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# editor's note

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### LemonAid

The cliché for dealing with adversity is turning lemons into lemonade. Laurie Johnson of Edwards, Colorado lost her husband and two-year old son in a small plane crash. She survived the crash, but was badly injured with a crushed femur. She endured numerous surgeries and spent years on crutches.

In an effort to cheer herself up she started decorating her crutches with colorful fabrics. Other folks on crutches noticed her creativity and asked her to spruce up theirs. She saw a market opportunity in the ski town she lived in, where hobbled snowboarders and skiers filled the emergency rooms every day.

She drew upon her own pain to develop a line of colorful crutches and named her company LemonAid Crutches. Her designer crutches have taken awhile to catch on, but the business is now gaining traction.

At *Today's Machining World* we have recently lost our Managing Editor, Jill Sevelow, and replaced a sales representative. The lemons of business. And the opportunity for fresh lemonade.

> Lloyd Graff Editor/Owner

C



contributors



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



Noah Graff has been working at *Today's Machining World* since 2005. He holds the titles of features editor, videographer, and "the web guy" of the magazine. Noah graduated from the University of Wisconsin majoring in film and history. When he was 19 he took a 50 hour Greyhound bus ride from Chicago to San Francisco to make a documentary about the outrageous, fascinating people he met on the bus. He currently has a reality show on YouTube called "Jew Complete Me" documenting his search to find the Jewish love of his life.



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

Lloyd Graff has had a lifelong love affair with magazine writing since discovering *Sport* magazine at age eight. During high school he would camp out at the University of Chicago library, endlessly reading periodicals. His writing heroes are Tom Wolfe, Jim Murray, and RIng Lardner. Besides writing, Lloyd's primary currect advocation is watching sports on television. He recently set a personal best of 27-1/2 hours during one recent two-day weekend.

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# forum

### **①** Todays Machining World

#### Oil Missed

In the response to "Oily in Memphis," in the Shop Doc column (June 2008), David Yancho of Armor Protective Packaging missed an entire class of corrosion inhibitors that is classified under a solvent based or dry film type. These are easily applied by spray or brush, do not have any oil content, have non-objectionable odors, are safe to use, leave a very thin and almost imperceptible film, and are easy to remove. The corrosion protection can be up to a year or more indoors, depending on the product's formulation.

> Joe Manfreda PICO Chemical Corporation Chicago Heights, IL

#### Open for Discussion

I am one lowly member of a group that has been looking for a likely place to try a new training program for metal arts technicians, primarily CNC programmers and cell managers. We have visited with several of the statefunded programs, and have found that they do not have enough time to be really effective in bringing people to the levels that the small to medium-sized companies need.

I was involved with an apprentice program several years ago at General Dynamics, where the apprentices were required to both complete 8000 hours of work and take some college work in order to be certified. I think there should be some way to create a program which would bring the "graduates" of a training program to the same level as the demands of the trade today. We recognize that the dynamics of manufacturing today is different, and with so much of the work assigned to smaller shops it is not possible to offer such "in depth" training at one company. We also recognize that there is so much competition for skilled workers that it would be difficult to have a "distributed apprentice program" where the apprentices would move from company to company as part of their training.

Our idea is to set up a combination training/manufacturing center with real work projects and modern equipment, where the prospective worker would be required to serve a "virtual apprenticeship," and have an advisory board of shop owners involved in both the lesson plans and overseeing the work being done. One way to do this would be for the advisory companies to have the opportunity to bring work to the center, have the students build the projects, and have the company receiving the support make a contribution to the cost of operating the facility. The students, who would be paid as apprentices, would be obligated to donate the first 500 hours of their apprenticeship, but would be paid after that based on a preset formula. Once the program has been run for three years, the graduates could be retained as "interns" or graduate students (in the manner of hospitals and universities), and could be engaged in the teaching.

We have been discussing this with a community college and a technical high school in Arizona, and also with a machine manufacturer, to get both involved in the process. I have also talked to some of the supply companies for tooling and software, and have found them receptive to the idea of giving "guest lectures" on a regular basis, if such a setting could be developed.

My reason for writing to you is to see what Lloyd Graff and your readers think of the idea, and to ask for some advice or caution as to how to make it a viable project.

> Robert T. Crowley robertcrowley41@yahoo.com

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International Manufacturing Technology Show

# Yeas & Nays for IMTS

MTS, which runs from September 8-13, shapes up as both a big winner for the aggressive exhibitors and potentially a major loser for the organizers of the show.

This is the anomaly. Because of the tax stimulus law, which is set to expire at the end of 2008 there will probably be a flurry of buying at IMTS to get in on the goodies before they go away. I think companies are waking up to what a good deal this governmental goose is for companies that are making money. Machinery builders are starting to scramble for castings and bearings, in short supply, because they must be able to ship before the end of the year to gobble up a raft of time sensitive orders.

The other side of the coin is a growing discontent, even anger, about the cost of presenting at IMTS which is increasingly being viewed as a super-regional show, primarily aimed at Midwestern buyers who can drive to Chicago. As all travel becomes more expensive, particularly by air, the allure of walking a multi-million square foot exhibit space filled with look-alike displays quickly diminishes.

By 2010 IMTS, I can imagine a plethora of virtual IMTS tours which will appeal to budget conscious travel vigilantes in bigger companies and visually and physically overwhelmed aging job shop owners.

