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Today's Machining World

THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY

January/February 2010 volume 6 issue 1

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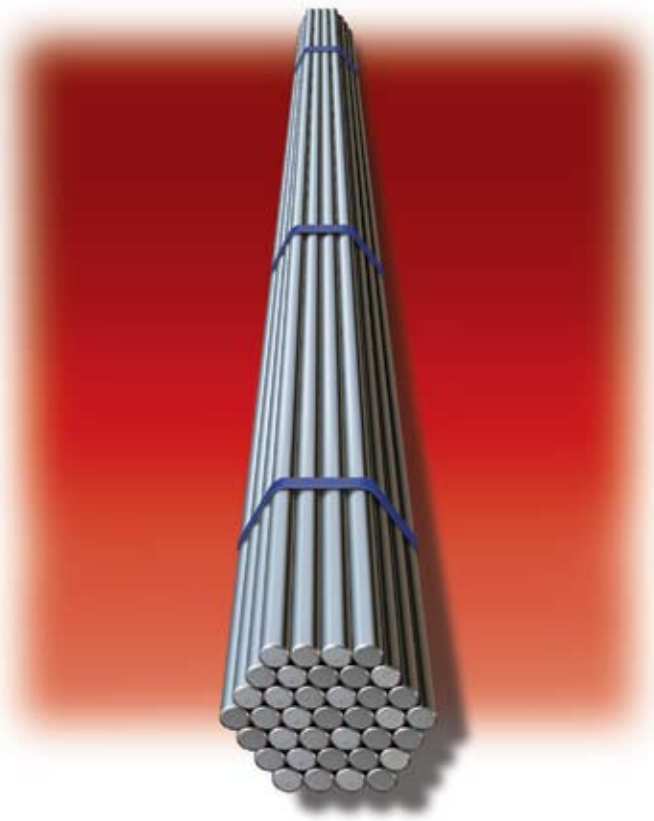

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in this issue

Features

Departments

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New Web site at:
www.todaysmachiningworld.com

contributors

Mary Ethridge, a freelancer, has written for a wide variety of publications, including *MSNBC, Newsweek, Cleveland* magazine and her favorite, of course, *Today's Machining World*. Before going solo in 2006, Ethridge spent 18 years with the former Knight Ridder newspapers. Ethridge graduated cum laude from Princeton University with a degree in English literature. She is currently producing a movie with the actor/director Corbin Bernsen about a boy's dreams of victory at the All American Soap Box Derby, headquartered in Ethridge's hometown of Akron. She expects to be hobnobbing it with the A-listers in L.A. this time next year, so she's busy polishing her stilettos and researching do it yourself liposuction.

Lloyd Graff attempts to integrate his work life, spiritual life and creative life. Every Hanukkah he pulls out his one of a kind menorah made of scrap screw machine parts, assorted bearings and metal tubing he collected around his machinery dealership Graff Pinkert & Co. In 1988 he sent 30 pounds of gleaned metal to artisan Archie Nahman, a paper machine mechanic by trade, who fabricated his unique creation. In 2005 he commisioned Mike Eissenwasser, a young artist, to paint a 40-foot mural about manufacturing and global machining on a shipping container which now resides next to the company driveway.

Emily Aniakou, managing editor of *Today's Machining World*, has an eclectic background which includes a degree from the Eastman School of Music in French horn performance, a year of service at a Bangladeshi orphanage, training at a Zen Center, and most recently a stint in the Peace Corps in Benin, West Africa. Emily is in desperate straights as she wants a puppy from the local Humane Society. Her husband has refused her request due to the challenging parts associated with pet ownership; namely mandatory Indiana winter walks, housetraining or anything to do with food and general care. Consequently, puppies are all Emily can think about.

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

Today's Machining World

www.todaysmachiningworld.com

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BPA WORLDWIDE

Oiling the Bitter Leaves

I was celebrating New Years with friends and family, eating pizza and salad. The greens were presented and a friend at the table asked what was in the salad. I said, "It's an arugula salad" and he retorted, "I can't stand that stuff, it's bitter." I thought he was joking but he went on and on about how a restaurant put arugula on his veal Milanese which he loves, but the bitter licorice taste of the greens messed up the dish for him.

He then said an interesting thing, "why would you want to eat something bitter that you have to mix and season just to make it taste edible?" A reasonable question.

I suggested the example of mustard as a food that is used to make people vomit when they eat a poison, but with a hot dog it's perfect. "I love mustard, it's not like arugula," he muttered.

The salad was served—a fresh combination of the bitter arugula coated with a nice olive oil, pear flavored balsamic vinegar, lemon juice from the backyard tree, salt and pepper and slivered almonds. I absolutely loved it, but the arugula hater would not touch the bitter leaves.

I thought of my friend and the arugula as I considered my first "Editor's Note" of 2010. The past year has definitely been bitter. Business vanished, jobs evaporated and homes fell into foreclosure. Everybody but pawnshop owners suffered. It was a year of ruination in the machining world. I tasted the bitterness of letting good people go, cutting back magazine issues and listening to the wails of readers and advertisers.

The bitter leaves of a brutal 2009 still fill my bowl, but I am dressing my salad with gusto going into 2010. The new Web site Noah Graff put together along with our *Today's Machining World* Swarfblog email blasts are bringing thousands of people to www.todaysmachiningworld.com online every week. People are reading us on their Blackberrys and iPhones all over the world.

Ten percent unemployment and 10 million-car years are still bitter stats to live with in our industry, but the survivors get to flavor the foul tasting leaves with creative touches as we taste the New Year.

Lloyd Graff
Editor/Owner

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WICKMAN
5/8" 6-spindle, thdg., pickoff, 1971-88 (8)
1" 6-spindle, 1960-1992 (9)
32mm 8 spindle, 1997
1-3/8" 6-spindle, 1967-1979 (3)
1-3/4" 6-spindle, 1965, 1984 (10)
1-3/4" 8-spindle, 1970
2-1/4" 6-spindle, 1962, 1973-79 (3)
3-1/4" 6-spindle, 1973,
6-5/8" 6-spindle, 1979
5-5/8" 6-spindle, 1978,

ACME
7/16" RA6, 1975 (2)
1-1/4" RB8, 1981
1-5/8" RBN8, 1979, thdg., pickoff (3)
1-5/8" RB8 thdg., pickup '68-72 (5)
2" RB6, 1979
3-1/2" RB6, heavy recess, '66
2-5/8" RB8, 1979

CNC INDEX
G200, 1997, Index
G300, 1997, Index
ABC 60mm Index '96

SCHUTTE
SF51, 1985
AF32, DNT, 1998 (2)
SF26, 1979
SF51 PC

CNC SWISS
Star SR20, 1999

CNC MACHINING CENTER
Haas EC400, 2004
Doosan DMW, 2007

CNC LATHES
Doosan VT900, 2008

HYDROMATS
V8 Trunion
HW 25-12, 1985, 1994
HW 25-12 Chucker 1994
HB45-16, 1989 - '97
HS16, 2001
CNC 36/100 HSK tool spindles w/2-axis CNC flange and valves w/ 6-axis CNC, new in 2006.
VE 20/80 QC unit
36-100 Recess unit
36/100 unit
30/60 unit

Gildemeister
GM 20AC 1999

EUBAMA
S-20, S-12
S-8.1 1999

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

MISCELLANEOUS
Acme Recess 3-1/2 RB6
2 5/8" RB6 spindle bearings
New repair parts- 3/4 RA8, 1-5/8 RB8
Reed B-13 thread roll attachment (3)
3-1/2 RB6 thdg. attachment
IMG recess 1-5/8" RB6 (2)
C&M Wickman pickoff 1" and 1 3/4"
Hydromat recess unit and flange 36-100
Siemens varispeed motor off Wickman
Wickman thread chasing 5/8" – 3 1/4"
Wickman pickoff 1" and 1 3/4" x 6
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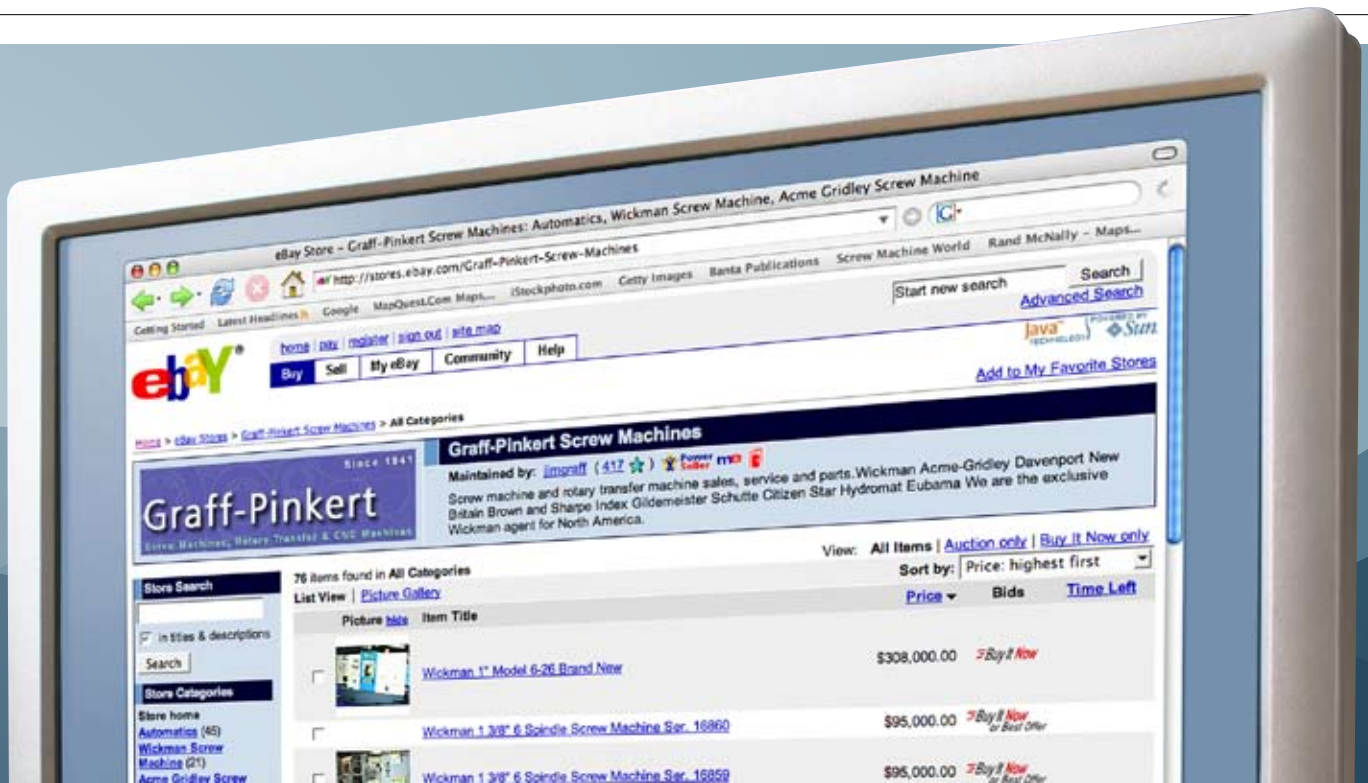
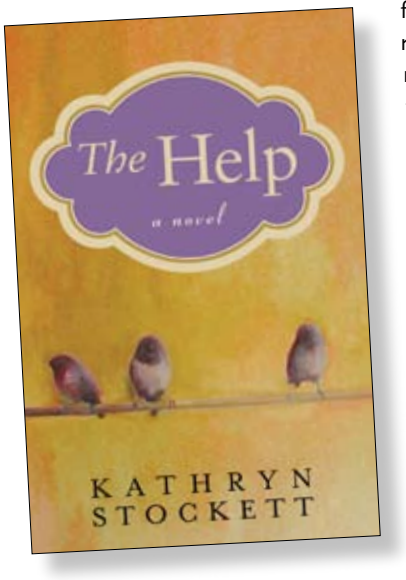


By Jerry Levine

The Help

The Help by Kathryn Stockett is currently near the top of the best seller lists. It's a delightful novel about the relationships between African-American maids and their white employers in the early 1960s in Jackson, Mississippi.

