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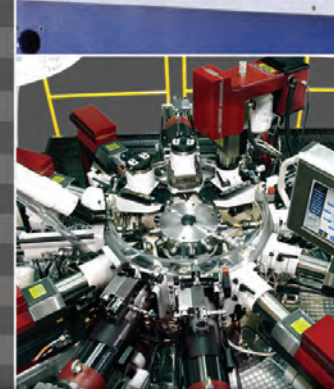
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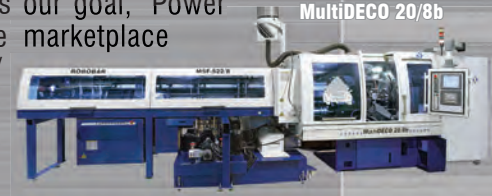


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4235 W. 166th Street
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(708) 535-2200

Pundit
Lloyd Graff
Lloyd@todaysmachiningworld.com

Publisher
Dan Pels
(312) 342-6557

Managing Editor
Jill Sevelow
jill@todaysmachiningworld.com

Features Editor
Noah Graff
noah@todaysmachiningworld.com

Web Forum Editor
Noah Graff & John Iwanski
noah@todaysmachiningworld.com

Art Director
Robert E. Bocok
rob@todaysmachiningworld.com

Circulation Director
Judy Palmer
judy@todaysmachiningworld.com

Sales Manager - East Coast
Bill Papp
845-613-7329

Contributing Writers
Barbara Donohue, Russell Ethridge, Lloyd Graff,
Noah Graff, Jerry Levine, Lynn Walters.

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editor's note

Political Landscape

When we put together our editorial scheduling for 2006, we told our advertisers that November's issue would have an article about the "politics of manufacturing."

I would compare this topic with "the heartbreak of psoriasis" and the "passionate pursuit of pastrami." You know there is a story, you just don't know what it is 'til you get into it. Our two general interest features – an interview with T.J. Bonner, head of the Border Patrol's Union, and the devastation and rebirth of MECO, a New Orleans manufacturer of water purification equipment – address the politics of manufacturing through two unique prisms.

When Mr. Bonner was approached by Noah Graff for the interview, he expressed genuine surprise that a magazine named *Today's Machining World* would be so interested in his story. When Noah explained the importance of immigrants, especially Latino immigrants in American metalworking, he immediately picked up on the connection.

As this magazine has developed in the past several years, we have been able to integrate many topics not normally addressed by the old school industrial trade press. It is a real kick to cover health, sports, environment, art, family, etc. in the context of the machining world. Well, sometimes it's a stretch, but my belief is that we are speaking to one of the smartest audiences in the world – and one with eclectic tastes. If we address you on several levels, you will stay interested. We are about a lot more than drills and reamers.

Lloyd Graff
Editor/Owner

p.s. We welcome Bill Papp, who has recently joined *TMW* as our East Coast sales manager. Bill has spent a career in industrial publishing. During the last five years, he served as a regional sales manager for Marubeni Citizen, so he has seen the business from both sides.

editors note

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Hearty Growth

First, let me say that I continue to be impressed with the quality of your publication. The recent article on thread rolling is of excellent educational value, and Scott Livingston (Thread Rolling, *TMW* Aug 2006) represents the next generation of intelligent business owners this nation must possess.

In the twelve months since you wrote the article on us (see *TMW* Aug/Sept 2005), we have advanced our business plan with successful military contracts, staffing and additional machine tools. We find that there is more than enough machine work in the market, and we have been awarded several long-term contracts. Our shop has also expanded with the addition of a second used Hardinge ST225B CNC Swiss, as well as a new Hardinge GT27SP gang tool lathe. Now, we face the same issue as any growing business; namely, finding quality employees. Although we have relied on some part-time contractors, the time has arrived where we need to employ key personnel. Hope you find this update encouraging.

Charles E. Fluharty
APEX Design, Inc., Atlasburg, PA

Call for Help

I read your comments relative to B & K and their apparent lack of

commitment to the multi-spindle indus-

try. It struck a cord because we must use them for parts on a pair of Fellows gear shapers. Recently, I learned our Regional Sales Manager, with years of Fellows experience, was no longer with the company. My concern at this odd news turned to near panic when I read your comments.

We have found alternatives for all the terminal tooling used, but our search for machine parts has been fruitless. Do you know of any alternative sources for machine components that won't cost a fortune or take months to acquire? If not, perhaps you can send us in a direction we have not previously considered. Any guidance you offer would be greatly appreciated.

Mike Sutton
HyPro, Inc., Rhinelander, WI

Send your comments to:

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The Economic Pulse

The big economic question going into 2007 is whether we will be going into recession, a slowdown or a continuation of reasonably good economic times.

There is no doubt that homebuilding has tanked. Is this a real housing depression or a short-term dip? Some very smart people like Gary Shilling see a long-term slide in prices for a single family, especially in areas like the Northeast, Los Angeles, Miami and Las Vegas. Home sales in big cities are tied closely to legal immigration. A large percentage of first-time homebuyers are immigrants.

Homebuilding is labor-intensive, so a lull implies more unemployment. A real estate downturn hurts manufacturing because it is a big user of products like plumbing and hardware.

The Federal Reserve is at a tipping point now, and nobody knows if Ben Bernanke will side with the Hawks (tighteners) or the Doves (looseners). If he chooses to tighten further, a recession is a good bet for 2007.

Much of the fuel for the consumer spending strength in recent years has come from borrowing against rising home equity at reasonable rates. Sliding home prices and higher lending rates are a recipe for at least a slowdown.

Christmas is coming, and the consensus is that it will be a solid time for retail.

Gas prices are down, winters are tending toward moderation, no big hurricanes this fall, low unemployment and rising wages point toward a happy season. Consumer sentiment is lukewarm. People are down about the war, gas and politics, but not so sour that they'll forget Kohl's address.

The stock market is betting that the Fed will not tighten and that ten-year bonds, which determine mortgage rates, will stay under five percent, which means mortgages under six percent. This will mitigate a dramatic drop in home sales.

Manufacturing in the U.S. has held up well despite shifts to offshore outsourcing and record trade deficits. Labor shortage is a longer-term threat, but in 2007 innovation, automation and improvisation will generally enable shrewd managers to grow.

So barring a major terrorist attack, it is likely that the economy will absorb a housing slide and narrowly avoid a recession unless interest rates spike.

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As I am writing, the Congressional elections are an unknown. The conventional wisdom is that the Democrats will win the House and possibly the Senate. Is this a big deal if it happens?

From a legislative standpoint it is a nonevent.

But from a political point of view it is significant. The Republicans have held the House for 12 years. Six years of Bill Clinton and six years of Bush, the political climate in Washington continues to sour. The animosity between the parties is stronger than I can ever remember. This is good and bad.

Legislatively we will have gridlock. This is a wonderful thing for business, because usually the best outcome we can hope for in Washington is a stalemate. The mantra of doctors and Congress people should always be "do no harm." If the government can't get anything done, we are normally sheltered from gross stupidity.

So the Congress will probably become a vitriolic star chamber of investigations of the Bush administration with the Dems attempting to brand George the 43rd as Charles Manson's twin brother.

But no matter what happens in the 2006 election, 2007 will be an important year for debate about the Iraq war and containment of North Korea and Iran.

The possible presidential candidates will be formulating their war messages next year. Al Gore, Hillary and various unknown governors will be testing their rhetoric on the left wing power brokers in the Democratic party. They will have to appease the La Monsters to get the nomination, but if they go too lefty, they will alienate middle America, which also dislikes an endless war of refereeing between Muslim gangstas in Iraq but realizes that the U.S. needs a military presence in the oil-loaded desert.

It will be a signal event if the euphemism "War on Terror" finally is renamed by the candidates as the "War against nihilist Muslim Jihadists."

On the Republican side, the 2006 election will also shape the message of the presidential contenders. Senator John McCain appears to really want it. If the Bushies get whopped in the Congressional elections, he will be a logical alternative for the party, but the unalterable fact remains – senators usually lose Presidential elections. You have to go back to 1960 and John Kennedy to a senator who moved directly to the presidency. For this reason I think Rudy Giuliani has a good shot at the nomination, despite a lot of health and personal issues, which will disappoint the party's

swarf

social conservatives. Whoever gets the GOP nod will position himself or (herself) as the counter-Bush candidate. History may vindicate Bush-Cheney-Rumsfeld's foreign policy, but 2008 will be too close for happy reminiscences.

If the Democrats take the Senate with 51 seats, it will be extremely difficult for Bush to name a Supreme Court Justice if a vacancy occurs. About the only sure nominee to pass a Democratic Senate would be Bill Clinton. Now that would be one way to get him off the campaign circuit in 2008.

Fifty years ago, in the last week of October, one of the enormous events of the 20th century took place – the Hungarian uprising against the occupying Russians. The revolution pushed the hated Russkys out of Budapest. The Russians came back and crushed the rebellion after a few months of freedom, but it showed the world that the subjugated people of Eastern Europe hated the Russians and the Communist tyranny.

Hungary was important because it showed that the Russians were not invincible. For Americans this was significant because Communist expansionism seemed unstoppable. Today we can look back and mock the Soviet failures, but the Cold War was a long, hard, expensive and dangerous battle.

There is a parallel today with expansionist Islamic Jihadists. If the Cold War was really World War III, the current war against Islamo-fascism is World War IV. Iran is the vanguard of state-sponsored Jihadism, which makes its development of nuclear weapons scary.

Iran is a country divided between crazies fronted by Ahmadinejad, the more conservative clerics who do not court confrontation with the western world,





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and the secular young people of Tehran who want a modern capitalistic lifestyle. We could have a shift in Iran in which the crazies lose power to freedom lovers who just will not take it any longer.

A military strike against Iran by the U.S. or Israel is dangerous because it might strengthen the belligerents who are frantically trying to hold on to power. Ahmadinejad is using his outrageous comments against the U.S. and Israel as a political feint to keep office.

An indigenous uprising like we saw in Hungary is our best hope for a crumbling of the expansionist Jihadist tyranny coming out of the Arab world. Tehran could surprise us like Budapest did five decades ago.

The machining world is highly competitive, but it can be wonderfully fraternal amidst crisis. The MECO story in this issue is an example of suppliers and competitors coming to the aid of peers. The Precision Machined Products Association boasts many anecdotes of members helping other members.

The story of Colbree Engineering, a CNC shop in Hemel

Hempstead, England, is an inspiring one. Colbree's factory was located in an industrial area within a few hundred yards of the Buncefield Petrol Storage Facility. On December 11 of 2005, Buncefield blew up with an ensuing devastating fire. It took three days before the Colbree folks could look inside their building. Fortunately the blast was on a Sunday when nobody was working. Machines were lifted off their moorings. The ceiling and walls were damaged. Within 72 hours construction teams were making the building safe, and temporary offices were set up nearby. Two barns were rented on a local farm, one for storage and one for temporary production.

Colbree quickly bought an 18,000 square foot plant 13 miles away from the old one, and the seller allowed them to work on the facility before the deal closed.

On the Friday after the fire, DW Engineering of Wembley, another Citizen shop, began allowing Colbree's workers to use their machines at night to keep up with critical orders. Two teams worked for six weeks there. Emerald Engineering in Hitchin also helped out in the pinch.

Trumpf allowed the company to run one of its showroom machines, which enabled Colbree to hold on to its sheet metal work. N.C. Engineering, the Citizen dealer in the U.K.,

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enabled the company to get new M-32-V machines on a verbal order.

Colbree is now up and running successfully in its new premises. Some of the aerospace work, which its customers attempted to re-source, has been won back by the firm.

The machining world is a tough one, but there are a lot of good people ready to help.

Howard “Butch” Kerzner died Oct. 11 at the age of 42 in a helicopter crash in the Dominican Republic. He and his father Sol had built Kerzner International, Ltd. into a multi-billion dollar worldwide casino developer from a small hotel company based in South Africa. The *Wall Street Journal*’s remembrance on Oct. 22 told of Butch Kerzner coining an acronym for the company’s audacious style – BHAGS – for “big, hairy, audacious goals.”

This term really hit me when I read it, particularly the irony of Butch Kerzner’s untimely death. Man plans, God laughs. But the power of big goals is worth considering as we move toward the new year.

I have found that writing down a small number of well-considered, succinctly-worded goals really helps me focus my efforts. Personally, “big hairy” goals are not my favorites. I prefer small reachable challenges blocked out in 90 day chunks. I get to monitor my progress and actually feel good about my movement toward such goals.

My goals these days are often not explicitly financial ones. One repeating goal is to make each issue of *Today’s Machining World* “better” than the preceding one. My measurement scale of “better” is hard to quantify, but if I read the magazine from front to back, then back to front, and then want to read it again, I feel good about the magazine’s progress.

Kerzner International is preparing a bid to convert London’s Millennium Dome into a “supercasino,” certainly a “big, hairy, audacious goal.” My small hairless goal is to make this one magazine remarkable.



Art by Mike Kurtz.

I was walking down trendy Boylston Street in Boston recently on a Saturday afternoon and saw a young guy playing his white electric guitar in front of a new Volkswagen GTI. I was perplexed, but interested enough to query the guitarist, “What’s up with this?” He explained that the car had an amplifier built into the dash, which was providing the sound on the street. And I’m thinking, “Duh, who cares?” Then as I’m staring at the car, another passerby walked up and asked the same question. But his reaction was totally positive. “That is really cool,” he said, making note of the car.