I know that many exhibitors, even the grizzled veterans who can remember McCormick Place burning down in 1967 feel that they are being gouged by the Chicago Unions and the downtown hotels. Major exhibitors at IMTS will spend \$1 to 5 million dollars for the privilege of showing at IMTS in 2008. Increasingly, they see the show as a tough payback and the argument that "you have to be there because your competitors will be there" is being replaced by this question "what could I do with my marketing if I only spent half as much on IMTS as I am this year."

IMTS serves as an excellent networking venue for the machine tool clans. Personally, I love it just for this reason. I enjoy watching schmoozing distributors fish for new lines and magazine editors trolling for advertising and readers. But the myriad of worldwide shows and specialty exhibitions exhaust budgets and staff for most builders.

I think that 2008 will be the tipping point for significant show cutbacks. The relative efficiency of email blasts, web tours, web video, print and local sales people will make IMTS look more like an over-priced anachronism.

IMTS 2008 will be a raging success because of the stimulus package. It could well be the last big hurrah for the massive show we've known all these years on Chicago's lakefront.

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### Across the street from our factory at a local

strip mall next to Quizno's a sign proclaims, "Coming soon: Ultimate Arch Threading Salon." I know this will be a hair weave parlor catering to an African-American clientele, but what if it was a shop to study and swap information about threading metal parts. What if this "salon" was like the salons of other eras where the intelligentsia gathered for conversation, music and avant-garde thought about "threading" metal.

Wouldn't it be great to go to a show like IMTS to find a "threading salon" to discuss the merits of single pointing, thread rolling, and die head threading with experts from the various disciplines? This would be a real reason for coming to Chicago in sticky September. The threading salon could make money if companies in the field could advertise their wares around the edges of the salon while the experts and the students hovered around a piano (or a lathe) in the center of a room.

Is this a fit of whimsy? It doesn't have to be, but the way IMTS is structured today with competitive exhibitors often separated by vast expanses of McCormick Place acreage, the "threading salon" does not happen.

There may be a greater opportunity to build a virtual salon on a website like *Today's Machining World's* new online Shop Doc format (www.shopdocforum. com), though it lacks the touchy-feely intimacy of an 18th Century Vienna literary gathering.

But I love the idea. You, the brilliant readers of this magazine, can make the "threading salon" or the "lubricant lab" or the "heat treat hot stove league" come alive on the web if you will loan out your brains from time to time.

### IMTS will combine an Interactive Career

Development Center with a self-guided tour of the technology and manufacturing exhibition. Sponsored by the Association for Manufacturing Technology along with the National Institute for Metalworking Skills (NIMS), the event's main goal is to generate interest and incite enthusiasm in young people for precision manufacturing through contact with industry professionals and state-of-the-art technology. Educators can have their students witness emerging technologies that will be the future platform for precision manufacturing. Students will have the ability to interact with IMTS exhibitor personnel, ask questions about career opportunities and the skill sets required for entrance into the precision manufacturing industry.

### Taking a page from the American Airlines

manual on "How to antagonize your best customers by charging for baggage handling," McCormick Place is charging \$1,300 to connect Internet service for IMTS.

When restaurants like Panera Bread offer free Internet even if you walk in with Starbucks coffee, and many of the IMTS exhibitors will carry Blackberrys and iPhones, what is their rationale for charging \$1,300 for a connection?

Antics like this will send exhibitors to Las Vegas or Atlanta where the organizers

# swarf

of trade shows are perceived to be more responsive. IMTS is seen by many participants as an insider's game. Why else would the show directory book be so impossible, yet so expensive to advertise in. The *Show Daily* newspaper is canned material, prepared long ahead with no discernible news value. If the organizers of IMTS continue to alienate exhibitors who may spend \$5 million to show, by nickel and diming them on Internet, or charging attendees \$20 a day for distant parking, IMTS will marginalize what used to be North America's great machine tool extravaganza.

### Hardinge has made a significant

change in management bringing in Rick Simons as CEO, a veteran of the company who had left to go to Carpenter Technology Corporation for three years before coming back ultimately to replace Pat Ervin.

Hardinge stock has been on a long plunge over the last year. Simons appears to be a popular change from the old regime. Under Ervin, Hardinge, focused on developing its worldwide business, had acquired prestigious Swiss brands like Kellenberger and Tschudin, but slowed the North American machine tool business to decay.

The Hardinge machine tool brand has been lost in the blizzard of brands and marketing. Simons has the advantage of knowing the cast of players in Elmira N.Y. and the insight from spending three years in Hardinge exile.

Since Simons has taken the reins, the stock has bounced like a yoyo, hitting a low of \$11 and then quickly jumping up to \$17. Could this indicate interest by an acquirer? With the cheap dollar, you never know.

### I recently had a visit with a

sophisticated manager of a large Indian auto parts firm. He has a major order from Ford and was looking for Hydromats as his primary production tool.

He made it clear that the days of Indian and Chinese companies relying on cheap labor and basic machines to compete in the world market were ending quickly. With raw material prices escalating, and the weak dollar, the percentage of pure labor in many components is shrinking. So he now has to play the same game that his American and European competitors are playing without the big edge of inexpensive workers. In some cases raw material costs may even be more expensive in India and China because of increasing transport costs for scrap and iron ore.

Ironically a major advantage that North American producers have traditionally had, basic infrastructure, is starting to cut the other way. As manufacturing has moved to China and India these countries have developed redundant backup and skills. Whole cities have sprouted up for cutlery, sweaters and brass plumbing fixtures. In the U.S., skills in these areas are vanishing, so if somebody wants to start up again they have a shortage of expertise.