The civil rights movement was just about to take off. And while we all remember the soaring rhetoric from the movement's leaders, we never heard from the workaday domestics who cleaned the houses, cooked the meals and raised the children of their white employers. These women suffered unbelievable indignities and abuse without ever letting on. Now, in *The Help* they are given a voice in their own clandestine book exposing the good, bad and ugly of 1960s Mississippi.



The novel features three narrators: two black housekeepers, Aibileen and Minny, who work for white families, and Skeeter, who is white and a recent journalism graduate from Ole Miss who wants to be a writer. Skeeter is not a racist, but is initially naïve and patronizing.

She takes a job with the local paper writing a household advice column—not her forte, and has to rely on her white friends' maids, Aibileen and Minny, to answer readers' questions.

When Skeeter's best friend, the Junior League president, tries to pass a law barring the help from using the toilets in their employers' houses, she decides to write a book in which the maids anonymously talk about their work experiences and the racism of the society.

The maids' stories about their employers are both positive and negative, but most are negative. The stories strongly reflect the narrow-mindedness and bigotry of the society. The positive ones talk about how some whites take good care of their maids and farm hands, look after their health and even their childrens' higher education, yet still within a very paternalistic "separate but equal" environment. There is never true acceptance or a feeling of equality between blacks and whites. The novel has much to do with the drawing of invisible lines and the meager attempts at erasing them.

Skeeter begins to recognize the many lines running throughout the community—not only between blacks and whites, but also between whites. This results in her gradually becoming an outsider in white female society and also ends her budding romance with the son of a Mississippi senator.

The interracial friendships carry a great risk both for Skeeter and the maids. Racial beatings and murders are sprinkled throughout the book to remind the reader of the terrible reality of that time and place.

The author creates a group of stereotypical characters: the cunning, bigoted Junior League president, the sexy "white trash" woman who marries into Jackson society but is excluded from it, the cake-eating, cigarette-smoking pretentious women of the League who ironically run a fundraiser for the "Poor Starving Children in Africa," yet ignore and abuse the poor African-Americans and their children in their midst.

But all of this is done with a light touch and a sense of humor that lifts the novel when it could be too serious and depressing. One of the most humorous subplots occurs when a maid known as the best cook in town, Minny (perhaps the most blunt, outspoken black woman in Mississippi), pulls off what she calls "The Terrible Awful" trick on the Junior League president. Reading it one can only howl with appreciative laughter.

The book then ends abruptly. The lives of the three moderators are impacted by a major event for the better, which allows them to start a life freed from the constricting lines of Jackson. Skeeter is offered a job at a magazine in New York. Aibileen gets Skeeter's old advice column job at the Jackson newspaper and Minny and her children finally leave her abusive husband to move closer to the family she works for who has guaranteed her a "job for life."

How will their lives progress? We don't know. It might be nice if the author is planning to tell us in a sequel.

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

Today's Machining World

Stay as You Are

I just read your "Editor's Note" in the November/December 2009 issue. To heck with the guy who complained that your magazine is not technical enough. There are plenty of technically oriented magazines in this market, but *Today's Machining World* is the only one to look at our world from a humanist angle. If we ever get out of this freakin' recession we plan to invest more in ads in your magazine. Please stay as you are.

Steve Pinto
Vice President, Marketing and Finance
Southwestern Industries, Inc.

A Knitting Machinist

I have always liked your magazine, but I got a real kick out of the Nov/Dec 2009 issue's knitting needle story. I am a model maker machinist and I also knit. I enjoyed reading about the machining side of a product that I like to use. I hope my job hours pick up soon so I can buy a pair of purple, 10", Stiletto point, teardrop needles. Now I'm off to check the gauge on my next project.

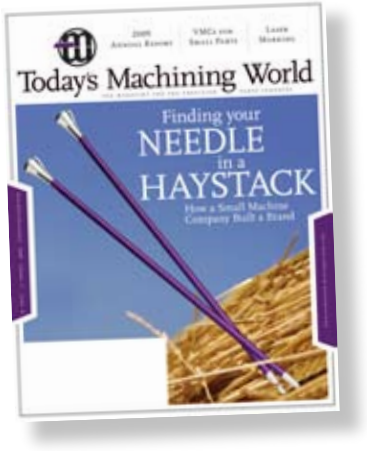
Tamara Ann Hawn
Sunnen Manufacturing

Seasonal Thanks

I wanted to write you a note to thank you [Lloyd] for a great magazine and for being a real person. I just finished a very rough week in which I buried my 23-year-old daughter who we adopted into our family of four sons when she was three months old. She was a joy to our whole family, and four older brothers meant she had a circle of protection around her all her life. On the evening of December 6, 2009, that all changed when I received a call from my eldest son saying that they had found Mandy unresponsive in her bed. I thank God for the years he gave us this precious child whose name in Korean, Yung Hee, stood for "Bright Hope."

I came out of high school to work in manufacturing and ran a New Britain chucker that made aluminum cones for the war in Vietnam. After serving Uncle Sam for three years I went back into the manufacturing business, but in a new way. I have been working with Hope Haven (www.hopehaven.org) for almost 32 years now and have been blessed by the people I work with in many ways. I wanted to let you know that I really enjoy your articles and your take on life. I use to love to read what Don Wood had to say in *Automatic Machining* and now I get to read your "Afterthought." Thanks and keep up the good work. May you experience God's richest blessings now and throughout the New Year.

John Wallenburg
Rock Valley, Iowa



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

Send your comments to: *TMW Magazine* 4235 W. 166th Street, Oak Forest, IL 60452

Or email us at: emily@todaysmachiningworld.com or lloydgrafftmw@yahoo.com

By Lloyd Graff

Find Your Own Goat

For my 65th birthday on December 16th my daughter gave me a goat. When she told me about the gift I figured it was an effort to expiate the curse of the billy goat on my cherished Chicago Cubs. But no, this was an animal with an even better purpose.

For my Medicare birthday Sarah purchased a goat in my name from the WorldVision charity, which I'm told ended up in a small farm in Ecuador where it will provide milk for a family. The gift gave me pleasure, not only because it ended up in South America and not dropping dung on my patio and eating the hostas in the garden. It also gave me an insight into marketing to a jaded world, inundated with muddy media messages.

My daughter, a sophisticated and frugal person, put out $120 for a charity gift and photo of a cuddly goat presented to a milk deprived family in Ecuador. The goat sold her. The WorldVision Catalog would have ended up in the recycling bin along with a dozen other worthwhile charitable pitches, except for the hairy can eater on the cover of the brochure.

From a business standpoint the message is "sell the goat not the widget." Your company and your product need a story and an image. I'm not talking about a building photo or a promise of precision.

Everybody has a building and if you can't produce quality you would have been washed out two recessions ago.

You need buzz, or at least a baa and your own credible goat to separate you from the herd. The competition wants to sell stuff. The buyer wants an authentic story.

Find your own goat.

The December statistics from the Federal Reserve confirm what we have been writing about for a year, industrial capacity for production is shrinking. According to the report, the ability to produce goods from oil to shoe laces has shrunk one percent from December 2008 to December 2009.

All of those auction brochures and vacant factory buildings you see are the visible signs of the shrinking of production capability.

This is a very good thing for those of us still breathing and crawling amidst the manufacturing wreckage. There is no doubt that demand for goods is inflating in North America now and around the world. In a crude calculation that means more business for fewer producers.

Nowhere is this more obvious than for automotive parts suppliers. If you just consider the amount of production eliminated at Delphi and Visteon plants you get a feel for the void. If production of cars goes from the 10.5 million rate of late 2009 to 11.5 million, some smart players like AutoNation's Mike Jackson expect we will see some stresses on capacity. Car companies are starting to rehire already, indicating we are in the early stages of rebuild.

Some economists and investors are paranoid about the possibility of inflation.

I'm not.

After 18 months of deflation, disintegration, debilitation and degradation, the heart of our economy needs defibrillation.

Inflation, if it were to sprout like a March crocus, would look good for the value of my house, factory and inventory.

Every machining appraisal I've seen could use a spritz of inflation to wake up the greens.

Do I think inflation is coming? Damn, I hope so.

The default position for many in the machining world has been to flee the automotive business like it was an ominous cloud of swine flu. I admit to lapsing into that mindset, but after reading a provocative article in *Inc. Magazine* by Bernard Avishai I am becoming a believer in a new golden age of car technology.

Avishai used to sell car parts in college in the 1960s and is now a part-time professor at Hebrew University Jerusalem. He is convinced the electric car (plug-in) is coming soon in a big way and will present fabulous opportunities for entrepreneurs, including people who make stuff.

The core of the new electric vehicles will be the battery. The first generation batteries may come from LG in Korea but the much-maligned Obama stimulus package is tossing a ton of taxpayer money at jump starting American competitors.

The cynics mock the $40,000 Chevrolet Volt coming in 2010, but what if it's the prototype for an important new class of vehicles?

GM does not have Delphi anymore, but may have something much more valuable for the next decade of car making—OnStar. According to the *Inc.* piece, OnStar gives GM the first mover position in car connectivity. We will see the connectivity of all of the car's systems—charging data, mechanical components, GPS and the ability to respond to collisions and malfunctions. If OnStar becomes the defacto standard for car connectivity it could become the Windows of the new smart electric vehicles.

I think I have been so focused on the question of whether we are going to have a 10 or 12 million-car year in America that I have missed the forest for the trees. The next several years will probably transform this gigantic business. With major change will come huge opportunities for entrepreneurs who are not wedded to making gas guzzlers.

I recently had a conversation with Brad Ohlemacher of EMC Precision Machining, the new name and incarnation of an Acme screw machine shop in the Cleveland area, called Elyria Machine Corporation. Brad and his brother Jeff are two of the most studious and innovative job shop owners I know, constantly attending seminars, conferences and learning from proponents the black art of plant productivity. These guys are always on a mission to make their company not just profitable, but a group with an identity and team spirit.

Brad and Jeff utilize Verne Harnish's Rockefeller habit of the morning huddle to stoke the production fire at the start of the day. Brad told me that they are intrigued by a peer rating approach to filter the chaff from their staff as they continue their relentless push for manufacturing brilliance.

I asked Brad if his desire to build a gem in the contract machining world would ultimately be thwarted by the ubiquitous bidding process which continually pushes prices lower and margins to zero. He says his firm's answer is to position itself as the company you call in a crisis. By continually honing their skills in the just-in-time world and machining creativitely Brad feels EMC has found a niche market where price is not the primary determinant. When a company is down because a supplier just went Chapter Seven, or they had a fire, or a dog ate their software, the Ohlemachers want to be Batman to the rescue. If their plan comes to fruition the company name, EMC, would become synonymous with "emergency-manufacturing-capability." It is an audacious effort but it plays to the strengths of flexibility and teamwork they have been working on for years.

