



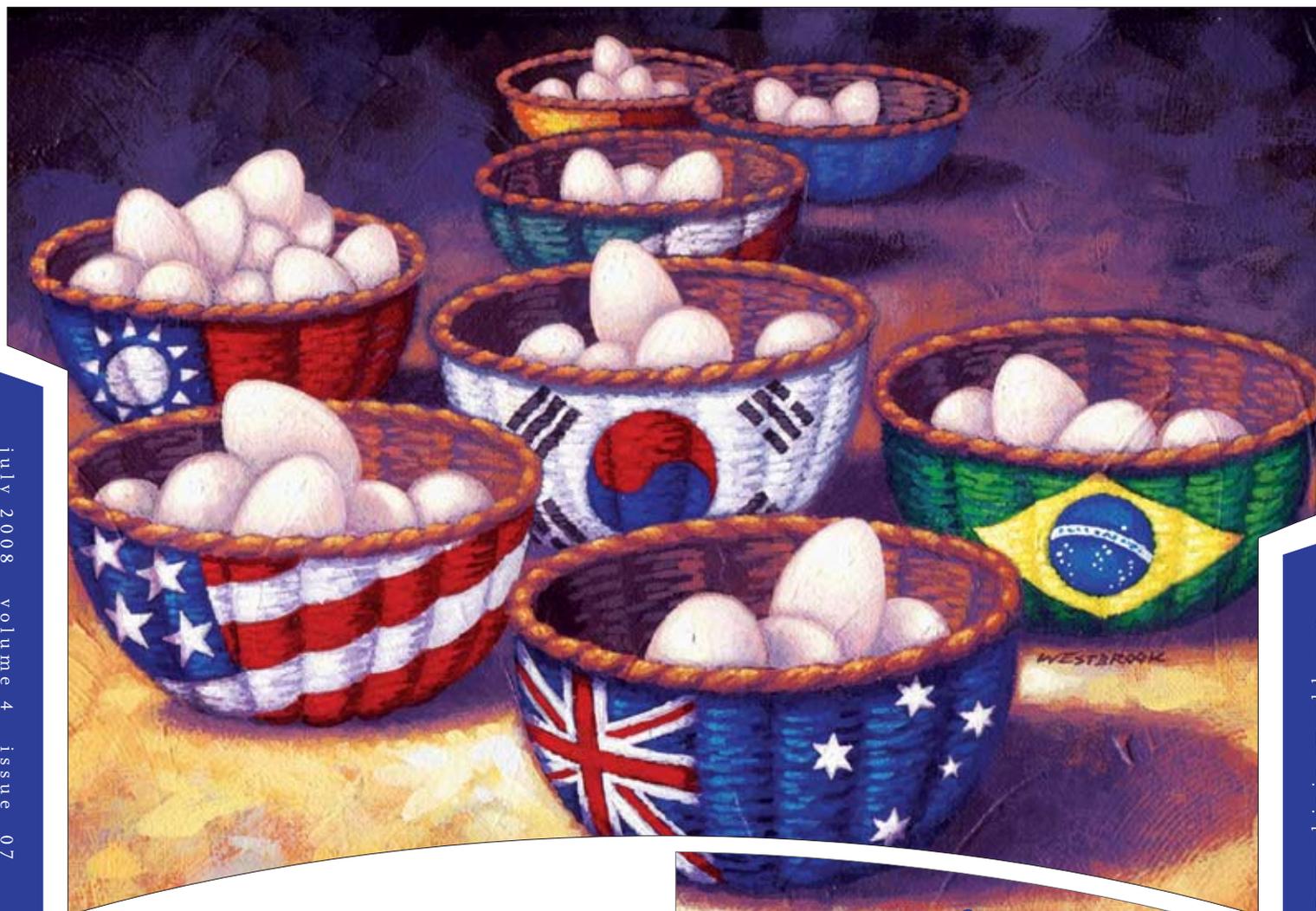
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Today's Machining World

THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY



july 2008 volume 4 issue 07

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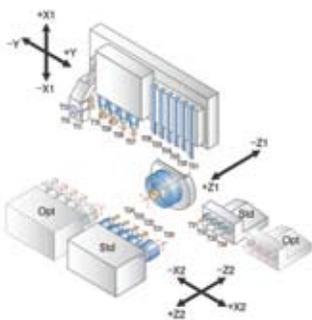
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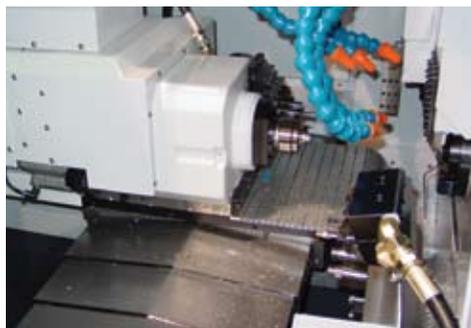
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editor's note

Planting the Seeds

Paul Thomson died recently in California at 91. He was not a rich guy or an Internet pioneer, but I was fascinated by his life story. A child of missionaries, he grew up in India where he developed a taste for mangoes.

He served in the Marines during World War II and when he left the Corps after 20 years he ended up in the San Diego area. He decided to grow the fruits he had developed a passion for in the tropics on a small, five acre plot near San Diego. He planted lychee and longan fruits, papayas, mangoes and any other tropical fruit he could find. For the most part he failed spectacularly, done in by freezing and fluctuating temperatures. But he did not give up. He started a second orchard five miles away with a slightly more hospitable climate. He planted 96 types of fruit not normally grown in California in 1971.

As a businessman he was not a roaring success. He was quoted in the *San Diego Union-Tribune* in 1989 saying, "I never made enough money to pay the water bill, let alone make any money." Yet he was the pioneer of a major new industry in California. Today there are hundreds of growers of tropical fruits in the state. As a devotee of farmers markets, I thank Paul for his unconventional thinking, and willingness to try what everybody said could not be done.

Today's Machining World is always looking for folks like Thomson, whether they cut metal or not, because creativity is a process that grafts ideas from one intellectual plant to another.

For Paul Thomson, growing mangoes in San Diego was not a failure. It was just a success, slightly delayed.

My goal is to make *Today's Machining World* the publication for people in this industry who think like Mr. Thomson, and then make it happen.

Lloyd Graff
Editor/Owner

editor's note



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



Nitin Shankar, based in Switzerland, is a freelance writer covering technical topics for Swiss German and French journals. He also writes in-depth articles on new watch models for *International Watch*, a Connecticut-based magazine. Prior to his retirement in 2004, Nitin worked as Marketing Manager for TESA S.A., a Swiss manufacturer of precision measuring instruments. In this capacity, he had the opportunity to visit major aerospace and automotive manufacturers in Canada and the U.S. Nitin holds a degree in electrical engineering, and has been fascinated by machine tools since working on his first lathe during his practical training in Germany.



Jill Sevelow has seen *TMW* from its inception as the “little magazine that could” and has been on one wild, chaotic and utterly joyous ride for the past nine years. She has finally fulfilled her ultimate goal of being able to use a red pen for editing, emulating her most loved/hated 4th grade teacher Mrs. Steibel. Jill is a 2nd year empty nester (get her a tissue) but enjoys watching daughters Jade, a dolphin trainer at Sea World, and Tess, future Social Worker extraordinaire, fulfill their dreams. Jill spends her off-work hours reading, gardening, finding long-lost relatives through genealogy websites, and is rapidly filling up 27 books of photos she’s spent the last 23 years accumulating.



Terry Ntovas-Roth creative director for *TMW*. She has been in the visual communications field specializing primarily in print for over 20 years. Before joining the *TMW* team Terry was with Reed Business Information for seven years as a senior art director overseeing two publications as well as working within custom publishing for the company. She did her undergraduate work at Southern Illinois University in Carbondale in the area of advertising through the journalism department, and her graduate studies at Pratt Institute in New York in the area of Visual Communications. Terry is busy fulfilling a mom role to her new Lab Buddy.



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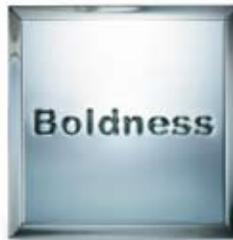


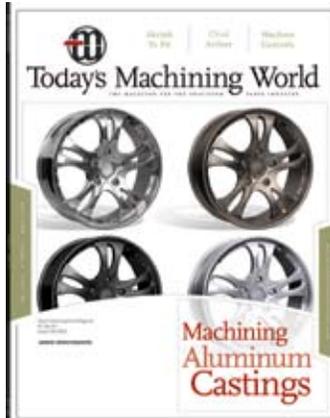
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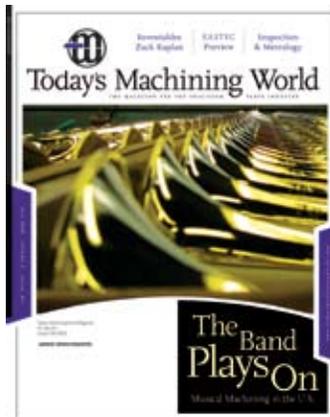




New Reader

I own a business in Green Bay, Wisconsin, where we heat treat steel. Our customers are mainly machine shops and foundries. I started receiving your magazine a few months ago. I thoroughly enjoy it. Thank you!

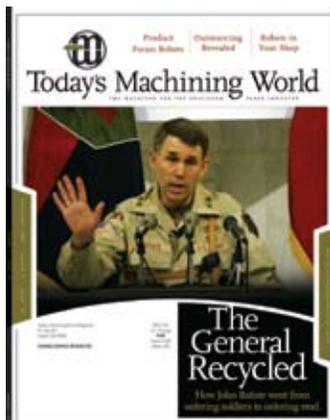
Ted Kemen
Metals Engineering
Green Bay, WI



Long Time Reader

I have recently been a victim of a workforce reduction. My regret is that I will truly miss receiving your great magazine. I have been enjoying it since its inception. I hope you can find it in your heart to continue my subscription to my home. Thank you very much for such a great publication. I really enjoy it – keep up the good work.

William Mackay
Waukesha, WI



Not So Anonymous

In response to the letter from Mr. Anonymous (June 2008, a follow up to our November 2007 feature, "The General Recycled"). If Mr. Anonymous does not like "the expense of getting our young (and not so young) men and women killed for no good reason," why does he continue to build the equipment to kill people ?

Bruce R. Colbert
The Ridge Tool Company
Elyria, Ohio

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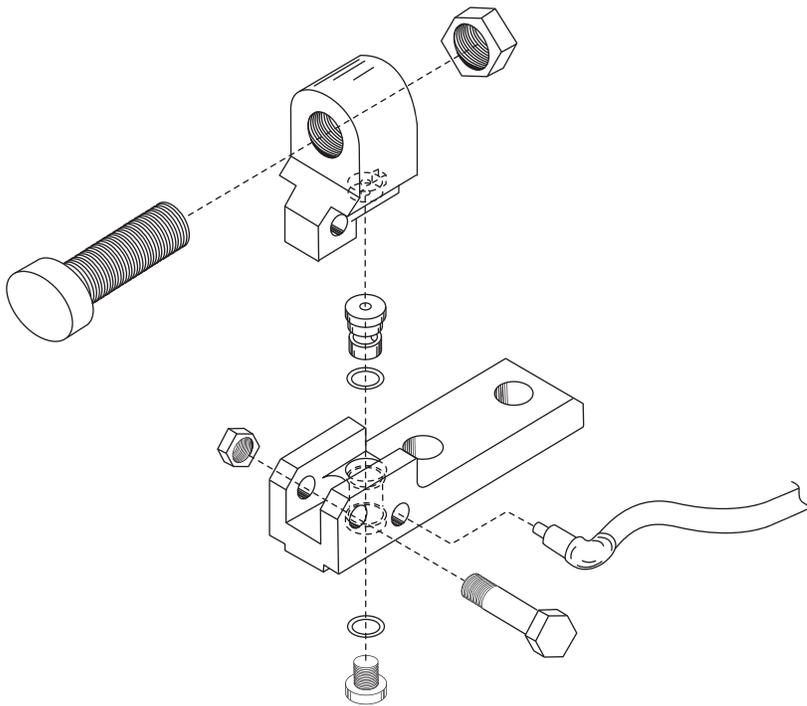
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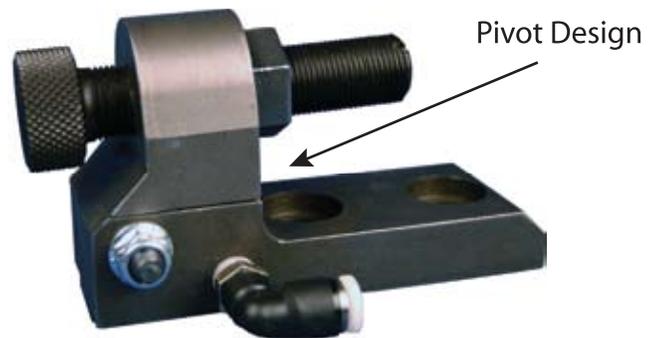
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Customized Shoes

I am not the Imelda Marcos of the machining world, but I have cultivated interest in footwear to go with my fallen arches. For many years I have believed in the inevitability of the customized shoe taking over the industry with the help of 3-D imaging and rapid response manufacturing at the shoe outlet.

I know that Nike is a believer in the viability of the idea. They are beta testing a sole making strategy at their house store in Beaverton, Oregon. A shoe buyer would step into a soft gel, the onsite computer would

take measurements and the customer's footprint would be captured by some nifty software developed by Delcam. When the customer wants another shoe from Nike, the store could access the measurements and the manufacturer would mail the custom soles out to the client in a few days.

The June 11, issue of the *New York Times* ran a long piece about the master craftsman Hitoshi Mimura, who is incorporating rice husks into the soles of the running shoes of several marathoners who are contenders at the Beijing

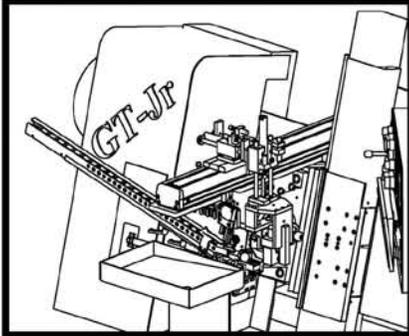
Olympics. Mimura is a former marathoner himself. He works for Asics, one of Nike's competitors, always looking for the little edge that can translate into a runner's victory and profits on his company's bottom line.

Mimura visited Beijing and checked out the marathon course. He found the streets were a mixture of stone which could get slippery if it rains, newly paved asphalt which could radiate heat, and extra hard concrete made to accommodate Chinese tanks if a Tiananmen Square incident

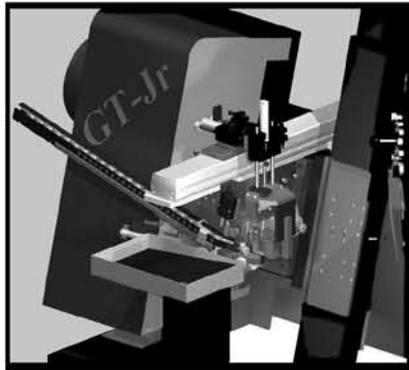
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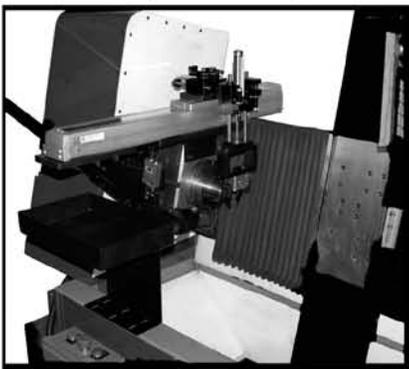


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(Swarf continued from last page)

comes up. And he found horrible air pollution, which will tax the fittest of runners.