### There is a lot of jockeying going

on by the Obama and McCain campaigns for the "Hispanic Vote." I question whether there is such a thing as the Hispanic vote because the community is so diverse and spread out.

Neither Obama or McCain are natural fits as we saw when Hillary Clinton bludgeoned Barack in the California primary because of the Clinton name and popularity, and possibly because of anti-black sensitivities amongst Mexican-Americans.

McCain is stuck in the middle of the Republican Party's "Know Nothing/Pat Buchanan/Right Wing," which is perceived to be anti-Hispanic and the pro-business, pro-immigration segment of the Party. McCain is despised by many in his home state of Arizona as being soft on illegal immigration, but he is also seen as a Bushee and not responsive to the needs of the poor.

Florida will again most likely be the biggest swing state that may decide the election. The South Florida Cuban American vote has traditionally been a Conservative, Republican-leaning group but McCain does not automatically inherit them, especially if he waffles to

August 2008

please the Lou Dobbsians who could influence the election in Ohio and Pennsylvania where Hillary also clobbered Obama in the Democratic primaries.

The complexity of the evolving Hispanic community has become more clear to me as I connect with the people of the "machining community" in my business life.

If you are doing business in machining and machinery in the U.S., you are dealing regularly with people of Hispanic background. From my observation, the machinists entering shop floor positions are increasingly Hispanic. A significant group of Hispanic men are now in supervisory positions, and many have started job shops. These are upwardly mobile folks who are generally not part of old Organized Labor.

I see this as a constituency which is definitely "in play" for this election and one which does not fit neatly into either party.

What makes this upcoming Presidential election so fascinating is its utter unpredictability. The poll numbers must be very scary for Barack Obama because Bush's huge unpopularity has not blasted Obama way ahead like one would expect in the late summer of \$4 gasoline prices.

McCain's blah, slow motion campaign seemingly has

worked for him as Obama appears to be going backwards since he stole the Democratic nomination with his early wins and Hillary's incredibly complacent winter campaign. Obama and his staff are shrewd and they are trying to position the candidate in the center while his lefty partisans dither about he carbon footprint of the Denver Convention.

The Greens will not decide this election, but the Mexican, Cuban and Salvadoran-Americans just might. I'll be watching intently to see how the two parties play it at their conventions.

### This is the last issue of

*Today's Machining World* that Jill Sevelow, our Managing Editor, will work on. She is leaving to follow her dream of helping to produce a Jewish magazine (World Jewish Digest) based in Chicago. She will be trading articles about spring collets for pieces about the Spring Holidays- a poor trade off from my point of view, but what can I do.

Jill has worked on *TMW* from its inception, migrating from the Graff-Pinkert spare parts business to help me pursue my dream of building the machining magazine I



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always wanted to read. She has turned chaos into order as we moved from quarterly to bimonthly and now a monthly publication.

She has transcribed my handwritten scribbling without critiquing my erratic handwriting, and occasionally tamed my anger and brashness.

Jill has been a fabulous colleague and a good friend for the past dozen years. I wish her only great pleasure and satisfaction in her new position.

Our new Managing Editor, who Jill has trained extensively, is Emily Halgrimson. Emily answered our ad on Craigslist, which cost \$25 to place online, and drew 40 responses within two days. At 26 years old, her credentials for the job were sketchy, but intriguing.

She had graduated from the Eastman School of Music, majoring in French horn, worked in her father's sporting goods store, and helped put out a magazine for a yoga and meditation center. She had also worked in Bangladesh and was just back from a stint in the Peace Corps' small business development unit where she helped local people set up an internet café in a small rural town in Benin, West Africa.

After talking to her on the phone and interviewing her extensively Noah and I felt she had a charisma, intelligence and maturity that trumped her weak direct credentials. We interviewed two other people with deeper resumés but decided to hire Emily to learn on the job rather than go for the experience.

Hiring a key person for any business is a crapshoot. We think Emily has a tremendous upside and will make the magazine better in a short time. We miss Jill already, but can't wait to see what Emily will bring to TMW.

### I have written a lot of personal,

emotional pieces in TMW. I always worry about the magazine becoming the musings of an egotistical dilettante, but now I'm doing it again.

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getting prostrate cancer. Like so many men I've suffered with flare-ups of prostatitis, progressive enlargement of the prostate, rising PSA numbers, and the revolving worry of semi-annual visits to my urologist. I am sure that a large percentage of you who are reading this column have experienced the same misery.

I have become a student of prostate woes. Toss me the name of a prominent male over 50, and I'll probably know his prostate cancer history. Michael Milken, who took the fall for the leveraged buyout excesses of the 1980s, is a personal hero of mine because he has devoted so much of his post-Wall Street life to the search for a cure and beating back his own prostate cancer discovered in his mid-forties. Joe Torre, Dusty Baker, Rudy Giuliani, Arnie Palmer; the list of sufferers goes on and on. Fortunately they are all survivors. Sadly, I know several men who were not so lucky.

The detection of prostate cancer has long been a chancy happening. The PSA reading is still the primary screening tool. It is an imperfect marker, if my experience is indicative.

MY PSA reading elevated as high as 13. Over 10 years I had three biopsies as an out patient, all negative. After a surgery for a detached retina, in which the eye surgeon manipulated the optic nerve prompting my heart to stop (not uncommon in such operations) the drug the anesthesiologist used to restart my heart caused the side effect of significantly enlarging and inflaming my prostate gland. I ended up with a catheter for four months while waiting to get into shape for a TERP, or prostate reduction surgery, to enable to me urinate normally.