Brad told me that the company was started by his

grandfather, who began the business by repairing potato harvesters out in the fields to rescue farmers' crops after a machinery breakdown.

EMC is returning to its roots.

I recently talked to a long time friend and client, Wes Skinner of Manth Brownell, Kirkville, New York. In 2009 Wes took his available cash and invested in Citizen CNC Swiss lathes, diversifying his machining portfolio out of his core Davenport and Wickman multi-spindles. He bought seven Swiss—all used—including an M-32 for $160,000. His rationale is that 2009 afforded him a window to buy at historically low prices and he wants to bring his percentage of sliding headstock work up to one third of his current volume. Currently his multi-spindle business is good and getting better, but he does not envision buying any traditional multis in the foreseeable future. Wes thinks the really great buys in machine tools are ending now.

The stock market is showing us some interesting things now, which makes the gloom and doom scenario for 2010 less believable. The Real Estate Investment Trusts are hot. Even though vacancies are high in commercial, office and industrial, the strong REITs are beloved by forward looking investors. This would indicate that the well-funded publicly traded real estate guys are in a great position to pick off the plums that the weak ones will be unloading. It also indicates that insurance companies and pension funds still like to lend on good properties with U.S. Treasuries paying a pittance and the strong likelihood that rates will be higher in a couple years or sooner.

For Tom Smallwood the possibility of a strike was part of life. He worked at GM in Pontiac, Michigan. He got the bad news that he was being laid off just before 2008 Christmas.

He had been off regular hours for a year, but recently he heard from a lady from the UAW jobs bank that the plant was calling him back. He thanked the woman but told her that he had a better gig going.

Tom Smallwood, a short, stocky 32 year old, was bowling strikes at the PBA World Championship in Wichita, one of the biggest events on the professional tour.

That Sunday in mid-December, Smallwood pulled four bowling balls he had schlepped on the 15.5 hour trip from Michigan out of the trunk of his car and bowled in the televised event for the $50,000 first prize. He won his semifinal against another Saginaw bowler, Tom O'Neil, to earn the chance to bowl against Wes Malott, one of the established stars of the pro game.

I had been watching a boring Bears Packers NFL game, and channel surfing during timeouts. I found the PBA event on ESPN and immediately caught the drama of the underdog UAW guy pitted against the polished tour veteran, Malott, who stood 10 inches taller than Smallwood.

Malott took the early lead but faltered as the pressure built in the latter frames. Smallwood, five and a half feet tall, hung in and had a chance to clinch the match with a strike in the tenth. He rolled three perfect strikes to win the tournament. It gave me chills to watch it.

For one GM guy off the factory floor from Saginaw, the bankruptcy and layoff gave him the chance to do what he loved. Smallwood had the guts to leave the familiarity of home and roam the country in bowling's fast lane. When you do what you love it usually pays off.

My condolences to the family of Ivan Doverspike, who recently died. Ivan was a machinery dealer in Detroit specializing in screw machines. I didn't know Ivan that well, but I remember traveling with him to look at a deal and discussing mutual acquaintances from the used machinery wars. His favorite saying during that conversation was "he knows his apples," meaning, a guy who's astute. When I heard he had passed away my first thought was that he was a man who definitely "knew his apples."

Salt is the ultimate commodity. Buy a canister of Morton's off the very bottom shelf at the supermarket for a buck and a quarter and use it for six months, then buy another.

But for a seasoned cook, salt has a flavor that varies with the coarseness of the granule and where it comes from. Sea salt tastes different than mined salt, and rough kosher salt makes better brine than the fine stuff. When I think of salt I envision Tony Maglica, the man behind Mag Instrument, the greatest machining success story of the last 30 years. Tony grew up poor as dirt on a tiny island in the Adriatic. He and his mother survived on the pittance they gleaned by collecting sea salt during and after World War II. For Tony, salt afforded life—if just barely.

Nowadays, when I visit my daughter Sarah in Palo Alto, California, I always check out the Saturday morning farmers' market. One of the newer sellers is a company called Spice Hound. They sell several different types of salt. I own a Bounds salt grinder and I was looking for the chance to buy something

more interesting than Morton's generic, but I didn't know what I wanted.

The Spice Hound had 50 different containers of dry condiments. I certainly didn't need to buy salt, but I saw a vial of tiny pink rocks labeled "Bolivian Salt." The Bolivian thing, plus the quartzy pink cast of the crystals pulled me in. I asked the owner of the kiosk business to tell me her story and the story of the Bolivian salt.

As I tasted the salt, I imagined Paul Newman and Robert Redford in Bolivia in *Butch Cassidy and the Sundance Kid*. I thought of Tony Maglica harvesting salt. I thought of this young Asian girl, Tammy, starting a spice business in the pit of a recession. The salt was no longer just salt. It was a sensual, exotic, fresh must-have with an interesting story for only $7.00. I bought it and every time I grind salt for my tomatoes or omelets I think—wow this Bolivian salt is such a delicious luxury.

The task we all face as sellers of products that masquerade as generic commodities, is to give them a living story that sticks. Bolivan salt—pink as the Andes Mountains. Is it really that different from Andy's Machined Products in burned-out Detroit. Maybe the story is about a job for an ex-offender in St. Louis or a chance for a blind machinist in Seattle. We all have a story to tell—if we are worth our salt.

I had a long talk recently with Miles Free of the Precision Machined Products Association (PMPA). Miles has heavy experience in understanding the technical problems machining companies have in the hostile world of perfect competition which relentlessly drives prices down for even the most proficient contract shops.

Quality and delivery are just the price of admission to the poker game of job shop survival.

In Miles' view, the blood sport of contract machining makes the participants risk averse to a fault in venturing out of their area of expertise—making parts. The bidding process they live in everyday is unforgiving of even the smallest goof-up.

A missed tolerance, a botched UPS shipment, shoddy material and a dozen other possible missteps can kill a job and sabotage a relationship.

With this view of the business world it is completely understandable that metalworking folk do not want to try crazy new ideas or develop their own products. The world they live in is endlessly demanding, but at least it is the devil they know.

The sad fact is that with global competition and free flowing machining expertise it is an excruciatingly hard time to make money in contract work.

swarf

Everyday I observe brilliant metalworking technicians with millions of dollars invested, struggling to survive, and I wonder why they don't spend more time and effort on products and brands.

To me, the biggest lesson from this awful recession is that most businesses need a distinctive presence in the marketplace to get some relief from the bludgeoning of one on one price competition.

The social awkwardness of Larry David on his HBO show, Curb Your Enthusiasm, makes me feel so uncomfortable that I rarely watch it. But I saw a clip from a recent episode which I found so compelling that I willingly endured my uneasiness.

In the episode, Larry is invited to Ted Danson's house for a party. The entertainment is his best friend Jeff's daughter singing Frankie Valli's classic, "You're Just too Good to be True." The song lyrics drip with irony as the guests cringe to her off-key rendition, but still smile benevolently so as not to embarrass the girl—but not Larry.

He abruptly stops her after 30 seconds, runs up next to her and asks for a round of applause from the audience to halt the abrasive rendition. The girl is humiliated and her mom is enraged.

This television vignette is like squeaky chalk on the blackboard for me. I have grappled with the art form of giving criticism as a manager of a business and father for as long as I can remember. How do you tell it like it is without crushing the recipient, yet still get your point across in order to get the results you need from an employee.

There is a new book out by Po Bronson and Lee Merryman called Nurture Shock, which argues that modern parents tend to side with the "shower your child with praise to buoy

his confidence" model, which the authors decry. They advocate keeping it real rather than complimenting mediocrity. They argue that kids will tune out parents who they know in their bones are praising without really meaning it.

In business it is so tricky to criticize without chastising. If I have learned anything in running a business, it is to be clear in both praise and criticism. People generally accept honesty combined with sympathy.

As I get older my tolerance for time wasting negativists wears thinner. I don't have time for people whose default position is no.

I will probably get a reputation as an arrogant know-it-all, but I am highly inclined to rudely hang-up on people who live in the world of "can't." After having almost died I am offended by the "failure is inevitable" mindset.

I recently had a conversation with a fellow about an advertising barter transaction. The elements of the deal had already been discussed and ironed out with his associate, but he was a senior person in the firm whose opinion was solicited for confirmation. As I outlined the arrangement he threw out reason after reason why it wouldn't work. I listened impatiently and then shot back, "You've given me 12 reasons why this won't work, but I'm not in the "won't work" business. If we want it to work, it will." End of conversation with him.

I have since done this several other times.

My world begs for clarity. By allowing the chronic negative thinkers to dictate the agenda we assign ourselves endless delay and failure. If I am short with you, it's because life is short. Let's make good things happen.

◀ DMG

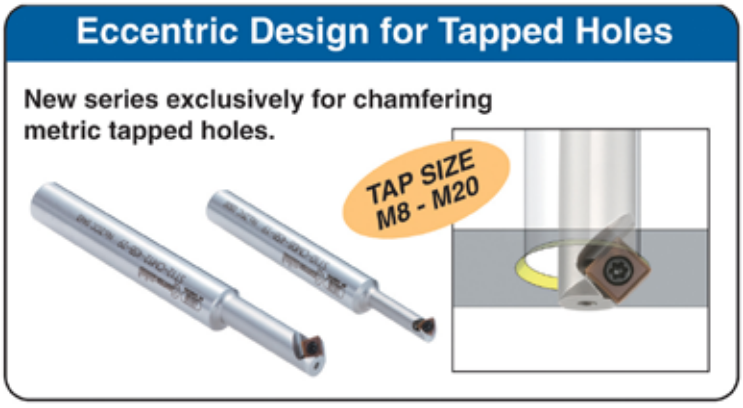
DMG's new DMC 100 H duoBLOCK® offers higher stability and permits higher workpiece and tool weights despite its smaller footprint. The duoBLOCK® designed at DECKEL MAHO has had guaranteed stability, increased dynamics and reliable precision for many years. The third generation duoBLOCK® goes even further with a 15 percent increase in rigidity. The new horizontal machining centre DMC 100 H duoBLOCK® particularly benefits from this design. The increase in rigidity together with the newly designed pallet changer enables it to machine workpieces weighing up to 4,409 lbs. With further innovative features and the unique combination of minimum footprint and maximum performance, the DMC 100 H duoBLOCK® guarantees efficient and economic series production of high precision components.

For more information, please visit DMG America at www.dmgamerica.com.

▶ Advanced Machine & Engineering Co.

Advanced Machine & Engineering Co. (AME) Rockford, Ill. introduces the new dovetail vise-clamping component, as the newest addition to their line of fixturing and workholding products. The dovetail vise is widely used in the aerospace industry for aluminum milling operations, but can also be used for many other applications.

For more information, please contact Advanced Machine & Engineering Co. at www.ame.com.



◀ BIG Kaiser

BIG Kaiser announces the expansion of the C-Cutter Mini ultra high feed chamfer mill line. The C-Cutter Mini's compact design reduces the cutting diameter to the lowest limit, helping to achieve ultra high spindle speeds and feeds. Additions to the line include a new eccentric body style for bolt hole & tap chamfers, expanded lengths to the existing program, a new Sharp Edge (SE) insert type as well as a new hexagon insert design.