I walked away feeling culturally obtuse and generationally challenged, but also thinking that VW was on to something important. Volkswagen has allowed its brand to drift into irrelevance in the U.S. Here they were working at developing a buzz one person at a time on a packed street in Boston.

An amp in the car? Who needs it? But the same could be said for the camera in the cell phone, and they sell them by the billions. Never discount cool.

While staying at a Boston hotel, I wrote three Swarf pieces, which I wanted to fax to Jill Sevelow, TMW’s managing editor. The hotel boasted of a “Business Center,” with computers and copiers and a fax. I ventured into the room of machines and looked for a person. Nobody there. This was an automated, human-less tomb. The fax machine was a copier. The directions on using it must have been written by a robot. I finally figured out where to swipe my credit card. I did it correctly, but it didn’t work.

I called the service number only to get Mumbai central. I spent another half hour with an Indian chap, whom I could barely understand, trying to get the dumb fax machine to work. He kept saying “just another 30 seconds,” but the thing never did work.

I wrote a note and put it on the broken machine telling the next fool not to waste his or her time. Then I went to the front desk and asked the clerk to fax the few pages. He did it politely in 45 seconds. Score one for humans.

My uncle Jerry was a very bright man. He sold his plumbing supply business as a young man and then applied his considerable intellect to the stock market.

Jerry was astute in a very special way. He could see the downside of everything. You name the company, he could pick it apart. Same for people. He was the master of flaws.

Jerry would have been a superb short seller, but alas, he saw the flaws in that strategy. He saw the error of going long too. It was just too risky to bet on any management because they were all crooked, or venal, or dumb – or something.

So Jerry invested in government bonds, or stayed in cash because he didn’t really trust anybody to do well by him. Jerry was correct about a lot of his assessments, but he was paralyzed by his fear and anger.

I saw Jerry a lot. He and my dad were close. I saw how negativity can wreck your life and those around you.

Intelligence bathed in black is ruinous.

I’m making an announcement. No more e-mail for Lloyd Graff. If you want to reach me, just call or write me a letter, or knock on my door, or do charades. Lloyd is no longer available at Lloyd@todaysmachiningworld.com.

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My phone number is 708-535-2200 and my cell phone is 708-380-8530. I want to hear your voice, get your accent, your verbal hesitation, your hoarseness, your post-surgical dry throat, your puns, your chuckle, your nervousness, your lies, your run-on-and-on sentences. Your voice has its own poetry.

I have no time for uninvited emails. How dare these cynical pirates of cyberspace assault my eyes with fraudulent gibberish about Cialis or a free palace?

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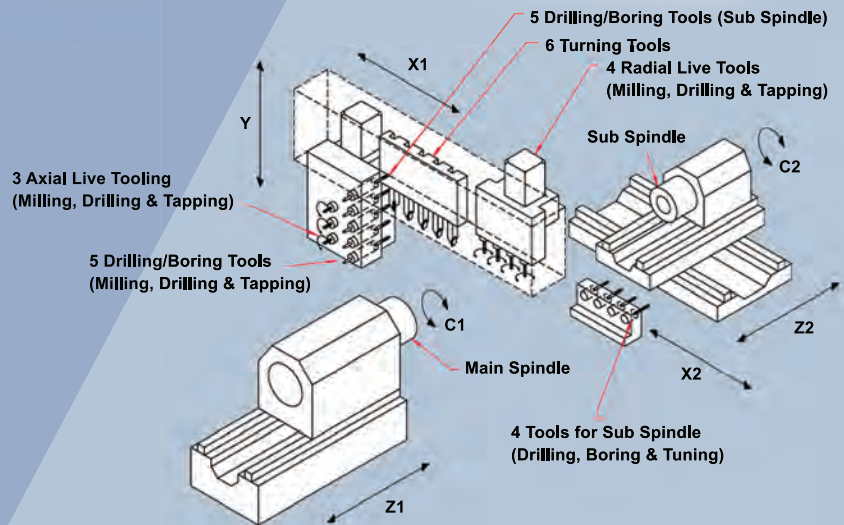
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BY JERRY LEVINE

A Home on the Field

"That which hath been is that which shall be...And there is nothing new under the sun."

Ecclesiastes 1:9

Assimilation of new Americans can be a slow difficult process, but it is not a new process. And while Congress and the country debate immigration issues, they can look to Siler City for inspiration. In early 2000 a group of Latino high school students in Siler City, NC (population 8,000) petitioned to start a soccer team. The locals were skeptical. Some admonished, "What is this sport, and what are they doing on our football field, our sacred ground?" In the end, the students persevered and ultimately won the state championship. The book *A Home on the Field* documents their journey.

For the past 15 years, this country has been experiencing a silent migration of Mexicans and other Latin Americans into the interior of the U.S., finding jobs at places like a chicken processing plant in Siler City. Author Paul Cuadros (son of Peruvian immigrants), blames the migration in part on NAFTA, which allowed the Mexican state run economy to procure heavily subsidized American corn to feed their poor, displacing Mexican farmers. Cuadros also blames Mexico and its ruling class for never really providing adequate education or meaningful jobs to create a middle class.

Inevitably, the population moves to greater opportunities. This has been the story of U.S. immigration since its founding. But the old ties don't break easily. They never do. The immigrant workers still remain largely isolated by language and culture from mainstream American society.

Cuadros points out that while he was born a minority, he will not die one. Given anticipated population trends, by 2050 half the U.S. population will be non-white, and half of that will be Hispanic. There will be no one majority, so the concept of minorities will lose their meaning. How we deal with this transition is a major challenge of the 21st Century. Cuadros likens the transition to the stages of grieving, from denial to anger and eventually to acceptance. Siler City is well along in that process, helped by its success as a state championship soccer team. But it wasn't easy.

Initially, there was a tremendous anti-immigrant reaction by the locals, capped off by a rally in the town square featuring David

Duke, former grand dragon of the KKK and erstwhile politician. Duke bashed the poultry plant and its workers, but rather than continue the rally with a march on the poultry plant, he and his entourage filled up on fried chicken at a local restaurant for lunch.

The hypocrisy is revealing: They don't want immigrant workers and their families, but they sure want their chicken. Similarly, Americans want their tomatoes and blueberries picked, their lawns manicured, their Christmas trees cut and their meat packed. And they want it done cheaply, efficiently and invisibly.

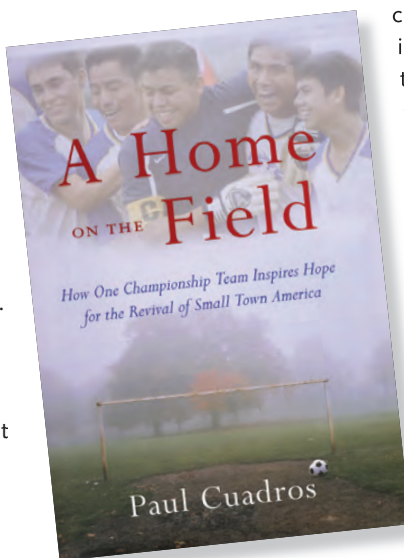
This reflects the great dichotomy of the current immigration issue. This immigration is motivated by the same American ideals that brought all of our ancestors to these shores. America is the dream of a better life for oneself and one's children. Siler City is being transformed by that dream, from a sleepy, slowly dying Southern town into a robust growing community. Spurred by the Latino labor, the rising tide is lifting all ships.

For the immigrants, there is still a great struggle. The Latino kids frequently hurt themselves as they try to deal with the larger society. They drop out and reject the system that rejects them. Self-esteem in a foreign homeland is an ongoing issue, as are the deep ties to family in Mexico. Family often takes

priority over getting through school and getting ahead in American society.

The author himself, though born in the U.S. and now a successful writer, is always striving for acceptance. His goal in winning the state championship is to have the pictures of the Latino championship soccer players on the high school's "Wall of Champions" along with the black and white faces already there.

And soon, "that which hath been is that which shall be."



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

Super CNC

New from Miyano, the ABX Series of Super CNC Turning Centers feature two symmetrical sets of spindles, different locations of turrets, and Y-axis slides, allowing for single setup machining and fast throughput of complicated workpieces. On the DHY2 and SY models, a total of 24 tool stations (accepting up to 24 live tools and 48 ID tools) perform simultaneous turning or milling operations. The TH2 model has a total of 36 live tool stations. The 12-station high-rigidity turrets are identical in size and capacity. These turrets incorporate an AC servo motor and a 3-piece curvic coupling, while featuring non-lifting turret indexing.

The ABX Series is available in three models, each with bar capacities of 2" (51mm) and 2.52" (64mm): the ABX SY series with spindle speeds up to 5,000 rpm (51 model) and 4,000 rpm (64 model). The ABX DHY2 series with spindle speeds up to 5,000 rpm (51) and 4,000 rpm (64). The ABX TH2 series is equipped with a unique 3-turret construction with spindle speeds up to 5,000 rpm (51) and 4,000 rpm (64).

For more information, please contact Miyano at 630-766-4141 or visit the company website at www.miyano-usa.com.



X Marks the Spot

The VMX42SR, Hurco's newest 5-Axis machine with a swivel head and rotary table, meets the demands of 5-Axis machining without taking up the floor space typically required of a 5-Axis machining center. The VMX42SR will be available next year and will include software specifically designed to simplify 5-sided machine programming.

Hurco also introduced the VMX60. This addition to the popular VMX line provides 60" of X-Axis travel in a condensed footprint (26" Y-Axis travel and 24" Z-Axis travel).

For more information, please contact Hurco at 800-634-2416 or visit the company website at www.hurco.com.



fresh stuff

Rotary Magnet

Hardinge's new Direct-Drive, Quick-Change Rotary Systems incorporate a direct-drive, rare-earth permanent magnet torque motor with no mechanical gearing. This frameless motor wraps around the spindle. Liquid-cooling wraps around the motor stator housing to increase continuous torque output by 38% to 100% when utilized for rigorous duty cycles and heavy cutting. Thermal isolation mounting arms and a cast iron base enable uniform heat dissipation, which holds the centerline of the spindle constant in the Super-Precision® A2-5 spindle mount design. The $\pm .077$ arc/sec resolution, ± 2.19 arc/sec accuracy encoder is mounted directly on the spindle to ensure extremely accurate positioning. The A2-4, 5C High-Speed Direct-Drive Rotary System is designed to position extremely fast with a high degree of accuracy and without backlash.

For more information, please contact Hardinge at 800-510-3161 or visit the company website at www.hardinge.com.



Vertical Speed

Toyoda Machinery has introduced a new line of vertical machining centers with a high-speed linear guide and boxway VMC line. The direct-drive 12,000 rpm, temperature-controlled spindle is paired with the Fanuc 18i-MB control.

The BM Series, with 6,000-8,000 RPM geared headstock, is ideal for heavy-duty applications in ferrous materials such as cast iron and steel. The iron base is paired with four Y-axis box guideways to eliminate saddle overhang while the extra-wide column expands machining capability. Many high-torque and direct-drive spindle configurations are available in CAT 40 or CAT 50 tapers.

For more information, please contact Toyoda at 847-506-2488 or visit the company website at www.toyoda.com.



fresh stuff

fresh stuff

Shank Your Booty



REGO-FIX has introduced powRgrip PG 32, which allows customers to clamp tool shanks ranging up to 25 mm (1"). This is an increase from the previous maximum clamping capacity of 20 mm (3/4"). PG 32 includes a holder, collet and lightweight mini-press that generates nine tons of force. The system relies on the interference between holder and collet to generate its clamping force. powRgrip is available in metric (2 mm – 25 mm) and inch sizes (1/8" – 1").

The powRgrip system uses the mechanical properties of the holder material to generate gripping force with run-out below 0.0001". It takes less than 10 seconds to press in a tool or remove it from the holder. Because no heat is used, tools can be used immediately after a tool change. PG 32 will be available for purchase in June of 2007.

For more information, please contact REGO-FIX at 800-REGO-FIX or visit the company website at www.rego-fix.com.

Insertion Order

BIG Kaiser Precision Tooling Inc. has introduced a new carbide grade insert, TN14, for rough boring on cast iron materials for improved tool life. Grade TN14 is made from a

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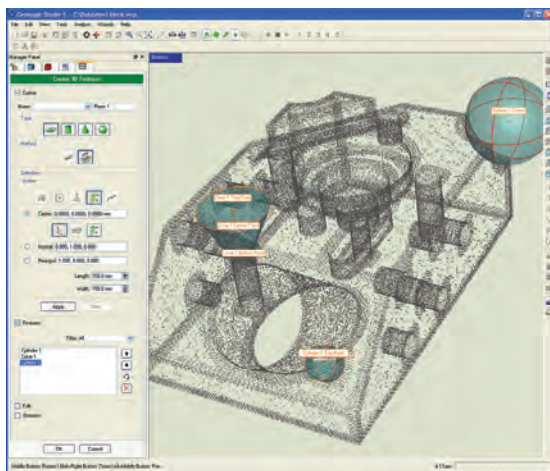
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hard C2 carbide substrate and a multi-layered coating. TN14 is available in CC and SC style of inserts for twin cutter rough boring tools.

For more information, please call 888-TOOL-PRO or visit the company website at www.bigkaiser.com.

It's Magic!



Geomagic® announced the release of Geomagic Studio 9, digital reconstruction software featuring three major areas of enhancement: 3D feature-based modeling, advanced color texture generation and greater versatility with user-defined patch layouts. Geomagic Studio automatically processes 3D scan data for applications ranging from reverse engineering to design and analysis, and can automatically create accurate models from any physical part.