For two years after the prostate surgery in 2004 my PSA readings were around 2.0, but then they started rising again. I had hoped that three biopsies and a surgery were the ticket to no more worries about prostate cancer, but frankly, no man gets a lifetime pass. In June, after another small but consistent rise in my PSA count, my doctor, Mark Schacht, told me I would need another biopsy, but this time it would be a "saturation biopsy," meaning he would take 30 to 50 tiny samples for the pathologist to assess.

I have developed many friends and acquaintances who are natives, not tourists, in prostate cancer land. I talked to some of them, including Jake Grainger, who was diagnosed in his mid-50s and has become a lay expert in the field.

Jake recommended a newly developed MRI rather than

the saturation biopsy technique. He has taken the road less traveled in American medicine, choosing to treat his prostate cancer with a strict diet with many fruits and vegetables, Lycopene capsules, and surveillance rather than surgery, radioactive seeds, or radiation. He is doing well.

I opted to undergo the saturation biopsy because I thought it was the most definitive test available today. I went to the Prostate Cancer Center near Chicago where they specialize in the biopsy and seed implants. Compared to any hospital I've seen, it was a place which treated me like a valued client, not a patient to be herded through processing. The biopsy required a general anesthesia, but I was out of the building in less than four hours.

Then came the inevitable agonizing wait for the results. I tried to reassure myself that prostate cancer for most men today is not a death sentence. But I also knew that thousands of men do die from the disease every year.

I received the results just before the July 4th holiday weekend. To my shock and abject relief, I again tested negative for prostate cancer. I have been living with the dread of this illness for so long I still almost feel like I have it, even if the test says I am free – for now.

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book review

By Lloyd Graff

**Exile** by Richard North Patterson, is a story of the Palestinian-Israeli tragedy conveyed in a love story-mystery format by one of the great writers of our day.

Patterson is a former prosecutor who writes about big issues with clarity and sensitivity that nonfiction writers seldom approach. In recent books he has taken on gun control, abortion and presidential politics with depth and emotion. Patterson is not a polemicist. He presents many facets of no-win problems. He makes his readers think and question their easy and preconceived ideas.

The plot line of *Exile* hinges on the assassination of the Israeli prime minister in San Francisco. The accused mastermind of the plot is a youngish Palestinian woman, educated at Harvard. While studying at Cambridge she has an affair with a brilliant Jewish law student. Both go their separate ways until a dozen

years later, when she calls him after she has been arrested for alleged involvement in the assassination. Only after he reluctantly becomes her defense attorney does he begin his own personal odyssey to understand her and the conflict which has brought her to imprisonment in America.

The book tells a complicated love story of passion unfulfilled. But what makes it unforgettable for me is Patterson's meticulous unveiling of the feelings of Palestinians and Israelis who hate each other, yet must constantly live together as hostile neighbors. I have



visited Israel several times, contributed a lot of money

over the years, and felt the Zionist dream in my bones. I found the book upsetting because many of the Palestinian characters were appealing and the Israelis were oftenterrifying in their zealotry.

The book undermined my black and white view of Israeli-Palestinian relationships. After 60 years of Israel independence, many Palestinians still see their old villages as home, even if they have never set foot in them.The Arab sense of history and entitlement disturbed me, yet resonated. Though I have never lived there, I feel a visceral tie to the land of Israel.

For much of my life I viewed American politics through the prism of the US-Israel

relationship. If a politician was not in lockstep with the prevailing Israeli policy I despised him as an anti-Semite. But after reading (actually, I listened on CD) *Exile*, I am less sure of the purity of Israel, yet also scared by the ingrained hatred of Palestinians toward Jews and Israel.

This is not a good book. It is an absolutely superb and unnerving book. If you want to understand the conflict from a fresh point of view and enjoy 21 hours of riveting drama, take this CD out of the library. It will keep you up at night and lingering in your car, savoring its 22 chapters.

Comments? You can email Lloyd Graff at Lloydgrafftmw@yahoo.com.





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### IMTS spotlight

### CNC Software- Mastercam-Booth #D-3027

IMTS 2008 features the unveiling of the next generation of Mastercam CAD/CAM software - Mastercam X3. Attendees will get a first look at Mastercam's new Feature Based Machining (FBM), the new Mastercam in the SolidWorks product, as well as the Mastercam X<sub>3</sub> release. With just a few simple clicks, Mastercam FBM will: detect solid machining features for the chosen FBM operation type, based on your selection criteria; machine pockets using 2D roughing, rest mill, and finish operations; automatically support closed, open, nested, and through pockets and set the right toolpath options; automatically identify when external machining is required and enable users to activate or deactivate it; automatically identify when facing is required; automatically create drilled, tapped, counterbore, and countersink holes; automatically perform deep drilling, spot drilling, pre-drilling, tool selection, and tool creation if needed; and provide advanced controls to drill blind, through, co-axial, and split holes.

CNC Software is a privately owned corporation founded in 1984. The U.S.-based company provides Mastercam CAD/CAM solutions to more than 124,936 installations in 75 countries in industries including mold-making, prototyping, automotive, medical, aerospace, and consumer products. Mastercam runs under Windows 2000, Windows XP, and Windows Vista, and is compatible with all other CAD/CAM systems.

CNC Software: 800-228-2877 or visit www.mastercam.com.