For more information, please visit BIG Kaiser at www.bigkaiser.com.

fresh stuff

▶ Birchwood Casey

Birchwood Casey offers a full line of eight different aqueous and solvent-based inhibitors and sealants to prevent rust and corrosion on all metal surfaces. Providing precise corrosion resistance, Birchwood Casey rust preventative and corrosion inhibiting products enable selection according to needs for lubricity, dryness and decorative appeal.

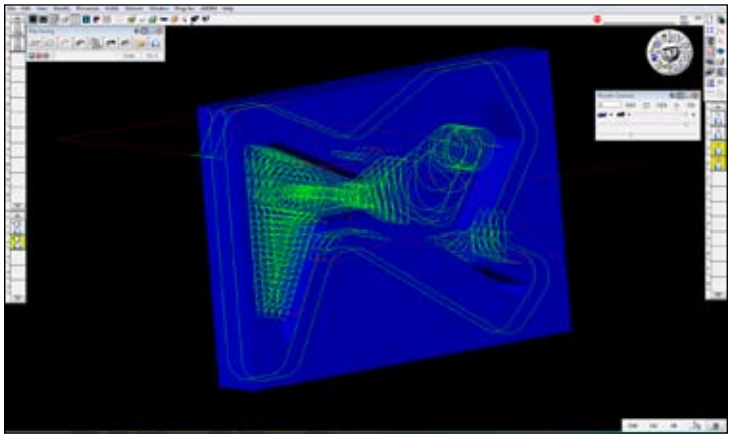
For more information, please visit Birchwood Casey at www.birchwoodcasey.com.

◀ Doosan Infracore

The recently introduced DNM vertical machining centers from Doosan are now equipped with factory-installed Tsudakoma TN161 or TN201 rotary turning tables. The TN models incorporate specially designed, double-lead worm gears that mesh the full length of the teeth. The machine also features a patent-pending, pneumatic clamping device for added power.

For more information, please visit Doosan Infracore at http://usa.doosaninfracore.co.kr/.

▶ GibbsCAM



Gibbs and Associates, developer of GibbsCAM® software for maximizing programming efficiency of CNC machine tools and a Cimatron company, announces that Celeritive Technologies' VoluMillTM software for high-speed rough machining is now available for GibbsCAM. VoluMill uses the Celeritive Ultra-High Performance Toolpath algorithm to generate toolpaths based upon desirable material removal rates. Unlike traditional roughing-toolpath generators which create parallel offsets optimized through stops, starts and variable speeds to reduce tool wear and excessive tool loading during sharp corners and transitions, VoluMill develops toolpaths optimized for volumetric material removal by using continuous tangential motion, specialized contour ramping and adaptive feedrates to achieve the highest feeds and speeds possible.

For more information, please contact Gibbs and Associates at www.GibbsCAM.com.

Hardinge

Hardinge announces the newest members of the GX-Series of Vertical Machining Centers as a standard product offering in North America. These machines are designed and built for a production environment. The machines can literally overlap one another to better utilize valuable floor space and to promote cell manufacturing. The unique design provides service and operator interface to only the front or back of the machines. This design allows the machines to be stacked in a line side by side since there is no need to access the sides of the machines.

For more information, please visit Hardinge at www.hardinge.com.

Motoman

Fast and highly flexible, Motoman's new 6-axis MA1400 "Master Arc" welding robot significantly increases uptime by integrating the torch into the upper arm. Available in floor-, wall- or ceiling mounted configurations and ideal for high-density layouts, the space-saving MA1400 robot increases productivity due to its cutting-edge SIGMA V motor control technology.

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

Pinpoint Laser Systems

Pinpoint Laser Systems® is introducing a new right 90-Line Square Plane. This newest Pinpoint product is ideal for squaring machinery and equipment, setting up presses, checking machine tools, aligning guide rails, establishing parallelism between web rollers, idlers and take up reels and a wide variety of other measuring and alignment tasks. Coupled with the Laser Microgage system, the 90-Line Square Plane allows quick and precise equipment measurement and alignment for optimal production efficiency.

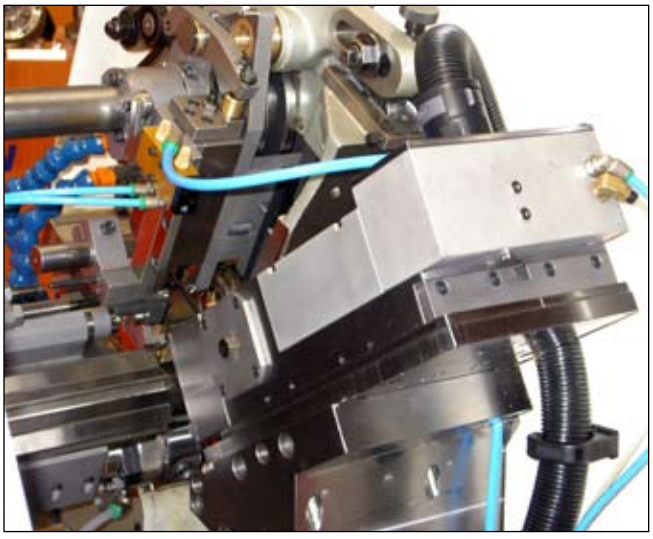
For more information, please visit Pinpoint Laser Systems at www.pinpointlaser.com.

fresh stuff

▶ Rush Machinery

Rush Machinery offers the large capacity Model FC-700 Series Diamond and CBN Wheel Truing and Dressing Machine. The Model FC-700 series is designed for truing and dressing of flats, angles and radii on diamond and CBN single wheels and multiple wheel packs for wheels up to 28" (700 mm) standard, with an option to 42" (1070 mm) in diameter. Use of the Model FC-700 series allows for increased efficiency and accuracy by dressing wheels properly offline of the production grinding machinery. The machine is simple to operate, quick, accurate and cost-effective.

For more information, please visit Rush Machinery at www.rushmachinery.com.



◀ SPC Innovations, Inc.

SPC Innovations is offering two new solutions to bring the cam multi-spindle into the 21st Century. They can quickly and easily add CNC capability to the cam multi-spindle, allowing the user to compete on difficult parts with the benefits of CNC and the productivity of the cam machine. One old machine can do the work of several CNC lathes with much higher efficiency and much lower cost.

For more information, please visit SPC Innovations, Inc. at www.spcinnovations.com.

▶ Widia

The new WIDIA Victory TOP DRILL M1™ Modular Drill, part of the new WIDIA Victory™ platform of advanced milling, turning, and holemaking tools, is available over a standard diameter range of 8.00 mm to 20.99 mm (0.3150 to 0.8264 inches), and in length/diameter ratios of 3x and 5x. Drill bodies come in either flanged-shank (metric) or round-shank (inch) configurations. They feature solid coupling for consistent performance from insert to insert and easy insert changes on the machine due to a front-clamping mechanism.

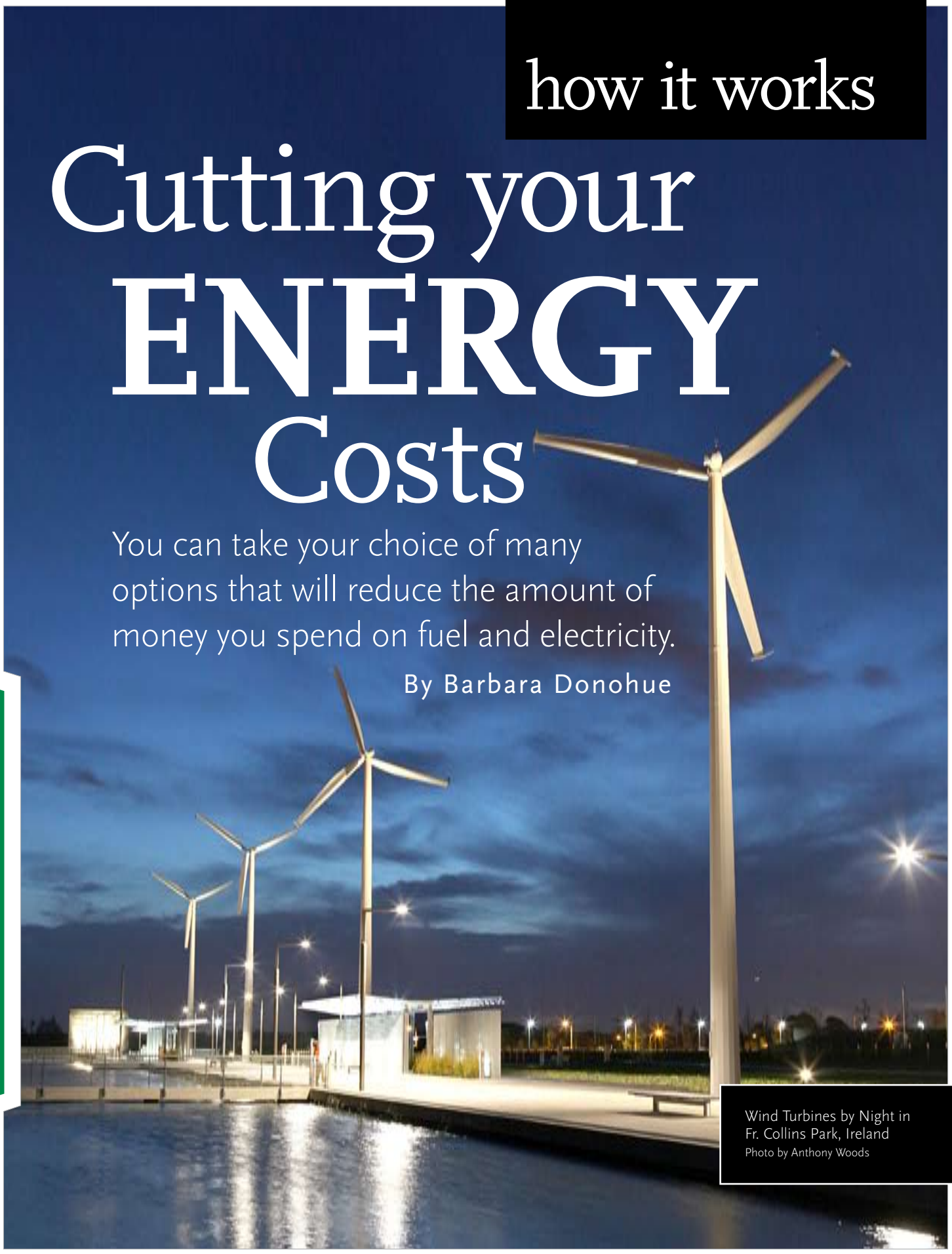
For more information, please visit WIDIA at www.widia.com.

how it works

Cutting your ENERGY Costs

You can take your choice of many options that will reduce the amount of money you spend on fuel and electricity.

By Barbara Donohue



Wind Turbines by Night in Fr. Collins Park, Ireland
Photo by Anthony Woods

The cost of energy—electricity and fuel—continues to spiral upward. Reducing energy usage can cut your company's operating expenses and at the same time reduce the production of greenhouse gases. It may also enable you to pay less for the energy you use. From caulking your windows to installing a wind turbine, there are many energy-saving and cost-saving options to choose from.

Find Your Baseline

Before taking action to reduce energy costs, it's a good idea to determine your baseline energy usage. This information, along with such data as the number of operating hours per year, will help you determine where to focus your savings effort. After you make improvements, this baseline information will allow you to track your savings and see how long it takes for the improvements you've made to pay for themselves.