The rice husk soles he has devised give the sole a pimply roughness that should help prevent slippage on wet surfaces. He is adding a polyester upper layer to aid ventilation, attempting to lower the runner's foot temperature from 109 degrees to 99 degrees. For cushioning he has incorporated a sponge mid-sole. We are talking about featherweight shoes that weigh 3.5 ounces compared to 11 ounces of a standard shoe.

For his stable of marathoners, Mimura uses 3-D computer models that measure feet at 13 different points. He also hand measures the Achilles tendon and heel width. His goal is the perfect shoe, which we all know does not exist. He is trying to make the shoe that a runner wants to sleep in.

Mimura is evidently a legend in the arcane world of high performance footwear. For the 2000 Olympics he made shoes for the women's winner, Naoko Takashi of Japan.

Mimura had carefully measured the runner and found that her left leg was eight millimeters longer than her right. He made soles of uneven thickness to compensate. Takashi didn't like the way they felt in practice, but Mimura believed she had to have the built up sole to win. Without her knowledge he gave her the uneven soles for the race and wrote a letter of resignation if she lost. Takashi won.

Mimura is an artist. Shoes are his creation. He brings a lifetime of experience with materials to his medium. Nike, the great marketer, may win the profit wars with their customization software, but I'm hoping Hitoshi Mimura's rice husk sole prevails at Beijing.

General Motors' stock is languishing at \$14,

Hummer is probably up for sale, Kirk Kirkorian may take another swipe at the wounded company, and Toyota has bounced past poor GM as the world's biggest seller of vehicles.

To a significant degree the future of GM and certainly the job of Rick Wagoner lies in a four-letter word – Volt.

The Volt is a fully plug-in automobile with a 40-mile reach between recharges. For a big segment of drivers this is the limit of a day's driving.

GM is committed to bringing this car to market for around \$35,000 in late 2010. In a very thorough piece in the June *Atlantic Monthly*, Jonathan Rauch brought the story of the Volt alive. What may have started as a countermove to the Toyota Prius has now become a "bet the farm" gamble for the staggering Detroit giant. With the truck business gasping on \$4 gasoline and the Malibu languishing with everything else automotive in the U.S., the Volt is GM's hope for the future.

Of course Wall Street is looking at the car as just another money loser, which it will be for the short run. But if it is good and comes out when promised, it could remake the company, which hasn't really had much good news since the Cadillac Escalade became the car du jour for every NBA wannabee.

According to the *Atlantic* piece, Wagoner and the GM Board have given the project the best talent in the company and allowed the engineers to circumvent the paralytic bureaucracy to make the car happen. GM is hoping the Volt

will be the company's iPod that will transform GM into car tech leadership and thrust Toyota into an uncool Microsoft position.

Toyota may be sandbagging us but they are not promising a plug-in until 2012 at the earliest for commercial sale. Toyota has been stung by falling quality ratings for its cars. They still own the hybrid space with the Prius which has a waiting list again at list price.

The lithium-ion battery technology that GM is betting on for the Volt has yet to be tested in a mass-produced car-ready version. This is a lot like John F. Kennedy proposing that the U.S. would put a man on the moon and then committing the resources to the project without knowing if it was possible.

Elan Musk has shown the world that a little Tesla Motors can build an electric roadster and sell it for a hundred grand. But Tesla's goal is to move 10,000 cars in 2009. GM's challenge is not only to invent a new mass-produced car, but also to reinvent a company that is 100 years old and looks its age.

I have mocked and knocked Rick Wagoner for years as he has struggled to tame the beast of a company he inherited from the charlatans who gave us the Aztec, Vega, and killed the EV1 electric prototype.

After all Wagoner has been through in recent years I think he and the Board finally get it. He is no Steve Jobs, but GM resembles the walking corpse Jobs rejuvenated with the incredible little gizmo called the iPod.

The Volt may well fizzle on takeoff like an old Vanguard rocket, but I am rooting for GM on this one. If it's good, I'm buying one right out of the chute.

Jim Cramer, the boisterous stock

picker of CNBC has done some fascinating work on what he sees as the big picture in investing today. In his view the great growth companies of the day are no longer in Silicon Valley developing the next hot video game or software to make your salesmen more effective. Figuring out a niftier Internet search format or flashier iPods is not where the action is today because these are not solutions to the big problems of the day.

He quotes the work of Professor Richard Smalley, now deceased, who outlined the 10 big problems facing mankind today. The companies that make a dent in these areas have a chance to make huge fortunes, and for the precision parts arena it points the way to robust customers to do business with.

Smalley said the number one problem facing the world's economy today is providing enough energy to enable expansion of standards of living, particularly in growing countries like China and India. The demand for energy is pushing up prices even as the American economy stagnates.

Cramer sees tremendous opportunity in alternative energy, particularly wind, in the next several years. Solar energy also shows great promise but so far the economics of solar are not quite as compelling as wind. When a Warren Buffet has to call up his buddy Jeffrey Immelt, head of GE, to get faster delivery of turbines for his wind farms, you know that wind energy is smoking.

Boone Pickens, who has made billions in oil and natural gas, is building a huge wind farm in Sweetwater, Texas. Several companies are going public to raise capital to develop wind farms. For bearing makers like Kaydon, and transmission firms like Woodward Governor and Parker Hannifin, wind power is becoming a major profit center.

Electricity generation is only going to get more interesting in coming years as coal gets more expensive because of carbon taxes in one form or another. Natural gas will become the backup fuel for wind and solar when the wind is not blowing and the sun is behind the clouds. The supply of natural gas in North America is tremendous and significantly untapped. This will be a boon to the rig makers and the pipeline builders, which means a lot of business in machined components.

If one takes a longer view, the current price of oil will finally be the catalyst we have needed to move to alternatives to oil.

Energy will likely be the biggest growth market for the machining world for the next several years. As usual, American car companies are behind the curve, having hitched their fortunes to SUVs and trucks while the energy market was turning against them. For people doing domestic automotive components the transition will continue to be painful. Being part of the solution to energy transformation is where the money is going to be.



World trade is like a chameleon,

constantly changing colors to survive and flourish. This is why I tend to disregard the Lou Dobbsians who are constantly searching for bad guys rather than opportunities.

Exports are growing at such a rapid rate in the U.S. today that there are not enough containers to fill the rising demand. I talked to Mike Costantini, sales manager for Chicago Export Packing about the issue. His company is having a great year, but it could be even better if he wasn't scrambling for containers and ship space.

The container shipping lines are so crazy with business now that the containers that come into the huge container ports like Long Beach, Savannah, and Montreal tend to stay on the coasts. There is so much outgoing cargo from the United States today that the container shipping firms prefer to turn the containers around on the coasts rather than storing them inland to await cargo that then must be sent by rail to meet the ocean-going ships in the big ports. As world trade has accelerated, the number of ships and containers has not kept pace with demand. Just like Exxon, which is fat and happy with \$130 oil and refuses to aggressively drill and

explore because exploration bites into profits, the shipping and container builders are not inclined to expand capacity at a breakneck pace. Better to just count the money, rather than risk overexpansion during what could be a bubble.

So with the developing world growing so fast now and the added strain of material flowing to China to heal the wounds of the horrible earthquake, the container system is simply overused. The China trade is sopping up all slack in capacity, which means rates are triple those of six years ago if you can even find a container to send goods from the U.S. to Europe.

Transport, which used to be barely a factor in the cost of goods from China to the U.S., now is reaching 10 percent of total costs. With labor costs and the value of the yuan rising too, China is losing its competitive edge in manufacturing versus the U.S. Even furniture, which gravitated almost entirely to China, is coming back to America.

The container shortage, particularly in the Midwest, is symptomatic of the shift in manufacturing back to the United States. It is being masked in the national statistics by the weak domestic housing market and soft car business

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stemming from the run-up in oil. But the growth opportunities abound with American ingenuity in grabbing the gigantic market opportunities in alternative energy, medicine, and agriculture.

The container shortage is an annoyance at the moment. Its deeper significance is in the context of world trade. If the protectionists do not mess things up after the election, the seeds are being sown for a significant resurgence in American manufacturing for many years to come.

Managing Editor Jill Sevelow

attended CNC MasterCam's Open House in celebration of their 25 years in business in Tolland, Conn., just prior to perusing the halls of EASTEC in mid-May. MasterCam was

unveiling X3, which offers Feature-Based Machining, new high speed tool motion, and faster toolpath generation along with dozens of additional new enhancements.

Jill says she was awestruck by the detail put into constructing as green and eco-friendly a building as she's ever seen. She said she knew she was in for a treat when she drove up – the grounds to the left of the building housed 72 KW solar panels, which ultimately will generate one fourth of the power the building uses.

The building itself takes the traditional fluorescent lighting industry out of the equation, as each room, office space, kitchen/meeting area and conference room, contains both T8 energy efficient lighting and enormous windows for natural light. The building uses geothermal heat pumps to warm the building. Even their computer server room, traditionally a sweltering area, has gotten into the act. Warm air is siphoned out of the room and into another area of the basement, effectively warming it at no cost. And the commodes rock. They use dual flush toilets and low water-use urinals.

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My friend Stanley, who I wrote

about last year, is poised to take on the world of large scale medical linen laundry. He has gotten his feet wet doing the mops of a major Chicago hospital and established credibility by his attention to detail, understanding of medical requirements, networking, reliable service, and powers of observation.

Stanley does the mops at his 2,000 sq. foot laundromat in a suburban Chicago strip mall. He started his laundry business five years ago after becoming totally jaded with corporate America, after bureaucratic jobs at a big bank and United Airlines. His first foray into laundry was a home delivery service out of his car. Good margins, modest volume, small upside, but it required very little capital. He parlayed his earnings, having a modest lifestyle – he lived with his parents – into his modern coin laundry business. But his goal was to build a profitable million dollar laundry business using the laundromat as a base.

I've been coaching Stanley for about a year in an informal, meet for coffee arrangement. He is extremely well read, great at connecting with people, and totally committed to building a major laundry business that provides him the lifestyle and personal fulfillment he wants from his work.

Stanley is a planner. He keeps journals with his ideas and is constantly tweaking his plans. A year ago he decided that 2008 would be the year he broke into the institutional laundry business. His plan was audacious, yet small. He would convince a small hospital or nursing home to allow him to do their linen from midnight to 6:00 a.m. when his laundromat was empty. He would buy an institutional dryer and folder and stage the laundry using a steel cargo container behind his shop in an unused parking area in back of the strip center.

This scheme capitalizes on the competitive weaknesses Stanley had found in the marketplace through consistent reconnaissance on the four main players in Chicago's medical laundry oligopoly. The big laundries are generally located far from the medical facilities they serve. With \$4 gas

and \$5 diesel, their trucks are burning profit. He can service an account daily for less money than their two- or three-day per-week service, thus enabling hospitals to reduce their linen buying requirements. Stanley is a young 33, and African-American, an advantage in connecting with the people who are involved with laundry at the operating level. He puts on a coat and tie to meet with the purchasing masters and speaks to them perceptively about just in time and cash flow conservation.

The big laundries are remote both geographically and culturally from the accounts they manage. Stanley brings donuts and flowers with laundry. They bring invoices with the fuel surcharges.

The elegant beauty of Stanley's micro laundry is that his institutional laundry has virtually no rent. The coin laundry pays his rent so his medical business just needs to cover the additional marginal expenses. Stanley believes that once he proves his model he can open other coin laundry/institutional laundry hybrids around the area, close to his outsourcing client base, running efficiently 24 hours per day.

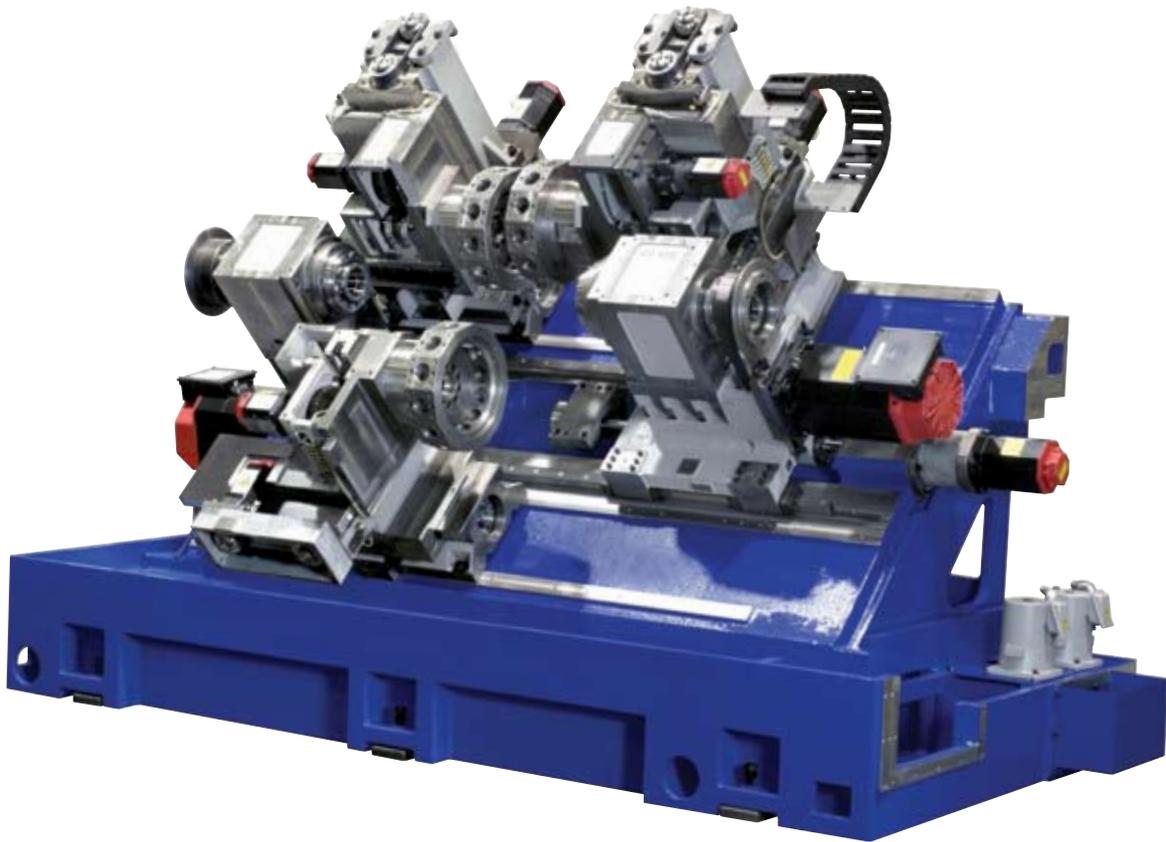
Stanley has been preparing his pincer movement into the market for year. My modest contribution has been as a sounding board and occasionally a prod to action. He has done a huge amount of homework and covered the predictable crises and contingencies.

In April he sent out 17 brochures to potential clients he had gleaned from databases and cold calling. He received one enthusiastic inquiry, and one call expressing strong interest, but the latter had just signed a new long-term contract.

As I write this, Stanley is close to converting that enthusiastic inquiry into a multi-year institutional client, while his old mop client has a laundry renewal coming up. Stanley says that the mop client's purchasing manager who had viewed him as an overreaching black kid now sees him as a business man who could prove useful to him as a competitive bargaining chip or a major contractor.

I think that the parallels in the precision parts business are compelling if you look for them.

