity, albeit illegal and socially harmful. True first time shoplifters are usually "counseled" and given probation and a smack in the wallet. The shoplifter drug addict, however, will face real time not for this crime but because this is his fifth, fifteenth, or twenty-fifth time though the system. It is not the theft that's punished but the defendant's inability to reform.

Gene Haas and Michael Vick are in the sentencing phase of their deals. Complicated sentencing guidelines, themselves under recent constitutional attack, will be applied to examine them, evaluate the wrongs, and calculate the harm. Assuming the judges are not appalled by the deals, both will do their time. For Haas no one but the tax payer was financially hurt, and we got our money back, with interest! No weapons were fired, no one died, and the conduct was arguably just the illegal far side of the perpetual fight with the tax man: All very civilized. Vick's transgressions, however, involved social conduct viewed as repulsive in our civilized society, even though there were no human victims, and no one (excluding dogs) lost a life, their sense of safety, or their retirement account.

For Haas, two years is a long time and $70 million is a bunch of money, especially when you're in your fifties and near the top of your game. But it is most definitely not Kozlowski's eight to 25, Rigas' life sentence, or Skilling's 24 years. It is not even Bakker's parole after five years. Compared to those sentences, 20 months and $70 million seem "doable." Taking a year or two or maybe more out of your lucrative NFL carrier, losing your freedom, and having the taint of your incivility linger for life is a high price for being an unsophisticated thug. All in all, Haas got the better deal.

They've Got Spirit

The Agietron Spirit 3 CNC die sinking EDM system is capable of handling workpieces up to 43" x 30" x 15. Featuring a CE Compliant design that improves thermal stability over long periods of time, the Agietron Spirit 3 has a manual-centering mode that precisely centers an electrode in an existing cavity. The integration of the C-axis adds capability for rotation, indexing and complex erosion, while the inclusion of AgieBril™ technology within the spark generator provides finishes as fine as Ra 0.2µm in steel using copper electrodes.

The Spirit 3 is a true "Plug & Play" EDM system that enables start up and production within an hour of delivery. The Spirit 3 also contains Automatic Erosion Programming for users to select erosion technologies by application type, set minimum wear and maximum removal priorities.

For more information, contact Agie Charmilles at 800-CTC-1EDM or visit www.gfac.com.

Row your Parts

Toellner Systems, Inc., has announced the introduction of their multi-row parts magazine. This magazine offers the capability to hold multiple parts (depending on the raw part size) in queue, thus creating a longer unattended run time. Dennis Toellner, president of Toellner Systems, Inc., said, "Increasing the loader's unattended run times and keeping human intervention to an absolute minimum, while maximizing profitability by longer worker relocation, is so important in today's world of lean automation."

For more information please contact Toellner Systems at 715-424-4530 or email bruceacurtis@toellner.com.

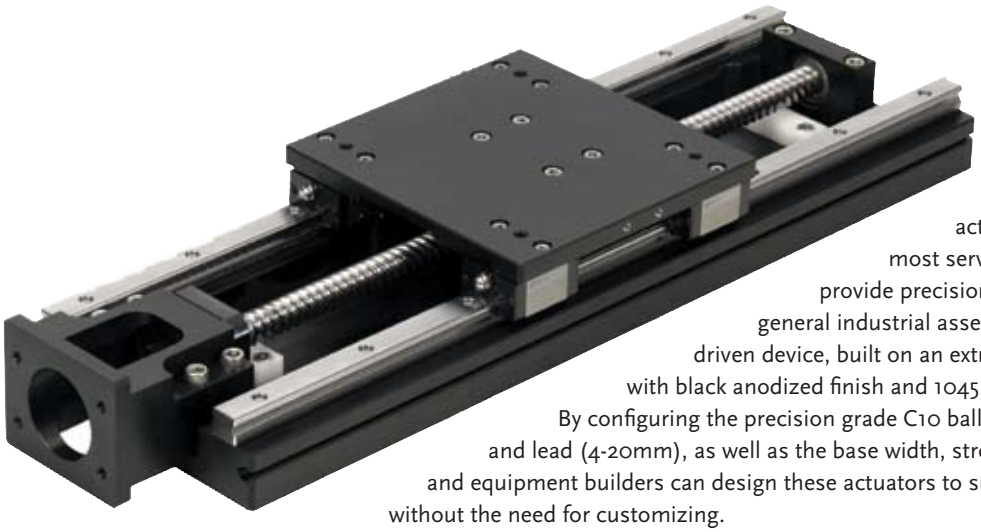
fresh stuff

Total Support

Hardinge Inc. will now manufacture and inventory solid collets, master collets & pads, solid feed fingers and master feed fingers & pads. They will fully support Euroturn, Gildemeister, Index and Schütte machines with 24-hour shipping of standard fractional and whole metric sizes. Decimal sizes and products for other brands of machines will be available within a 5 to 7 day delivery. Hardinge will offer a semi-finished blank program for pickoff burring collets and special-shape collets for fast turnaround.

According to Hardinge, if you use inch bar stock, you should use fractional collets – NOT metric. Very few metric sizes have a direct fractional equivalent. When the collet is the proper size for the workpiece or bar stock, there is a full bearing along the angle and the circumference of each segment of the collet where they mate with the spindle angle (seat).

For more information call Hardinge at 800-843-8801 or visit www.hardingetooling.com.



On Your Axis

Misumi USA, Inc. has introduced its single-axis actuators, available in 208 configured styles. These new actuators are compatible with most servo motors and are designed to provide precision linear motion in a variety of general industrial assembly. Each unit is a ball-screw driven device, built on an extruded 6063-T6 aluminum base with black anodized finish and 1045 steel side supports.

By configuring the precision grade C10 ball screw diameter (12-20mm) and lead (4-20mm), as well as the base width, stroke and table length, machine and equipment builders can design these actuators to suit the application at hand, without the need for customizing.

Other features on these new Misumi single-axis actuators include a linear slide for medium or heavy loads, grooved base for sensor mounting, top plate with tapped holes for switch flags on both sides and a tight-tolerance bore (DH7) motor bracket to accept most popular 30-400W servos.

For more information, please contact Misumi USA at 800-681-7475 or visit www.misumiusa.com.

fresh stuff

Ken Clamp it

Kennametal's new KSOM Clampless Cutters have a single-screw clamping system and deliver high metal-removal rates. The new cutters are offered in four different geometries and six specific grades. They feature a steel body with eight tungsten carbide cutting edges, and are available in medium and fine-pitch styles.

The Clampless Cutters are suited for rough-milling applications requiring lower cutting speeds and increased metal removal rates. Roughing and semi-finishing can be accomplished with the same tool. The cutters are available in diameters from 1.25 inches to six inches, have up to 0.197 inch depth-of-cut capability, through-coolant capability, and can be used in all common milling applications. The 6-mm version offers a 0.138-inch cut and the 7-mm version provides a 0.197-inch cut.

For more information, please contact Kennametal, Inc. at 800-446-7738 or visit www.kennametal.com.

fresh stuff

Mini Nut

Techniks has introduced new ER mini-nut holders. Nut diameters range from .63" to 1.02" (16mm – 28mm) to permit machining where standard ER nuts cannot fit. ER11, ER16, and ER20 sizes are available for CAT40, CAT50, BT30, and BT40 spindles. Each taper is precision ground to exceed AT3 industry standards, and T.I.R. (runout measured from outside of taper to inside of collet pocket) is only 0.0001" maximum. They are factory balanced to 18,000 RPM at G2.5, and each holder is individually lab tested for accuracy and balance. A lab certification documenting test results comes with each holder.

For more information, please contact Techniks, Inc. at 317-803-8013 or visit www.techniksusa.com.

fresh stuff

Green Piece

PICO Chemical Corporation announces its PICO SOLV NPB as a new chlorine-free solvent cleaner manufactured as a direct "green" replacement for Tri-Chlor (TCE), Perchlor and other more hazardous cleaning solvents such as mineral spirits, Xylene, MEK, Toluene and alcohol.

Typical applications include: oil removal from screw machined parts, dirty electrical components and coil-to-coil metal cleaning. PICO SOLV NPB does not contain petroleum solvents, chlorinated compounds, or water for improved health, safety and environmental compliance. It is a stabilized azeotropic mixture that may be distilled many times and has good wetting characteristics to evenly coat surfaces, thus releasing its full power solvency to penetrate and dissolve oil and grease films.

For additional information contact PICO Chemical Corporation at 708-757-4910 or email jmanfreda@picochemical.com.

fresh stuff

Sump it up

CECOR Sumpcleaners use high suction lift to remove all coolant, chips and sludge in the sump within minutes. Filter separates solids from coolant. Pump cleaned coolant back to machine tool sump or transport to central processing system. Lobe, positive displacement pump generates suction lift to 13" Hg. and pumps 110 gallons per minute. The 300-gallon tank features a 5 cu. ft. capacity filter that can hold up to 800 lbs of solids. Tow-base with pintle-eye hitch accommodates in-plant tug or tractor.

For more information, please contact CECOR Incorporated at 800-356-9042 or visit www.sumpcleaner.com.

fresh stuff

Razor Sharp

Razorform Tools has announced first Indexable-Insert-Style broaching tool for use in CNC lathes with locking spindle. According to Razorform, the TiN coated razor-sharp carbide insert lasts 3-4 times as long as brazed carbide inserts. The tool design also allows for the insert to be removed and rotated or replaced while the tool remains locked in the turret, saving 10-15 minutes of setup time re-zeroing the machine. The heat treated O-1 tool steel and the proprietary design of the insert and insert pocket, provide stability during the cut, reducing chatter. The removable carbide inserts mean you need to replace only the inserts as you cut more parts.

Razorform Tools currently offers 7 sizes of broaching tools and inserts from .127 (for a 1/8" keyway) to a .318 (for a 5/16" keyway) with a .502 tool and insert due out later this year.

For more information, please contact Razorform Tools at 310-822-2810 or visit www.razorformtools.com.

THINC Hard

Okuma America Corporation has released THINC®, The Intelligent Numerical Control – a single processor, robust PC based system. THINC® is a fluid platform. All functions including motion control and Microsoft Windows® applications run from a single processor of a truly compatible, industrially hardened PC motherboard. This board can be easily and inexpensively swapped to allow THINC® controlled machines to grow with new technology after installation.

THINC® brings true plug and play of industrial peripherals to the factory floor. The OSP-control uses standard USB and Ethernet ports and PC based software developed by either Okuma, the end user or a third party. As a result, devices such as bar feeders, robots, gauging systems, adaptive control software, ERP, etc can be easily integrated into an intelligent system with nonproprietary tools. Available for all new Okuma lathes and machining centers, select Okuma models can also be retrofitted with the THINC-OSP control to give new life to old iron.

For more information or to find the distributor nearest you, please visit www.okuma.com or www.partnersinthinc.com

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Diameter	32
Stroke	320mm
O. D Tool	5
Front Tool	5
Back Tool(Driven)	4(2)
Off-Center(Driven)	2(2)
Cross Tool(Driven)	4(4)
Power	Main 5.5/7.5kW Sub 2.2/5.5kW
Weight	4,050kg
Dimention (LXWxH)	2,720x1,304x1,775mm

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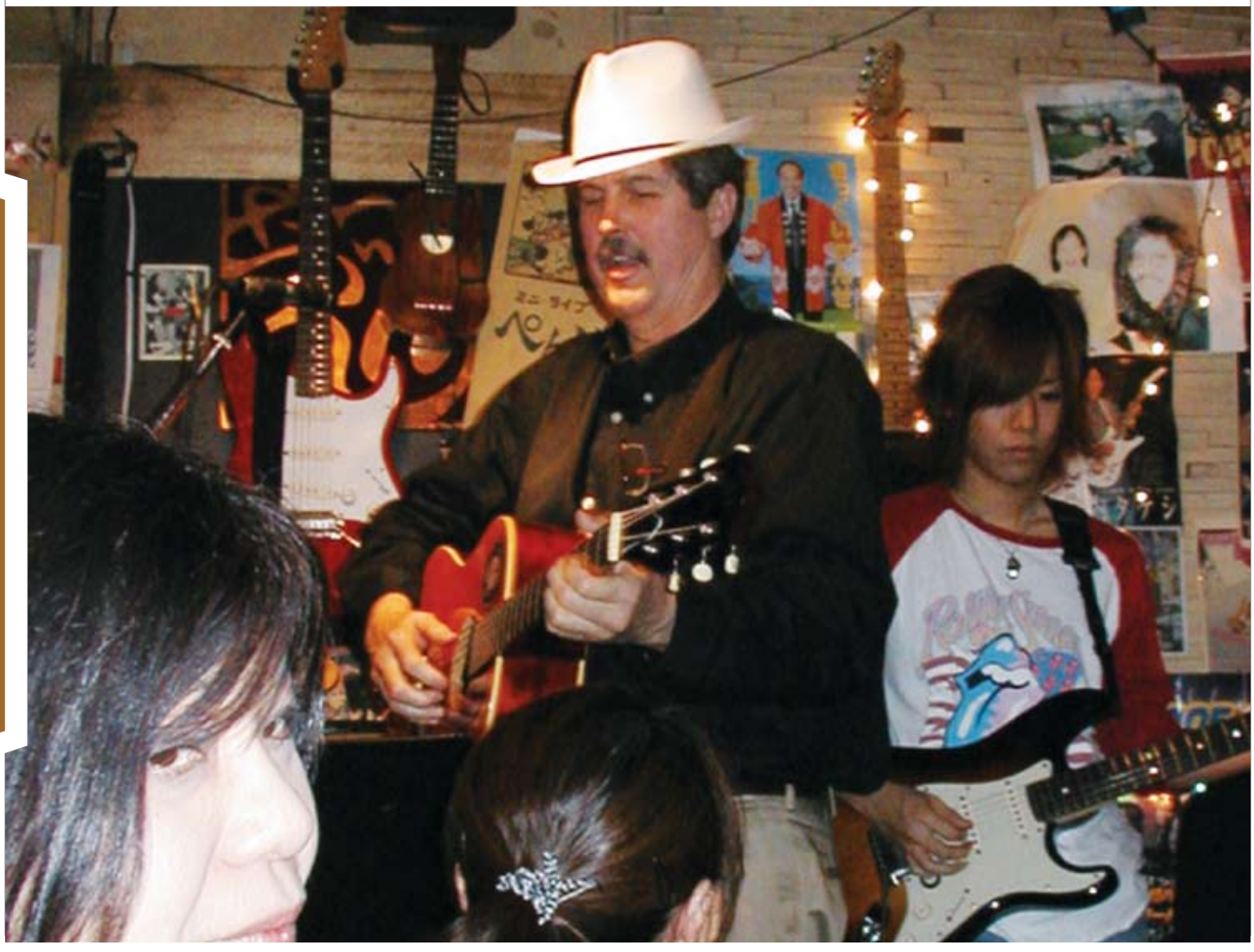
An Interview with Scott Walker

Scott Walker is the CEO of Mitsui Seiki USA., a machine tool builder offering a lineup including jig boring machines, jig grinders, horizontal and vertical and 5-axis machining centers. He's been at the company for almost 17 years and regularly commutes between the U.S. and Japan. Noah Graff sat down with him to get a more intimate view of Japanese business and culture.