The new features automates through the auto-detection of 3D features; a redesigned powerful macro system with the ability to add logic and flow control to automation scripts; a system that enables users to define their own

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Bijur Delimon International has announced
the release of the SureFire automatic
lubricator with an on-board programmable
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For more information, please contact Bijur Delimon at 919-465-4448.

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Gatco, Inc. has introduced rotating bushings – self-contained bearing cartridges that are used in precision machining operations. The tool and the bushing's inner liner turn together, virtually eliminating friction and reducing tool wear and breakage. Gatco has designed its product as a quick-change, precision cartridge with self-contained bearing assembly that is machine-installable in minutes.

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For more information, please contact Gatco at 734-453-2295 or visit the company website at www.gatcobushing.com.

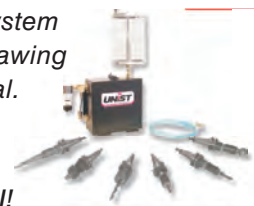
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View From the

Border Patrol



Border Patrol

NG: HI, T.J. CAN YOU BEGIN BY TALKING ABOUT WHAT YOUR JOB ENTAILS AS A BORDER PATROLLER AND AS THE PRESIDENT OF THE NATIONAL BORDER PATROL COUNCIL?

TB: As a Border Patrol agent I'm responsible for securing the border, stopping everything that comes across the border. Obviously we're not successful in that. We have millions of people in the country illegally, although it's estimated that at least a third of the people or perhaps 40 percent of the illegal alien population in the United States are overstay. They come to this country legally but overstay their welcome. My other job, as president of the National Border Patrol Council, consists of the traditional things that labor leaders do – collective bargaining, representing the interest of the employee, as well as speaking on behalf of the employees in the media and lobbying on their behalf in the halls of Congress.

NG: ARE YOU ACTUALLY STATIONED AT THE BORDER?

TB: The Border Patrol of late has been consigned to the border. We have a few stations that are in what's called the interior, but most of our stations are right along the border.

NG: WHAT MADE YOU WANT TO BECOME A BORDER PATROL AGENT?

TB: Seemed like an interesting job. I had an interest in pursuing a law enforcement career and had an application in with the Los Angeles Police Department. I was living in Los Angeles at the time, and had seen the Immigration and Naturalization Service special agents working in the same factory I was working in. They didn't have any openings for criminal investigators but they did for border patrol agents. I entered with the thought of using that as a stepping stone, but fell in love with the job and have been here for 28 years.

Noah Graff recently talked with T.J. Bonner, president of the National Border Patrol Council, a union that is part of the American Federation of Government Employees, about his dual role in thwarting illegal immigration while advocating as a labor leader.

BY NOAH GRAFF

Border Patrol



Above: Photo of T.J. Bonner, President of the National Border Patrol Council and border patrol agent.

NG: WHAT IS THE DAILY ROUTINE FOR BORDER PATROLLERS?

TB: It depends on where you're stationed. In some areas the daily routine is about as boring as boring can be, because they sit you in one spot and tell you to watch that piece of the border. In other areas you have the freedom to patrol around and engage in what's called sign cutting, which is looking for footprints or other signs of disturbances that indicate people have crossed the border. It's not always something as simple as a footprint. In many cases people will get very clever when they cross the border. They'll put boots on their feet so that it's just a scuff mark, or they'll lay a board across and have people walk across like on a balance beam.

NG: DO AGENTS THEN GO HUNT THEM DOWN?

TB: Then you follow the footprints. In some areas where you're close to cities, you're watching them and directing other agents in because it's impossible to follow footprints on asphalt; so if they're in a highly urbanized area you're relying much more on visual than you are on looking for physical evidence. We use a range of technology to detect people as they come across the border. We have a few cameras now but mostly sensors, which are

seismic devices that pick up vibrations. Unfortunately, it also picks up vibrations of animals, so if you have a herd of cattle they will set it off, and depending on how sensitive the setting on the sensor is, you can have it tripped off by smaller animals like coyotes.

NG: WHAT ARE THE UPS AND DOWNS OF A JOB LIKE YOURS?

TB: I love the challenge of tracking down someone who knows they're being followed and they're trying to throw you off the trail. It's a very satisfying aspect when you outwit and capture them. The most difficult part is working in some of the extreme temperatures. I work out in the mountains of San Diego, and in the winter-time we will get snow out there. In the summertime we will get triple-digit heat. Working in the extreme temperatures exposes the agents to as much danger as it does the people who are out walking.

NG: WHERE IS THE MOST DIFFICULT PLACE TO STOP ILLEGAL ALIENS?

TB: Currently the number one hotspot is Tucson, Arizona. It's the favorite crossing point for smugglers. Before that, it was San Diego, and before that, El Paso.

It shifts around. When the Border Patrol places its resources in one area, smugglers adapt and move to a different area. After all, they're in business to make a profit.

NG: HOW HAS THE JOB OF BORDER PATROL AGENTS CHANGED SINCE YOU STARTED?

TB: The big change was the adoption of the strategy of deterrence, which came about in the mid 1990s. The theory of the strategy of deterrence is to have agents in high visibility, high profile positions right along the border. The people who are making \$5 a day will come up to the border and see all of these agents and turn around and go home. They figure out ways to get by the Border Patrol. One of the results of this new strategy has been an increased reliance on professional smugglers. It's now estimated that perhaps as much as 90 percent of the traffic that crosses that border illegally is aided by professional smugglers. And the cost of being smuggled across has grown commensurately, about tenfold in the last 15 years. So what used to be \$150-\$300 crossing is now in the range of \$1,500 to \$3,000, and that's for someone from Mexico. The farther you get from Mexico, like from Canada or China, the more it costs, because there are more palms to be greased.

NG: WHAT IS THE MOST IMPORTANT GROUP OF PEOPLE YOU ARE FOCUSING ON?

TB: Obviously the terrorists. In February 2005, James Loy, Deputy Secretary of the Department of Homeland Security, testified in front of the Senate Intelligence Committee that al-Qaeda had a keen interest in exploit-

ing the weakness of our southwest border for sneaking across. The reason is very obvious; when you come across through legal means, albeit fraudulent legal means, you leave a trail. There is then a danger that someone is going to connect those dots and track you down before you can carry out your terrorist attack. If you slip across the border unknowingly, no one knows you're in the country.

NG: WHAT GROUP OF PEOPLE DO YOU TARGET NEXT?

TB: It would be the large grouping of people I call criminals, whether they be drug dealers, drug smugglers or just coming in for the express purpose of preying upon people in our communities. About eight percent of the people the border patrol catches have some type of criminal record.

NG: WHAT IS THE BEST SOLUTION TO PREVENT FOREIGNERS FROM ENTERING THE COUNTRY ILLEGALLY?

TB: The best solution is to address the problem at its root, which is the workplace. We know why most people are coming across the border illegally; they're seeking to better their lives economically. If they can't find work in the United States they simply won't come, which will leave you with a smaller group of criminals and a handful of terrorists. It would be much easier to spot and apprehend that smaller group if you weren't consumed with dealing with the millions of people who are coming across every year looking for work. The Border Patrol catches an average of 1.2 million yearly, mostly people simply looking for work. Our agents on the ground estimate we were only about 25 to 33 percent successful, which means that several million people get by us every year. Now some of them go back home, so some of the people you're catching are repeat offenders. In fact, the rate of people we catch multiple times in any given year continues to climb. Last year we apprehended about 1.2 million people, three-quarters of a million of whom were distinct individuals. The others were multiple apprehensions of people who got caught numerous times. I've caught the same group of people four times in one eight hour shift.

NG: IF YOU WERE A POOR MEXICAN, WOULD YOU TRY TO CROSS THE BORDER?

TB: I think that any person who is looking out for themselves and their family's best interest would make that journey. You can't blame them for coming across and breaking our immigration laws. You have to blame our system which encourages people to come across, because on one hand we say, "Don't cross the border" and we have Border Patrol agents there, and fences in some areas, but once they get by the immediate border area,



no one is looking for them. So the word gets out that, “Hey, once you make it, once you run the gauntlet you’re home free. No one’s going to be looking for you.”

NG: IF YOU WERE THE SUPREME LEADER OF THE U.S. GOVERNMENT FOR ONE DAY AND YOU COULD MAKE ONE CHANGE OR NEW POLICY, WHAT WOULD IT BE?

TB: Employers need to be given a simple, foolproof mechanism to verify that an individual has a right to work in this country, and that requirement has to apply to everyone. The logical document to establish is a smart Social Security card that contains no more information than what the current card contains, like a name and a number, but it would also have a digital photograph encoded. It would also be biometrics encoded in a very sophisticated algorithm, so when the employer swipes the card through a reader they would get an answer back in a matter of minutes saying, “Yes, this is a genuine card, feel free to hire this person.” That information would also bounce into a master database so that enforcement agents could compare the records.

NG: WHAT ABOUT THE SECURITY OF CANADA’S BORDER OR FLORIDA’S COAST? DO THEY CONCERN YOU AT ALL?

TB: Absolutely. For example, Canada’s border has about 4,000 miles of land bordered with the United States, and we have fewer than a thousand officers to patrol that 24 hours a day, seven days a week. That means that, at any given time, you have perhaps 25 percent of that workforce out there.

NG: HOW MANY OFFICERS DO YOU HAVE ON THE MEXICAN BORDER?

TB: We have about 10,600 to 10,700 patrolling 2,000 miles of border.

NG: TO WHAT EXTENT HAS ILLEGAL IMMIGRATION HURT AMERICAN WORKERS?

TB: In several very significant ways. It has depressed the wages, primarily of the lower class and lower middle class workers, but it has also significantly increased the health premiums that all Americans pay. These are people in the lowest paying jobs who typically do not have any health insurance. If they are treated in our hospitals, someone is going to pay for that, and that someone is the person who is paying the health insurance premiums. There is a reason that health insurance premiums have steadily climbed at an alarming rate over the past decade or so. Another effect is that property taxes in many states have risen dramatically in order to pay for the education of the children of the illegal immigrants. Now I’m not suggesting that we don’t treat people in hospitals and that we don’t educate their children. I’m suggesting

that we stop inviting them in here to work illegally so you don’t have these fringe problems like health care and education, because if they’re not here working they’re not here. I have never encountered anyone at the border who said, “I’m not going to work here,” “I’m coming across because I think you guys have a better educational system,” or “I like your health care system.”

NG: ARE IMMIGRANTS DOING JOBS THAT AMERICAN CITIZENS DON’T WANT TO DO?

TB: To the extent that you have jobs that Americans do not want to do or that you don’t have enough of a labor pool, then by all means immigrants are important. Immigrants have been used historically in United States to fill jobs where there was a need. The problem comes when you have a surplus of people coming in and when you are not selecting people who have the skills that you need. We’re getting the poorest of the poor and the most unskilled workers coming in rather than soliciting people who have the job skills that we need.

NG: IS SOME IMMIGRATION NECESSARY TO SUSTAIN BUSINESSES IN THE UNITED STATES?

TB: I think so, but bear in mind that we have a very generous immigration policy — the most generous in





the entire world. Every year close to a million people come into this country legally.

NG: DO YOU THINK THAT A CHEAPER, ILLEGAL LABOR FORCE IS IMPORTANT FOR STOPPING COMPANIES FROM OUTSOURCING EVERYTHING TO OTHER COUNTRIES?

TB: I don't think so. I think that corporations have to have a conscience and have to do what's not just best for their bottom line, but what's best for their country. Because after all, they're Americans also.

NG: BUT YOU KNOW A LOT OF THEM WOULD CLAIM THAT IT'S THE ONLY WAY THEY CAN STAY COMPETITIVE.

TB: And I disagree with that. I think we're engaged in a race to the bottom if that's the prevailing theory. Let's see how low we can drive the wages. We simply can't compete with a nation like China where you can get unskilled labor at \$0.50 an hour. We're never going to win that game, so you have to look at the big picture rather than focus just on the profit margin.

NG: WHAT IS YOUR GREATEST FEAR ABOUT THE FUTURE OF ILLEGAL IMMIGRATION?

TB: My greatest fear is that the next terrorist attack

happens on American soil and is carried out by foreign terrorists. And that is the way it's going to happen, whether they exploit the weakness in our legal immigration system as they did for the September 11, 2001 attack, or whether they slip across the border. The prospect of another terrorist attack is still something that should frighten any sensible American.

NG: IS THERE ANYTHING MOVING IN THE RIGHT DIRECTION?

TB: The one thing that gives me some optimism is the fact that they're finally hiring more agents, because regardless of what you do in the interior you're going to need more than the current number of agents. We have about 12,000 agents right now, which means that at any given time, 3,000 agents are out there patrolling 8,000 miles of land and coastal areas. When you do the math you realize we are spread very thin. The commitment to add agents and resources for these agents so that they can accomplish their jobs gives me some hope, but we still have a long way to go.

Thanks, T.J.



The Struggle to Survive

A Manufacturing Company's Progress Post-Katrina

More than a year after Hurricane Katrina, the Mechanical Equipment Company (MECO) lies abandoned on the banks of New Orleans' Industrial Canal.

Birds fly through cavernous holes in corrugated metal walls. Inches of grayish-black mud cake the office floor, the residue of a 17-foot water swell. Sickening black mold dots dry wall.