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BY JERRY LEVINE

Diamonds are Forever

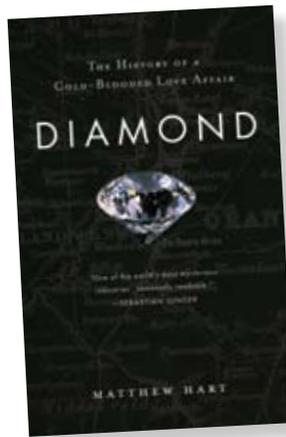
For centuries, diamonds have symbolized wealth, power and love. Their dazzling brilliance excites the imagination, but behind these symbols lies an industry filled with greed, lust, war and deceit. Matthew Hart's *Diamond* shines a glaring light onto one of the world's most mysterious businesses.

To understand diamonds, one must first know the history of De Beers, the world's most successful diamond cartel. De Beers was founded by Cecil Rhodes in 1880, and for nearly a century controlled most of the world's diamond mining and trading of rough (uncut, unfinished) diamonds. As more diamonds have been found around the world, the cartel's strength has eroded, but De Beers still controls about 40 percent of world diamond production and over 50 percent of rough diamond sales.

Diamonds are formed deep in the earth and come to the surface through extinct volcanoes called pipes. The first diamonds found were washed from the pipes by rivers or found in riverbeds, particularly in India and Brazil. Some still are found that way.

Later came the big diamond land finds in South Africa. Production grew exponentially, and producers realized they had no alternative but to form a cartel, restricting production and creating the illusion of scarcity to maintain high prices. Beginning in the 1970s, more diamond pipes were discovered in Russia, Australia, Canada and other parts of Africa not controlled by De Beers. However, De Beers maintains almost absolute control of the wholesale rough market through an entity in London called the Diamond Trading Company (DTC). When rough supply is strong, De Beers withholds it from the market to maintain high prices.

The diamond business is not for the faint of heart, involving gambles throughout the supply chain; from mining to selling into the wholesale market, to cutting and polishing the gem, to marketing at retail. The author illustrates the mystery and doggedness of diamond businessmen through several horror stories in which charlatans and thieves abound, but dealing in diamonds has huge risk even when conducting honest



business. Nevertheless, much of the wholesale business is still done on trust and a handshake.

A rough diamond's value depends on its size, color and visible flaws. Cutting and polishing them creates color changes. On rare occasions a diamond can disintegrate into dust. Generally, the largest finished gems have the greatest value, but if there is a flaw in a strategic location, the gem's brilliance and value are reduced. Sometimes it's better to work around the flaw and produce smaller, but higher value gems. Windows can be cut into a rough stone to better estimate flaws, but this reduces the allure and value of the rough.

Hart discusses politically unstable African countries like Sierra Leone and Angola, where revolutionary groups have taken control of the diamond fields to finance their revolutions. It's unclear if the wars are about politics or simply control of the diamonds. These "conflict" or "blood diamonds" are officially banned from world trade by the Kimberly Process, which requires a certification of origin for all diamonds. However, diamonds are routinely smuggled out of the war-torn countries and given phony certification in places like Gambia.

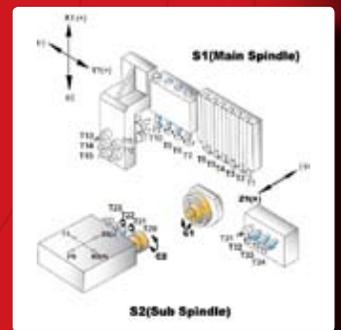
Major traders still do business with armed groups. De Beers claims that 100 percent of the diamonds they sell are conflict free. The only reason to believe them is that this further restricts diamond supply, keeping prices elevated.

The diamond business is largely built on a house of bloody cards, but everyone has a stake in it – from the impoverished miners hoping to strike it rich to the dealers in the supply chain to the ultimate customer, be they king or commoner. All parties unite to maintain their investment and the illusion of grandeur of the diamond. Diamonds may sparkle, but they are an industry replete with decadence at its core.

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

The only thing more impressive than its brain...is its

BRAWN



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Broaching the Subject

Slater Tools Inc. is expanding its product line of Swiss Type Adjustment Free Rotary Broaching Tool Holders. Slater's latest rotary broaching video, broadcast on YouTube, demonstrates the new 0700 series Swiss Type Broach Holder, which has a .500 inch tool bore. The Swiss Type Rotary Broaching Tool Holder is shown creating a hexagon shaped hole in a metal bar on a lathe.

The new 0700 series features a .500 inch tool bore for use in larger swiss type machines. The 0700 series tool holders use standard .500 inch shank, 1.75" overall length rotary broaches for polygon forms. Most are available from stock. The Swiss Type Adjustment Free Rotary Broaching Tool Holder is used primarily on swiss type CNC machines and gang style lathes. Broaches are available from Slater Tools Inc. with squares, hexagons, splines, serrations and other polygon forms. When micro broaching, profiles under .050 inch can be achieved.

For more information, please contact Slater Tools Inc. at 586-465-5000 or visit www.slatertools.com.



Pedal to the Kennametal

Kennametal has introduced KC7542™ solid-carbide taps for tapping steels and irons, and KC7512™ solid-carbide taps for tapping aluminum and other non-ferrous materials. Kennametal has developed a grade of carbide KC7542 that when used in steel (up to 32 HRC) prevents chipping. Kennametal's new patented tool is said to run up to two times conventional tapping speeds in aluminum and up to four times tapping speed in steels and will often produce four times the tap life of standard HSS versions. Non-standard TPI or metric pitches, non-standard pitch diameters, or optional overall lengths are available by contacting your Kennametal representative.

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



Spindle DECO (bottom right)

Genevieve Swiss Industries, Inc., has introduced replacement Live Tooling Spindles for Tornos DECO models, featuring a heavy duty steel housing (vs. aluminum OEM styles). These axial milling and drilling spindles incorporate high grade bearings for increased accuracy and greater spindle life. The PCM axial spindles suit the Tornos models with collet sizes as follows: DECO 10 utilizing ER11 axial spindle, DECO 13a utilizing ER 20 axial spindle, and DECO 20a/26a utilizing ER25 axial

spindle. In addition, a triple cross-drill unit with its 3 spindles increases the live tooling capacity for the DECO 20 and 26. Also available is a thread whirling head that accommodates the unique Thread Whirling Ring that enhances the number of available cutters for higher production and increased insert life.

For more information, please contact Genevieve Swiss Industries, Inc. at 413-562-4800 or visit www.genswiss.com/tornos.htm.

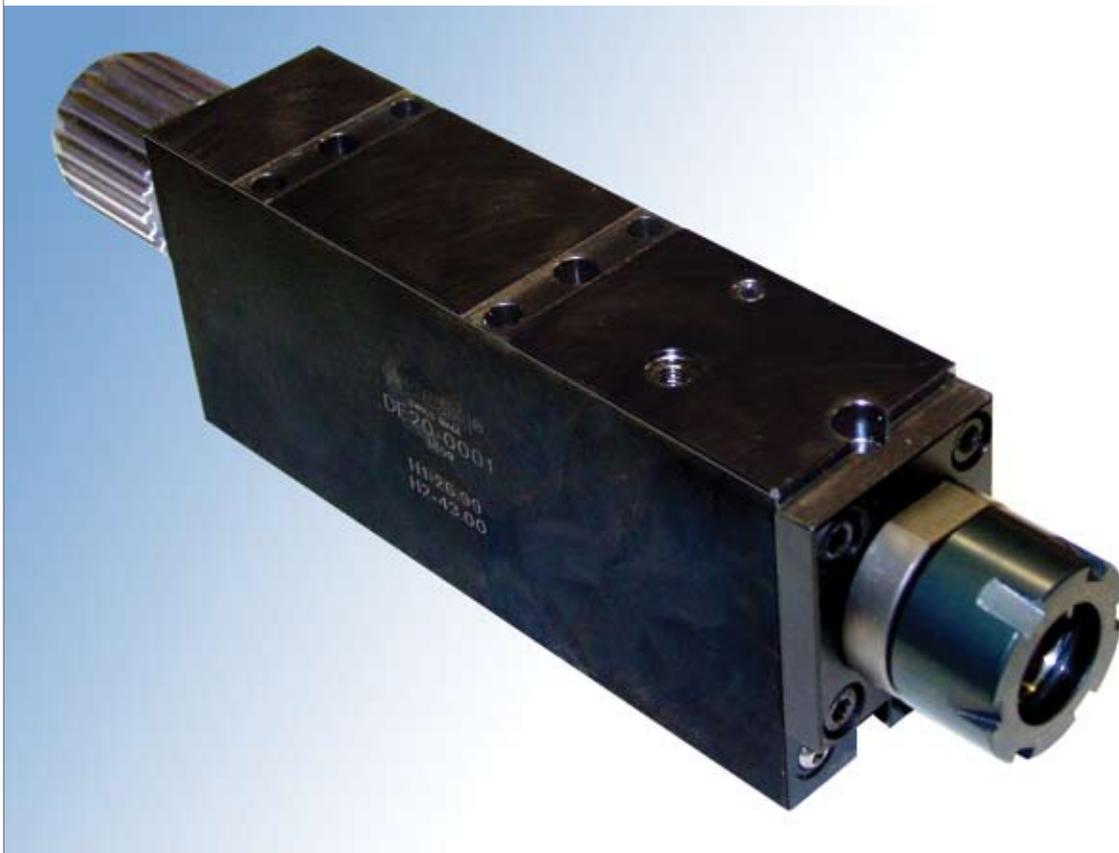
fresh stuff

It's a Bird... It's Supermill! (right)

Primary Cutter, LLC, has introduced Supermill all purpose carbide end mills with corner radius. The all purpose tool geometry features full eccentric relief and variable pitch with 35° helix, available in 4 flute styles.

Ideal for a full range of materials including Titanium and Inconel for aerospace, medical applications and more, the new line is available from 1/8" to 1" and radius sizes from .010-.125". In addition, these new end mills are furnished in long and extra long, with sizes from 3/16" to 1" for a wider range of applications. The new end mills can be furnished with Alcrona or Xceed coating as requested.

For more information, please contact Primary Cutter, LLC at 860-828-9703 or visit www.supermill.com.



fresh stuff



Sideways Glance

The new Haas ES-5 Series HMCs are horizontal machining centers with 40" x 18" x 22" (xyz) travels, and a VMC-style enclosure. Each machine features a 24+1 tool side-mount tool changer, and is equipped with an 8,000-rpm, 40-taper spindle that uses an inline, direct-drive system that couples the motor directly to the spindle. A 20-hp vector dual-drive system with on-the-fly wye-delta switching yields plenty of low-end torque and a wide constant-power band.

High-lead ballscrews and high-torque servomotors on all axes of each ES-5 provide rapids to 1,000 ipm to reduce cycle times, and the 24+1 tool side-mount tool changer swaps tools quickly to keep non-machining time to a minimum.

For more information, please contact Haas Automation at 800-331-6746 or visit www.HaasCNC.com.

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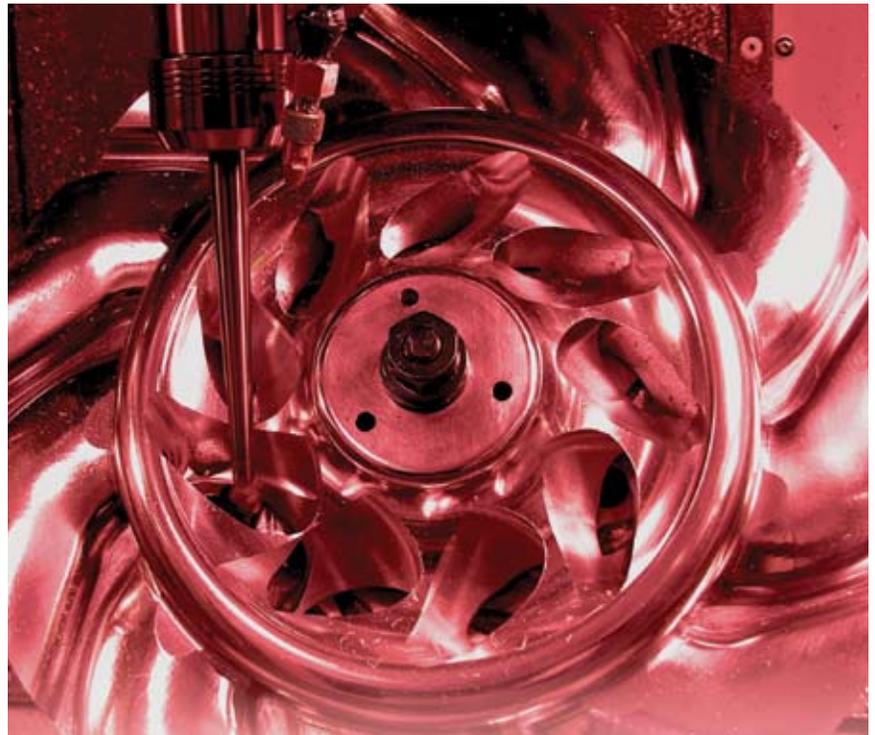
NOWAK
PRODUCTS, INC.

fresh stuff

Analyze This

Thermo Fisher Scientific Inc., has announced NITON Data Transfer (NDT[®]) Software Release 6.4 for its handheld Thermo Scientific NITON XL3 Series analyzers. This upgrade introduces features such as TestAll technology, live spectra and peak identification, Simplified Chinese language support, and a new Consumer Goods screen. TestAll Technology automatically selects the correct analytical mode for consumer goods analysis. Live Spectra and Peak ID enables identification of non-standard elements found in samples; for mining, environmental and archaeometry applications. Simplified Chinese added to existing support for English, French, German, Spanish and Portuguese. Consumer Goods Menu includes TestAll technology, metals and minerals, plastics and painted products modes. Software Release 6.4 allows users to customize the displayed Sigma value to meet preferences, view the camera image from a stored reading, normalize out the light element content of an alloy and view data in either parts per million (ppm) or percent (%) for precious metals (alloy) and bulk (soil) mode.

For more information, please contact Thermo Scientific NITON Analyzers at 800-875-1578 or visit www.thermo.com/niton.



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New Introduction

Ganesh Machinery has introduced the VMC-1814 Electrode Package CNC Machining Center. The VMC-1814 spindle design provides high axial thrust capacity while generating minimum heat buildup. The P4 class high precision angular contact bearings provide for a standard spindle speed of 8,000 rpm. A special labyrinth seal is designed into the nose of the spindle to prevent coolant or fine particle contamination during machining and ensures high spindle accuracy and a long and productive machine service life. Longitudinal travel on the X-axis is 17.72", cross travel Y-axis is 12.40", vertical travel Z-axis is 15.74".

The VMC-1814 machine casting design was CAD designed with FEA (Finite Element Analysis), and computer analyzed with internal structure reinforcement with numerous strategically placed heavy cast ribs to intensify rigidity. The machine is constructed of all certified premium Meehanite® castings. The wide spacing of the saddle box ways offers the optimal guide ratio for the slideways further enhancing the rugged design of the machine. Premium quality ball screws are double anchored and pre-tensioned, and then 100% inspected for parallelism to the axis guideways.

For more information please contact Ganesh at 888-542-6374 or visit www.ganeshmachinery.com.

More From Mori

Mori Seiki has announced the release of the NMV8000 DCG®, a 5-axis vertical machining center, built to accommodate workpieces up to a diameter of 39.7", weighing up to 2,200 lbs. DCG technology minimizes vibration by pushing moving structural parts along their simulated centers of gravity. The use of DDM™ (Direct Drive Motors) eliminates backlash and enables high-speed rotation. Additionally, the ORC™ (Octagonal Ram Construction) design from Mori Seiki's NT Series has been incorporated into the NMV8000 DCG.