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#### Doosan- Booth #A-8018

Doosan will be showing the Puma MX turn-mill, which adds true milling capabilities to a powerful Doosan turning center. Its dual-spindle, multi-tasking configuration tackles heavy and interrupted cuts, producing high precision and mirror finishes. For turning, the MX combines a 25 Hp or 35 Hp spindle motor with a 12-station tool turret. For machining, corresponding data are a 25 Hp motor and 40 station ATC (80 station optional). The torque-tube, meehanite bed construction prevents twisting and distortion, and provides a through-the-machine conduit for fresh air. Standard features include an automatic tool setter and a tool monitoring system.

MX models are available for parts up to 21.7" diam x 40.2" or 60" long.

Doosan: 973-618-2502 or visit www.usa.doosaninfracore.co.kr/



# fresh stuff

### Ganesh Machinery- Booth #A-8660

Ganesh Machinery has done machine tool innovation for over 22 years. They will be introducing the 5X-160 5 Axis CNC Machining Center, a powerful box way 5 axis CNC machining center allowing you to combine up to 4 setups, the FSL-7612TM Heavy Duty CNC Turn/Mill Center, combining turning and milling with 3" bar capacity, and the Cyclone – 32CS 7 Axis CNC Dual Spindle Turn/Mill Center, which allows turning, milling, front and back side work to machine a complete part. They will also be introducing the Cyclone GTS, their newest ultra powerful machine with dual spindles and independent gang slides that work simultaneously to decrease production time and increase profitability.

Ganesh Machinery: 888-542-6374 or visit www.ganeshmachinery.com.



### Hardinge- Booth #A-8032

Hardinge will feature Sure-Grip® Expanding Collet Systems (patented) with interchangeable collet heads that have an under-over capacity of -.001" to +.015" (.025mm to.38mm) from its specified size to accommodate part variation. A double-angle design assures true parallel gripping with maximum grip force. A built-in safety stop will prevent the collet from over-expanding. Machines with ANSI type-A spindles and machines with collet-ready spindles or collet adapters can use the Hardinge Sure-Grip® Expanding Collet Systems. Collet systems are available for internal gripping diameters from 1/8" up to 4" (3.175 up to 101.6mm). Hardinge will also show their Direct-Drive Rotary Systems, which incorporate a rare-earth permanent magnet torque motor with no mechanical gearing. This frameless motor wraps around the spindle, eliminating the need for a separate motor extension. A  $\pm$  .077 arc/sec resolution,  $\pm$  2.19 arc/sec accuracy encoder is mounted directly on the spindle. The direct-drive design eliminates backlash, which results in high servo stiffness, extremely rapid and accurate bi-directional response and exceptional repeatability of  $\pm 2$  arc/sec.

Hardinge: 800-510-3161 or visit www.hardingetooling.com.





### IMTS spotlight

### Marubeni Citizen- Cincom-Booth #A-8560

Marubeni Citizen-Cincom (MCC) will feature the A32 Type VII – the world's fastest Swiss type CNC automatic lathe. Offering 32mm large diameter machining, the A32VII is strong, powerful and highly rigid for exceptional cutting performance. Features include a rapid feed rate of 45m/min, high speed processing with the latest NC unit and Citizen's unique Streamline Control.

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# fresh stuff

### Hurco- Booth #A-8117

Hurco will feature their SR 5-axis machines, which tackle complex, multi-sided parts with a B-axis swivel head and a C-axis rotary table design. The Hurco SR machines include a special version of WinMax<sup>®</sup> control software that streamlines setup and simplifies programming for complex parts. Includes B-axis with table removed, which means access to four axes.

Heavier digital servo drives, larger ball screws, and larger linear rails increase accuracy and deliver superb surface finish exceptional part clearances and larger part capacity due to integrated trunnion table design. Its high capacity table rotates faster and has a high load capac-

ity. Hurco will also feature their TMX Series of lathes, which feature increased travels, faster acceleration and deceleration rates, and more horsepower. A radial turret gives you more options including programmable tailstock and plug and play options for lights out operations.

Hurco manufactures machine tools designed for virtually any application and budget. The flagship VMX Series is a production-oriented line of mills designed for speed while the TMX Series is its lathe counterpart. The popular VM Series of mills and the TM Series of lathes combine small footprints with huge work cubes and best-in-class features. The U Series and SR Series feature application machines with 5-axis technology. The TMM Series includes lathes equipped with live tooling for multi-tasking. Each machining center and turning center from Hurco includes the integrated Hurco control with WinMax,<sup>®</sup> which has multiple programming methods.

Hurco: 800-634-2416 or visit www.hurco.com.









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# fresh stuff

#### Miyano Machinery-Booth #A-8717

Miyano Machinery will be featuring three new ABX Super Turning Center Models: ABX-51TH3, ABX-51THY, and ABX-51THB. Equipped with two spindles and three turrets, Miyano's ABX Super Turning Centers are capable of processing complex parts efficiently in a single setup.

The ABX-51TH3 has two upper turrets on the left and right sides, both with y-axis controls. A lower turret, capable of working on both the left and right spindles, makes a total of 36 tools (with all tool stations able to utilize live tools) available to perform complex front and back operations simultaneously. The ABX-51THY has the same features as the ABX-51TH3, but adds a Y-Axis control to the lower turret. The ABX-51THB features a completely independent B-axis lower turret that further simplifies the machining of angular features. Both the ABX-51THY and ABX-51THB incorporate more powerful motorized turrets, allowing for heavier cutting to be performed by the live tools.