You'll need to know what your historical energy usage and energy costs have been. This may take some research into your records, but generally you can find the information you need on your utility and fuel bills. To have a useful history, you may want to look back as long as five years to allow for different conditions in the climate and the economic cycle. For each month, track the energy usage (kilowatt hours, therms of natural gas, gallons of heating oil), the unit cost of the electricity or fuel and the total cost. Also, gather some basic information about your plant and its operation: the square footage of your building, the number of employees and the number of hours you operated each year.

A First Step: Reduce Energy Usage

Once you have your baseline data in hand, you can make a plan to reduce your costs. Free energy audits are available from utility companies, and that is a good place to start. You can also check in with services available from your state energy office, or from a resource such as the university-based Industrial Assistance Centers, which are part of the U.S. Department of Energy's Industrial Technologies Program (see "For more information").

Some basic energy-saving recommendations include to:

- Caulk and weatherstrip windows and doors, or replace them
- Insulate your building
- Replace lights with high-efficiency lamps
- Turn off equipment when not in use
- Use occupancy sensors to turn off lights when no one is in a room
- Reduce leakage in compressed air lines and valves
- Reduce compressed air pressure to the minimum required
- Install compressor air inlets in coolest locations
- Use ceiling fans to equalize air temperature in spaces with high ceilings
- Reduce ventilation air to industry standard level
- Install air seals on the loading dock

More Effort, More Savings

You may decide to take a whole different energy-saving approach to some aspect of your building and operations. Here are some technologies you might want to consider.

Heat pump: For space that is both heated and air conditioned during the year, you can use a heat pump instead of a furnace and an air conditioning system. A heat pump system resembles an air conditioning system, but it is capable of not only extracting heat from inside and sending it outside, but also of extracting heat from the outdoors and bringing it indoors. This could offer you cost savings over the course of the year, especially if you are in a location that has moderate heating/cooling needs and may not need auxiliary heat during the winter.

how it works

Below: A green roof, or living roof, is covered with vegetation planted over a waterproofing membrane. It absorbs rainwater, provides insulation and lowers urban air temperatures.
Photo courtesy of Tecta America Corp., Skokie, Ill.

Cutting Energy Costs

Ventilation heat recovery: When you exhaust the warm air and bring in cold air (or vice versa) you're sending some of your heating or cooling dollars out the window. Air-to-air heat exchangers designed for ventilation use the outgoing air to bring the incoming air to near room temperature. Models are available that dehumidify the incoming air during the air conditioning season.

High-efficiency motors: Motors consume half the energy used in the U.S., and two-thirds of the energy used in industry, according to the Consortium for Energy Efficiency (CEE). Premium-efficiency motors provide efficiency just a few percent higher than standard motors, but can pay back their purchase price in two years or less if they run at least 80 hours per week. These premium-efficiency motors also run cooler than standard motors and can be expected to last longer.

Skylights: In the days before electric lighting, factories were constructed with large windows to let in sunlight. Studies of energy use show that lighting accounts for as much as one-third of electricity usage in commercial buildings. Many industrial buildings these days are built with few, if any, windows, so they need electric lighting all day long. You can use high-efficiency lights, of course, but you could save even more energy by making use of sunlight—it's free. Specially designed skylight systems installed on the roof can conduct daylight into the building, allowing you to turn off the lights altogether when the sun is bright. A light-sensing system inside the building can turn on the lights when daylight is not sufficient.

Green roof: Plants can play a part in energy conservation. Much of your heat load in the summer and heat loss during the winter goes through the roof. A plant-covered "green roof" is an environmentally sound option for saving energy. A green roof system includes a waterproof roofing membrane covered by a growing medium planted with specially selected plants. In summer, the plants absorb the heat from the sun and provide evaporative cooling. Year round, the green roof provides some insulation and also absorbs rain water, minimizing runoff from the roof.

> “Many electric utilities offer incentives to companies that volunteer to reduce their electric usage during periods of high demand.”

Reducing the Unit Cost of the Energy You Use

You need electricity all day, every day, to run your shop. You'll want to save as many kilowatt-hours as you can, but there may also be ways to reduce the cost of the power you use.

Off-peak rates: Your electric utility company may offer the option of different rates for electricity used at different times of day. If so, it could be worth your while to adjust your operations to take advantage of lower rates.

Contract rates for electricity or fuel: If your operation uses a lot of electric power or fuel, you may be able to contract with providers for reduced rates. Check for alternate providers in your area. You can also work through a consultant experienced in finding lower-cost suppliers. Many of these consultants do the up-front work for free—analyzing your energy usage and researching suppliers; then, if you do save money, you pay them a portion of the savings for a period of time. One such consultant receives 50 percent of the savings for a period of five years, for example.

Above: Scott Livingston, president of Horst Engineering & Manufacturing Co., standing next to the solar panels installed on one of the company's plants in East Hartford, Conn. The 39 kilowatt solar photovoltaic system generated 41,500 kilowatt hours in 2009, which was 60 percent of the plant's total electricity consumption. The total system cost $335,000 but was defrayed by a $153,000 grant from the Connecticut Clean Energy Fund. Federal Tax Credits further reduce the ROI to less than seven years. The company avoided 71,800 lbs. of CO_2 emissions, 61 lbs. of NOx emissions and 190 lbs. of SO_2 emissions.

Photo courtesy of Scott Livingston

Burning used motor oil: If you have access to a steady supply of waste motor oil, consider installing a used-oil furnace or boiler. Then, your fuel is essentially free and you can save the cost of disposing the used oil. One supplier recommends you need at least 500 to 700 gallons of used motor oil per year to make the system cost effective. If you need additional oil during the heating season, you can use the standard #2 heating oil that is used in conventional furnaces.

Incentives for Reduction of Electricity Use

Electric companies may actually pay you to reduce your energy usage, either on a temporary basis or by reducing your maximum usage. Check with your electric utility company to find out about available incentive programs.

Voluntary load shedding: Your electric utility company has a only certain amount of generating capacity. When demand rises too high, typically on very hot days during the summer, the utility may need to shut down power to different areas, a process known as rolling blackouts or load shedding. Many electric utilities offer incentives to companies that volunteer to reduce their electric usage during periods of high demand. The incentive might be a certain number of dollars per kilowatt shed, as recorded by a special electric meter.

Reducing your peak: Though they can reduce the load by rolling blackouts, electric companies generally try to have sufficient capacity to meet peak demand. To do this, the utility has to maintain a lot more generating capacity than is needed day to day. Many utilities offer incentives for you to complete projects that permanently reduce your peak use of electricity.

Making Your Own Energy

A “combined heat and power” (CHP) system, also called a cogeneration system, generates electricity for you to use and also provides heating/cooling. A CHP system is made up of a power source (often a diesel engine or a turbine that runs on natural gas), a generator, associated controls and a connection to your electrical system. The engine or turbine turns

> “A 10-kilowatt wind turbine might cost $50,000 to erect and if well-maintained, could have a working life of 20 years.”

a generator that produces the electricity. The heat given off by the engine or turbine can be used for space heating. A special type of cooling unit, called an absorption chiller, can use the heat to produce chilled water for air conditioning or other uses.

Harvesting Energy from the Wind and Sun

Depending on your location, you may be able to take advantage of sun or wind power to provide some of your energy needs. Many types of tax credits, low-interest loans and other types of financial assistance are available from federal and state governments, and other sources for installing wind and solar projects.

Wind: The local average wind speed will determine if your site can provide you with enough electricity to justify installing a wind turbine. A minimum year-round average wind speed of 10 mph (about 17 km/hour) is widely regarded as adequate. This occurs in areas on the Great Plains, in mountains, and along coastlines. Look online for wind velocity maps. Also, you can measure the wind speed at your location with an anemometer over a period of time. Other site factors must also be taken into account. For example, your town must allow construction of the tower on your property. A 10-kilowatt wind turbine might cost $50,000 to erect and, if well-maintained, could have a working life of 20 years.

Solar: You can use the power of the sun to heat water directly or to produce electricity with photovoltaic cells. The amount of solar energy you can harvest depends on how intense the sunlight is at your location. Solar power density is, of course, highest in the South and Desert Southwest. You can find solar density maps online. Different types of systems increase the collection of solar energy by tracking the sun during the day and/or by concentrating sunlight with lenses.

You have many opportunities for saving energy and reducing the amount you pay for the energy needed to run your shop. If you adopt some of these methods and technologies, you can not only save money, you can feel good about conserving fossil fuels and doing something good for the environment.

For more information:

Combined Heat and Power:
www.gammillelectric.com/images/cogeneration.pdf

Daylighting:
www.tectaamerica.com/services_tecta_daylight.shtml
www.majorskylights.com/products

Energy saving assistance from Industrial Assessment Centers, DOE Industrial Technologies Program:
www.eere.energy.gov/industry; find a center
http://iac.rutgers.edu/database/centers.php;

Case Studies:
http://iac.rutgers.edu/case_studies.php

Green roofs:
www.greenroof.com

Heat pumps:
www.oppd.com/AimGreen/HeatPumps

High-efficiency motors:
www.motorsmatter.org
www.nema.org/gov/energy/efficiency/premium
www.cee1.org/ind/motrs/motr-broch.pdf
www.esmagazine.com

Used-oil furnaces:
www.cleanburn.com
www.usedoilheaters.com
www.energylogic.com

Wind and solar information from U.S. Department of Energy (DOE):

Energy Efficiency and Renewable Energy:
www.motorsmatter.org

Renewable Energy Potential (wind, solar, geothermal) Maps for Regions of the U.S.:
www.eia.doe.gov/emeu/reps/rpmap/rp_contents.html

Wind energy:
www.windpoweringamerica.gov
www.windpoweringamerica.gov/small_wind.asp

Wind and solar information from U.S. Department of Energy (DOE):
Your local electric utility company

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BY MARY ETHRIDGE

Diversify. Diversify. Diversify.

In 2009, cheerful economic development types chanted that mantra to frantic auto suppliers. *Reinvent yourself*, they said, as they paraded shiny growth industries before tired eyes.

Think aerospace, they said, or *alternative energies*, or *medical devices*.

By diversifying into those areas manufacturers would protect themselves from a collapsing auto sector and its attendant woes, they reasoned. Expertise in precision machining, automation and systems integration along with an established supply chain would fit well into one of these growth industries.

It sure sounds like a good idea. But ideas are free, and diversification usually isn't. Auto suppliers that followed the big thinkers' suggestion to explore new routes to revenue found themselves up against the same roadblock time and time again: the closed doors of lenders. The weak auto market, the general decline of the economy and the credit squeeze make it vital for companies to reinvent themselves and, at the same time, more difficult for them to do so. This dearth of capital has been a complicating and sometimes insurmountable problem for automotive suppliers trying to diversify.

"It's been a major problem for many but especially for anyone serving the automotive market," said Rob Kiener of the Precision Machined Products Association (PMPA), who recently testified on the issue before Congress. "I think that by trying to prevent another crisis the banks are creating a whole new one."

The Original Equipment Suppliers Association has estimated that when all the figures are tabulated, about 15-20 percent of the 4,000 U.S. auto suppliers will have gone out of business through 2009. Monthly billings just to the three Detroit automakers from the U.S. suppliers fell from an average of $16 billion to about $7 billion in less than a year.