Through the use of MAPPS III, the latest iteration of Mori Seiki's standard-setting control system, the NMV8000 DCG is equipped with a 3D interference checking function. The MAPPS III control also takes advantage of the conversational input, providing high-speed canned cycles that lead to increases in programming speed. The NMV8000 DCG can be equipped with either a No. 40 taper or No. 50 taper spindle, allowing customers to optimize the machine for their specific applications.

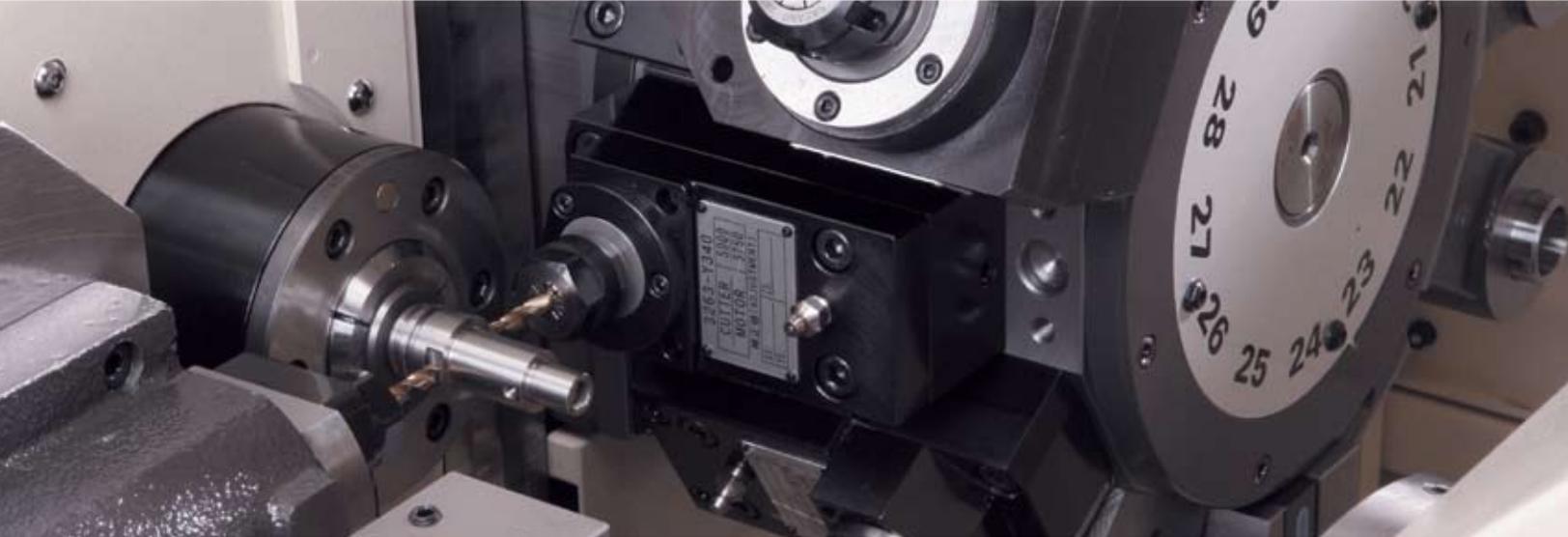


For more information, please contact Mori Seiki at 847-593-5400 or visit www.moriseiki.com.



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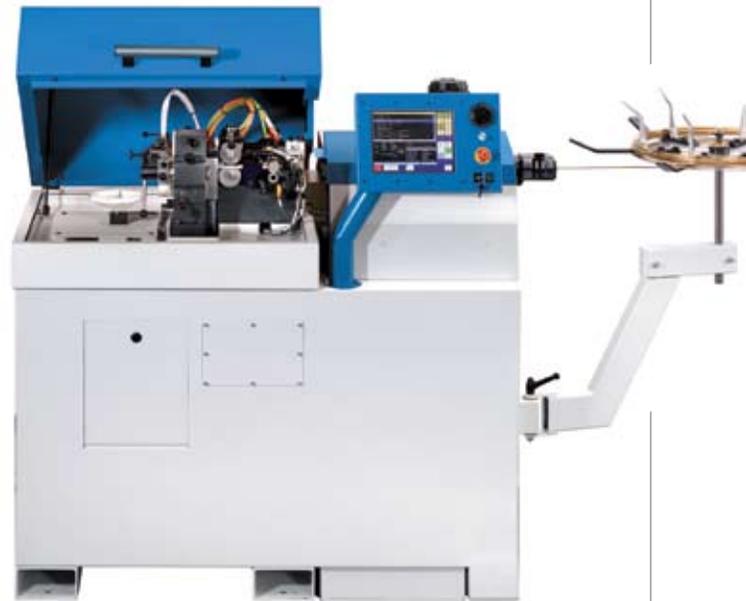
Visit www.tsugamiusa.com to watch the BH38 cut!

RU D2 (right)

Tornos has introduced the D2 CNC Esco for manufacturing of simple parts up to .157" in diameter in large and small lot sizes. The D2 CNC machines up to 100 pieces per minute without cams. The D2 CNC is equipped with a menu guided CNC control that employs touch screen technology and conversational programming. Additionally, the machine is outfitted with 2 cutting tools that revolve around the material at speeds up to 12,000 rpm.

The D2 CNC uses an automatic coil-fed system. Coil stock of any shape can be fed into the D2 CNC. All stock goes through a cleaning box where it is thoroughly scrubbed with steel wool before going into the straightener, where it becomes a solid, straight bar. Since the large coils can last several days, downtime due to replacing bar stock is eliminated. Additionally, wire as small as .011" in diameter can be machined without bending or whipping.

For more information contact Tornos U.S. at 630-812-2040, or visit www.tornos.us.



Heavy Metallic (right)

REGO-FIX® is expanding its line of revolutionary ER collets with a range of metallic sealed collets. Designed to seal the tool to the collet and the collet to the toolholder, this product is ideal for applications that require coolant pressures up to 2000 psi through the tool. The Swiss-quality metallic sealed collets are designed for universal use, working with any standard or friction-bearing nut. As a result, users do not need to purchase special coolant nuts or disks for coolant sealing. REGO-FIX offers the collets in standard and metric sizes, ranging from \varnothing .125"– .75" and 3.0 mm – 20.0 mm.

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

The Whole Spectrum (right)

The Hardinge Group has introduced the Spectrum Analyzer, an online tool for finding and matching machines to a company's needs. The Spectrum Analyzer is a 4-step process: Choose process; choose capacity; choose functionality; and choose capability. Process options are turning, milling or grinding (Hardinge turning centers; Bridgeport machining centers; Kellenberger, Hauser, Tripet and Tschudin grinding machines). Capacity focuses on machine size determined by bar or chuck capacity (turning), X-axis travel (milling/machining centers) and part diameter/length (grinding). Functionality presents machine configuration and option choices that help define complexity of the part, as well as overall manufacturing strategy. Turning center choices include options like sub spindle, live tooling, C-axis, gang tool, etc. Machining center choices include number of tools, pallet changer, number of programmable axes, high-speed spindles, etc. Capability needs are driven by material, hardness, part accuracy, surface finish, tolerance and throughput.



Users can find the Spectrum Analyzer at www.hardingespectrum.com.



Solution Mate (above)

SolutionWare Corporation in the USA, and MazaTech Solutions in Australia have partnered up to provide full functioning CAD/CAM solutions to Mazak shops, giving them the flexibility of continuing to program in Mazatrol as well as keeping the Mazatrol advantage by programming in the MazaCAM CAD/CAM and Editor.

MazaCAM is a full functioning CAD/CAM system that gives shops the abilities expected in a CAD/CAM system such as loading of CAD files, programming in a graphics environment, output programs to either G-code or

Mazatrol, full RS232 communications, etc. MazaCAM CAD/CAM is known in the United States for its capabilities in programming Mazak machines using Mazatrol; MazaCAM CAD/CAM also programs G-code machines with full functioning user-configurable post-processors that are common to G-code machines. MazaCAM also gives the Mazak shop the ability to take a Mazatrol program from an older machine and convert it to a newer control such as the Fusion or Matrix.

For more information, please contact SolutionWare at 888-322-3226.



benjamin wey

An interview with Benjamin Wey

The human bridge between China & America

WITH LLOYD AND NOAH GRAFF

Born in China, Benjamin Wey came to the U.S. as a teenager on a full scholarship to Oklahoma Baptist University to study business management. Today he is the President of New York Global Group (“NYGG”), a New York and Beijing headquartered investment banking, venture investments and strategic consulting firm which specializes in advising China related projects.

LG: What did you think when you got off the plane in Oklahoma? Was it an enormous culture shock?

BW: It certainly was. I had several impressions. One, there’s so many cars on the streets; nobody was walking. Second, I thought it was so big. Houses are big; air conditioners are big; milk is so cold. Everything was cold. Nothing was cooked, and every time there was a meal on the table it was so big. As a little guy who was experiencing America for the first time everything was big and exciting.

LG: How many years did you spend in Oklahoma?

BW: I actually finished my college degree in about three years. I had a bachelor’s degree in business management, and during that time I started my own importing and exporting business. I imported silk ties from China. I sold 1,000 of those ties to school programs and to

wholesalers. I sold sugar from Brazil to the Chinese. I sold fake Levi jeans from China to the Russian markets. Also, before I graduated, I became a consultant at Eaton Corporation. I joined that company with its market entry into China. and I helped them in their joint venture with Tata in their Titan division of their Bangalore hydraulic motor facility. They offered me a job, but I didn’t take it because I thought I was doing great on my own.

LG: Do you look at yourself now as American or Chinese, or do you look at yourself with two brains?

BW: I get asked that question often. I do look at myself as an American citizen. I don’t have a Chinese passport anymore. I changed my name from a Chinese name to Benjamin Wey. I’m Americanized, but when I go to China I’m still allowed into sensitive or governmental meetings. I’m always a Chinese person in their minds,

but I'm an American or Chinese-American on Wall Street. I have a language advantage. I speak fluent Chinese, Mandarin Chinese as well, and my business contacts in China are extensive. I'm also executive director of a China investment association, an affiliate of a Chinese government agency. And I'm a visiting professor of finance at Shanghai University of Economics and Finance in China, and China's University of Petroleum.

NG: What's one of the most important differences between negotiating with Chinese companies and American companies?

BW: Cultural sensitivity and cultural knowledge of the Chinese state is extremely important. Many people going to China land in Beijing on Monday or Sunday, and they want to wrap up their main target in China within a week. The problem is that they don't have enough information. It's extremely difficult just to tap into China from the surface and hope a deal can be done.

NG: Can you give a specific example of cultural knowledge?

BW: Sure. Most people learning about China from newspapers or CNN do not realize China is a very sophisticated society. The *New York Times* broke a story on Chinese toys that had tainted paint. The reality is that the customer, Mattel, was actually providing the problem. The toys are made by Mattel's own China factory, with their own employees, their own infrastructure, and their own technology. So China was actually serving only as a manufacturing-base providing labor. It was not China's problem. It was Mattel's own problem.

And remember the poison in the pet food? What the people don't write about is that the same exporters of the counterfeit products got prosecuted and thrown in jail in China. The same products that were sold in the American market were also sold in the Chinese markets. They actually killed animals in China.

LG: I want to ask about the rule of law and stealing of intellectual property in China. Say I come to you and want to establish manufacturing plants to make a product that I've developed here. But I'm afraid that the intellectual property could be stolen in China and

that I wouldn't have good legal recourse to go against the people who took my intellectual property.

BW: I would say watch your back. It is a real issue. But it's also something that any manufacturer going to any emerging market will look at. IP protection in China is weak, but I can also tell you that violators do get punished and the people bringing cases do get judgment all the time. But unlike America, in China there's no such thing as punitive damages. The most you could get is probably a \$20,000 award.

LG: Let's talk about the two great events in China in 2008, the Olympics and the earthquake. Which will be considered the most significant event for the future of China?

“The Chinese are united in a strong and open society. The Olympics will change China's image for years to come.”

BW: I think the future of China is going to come out of the Olympics. The earthquake happened in a distant but populace province with 100 million people. It is becoming a fantastic PR machine for the Chinese. If you look at what happened before the earthquake, all the talk was the Tibetans, right? Look at what happened. You don't read that anymore. All we talk about is what to do to help the Chinese.

LG: What about the Olympics?

BW: The Olympics is going to become a very major event. The Chinese government is going to put on a very big PR machine, and make this Olympics a showcase of China. But the Chinese are united in a strong and open society. I'm telling you this Olympics is going to change China's [image] fundamentally and positively for years to come.

LG: Some people believe that after the Olympics China will have a hangover, that there will be a recession, and the boom will finally soften up.

Do you think there is anything to that?

BW: No, I do not think that at all for a very simple reason. China's economy is very much linked to the world right now. Everything is made in China. That manufacturing base is not going to go away with or without the Olympics. Second, the Olympics takes place in Beijing. Beijing is one city. There are 670 cities across China. Like here, China has different pockets of economic growth. Florida is not good for real estate, but New York City is not bad at all.

NG: How many people speak English in China?

BW: 200-250 million Chinese, or 20- to 25 percent speak English. China actually has the largest English speaking population in the world

NG: How often do you speak Chinese during the day?

BW: During the day here in New York I speak English, and evenings I speak Chinese. We have customers as well as friends coming into New York all the time. We also have people going to China every week. I've got to twist my brain.

LG: Would there be a big opportunity for smart American young people to go to Shanghai or Hong Kong or Beijing to make money and have a good career?

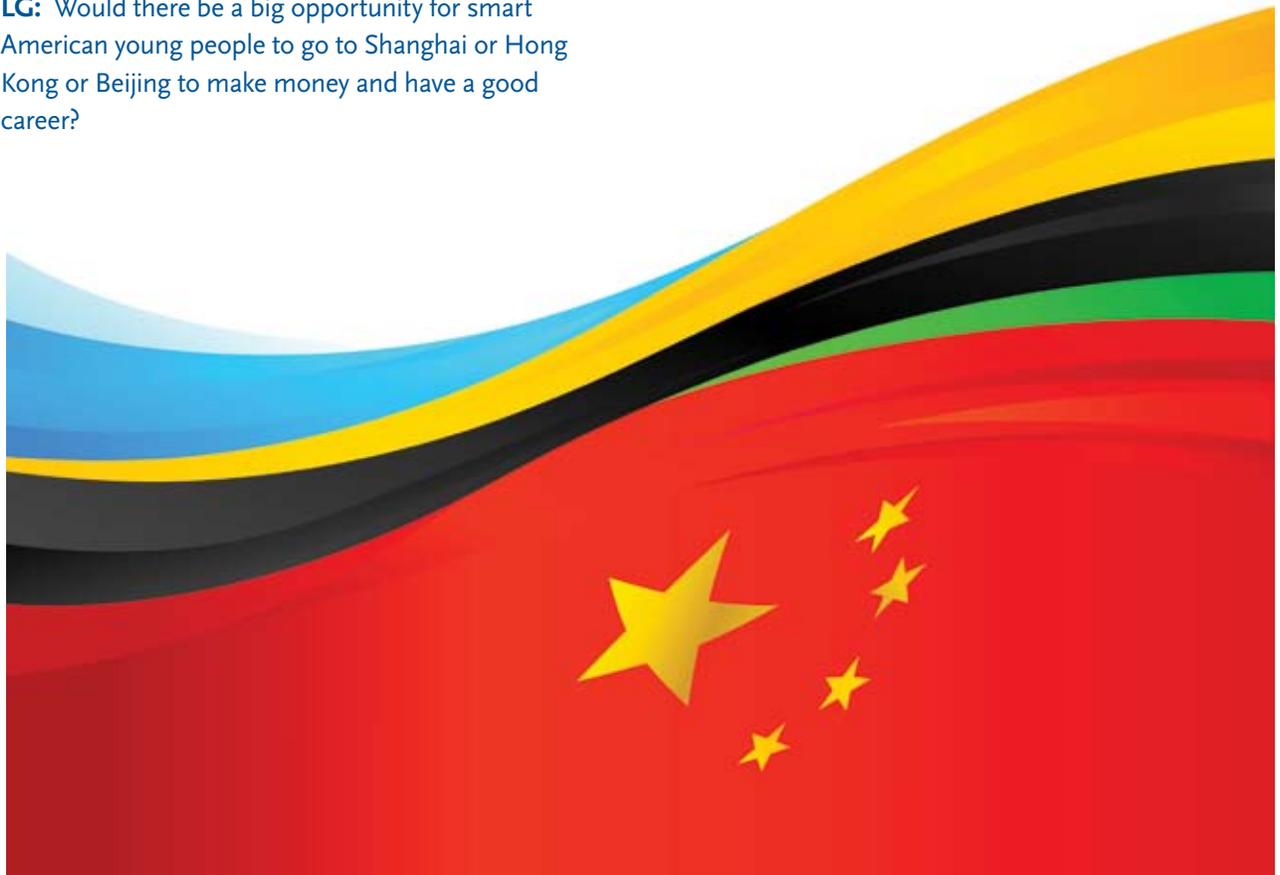
BW: There are a lot of foreigners in China already looking for the gold. In Beijing we have three Americans working for my company. Finding good paying jobs in China is not easy. It's highly competitive but a lot of people love China culturally. They go to China and live a great life.