Miyano Machinery USA is a subsidiary of Miyano Machinery, Inc., headquartered in Nagano, Japan. Miyano Machinery, Inc. was founded in 1929, and has become a global leader in precision machining technology. To support the North American metalworking market, Miyano Machinery USA was established in 1975 in Chicago, and moved to their current headquarters in Wood Dale, Illinois, in 1987. This facility houses Miyano's North American service, engineering and sales staff, as well as over 50,000 stock parts.

Miyano Machinery USA, Inc.: 630-766-4141 or visit www.miyano-usa.com.

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#### Partners in THINC- Booth #A8745

Partners in THINC will showcase their collaborative efforts through a complete manufacturing cell demonstration that will produce an Op 10/Op 20 aluminum piston on two Okuma Millac 33T vertical lathes through the seamless integration of Partner products through Gosiger Automation. The Okuma Millac 33T features the THINC-OSP control, external program select capability, device net I/O, chilled ballscrews, Absolute Scales, a right-angled tool to drill the pin bore, and an Anybus robot loader interface. Each Millac33T has a 1x4 meter footprint with special automatic doors for easy access by an ABB robot moving between the two vertical lathes. The tool data system will tie to the Zoller tool presetter through the THINC-OSP control and is prepped with auto gauging by a Renishaw MP-400 probe. Sandvik and Kennametal tooling provide turning and rotating tools for the necessary machining.

Partners in THINC will also feature the Okuma LT-200SB-MY with THINC-OSP control and Absco scales for the automated production of aluminum crank shafts. Gosiger Automation integrates a Fanuc robot, LNS barfeeder, Marposs touchsetter, Zoller toolsetter, Sandvik tooling, Caron Engineering TMAC-7 and AutoComp (for quick SPC) software, Schunk chuck, Kennametal ToolBoss, ISCAR Matrix interface, and Renishaw inspection probes. The multi-function cell decreases lead times by combining machining operations. The application opens up possibilities from aerospace and medical, to automotive and construction.

Okuma: www.okuma.com.



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The Tsugami TMU1 CNC Precision Swiss Turning Center houses 76 plus tools, virtually eliminating costly set-up and changeover time between jobs. It machines complex parts complete from bar stock. 800mm work envelope accommodates long parts. Powerful main and sub spindles are supported by a sixteen station front turret and a 10,000 rpm live tool spindle with 210 degrees of B-axis motion — yielding the milling, drilling and tapping capabilities of a 5-axis machining center. Thread whirl in straight or inclined planes.

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### IMTS spotlight

### Partmaker- Booth #D-3005

PartMaker Inc., a division of Delcam Plc, will unveil its latest version of PartMaker Software for programming CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes. Major highlights of this newest version of PartMaker, Version 9, include a revamped and more productive user-interface, improved capabilities for programming directly on solid models, and improved machine simulation for the ever increasingly complex machine architectures of today's multi-axis Turn-Mill Centers and Swiss-type lathes. A host of other productivity, user-driven enhancements will also be featured in PartMaker Version 9.

IMTS 2008 represents the first IMTS where PartMaker will be exhibited in the booth of its parent company Delcam Plc. PartMaker will demonstrate along side Delcam's other leading edge manufacturing software products including the PowerMill, FeatureCAM, ArtCAM and PowerInspect.

PartMaker pioneered the field of CAM software for Turn-Mills and Swiss-type lathes with its patented Visual Programming Approach for programming multi-axis lathes with live tooling. PartMaker Inc. is a sub-



sidiary of Delcam Plc, the world's leading developer and supplier of complete CAD/CAM software solutions. Delcam Plc is publicly traded on the AIM exchange in London. PartMaker is sold direct in North America by PartMaker Inc., and overseas through a network of sales partner offices operating in over 120 countries.

PartMaker Inc.: 215-643-5077 or visit www.partmaker.com.



### REM Sales/Tsugami-Booth #8701

Rem Sales, division of Morris Group, Inc., will have several Tsugami Swiss-type and fixed headstock lathes operating. The company is highlighting the SS32 model. The SS32's modularity is a major contribution

to Swiss technology, as is its ample space in the work zone. The machine's standard main spindle configuration includes seven turning tools, five cross rotary tools, and five ID tools. The standard sub-spindle setup includes three ID stations and three face drills and can include up to two cross rotary drills. Thread whirling, polygon turning, and angular face drilling operations are possible with an adjustable face tool attachment. Key specifications include 320 mm (12.6 in.) of Z-1 stroke and 8,000 rpm main and subspindles.

Rem Sales: 860-687-3400 or visit www.remsales.com.

# fresh stuff

### Schütte: Booth #A-8370

The new, modular assembled Schütte multi-spindle automatics are made to produce complex as well as simple work pieces economically. The principle feature of the SCX-series is the ability to optimize the backworking process. Complete backworking and cross machining operations are done in positions 8 and 9. This is done without unclamping the workpiece and with the same speed as front side machining. The SCX machine is designed to use the same tool holders in all positions front and rear. All tools can be driven and offer coolant thru-standard. All spindles are independently driven. The spindle drum is continuous indexing even in reverse mode and the spindle speed is adjustable during indexing. All drives, cables, and hoses are outside of the machining area. In focusing on flexible machining, Schütte has partnered with TECHNICA rotary precision turning machines from Switzerland.