With Noah Graff



NG: Let's start by asking, what is a typical work week for you?

SW: I have a P&L responsibility for this division at Mitsui Seiki. I go to the board of directors in Japan and I tell them what I'm going to do, which I call "The Great Lie," then I have 12 months to make it the great truth. Included in that is working with the large corporations that have lean technical challenges and trying to work with their R&D groups to find out what their needs are. Then I try to work with the engineering group in Japan to design equipment around those needs.

NG: How much time do you spend in Japan and the United States?

SW: I pretty much commute to Japan on a monthly basis, sometimes twice a month, sometimes I don't go for two months. I'll stay one day to six weeks, depending on what I'm trying to get accomplished. This week, I got

up Monday morning, flew to Seattle; had a meeting there Monday afternoon. I went out to dinner with the guys; I left yesterday morning; I flew back to [New Jersey] and had dinner last night with company people. I'm in the office today, but tomorrow I'll prepare what I'll need to depart for Japan on Friday.

NG: How do the Japanese people feel about their manufacturing being outsourced to the United States or China? They seem like a protectionist country.

SW: They're outsourcing also. They've got machine tool builders going to China.

They really don't care, because the dynamics in Japan are different than here. In Japan you have a society that is not reproducing itself. They have less people every year, so they don't have enough people to do the work.

Exterior Mitsui Seiki factory.

Outsourcing is an avenue that allows them to maintain control of the revenue stream in a society that's reducing in size. It's different than over here. Over here what you have is a lot of immigrants coming in; you have a growing population.

NG: Do Japanese business people have difficulty working with people from China and Korea?

SW: Not really. I think it's like any international business relationship. You have to break down the cultural barriers because the objective is to try to make money. There are some political issues that are on the table. In China people complain that the Japanese still won't apologize for the atrocities of World War II, and the Koreans are still looking for an apology because most of the "comfort women" were Koreans during World War II. But the Japanese are pretty good at bridging that gap in order to get into other countries to do business.

NG: Are a lot of the products we take for granted as being Japanese actually made in China?

SW: A lot of the parts are. The brand and the point of manufacture is never what you think it is anymore. A Mercedes SUV is made in Georgia.

NG: Are most of the sophisticated products made in the United States?

SW: Oh, absolutely. They don't have the military machine like we do here. They don't have aircraft companies like Boeing. They don't have companies that are developing new metal making material.

NG: Do see yourself as an American face of a Japanese company?

SW: Actually, I see myself more Japanese than American at this point in my career.

NG: What does that mean?

SW: It means I function more on the Japanese mentality than an American mentality. I think they see me more as a peer.

NG: How do Americans and Japanese differ in their approach to business?

SW: One thing is the length of time that one stays employed by the same company. Americans usually don't last much longer than six years at the same company. Japanese tend to hire into the company and stay there for their whole career.

NG: Are you a believer in that?

SW: I'm one of those guys. My view of the business is not next year or the following year, but 10 years from now, 15 years from now. The other thing is compensation. I'm paid, but I'm not paid remotely like an American executive would be in a similar position. I long ago gave up the money aspect [because] I wanted to be part of them. I wanted to prove to myself that I could make it in Japanese culture and in the Japanese corporation and become one of them. It was a personal goal.

NG: Can you explain where those Japanese customs come from?

SW: Well, the Japanese culture is a 3,000 year-old culture, and the strategies that they have developed culturally are strategies that allow them to go on hopefully for another 3,000 years. They have Bonsai trees over there that are thousands of years old that each generation of Buddha took care of. You're carrying on a lineage of the people before you. We're a 200-year-old culture, and basically very culturally immature. We're an immigrant society. We're the castoffs of the rest of the world.

NG: How do Japanese people think differently than Americans?

SW: Perfect example – first thing in the morning. Japanese walk in, sit down at their desk, and go right to work. Americans walk in and say "Hey, what's happening? Did you see the game last night?" From a Japanese perspective, they look at the American and think: What the hell is up with this guy, he spends his first 15 minutes bullshitting. He doesn't get to work, fools around, is slapping everybody on the back. Japanese guy comes in, bam, he's going to work. Why? Very simple. In Japan, they all come from the same culture and because of that, they all know what each other is thinking and feeling. They don't have to say anything. In America, we're all different. But what's perceived by the Japanese is: What's with these guys?

"They have Bonsai trees over there that are thousands of years old that each generation took care of."

NG: But do you really think they're all the same?

SW: I think that they think they are all the same. I think they come up through exactly the same environment in terms of their schooling. They wear exactly the same clothes in each class grade they're in. They are all taught the same way, the same things. They are all taking the same tests, and they all come from the same background in terms of their genetic makeup, in terms of the way they look, and in terms of the way they act. Now each person is an individual in Japan, but they are not taught to be an individual. They are taught to be a group. We are taught to be individuals over here. That's because we come from many different cultures.

Photo (left): Mitsui Seiki worker calibrating a spindle.

I have to teach Japanese people to look Americans in the eye when they're trying to conduct business. In Japan, you never look anybody in the eye. When I'm having a conversation with a [business associate] I look at his forehead or over his head or down at the table, because direct eye contact is aggressive. And in Japan, you can't be aggressive with your gestures. You can't point in Japan; it's disrespectful. So if you wanted to show somebody something, you open your entire hand like you're presenting it. Another example – when you go into a contract meeting and go through the points of the contract, the Japanese will be saying, "Yes, yes, yes." As an American, you're thinking: Oh, they're agreeing to all these points. What they're saying when they say, "Yes," is "I understood what you just told me." Same thing if you want them to say, "No." They will never say, "No." They just won't answer because saying, "No" is aggressive.

NG: How do you prefer their culture?
SW: What interests me is that the Japanese are not very creative, but they're very capable of enhancing something that's already been designed. I like their culture, yes. However, I also am very creative. So I have one foot there and one foot here. I ride between the two cultures. I think I would go insane if I had to just be in the Japanese culture. But when I'm over there I love it, but it does wear me out after awhile, because it's very restrictive.

NG: How do they see you?
SW: When I'm in a difficult situation with them, or in a situation that I need to win, let's call it, I become very Japanese in the way that I do that, and that's how I get the job done over there. I use my knowledge of Japanese culture to get them to rethink what it is I'm trying to get them to do. That's a very powerful tool.

NG: How's your Japanese?
SW: It's good enough. I know words and I can carry on conversations and understand what they're talking about, but there are a lot of subtleties going on that I don't catch and don't understand.

NG: My brother went to Japan while he was dating a Japanese woman here. He said there are certain bars where they don't allow non-Japanese people to enter. Can you explain that?
SW: When I go to those bars and am excluded, I get really tough with them and speak Japanese and embarrass them into letting me in, and then when they invite me, I refuse to go in. There's a couple of reasons they are afraid to let [Americans] in. Number one, they look at you as a foreigner and think you don't have the manners to go in. They're concerned about whether you'll be honorific or not.

NG: Do you fear Japan is losing its culture?
SW: It's radically changed in the last 30 years. It's not even a shadow of what is was when I first started going there. A generation has now grown up in affluence and the culture is going away. Ten years ago they didn't sell wine. All they drank was beer and sake, shochu and whiskey. Ten years ago you couldn't find a Starbucks; now you can't walk down the street without seeing one.

I am shocked by the Japanese women, who have such beautiful black straight hair – they're bleaching it now. It annoys me, but that's them. Their culture is evolving. They're becoming more Westernized.

NG: They're rebellious and more individualistic?
SW: They're becoming more individualistic. One social problems there right now is suicide, especially in the last 10 or 15 years. Bullying is also a big issue in Japan right now. They're bullying in preschool, in the younger grades of school and the older grades of

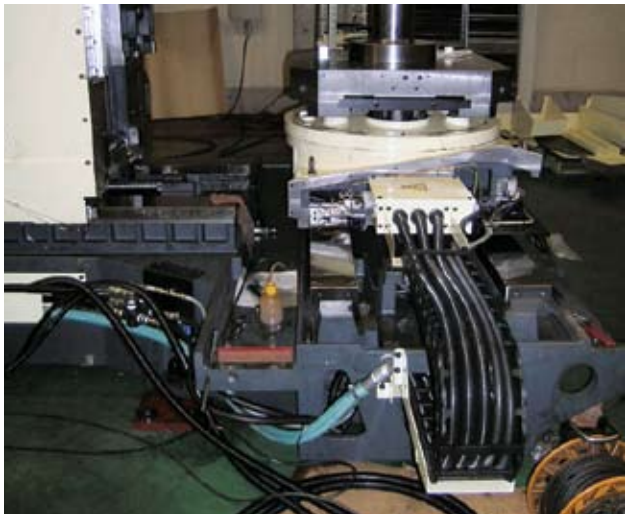


Photo (left): Inside Mitsui Seiki's Shinagawa, Tokyo plant. Photo (right): Detailed view of a Mitsui Seiki machine under construction.

school, and you get groups of kids just terrorizing other kids or individuals.

NG: There weren't bullies before?

SW: There really weren't, at least they claimed there weren't. I don't really know. But that's a big social issue there right now that I didn't see 10 or 15 years ago.

[Crime] is the other issue is that's becoming a problem. In Japan, if you commit a crime, there's almost a 100 percent conviction rate. If they think you did something, they literally take you in a room and beat you until you say you did it. Just don't be in the wrong place at the wrong time, or most likely you'll spend time in prison. And when you come out of prison, you are completely banished from your family, friends, and society, not like in the United States. So Japan was a very safe country as long as you [stayed] within the lines of the defined laws. However, in the last 5 or 10 years, with the immigration of the Chinese and Koreans, the crime rate is starting to go up. And those traditional things of 100 percent conviction and incarceration and banishment are going away.

NG: What does "Mitsui Seiki" translate as?

SW: Seiki means "precision" and "Mitsui" is a family name. So 1,200 years ago, the Mitsui family started a trading business. They were trading rice, and it grew into Mitsui & Company. Mitsui Seiki is a machine tool manufacturer in the Mitsui Group, which owns thousands and thousands of companies all over the world.

NG: What are you upbeat about for the future of manufacturing in Japan, Mitsui Seiki, and Japanese culture?

SW: I think much of the Japanese culture will be gone in 50 years, and that's not a real upbeat thing. I think the Japanese are our best allies in the world. I think that's upbeat, and I think the reason they are is because they've learned who we are and what we are. Although they dislike the individualistic approach to a society, I think that they appreciate what individualism can do for them as a culture if they can integrate it into their culture without fragmenting it to the point where it doesn't work. I think in terms of manufacturing, the Japanese will continue to define processes because that's what they're good at and I think that's what they're educated at. However, I think manufacturing will continue to be reduced and that they will pick up financial services, banking services, those kinds of things as they evolve. But I think maybe 500 years from now, there will still be a piece of Japanese culture in Japan.

NG: Thanks, Scott.

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Life After Sherwood

The personal aftermath of being let go

By Jessica DuLong

after sherwood

Losing a paycheck is bad enough. But getting laid off can cost more than just the sum of your wages. Last year, Harsco Corporation shut the doors of its Sherwood precision valve plant in Lockport, New York. When I heard that people with decades on the job had been put out of work, I was curious about the intangible consequences of shouldering a late-career layoff. I started asking questions and heard a familiar story: a big company had muscled in on a longstanding machining firm shop and ruined the family feel, challenging the workers' sense of shared purpose. I heard another story, too: about a medium-sized company so stuck in its status quo, business-as-usual mentality that inefficiencies continued unchecked, until the big conglomerate came in and cleaned house – though even that didn't solve the problem.