Founded in 1928, MECO had grown into a leading global supplier of high-tech water purification systems before Katrina. Now, outside of the 90,000-square-foot facility lies broken glass and a few corroded parts along side a dead bird. MECO's France Road location is deserted, as are most nearby Port of Orleans businesses.

No federal money has arrived. Government assistance has moved slowly for hard-pressed employees, many of whom lost nearly everything they owned and held dear. The city of New Orleans dithers with three false starts on a citywide rebuilding plan. MECO can't wait.

Katrina Strikes

On August 28, 2005, MECO was enjoying its highest backlog. This leader in water purification plants for offshore oil and gas platforms and the biopharmaceutical industry produced the majority of water for IV bags worldwide. *New Orleans CityBusiness* Magazine named MECO 2003 Innovator of the Year for its lightweight "Cajun Canteen" military purification system, one of several systems MECO supplies to the U.S. Armed Services.

Yet, within hours of that ill-fated August day, MECO became a company on the edge of extinction.

MECO had established hurricane procedures since its 1943 move to France Road, an ideal location with brackish canal water for purification system testing. Employees squeezed equipment into the machine shop elevated four feet above the ground. Flatbed trailers lifted items from ground level into the elevated building. Past storms had produced, at most, one to two feet of water in the plant.

With the onslaught of Katrina, for the first time, the levees didn't hold. With an estimated storm surge of 20 to 30 feet, a potent brew of seawater, silt, oil, acid and other contaminants swirled over in-process and completed product. The contamination wrecked completed

By LYNN WALTERS



Photos courtesy of Terry Poche, Covington, LA and Ethan Necaise, MECO

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Johnny Lemons
Fabrication

Randy Gonzales
Machine Shop

120 VOLTS

The Struggle to Survive

biopharmaceutical purification systems, which took up to six months to produce, and 200 smaller desalination units. Rust quickly destroyed 50 years of tooling, including a CNC welding saw delivered a week before Katrina.

President George Gsell, the third generation of family to run MECO, and his nephew Will Brown were the first ones into the plant after Labor Day, thanks to a U.S. Army pass.

"I trudged through the mud and debris," Gsell said. "That's when I understood it was over here."

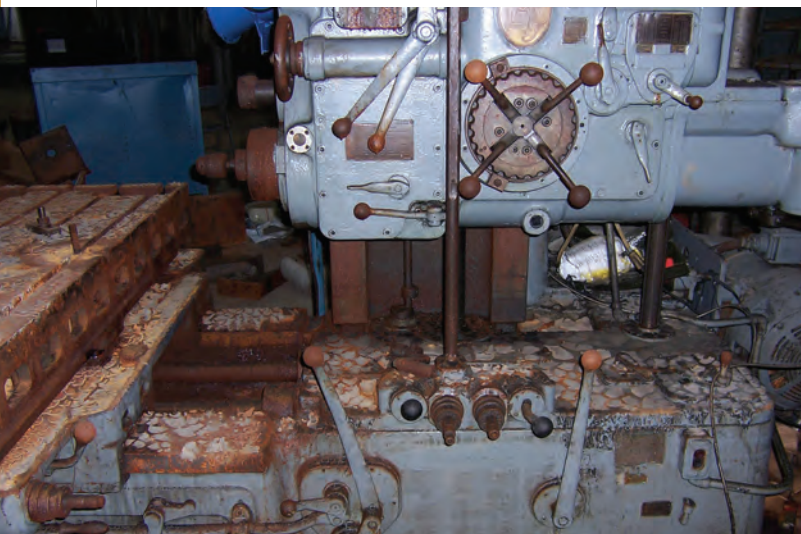
Gsell's first action was to locate employees scattered from Texas to Tennessee. More than 70 percent of MECO employees' homes were completely or severely damaged. Many lived in St. Bernard's Parish, which was totally flooded.

"The only thing I could think of was to keep them employed," said Gsell. "I sent out a note that everybody's got a job and they were not going to miss a paycheck. I wasn't sure how long I could keep that up."

A few stories

Austin Bodden has been a MECO welder for 39 years. Bodden's family – including son, Austin II, a nine-year MECO employee – not only lost their homes but also Austin's father-in-law. The elderly man refused to leave his home. His body was identified in February through DNA matching.

"I couldn't get a loan and only got some FEMA rental assistance," said Bodden, whose flood insurance lapsed two days before Katrina. "When you ain't got no money, you can't do nothing, and that's the problem. I'm paying \$1,350 a month in rent."



The Politics of Limbo

The actions of government and politicians are playing a critical role in how communities recover from Katrina.

The August 2006 study, "GulfGov Reports: One Year Later," concluded New Orleans' failure to draft a rebuilding plan threatens long-term recovery.

Produced by the Rockefeller Institute of Government of the State University of New York and the Public Affairs Research Council of Louisiana, the report identifies housing and worker shortages as major impediments. The opposite is true for other local governments whose leaders pushed ahead with rebuilding plans, including St. Tammany Parish, where MECO operations are now located.

Economist Loren C. Scott called New Orleans' slow recovery a "series of brakes." Many small things have halted progress, said Scott, who issued his latest quarterly study on Katrina's economic impact in June.

Flooding was not covered by many home insurers. New FEMA flood elevation guidelines weren't issued until April 2006, delaying rebuilding progress. The \$7.5 billion "Road Home" housing aid program has yet to cut checks for embattled homeowners.

With 10,010 homes rendered uninhabitable – seven times more houses destroyed than in any other U.S. natural disaster – employees have difficulty finding Gulf Coast housing, said Scott.

The Struggle to Survive

L.J. St. Philip, a MECO employee since 1964, assembles and tests the company's patented vapor compression units – the heart of the purification system. St. Philip's Chalmette house had 17 feet of water. He crowded into a two-room apartment in Baton Rouge with his wife, son, daughter, son-in-law and two grandchildren. After purchasing a house in Mississippi in August 2006, St. Philip now has a 30-year mortgage at age 64.

Unlike larger companies, MECO didn't have resources to provide trailers as temporary living quarters. Gsell and senior managers instead devoted their energies to reviving the enterprise.

The Comeback Fight

For MECO, the road to recovery led away from New Orleans. With no suitable locations near the original plant, MECO, like many New Orleans residents, found sanctuary in Houston.

MECO first worked on folding tables in leased space. In December 2005, the Houston operations turned permanent in a 66,000-square-foot facility in Sugar Land, TX, with some employees commuting 350 miles between Houston and Louisiana. About 100 employees now work in Houston's engineering, service, assembly and test center functions.

MECO contracted out machine work after the move. Randy Gonzales, shop foreman, competed with the booming oil and gas industry for resources. Precision machin-





ing is integral to everything MECO does, tolerances are tight –.0005 for a tapered vapor compressor impeller. MECO also needed stringent quality control, extensive traceability of materials and validation documentation.

“The cost was astronomic, turnaround was long, and the quality was not what we were used to,” said Gonzales, who began to realize he didn’t want to move to Texas.

The same conclusion was reached by other skilled machinists and fabricators.

“These employees didn’t want to leave us, and we didn’t want to leave them,” Gsell said.

The answer for MECO and its employees was the lease of a Goodbee, Louisiana, 50 miles north of New Orleans and Lake Pontchartrain in late December 2005, which was in production by May 2006. The 55,000-square-foot plant has 70 employees, 46 in manufacturing. The machine shop operates CNC machining centers from Cincinnati Milacron and Mazak, cutting stainless steel, titanium, MONEL® and copper nickel alloys. The fabrication systems include plasma cutting, rolling and forming both plate and sheet metal with 24 TIG and MIG welding stations.

In May 2006, MECO received the Excellence in Government Contracting Award as the Small Business of the Year for the U.S. Army’s latest Light Weight Water Purification units (LWP). The company has now exceeded pre-Katrina employment levels with more than 180 employees and expects to have 200 employees by year-end.

MECO’s recovery was aided by many, including its bank, vendors and customers, some of whom placed large new orders. After a meeting with MECO in Houston, Brian Papke, Mazak Corporation president, said, “We have to do something for this company.” Mazak scheduled priority delivery for new machines, arranged extended financing terms, and provided installation and



The Struggle to Survive

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Most employees at MECO's Louisiana plant are now working 60- to 70-hour weeks. The facility is several months from achieving production goals, Gonzales estimated.

"I can't hire nobody," said Gonzales, who is not yet running a second shift. "I'm looking into automation, gantries and robots. It's the only way we can keep up. The people just aren't out there." He is competing with high-paying FEMA jobs.

New Mazak machines have cut cycle times by half. The goal is to eventually achieve full production of MECO products and then pursue contract work.

MECO is still in transition. Wrangling on insurance continues. Gsell estimated MECO has reinvested \$30 million in the business with a total loss of around \$60 million. Despite financial challenges, MECO established a \$100,000 employee relief fund and donated \$25,000 to the Louisiana Disaster Recovery Foundation in late 2005.

MECO and its employees continue to persevere. Commutes of many Louisiana-based employees have gone from under 10 minutes to hour-long trips. Gonzales travels 56 miles one way from his FEMA trailer in Chalmette to Goodbee. The seventh generation to live in New Orleans, Gonzales plans to relocate closer to the plant.

"When you're down there (Chalmette) it's hard to describe your attitude," said Gonzales.. "We call it Katrina-ism. It's not depression, but you're not happy.

"I worry about things around here at work that I can handle," Gonzales continued. "I can't manage FEMA, SBA (Small Business Administration) and the insurance companies, so I deal with this."



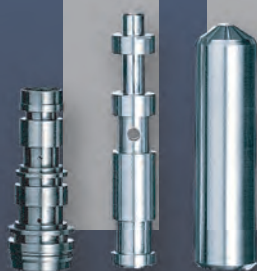
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A continuing column in which we ask smart people to discuss their views on topics related to the future of manufacturing

BY NOAH GRAFF

next

In the last five years foreign car companies have obtained over 50 percent of the sedan market in the U.S. While GM and Ford are presently burdened with restructuring, foreign manufacturers are increasing their foothold in the light truck market that has served as the lifeline for the Big Three in recent years.

In five years, will American car companies still control the domestic light truck market?

Clearly in five years, the traditional “Big Three” will still be an important factor in the U.S. light truck market. However, they will not be as dominant as in the past. Nissan and Toyota are becoming full line producers of light trucks, and Honda and Hyundai are expanding their positions as well, but not in the larger vehicle part of the segment. Their participation is not a surprise considering the shift in buyer wants and needs, and the high profitability of this segment. Also the range of product offerings is being greatly expanded with a multitude of new vehicles such as crossovers (CUVs). The industry is extremely turbulent presently, with major restructuring at the Big Three and unpredictable market drivers such as volatile gasoline prices, government regulations and changing consumer behavior. This environment demands significant agility and a steady stream of exciting new products.

David E. Cole

Chairman, Center for Automotive Research (CAR)

Ann Arbor, MI

Makers like Toyota and Honda, it should be noted, already dominate specific niches such as the compact pickup and crossover segments, and they’ve been gaining ground in minivan and compact SUVs, as well. The real battle is shifting to the full-size pickup, where Detroit products, such as the Ford F-150, continue to post Impala-size numbers and serve as one of the few remaining bulwarks of Big Three balance sheets. The recent slump in pickup sales was a wake-up call, and while soaring fuel prices were a major factor behind the decline, it’s also clear that Detroit will have a hard time maintaining its grip in the face of new import competition.

the facts:

“Toyota has indefinitely halted plans to offer a heavy-duty pickup truck to compete with the Ford F-350 and the Chevrolet Silverado 2500, according to *Automotive News*. Toyota had originally planned to launch its truck as early as 2009, but these plans have now been delayed at best. Meanwhile, Nissan has delayed the launch of its heavy-duty pickup until 2009 or 2010.”

www.autonews.com via www.leftlanenews.com

A crossover SUV (also called CUV for Crossover Utility Vehicle) or XUV (not to be confused with GMC’s Envoy XUV) is a automobile with a sport utility vehicle appearance but is built upon a more economical and fuel-efficient car-based platform.

www.wikipedia.org

Car	2001	2006	2011
Big 3	54%	47%	44%
Asian 3	26%	35%	35%
Rest of Market	19%	19%	20%

Truck	2001	2006	2011
Big 3	77%	68%	64%
Asian 3	16%	24%	26%
Rest of Market	6%	7%	10%

Total	2001	2006	2011
Big 3	66%	58%	55%
Asian 3	21%	29%	30%
Rest of Market	13%	13%	15%

JD Power and Associates
Automotive Forecasting

Nissan's Titan hasn't done all that well, but Toyota is confidently – yet conservatively – boasting it will double sales with the imminent launch of the third-generation Tundra truck. An equally new line-up from GM is due out in early 2007, but there's little doubt that it will become increasingly difficult to head off the sort of decline that decimated the once-overwhelming lead the Big Three once held in midsize sedans.

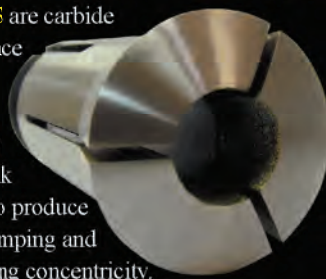
Paul A. Eisenstein
Publisher, TheCarConnection.com
Pleasant Ridge, MI

Over the next five years, domestic automakers will continue to lose light truck market share, but will maintain a majority stake in the U.S. market as DaimlerChrysler, Ford and GM together will account for 64 percent of all light trucks sold in the U.S. in 2011. There will be, however, an increasing amount of competition by new domestic manufacturers in segments traditionally dominated by the Big Three. A key example is the large pickup segment where Toyota's new 2007 Tundra will be much more of a direct competitor to the domestic models than its predecessors. Additionally, Nissan will continue to refine its large pickup entrant, the Titan, and both Nissan and Toyota are exploring HD (heavy-duty pickup) versions of these vehicles. Also, the emergence of the CUV market will continue to benefit new domestic manufacturers in their efforts to penetrate the U.S. light truck market.