LG: Do they need people who can guide them through the maze?

BW: Yes, they do, but a problem is some of those people don't have deep roots in China. They really need a guy like me.

LG: Why would they need a guy like you?

BW: If you have a problem, we solve the problem. Government regulations, licenses, how to pay someone a bribe – we do it. We get over the hurdles. We know who to go to. We have eight offices in China. We've been there since 1998 and we are the largest U.S. middle market banking firm in China.



LG: How many people do you have in Beijing?

BW: 82 today. Lehman Brothers has seven people in Beijing. Merrill Lynch has around 20.

NG: Do you think it's fair that people in other countries criticize China for human rights violations?

BW: This is my personal view. When people are hungry, they worry about what it takes to fill their stomachs. When they fill their stomachs, they think about what it takes to live better – they worry about where to live, or having a car. When the basic standard of living gets increased over time as the country of China gets wealthier, people start thinking about political change. Look where China was 30 years ago and look where China is today. People have absolutely no problem voicing their concerns, telling their friends, “Hey, we do not like the leadership or certain policies in China.” It took the U.S. over 200 years to become what we are. Give China a chance. I am very impressed by the progress in China every single time I'm there.

NG: What's your opinion on Tibet becoming independent of China?

BW: People don't realize Tibet is 20 percent of China's total size geographically. Can you imagine China tolerating anybody breaking 20 percent of its total territory away to become an independent country? Since the 1500s Tibet has been part of the Chinese government. It's not as if Tibet was an independent country 100, 200, even 300 years ago. The United States has only 200 years of history. Please tell Hawaii to go independent. Tell California to go independent. And economically Tibet's livelihood depends heavily on China because Tibet itself is a very barren land. Well, it has certain wheat products, and they raise bison, but it's not a very ideal living place for human beings. It has a high altitude, the region is extremely cold, even oxygen is not [always] sufficient.

LG: Let's talk about Taiwan.

BW: Taiwan itself has always been part of China. They were always under the jurisdiction of the Fujian Province. But Taiwan was nobody until communist China took over and kicked out the previous administration.

NG: Do they identify themselves as Chinese?

BW: They call themselves the “Republic of China.” They

don't call themselves the “People's Republic of China.” If you look at the green colored passport the Taiwanese hold it actually says the Republic of China. Taiwan wants to become independent. There's no way. They don't have a seat on the United Nations. It's a bit of an odd place, more like a territorial type of place.

LG: Taiwan and the People's Republic of China, are they becoming much closer now or is it still a big rivalry?

BW: They're very close. The new Taiwanese president is a Harvard graduate. He understands very much that if mainland China says, “Okay, guys, no more Taiwan,” meaning I'm confiscating the assets of the Taiwanese business people, Taiwan's economy is dead in a day.

“Americans would be shocked by Communist China, which is communist in name, but has capitalism in the blood.”

The Taiwanese are in the semi-conductor business. The high-tech industries are pretty much the ones supporting Taiwan's economy. Guess where the raw materials come from? Mainland China. Guess where they are manufacturing the parts? China. China thinks that over time they can culturally overtake Taiwan, and the two will merge into one. I think that will happen in the next 50 years.

LG: If there is one thing that you could tell us about your experience in China that Americans would be completely shocked by, what would it be?

BW: Americans would be completely shocked by Communist China, which is communist in name, but has capitalism in the blood.

LG: Thank you so much Benjamin.

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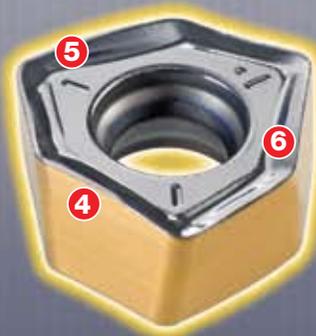
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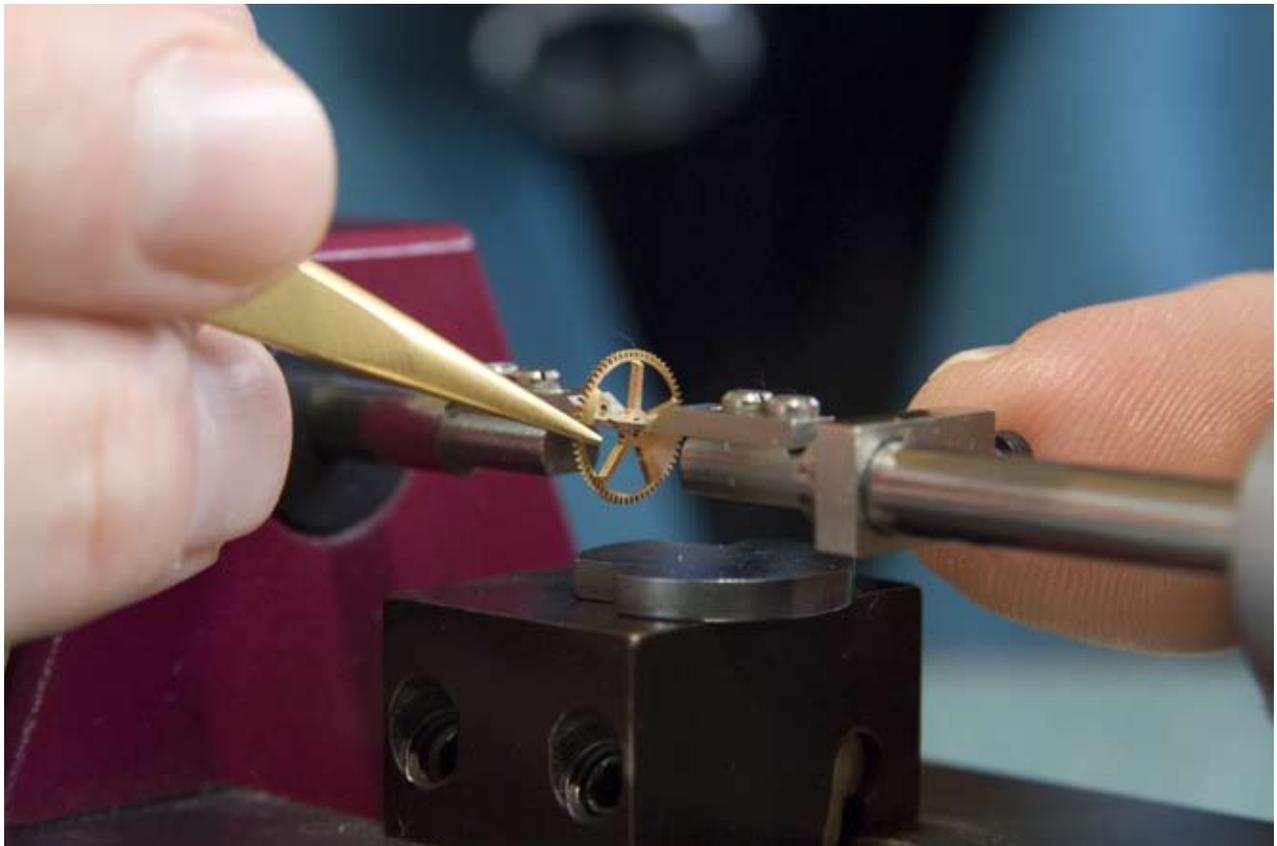
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BY NITIN K. SHANKAR

Looking Westward from Europe



Watch manufacturing in Switzerland. Photo courtesy of Le Manufacture des Franches-Montagnes, Switzerland.

The U.S. becomes competitive in manufacturing in Europe

westward from europe

As far as European Union (EU) exporters are concerned, one of the troublesome legacies of the Bush administration has been the dollar's plunge against the euro. While the dollar stood at parity with the euro in November, 2002, it has since dropped by more than 35 percent to hit an all-time low of \$1 = 0.625 € (or 1€ = \$1.6) in April, 2008. For Europeans, this exchange rate served as a psychological benchmark for future projections.

Since the EU and the USA account for the largest bilateral trade relationship in the world, the dollar's free fall has consequences for European exporters. In 2007, U.S. imports from the EU (\$354 billion) exceeded even those from China (\$321 billion). Among the EU member states, the largest exporters to the USA in 2007 were Germany (\$94 billion), France (\$42 billion) and Italy (\$35 billion). These three countries as well as other euro zone states are forecasting sizeable drops in exports to the U.S. in 2008. As far as most companies are concerned, the trigger point has already been reached to seriously consider the U.S. either as (a) a manufacturing location or (b) a sub-contracting source for components.

For some European companies, manufacturing in the U.S. is the key to their survival. Take the case of EADS, Europe's top aerospace concern. When EADS outbid Boeing to win a U.S. Air Force contract worth \$40 billion dollars over the next two decades for the supply of 179 KC-45A tanker aircraft, CEO Louis Gallois described the deal as "a fabulous victory." However, he said, "The number one adversary is not Boeing but the strong euro." Gallois added, "The exchange rate of the euro to the dollar presents a threat to our existence – not in the short term but in the long term."

EADS is trying to convert its problems with the weak dollar into an opportunity. Up to now it has been sacrificing margins by invoicing for its Airbus commercial airliners in dollars while paying most of its European workers in euros. Now the strong euro and lucrative U.S. defense contracts are serving as a trigger for EADS to start manufacturing in the U.S. In partnership with Northrop Grumman, it will be building a wide body jet factory in Mobile, Alabama. This facility will not only produce KC-45A tankers for the U.S. Air Force but also

churn out commercial A330 freighters for the world market. EADS will then be able to compete with Boeing by building its air freighters in the U.S., and quoting for the same in dollars instead of euros.

Luxury car manufacturer BMW is following the EADS strategy and producing cars in the U.S. for export. BMW's manufacturing facility in Spartanburg, South Carolina, was originally built to meet domestic demand. Today this plant has an expanded role and serves as the sole BMW production site in the world for both the X5 SUVs and Z4 roadsters and coupes. In 2007, it produced more than 157,000 units of the X5 and Z4 Series and, as part of its strategic realignment, the BMW Group has announced that annual production capacity at the Spartanburg plant will be increased to 240,000 units.

BMW Group's move is noteworthy. For one thing, the German carmaker is increasing production capacity at a time when others are closing down plants in North America. For another, Americans are assembling cars associated with a "Made in Germany" nameplate. Furthermore, the group wants to increase its overall purchasing volume from the NAFTA zone. "We will expand sourcing in the USA," says Dr Michael Ganal, BMW AG's CFO, "At present, only nine percent of the



Photos, **Top:** EADS' A330 freighters will be assembled in Mobile, Ala. *Photo courtesy of EADS, France.* **Bottom:** Company's hydraulic components seeking to be manufactured in Canada. *Photo courtesy of Bouverat Pernat, France.*



Photos, **Top:** Bouverat Pernat's new plant in Marnac, France. *Photo courtesy of Bouverat Pernat.* **Bottom Right:** Machining transfer line at Le Manufacture des Franches-Montgnes, a Montfaucon-based Swiss sub-contractor. *Photo courtesy of Le Manufacture des Franches-Montgnes, Switzerland.*

purchasing volume for our global production network stems from NAFTA – this is far too little.”

This move will benefit U.S.-based Tier 1 suppliers who deliver items such as complete dashboards, steering gear, and gear boxes directly to BMW in Spartanburg. Bosch Automotive Technology, a subsidiary of German-owned Robert Bosch, has a number of U.S.-based Tier 1 supplier companies that supply units to European and Japanese “transplants” in North America. One such company, ZF Steering Systems Nacam Corporation (Hebron, Kentucky), has experienced a rapid rise in turnover, which is expected to exceed \$150 million this year.

This will also have a ripple effect on Tier 2 suppliers who deliver components to Tier 1 contractors. Manufacturers of precision turned parts, nuts and bolts (NAICS code 33272) make up a large part of Tier 2 and 3 auto parts’ suppliers. Industry production in 2007, however, was just around \$9.4 billion with the industry using less than 70 percent of its production capacity. Although exports increased to \$2.6 billion, more than 60 percent went to Canada and Mexico. There is scope for exports to EU countries, which are currently suffering from full capacity utilization and a shortage of skilled labor.

An example is the case of the French screw cutting industry, which registered a 2007 turnover of \$3.3 billion. Nearly 70 percent of all screw machining is concentrated in the Rhône-Alpes region with about 700 companies employing some 14,000 people. Still, there is an acute labor shortage and the salary for first time employees has risen to \$30,000 per year. Baud Industries, which employs 200 people and produces 800 million turned parts per year,



has three units in France and four units elsewhere in Europe and the Far East. Its main unit in France operates on a 7-day/24-hour work week and, at times, makes overnight deliveries of cell phone parts to China. Lionel Baud, CEO, says, “Up until now we have been giving priority to setting up plants in Europe and the Far East, but in view of the dollar/euro exchange rate we plan to produce in the U.S. within the next three years.”

Other French units in the region are already moving in this direction. Bouverat Pernat, a precision turned parts unit employing 45 people produces parts for the aerospace, auto and hydraulic industries. Louis Pernat, one of the directors, is hoping to partner with a Canadian screw machining manufacturer or set up a unit in the French-speaking province of Quebec to manufacture parts for North American industries. “I am keeping an open mind on the type of operation but prefer to be based just across the U.S. border,” says Pernat.

European component manufacturers can also overcome capacity bottlenecks by sourcing semi-finished turned parts from North American sub-contractors. Steve Hurlin, Director of LMFM, a sub-contract shop

in Montfaucon, Switzerland, supplies pinions and gears to watch manufacturers. Such components are produced on high precision turning headstock lathes and have to undergo several finishing operations. Hurtlin says, "U.S. shops, capable of producing parts to tight tolerances, could supply components that can then be finished locally."

Although the U.S. turned parts industry has spare capacity, it has been slow to take advantage of the export opportunities in Europe.

Take the case of Germany whose "old economy" thrives on turning bolts and making valves. The German precision turned parts industry grew by 12 percent last year and registered a turnover estimated at \$ 9.6 billion. Plagued by the high labor costs and a shortage of skilled workers, there is pressure on German suppliers to hold the price line even in inflationary times. Werner Liebmann, Director of the German Turned Parts Industry Association, says, "Customers in the auto industry are forcing suppliers to reduce prices and absorb increases in raw material and transport costs."