Bill Shepard, president of Die-Matic Corp., a metal stamper in suburban Cleveland, was one of those who took the diversification message to heart. More than two-thirds of Die-Matic's business is tied to the auto industry. The remainder is in small appliances, mining and construction, where sales are healthy but not big enough

Below: Vacant auto dealership.

to sustain the company over the long term, let alone grow it. Shepard explored the high-growth medical device market but found that even if he mastered the industry's complex requirements he would need new equipment. He was set up to stamp big pieces of metal, but the medical industry typically needs small parts, thoroughly cleaned and individually packaged. New equipment, of course, requires money. Even if Shepard had gotten over some of the other hurdles, he says he doubts he could have managed to convince a bank to follow him into new territory. He's heard the similar horror stories from his peers.

"They're cutting off credit of good, solid companies after relationships of years and years," said Shepard. "These aren't fly-by-night operations, but the banks want nothing to do with them."

For the time being, Shepard has pared his operations dramatically, laying off talented, skilled people he took years to find and train.

"It's a shame, and I certainly don't want it to continue this way," he said. "I don't really know what the answer is yet."

About an hour south of Die-Matic in Akron, Ohio, machining company owner Lee Combs is trying to figure out how to fill a $60,000 order when he needs to spend $24,000 for 4,140 steel rings to do it.

"I would normally use a line of credit to buy what I need, but you can't do business as normal anymore," said Combs, who also operates a CNC school to retrain old-school machinists that was featured on the NBC Nightly News in November. "I can't finance it. My bank doesn't want me. They told me that. They want to shed anyone who's not all about cash flow."

Combs said he went to a holiday party an Akron bank gave for its business customers in December, but it wasn't out of the spirit of the season.

"I went so I could get a free drink off a banker and eat their shrimp," Combs said. "I figured it's the only thing I'll get from them."

Combs said only about 25-30 percent of his business is automotive and that he's been diversified for years, but that doesn't seem to matter to the banks.

"They see automotive and they don't want you in their portfolio," said Combs.

> "15-20 percent of the 4,000 U.S. auto suppliers have gone out of business in 2009."

In mid-December, the Federal Deposit Insurance Corp. reported U.S. bank loans fell by $210.4 billion or 2.8 percent during the third quarter—the biggest drop since the FDIC started keeping records in 1984. Banks booked $2.8 billion in third-quarter profits, reversing a second-quarter loss of $4.3 billion, while loans to businesses fell 6.5 percent. Borrowing from the Fed for nothing and buying 10-year treasuries is a no-risk, can't miss strategy for banks.

Several surveys of metalworking manufacturing companies estimate that roughly 75 percent of these businesses cannot secure sufficient credit for day-to-day operations, equipment acquisition and expansion, among other activities, according to PMPA. In some cases, a small to medium-sized manufacturer will see its line of credit significantly reduced or revoked, or a loan called due to the health of its manufacturing customers, not because of the company's own business decisions. Or, a company will sometimes be denied credit because the lender is having its own troubles.

> "They (the banks) see automotive and they don't want you in their portfolio."

"Countless members I speak with who still manage to maintain profitability tell me they have held decades-long relationships with their bank but are now being told they must offer their life insurance collateral to help secure a loan," said Rob Kiener of the PMPA.

Kiener said that even when a manufacturer seeks to renew a loan with its existing bank, it can take three to four months to process because of all the new lending requirements and paperwork, despite taking no more than 30 days in the past. Small manufacturers are required to purchase raw materials on their own, and some aren't seeing full payments from customers for six months, prompting a cash flow squeeze.

The federal government agrees. "We need to see banks making more loans to their business customers," FDIC Chairman Sheila Bair said in a news conference. "This is especially true for small businesses."

But the bankers have said they are doing what they can, and the federal government is partly to blame. Their lending is not only limited by a sluggish economy but by hawkeyed federal regulators eager to avoid the kind of shaky loans that led to the banking crisis in the first place. In addition, businesses are reluctant to expand in a

Below: GreenCleen Surface Preparation.
Photo courtesy of Mark One Corp.

poor economy, so loan applications are down.

Aggravating the situation, according to Kiener, is the decline in value of assets traditionally used as collateral for loans. "You have a piece of equipment that used to be worth $100,000 and it's now worth $10,000," he said. Real estate has also lost value, so even owners who put up their own homes as collateral, which happens primarily when banks seek loans through the Small Business Administration, can't convince lenders to make the loan.

But despite the grim lending picture, some auto suppliers have managed to diversify and expand, using a bit of creativity and daring to avoid banks altogether.

Gary Lawton, president and majority owner of Buell Automatics in Rochester, N.Y., is grateful he didn't have to depend on a bank to expand his non-automotive business. Buell, which was founded in 1966 and has 44 Davenport screw machines, had a long-time relationship with a client who liked their work. The client told Lawton they had another job they wanted Buell to do, but it required CNC capabilities. Based on the client's commitment, Buell purchased two Citizen A-32 Swiss CNC machines and got the job. Besides the investment in new CNC equipment, the company also purchased a Durr Ecoclean parts washer in early 2009.

"Fortunately we were in a position to pay cash and didn't have to rely on the banks," said Lawton.

Buell's business has traditionally been about 60 percent automotive, but now has dropped to around 45 percent. This new non-automotive business more than compensates for lost automotive work, Lawton said.

"You don't want to put the cart before the horse and take the risk buying new equipment, but in this case it worked out for us by getting the commitment up front," said Lawton. "These days you'd better be creating some revenue without the help of a bank if you want to survive." Lawton said he's optimistic about marketing his new CNC capabilities to lure new customers this year.

Frank Kestler, president and chief executive officer of the Mark One Corp. in Gaylord Mich., said it was a matter of some luck and a boost from a state organization that allowed him to expand his company into non-automotive territory. For years, the company's bread and butter was designing and building material handling and surface preparation systems for automotive metal fabrication

A **Success** Story

Above: Aluminum turbine blades for a 50,000 rpm pneumatic starter system.
Photo courtesy of Rable Machine, Inc.

At Rable Machine, Inc. in Mansfield, Ohio, president Scott Carter has been able to lead his employee-owned company into several new industries and more than double its revenue, thanks to some forward thinking several years ago.

"In 2000-2001, we could see the need to diversify and we took action. We upgraded our equipment so we could get into aerospace, medical, industrial pumps and air conditioning, among other things," he said. "We now have 5-axis and 8-axis machines that let us operate leanly, making a part on one machine instead of three." Sales rose from $4 million in 2000 to $9.1 million in 2008, Carter said.

"If we hadn't invested in expanding into these industries several years ago we'd be behind the eight ball now," said Carter. "As it stands we don't have to ask a bank for money, plus we're taking advantage of the current economy because there are fewer competitors now in the market."

applications. In 2005, a steel drum manufacturer approached Kestler and asked if Mark One could develop a more efficient and eco-friendly way to clean the rolls of steel used to make the drums. They came up with GreenCleen, which eliminates chemicals by using only hot water and brushes.

Kestler began to think about marketing GreenCleen to other non-automotive industries but found that banks considered it speculative, even though he had already sold one system. Kestler turned to the Michigan Economic Development Corporation's (MEDC) Auto Suppliers' Loan Diversification Program. Through the program, the MEDC buys a portion of the loan from the bank and offers a grace period up to 36 months on its portion. The $1.1 million awarded Mark One Corp. protects the bank while giving Kestler the freedom to market GreenCleen to a variety of industries. In November, he shipped a GreenCleen machine to a U.S. company doing business in China. He said it was the biggest sale of the year for the company, which employs 50.

Bridget Beckman, spokeswoman for the MEDC, said the program was started with what the MEDC could "scrounge from its couch cushions"—about $12 million.

"It's a start, but unfortunately, the need is about $1 billion," she said.

Successful applicants to the program should have a solid plan already in progress, Beckman said. About $6 million has already been awarded.

"They chose us because we were already well on our way. We just needed a little support," said Kestler. "You probably aren't going to get it on just an idea."

Kiener of the PMPA said programs like the MEDC's are worthwhile, but what manufacturing really needs is a new attitude from the banks.

"If customers can't receive the products they need because manufacturers can't get the credit they need, they're not going to wait. They'll source them from overseas," he said. "These lost jobs, once outsourced, will never come back to the U.S. We have to solve this problem"—and we have to solve it right now."

With Noah Graff

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

Dear Shop Doc,

I'm using a quarter inch hexagon broach to create a quarter inch deep form in 400 series stainless steel. However, the form is twisted, somehow spiraling from one end to the other. I don't see any type of adjustment available on the broach holder. How can I get rid of the twist?

Spinning Out of Control

Dear Spin Doctor

The solution to removing the twist from your form is easier to find when you understand the nature of the problem. The sides of the broach include a relief angle greater than the angle of the rotary broach holder so it will not interfere with the part. The broach is held in the holder at a one degree angle. The rotary broach is designed to cut a form into the part using a cutting edge with contact points that are constantly changing. The center of the cutting edge is always kept in line with the axis of the part. As the contact point continually changes, separate chips develop in each corner of the form. As these chips increase in size, pressure is absorbed by the broach tool and tool holder. This resistance against the broach holder spindle and bearings may cause the broach to drag slightly against the material being broached. The sides of the broach cannot hold it straight because they have a greater relief angle for clearance and sometimes a spiral will develop along the length (depth) of the form.

At first you may have noticed that the form appeared smaller at the bottom. What you are really seeing is the sides of the form following this spiral path. Although there may be a slight twist, the part may still be within specification. Technicians will often recommend that you broach to the high side of your tolerance for this reason.

Work piece material can also affect this condition. Some materials could be too tough or too hard for the capabilities of the tool holder. Your material (400 series stainless) is difficult to broach, and may result in poor tool life. The combination of a dulling tool and hard material increases the thrust required to broach which increases drag thus increasing the spiraling of the form. However, at this small size and form, I'm hopeful that there are a few things you can do to try to reduce or eliminate the spiral.

First of all, good broaching practice is to check your tool holder and broach to make sure they are on center. If not, re-center the tool holder. If you are using an adjustment free model, make adjustments on the machine to assure that the broach is on center with the part. It is also good to check and make sure the pre-drilled hole is on center. Next, anything you can do to reduce the pressure caused by chip accumulation will help. Check your pre-drill diameter. Can you make it larger?

Finally, if the above recommendations do not help or are not practical, reverse the direction of the spindle at half of the depth. This will drag the spiral in the opposite direction and can reduce the overall deviation by half. Hopefully, these suggestions will help you make a turn in the right direction.

Peter Bagwell
Slater Tools Inc.

Peter Bagwell is an engineer at Slater Tools Inc., which specializes in rotary broaching tools. For more information go to www.slatertools.com.

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

shop doc

Dear Shop Doc,

My Acme-Gridley screw machines have been real money makers over the years, but all that production takes its toll in wear and tear on the machines. Will I be better off doing major repairs to my current Acmes, looking for deals on good used Acmes, or investing in some type of new machinery?

Which Way Should I Go

Dear Which Way,

Acme-Gridley multi-spindle automatics are well designed to be rebuilt or reconditioned, and worn machines can be returned to good running or like new condition by those qualified to perform that type of work. There are different levels of repair to choose from.

For example, let's say you have a 1-1/4" RA6 Acme machine that needs some work. The heart of an Acme is the spindle carrier, which you might start looking at having rebuilt for around $10,000. This includes rebuilt work spindles, new precision spindle bearings, new front and rear retainers and flingers, and new spindle gears, adjusting nuts and keys. The carrier stem should also be ground, and fit to your re-bushed and bored main tool slide. At the high end of your list of options you have a complete machine rebuild, which for all practical purposes is like building a new machine. That will cost in the neighborhood of $100,000 to $150,000, depending on your machine and requirements. Compare that to a price tag of $500,000 or more for a comparable new multi-spindle cam machine.