Matthew Vicenzi
Analyst, J.D. Power Automotive Forecasting
Troy, MI

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Chris Paine is a man with shoulder-length brown hair and glasses, wearing a dark blue blazer over a maroon button-down shirt and a white t-shirt. He is standing in front of a dark, corrugated metal wall. To his left, a car is partially visible with its front end open, showing exposed wiring and a yellow caution tape with the word "CAUTION" in black letters. The car's wheel is visible.

Chris Paine

is the director of the recent documentary, *"Who Killed the Electric Car."* The film tells of the emergence of electric cars in California during the late 1990s and early 2000s and the car's destruction by the same companies that invented and produced them. The film specifically focuses on the story of the EV1, GM's electric car.

one on one

INTERVIEWED BY NOAH GRAFF

What did you want to achieve by making this film?

I wanted to turn people on to electric cars and plug-in cars, show that the technology is here, that these things are available and that they're on the road. I think that was the main surprise for a lot of people, that these cars are possible. I also wanted to tell what I thought was an extremely entertaining, dramatic story about something that went wrong in America.

What's the most important thing about the EV1 and other electric cars?

The most important thing is it's a way to get America off foreign oil. Electricity is domestically produced, it doesn't require any tankers from another country, and it incorporates American technology – certainly in the case of the EV1.

What's your response to car companies saying CO₂ produced from coal to make electricity for these cars is environmentally harmful?

It's funny that the car companies would even bring up CO₂, given their records for stopping any emissions controls for cars and any improvement for mileage per gallon since the 1970s. However on a macro level, it's certainly a concern. The short answer is that the American domestic power grid, which is 55% coal, still drops your CO₂ level by half of that produced by a traditional car. Also, as the power grid gets cleaner when electricity can be made renewably, electric cars will be even cleaner.

What is your response to GM's claim that there wasn't enough demand for the EV1 to be profitable?

This was the official reason that the EV1s were discontinued. In my film the consumers are one of the guilty parties, but our experience was that, A: Nobody knew that they were even an option. Most people had never even heard that they could get one. B: They were rarely available for sale. C: GM marketed them so that only a super early adopter would have had a chance to drive one.

Why does the film focus on GM more than the other car companies?

That's a great question. Of course the other makers are mentioned, but the EV1 is sort of the protagonist of our story. GM destroyed their own creation. So I think in some ways they're the best tragic figure.

Will the government play a bigger role for fuel efficient cars in the future?

Government is the most important player in this. Corporations won't lead this. A push from the public is an incredibly important component in this as well, but without government

regulation, we wouldn't have had seatbelts and airbags, and the mileage wouldn't have gone up as the agreement says – from 13 to 24 miles per gallon.

What are you most optimistic about for the future of electric cars?

I think the big plus is that people are seeing that you can make money building plug-in cars. And I think that the public understands that with a plug-in hybrid you can go 300, 500 miles on range. As new batteries come on the market, it will really help electric cars out.



What are you the most pessimistic about for the future?

Resistance to change.

Do you believe that fuel cell technology is a practical goal by 2010 as GM claims?

No, I think the fuel cell is a boondoggle. I think GM and the others like it because there's a lot of federal money attached to it, and it keeps them from having to do anything now.

What did you like and dislike about the EV1?

I loved the speed. I didn't like that I couldn't buy it, and it didn't have a good tape player.

If you could drive any car for a day besides the EV1, what would that be?

The Tango by Commuter Cars up in Spokane Washington. George Clooney has one.

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how it works

BY BARBARA DONOHUE

The Right Tool for the Job

Clever, specialized and innovative tooling can save time and money, and even make it possible to economically machine those “impossible” parts

How would you make a hole a foot in diameter? How would you make a 1 mm hole? Could you then align a reamer to that little hole exactly right?

How would you go about cutting threads on a slender titanium bone screw three inches long?

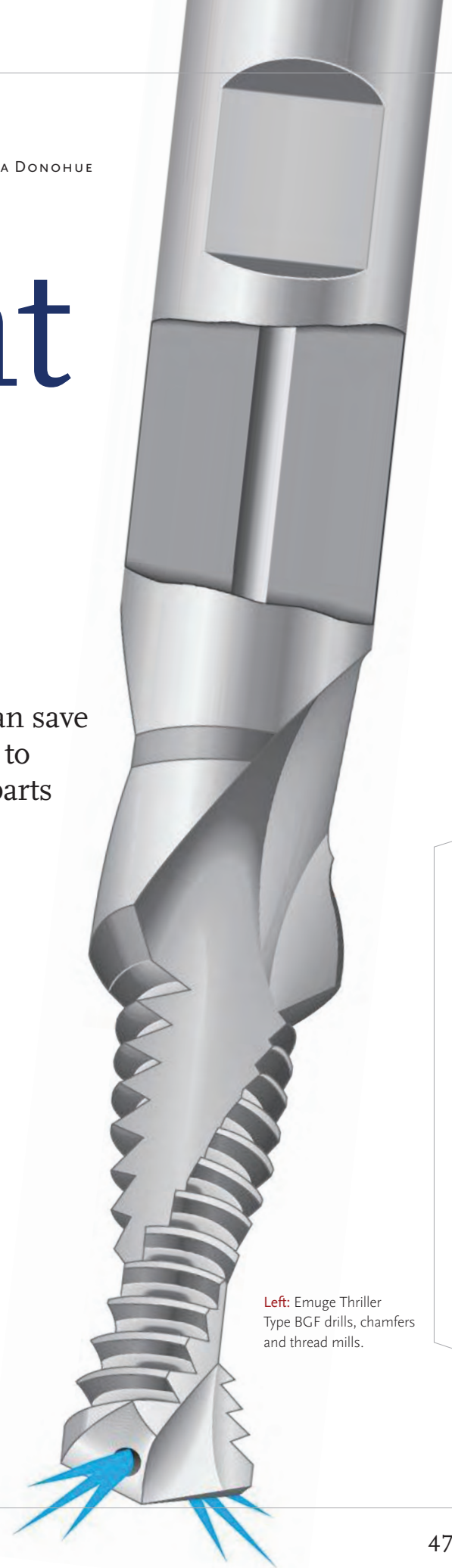
And what would it be worth to know for sure when you're turning Inconel that the edge on the cutter is staying nice and cool? What would this mean to your cutting speed? To your tool life? To the surface finish? To your profits?

It's been said that there is nothing new under the sun. That may be true, but the creative folks in the tooling business never stop looking for ways to help you save time, save money and get the contract for that nearly-impossible-to-machine part. Here are some tools and technologies that can make your work easier and more profitable.

Threading / drilling is thrilling

Drilling, countersinking and thread milling aren't news. But what if you could do all three with a single tool? You could save time and maintain accuracy with no tool changes and no repeatability issues.

The vividly named Thriller tools from Emuge Corporation in West Boylston, MA, do just that. One version, the BGF, first drills and countersinks a hole (see figure). Then it mills the thread. It is intended for short-chipping materials, and for producing threads in the range of M4 to 3/4". This Thriller is available in a 2-flute design, or in a 3-flute design, which shortens cycle times and performs well on cast-in thread holes, according to Emuge product literature.



Left: Emuge Thriller Type BGF drills, chamfers and thread mills.



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how it works

Another version, the ZBGF, doesn't drill first, but it generates a threaded hole in solid stock. The lower figure shows the steps: First the tool is positioned at the center location of the hole. Then it moves off to the side to find the starting point for the thread. It revolves around the center position, cutting threads as it goes deeper into the material. Finally, when the hole is complete, the tool returns to center and retracts. This type of Thriller is designed for hardened or difficult-to-machine materials for thread depths up to 2x the hole diameter. It produces short, easy-to-remove chips, even in materials that tend to be long-chipping.

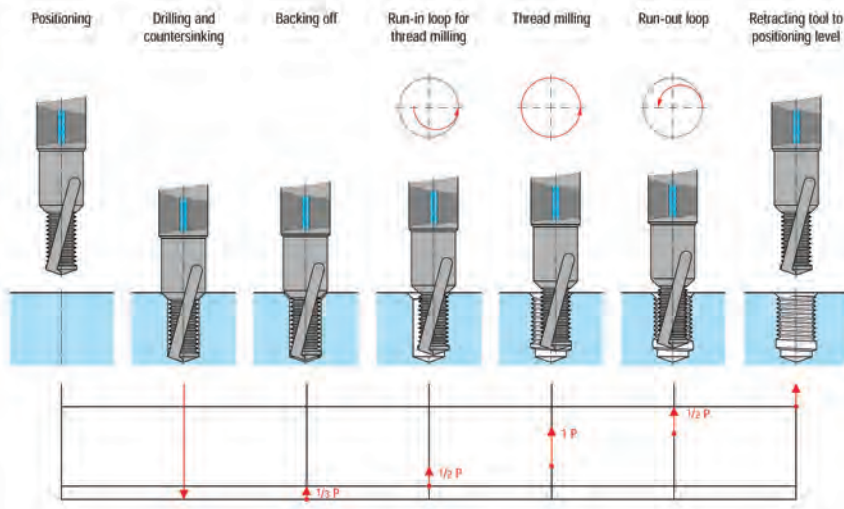
Both types of Thriller include through holes for coolant. The Emuge web site provides programming instructions for thread milling with Thriller tools.

Give it a whirl—cutting threads on challenging parts



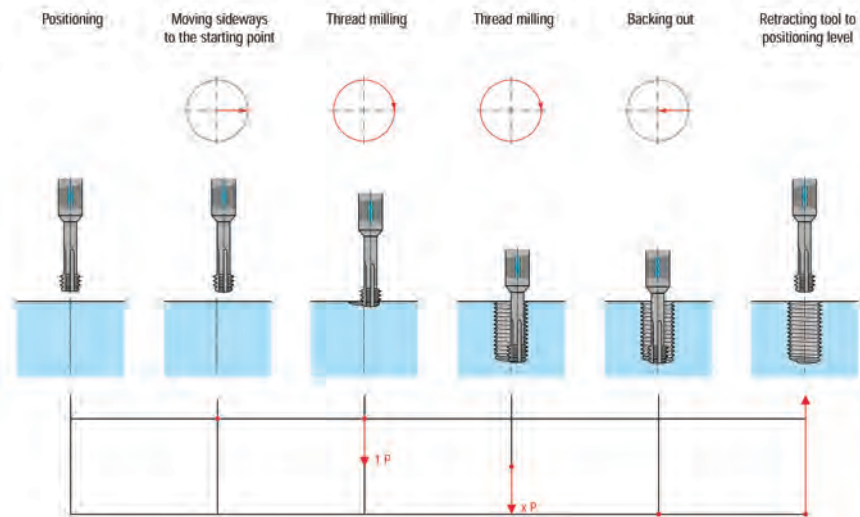
Above: Thread whirling attachment for Citizen L20/L32 & M/20/M32 with insert style cutter holder ring.

Thread whirling, a technology developed decades ago, is gaining popularity as a machine accessory for putting threads on parts such as bone screws, where the length to diameter ratio is large. For this type of part, the pressure required for single-point thread cutting tends to bend the part, causing accuracy to suffer. Thread whirling uses multiple cutters at the same time, so the cutting forces counter each other and bending is not an issue.



Left: Emuge Thriller Type BGF drills and then thread mills.

Right: Emuge Thriller Type ZBGF produces a hole and threads at the same time.



A typical thread whirler accessory provides multiple cutters that surround the screw blank and spin — or whirl — around the blank as it turns slowly. The whirler spins at perhaps 5000 rpm, cutting the threads, while the screw may turn at about 20 or 30 rpm, explained Scott Laprade, sales and marketing manager at Genevieve Swiss Industries, Inc., Westfield, MA. The photo above shows a thread whirling attachment designed to operate with several different Citizen screw machines. A thread whirler accessory may mount on the turret or on the gang slide.



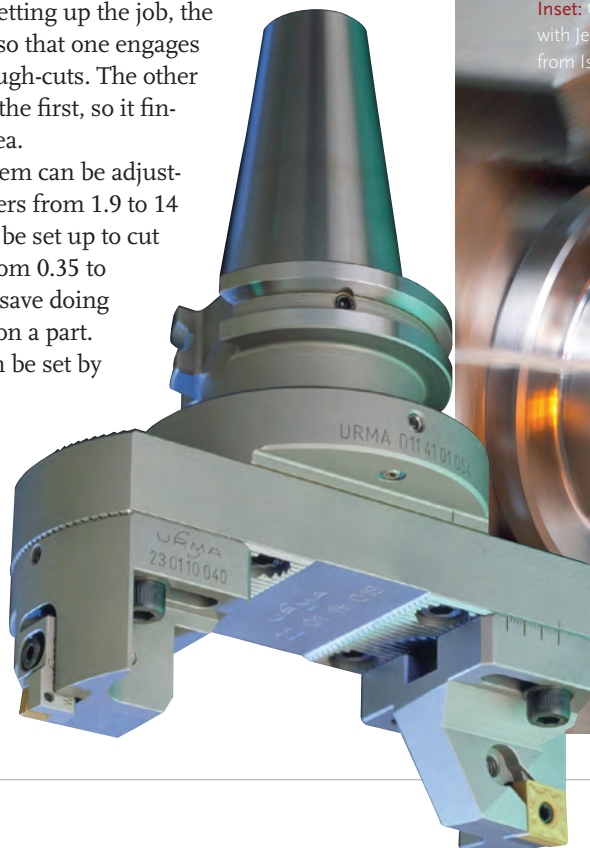
Above: “Whirling” a titanium bone screw with a thread whirling attachment on a Citizen C16.