"The low dollar will encourage manufacturing in North America as well as stimulate exports."

Yet, even with the cheap dollar, German units have been slow to source from North America. This also applies to German Tier 2 suppliers with manufacturing plants in North America. One such example is A. Berger Präzisionsdrehteile, a German screw machine operator based in Ottobeuren, close to the Swiss border. Berger has manufacturing facilities in Brampton, Ontario, and Spartanburg, S.C., set up to supply parts to North American automakers. Although the low dollar now makes U.S.-made parts competitive for export to Europe, Karin Berger-Hagenmiller, CEO, says, "We are reviewing the situation carefully but one obstacle in sourcing from the U.S. lies in logistics and rising fuel costs."

Hermann Rumpel, CEO of Rumpel Präzisionstechnik, feels that there is a "perception" problem as far as the U.S. is concerned. Rumpel, whose company employs 80 people and specializes in nickel-alloy turned parts, is a much-traveled man who has also visited the U.S. However, he says, "Brazil and India come first to my mind

should I think about sourcing turned parts."

Rumpel observes that the U.S. has been reducing its manufacturing base to a point where the country no longer even makes its own screw machines. He adds, "I did not even see any American exhibitors at the recent Hannover trade show for sub-contractors." This adds to the impression that U.S. screw machine units are not interested in supplying to the EU market. To combat this notion, the Precision Machined Parts Association should sponsor visits by its members to EU countries to stimulate trade prospects.

The general consensus is that the low dollar will encourage manufacturing in North America as well as stimulate exports. During the third quarter of 2007, U.S. exports grew by more than 10 percent for the year, the highest among the G7 countries. In the long term, however, everybody is keeping an eye on oil prices where the current rate of \$130 per barrel is likely to continue for some time. While many European companies will actively pursue a strategy of maintaining a manufacturing presence in North America, it is now up to American precision part manufacturers to look eastward towards Europe.



Photos, **Top:** Rumpel Präzisionstechnik's automated plant in Wilflingen, Germany specializing in nickel alloy turned parts. *Photo courtesy of Rumpel Präzisionstechnik, Germany.* **Bottom Right:** Watch parts being manually polished. *Photo courtesy of Le Manufacture des Franches-Montagnes, Switzerland.*



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

next

BY NOAH GRAFF

Recent devastating weather disasters have caused many people to wonder if the frequency of extreme weather is increasing do to changes in the Earth's environment.

In the next 50 years will there be more extreme weather in the United States than in the past half century?

Global warming due to increasing carbon dioxide over the next 50 years will cause changes in extreme weather. Past observations and future model projections indicate a trend toward more heavy rainfall events, while regions such as the southwestern U.S. will experience more severe drought. Hurricanes may become stronger, but there is not yet a general consensus about this. Trends in lightning storms, severe storms (with strong winds), and tornadoes have not yet been observed, because historical records are uncertain and the eastern-central U.S., where such storms are frequent, warmed less than other parts of the world during the past 50 years. Only in the past year or two have climate models developed the capability to make inferences about such storms. We now predict that in the coming 50 years, lightning, severe storms, and tornadoes will be less frequent, but the strongest storms will occur more often.

Anthony Del Genio
NASA Goddard Institute for Space Studies

The current best assessment for tropical cyclones is that it is very likely that we shall experience higher rainfall and stronger winds. Cyclone numbers are much more uncertain, though several recent investigations have indicated possible reductions. Little can be said about the potential changes to landfalling systems.

While the overall increase in winds will be relatively modest, say 5-10 percent, recent work indicates that this could result in a marked increase in the most destructive hurricanes. For example, the frequency of category 5 hurricanes has more than doubled in the last decade and this may increase further in the future.

Greg Holland
National Center for Atmospheric Research



Satellite Photo of Hurricane Katrina.
Photo courtesy of NOAA.

Climate change manifests itself by a change in the frequency of occurrence of extremes. For global warming, heat waves will occur more often and be more severe, cold waves will still occur but will happen less frequently. When these weather events are averaged together, the change shows up as an increase in the average temperature. Climate projections for the next 50 years include more frequent heat waves, more heavy rain events and flash flooding, longer dry spells between these heavy rain events, stronger winter-type storms (low pressure systems), increased rainfall and stronger winds with hurricanes, and increased storm surge from hurricanes.

Richard Heim
National Oceanic and Atmospheric Administration (NOAA)

the facts:

[Since 1950] generally, numbers of heavy daily precipitation events that lead to **flooding have increased**, but not everywhere. Tropical storm and hurricane frequencies vary considerably from year to year, but evidence suggests substantial increases in intensity and duration since the 1970s.

Intergovernmental Panel on Climate Change Fourth Assessment Report (IPCC, 2007) www.epa.com

In the past 50 years the **U.S. Population** has almost **doubled from 174,881,904 in 1958 to 303,598,000 projected for 2008**, significantly increasing the number of people vulnerable to the effects of extreme weather. U.S. Census Bureau

The high frequency that Americans build **structures in vulnerable areas such as the Gulf and Atlantic coast drastically increases the magnitude of destruction from storms**. An increasing quantity of deforested and paved land often cannot absorb heavy rain, causing rivers to overflow. Also, today's **increased media coverage** of storms has created the perception of escalating extreme weather.

The **United States experiences** more severe storms than any other country in the world. On average, **10,000 violent storms, 5,000 floods, and 1,000 tornadoes** hit each year. Despite improved weather predicting technology **1,300 people die every year** (as of 2006). www.sciencedaily.com

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Dear Shop Doc,

We are having trouble with chatter while turning on our 20mm Swiss CNC lathe. We recently replaced the guide bushing bearings and we have the bushing adjusted so tight that the bar is a press fit inside the bushing, but it still chatters. We have also tried different tool geometries and slowing the rpm down. Nothing works. Can you help?

Squealing in Wheeling

Dear Squeal,

I'm pretty sure I see the problem. These are some of the possible causes of chatter while turning on a Swiss:

1) Incorrect Tool Geometry: Positive rake tools cut more freely and can reduce the cutting pressure, which in turn can help eliminate chatter. Smaller nose radii also generate less pressure. However, this effect is minimal compared to reducing the feed rate or the depth of cut.

2) Guide bushing is too loose: Obviously not the problem here, but when the bushing is too loose the bar can move about during turning causing chatter.

3) Guide bushing is too tight: While this seems counterintuitive, over-tightening the guide bushing can cause chatter. A typical driven bushing has two angular contact bearings in the front and one or two bearings at the rear. When the bushing is run too tight, the back bearings will compress under the load caused by the bar moving forward, and the front bearings will unload. With the preload on the front bearings being pressed out by the bar being forced through the bushing, the bearing set is unable to support the cutting forces created by turning. This is probably your problem. This situation will lead to the back bearing failing, followed soon after by the front bearings. There is no need to run the

bushing as tight as you describe. If you are after better roundness use ground bar stock. The bushing should be adjusted snug to the bar but still be loose enough that you can rotate it by hand with the bushing locked. You should feel some drag on the bar when you rotate it.

4) The cut exceeds the driven bushings' rigidity: Lathe spindles and driven guide bushings are rated by the manufacturer with a figure known as the "maximum chip section." It is usually given as area in square millimeters. You calculate this figure by multiplying the depth of cut by the feed rate. On a typical 20mm Swiss this can range from 0.3 square millimeters to 0.8 square millimeters for a heavy duty driven bushing. Let's assume a 4mm DOC. Take 0.3mm (0.0118") and divide by 4mm (0.1575") and the result equals 0.075mm (0.003"), which is the maximum feed rate possible before the bearing in the bushing becomes overloaded and chatter results. Repeating the calculations for the stronger guide bushing you will find that you can feed up to 0.2mm (0.0079") per revolution before you will overload the bearings. This may also be the source of your problem while over-tightening the bushing is compounding the problem.

Dan Murphy
 Regional Sales Manager
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Halitosis to the Mostest

We've all been there. You are working closely with someone, thoroughly engaged in conversation, and BOOM! You back up, eyes watering, trying desperately not to make the "Oh My God! What did you eat?!" face. They have bad breath! He obviously doesn't know. Should you tell? And how can I prevent a similar fate?

Bad breath is usually caused by the presence of oral bacteria. It is the bacteria's waste that has an effect on the quality of a person's breath. The variables are dependent on the numbers of oral bacteria, the conditions which promote the growth of bacteria, and the unclean areas where bacteria reside.

"It is the oral bacteria's waste that has an effect on the quality of a person's breath."

Certain foods like garlic and onions cause bad breath, which is annoying but not a chronic problem. Bad breath caused by the consumption of certain foods will resolve on its own in a day or so as your body completes the process of breaking down these foods. Smoker's breath is directly related to the tar, nicotine, and other foul smelling substances derived from tobacco's smoke that accumulates on a person's teeth and oral soft tissues (tongue, cheeks, and gums). There is no effective way to totally eliminate smoker's breath. (except quit!)

Decreased moisture in the mouth limits the washing and buffering effects of saliva on oral bacteria and their waste products, and helps produce xerostomia, or dry mouth. You have probably noticed that your breath is least pleasant when you first wake up. We inherently reduce salivary flow while we sleep, so a person's mouth becomes dry. Saliva is the body's natural mouth rinse. It contains compounds that kill oral bacteria and buffer waste product. The presence of oral fluids encourages us to swallow. Each swallow washes away bacteria, as well as the food and debris on which they feed. When our mouth becomes dry the benefits of oral moisture are reduced. The net result is that the conditions for bacterial growth are enhanced while the neutralization of bacterial waste products is lessened.

Chronic dry mouths can be a side effect of medication. Antihistamines, blood pressure agents, diuretics, antidepressants and anti-anxiety medications can produce a dry mouth. Also, as we age, our salivary glands tend to work less

effectively, reducing the effects of salivary cleansing and buffering.

Periodontal disease is the second most common fundamental cause of bad breath. The older we get the more likely that bad breath is related to the health of our gums. Periodontal disease is a bacterial infection located in the tissues that surround a person's teeth. Advanced forms of periodontal disease typically result in serious damage to the bone that holds the tooth in place. As bone damage occurs, deep spaces form between the tooth and gum (periodontal pockets). These pockets provide an ideal location for bacteria to live – and it's the waste from the bacteria that makes the smell. Often these pockets are so deep a person cannot effectively cleanse them.

Sinus conditions also have an effect on a person's breath. Upper respiratory infections and allergies promote the flow of postnasal drip onto the back portion of a person's tongue. This discharge has a foul taste and smell. Oral bacteria will feed on this discharge and add their own smelly waste products. As a compounding factor, people with sinus conditions will often have stuffed up noses and breathe through their mouths. The drying effect of mouth breathing creates an environment that promotes bad breath. If a sinus sufferer takes antihistamines, it also adds to mouth dryness.

Fighting chronic bad breath has gone mainstream. Wrigley completed a study adding various compounds to their sugar free gums and found that adding magnolia bark kills 99 percent of the odor causing bacteria. The Chinese have used this natural remedy for years. Even the American Dental Association gave their stamp of approval. It seems that gum chewing with the bark strengthens teeth by augmenting enamel remineralization, decreases plaque acids by increasing the level of salivary buffers, and helps to prevent cavities by stimulating salivary flow.

But gum is only a temporary fix; you need to identify what is causing the growth of bacteria. Certain medical conditions that cause mouth dryness or an active infection in a person's sinuses or mouth can cause bad breath. If a person's bad breath persists, a consultation with a medical doctor is indicated.

And yes, you should tell!



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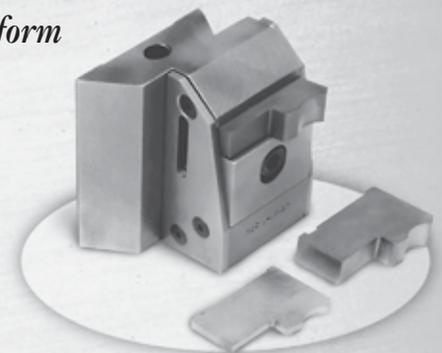
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Al Commins, president of Commins Manufacturing Inc., invented the AutoTight Rod Holdown system to protect buildings from earthquakes and high winds. His patented system uses threaded rods (8-16 feet long) and steel plates to connect floors and ceilings. The AutoTight take-up system automatically expands as the building shrinks, and settles. This tightness keeps walls tight and helps prevent damage and collapse.

NG: Where have you installed AutoTight?

AC: Our market basically starts in British Columbia, Washington, Oregon, California, Nevada, and actually in New York. But primarily it's West Coast earthquake region. It also is perfectly applicable to high winds, so if you're in a tornado or hurricane region it's quite appropriate.

NG: Do you see expanding your sales worldwide to China or other places with recent natural disasters?

AC: The way we build in the U.S. is typically quite different. Many parts of the world use masonry and there's different ways to handle loads with masonry. Our primary market is wherever they build buildings out of wood; primarily retirement homes, apartments, condos, small hotels up to five stories, and mixed use buildings.

NG: Did the recent Chinese earthquake bring your company business?

AC: Anytime there's an earthquake or a major disaster there's a short-term, heightened interest for a couple years and then people tend to forget. The problem and the good news about earthquakes and high wind events is that for the most part, they are typically local and don't happen very often. The last great earthquake in the State of California was in 1906 in San Francisco.

NG: If there is a very small chance a person will need your product, does it make it hard to sell?

AC: There's probably a one percent chance, or at least a very low probability that you'll need our product in any given year. But there's a 100 percent probability given the right timeframe that a building is going to be shaken with a massive earthquake. The [building] code actually says you've got to tie your build-

ings down. But the number one thing is safety. That's easy; we don't want people to die. It's hard to sell property preservation because we don't know enough to prevent all the damage in buildings.

NG: How did you decide where to have the part produced?

AC: When I was first making it, I actually made the first one here in my own shop on a manual lathe. I talked to machine shops, who said "Oh no, no, you can't do that." I said, "Well of course you can." Trying to get something made the first time is simple if you have a part in your hand. You can look at it and say, "Okay, now I understand." But if you look at a piece of paper, it's hard to explain to people exactly how it works. So I made some working prototypes and I went and visited some shops to get it made in a cost effective way. It's amazing; people can't read prints. The print said it's a left-handed thread; it came back as a right-handed thread. They said, "Well, we can't do this; we can't do that." I mean, these are shops with CNC machine tools that are serving aerospace stuff, making all sorts of fancy stuff. You look at my product and how simple it is, but they said they couldn't make it.

NG: Why didn't they think they could make the part?

AC: Originally it had four starts and I've gone to six starts. But the multi-start thread just sort of threw them. Today, we've progressed to the point where our threads are being rolled. After I went through a couple shops I finally found a shop that was willing to do it, and we've been with them for about eight years now.

NG: Thanks Al.