Schütte LLC and its companies of MSA and TGM are a wholly

owned subsidiary of Germany based, Alfred H. Schütte GmbH, founded in 1880. From its North American headquarters in Jackson, MI, Schütte serves the manufacturing community with the latest technology in multi spindle automatics, and tool and production grinders. This service includes a completely trained technical staff and an extensive level of spare parts inventory.

Schutte USA: 517-782-3600 or visit www.schutteusa.com .

### STAR CNC Machine Tool Corp-Booth #A-8552

Star CNC will be featuring their new ECAS-20T machine, which is the first twelve-axis (12) Swiss Style Machine of its kind with a completely independent three (3) turret-design allowing three (3) tools to be used at any time, working simultaneously in the cut. Fully independent front/back machining capability with an extensive variety of tools makes complicated parts a simple task enabling them to be completed in a single operation. Providing fast rapids and a quick tool change with great accuracies, the ECAS-20T is suitable for traditionally difficult and complex parts to manufacture. CCAS-201

Star CNC Machine Tool Corp. is a leading provider of superior technology and unparalleled service to the machine tool industry. Founded in 1948, Star CNC is a division of Star Micronics Co., Ltd. of Japan and is their exclusive distributor in the United States. Star Micronics is one of the world's most respected manufacturers of machines for the production of small, complex and precise components used in a broad spectrum of industries.

Star CNC Machine Tool: 516-484-5820 or visit www.starcnc.com.

# Noving From Help By Jessica Dulow Wanted to

Today's Machining World

### Attracting the next wave of skilled workers

Photos of students taken at Ferris State, Big Rapids, MI.



Unit of Instruction on ergonomics (Industrial Engineering Course)

riving around among the windowless, steel-sided buildings in South Bend, Ind., I missed, at first glance, the faded sign for Value Production, Inc., but not the handstenciled sign on the front lawn, its slightly crooked letters spelling out: "HELP WANTED CNC PROGRAM-MERS." It reminded me of other postings I'd seen around the country. These hand-made signs erected as temporary measures seem, inevitably, to end up as permanent fixtures. Why all these empty positions? How come the next generation isn't stepping into jobs left open by retirees? Steve Hartz, president of Value Production and Value Tool & Engineering, Inc., had put up his sign as a last-ditch effort, "just hoping somebody coming down the street might see it." He'd given up on classified ads, staffing companies, and local colleges. For the time being, Hartz conceded, the placard will stay. But if the plan he's concocting comes to fruition, it won't be up for long.

"In the papers and on the 6 o'clock news, all you hear about manufacturing is how it's dying in this country," said Hartz. "But manufacturing's not dying, we're just dying for skilled people. I'm actually foregoing expansion because I can't find qualified people to do the work. I can buy equipment any day of the week, but machines are useless without people to run them. We could double our business if we had the staffing in place. The work is out there." Hartz said his company has touched the manu-



Professor Bruce Gregory assisting students with a Hurco machining center in the Process Planning (projects) course.

facture of nearly every plane in the sky, from Boeing 777s to Cessnas and from F-16s to the new joint strike fighter. "Either we built the parts, the testing units, and/or we did research and development projects." The business is thriving, but staffing roadblocks have stalled growth.

#### **Statistically Speaking**

Hartz is not alone. Eighty-one percent of respondents to a 2005 National Association of Manufacturers (NAM) survey said they struggled to find qualified workers to fill open positions, despite the fact that manufacturing wages and benefits are about 25 percent higher than non-manufacturing industries. The average age of these workers is 50, according to a December 2007 *Automation World* article. As these workers retire, young people aren't stepping up to fill their shoes. The industry is suffering the fallout of a public-image nightmare of grand proportions.

#### Working for Change

To counteract that effect, government agencies, national organizations, and foundations have been working to send a new message about manufacturing. The U.S. Department of Labor produced a publication for their "In Demand" series geared toward young people that touts the benefits of a career in advanced manufacturing. It highlighted hot, high-paying jobs that tapped employees' curiosity, passion, and creativity. In 2005, NAM and the

# Help Found

Manufacturing Institute joined forces to launch "Dream It. Do It.," a marketing campaign designed to raise awareness among 16 to 26-year-olds about the diversity of manufacturing careers available, supplemented by an "on the ground" coalition of regional groups that go into schools to offer plant tours and externships. Through his Nuts Bolts & Thingamajigs Foundation, John Ratzenberger has organized Manufacturing Summer Camps, Discovery and Invention programs, and Tinkering Days. Manufacturers have been forced to take new approaches to fill open positions. Some companies have teamed up with academic programs - donating equipment and scholarship dollars. Others have focused on developing inhouse training, while still others, like Hartz and his South Bend consortium, are teaming up with competitors to increase the worker pool that everyone in the region can tap.

"We're going to create the new economy," said Peg Walton, NAM's director of the National Center for the American Workforce. But the challenge comes in communicating that to the next generation. "The Dream It. Do It." campaign is an effort to open the eyes of a new audience to the incredible opportunities in advanced manufacturing. People don't think about what's going on in those big facilities they see on the side of the interstate," said Walton.

#### **Enthusiasm Grows**

Joe Merchant would agree that old stereotypes are a barrier. "A lot of people's image of manufacturing is WWII vintage," he said. Having just retired after 36 years at Vincennes University, the former chair of the Machine Trades Technology Department remembers when that WWII-vintage description wasn't so far off. Vincennes graduated its first Machine Trades class in 1968, and Merchant started with the program a few years later. "We were using a lot of WWII surplus equipment then. The program didn't look at all the way it does today." He recalls the excitement among companies when Vincennes launched its third-year option in CNC Advanced Manufacturing three years ago: "'That's fantastic,' they said. 'What can we do to help?'" The news spread by word of mouth, and soon every manufacturer wanted to get involved. "The companies wanted people who could not only punch a button on a CNC machine but do the programming and know what was happening when that cutter came into a piece of material cranking at



Associate Professor Mark Rusco discusses a problem in the Design of Experiments (DOE) course. Photos of students taken at Ferris State, Big Rapids, MI.