Rough/finish boring system: Why use two when one will do?

The IntraMax boring system performs rough and finish boring in one operation, with one tool. The tool has two adjustable cutters mounted on opposite ends of a beam. In setting up the job, the cutters are adjusted so that one engages the part first, and rough-cuts. The other cutter is offset from the first, so it finish cuts the same area.

The IntraMax system can be adjusted for inside diameters from 1.9 to 14 inches, and can also be set up to cut outside diameters from 0.35 to 9.8 inches. This can save doing a turning operation on a part. Finish diameters can be set by 0.0002” increments.

Right: Command Urma IntraMax modular boring system can perform rough and finish boring of large, deep holes in a single machine pass.



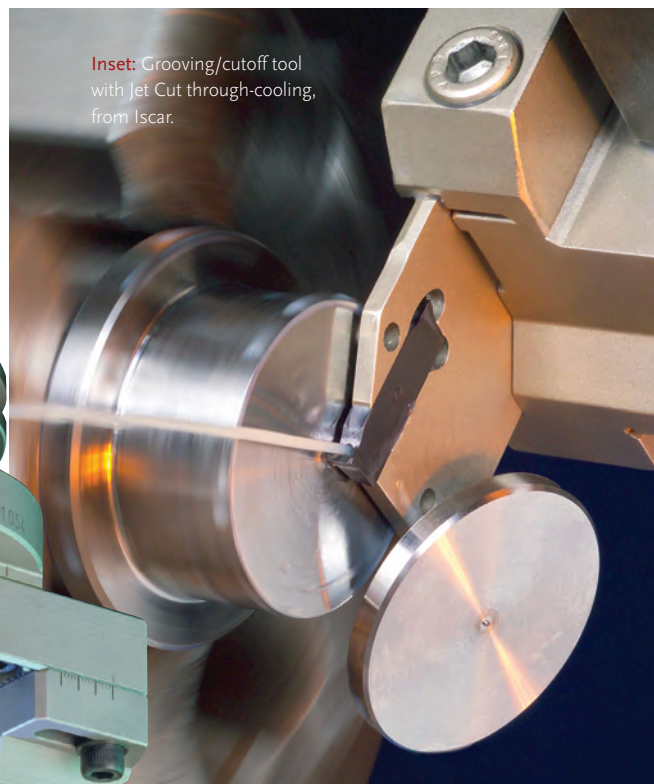
Above: Outside diameter roughing and finishing, completed in a single pass on a vertical machining center with the Command Urma IntraMax system, eliminated the need to perform a turning operation.

Made by Urma AG, of Switzerland, the IntraMax boring system fits machines with HSK 63A and 100A, V-Flange or BT tooling, and is available through Command Tooling Systems, Ramsey, MN.

To keep cool, stay focused

Many are the benefits of keeping the cutting edge cool. Several manufacturers, three of whom are noted below, have developed tool designs that deliver coolant directly to the business end of the cutter. Keeping the edge cool helps prevent or delay failure modes such as built-up edge or cratering, which are aggravated by high temperatures. A cooler cutting edge can also produce a better surface finish.

Cool through and through



Inset: Grooving/cutoff tool with Jet Cut through-cooling, from Iscar.

how it works

Coolant has particular difficulty reaching the cutting edge in deep grooving and parting operations. To alleviate this problem, Iscar Metals, Inc., Arlington, TX, offers an ingenious method for cooling this critical area; a grooving/cutoff tool that supplies coolant right through the insert, delivering it near the cutting edge. This Jet Cut version of the company's Do-Grip parting tool, recommended for use with stainless steel and high-temperature alloys, keeps the cutting edge temperature down. This can extend tool life by as much as a factor of three, according to Michael Gadzinski, training manager at Iscar.

Coolant can be delivered to the insert through the coolant passage in a special blade used on regular blocks, or through a special block. Both incorporate connecting ports and passages for the coolant supply.

For Jet Cut, the coolant pressure should be at least 200 psi, Gadzinski said. Any coolant can be used, but it needs to be filtered through a 10-micron filter. "The big thing people who are running high pressure coolant need to be aware of is filtration," he said.

Across the insert



Above: Toolholders deliver coolant across the insert in the Point-Blank system from LMT-Fette.



Above: Point-Blank toolholder from LMT-Fette.

The Point-Blank Direct Flow turning holder from LMT-Fette, Cleveland, OH, takes a different approach. Standard inserts fit in the holder. Three holes next to the insert flood its surface with coolant. There is also boring bar that uses a similar coolant delivery design.

Air or liquid



Above: Jet-Stream toolholders from Dorian Tool blast air or liquid coolant through the insert clamp directly across the insert.

The Jet-Stream turning toolholder and boring bar from Dorian Tool, East Bernard, TX, provide either air or liquid coolant through an opening in the clamp that retains the insert in the holder. The boring bar includes a second coolant or air jet that helps flush away chips.

Dorian Tool originally developed this focused-coolant concept to meet the company's own needs, said product manager Alan Steinberg. From there, the concept evolved into Jet-Stream products and went on the market several months ago.

Very small holes

Sometimes it seems that parts are just getting smaller and smaller. With this decrease in size comes tighter tolerances and accompanying challenges in machining. Following are two tools specially designed for hole-making and reaming in small dimensions.

Micro Boring



Above: Multidec Bore Micro holder & quick-change boring bar with thru-coolant, from Genevieve Swiss Industries.

For boring small holes, 1 mm to 8 mm in diameter, the Multidec-Bore Micro offers a variety of cutter shapes in coated or uncoated carbide. The tool holder fits in a standard chuck, and the cutter insert is secured in the tool holder with a special nut that allows changing inserts by hand. The toolholder locates the insert axially and radially, so no adjustments need to be made after changing inserts. The Multidec-Bore Micro is made by Utilis of Switzerland and distributed in North America by Genevieve Swiss Industries, Inc.

Orbitally Floating Micro Reamer Chucks



Above: Orbitally floating micro reamer chucks from Genevieve Swiss Industries.

Misalignment between a micro reamer and a very small hole in a part can result in inaccurate reams or broken reamers. Or, if you use a conventional floating chuck, it will allow the reamer to misalign with the axis of the hole, resulting in a less-than perfectly round hole. Genevieve Swiss Industries offers a selection of orbitally floating micro reamer chucks. These allow offsets of up to 0.009", while still keeping the reamer parallel to the axis of the hole. Versions of these chucks are available in ER8 and ER11 sizes.

Making possible the impossible



Above: Coolant driven right-angle head and coolant-driven keyway cutter, from Eltool.

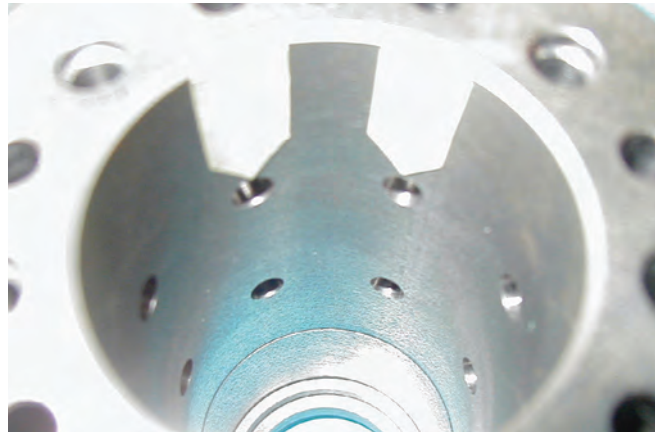
The task: drill more than 100 holes inside an aircraft fuselage component, parallel to the bed of the machine. Sounds like a lot of fixturing and hand-drilling, right? Not necessarily. At Precision Machine and Manufacturing in Grove, OK, they make just such a part on a Toshiba 5-axis vertical machining center. When it comes time to drill all those holes, the tool of choice is a coolant-powered right-angle drill head, said Wade Caudill, product development engineer at Precision.

how it works

Able to fit into openings as small as one inch in diameter, the Titespot head from Eltool Corp., Cincinnati, OH, uses high-pressure coolant to drive a positive displacement ball piston motor. Depending on the load, the coolant pressure needs to be between 200 and 2000 psi, said Ed Crotty, vice president of marketing at Eltool. The speed of the unit depends on the load, the coolant pressure and flow rate. For example, with 6 lb/in of load, the speed might be 5000 rpm at 450 psi and 9000 rpm at 1000 psi.

Since the head doesn't depend on the spindle for power, it is possible to mount the Titespot head and use the spindle as an indexing device, which is what Precision Machine does when drilling all those holes. The figures [below and right] show holes drilled with at Titespot unit inside a hydraulic pump housing.

Besides drill heads, Eltool also makes a coolant driven keycutter that machines keyways right on the machine, so a separate broaching process is not needed.



Above: Close-up of hydraulic pump housing showing holes drilled radially in small bore at multiple positions, taking advantage of small profile and indexability of a coolant-driven right-angle head from Eltool.

Mother of invention

All these products started out with someone recognizing a need or problem. If you're having trouble with something in the shop, you're probably not the first person to encounter it. If you have the idea that "this process can be done more efficiently," you're probably right. Ask around. Check the Internet. Someone out there may have already created a solution. If not, maybe this is your opportunity to invent one. It can solve your problem and could become a whole new product line for your company.

Many in the machining business find that part of its attraction is that every day there's something new to deal with. And that's why new technologies are being developed all the time — and old ones dusted off and brought back in new applications — to help keep those parts coming off the machines.

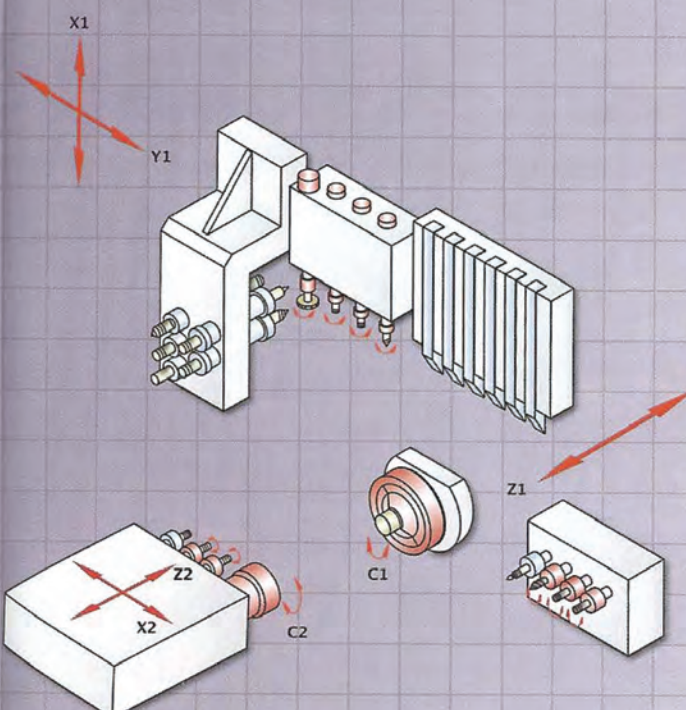


Left: Coolant-driven angle head drilling multiple rivet holes in a prototype leading wing frame component on a Cincinnati Machine V5 vertical machining center.

For more information

Command Tooling Systems: www.commandtool.com, Dorian Tool: www.doriantool.com, Eltool Corp.: www.eltool.com, Emuge: www.emuge.com, Genevieve Swiss Industries, Inc.: www.genswiss.com, Iscar Metals, Inc.: www.iscarmetals.com, LMT-Fette: www.lmtfette.com, "Thread Whirling on CNC Turning Machines": www.index-werke.de/shared/technologie/tn12-0030e.pdf

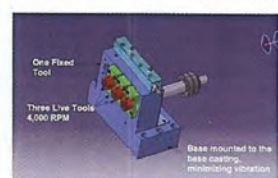
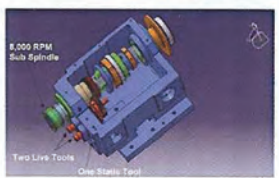
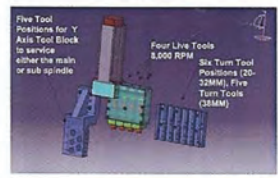
Above: Hydraulic pump housing machined with coolant-powered, right-angle head from Eltool.



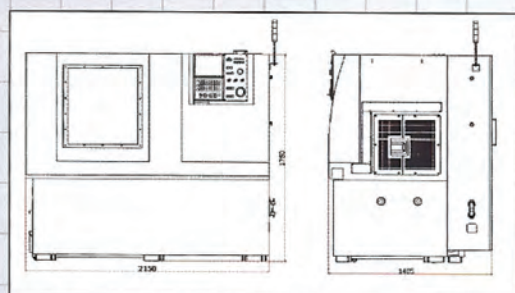
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product focus

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THREADED TOGETHER FOR YOUR INFORMATION:

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.