There are as many truths as there are tellers, of course. Sometimes people's feelings about what happened tell us more than the facts of the case ever could. In this case, the disenchantment, resignation and sense of betrayal shared by the workers I spoke with tell a story at least as old as the turn of the century, when the first efficiency expert, a man named

Frederick Taylor, set out to micromanage every movement of the machinists in his shop. Taylor's system was based on the premise that wages were workers' sole motivator. But today's social scientists recognize that work can offer much more than just economic gain, including a sense of belonging, accomplishment, and personal identity, as well as opportunities for social interaction. As Sherwood's newly unemployed scrambled for direction and searched out new jobs, they gained insight into what work meant to them. These are their stories.

Jim Michaels, 58

"That's it. Right there. Wow." Jim Michaels peers through the windshield of his pickup at an unremarkable, mostly white building with several boarded-up windows. His "wow" comes out as a mix of awe, reverence, and reconciliation. It's been months since he's been here, and he makes a point to register the changes, then heads toward the front of the building to look for the sign. A slight note of something like panic rises as he rounds the corner of Grand Street. "They took it down. They took down the sign," he says, before catching sight of it behind the flagpole. The letters, all in lowercase, spell out: Sherwood, a Harsco Company. As Michaels continues down a narrow alley bordered with train tracks, he points out the different work areas, now hidden behind locked doors. "That was my division. The automatics. I worked there for 26 years."

Until Sherwood, Michaels had never had a career. He'd worked a slew of different jobs: as a Navy hospital corpsman in Vietnam, as a laborer in a foundry that made train parts, in termite re-inspection and pest-control sales, and as a pit truck driver in a stone quarry. But they were just "little bits and pieces jobs," and he was ready for something more solid. In 1980, he walked into Sherwood and announced, "I'll do anything." He was 31 years old when he got a job there as a materials handler, moving around stock and parts skids, for $4.77 an hour. "The first day I started there – I can remember this so vividly – I said, 'I like this job. I want to retire out of here'."

Not long after he was hired, Michaels moved up into the automatics department. He was working in second operation on Brown & Sharpe machines when the Davenports caught his eye. After some hands-on training from a coworker, he settled in as a Davenport specialist. It was a family place, Michaels recalls. "Everybody knew everybody. Even office help would come down and say, 'Jimmy, how 'ya doing? How's things going out here on the floor?' They weren't afraid to go out onto the floor. You knew them by their first name. It was a close-knit group of people." Michaels says the community atmosphere encouraged him to work hard. "You didn't mind applying yourself. 'Sure, I'll do it,' you'd say. 'I'll go that extra 105 percent.'" But five years later, everything began to change.

In 1985, Sherwood was purchased by Harsco Corporation, a publicly traded conglomerate with sales now topping $3.5 billion. And that, says Michaels, was when the "bean counters" took over. "I don't know if you want to call it corporate greed, but everything started to go down in the dumper after that," he explains. "I remember all of us talking, saying it will either cure us or kill us. We knew we were being bought by a big, big company. The worry was losing the family atmosphere and becoming a number." Sure enough, when the new ID cards came out, there, below his picture, and beside the barcode, printed in black on white, was Michaels' number: 956584.

The worst part, though, came the day his friend from the sales office waved him off instead of stopping to say hello. "He said, 'Jimmy, I can't talk to you,'" Michaels recalls. "They'd gotten a memo from Harsco, saying they couldn't associate with the blue collars on the floor.' That kind of hurt a little bit. I was used to the camaraderie, the friendship." From that point forward, the culture of the place changed. The family feel, he says, had been replaced by a push to produce. "It turned into a numbers game where you had to get this many parts out in this length of time. We were running the machines so fast that they were literally blowing up before us. Where once we'd run 2,000 parts in an hour, we now had to run 3,500. We'd end up with a lot of downtime because the

> "Sometimes people's feelings about what happened tell us more than the facts ever could."

machines couldn't handle it." Profits slumped. Michaels got word in May of 2005 that they were closing the screw machine division.

When Michaels was laid off after 26 years with the company, he was making $18.75 an hour. "In another four years I could have bailed out of there with a good retirement, a nice 401k, and got a part-time job somewhere," he says. But that wasn't to be. For a while he thought about going to school for CNC machining, but it was a hassle running back and forth to the local community college. "It started to be a little stressful. At 58 years old I figured I don't need this kind of stuff."

Then around Thanksgiving of 2006 he heard from a Sherwood coworker. Would Michaels be interested in running the Davenports at the shop where he worked? That's how he got the job at Ashdan Screw Machine Products, a four-man job shop on Lockport's Simond Street, where several of Sherwood's machinists had found work. Michaels accepted a job for $12.65 an hour – a more than $6 pay cut – but says if he can stay there until he's 62 or 65, he'll be happy. "It's laid back, there's no stress, and it's a friendly atmosphere. It's just a good place to work."

Larry Newman, 57

When Larry Newman left Sherwood in June of 2006 – three months shy of his 30th year – he'd been with the company longer than anyone. His best days were spent in the tool room making tooling for the automatics department. Newman started at Sherwood as an A-level tool grinder, and embraced the challenge of doing specialized work. "You made a tool that would manufacture, maybe, a million parts in the screw machine department. It was satisfying." Sherwood felt like a step up from his previous job at Niagara Cutter, not only in terms of pay, but because he did all specialized work. "In my department, they were all skilled tradespeople. They were all there to do a good job. That was their career. They put forth a lot of effort, and everyone was willing to help each other."

Newman advanced steadily, working as the lead person in his department for 10 years before being promoted to supervisor in 2001. His supervisory position gave him more of a top-down view than most of the workers had from the shop floor, and what he saw wasn't encouraging. "After Harsco bought Sherwood, things didn't change much for the first couple of years. Then slowly, as the profit margin fell and sales declined, the corporate office got more involved." They replaced the management force, he recalls. And once they did, "the company went from turning a little profit, to no profit, to being in the hole."

As conditions worsened, he looked for other jobs, but nothing seemed to fit. "I could see the place downsizing and getting rid of product lines," he explains. "They were going to close this and that, and outsource all the machining. I thought, 'If they're going to do that, what am I going to do?'" The final straw came when major layoffs began. "You hate to see anybody lose their job. That's when I bailed," he says. "When you start to see people with 20 years on the job... when it got down to the old-timers... it was pretty devastating. I didn't want to deal with it. I didn't want to have to march people out the door and say, 'Your job is done.'"

Soon enough, he marched himself out the door and into a position at Myles Tool Company in nearby Sanborn. He went to work for Myles Barraclough, who'd actually been his boss 30 years before, when Barraclough's fledgling business was still operating out of his garage. Since then, the business had grown into a 42-person shop, run in a 45,000 square-foot facility. Newman was hired to develop an inventory management system for the tool crib. He says he loves the work, despite the fact that he took a 20 percent cut in pay. "It's different from what I'm used to. It's a growing company and there's lots of enthusiasm and growth potential here," he says. "I came in here with a few projects, things I had to accomplish, and I think I've been good at it. I don't know how long I'll stay here, to be honest. Maybe I'll retire. Visit my son up in Gloucester, Massachusetts. Do some deep-sea fishing. Bump elbows with the Yankee fishing fleet."

Frank Henley, 49

"From the time there was a machine, there was a machinist in my family," says Frank Henley. "But none of us owned our own shop." Until now, that is. Since Henley left Sherwood last August, in what he calls the "second to last wave of layoffs," he's been running his own business, F&D Machine Parts, Inc., in Medina, N.Y. It's a risk he might not ever have taken if he still had his old job.

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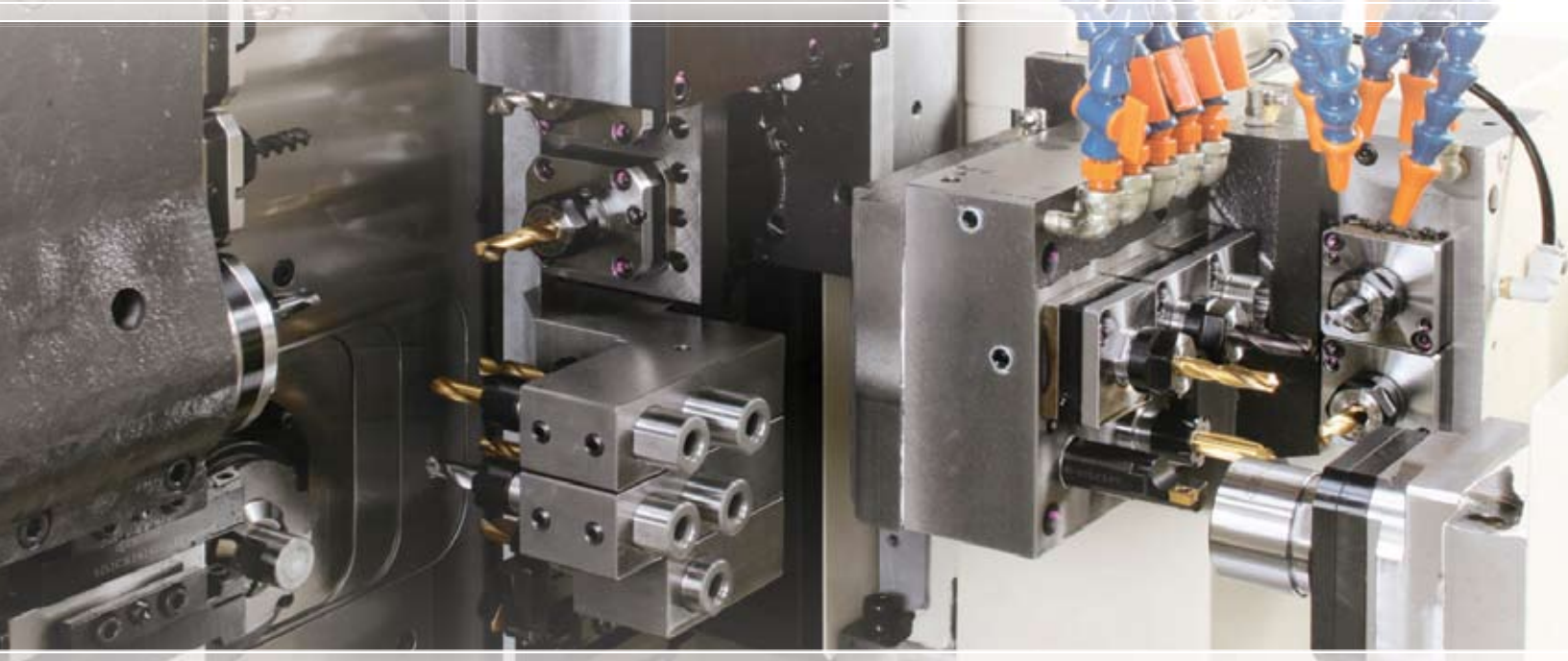

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Henley started at Sherwood in 1992, when he was 33. Before then he'd been working in a "nice, clean CNC job shop," he recalls. He liked the machines and the environment, but at $15 per hour, he'd reached a dead-end in pay. When a cousin told him he could make upwards of $20 at Sherwood, he applied. "All I had was CNC experience. I liked the idea of learning about more machines." By then, Harsco had owned the place for seven years, and the bureaucratic changes were already in full swing.

Henley says the biggest problem with Sherwood was a shortage of skilled labor. "Out of 50 guys there, there were 10 guys who knew what they were doing," he explains. "A handful of guys kept the place going. I saw guys run thousands of dollars of scrap, week after week, and still keep their jobs. It was an inefficient shop." By and large, he says, tool breakage was caused by operator errors. The downtime resulting from constant machine repairs, he says, cost the company plenty.

Still, Henley felt betrayed when he lost his job. "I left a job I'd worked for 15 years. I was there for a career. I was in shock for months." For a while, Henley didn't know what to do. "I had job offers up in Rochester, but that's 50 miles each way." That seemed too far, and the pay wasn't as good. "I felt like I was too old to make a transition." But he'd talked about running his own business for years, and his wife encouraged him to take the layoff as an opportunity to finally do it.

"I didn't want to have to march people out the door and say, 'Your job is done.'"

Though it's been less than a year, Henley says his shop is doing fairly well. He works hard to drum up new work, which he gets over the Internet, through email, and by going door-to-door. He estimates he's making the equivalent of a couple dollars less an hour than he did at Sherwood, but almost everyone he knows who used to work there has taken a pay cut at least that steep. "I could use more work over at my shop," he says, but recognizes that it takes time to build a business. What he likes most about running his own operation is the ability to call the shots, and do things the way they're supposed to be done.

Christine Yotter, 56 and Scott Shulock, 44

These days you won't find Christine Yotter or Scott Shulock anywhere near a machine shop. It's been almost 10 years since they left Sherwood to embark on a very different venture: One-Eyed Jack's Smokehouse Grill – authentic, southern-style Bar-B-Q, "right here in Niagara County."

A rich, smoky smell permeates the dining room at the corner of South Transit and Robinson. The menu informs diners that the smoldering hickory and white oak gives pork and chicken a pinkish hue, reassuring them that "if the meat falls off the bone, it's done." While you wait for your wings, ribs, or pulled pork to come steaming from the kitchen, there's plenty to look at in this casual, family joint – from the bleached steer skull above the fireplace, to the license plates and 45s on the walls, to the galvanized buckets used as light fixtures, their handles strung with tiny plastic flying pigs.

Though it seems like a lifetime since Yotter and Shulock left Sherwood, they agree the time they spent there taught them a lot about running a business – even one as different as a restaurant.