Another factor to consider is that a rebuilt Acme, when properly maintained, can be run hard for 10 years or more before it will require another rebuild. Acme-Gridley machines come in a wide variety of models, capacities and vintages. Some machines in service today predate 1950. With sound castings most of these machines are still great candidates for rebuild or recondition, with just a few old models that are obsolete.

A concern for some shop owners today is a lack of experienced machine repair personnel to remove or re-install a spindle carrier, but most qualified rebuilders can offer contracted field service work to do this for you.

Another option popular with some shop owners is to look for an inexpensive, worn, late model machine and have it rebuilt. This could be a good option because its mechanical condition is not a concern as long as the castings are in good shape. But even if a machine is examined by experienced personnel when purchasing, the condition of the spindle bearings will largely be an unknown. So it may be a better option to invest money in a machine that you already have and know.

Acmes are well suited for high production part runs or running a family of similar parts at moderate volumes, but may not be the best choice for small lot runs unless efforts are made to reduce setup times. Attachments are available for Acmes that allow even complex parts to come off the machine complete. In some cases shops are using Acmes in tandem with single-spindle CNC machines, with the Acme blanking the part and then a robot transferring the part to one or several CNCs to finish it off. Your production time may be longer, but for the right type of job the dramatic savings on equipment could very well make up for the additional second or two.

Bottom line, your Acmes still have a lot of life left in them, so if you have the right work for them, rebuilding and refurbishing can definitely pay off.

Dave Johnson
Champion Screw Machine Services

Dave Johnson is the Rebuild Manager for Champion Screw Machine Services.

Dr. Hong and the Blind Driver Challenge Team at Virginia Tech.
Photo courtesy of Virginia Tech

Interviewed by Noah Graff

Dr. Dennis Hong is an associate professor of Mechanical Engineering at Virginia Tech and the director of the Robotics & Mechanisms Laboratory (RoMeLa). He is also faculty advisor for the Blind Driver Challenge, a project to develop a vehicle that can be driven by the blind.

What brought about this project?

DH: In 2004 the National Federation of the Blind (NFB) had announced a challenge to the research community to develop a car that can be driven by the blind. [Virginia Tech] already had a fantastic research program in fully autonomous vehicles, finishing third at the DARPA Urban Challenge. We thought that this was a very challenging project, and so far we're the only team that has accepted the challenge.

What is the goal of the project?

DH: The immediate goal is to develop a car that can be driven by the blind, but there's a more important aspect to it. We want to show society that blind people have the capability of handling complex tasks. We also want to give hope to the blind about what kind of freedom technology might eventually provide them. We're also interested and excited about the potential spin-off technologies from this project, such as early warning detection systems for the safety of sighted drivers, and technology that can be used by blind people in non-driving applications, like the use of everyday home appliances.

How does the system work?

DH: There are three parts to it. Part one is *perception*. Because the person cannot see, the car needs to gather information about its surroundings. The main censor of this Version Number 1 uses a laser range finder. A small laser shoots out from the front—it's like a laser pointer that you use in a presentation. If there is an obstacle in front of it, it bounces off and measures the time of flight of the laser beam.
You know the speed of light, you know the time, thus you can calculate the distance to the obstacle. The laser range finder scans in front of the vehicle and builds a map around the vehicle.

Part two is *computation*. The computer takes the map of information and calculates the safest way to drive—which direction and what speed.

Part three is probably the most difficult—*non-visual user interfaces*. How do you convey this high bandwidth of real information to a driver who cannot see? First of all, the car has a seatbelt that looks like a vest or harness. The vest vibrates in different patterns, and those patterns give speed information to the driver. For directional information we have a Nintendo Wii steering wheel. We call it the "Click Wheel" because when you move it, it makes "click, click, click" sounds. An audio system with headphones then gives commands like "three clicks to the left," or "five clicks to the right."

So the results have been good?

DH: We did some testing that was successful, but that's not the end of the story. It turns out we had what we call the "backseat driver problem." People can drive it, but it's not that fun. People don't feel the freedom because the decisions are made by the computer telling them when to stop, when to go, turn left, turn right.

What can you do about that?

DH: We're changing the direction right now. We're working on the second version and we have a prototype that we use on the first version of the vehicle. We call this device AirPix. Think of it as a computer monitor for the blind. It looks like a tablet. There are a lot of small holes on the tablet and compressed air shoots out of them in certain patterns to display the map around the area (used from information from the laser range finder). When the person puts his or her hand over the device they can "see" the environment and then make an active decision how to drive.

Are you gong to be testing the car on regular roads?

DH: In July 2011, the second generation Blind Driver Challenge vehicle will be driven by a blind person from Baltimore, Maryland, to Orlando, Florida, which is about 900 miles. It's going to be a combination of highway and regular road driving. The details are not set yet.

The following companies have provided information on CNC Swiss Machines.

product focus

The Swiss type lathe used to be employed primarily to machine long skinny metal parts. Today it is used for a huge variety of components, with an estimated 70 percent being product which could be run on machines which do not have the traditional bushing and sliding headstock construction.

▲ DMG America

DMG's Sprint 20 linear sliding-headstock line offers the highest surface quality and precision and 35 percent longer tool durability. It has linear drives in the X1 axis for the highest precision. It also has 1,574.8 ipm rapid traverse and 393.7 in/s2 axis acceleration with short setup time, easy operation, two C-axes and up to 5 rotating tools in the standard version. The sprint 20 linear has Axes of 6 + 2, a maximum bar diameter up to 1 in., a rotational speed range of 10,000 rpm., power (S2 /S1) of 7.4/5.0 hp., rapid traverse of 1,574.8 ipm., axis acceleration of 393.7 in/s2, longitudinal travel of the Z-axis of 9.4 in., a DMG SlimLinePanel with a 15" screen and Fanuc 310is. Also available as an option is a kit with guide-bushing to convert the Sprint into a Swiss-type lathe.

For more information, please visit DMG America at www.dmgamerica.com.

▶ Hanwha Machinery America

Hanwha Machinery America offers a complete line of CNC Swiss-style turning centers. With machines beginning at 12-mm bar diameter and ranging up to 38-mm bar diameter and 4 to 13 controllable axes, with additional Non Guide Bushing machines in both 20mm and 32mm. Hanwha can meet all the needs of the U.S. market including, medical, aerospace and automotive.

For more information, please visit Hanwha Machinery America at www.hanwhamachinery.com.

◀ Index Traub

INDEX TRAUB is introducing the new TNL18 sliding headstock automatic lathe and its variant, the TNL18P production machine. The TNL18 can be changed over in minutes to produce precision parts with or without a guide bush for long or short parts from bar up to 20 mm diameter. Up to three tools can be on the part at once. The tool capacity of the TNL18 can be increased to as many as 54 tool places through dual- and multi-holders, extending productive times.

For more information, please visit INDEX Corporation at www.index-usa.com.

▶ KSI Swiss

The KSI SQC Series high precision CNC swiss automatics offer the most complete standard features package of any swiss machines of its class. The standard 7-axis machine package is ready for the most comprehensive and demanding swiss applications. Our SQC series is designed and built by KSI/HJM to handle the breadth of CNC Swiss applications from high precision to high productivity. Our robust base casting and toolstand are extremely rigid and thermally stable.

For more information, please visit KSI Swiss at www.ksiswiss.com.

◀ Marubeni Citizen-Cincom Inc.

The CINCOM A32VII, offering ø32mm large diameter machining, is strong, powerful and highly rigid for exceptional cutting performance. Rapid feed rates of 45m/min and quick acceleration/deceleration makes the A32 the world's fastest CNC Swiss type lathe. High speed processing is also accomplished with the latest NC unit as well as Citizen's unique Streamline Control for smooth and fast movements.

For more information, please visit www.marucit.com.

product focus

▲ TMT Swiss/Nexturn

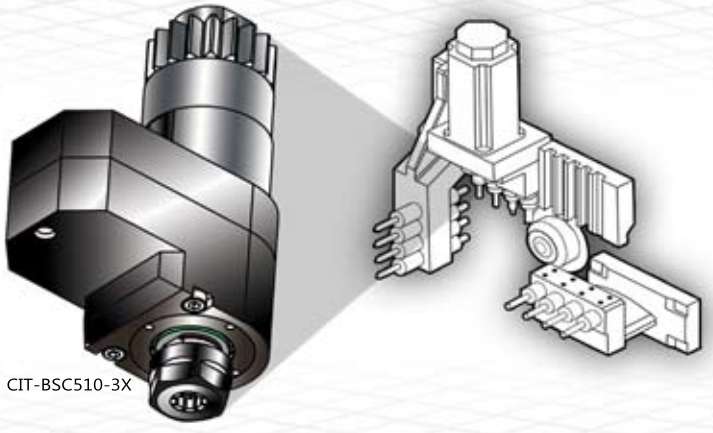
TMT Swiss/Nexturn offers a complete line of cnc swiss style turning centers. Bar diameters range from 12 mm to 38 mm with four to seven axis capabilities. In addition to our full line of conventional swiss style machines TMT Swiss offers our new X Series sliding headstock machines without a guide bushing. Available in bar diameters up to 45mm the new X series provides all the speed of a swiss machine without the need to grind the bars.

For more information, please visit TMT Swiss at www.tmtswiss.com.

▲ Tsugami/Rem

The new Tsugami S205 and Tsugami S206, available in March 2010, were designed to provide Swiss technology users the flexibility and capability to meet a wide range of needs at an affordable price. Both machines are ideally suited for production of complex parts. Live tools for cross and face operations are found on the main and sub spindle. A 2-path control permits true simultaneous operation of the main and sub spindle, reducing overall cutting time. The modular and roomy tool zone allows driven tools to be moved from main to sub spindle and from face to cross positions with ease by the operator, minimizing down time between different jobs. The S206 has the same capabilities as the S205 plus backworking y-axis motion.

For more information, please visit Tsugami/Rem at www.tsugamiusa.com.



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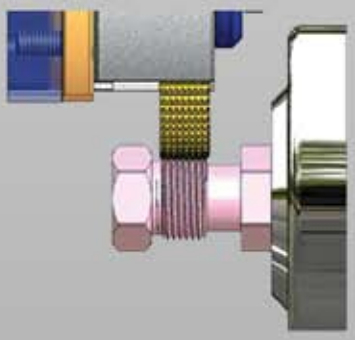

- **Attachment can also be used to generate flats.**
- **Lower cost per part than thread rolling.**
- **Quicker, easier change overs. No need to re-time rolls.**
- **Adjusts just as easy as a form tool.**
- **Cutters available in solid carbide and high speed steel.**

Gildemeister

New Britain

Acme Gridley

The thread milling operation is obtained by a particular cutting tool, which is helical shaped with the same pitch of the thread. This tool rotates at the same spindle's speed, the feeding stroke is radial, as the attachment is placed onto the lathe's cross slide. The thread milling unit can be used on aluminium, brass, lead free brass and steel (using solid carbide cutters or HSS); the thread can be located in the front side of the part and also behind a shoulder, near the collet.