Thread rolling machines and attachments generate threads by displacing and flowing metal into a thread shape. During the thread rolling process, a hard die is pressed onto a rotating blank attached to the thread rolling machine. The thread rolling machine gradually increases the force that is applied to the workpiece. This force rolls the thread profile from the hard die onto the attached blank. From screws to nuts and bolts, it's a process that has been "on a roll" for manufacturing machined turned parts.



ATI Landis Threading Systems

ATI Landis Threading Systems of Waynesboro, PA, offers a line of thread rolling tools designed to roll form external threads from #0 to 5/8" or M1.6 to M16 diameters on suitable materials having hardnesses including 24 to 32 Rockwell "C". The range is covered by using only 3 sizes of tools. An external thread can be rolled using an EZ ROLLER by employing the same tapping cycle used for internal tapping.

Landis offers the CNC EZ ROLLER in three sizes: the 1 1/2 CNC, which covers the diametrical range from #0 to #12 or M1.6 to M5; the 3 CNC, which covers the diametrical range

from 1/4" to 3/8" or M6 to M10 and the 5 CNC, which covers the diametrical range from 5/16" to 5/8" or M8 to M16. The 1 1/2 CNC is furnished with a standard 3/4" diameter hollow shank, while the 3 CNC and 5 CNC are supplied with a standard 1" diameter hollow shank. These round shanks allow the tools to be used in standard ER style collet tool holders. All three tools can now be furnished with standard size Tap Shanks for use in Rigid Tap Holders or Floating Tap Holders.

For more information, please contact ATI Landis Threading Systems at 800-358-3500, or visit the company website at www.landisthreadingsystems.com.

product focus



Kinefac Corporation

Kinefac has introduced its new Robo Roller, a flexible, quick changeover, automated production system for rolling threads, knurls, worms and other forms on bolts, shafts, and similar parts integrating a Fanuc robot with the new Kinefac® MC-15 FI [CNC] Kine-Roller®. This Robo-Roller can be used to provide automated rolling from a pallet system, bulk feed unit, hopper feed, cell, manual load-unload station or a conveyor system.

The Kine-Trol computer numerical control rolling and part handling system on the Kine-Roller® provides operator support to specify the thread size, thread length, and rolling die specifications to establish the rolling cycle and die match. Robot programs are set up using a teaching pendant and are then stored in the PC.

For more information please contact Kinefac® Corporation at 508-754-6891, or visit the company website at www.kinefac.com.

C.J. Winter

The CJWinter® ER-SERIES of end rolling attachments features include one piece front plate enclosures; roll protection from debris; carbide bushings as standard equipment on all attachments; engraved scale allowing thread pitch diameter adjustments on the machine; high-strength construction for longer tool life; extensive use of tool steel and custom heat treat on wear surfaces; and a special coating on all wear surfaces.

Their compact sizes fit CNC turning centers, Swiss, Multi-Spindle, and many other machines. Shank Sizes include ER 189: 5/8" Standard Shank; ER 190: 3/4" Standard Shank; and ER 191; and 1" Standard Shank. Standard size thread rolls are interchangeable for use with competitive end rolling attachments. Standard size thread rolls are inter-



changeable for use with competitive end rolling attachments.

For more information, please contact C. J. Winter Machine Technologies, Inc. at 585.429.5000 or visit the company website at www.cjwinter.com.

Reed Machinery

IntelligentOne™ from Reed Machinery uses the latest in RFID technology to read and write data to tooling, including die holders and/or threading dies. Users can view machine and process conditions and view historic use of tools in inventory using a hand-held reader. The ability to interrogate tooling off line facilitates tooling inventory ensures correct selection of tools for given jobs, and provides specific information about tool use/life as well as purchase/repair frequency. Information is automatically collected about machine tool use and stored both in the machine as well as in the tool. The tool's memory can be "activated" and "read" using a handheld scanner that uses radio frequency technology to "power" the tool. The Smart Machine Tool System includes a computer, sensor and antenna installed in the machine, as well as a hand-held scanner and tooling with the integrated RFID "tags." Base system cost is under \$15,000.

IntelligentOne™ can be purchased for new thread rollers or retrofitted to older models. Reed Machinery designs, manufactures and markets Reed®, Hartford® and Waterbury® brands of thread rolling machines as well as Reed® thread rolling attachments for screw machines, automatics and CNC lathes.

For information about any products contact Reed Machinery at 508-595-9090 or visit the company website at www.reed-machinery.com.



PCC Precision Tool Group

The PCC Precision Tool Group brings together Reed-Rico with Howell Penncraft and Hi-Life Tools. Products and services include: Flat Thread Roll Dies, including Machine Screw and Gimlet Point and Licensed forms and specials; Cylindrical Thread Roll Dies and Planetary Thread Roll Dies including Machine Screw, Gimlet & Nail and Thread Roll Die Regrinds; Form Rolling & Combination Dies and Heading Tools including Punches and Pins, Trim Dies, Nut Forming Tools, Recess Punches and Pins, Special Punches, Torx and Torx Plus tools and Steel & Carbide Cold forming tools.

For more information, please contact the PCC Precision Tool Group at 508-753-6530 or visit the company website at www.ptgtools.com.



New!

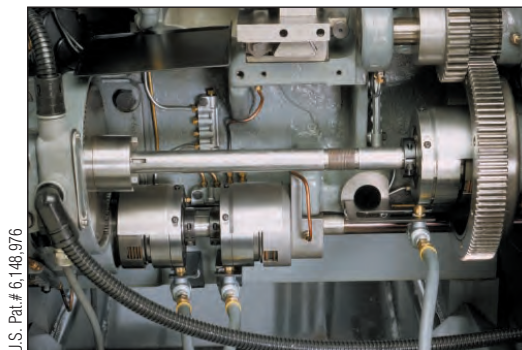
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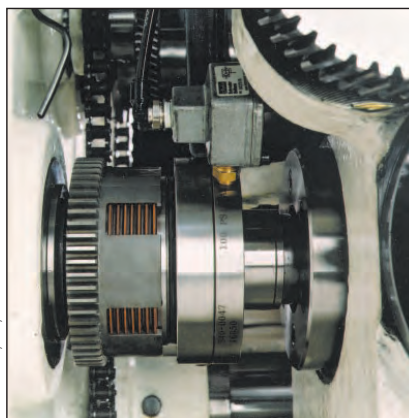


U.S. Pat. # 6,148,976

For Model B Davenports

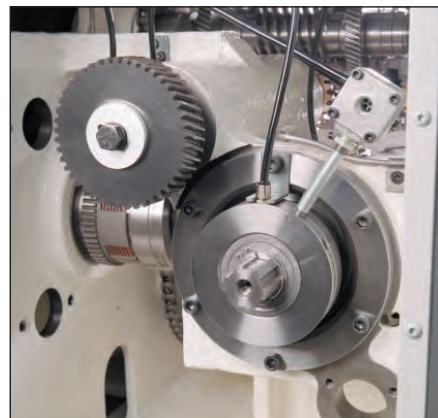


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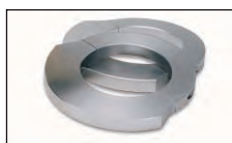
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Divided Loyalties?

My company submitted a proposal for rigging services as part of an engineering firm's bid to layout and install machinery at a customer's manufacturing plant. The job will be profitable, and we work frequently with this engineering firm. Since submitting our proposal, I received a call from the manufacturing customer wanting to know if we would work directly with them and split the savings they would realize by cutting out the engineering firm's markup. If we say yes, we'll do better on the deal, but at minimum, the engineering firm will lose their margin on our work and may be cut out of the deal entirely. If we say no, neither of us may get the work. No one's signed anything yet.

You are justifiably concerned about violating the time honored loyalty rule that "you dance with the one that brung ya." If you agree upfront not to bid directly or not to bid as part of some other engineering firm's proposal, the ethical dilemma is answered by the agreement because your agreement identifies the scope of your loyalty and was made in the absence of any actual opportunity. Here, however, you must make the decision under the pressure of real temptation.

First, determine if there is a loyalty conflict which requires further consideration. You have a good relationship with the engineering firm that benefits both of you, so there are solid business reasons to notify them of this invitation from the customer. If they don't care, there may be no loyalty problem, assuming you get an honest answer. Some people, however, never complain. They just harbor resentment and never call you again. You should make it easy for them to be candid. If you can be sure they honestly don't care (maybe they just wanted to submit a "turnkey" bid but expected it to be picked apart anyway), then your ethical dilemma is solved, and you demonstrated your loyalty.

If they do care, you must weigh the intangible costs of damaging a valuable relationship for what might be a one shot deal. Maybe it's not a one shot deal, though, and a direct relationship with this type of customer is where you've been trying to take your business for years. Nevertheless, there is value in loyalty which must be factored into the equa-

tion. The engineering firm will admire you for taking a pass on the opportunity to cut them out, which strengthens your relationship with them. You will also convey your ethical standards to the customer, and that may put you on the direct bid list next time around because you have some principles to go with your skills. Being asked to quote directly the next time does not raise the loyalty issue you've raised here. It's a reward for your good work and good fortune.

If the relationship with the engineering firm was not important or there are other strong business reasons to do an end run, explain those reasons to the engineering firm out of respect for whatever relationship you have and make your move. Although loyalty is admirable and usually makes good business sense, it is not a millstone weighing you down from opportunities you would lose by respecting it blindly. Weighing the short-term gain of disloyalty against the long-term cost is more complicated than just dollars and cents. Most of us are well advised to put an extra weight on the loyalty side of the balance.



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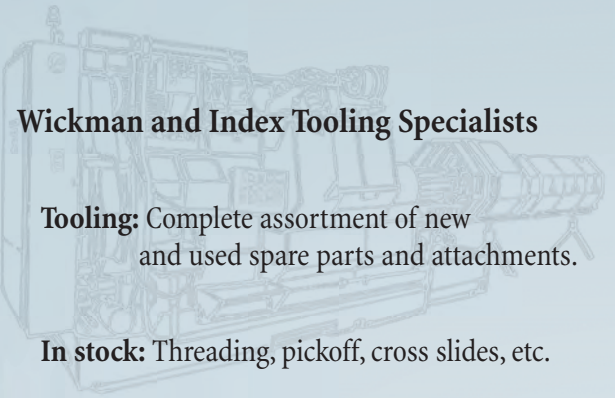
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1-3/4" 6-spindle, 1965, 1993 (7)
1-3/4" 6-spindle, factory rebuild
1-3/4" 6-spindle, thdg., 1969
1-3/4" 8-spindle, 1970
2-1/4" 6-spindle, 1973-79 (3)
3-1/4" 6-spindle, 1982
5-5/8" 6-spindle, 1979
6-5/8" 6-spindle, 1979

ACMES

1" RAN6, 1975
1-1/4" RA6, 1975 (3)
1-1/4" RB8, 1975
1-5/8" RB8, 1980, rebuilt 1996. pickup
1-5/8" RBN8, 1975, rebuilt 2002
2" RB6, 1979-1985
2-5/8" RB6-1977
3-1/2" RB6, thdg
6" RPA8, Gov't Storage

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GM16 AC 1997 w/ lemca loader
SF51 6sp. Schütte, 1981
AF26 8sp. Schütte, 1981 (2)

SWISS-CNC SLIDING HEADSTOCK

Citizen L20, Type VII, 1996-98 (2)
Citizen L25, Type VII, 1998
Star 20mm, 1999

NEW BRITAIN

Model 52, 1-1/4" 6sp., 1979 (3)
Model 62 2-1/4" 6sp., 1975

INDEX

MS 36E, 1993

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3/4" thdg., pickup, 1985 (6) Tamer
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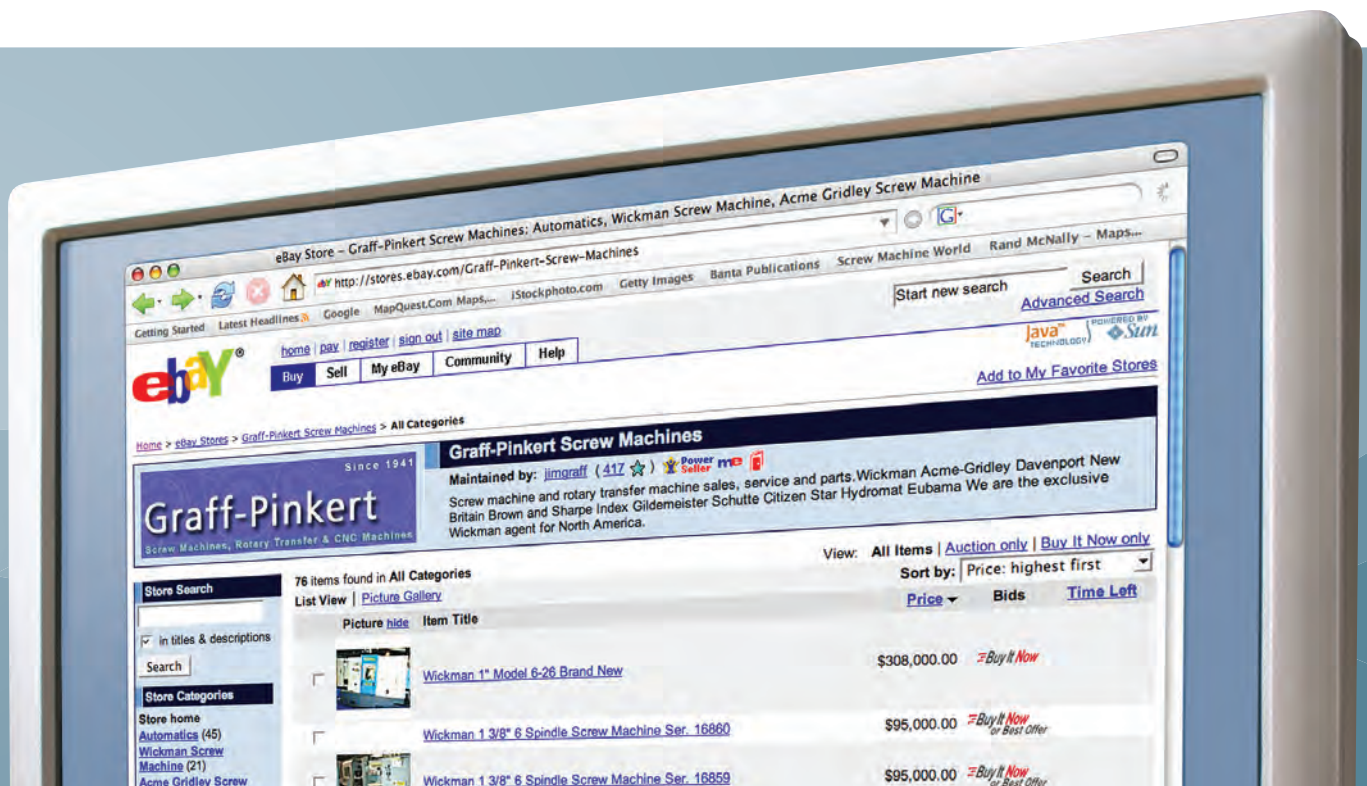
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BY NOAH GRAFF