Yotter was 28 when she started at Sherwood in 1979. Hired as a screw machine operator, she soon transferred to assembly, where she was promoted to lead person. Before Harsco, she says, the work environment was "fantastic." "People loved it. Everybody worked together to make it a better place. Everybody was involved." In particular, she liked the fact that there weren't rigid class divisions between employer and employee. "The president would come down and talk to people," she recalls. "He would even run jobs." Like so many of her co-workers, Yotter had planned to retire from Sherwood. But that changed after 1985. "When Harsco took over, everything just became more corporate," she says. "You lost that family work atmosphere. It became more of a 'This is your job, don't get involved, shut up and do it' kind of place."

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By 1997, Yotter was more than ready to leave. "I was actually to the point where I was physically ill going to work." She says she found herself weighing the cost of feeling sick against her paycheck and four-weeks vacation. The $17 an hour she was making didn't matter anymore. She didn't care about the money. "You come to a point when you say, 'What do you really want?' I was 48 and I thought, '20 years until retirement... Do I want to start over again?' Actually, yeah, I did. I'd just had enough."

For Shulock, the breaking point came when he realized he felt invisible. Harsco already owned Sherwood by 1992, when Shulock started at age 28. He began as a temp in the assembly department, where he made $5 an hour, but was hired full time within a couple weeks. Determined to make more money, he worked midnight shifts so he could go to night school for machining. "My goal was to get a job in the automatics department as a machine operator." But he ended up accepting a promotion to quality assurance at $12 an hour, instead. His position gave him a new perspective on the company: "Dealing with upper management from time to time, and dealing with the floor almost constantly, I could tell that the left hand didn't know what the right hand was doing. I think everybody had good intentions, from the floor all the way up the president, but they just couldn't seem to be able to tie it all together."

> "You come to a point when you say, 'What do I really want?' I'd just had enough."

Shulock decided to quit after conducting a secret two-month experiment: "One month I busted my hump and did everything I possibly could. The second month I sat in the office and played video games. Nobody knew the difference. I thought, 'Why am I here? I don't get commended on a job well done and I don't get reprimanded if I don't do anything. I must not exist or something.'"

Shulock and Yotter both wanted out. But what would they do for a living? Inspiration struck in the summer of 1997, while they were driving out to a nearby Indian reservation to get tax-free cigarettes. They drove past a restaurant with a For Sale sign on Main Street and Yotter said, "Hey, why don't we open a restaurant?" So they did.

Yotter was confident she could handle the financial and management side, and Shulock had cooked barbeque for five years at a Florida restaurant. "We thought about as many angles as we could," recalls Shulock. "We got probably about 85 percent of them covered between the two of us. The other 15 percent, we're just going to have to wing it." In May of 1998, after taking some classes in small business and restaurant management, they quit Sherwood and opened One-Eyed Jack's.

Once they launched their new business, they were surprised to realize how much they'd learned from Sherwood. In managing the restaurant, Yotter works hard to include employee feedback in decision-making. "Input is important," says Yotter. "If you start telling your employees, 'Go do your job. We're going to take care of this,' they can get to the point of feeling, 'Why should I care?'"

Shulock has gained a new perspective on how things must have been for Harsco managers in charge of layoffs. "I learned about the necessity of dehumanizing the workforce." Now that he's in a position of authority, he finds it "very painful" to make decisions that affect people's futures, but acknowledges that sometimes it just has to be done. "We've had to lay off a couple managers," he explains. "When you decide you have to eliminate a position, you can't keep somebody on just because they're a good guy, even if they're doing a good job."

"The biggest thing I learned was the importance of structure and organization," says Shulock. "I had always been very rebellious in my life. I'd be the first one to thumb my nose at anything that was establishment. But during the process of getting ISO certified, I learned the wisdom of setting goals and developing a game plan to achieve those goals."

Epilogue:

Harsco reported second quarter 2007 profits up 44 percent. On the home page of their website, they invite applicants with the following paragraph:

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ACMES
1-1/4" RA6, , 1974, thdg., pickoff
1-5/8" RBN8 - 1994 (2)
1-5/8" RBN8 '81 (2)
1-5/8" RB8, 1980, rebuilt 2002. pickoff
1-5/8" RB8 thdg., pickup '68 (2)
2" RB6, 1979, Direct Drive Rebuild (2)
2" RB6 collet chucker, 1980
2-5/8" RB6- pickoff4" RB6, 1975

GILDEMEISTER
GM-20, 1993

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INDEX CNC MACHINES
Index 42mm ABC, polygon '96
Index GFG, 1987 (3)

SCHUTTE
SF 51, 1979
SF 67, 1973
SE 16, 1968 (2)

SWISS-CNC SLIDING HEADSTOCK
Citizen L-20, 1998
Citizen L-25, 1996
Tornos A10A, 2005

NEW BRITAIN
Model 52, 1981, thdg.
Model 62 2-1/4" 6sp., 1975, heavy thdg.
Model 62 2-1/4" 1967

DAVENPORT
3/4 Davenport, 2006
3/4" thdg., pickoff, longbed (4)
3/4" chucker, 1991 (4) Tamer
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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 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.

Dear Shop Doc,

We are having trouble getting a reasonable finish on this 1018 part we are running on an Acme. The bar stock is 15/16 diameter 1018 steel. The part is 3/4 long with profiles as deep as 1/4 inch on the fully turned OD. We have only 10 days to deliver these parts and the delivery for carbide is two to three weeks. Even if we could get the carbide sooner it would not be economical since this is only a 1,500 piece job. With the high speed tool we are using, the micro is as high as 250. A 12 degree rake improved the finish slightly but we are still having problems with the material welding to the tool. We also tried a higher rake, which gave us dimensional problems with our part. This high micro does not give the part a very crisp appearance and we don't feel the customer will accept this.

Unfinished Business

Dear Unfinished,

Send the tool out for a tin coat. The tin coat will stop material from welding to the cutting edge and give a better finish and wear resistance. Make sure the tool is ground before sending it out for the coat in order to try to run the whole 1500 piece job without having to sharpen the tool. Coatings work at their best before the tool is ground on top. After a grind, the finish won't be quite as good but will still be much better and manageable. The cost is a small price to pay compared to the expensive cost of custom carbide tooling along with the long lead times. For jobs like this your delivery may be the determining factor in whether you get the job or not.

Weston Szpondowski
Wyandotte Industries

Dear Shop Doc,

We have a shop with 70 Acme multi-spindles, but we have no central system for chips and oil. In the course of the machining operation, our coolant oil mixes with the hydraulic oil. We are getting different results on similar machines using the same tooling. Is the mixing of the oils the cause of this? What should we do?

Central Nervous System

Dear Central,

It's hard to answer your question because you don't say what specific problems you're having with your parts, but whether the problem is tool-life, size variation, concentricity, or surface finish, the first thing to do is check the spindle speed and feed, then coolant, tooling, machine condition, part capability, and the operator – in that order.

Although it's not what I would check first, dirty cutting oil getting into a machine's lubricating oil or coolant oil is bad. With dirty lubricating oil you can expect a higher operating temperature which has negative effects on parts. Dirty lube oil or coolant oil can cause bearing surfaces to go bad, tear clutches, damage hydraulic valves and the coolant pump. You should make sure you don't have a bad gasket, cracks in the casting, dowel pins missing, or screws missing such as the set-screw or cap-screw. Openings around the shaft or an unsealed cam drum are often the culprit of your coolant oil becoming contaminated. Too many people don't seal the cam drum after they change cams.

So make sure your cutting oil doesn't get into your coolant or lube oil, if it does, you must seal your cracks with silicone and plug your holes. But remember, your problem could very well result from a different cause.

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

next

BY NOAH GRAFF

Will there ever again be a book series with the success of *Harry Potter*?

As of August 2007, the Harry Potter series had sold over 350 million books worldwide, ranking it third highest in book sales of all time, only behind the Bible and The Thoughts of Chairman Mao.

(Businessweek.com 2005, cnn.com)

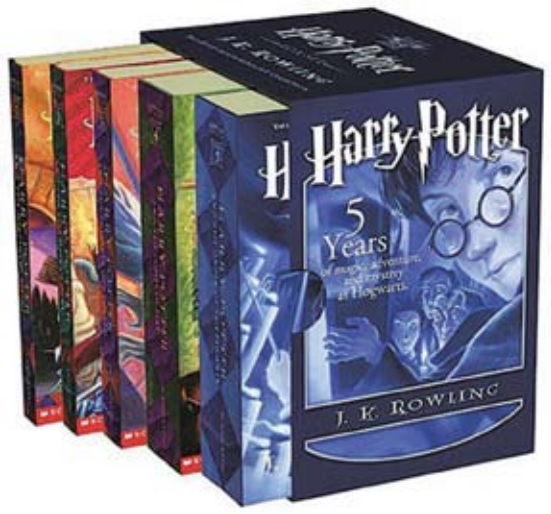
When we ask whether there will ever again be a phenomenon "as big as *Harry Potter*," we're asking two questions: Will any fictional character ever be as widely consumed as *Harry Potter*, and second, will any author ever make as much money as J.K. Rowling? The answer to the first, I would bet, is yes. Mass communications and global increases in wealth will accelerate the growth of such global phenomenon; sometime in the future, there will be a character bigger than *Harry Potter*. But will the author make money on it? That's harder to tell. Easy copying is destroying the profitability of the music business, and books and movies are probably close behind. I'm skeptical that the next *Harry Potter* can emerge before pirates cut off the revenue stream at the knees.

Megan McArdle
Freelance journalist

Absolutely. Most of all, the *Harry Potter* series is a social phenomenon. It's not mainly about the books. It's about kids – and often adults – sharing a common reading experience. We crave this kind of social connection – that's what Oprah's Book Club is about too. We like to look forward to the same books, read them at the same time, and talk about them afterwards. If you took these same kids, put them on a desert island, and just gave them copies of *Harry Potter*, with no further information or explanation, most of them wouldn't be so impressed.

With the current *Potter* series now over, we are looking for something else to latch on to. We may not find it right away, but when we do, the world will be wealthier and have more readers. Some other book series will trump the popularity of *Harry Potter* – it is simply a question of when.

Tyler Cowen, Professor of Economics
George Mason University



"It's about kids – and often adults, sharing a common reading experience."

The success of *Harry Potter*, although unparalleled by any fictional book series to date, will not be the last of its kind. The rise of the Internet has created "network externalities" associated with reading, making what was once considered a solitary activity more like going to the movies or watching a baseball game. Network externalities exist when the satisfaction derived from consuming a product increases when others consume it too. Potter websites, online chat rooms and video games offer fans the opportunity to extend their enjoyment and magnify the network long after the book has been read. While the success of the *Harry Potter* series certainly required creative storytelling, a loveable main character and an engrossing plot, the explosion of "Potter-mania" was a product of the Internet age. The *Harry Potter* series will soon be gone, but something else will surely replace it, and soon.

Kevin A. Hassett
American Enterprise Institute

the facts:

The *Harry Potter* series has been translated into 65 languages as diverse as Ukrainian, Hindi, Bengali, Welsh and Vietnamese, placing Rowling among the most translated authors in history. **http://harrypotter.warnerbros.com/**

Harry Potter is attributed to the creation of a **"Children's" *New York Times* Best Seller list in 2000** when publishers complained of the number of slots on the regular New York Times Best Seller list being held by *Harry Potter* and other children's books. **cnn.com book news, July 21, 2000**

All five Harry Potter movies are on the list of the top 50 highest grossing films worldwide. There are presently six Harry Potter video games, and a musical based on the series is currently being planned. **www.wikipedia.org**

Author J.K. Rowling announced in an interview that she "probably will" write an encyclopedia *of the* Harry Potter *world, including details of what happens to the other characters, who the new Hogwarts headmaster is, and more.* ***MSNBC.com***

one on one

Interviewed by Noah Graff

Mad Mike is the head car customizer on the MTV show *Pimp My Ride*, a reality show where people get to have their ugly, old beaters restored and "tricked out" with ridiculous, incredible features such as a 42 inch plasma TV, a microwave, and a purple paint job. He's been working on cars for over 20 years and has customized cars for several celebrities.

Noah: When did you start working on cars?
Mad Mike: I was 14- or 15-years-old. I learned from reading car audio magazines as a kid, and then I had a couple guys in the neighborhood who [taught me] – a guy named Uzi, and Corn-ball, who was one of the [stereo] installers for basketball players and the high profile people in Compton [L.A.]

NG: Who comes up with most of the ideas for *Pimp My Ride*?
MM: It's a group effort – we all come up with the ideas. I just organize it and make sure it happens correctly.

NG: What kind of cars do you have in your driveway?
MM: My '76 International Scout, my Tahoe, my Honda, my Pacifica, and my motor home. They're conservative but unique. Like the one I'm in right now – I have three cell phones, my laptop with high speed Internet, Direct TV, and the windows smoked out black. It's pretty fast too.

NG: What are you doing in your car right now?
MM: I'm checking my emails. I just got an iPhone. I'm watching Direct TV, and I'm also drinking tea and eating my cookie. I do it every day, and I don't have my seatbelt on. I'm going about 85 miles an hour.

NG: What's the most ridiculous thing you've ever done to a car?
MM: Put a TV in the steering wheel – which we got a $15,000 fine for.

NG: Tell me about an idea that simply went bad.
MM: Every idea goes bad. Everything wonderful goes bad. We put a waterfall in one of the first cars I worked on and I couldn't get it filled because the car vibrated and the waterfall just fell apart. When you get water in your electronics it's pretty crazy.