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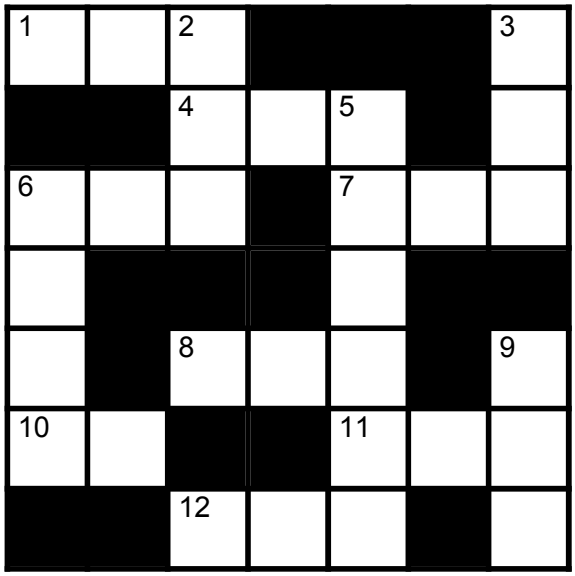
emily@todaysmachiningworld.com

Cross This Puzzle



Across

1 Tool condition problem with particles adhering to the cutting edge during chip removal, abbr.
4 Microprocessor-based controller, for short
6 Molding process which allows the rapid molding of liquid materials
7 Rotating tool with teeth arranged in a helical path
8 Rotary tool that removes hard or soft materials
10 Cutting-fluid additives that minimize chipwelding, abbr.
11 Tool coating process performed at low temperature, briefly
12 Direction of the predominant surface pattern

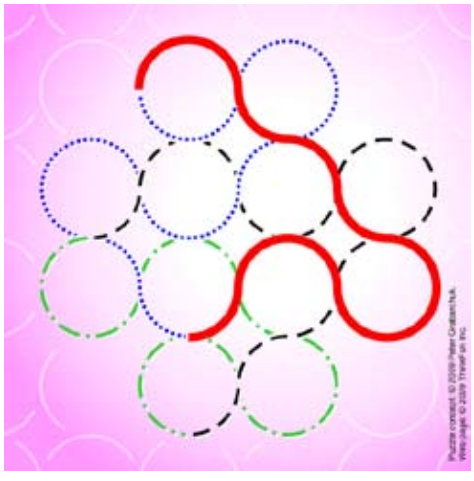
Down

2 Operation in which electrical current flows between a workplace and conductive tool through an electrolyte, abbr.
3 The portion of the tool body that joins the lands, on a rotating tool
5 Impact test in which a V-notched, keyhole-notched or U-notched specimen, supported at both ends, is struck by striker
6 Angle of inclination between the face of the cutting tool and the workpiece
9 Out of the ordinary

The Snake Cross

The red snake, consisting of eleven bends only, is the shortest.

Puzzle found in the November/December 2009 issue



Al Bjork of Toledo Screw Machine Products in Rockford, Ill.; **John M. Bacsik III** of Air Parts Mfg. Co. in Arlington, Texas; **Tom Rukstelis** of The Chesapeake Machine Co. in Baltimore, Md.; **Jim Vanarsdall** of Crown Precision Products, Inc. in Carmel, Ind.; **Greg Tetrick** of Cass Screw Machine Products in Minneapolis, Minn.; **Jimmy Hunt** of Global Shop Solutions in The Woodlands, Texas; **Ed Gnifkowski** of Rimco Industries in Sauk Rapids, Minn.; **Gene Wood** of Utility Solutions Inc. in Hickory, N.C.; **Joel Gray** of Service Industries LLC in Rolling Meadows, Ill.; **Ram Chandran** of Muller Martini Mfg Corp. in Newport News, Va.; **Frank Dunlevey** of Brush Wellman Inc. in Mayfield Heights, Ohio; **David Smith** of Electroswitch Electronic Products in Raleigh, N.C.; **Rocco Sarro** of MAHLE, Inc. in Trumbull, Conn.; **Jeff Kovalenko** of Key Machine Tool, Inc. in Elkhart, Ind.; **Mike McCaul** of Absolute Turning & Machine, Inc. in Tucson, Ariz.; **Jeff Riley** of Rawco in N.J.; **Kevin Albright** of Gear Headquarters in Kansas City, Kan.; **Fred Messmer** of BIG Kaiser in Hoffman Estates, Ill.; **Bruce Renwick** of NAFCO in Loves Park, Ill.; **Mitchell P. Koziol** of Mitchell Machine Screw Co. in Glastonbury, Conn.; **David Doctor** of Fordoc, Inc. in Rock Falls, Ill.; **Jim Wilson** of Vision Tool and Manufacturing Inc. in Meadville, Pa.; **Sheldon Wheaton** of Garmin International in Olathe, Kan.; **Dan Cibulskis** of Aurora Air Products, Inc. in Aurora, Ill.; **Steve Reinsel** of ConMed Linvatec in Largo, Flor.; **Seth Emerson** of Silicone Wire Systems in San Jose, Cal.; **Uli Kuster** of Blaser Swisslube in Goshen, N.Y.; **Steve Richards** of Yamazen Inc. in Schaumburg, Ill.; **Mike Grube** of BFG Manufacturing Services in Punxsutawney, Pa.; **Mark J. Brown** of Eagle Tool Company in Dyersville, Iowa; **Phillip Springer** of Thomas W Springer Inc. in Landenberg Pa.; **Mike Grube** of BFG Manufacturing Services in Punxsutawney, Pa.

swarfblog.com

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

GM's Purge of Former Jocks

Former pitcher at the University of Michigan, Fritz Henderson (Senior year ERA of 5.91), is out, following the ouster of Rick Wagoner who played basketball at Duke.
Question: Do you think jocks make good executives?

Steve Baranyk December 16, 2009 at 4:04 pm
Interesting. In 25 years this "competitive" person (he could have pitched for the Cubs or the White Sox with his ERA) was apparently turned into a hesitant bureaucrat if we can believe Mr. Whitacre who himself is from one of the most bureaucratic companies the world has ever known. I give GM five more years max. before it implodes and only Chevy and Cadillac survive.

In the Mecca of Swiss Machining

The banning of Islamic minarets in Switzerland led Lloyd Graff to query American shop owners on how they would react if they discovered their best employee was an illegal resident.
Question: If you discovered your best employee was an illegal, what would you do?

Jim Lestrange December 4, 2009 at 10:46 am
I would have to take 10 minutes or so to try and evaluate what would NOT go well in the shop if he could no longer work there. Then, I would contact an attorney to see what could be done about MAKING him a legal resident, then I wouldn't have to worry about losing him (except, possibly to an offer of a higher-paying job).

Gerald Johnson December 16, 2009 at 12:01 pm
REPORT HIM, TIE HIM UP UNTIL THE IMMIGRATION GOT THERE, AND THEN FIRE HIS ASS!!!!!!!!!!!!!!!!!!!!!!!!

Peter December 16, 2009 at 3:02 pm
You would have to try everything to make him legal!

Oprah and The Acme

Lloyd Graff narrated the history of the American machining industry from the perspective of a worn down Acme named "Arby Eight."

Gregg Lio December 18, 2009 at 10:22 am
I hope the acmes make a comeback, we have plenty of CNC machines, but honestly they have a lot of problems when they get about 10 years old. They are just not built to last. When the electronic parts become obsolete what can you do? I'd put an Acme up against a CNC any day. The only drawback is it takes longer to set-up an Acme. I say, yes, they will make a comeback.

Clark Kostik December 18, 2009 at 11:40 am
Our country should be so thankful for the contribution multis and the great men and women who made them come alive. It reminds me of Christmas and that JESUS is still alive; Rev. 22:12 Behold, I am coming quickly, and MY reward is with ME, to render to every man according to what he has done.

WageWhore December 18, 2009 at 1:26 pm
My dad owned a machine shop, and he and the great guys that worked there taught me the basics of my trade. I've been in and around manufacturing now full time for over 50 years. I've watched the talent pool diminish sharply, and the thing that really scares the hell out of me is that if we ever get in another big war, do we have the talent left to put together another war machine, or will we have to outsource that to China, India, Korea or Taiwan too??

Join TMW's email list comprised of over 20,000 readers, to receive articles as soon as they're posted. Email emily@todaysmachiningworld.com with "add me to your email list" in the subject line.

ad index

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afterthought

Picking the Bargains

Last March the Dow Jones average hit 6,500, 55 percent off its high a year earlier. Many people saw Depression and felt desperate. The really smart few bought Ford at $1.80. Today it sells for around $12.

The question I have been grappling with for the last few months is whether the used Wickman or National Acme screw machine is today's Ford stock? You can make your own analogy for your business. Has the horrifying recession so killed expectation that it has left a huge opportunity for the gutsy and shrewd risk taker.

> "We can "what if" everything to death, but at some point people in the machining business need to place bets."

The first question to ask is, "Can it get worse?" Absolutely. We could have stagflation with higher interest rates,moribund housing, commercial real estate in ruins, and a weak dollar pushing up the price of imports, especially raw materials.

Automotive could fester at 10 million units or less, and oil could rise to $100 as the dollar weakens under Obama, Bernanke, Pelosi policies.

Europe could uglify further as Greece slides down the sink and Portugal and Spain reach 20 percent unemployment.

Credit stinginess could asphyxiate small business. Nancy Pelosi could find charm and the Democrats could solidify their monopoly in Washington in the November elections.

Excuse me. I must now vomit.

But what if all this awful stuff does not happen, or at least is somewhat less terrible than the negativists postulate?

Maybe automotive gets some traction. A rejuvenated GM finds a buyer for some of Howie Long's new models. Maybe Ford's Fusion and F-150s keeping gaining share.

What if the world doesn't come to an end when the health care bill is signed? Maybe the commodity speculators get burned if oil demand stays low and they run out of storage space for the excess supply.

What if the Mullahs fall in Iran and a new regime decides to make a deal to shelve nuclear bomb development. That would probably shave $10 to $20 a barrel off the oil price.

We can "what if" everything to death, but at some point people in the machining business need to place bets. Doing nothing, punting, is a bet, too. It is a gamble on things staying the same over the next few years, which history tells us is quite unlikely.

I think the big question of 2010 for us is whether we see a tipping point upward for machine tool prices, especially used equipment.

The statistics show nice improvement in machine tool sales in November and December. The three-month moving average of sales is rising. The PMPA users index shows a big rebound in hours worked since the May of 2009 low point. Auction prices of CNC machines are firming. The inventory blow off of the big Japanese builders with some indulging in 10 percent to 30 percent discounts off list, is tapering off. Repos of recent vintage CNC lathes and mills appear to be fewer than six months ago.

In our Graff-Pinkert used machinery business, late model CNC machines are selling rapidly and the supply of machines less than five years old is dwindling.

We are speculators in used equipment. We can buy a five-year-old Mori or Haas and hope to squeeze out a 10-15 percent profit if the ball screws are good. But the enticing possibility of buying for "dirt" and selling for real money lies with the dirty orphans of manufacturing—the old reliable Acmes, Wickmans and New Britains.

Maybe they are all headed for the scrap heap and we lose a long shot bet. But they may come back—not to sexy numbers—but perhaps to current Ford stock numbers. When we buy a 1 5/8" RB8 Acme for five grand it is not a stretch to imagine a user buying it for 25 grand if it runs well. There is still plenty of excess multi capacity, but a lot of the idle machines are ratty piles of iron. A tidy, tight machine could be a handy addition for a firm that can run a multi profitably. And surprisingly, there are not many nice ones out there.

I think this is the time to place a sizable bet on the old nag. It might well be Ford at $1.80.

Lloyd Graff

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