Low Rider

I went downtown one cold October night to see a string of custom-made “lowriders” lining Wabash Avenue in Chicago. Almost every car was big and American – lots of Cadillacs, Impalas, and Chevrolets, along with a few pickup trucks. Their vintages spanned from the 1940s until today – all customized with funky paint jobs; massive stereos; low riding, chromed out wheels; and hydraulics, which enabled them to hop down the street.

Three prominent lowrider car clubs of Chicago came that night: El Barrio, UCE/USO, and The Regulators. These Chicago car clubs often get together on the weekends. Members go to show off their rides to one another, listen to music, barbeque and, of course, cruise the streets to and from the meetings. Their kids come along too to show off bicycles they’ve customized. Even though there are several different car clubs in Chicago, people told me that there is no bad blood between them and that almost everybody knows one another, at least by face. Normally, they don’t have meetings downtown like they did that night because they sometimes get hassled by police who stereotype them as gangbangers or dope dealers because they are often working class Hispanic males.

I asked Pablo Cazares from the Regulator car club why almost everybody displaying cars was Mexican. He explained to me that customizing cars for cruising originated in California in the 1940s and 1950s. During World War Two, when American car companies stopped

production, a lot of people started modifying old cars. Young people in the cities wanted to express their individualism and show that their style was different and cooler than normal society, so they started painting the cars and adding customized accessories. To make their statement, they tried to make the cars ride as low to the ground as possible. Before hydraulics were available, people would heat up springs with blow torches and put sandbags in the cars to keep them riding low.



Several people mentioned that one of their original inspirations for building lowriders came from Cheech Marin’s car, “The Love Machine,” from the Cheech and Chong films, which they joked was “half primer and half painted.” A lot of the car owners from that night have been building lowriders for 10 to 20 years. Many of them are mechanics, some weld or paint, and they all come together to help each other create their lowrider masterpieces. The car owners stressed to me that building the lowrider yourself was imperative. They scoff at people who get other people to build their cars for them. They also said that it’s important to actually drive the cars rather than just take them to shows because that’s what they’re made for. “They’re for cruising,” they told me.

Some people told me that building customized lowrider cars is more like a way of life for them than a hobby. They live for the challenge of modifying a machine to do something it wasn’t originally designed to do. What’s more, they’re blessed with the opportunity to show off their creation to the world, cruising around in style.



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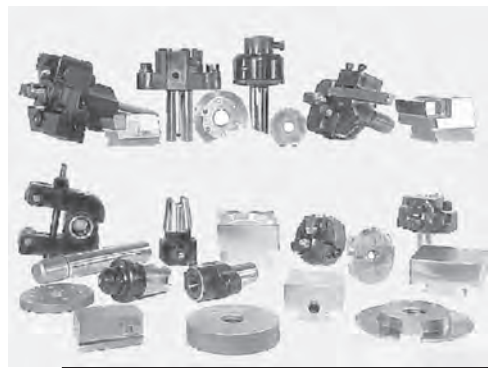
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WITH NOAH GRAFF

Dear Shop Doc,

In recent years, our shop has been using medium to high pressure oil pumps. High pressure oil has allowed us to run our jobs faster and with less chip interference. Our systems work by using a powerful motor attached to a metal gear pump that pushes oil at a high velocity out of small 1/8 and 3/16 inch break lines. Oil has to be filtered well in order to pass through the small lines without clogging. We use 4 1/2 by 12 inch suction strainers to do this. This is the weakness of the system for us because of downtime associated with changing and cleaning the filters. Metals with finer chips can clog these filters in under an hour, which means an operator must always be watching the machine. Cleaning the filters makes an oily mess around the shop. In addition, the suction strainer filters the oil so well it overworks the pump and motor, which in turn get very hot. The hot pump heats the oil up to 150 degrees Fahrenheit, which makes the machine unworkable and changing filters a dangerous job. The high pressure system may work tremendously on the cutting side of the machine, but the problems associated with filtering oil make us question its value because we spend as much as one and a half hours per day dealing with filter maintenance. We are losing nearly 20 percent of our production, which is near the gains we were getting to begin with. Our operators are not happy dealing with these filters. We are looking for a low cost, simple solution.

Dear Strained,

The solution is simple and inexpensive. Use perforated sheet metal with 1/16 inch perforated holes and seal off the back of the machine. Many machines without high pressure pumps are already done this way, except they are using 1/8 inch perforated, which is too large. Run the perforated sheet metal at an angle right down the track in the machine's basin. Most Acmes have a track for this. For smaller machines, use smaller perforated sheet metal (1/32 inch is available). Most importantly, the rear of the machine must be spotless before the sheet metal is installed. Pipe the inlet down below the perforated sheet metal through the hole where the old oil pump used to be and make a metal seal so that no chips can enter below the screened-in area. There

Signed, Strained

can be no gaps between the casting and perforated sheet metal; otherwise chips will pass and clog the system. It will take time to fit this right. An immediate effect of this method will be a much quieter pump. These screens will allow much more oil to pass through, which puts much less stress on the pump motor. Cleaning is much less frequent than with the suction strainers, and sumps run much cooler. The screens can be cleaned by hand or by a metal scraper. The operators will be much happier with the lower maintenance method of filtering.

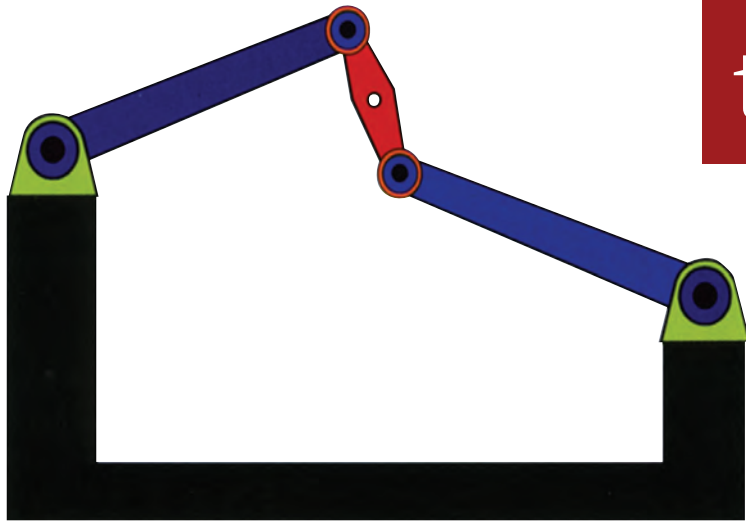
Weston Szpondowski
Wyandotte Industries, Wyandotte, MI

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.

shop doc

think tank



Watt's Linkage

Examine the mechanical linkage shown above. The arms are anchored to the mounts on one end, but may move freely on the other. The red link connects the blue arms and constrains their motion. Given that information, can you determine the path of the white point in the middle of the red linkage through a full cycle of motion?

Send in your answer—quick! Fax Jill at 708-535-0103, or email at jill@todaysmachiningworld.com

Amicable Numbers



Examine the sum of the divisors of 220:

$$1+2+4+5+10+11+20+22+44+55+110=284$$

Now look at the divisors for 284:

$$1+2+4+71+142=220$$

If the sum of the divisors of a number is equal to a number whose divisors are equal to the first, the pair is said to be amicable. The smallest known pair is 220 and 284. Although amicable numbers have been the subject of intense study throughout history, Nicolo Paganini, an Italian schoolboy, discovered the second smallest pair – 1,184 and 1,210 in 1866.

Who responded oh so amicably?

Kevin Albright of Gear Headquarters in Kansas City, KS; **Gary Sewell** and **Lynne Weixel** of GS Design & Machine in Tallassee, AL; **Dan Cibulskis** of Aurora Air Products, Inc. in Aurora, IL; **Ron May** of Hunter Engineering Company in Bridgeton MO; **Nancy Weber-Zehren** of Weber Systems, Inc. in Menomonee Falls, WI; **Roger Stillman** of Metric & Multistandard Components Corp. in Hawthorne, NY; and **Michael Kaibas III** of Kaibas Machine in Tool in Evant, TX.

postings



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

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Mold Inc.

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inspection on
December

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Second Week
of December

www.cwa.org/coats.htm

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Dimensioning and
Tolerancing Fundamentals
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Penske Racing South

December 6th &
December 7th

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www.sme.org

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December 2nd

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first
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Dec,
1st

1953



calendar

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Frank
Sinatra

Dec
12th



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Woody
Allen

December 1st



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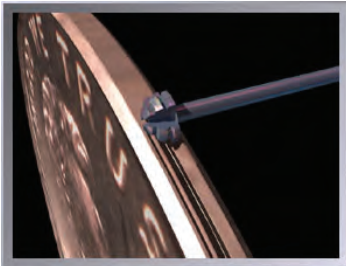
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afterthought

Net Worth

How do you figure your “net worth”? Accountants like to give you a number at the end of their analyses of your sums. Bankers want to compare those numbers with previous numbers to assess the value of a company. But “net worth” recently took on a new meaning for me when I was studying the classified ads in the *Stanford Daily*, the college newspaper of the esteemed university in Palo Alto, California.

In the issue of the paper I was reading, there were nine different personal ads, some with phone numbers, others with web addresses, offering to buy the “donor eggs” of young women with the desired profile. These are two of the classifieds.

“The real value is always in the intangibles – the creativity, cumulative memory, optimism, energy, leadership – the DNA of the firm.”

“Irish Egg Donor. Happily married academic couple in search of Egg Donor. \$10,000 offered and all compensation requests seriously considered. Must be Irish/Celtic descent, quick wit, 5 feet 5 inches or taller. To apply contact Tiny Treasures at info@tinytreasuresagency.com or call 781-279-1325.”

“Egg Donors Needed. \$20,000 (plus all expenses). We are seeking women who are attractive, under the age of 29, SAT 1300 (math and verbal), physically fit and maintaining a healthy lifestyle. e-mail darlene@perfectmatch.com or call 800-264-8828.”

I found the ads poignant and fascinating. I understand the fervent longing for a baby by an infertile couple. And if you are looking for a donor, you should state what you want and improve your odds of having a healthy, smart, tall, quick-witted child.

I was curious about the valuations of the eggs. Is this a way for a Stanford woman to pay for college or buy a Harley?

The donation of eggs is not a simple process like giving blood. A woman must take powerful hormone injections, sending her on a roller coaster ride emotionally and physically. The psychological impact of selling a potential person has to be enormously heavy. But what an amazing gift of life for the donor and the recipient.

And it can be worth 20 grand – a year’s worth of latté making at Starbucks.

The egg donor ads are suggestive of many ideas, but from a business view it says that a person’s net worth can be viewed in many ways. The real net worth of a business, as well as a person, simply from an economic viewpoint, is not the sum of depreciated assets less the debts. The real value is always in the intangibles – the creativity, cumulative memory, optimism, energy, leadership – the DNA of the firm.

On October 10, 2006, the day I was reading the *Stanford Daily* personals, Google struck a deal to buy YouTube with its 67 employees for \$1.65 billion. This is how they valued the Internet site’s donor eggs.

YouTube fit the profile that the Google boys wanted. They had the money. They needed the video.

Few of us really know the value the marketplace would set on our unique combination of talent and genes, but it is foolhardy to quantify it rigidly and mechanically by the numbers.

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Machine specifications		
Item	L20 V	L20 VII/VIII
Max. machining diameter	φ20 mm (.79")	φ20 mm (.79")
Max. machining length	200 mm (7.87")	200 mm (7.87")
Main spindle speed	10,000 rpm	10,000 rpm
Back spindle speed	8,000 rpm	8,000 rpm
Live Tools		4/7 Std

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