NG: One of my favorite episodes on the show was when you put the ping pong table in the bed of a truck.
MM: The ping pong table was one of the worst nightmares ever, because you had to saw it down. You couldn't have it regulation size because the bed of a truck is not square, it's like a trapezoid – but a ping pong table is square.

NG: If you could have coffee with anybody living or dead, who would that be?
MM: Albert Einstein or Thomas Edison. Einstein discovered something that nobody's ever been able to figure out, and Thomas Edison discovered something that we still use today. All that people are doing now is redesigning the things people have already thought of.

NG: Have you done cars for a lot of celebrities?
MM: I've built like 70 cars for Shaquille O'Neal. The seat always has to be moved back about two feet, and then right above his head has to be a set of tweeters in every car – he loves crystal clear music. We also did the "I'm Sorry Car" for Kobe [Bryant] when he had sex with that young lady. It was some weird car like a big '46. She always wanted an old car restored and it had diamonds all in a [crazy] cluster.

NG: Have you been carjacked before?
MM: Kind of, but not really. People have tried to steel this truck I'm driving – I think three times already, but they couldn't get it. I've had one car stolen in my life and it blew up on the freeway. I have the ultimate antitheft security system in my car, and if you're dumb enough to steal my car, whatever happens to you happens. May God have mercy on your soul.

Tomorrow's Machining World

Photo: PhD candidate Samved Bhatnagar, left, and mechanical engineering Professor William Endres use a CNC lathe for tool life testing in the Advanced Technology Development Complex at Michigan Technological University. (Photo courtesy of Michigan Technological University.)

By Barbara Donohue

2017—Your business over the next decade

As someone working in the machining industry, you've experienced competition with other shops within the U.S. and the threat of your work going offshore. Your customers want greater precision and lower costs, and, oh, by the way, more frequent delivery of smaller quantities. And on top of that, you can't find staff to run your machines. Squeezed from all directions, what do you need to do to stay competitive and stay in business?

Here are some other perspectives on the future of machining from people in both academia and industry.

Same objectives

Your goals will be the same as they have always been: increase production, decrease cost, increase precision, decrease defects.

Among machine tools, the progression will continue toward faster, more precise machines, incorporating more machining capabilities. Turn-mill machines will become more and more popular (see September *TMW*). Machine tool manufacturers will increasingly analyze stresses and track temperature rise to achieve just that little bit more precision. More rigid machines will allow increased cutting speeds without sacrificing accuracy.

Faster setup, faster changeover, faster cutting. Larger capacity tool magazines. More pallet systems. Auto-load/unload. Machine monitoring. Unattended operation. Automated measurement. Many steps toward taking labor cost out of the product.

Which, as it turns out, is a good thing for American shops. It helps cope with the lack of experienced machinists and operators, and also makes it more possible to compete with shops in low-wage foreign countries.

Large companies that used to do all their own machining will increasingly outsource the work. This can be good news for you, since "out" could be to your shop, and not necessarily to China. New computer-based systems are becoming available that help make outsourcing work.

You will see many new products and technologies, of course. And some that are in limited use now will become commonplace over the next several years.

Tooling catches up

As spindle speeds go up and cutting speeds get higher and higher, tools will need to keep pace, said William Endres, associate professor of mechanical engineering, Michigan Technological University (MTU), Houghton, Mich. His research at MTU and in his business, Endres Machining Innovations, includes investigating cooling, chip breaking and new coatings to increase tool life. New coatings will not just be more layers, he said, but will be substantially different. One cooling technique he is investigating uses ordinary tap water flowing through micro passages within the cutting insert.

In addition to incremental improvements in cutting tools, look for radical new designs, like the rotating-insert tools that are now available from Rotary Technologies Corp. These tools have round inserts that rotate during cutting; this reduces machining forces and can extend tool life.

Besides upgrades of the machines and tools, many of the upcoming changes will involve machine and part data and the software to make use of it.

Making connections

Today, every manufacturer, whether of machine tools or measurement instruments, seems to have its own proprietary electronic communications format. It would make life in the machining world much easier – and potentially more profitable – if all the different devices could "talk" to each other.

Photo Above: and Page 56 LOCKHEED-F-35-JSF. The Advanced Integrated Mathematical System (AIMS) is being used in the manufacture of the JSF F-35 fighter aircraft from Lockheed Martin. **Photo courtesy of Lockheed Martin Corporation.**

LOCKHEED-F-35-JSF

how it works

To fill this need, the Association for Manufacturing Technology (AMT), working with technical experts at University of California, Berkeley, is developing an open software standard for passing data among the machines, instruments and other devices likely to turn up in the machine shop, according to Paul Warndorf, vice president for technology at AMT, McLean, Va. The new standard, MTConnect, will be an open, freely accessible way to get data out of the machine. Your CAM package or other software on your network can use the information available from the shop floor, such as spindle time, temperature rise, cycle times.

"Where MTConnect fits in: a lot of companies have a lot of interest in characterizing how their process is working on the shop floor," said David Dornfeld, professor of mechanical engineering at UC Berkeley, who is working on the project.

In the future, machine tools will be network compatible, said Daniel Frayssinet, CEO, Esprit/DP Technology Corp., Camarillo, Calif. "Plug into your LAN [local area network] and your machine will connect itself to the network." Think back 15 years, he said. Remember what it was like to connect a printer to your computer? You had to load a special printer driver. Then along came USB (universal serial bus), and "Now, you buy a printer and plug it in," Frayssinet said. In a similar fashion, machine tools will use a similar open communications standard, so all your machines and all your sensors can communicate easily over your computer network.

Will it fit? Verifying parts remotely

As large manufacturers outsource more and more parts to more and more locations across the country or even around the world, a key to making this work will be control of dimensions so that when parts come in, they're right the first time and fit together properly.

The Advanced Integrated Mathematical System (AIMS) software improves communications and collaboration between an OEM (original equipment manufacturer) and its suppliers to help make global sourcing work, said Troy Niehaus, vice president, AIMS business unit, Metronor, Inc., Seattle Wash. AIMS was developed by the Boeing Company in the U.S. and the Metronor Group, Norway.

It's a challenge to exchange measurements and other data with suppliers, who are all working in different places with different hardware and software systems, Niehaus said. However, AIMS is "hardware and software independent and helps to insure integrity throughout the entire dimensional management process."

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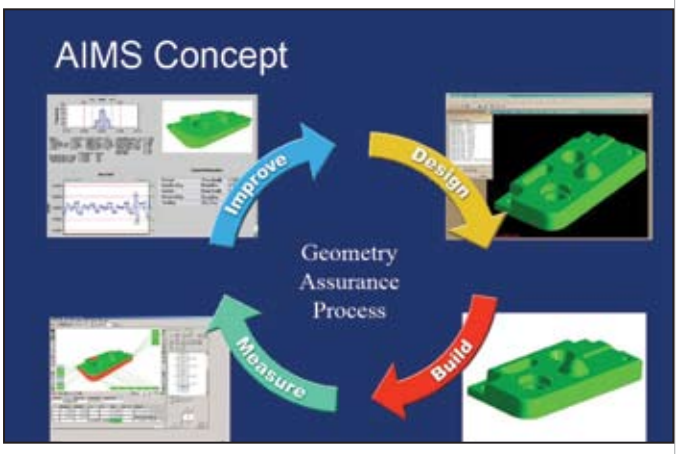
Eighty-five percent of metrology companies offer AIMS-compatible software upgrades, Niehaus said, so manufacturers can use their existing measurement equipment to communicate the data in a standard AIMS format.

Starting with the CAD files, AIMS allows the OEM to specify critical dimensions and set up inspection procedures. This information goes to the suppliers, who perform the needed measurements at their sites. The measurement data is incorporated into the file and transmitted over the Internet back to the OEM, who can then verify the parts before they ship.

AIMS is already being used by Lockheed Martin on the JSF F-35 fighter aircraft project and in a number of projects at Boeing, Niehaus said. Look for software tools like AIMS to come into widespread use over the next decade.



AIMS concept **(Illustration courtesy of AIMS business unit, Metronor, Inc.)**

Learning on the job

With the retirement of many machinists and loss of technical school training programs, staffing shortages will continue to plague the US machining industry.

In addition, "there's a technology gap," said Rod Jones, chief learning officer at Mori Seiki University (MSU), Rolling Meadows Ill. New staff needs to learn how to operate the machines, of course. But even experienced operators, programmers and maintenance techs may not know the latest and greatest features of a new machine, so they can't take advantage of all its capabilities. This could mean the machine won't be as productive as it could be.

Mori Seiki University is developing interactive online training classes for basic and intermediate learning, both specific to Mori Seiki machines, and general subjects such as print reading. MSU has just introduced its first "Education-On-Demand" online learning module for a Mori Seiki machine, with more to follow, Jones said. Online training is available round the clock, Jones said, and employees can work through the short modules at their own pace. It is an effective way to provide the ongoing training required by ISO 9000 and other standards, he said.

Your company can have its own customized computer-based training created by companies such as Oxygen Education, Indianapolis, Ind. In the next few years, companies are likely to depend more and more on this type of training to keep employees' skills up to date.

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Help on the machine

Another way to help make the most of available staff is computer-based help to guide them in their work space.

Mechanical engineering students at Worcester Polytechnic Institute (WPI), Worcester, Mass., create designs and then machine all the parts themselves, said Torbjorn Bergstrom, operations manager of the manufacturing laboratories and an adjunct professor at WPI. A semester or more may elapse between when students take their machining class and when they're making parts, he said, so the machining lab has a quick guide on computer available at each machine to help them get up and running.

Bergstrom expects that approach to become standard in the industry. He can see a computer next to each machine offering guidance through setup, as well as operation and troubleshooting assistance, with instructions and visual information. "If the surface of the part looks like this, turn this knob." Less experienced operators will be able to more safely run the machine and turn out good parts.

Look for this type of on-location help system to become commonplace. What else are you likely to see on the training front in the next few years? "Virtual reality," said Jones of Mori Seiki University. You'll be able to put on virtual reality goggles and see the machine in front of you in three dimensions, and to interact with it," he said.

Software that thinks

Expect smarter software that can read the machine and part conditions, anticipate problems and then instruct the operator what to do.

Since cutting tools wear and break, ordinary statistical process control (SPC) methods don't apply well to the machining process, according to Stephen Birman, president, High Tech Research, Inc., Deerfield, Ill. His company's Micronite software provides machining process control, including real-time data analysis and decision-making capability. Specifically designed for the machining process, Micronite analyzes part dimensions, and machine and tooling data, then determines whether there is, or soon will be, a problem. If so, it tells the operator what to do – make an adjustment or change a tool, for example.

Much of what will keep you competitive in the future are the same good business practices you've used in the past. In addition, you will be able to count on new technologies in machines, tools and especially software to help keep the orders coming in and the parts going out.

For more information:

Resources:

AIMS:

http://www.metronor.com/AIMS/In_use.html

Association for Manufacturing Technology:

www.amtonline.org

Endres Machining Innovations:

www.endresmachining.com

Esprit/DP Technology Corp.:

www.dptechnology.com

High Tech Research, Inc.:

www.htrmicronite.com

Michigan Technological University, mechanical engineering:

www.me.mtu.edu

Mori Seiki University:

www.moriseikius.com/MSU

MTConnect:

www.mtconnect.org

Oxygen Education:

www.o2ed.com

Rotary Technologies Corp:

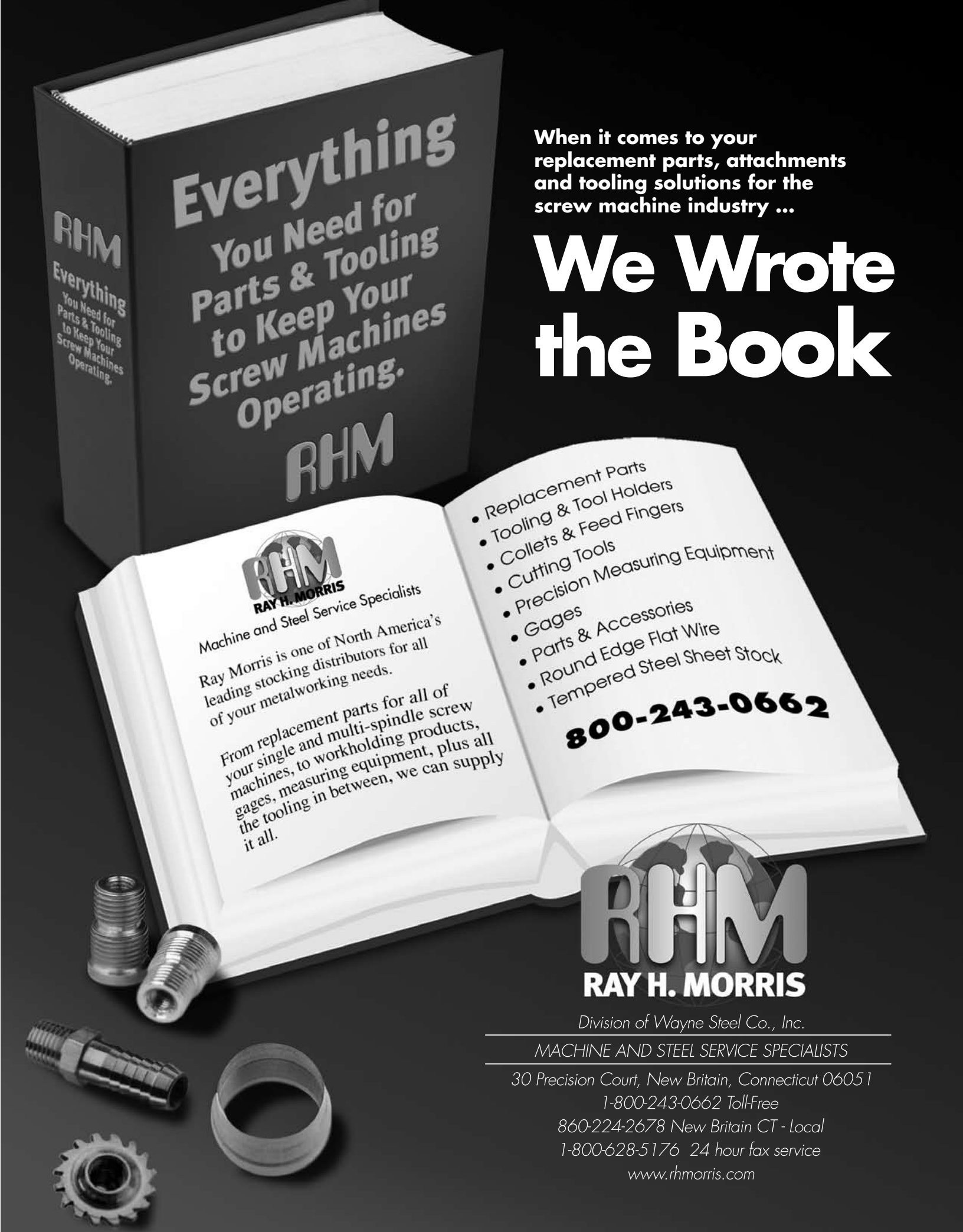
www.rotarytech.com

Today's Machining World: "Metal Injection Molding." August 2007; Robotics, October 2007 University of California, Berkeley, Laboratory for Manufacturing and Sustainability:

http://lma.berkeley.edu

Worcester Polytechnic Institute,mechanical engineering:

www.me.wpi.edu



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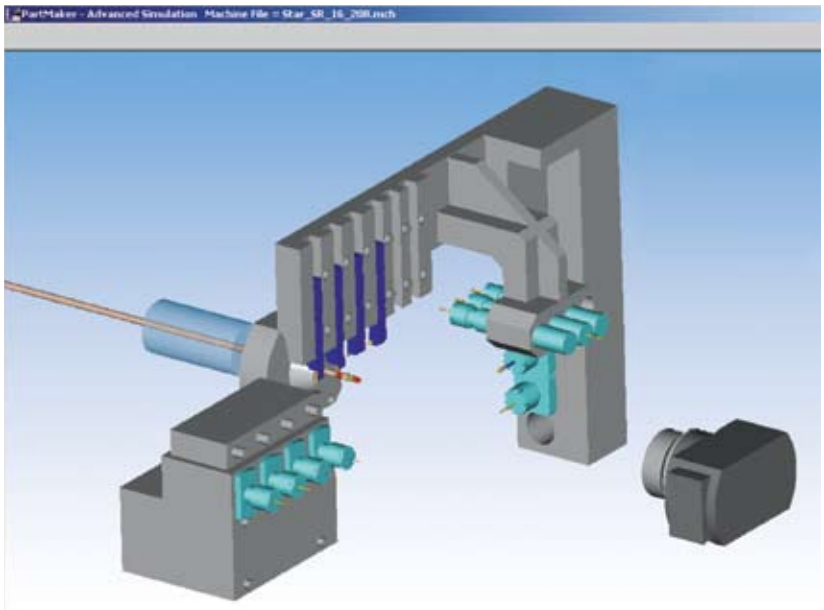
product focus

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.

CAD/CAM, or computer-aided-design and computer-aided manufacturing, has become an integral part of the machining process. Hanan Fishman, president of IMCS/Partmaker says, "As machine tools become more complicated, lot sizes shrink, tolerances become tighter, geometries become more complex and skilled labor becomes ever more scarce, the role of CAD/CAM software in the precision machining business has become more important. CAD/CAM software needs to be powerful enough to support the most complex applications, but easy enough to be implemented quickly and provide a rapid return on investment."

Following are companies who aided us in CAD/CAM information:

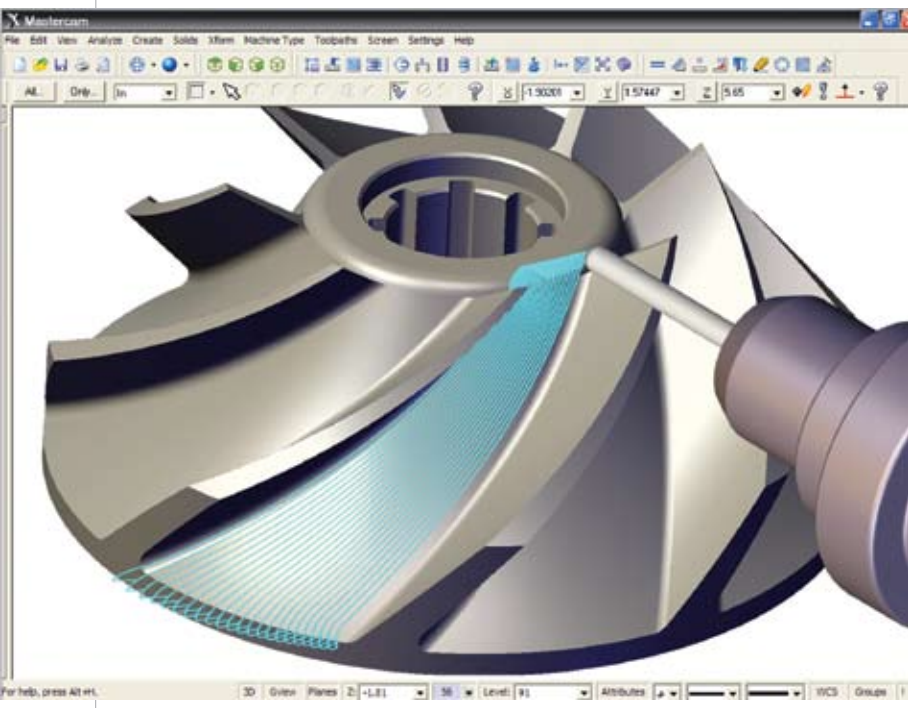


Partmaker

PartMaker Inc., a subsidiary of Delcam Plc, is now shipping Version 8 of its PartMaker® CAD/CAM software for CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes. PartMaker Version 8 introduces the PartMaker Full Machine Simulation module, an optional module which allows the user to view a photo realistic 3D model of the machine for which they are programming a part.

PartMaker Version 8 is the first PartMaker version to support operation under Windows Vista. Version 8 includes an improved method for handling the addition of new processes created after the Process Table has been generated while retaining existing Process Table modifications. Individual processes can now be turned off and on from the Process Table one by one for purposes of simulation and NC code generation. Improvements to 3D simulation in PartMaker Version 8 include the ability to compare a machined model to the original solid model imported. Advanced Simulation and the Production Milling Module allow for the selection of different types of part textures. Advanced Simulation for Turn-Mill and SwissCAM also now displays tool numbers directly on Tool Posts.

For more information, please contact PartMaker Inc. at 215-643-5077 or visit www.partmaker.com.



Mastercam

Mastercam is CAD/CAM software for 2 through 5 axis milling, turning, wire EDM, lasers, 3D design/drafting, surface/solid machining, router tooling and more. Mastercam's 3D geometry creation supports all basic geometry elements as well NURBS and parametric curves and surfaces. Mastercam gives you toolpath flexibility; reverse, delete, reorder, copy, modify or translate any element. You can modify your toolpath on the fly without recreating your original geometry. Features include rotary axis support and built-in material and tool libraries.

Mastercam provides gouge-free, multi-surface roughing and finishing of complex parts. Mastercam's toolpath verification generates a solid model of the finished part, complete with every scallop, chamfer and radius. Mastercam provides a certification program for today's programmers to sharpen and validate their skills.

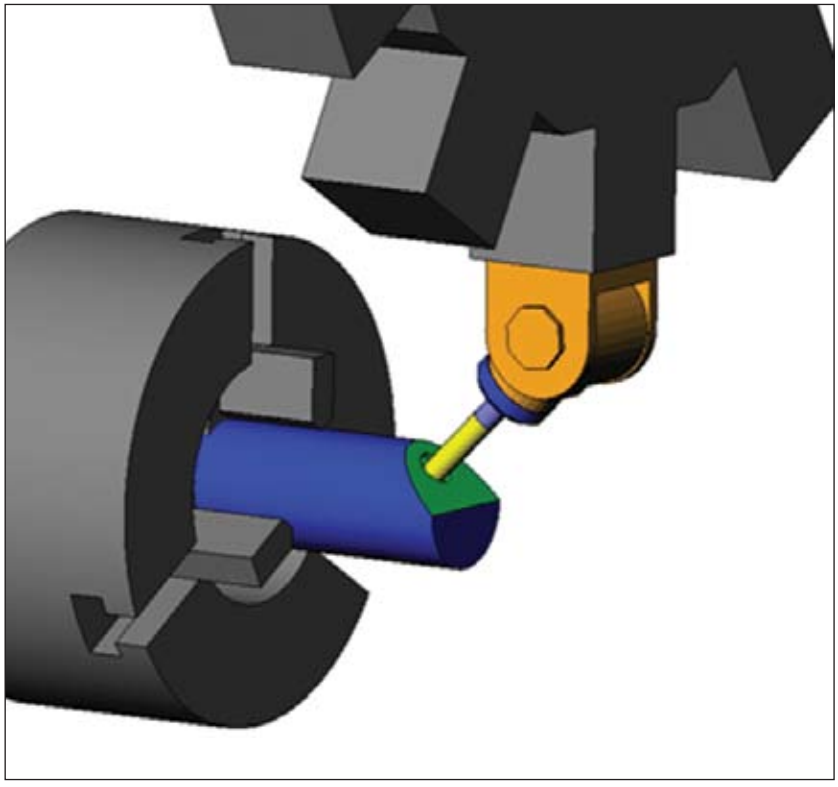
For more information, please contact Mastercam at 800-228-2877 or visit www.mastercam.com

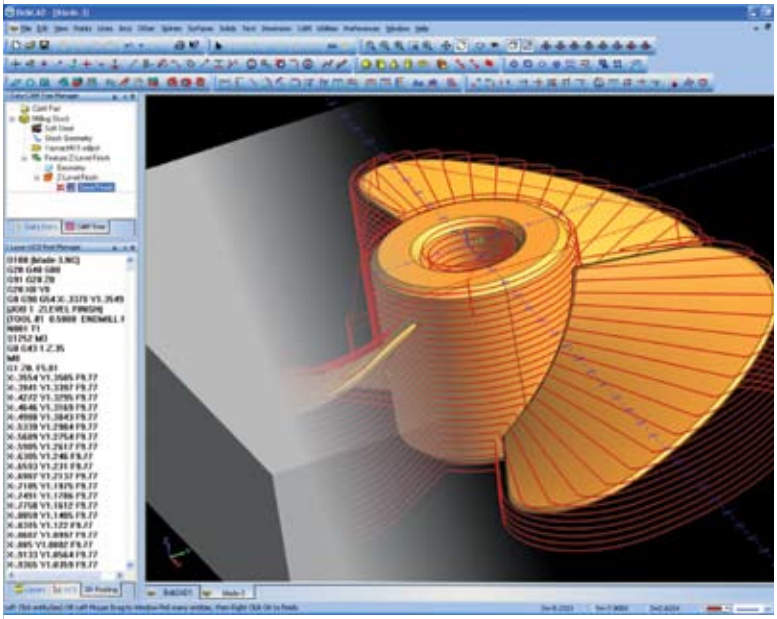
Esprit Technology

DP Technology has announced the release of ESPRIT 2008, which includes new technology for CNC programmers of mills, lathes and wire EDM machines.

Advancements available within this latest release include turning stock automation for lathes, EDM machine specific machining technology, improved 3D machining performance, open pocket milling, expanded CAD to CAM feature exchange (FX), enhanced KnowledgeBase machining (KBM) functionality, and B-axis turning for 5-axis mill-turn machines. ESPRIT 2008 is designed to run on both the Microsoft Windows XP and Microsoft Vista operating systems.

For more information, please contact DP Technology at 805-388-6000 or visit www.dptechnology.com.