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2-1/4" 6-spindle, 1962, 1973-79 (3)
6-5/8" 6-spindle, 1979

ACMES

1" RAN6, 1974 (2) thdg., pickoff
1-1/4" RA6, 1973 (2), thdg., pickoff
1-1/4" RB8, 1981
1-5/8" RBN8, thdg, 1979, thdg., pickoff
1-5/8" RB8 thdg., pickup '68-72 (5)
2" RB6, 1979
2" RB6 collet chucker, 1980
2-5/8" RB8, 1973, like NEW
2-5/8" RB6
3-1/2" RB6, heavy recess, '66

INDEX

B60, 1967
B42, 1974

SCHUTTE

SF 26, DNT, 1989

SWISS CNC

Star SR-20, 1998

NEW BRITAIN

Model 52, 1987, thdg., pickoff
Model 62 2-1/4" 6sp., 1975, heavy thdg.
Model 62, Collet Chucker, 1979

DAVENPORT

3/4" thdg., pickoff, longbed (4)
3/4" 1981 (4)
3/4" thdg., pickup, 1977-66 (8)
Noise Tamers

HYDROMATS

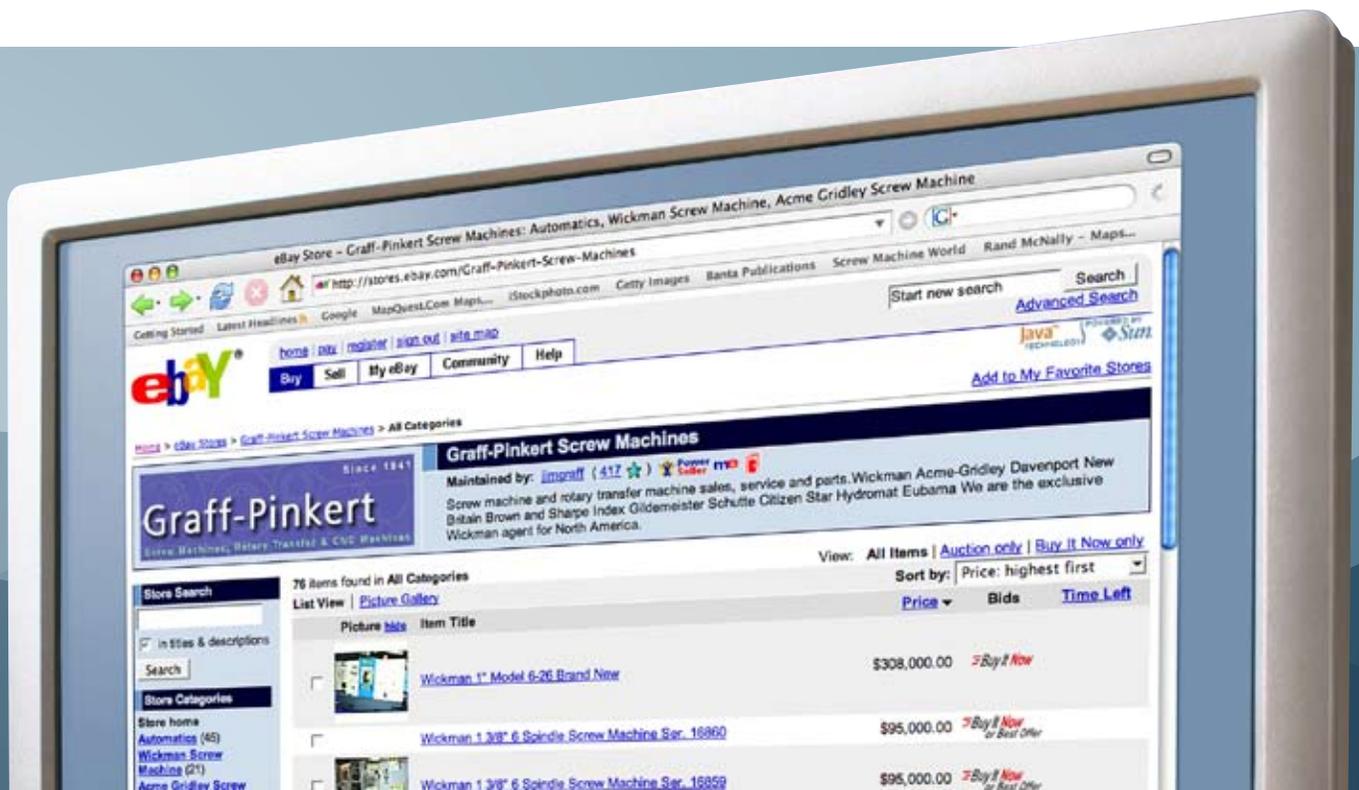
HB45-12 1996
HB45-16, 1987
CNC 36/100 HSK tool spindles w/2-axis CNC
flange and valves w/ 6-axis CNC cabinet.
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MISCELLANEOUS

Acme Recess 3-1/2 RB6
Davenport slotting- \$1,850
Hydromat flanges for HW25-12
New repair parts- 1-5/8" RB8
Reed B-13 thread roll attachment (3)
3-1/2 RB6 thdg. attachment
IMG recess 1-5/8" RB6
Davenport chucking package **\$1250**
Trion air cleaner (10)
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how it works

By BARBARA DONOHUE

how it works

A cutting oil from
Hangsterfer's Laboratories.
*(Photo courtesy of Hangsterfer's
Laboratories, Inc.)*

Cutting fluids

Choose the right oil or cutting fluid to improve tool life, surface finish and cycle times.

Unless you're doing dry machining, you'll use some kind of cutting oil or fluid in your machines. Cutting fluids and oils provide lubrication and cooling. They also help remove chips from the cutting area.

Selecting from the hundreds of available cutting fluids can be a real challenge. Experts in the business offer some guidelines on selecting and maintaining this important part of the machining process. Usually, you'll choose either a straight oil or a water-miscible (dilutable) fluid.

Straight oils

These are "mineral oils," petroleum products made from crude oil. Straight oils offer the maximum amount of lubrication, and the least cooling capacity. Blended with additives to improve performance, these oils are often used in screw machines and in heavy cutting operations like broaching and gun drilling.

Vegetable oils can be used instead of, or in addition to, mineral oils in many applications. They tend to have better lubricating qualities, and higher flash point, which is the temperature at which their vapor will ignite. In one cutting oil product line, for example, the flash points range from 200F to over 460F, with the vegetable oils on the higher end.

Water-miscible fluids

In addition to straight oils, three kinds of water-miscible cutting fluids are widely used. They give good tool life and help to produce a good surface finish, said Randy Templin, vice president, Blaser Swisslube, Goshen, N.Y., a manufacturer

of cutting oils and fluids. When properly mixed, the fluid is mostly water, with a few percent of the fluid concentrate, which is made up of oil and/or synthetics, plus additives.

Soluble oil: This is oil dispersed in water, making a milky-looking mixture. It offers the greatest amount of lubrication among the water-miscible fluids. Emulsifiers and surfactants let the oil mix with the water and remain stable despite contamination from tramp oil, machining fines, and other materials that find their way into machine sumps, Templin said.

Synthetics: These don't contain oil. They are made up of various chemical compounds such as phosphate esters. Synthetics fully dissolve into water. They are often transparent and may look like water or have a colorant added. They tend to be the most stable of the water-miscible fluids, and are often used for applications such as fine grinding, where a fluid is needed to keep the wheel open and clean, according to Templin.

Semi-synthetics: These blend oil and synthetics to give a combination of lubrication, stability and cooling performance. The concentrate usually contains 30 percent, or less, of mineral oil, Templin said.

Finding the right oil or fluid for your application

"We're trying to change the [industry's] view," said Templin, "so people think of coolant or cutting oil as part of the cutting tool package, [something that] can improve the performance of any tool."

There are so many products available and so many different



A magnetic filter element showing fines collected from fluid, after conventional filtration. (Photo courtesy of Knoll America)

applications that you will probably depend on your coolant supplier to help you select which fluid to use. Even if you are happy with your current cutting fluid, there may be room for improvement. In many shops, “If tool life is reasonable, they don’t know their coolant [isn’t] optimized,” said Joe Gentile, product manager at Hangsterfer’s Laboratories, Inc., Mantua, N.J.

“The first thing I ask is: what is the primary material that the shop runs? Then, what is the secondary material,” said Gentile. Most shops specialize and don’t realize it, he said. Which machining and other processes is the shop running? Heavy cutting? Grinding?

Gentile also determines what the shop’s tolerance is for residues on parts and machines. “Some shops want the machine to look like you could eat off it; some just want the tool lubricated,” he said. Also, medical and other critical parts shouldn’t accumulate any residue.

Your supplier will likely ask what kind of problems you’re having. Maybe you are not getting the kind of tool life you expect. Maybe “the current product is going sour, having biostability problems, smoking, misting, leaving residues, or [making operators’] skin break out,” said Mark Goedel, product manager at Valenite LLC, Madison Heights, Mich., a manufacturer of cutting fluids and tools.

From this and other information, your supplier will select a fluid that meets the needs of your primary application, works effectively with secondary materials and operations, and is compatible with any post-machining processes.

Give it a try

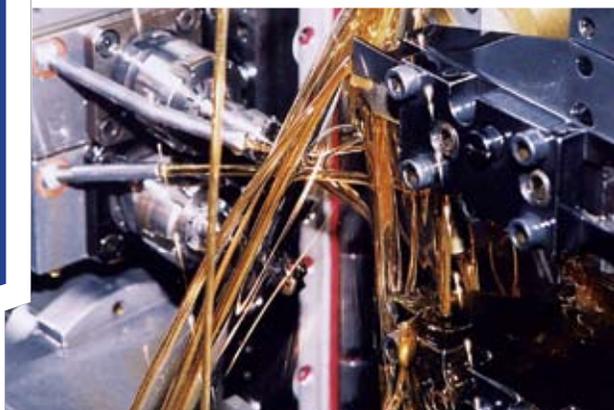
Testing a new coolant is a big commitment. “An insert is easy to put in a machine and test,” said Gentile. “Coolant is a different story.” You have to empty and clean the machine, he said, and you’ll need to be running the same part with both fluids, so you can compare performance.

With a fluid better matched to your process, you stand to gain improved tool life, better surface finish, and reduced cycle times. You may even be able to reduce your per-tool cost, as well. “We’ve helped customers using a \$100 drill go to a \$20 drill with the same tool life,” Templin said. You can’t always go from carbide tools to high speed steel, he said, but the right cutting fluid in the right situation can sometimes make this possible.

Goedel told about a company that was bar peeling, a very aggressive machining process. However, the shop was using a full-synthetic water-miscible coolant, normally intended for lighter duty. This produced lots of steam and mist. Coolant usage



Blasgrind cutting fluid. (Photo courtesy of Blaser Swisslube)



Vascomill, a vegetable-based cutting oil from Blaser Swisslube. (Photo courtesy of Blaser Swisslube)

how it works

was high – about one drum per day – and tool life was poor. To get acceptable performance with the full-synthetic, the shop was running it at 25 percent concentration instead of the usual 5 percent. Valenite provided a semi-synthetic that added lubrication, improved tool life and reduced misting, steam, and fluid loss.

When you change to a new cutting fluid, it needs to be compatible with all of your machining processes, but don't forget what happens after machining. Verify that your cleaning process works with it, and be sure to alert your plating or paint shop. The new fluid may leave different residues for them to deal with. For medical and other critical applications, alert your customers well in advance of the change, as they may need to obtain regulatory approval.

Mostly water

Since water-miscible fluids are mixed with about 95 percent water, you should have your tap water tested before selecting a new water-miscible fluid. The minerals in hard water can cause a problem with residues, and chemically softened water may tend to cause excessive foaming. Your cutting fluid supplier can advise you, and has different versions of product to alleviate some water-quality problems.

Keeping your cutting fluids on the job

As the price of crude oil goes up, and waste disposal rates rise, the lifetime cost of your cutting fluids goes up, as well. In the past, a shop may have routinely changed out the coolant every year or even every six months; now they'll try to keep the fluid going as long as possible. This requires careful monitoring and maintenance, but can pay off in the long run.

"The cost of coolant [concentrate might be] \$20 per gallon," said Steven Friedman, president of Sanborn Technologies, Walpole, Mass., a manufacturer of separation equipment for industrial applications. Then you mix water and concentrate in a ratio of 20 to 1. Now, from one gallon of concentrate, you have 20 gallons of waste to dispose of. It may cost you 50 cents per gallon, he said, to have it hauled.

"Cutting fluids are much better today than in the past," said Friedman. "They last longer and do more of what customers want." But to keep them going, you need to do some housekeeping – remove solids and tramp oil, and monitor the concentration and pH of the fluid.

To get a feel for the condition of your cutting fluid, filling a small bottle with clean fluid from a machine sump, sug-

gested Bill Cruey, problem solver with Knoll America, Madison Heights, Mich., a supplier of liquid coolant equipment. Let it stand a few days. The solids will settle to the bottom, and the tramp oil may float to the top. Cruey also suggests tying a magnet on a string and leaving it in the sump for a few hours. If you've been cutting magnetic materials, the magnet will come out with a fur of tiny metal fragments.

Be particular

Many different kinds of filtration equipment are available for solids removal. Nowadays, it is common to filter out particles down to 30 microns (about 0.001"). However, as shops keep fluid in service longer, smaller particles, "micro fines" accumulate more. They can cause wear on the tool, and clog through-the-tool coolant passages. If you're running a high-pressure coolant pump, it's a good idea to filter down to 5 or 10 microns.

Tramp oil

Hydraulic oil and lubricant from the machine ways can end up in the cutting fluid. This can interfere with the fluid's performance. "Even a couple of percent of tramp oil can make a big difference," Templin said.

With synthetic water-miscible fluids, often the tramp oil will float to the top when the machine is idle over the weekend, and you can vacuum it up on Monday. A coalescing unit can also remove the tramp oil.

In soluble oil or semi-synthetic coolants, the tramp oil can be more difficult to separate, Friedman said, so you may need something like a centrifuge to do the job. His and other companies can evaluate a sample of your cutting fluid and determine how best to deal with tramp oil and other filtration issues.

Concentration

Water evaporates continually, so you'll need to monitor the concentration of water-miscible fluids and keep them at their optimum concentration. You can check this yourself with a device called a refractometer, available from your supplier. Some suppliers will analyze samples for you. Goedel says Valenite performs monthly analysis for customers as part of product support.

pH

Another part of maintenance is monitoring the pH. This is an indicator of the cutting fluid's "health." Fluid tends to go acidic when there is a problem. If the pH is out of range, you can run the sump low and add fluid to it, or if the coolant is old, you should probably change it out. In a central cutting fluid system, you might add a pH adjuster.

how it works

Microorganisms

Water-miscible cutting fluids offer a friendly environment to bacteria and fungi: warmth, moisture, nutrients. Overgrowth of the wrong microbes can make the fluid smell very bad.

Fluid manufacturers have a number of ways to prevent this. They can formulate the fluid so it provides very little nutrient material, reducing growth of the germs. Or they can add a biocide that kills any microbes present. This could eventually result in the microbes becoming resistant to the biocide.

Another approach is to provide conditions in the cutting fluid that allow friendly, harmless bacteria to thrive, which keep the "bad bugs" from growing out of control, Templin explained. His company's Blasocut product line uses this method.

Filter, clean and recycle

You can use a movable filtration unit, which wheels up to the machine, such as the portable filtration cart available from Knoll America. This unit incorporates a bag filter and/or a magnetic filter, and can remove particulates down to 5 microns (about 0.00002"). It sells for about \$7,500, according to Cruey. This type of unit draws fluid from the machine sump, filters it

and returns it to the sump. Portable tramp oil removers are also available.

To clean the fluid even more thoroughly, you may want to invest in a self-contained recycling unit. These remove tramp oil and thoroughly filter the fluid. Such a unit might cost \$100,000, Friedman said. "The important thing is: the fluid is expensive to use and expensive to dispose of, so buying a quality recycling system [can] save money in the long run."

You need to remove the fluid from the machine, said Friedman, take it somewhere and clean it. At the same time, you can clean the sump. "The right way to do this is on a scheduled basis," Friedman said, ideally once a month. Vacuum out the coolant from the machine tool sump and take it to your recycling system. Then you can immediately refill the sump with fresh or recycled fluid and start making parts again.

"The metalworking fluid in your facility is the only thing that touches every tool, every part, every person," said Templin. You handle it. You breathe the mist. It affects every cut and every person who walks in the door, including your customers.

Experts consider the fluid to be as much a part of the machining process as the workpiece and the cutting tool. And the right fluid, properly maintained, can help keep your machines producing high quality parts, economically, with optimum cycle times.