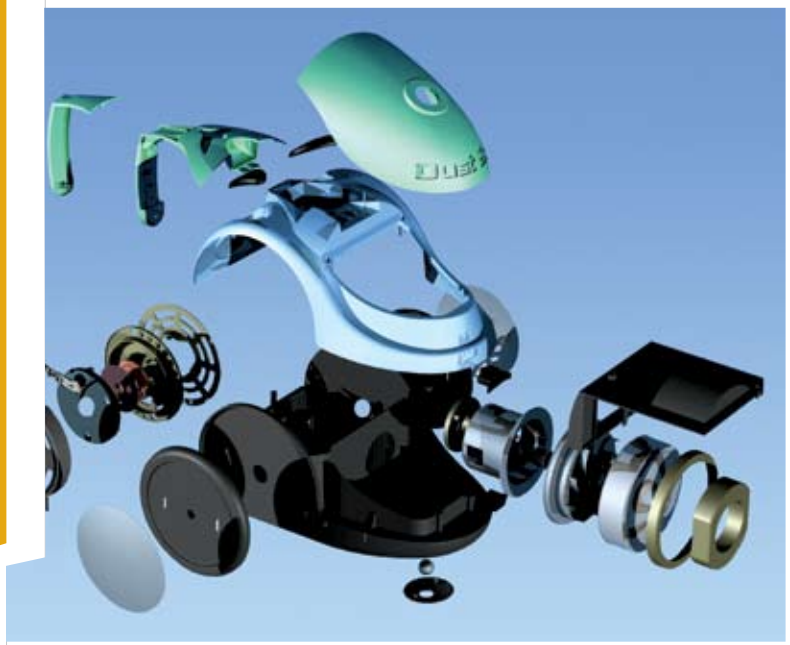




BobCAD-CAM

BobCAD-CAM, together with Predator Software Inc., has released the NEW BobCAD-CAM 2007 CAD/CAM system, adding Predator Virtual Simulation and DNC solutions to the product line. BobCAD-CAM has released add-on modules that add features in both Simulation and DNC to the customer depending on what their needs are. BobCAD-CAM has launched a division dedicated to providing shops around the world with specialized Predator DNC solutions that include the DNC software, cabling, hardware and the services necessary to streamline and provide shops with the automation they need whether the manufacturer is large or small. These special DNC packages are available for shops with one machine or more as Predator can DNC up to 256 machines from a single computer.

For more information, please contact BobCAD-CAM at 877-262-2231 or visit www.bobcad.com.

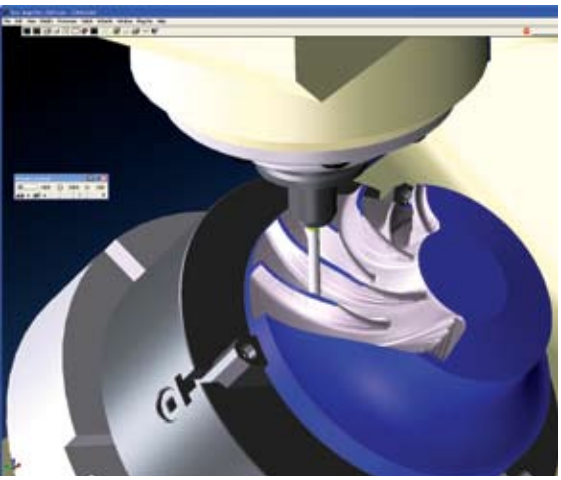


Delcam

Delcam supplies CAM software to the mold, tool and die markets, as well as the automotive and aerospace industries. Mr. Humphreys, Delcam Managing Director says, "Traditionally, both automotive and aerospace companies have simply used the CAM that came with the CAD. With the level of global competition now increasing, those companies are looking at their choice of systems much more carefully." Delcam's complete automated solutions, with equal emphasis on design and machining, provide an environment for companies designing parts or tooling for manufacturing. It begins with a CAD solution that offers freedom to manipulate surface form, along with solid and wireframe modeling. Delcam's software combines functionality to give back control to engineers over designs and the ability to check designs in order to make modifications if necessary. With Delcam's software solutions, manufacturing is covered from design and manufacturing to inspection and part verification.

For more information, please contact Delcam at 877-DELCAM1 or visit www.delcam.com.

product focus

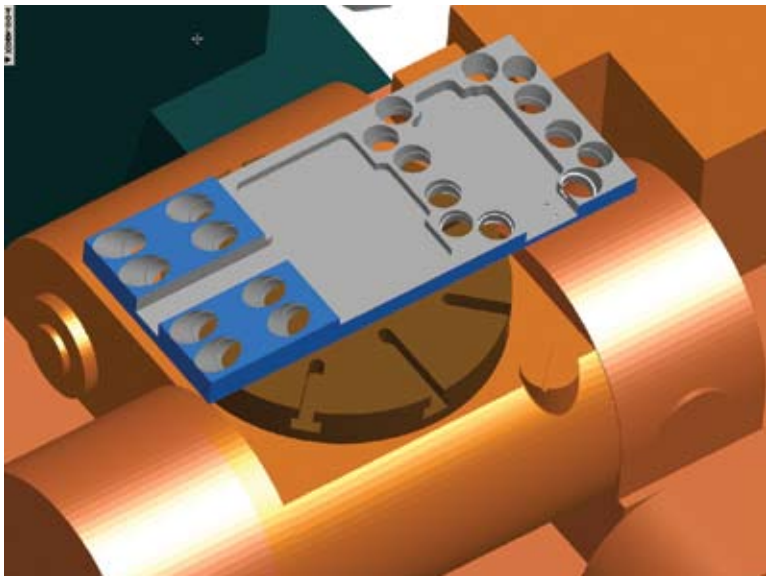


Gibbs and Associates

Gibbs and Associates, developer of GibbsCAM software for programming CNC machine tools, announced that a new GibbsCAM option, which supports 5-axis simultaneous milling, is now available. The new 5-axis module introduces the following capabilities: multi-surface 5-axis roughing and finishing; multi-surface 5-axis flowline machining; surface edge 5-axis swarf cutting (trimming vacuum-formed parts); adaptable interface, based on part type strategy, which shows only what is needed; advanced gouge checking ensuring safe cuts in complex operations; complete control over entry/exit, cut-to-cut, and between cut moves.

The new 5-axis option integrates seamlessly with GibbsCAM configurations. When used in conjunction with GibbsCAM SolidSurfacer, the 5-axis functionality is well suited for machining complex surfaces often encountered in automotive and aerospace applications. When used in conjunction with GibbsCAM MTM, the 5-axis functionality introduces support for B-axis live tooling, a multi-tasking machine tool configuration that is growing in popularity.

For more information, please GibbsCAM at 800-654-9399 or visit www.GibbsCAM.com.



FeatureCAM

The new version of FeatureCAM feature-based CAM system now includes support for continuous 5-axis machining. Many 3-axis toolpaths generated in FeatureCAM are able to be converted to a 5-axis equivalent by using automatic collision avoidance to change the tool axis when collisions might occur. The software automatically tilts the cutter away from the obstacle by the specified tolerance and then returns the cutting angle to the value set for the overall toolpath once the obstacle has been cleared. 5-axis drilling is also supported. This new functionality, coupled with the advanced feature recognition in FeatureCAM, makes it possible to create drilling programs in seconds for multiple hole types and sizes, oriented in a variety of directions.

The new functionality for turning allows a closed or open curve to be used to define the stock during toolpath calculation. The stock curve clips the toolpaths to it, so no toolpaths are generated outside this boundary. The enhanced tool database is able to support more information on recommended feeds and speeds. Data can be added for profiling and slotting with milling tools, and roughing and finishing with turning tools.

For more information, please contact FeatureCAM at 888-393-6455 or visit www.featurecam.com.

product focus

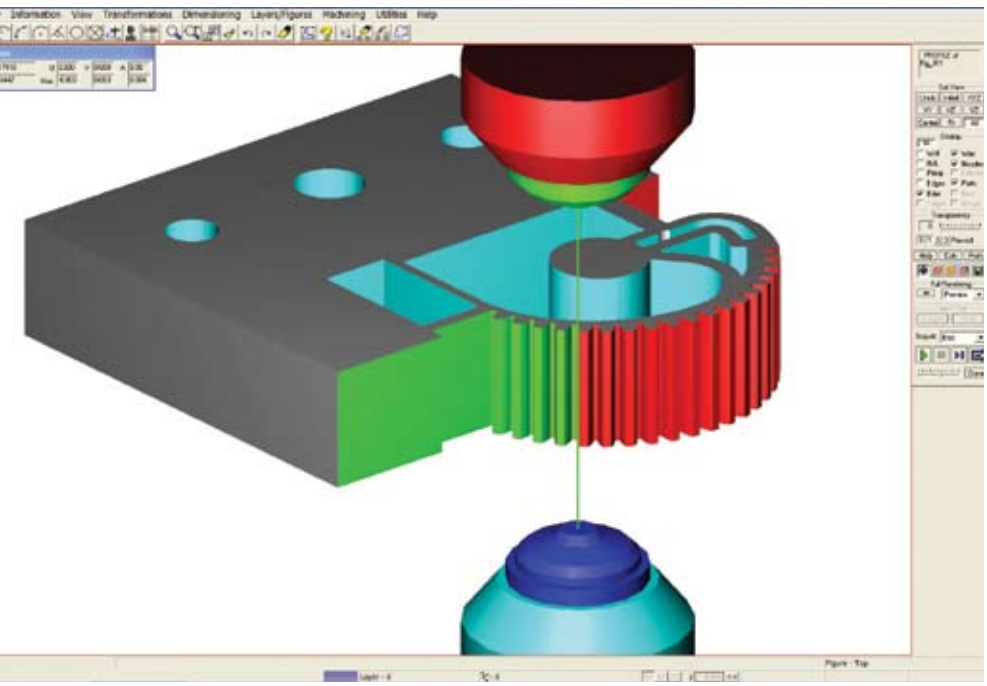
PEPS CAMFlow

PEPS CAMFlow Director is a powerful new technology engine suite that includes automated feature-finding, knowledge-based feature machining, machine kinematics, toolpath simulation and CNC code generation.

The development work necessary to deliver such significant increases in functionality has created the foundation for major enhancements in many application areas. Modular enhancements are now easier to 'plug in' to the base system than ever before. CAMFlow is centered on interactive and clear flowcharting tools that can be used in key areas of the new CAM system functionality. Best practice / preferred methodology can be configured and stored in the system. CAMFlow is also used to automatically find machineable features of model data and apply automated pre-configured machining to them. Features can also be defined within SolidCut itself. SolidCut Design – integrated component and fixture solid modeling - has also benefited from new user-interface options providing improved and intuitive 3D geometry capability.

The system is used to configure the machine tool components and the kinematics relationships and constraints that exist between them, simulate motion of the machine tool and is particularly designed to support the multi-spindle, multi-axis and synchronization needs of modern CNC machinery. SolidCut toolpaths and machining operations can be manually or automatically resequenced and optimized, and can also be edited freely by programmers as necessary.

For more information, please contact Camtek North America, Inc. Phone: 678-625- 0053 or visit www.peps.com/us.



SolidWorks Corporation

SolidWorks Corporation released SolidWorks® 2008, the newest version of its 3D CAD software. SolidWorks 2008 delivers a new intuitive, time-saving user interface (UI), and builds on the company's SolidWorks Intelligent Feature Technology (SWIFT), SWIFT Instant3D lets users create and modify 3D model features by manipulating drag handles directly on the model. SWIFT DimXpert automatically sets geometric dimensions and tolerances on parts.

The Design Clipart capability lets users search their file systems for sketches, tables, images, features, views, or DWG blocks that are inside existing designs. Once the item is located, Design Clipart dissects target files, allowing users to simply drag the item to incorporate it in new designs. DriveWorksXpress automatically creates custom parts, assemblies, and drawings based on pre-defined design rules, enabling companies to respond to the unique needs of every customer.

For more information, please contact SolidWorks at 800-693-9000 or visit www.solidworks.com.

product focus

Vision Numeric

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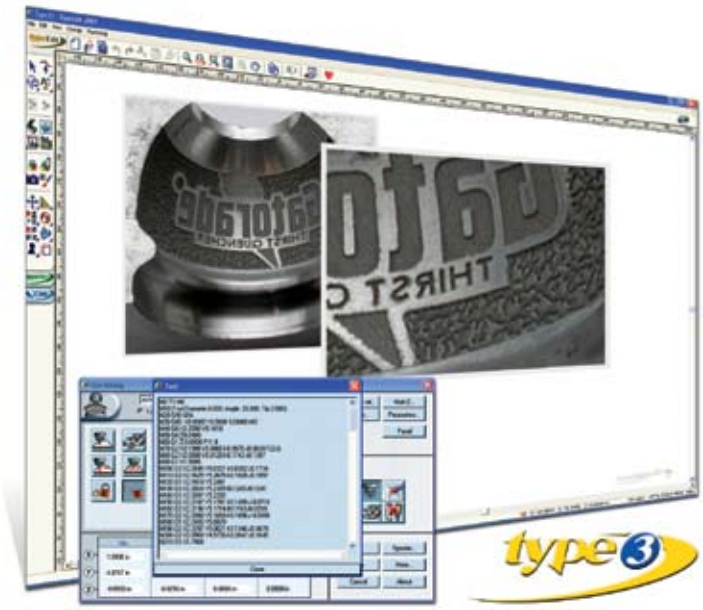

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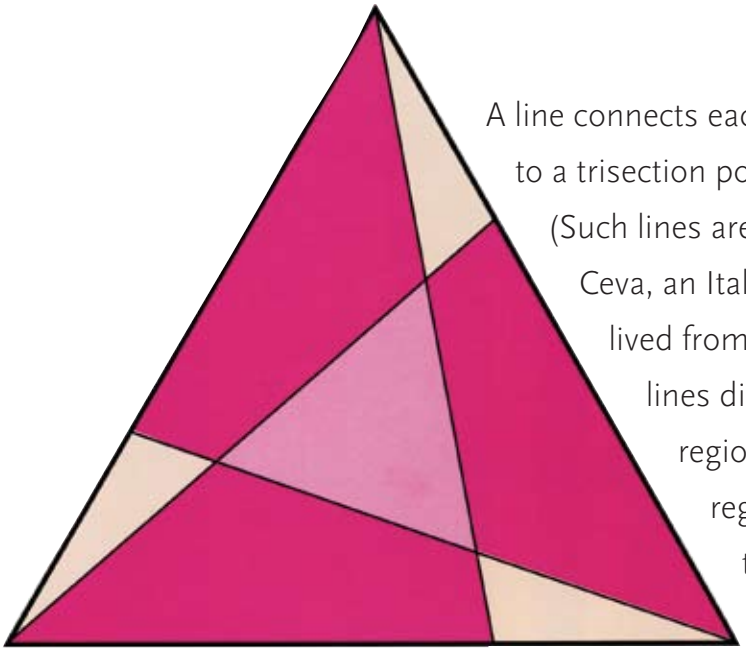
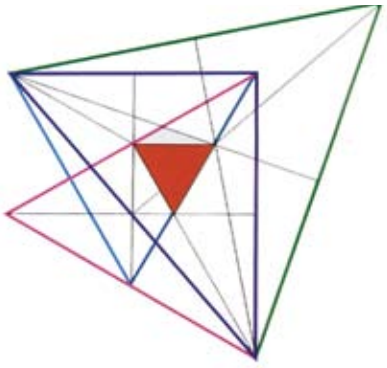
Trisecting Triangle



A line connects each vertex of the triangle to a trisection point on the opposite side. (Such lines are called cevians, for Giovanni Ceva, an Italian mathematician who lived from 1648 to 1734). The three lines divide the triangle into seven regions, with the area of each region a multiple of $\frac{1}{21}$ of the total area.

Can you work out the proportional area of all seven regions?

Medians of a Triangle



A median joins a vertex of a triangle to the midpoint of the opposite side. The point where all three medians meet is called the centroid and divides each median in a 2:1 ratio.

The centroid is the center of gravity of the triangle; it's the point at which it can be balanced.

A line from a vertex that bisects the median will divide the opposite side of the triangle a certain proportion. What's the proportion?

Curiously enough, the line from the vertex that bisects the median will divide the opposite side in a 2:1 ratio.

Only one person got it right!

Ron May of Hunter Engineering Company in Bridgeton MO.

postings

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

FABTECH

International & AWS Welding Show

Chicago, IL

Nov. 11~14,

www.sme.org/calendar

Laser Cutting Certificate Program

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Duncan, SC

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Nov. 5th thru Nov. 7th

Pacific Coast Machine Tool Expo

www.gmachinetoolexpos.com

Santa Clara, CA

Nov 13th, thru Nov. 15th

Northern Alabama Ind. & Machine Tool Show

Huntsville, AL

Nov. 7~8

www.smc-events.com/northern_tool.htm

Machinery Vibration Analysis Course

Nov. 13~16 2007

Louisville, Kentucky

www.vibinst.org/vcal.htm

Fundamentals Die Setup & Maintenance Seminar

November 1st

Indianapolis, IN

www.fmanet.org/Conferences

Assembly New England Trade Show

Boston, MA

October 30~31

www.devicelink.com/expo/ane07/

Rolling Stone Magazine Debuts

Nov. 9, 1967

www.wikipedia.org

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November 9, 1989

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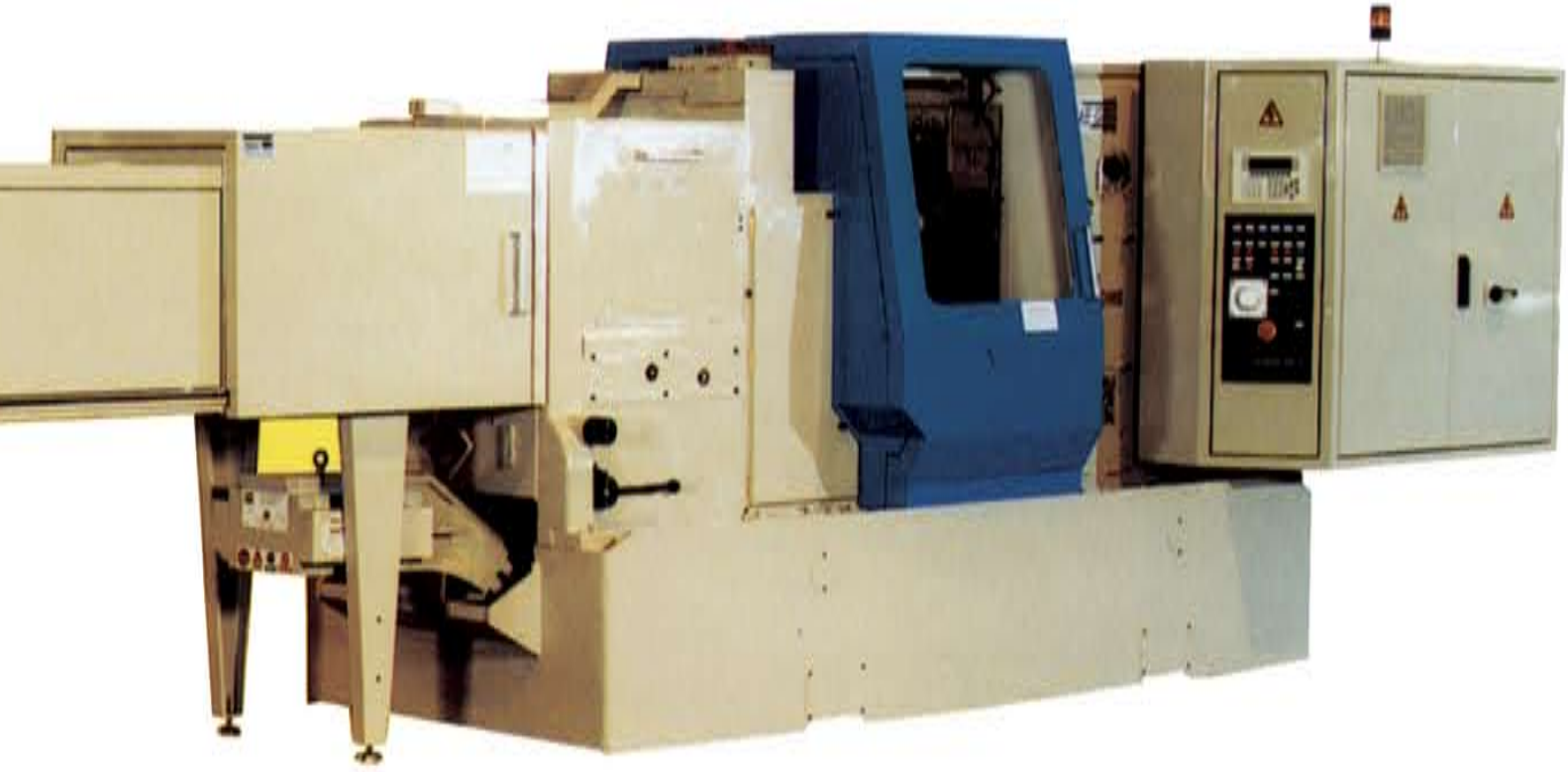

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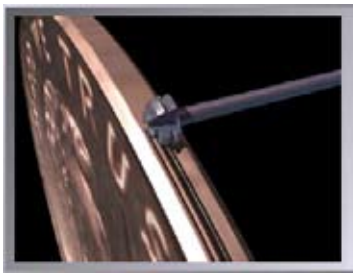

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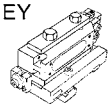

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Fulfilling the Unfulfilled

Is Rick Ankiel the incarnation of Roy Hobbes, the hero of *The Natural*? The Bernard Malamud book and the Robert Redford movie are maddeningly close to the real life saga of the St. Louis Cardinal's outfielder.

In the book, Roy was the ingénue lefty pitcher with amazing stuff who believed he could be "the best there ever was." His career was shattered by his mysterious shooting before he could ever display his amazing ability in the Majors.

Rick Ankiel was a golden southpaw pitcher with fabulous promise. He blazed through his rookie Big League season with great success, only to self-destruct at playoff time. He totally lost his control and concentration, walking four and throwing five wild pitches in a single inning. He blew his confidence and was soon exiled from the Major Leagues. He suffered in the Minors also, and ultimately ruined his left shoulder and blew out one of his knees.

"The story pulls us, because a kid refuses to accept what seems to be a fate of crushed promise."

In desperation, he gave up pitching and reinvented himself as an outfielder, just like the fictional Roy Hobbes. He struggled to learn how to hit the kind of pitches he used to throw.

But in 2007, he led the Minors in home runs playing for the Memphis Chicks. The Cards were afraid to bring Ankiel to the Bigs because of his multiple collapses of confidence. If he failed this time, they could not demote him to the Minors because he was out of options. They would have to release him and allow him to become a free agent. But with every home run in Memphis, the clamor for Ankiel became stronger in the Gateway City. The Cardinals pitching staff was in a shambles, with Cy Young winner Chris Carpenter undergoing elbow surgery and Mark Mulder recovering from a shoulder operation. In early August they called up Rick Ankiel and he started doing his Hobbes.

Ankiel hit three homers in his first three games. His presence seemed to rejuvenate a crippled, lifeless, also-ran team. Within a month, the Cardinals were challenging for a division championship despite even more injuries to vital players.

In a game at Wrigley Field, Ankiel fielded a ball off the left field wall and then threw a 270-foot bullet to third base to nail an amazed runner who had been running from first to third. Fact was imitating fiction in an uncanny way.

The term "reinventing" is used in such a cavalier fashion in business literature and "human potential" tracts that the term has almost lost its meaning. "Reinventing the wheel" is a cliché, and "reinventing your life" is so overused that it has virtually lost its meaning.

But once in a very great while a person comes along like an Ankiel – a guy who refuses to admit his baseball life is finished because he can't throw a strike, his body has failed him, his head is shot because he can't deal with his father's imprisonment for drug dealing, and his career is dictionary slang for "failure under pressure."

Once in a million years an old kid comes out of nowhere like an imperfect Roy Hobbes to fulfill the unfulfilled possibilities of his callow youth. He cannot recapture the lost years, he can only draw upon them. The Rick Ankiel-Roy Hobbes story pulls us, not because of the overworked story of reinvention, but because a kid refuses to accept what seems to be a pre-ordained fate of crushed promise.

As I had watched Ankiel disappear into the misery of A-ball 14-hour bus rides between Lubbock or Lose it, I really wished he would call it quits. His seemingly impossible struggle to regain his broken confidence, much less his physical talent, was difficult for a baseball addict to watch. Couldn't he just give up and become an insurance adjuster or a forest ranger?

Ankiel is not eloquent like Roy Hobbes, who spoke the words of Bernard Malamud. But he gives ironic life to *The Natural* in a way Redford barely even approached.

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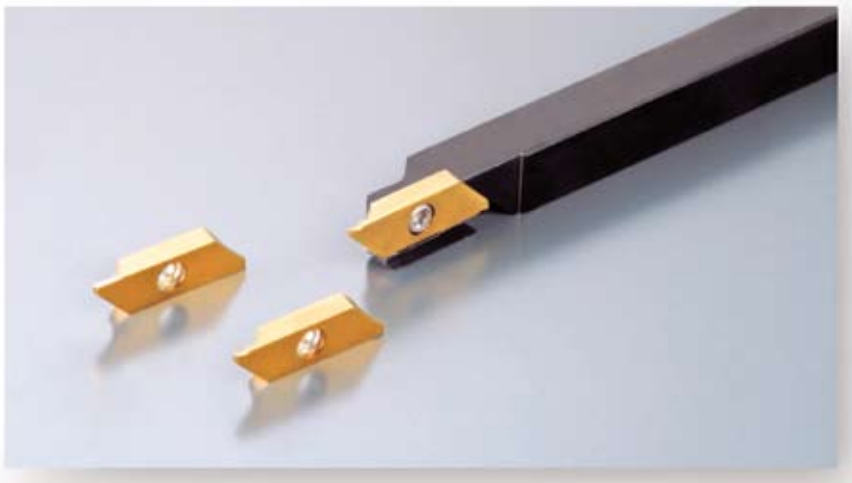

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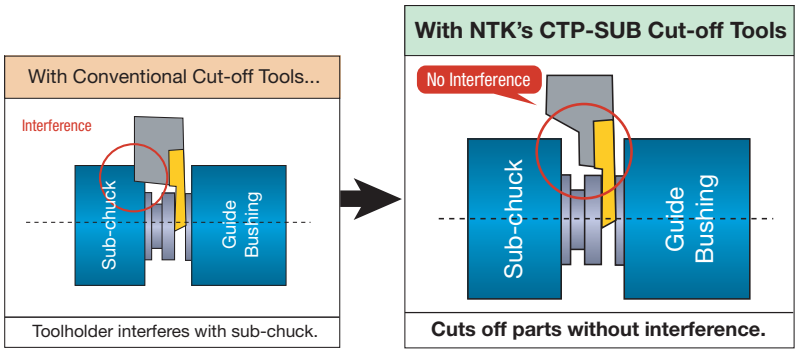

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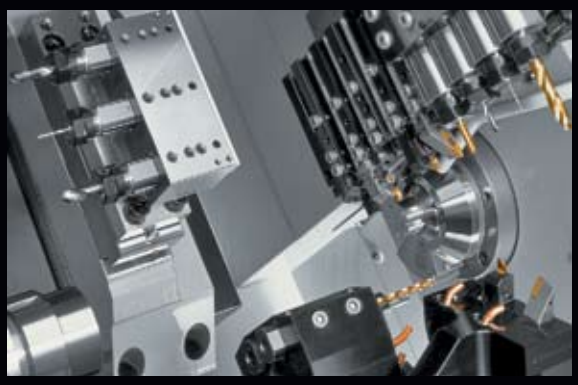

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