For more information

Contributors to this article:

Cutting fluids:

Blaser Swisslube: www.blaser.com

Hangsterfer's Laboratories:

www.hangsterfers.com

Valenite LLC: www.valenite.com

Filtration and recycling systems:

KNOLL America:

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product focus

Each month, *Today's Machining World* features a product category and focuses on equipment key to remaining competitive in our marketplace.

Having the right coolant system in your shop is crucial. Joe Manfreda of PICO Chemical states, "Higher compounded cutting oils without chlorinated paraffins are making a comeback by replacing older formulated cheap black oils and water solubles, especially for demanding applications. Machinists want coolants that last longer, don't create foul odors, are low misting, improve tool life, produce better finishes, and do not require additives. The initial higher price of these fluids is more than offset by the cost savings of no mixing, higher removal speeds, smoother finishes, no machine downtime for clean outs and reduced waste disposal issues."

Far West Oil Co.

Far West Oil Co. Inc. offers its KleanKut line of cutting and grinding fluids. The semisynthetic and synthetic fluids meet all criteria for small and large machine shops. The biostable cutting and grinding fluids enable the consolidation of multiple fluids into one universal fluid for use throughout the entire machining process. The fluids offer a high degree of lubricity, corrosion protection and resistance to contamination, affording extended sump life.

For more information, please contact Far West Oil Co. at 800-317-9434 or visit www.farwestoil.com.

CECOR Inc. (right)

CECOR Incorporated designs and manufactures coolant sumpcleaners. These sumpcleaners are used to filter solids out of metalworking fluids so that the fluids or coolant can be used longer. A coolant sumpcleaner is the first step in coolant recycling. A sumpcleaner uses high vacuum lift to suck the used coolant out of the machine tool. The fluid then passes through a filter, which separates the chips, sludge and fines from the fluid. The sumpcleaner will pump the filtered coolant back to the machine tool or transport the fluid to a central recycling system. Less coolant has to be purchased when it is used longer. Also disposal costs are decreased. CECOR manufactures single and three-phase electric, air-operated and propane sumpcleaners. Tank sizes range from sixty to six hundred gallons.

For more information, please contact CECOR Limited at 800-356-9042 or visit www.cecor.net





Monster Accessories (left)

New R Series high-pressure coolant pumps from Monster Accessories use the Hydra-Cell® diaphragm pump. This patented, hydraulically balanced design from Wanner Engineering has no packings, cups, or seals. This pump is available in either fixed volume (RF) or variable volume (RV) models and can accommodate flow rates of 8 GPM, 15 GPM or 20 GPM. The pump is built to handle the abrasive particles found in machine tool coolant that can wear out conventional centrifugal, screw, or piston pumps. In turning and milling applications, this pump excels at removing chips from deep and blind holes, thereby reducing “cyclic cooling.”

The R Series positive displacement design allows users to adjust the flow rate by changing the speed of the pump shaft. This is a helpful feature when using tools with different coolant flow requirements. The unit is portable on sturdy locking castors, giving operators the option to transport it from machine to machine, even with the 50-gallon reservoir filled. R Series pumps have electrical components manufactured by Sprecher + Schuh, a Swiss company.

For more information, please contact Monster Accessories at 800-808-1020 or visit www.monster-accessories.com.



PICO Chemical Corporation (above)

PICO Chemical Corporation offers Picocut Code Blue, a chlorine free and blue colored cutting fluid for difficult to machine stainless and titanium alloys. Picocut Code Blue is a quality fluid that significantly improves tool life, reduces smoke and heat, has a low mild petroleum odor, is non-foaming and exhibits high oxidation resistance. This clear, operator friendly fluid contains extreme pressure additives, is low misting and has a very high flash point. Picocut Code Blue is suitable in metalworking operations such as: milling, drilling, reaming, threading, broaching, grinding, stamping and drawing. Code Blue has virtually unlimited sump life and requires no expensive additives.

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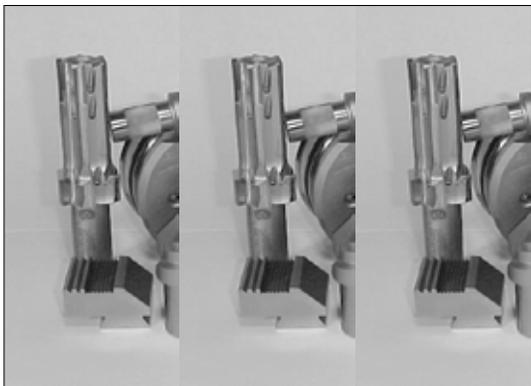
Mayfran (above)

The Mayfran ConSep is the second generation of a single-platform chip conveyor/coolant separator that removes chips and contaminants to a 50-micron level. ConSep has a low profile to fit with a wide range of machine tools. The unit is ideal for machining applications when all types and sizes of chips, including long strings and expansive nests are present. ConSep has a simplified single conveyor system that has a patented internal chip handling (auger) system that also handles fines and sediment. A backwash automatically cycles to the patented indexing filter drum's poly fiber media. The filtered coolant is held in a clean coolant holding tank for return to the machine tool. The removal of fines from the fluid results in a less abrasive, gritty coolant flowing back into the machining process, which helps reduce wear on machine components as well as on tools.

ConSep can also be equipped with a pumpback station for directing coolant to independent filtering stations if required, or outfitted with on-board filters, including the Mayfran AT-Cleaner that features mechanical, media-free 10-15 micron level cleaning of coolant when filtration below 50 microns is required.

For more information, please contact Mayfran International at 440-461-4100 or visit www.mayfran.com.

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EXAIR (left)

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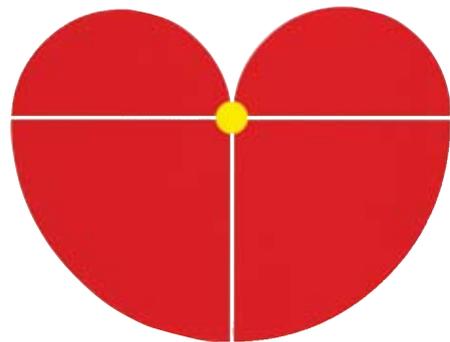


Two lightweight beach balls are suspended a short distance from each other, as shown. Can you guess what will happen if you blow air between the two balls?

Halving Heart

It turns out that every line drawn through the yellow dot divides the perimeter in half.

Who's got a heart?



Sheldon Wheaton of Garmin International in Olathe, KS; **Greg Tetrick** of Cass Screw Machine Products in Minneapolis, MN; **Jim Riddell or Baker College** in Flint, MI; **Samuel Potter** of CONESTOGA WOOD SPECIALTY CORP in East Earl, PA; **Todd Storch** of A & A Machine in Maple Valley, WA; **John Mandell** of Principal Point Technologies in Austin, TX; **John Seefus** of Rosene Machine Inc. in Firth, NE; **Ron May** of Hunter Engineering Company in Bridgeton, MO; **Jeff Kovalenko** of Key Machine Tool in Elkhart, IN; **Jim Brown** of Apogee Machining Services, Inc. in Salem, MA; **Jerry Levine** in Chicago, IL; **Douglas Edwards** of BorgWarner Emissions/Thermal Systems in Fletcher, NC; **Kevin Albright** of Gear Headquarters in Kansas City, KS; **Uli Kuster** of Blaser Swisslube in Goshen, NY; and **Rich Omdahl** of WARD Performance in Zimmerman, MN.

postings



Noteable and newsworthy information and events for the month of August

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www.sme.org

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Chicago, Illinois

Sept. 8th - 13th
www.imts.com

Lean Principles for Performance Management

Brownsburg, IN

August 21st
www.sme.org

COM 2008

WINNIPEG Conference of Metallurgists

Winnipeg MB, Canada

August 24 thru August 27

www.metsoc.org/com2008

Machinery Lubrication

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Minneapolis, MN

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August 19-21

Cleveland, OH

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WHO READS



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Today's Machining World?

ad index



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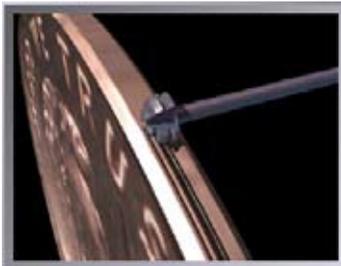
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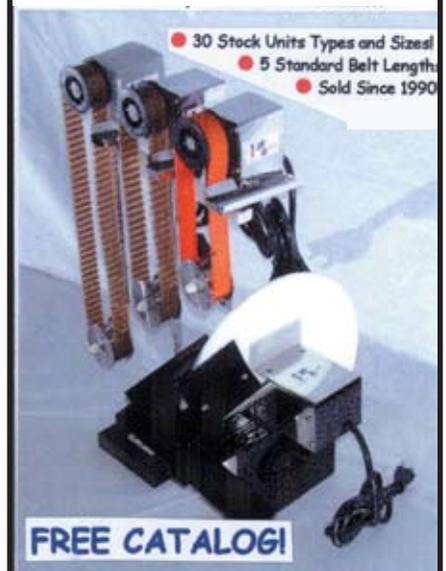
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The Juggled Path

I have always loved to follow the people who walk the less traveled path in their lives. The journalist Jason Fagone shares my interest in the skills that don't fit the sports page or the business section. He wrote the definitive book on competitive eating and recently published a fascinating piece on Vova Galchenko, the magnificently driven juggler, a 20-year old Russian who has mastered the "seven club five up 360." In this trick he juggles seven clubs (think of slender bowling pins), five in the air, while he pirouettes and simultaneously exchanges the two remaining clubs for two of the cascading clubs plummeting to him, while keeping the whole trick flowing seamlessly. Check out his YouTube video and you'll see how he makes this incredible feat look easy.

Galchenko, known as "Vova" is one of only two people in the world known to be able to do this. The other is the virtuoso, Anthony Gatto, of the Cirque du Soleil.

"I have always loved to follow the people who walk the less traveled path in their lives."

Vova practices many hours a day while taking a full load at Cal-Northridge University, where he just finished his freshman year. He grew up in Penza, Russia, where his father Vasili, a math professor, sent him and his sister Olga to Circus school when he was four years old. Times were tough in Russia a dozen years ago. Vasili couldn't afford a set of proper clubs so he asked a friend to carve a set from blocks of wood gleaned locally. Six years ago he video taped Vova and Olga doing a juggling routine. It found its way on the Internet, and the world juggling community discovered the Galchenkos.

Vova and Olga were brought to the U.S. by some of the juggling aficionados here and ended up in a Santa Monica, California mansion, owned by the Balaker family. Olga and her mother eventually returned to Russia, but Vova stayed to develop his art and get an education.

He has an unabated passion for juggling but does not want to tour or do the Cirque du Soleil regime. He performs at juggling conventions, does commercials, and works on his videos. More than 650,000 views are recorded on one video

on YouTube. He does some street performing and is working on some comedy shtick to intersperse with his juggling.

So how do I connect 20-year old Vova Galchenko with the machining world? He reminds me of Andrew Getz, the 15-year old Chicago area high school kid who taught himself the art of machining and walked into a Haas Open House, bought a CNC mill, and started a business in his family's garage.

Definitely the road less traveled in the Grand Theft Auto world of teenage America.

He also reminds me of Joey Chestnut, a San Jose, California, college student who challenges the magnificent esophagus of the great Kobayashi, the premier hot dog eater in the world in competitive eating competitions.

Our schools generally channel kids into the safe, conventional jobs like teaching, accounting, or programming, so they can compete with millions of others for middling rewards. My wife, Risa, is an educational therapist with a practice helping kids deal with learning problems. She has taught many students over the years who would have made great machinists with some training. They could have ended up with their own shops like Andrew Getz, but their parents scoffed at the unconventional notion of a middle-class suburban kid learning on the shop floor.

But thankfully, there are still a few intrepid kids like "The Russian Robot" Vova Galchenko, who have the courage to follow their passion. Every entrepreneur knows how challenging it is to continually keep the balls up in the air.

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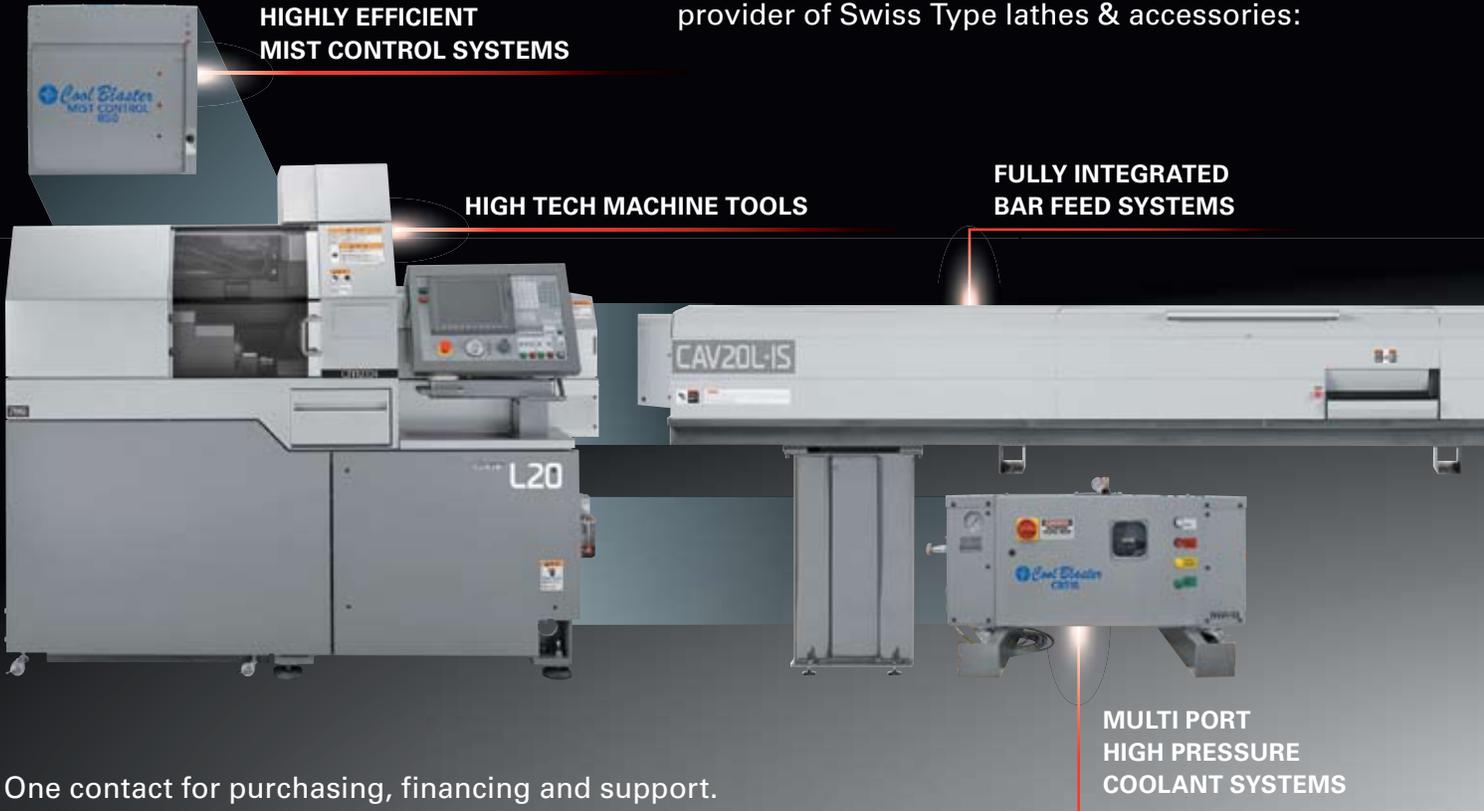
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