15,000 rpms," recalled Merchant. "They were flabbergasted that they could get somebody who knew what was going on. We developed a good rapport with a large number of employers."

That rapport soon translated into dollars and equipment. Several companies sponsored students, while others donated as much as \$5,000 per year to help with tuition. "We got a grant from Eli Lilly. They're a gigantic supporter of education. We got a \$1.5 million grant, half of which came to this department. That enabled us to purchase five machines in cooperation with Haas Automation. They gave us seven more. Haas was a big supporter of our program." This kind of support from industry sources has been crucial to helping programs like Vincennes' keep pace with industry changes. And the investment into machines can translate into an investment into students. "I've got a million-dollar lab sitting out there," Merchant explained. "I can't have a dummy walk out there and start punching buttons on those machines. Minimum you're talking \$65,000 for one of those. These students have to understand what's going on when they walk up and push that Go button."

#### **Changing Perception**

Just as companies struggle with stereotypes that discourage new workers, educational programs struggle with stereotypes about which students are best suited for manufacturing work. The real-life complexity of these trades seems to be lost on high school guidance counselors, said Merchant. The tendency is to funnel

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students with poor academic performance into a vocation track. Though some of those students turn out to be highly skilled on the shop floor, Merchant said the industry misses out on some top performers interested in the field. "One reason we're having a problem recruiting qualified, intelligent students is because high-school guidance counselors are telling motivated students: 'Go to a four-year-degree school, not into something like manufacturing." This advice is often pegged to associating degree level with subsequent income. But, as Walton pointed out, the income level for bachelor's level graduates is softening and differential between white and blue collar has flattened. If more students were encouraged to pursue their curiosity about how things work and how they're made, perhaps the industry wouldn't be suffering such a shortage of workers.

That's the idea behind Hartz's South Bend project. Merchant told me about Hartz while talking about the South Bend region's manufacturing heyday, when Bendix Missile and Studebaker operated in there. South Bend is where Merchant did his student teaching in the early seventies, and since then, vocational education in junior and senior high schools has taken a dive. That's why he was so excited about Hartz's project, which he called a landmark grassroots effort to bring more people into manufacturing. His excitement was what brought me to Foundation Drive, hunting for the sign for Value Production.

#### South Bend's Initiative

Inside his building, Hartz was laying the groundwork for an innovative approach to the skills-gap challenge: teaming up with his competitors to launch The Apprentice Academy. I sat down with him and Suzanne Wheeler, a representative of Vincennes University's business and industry training, to hear more about the project. Hartz said the idea for the academy grew out of his frustration at the ineffectiveness of local resources. He invited his competitors to join him in creating an industry-driven school.

The Apprentice Academy was born in June 2007 when Hartz invited the principals from local metalworking companies to a meeting to discuss opening a state-of-theart training center. Hartz had already teamed up with Vincennes, WorkOne, a regional employment agency, and the Workforce Development Group, a South Bendbased group that monitors and encourages training programs in the region. Bender Plastics, in nearby Mishawaka, had offered up space for the meeting, and a facility stocked with equipment for the new Academy. About 30 people attended. For Hartz, teaming up with his competitors to solve a problem affecting all of them made sense. "Right now the worker pool only has so many people in it, so if I get somebody, my competitor loses somebody. When my competitor needs someone there's a chance I'm going to lose someone. And who does that help?" Hartz explained. "I sat down with my competitors and said: Let's start doing marketing and looking at our future. Let's start looking at grade and high school kids, and people in this community looking for jobs. The people are here; the skill is not. Let's start working on the



Brand Steinhaus, May, 2000 graduate of the Ferris State University B.S. in Manufacturing Engineering Technology, explains the operation of a furniture coating machine with an operator. Brandy specified and supervised the installation of the system for Haworth Inc., a major Michigan office furniture manufacturer. Photo of students taken at Ferris State, Big Rapids, MI.

skill, knowing that it's not an overnight process, but if we don't start sometime, we're never going to get started."

Hartz's competitors rallied to the cause. By the second meeting, the consortium had set two specific goals: to work on training incumbent workers and to feed the pipeline with future workers. Within months the Academy received private donations of equipment and space, gotten support from local and federal governmental officials excited about the concept, and been contacted by volunteer instructors. On the first of October 2007, the Academy held its first class, a two-credit-hour Shop Math class taught using a Vincennes University curriculum. Ten students enrolled: eight incumbent workers from consortium shops and two women new to manufacturing who'd been referred by the Workforce Development
# Up To 24 Tools In The Cut At Once. That's Productivity.

## INDEXING CHUCK ROTARY TRANSFER MACHINES

Precision production of irregular-shaped parts, from castings or forgings, no longer requires multiple machines and countless secondary operations. The Hydromat EPIC R/T HS Indexing Chuck machines tackle irregular shapes and are designed with the flexibility and versatility to easily accommodate a variety of part families as well.

2008

The HS Indexing Chuck machines combine precision chucks with the indexing accuracy and reliability of the Hirth ring, a proven hallmark of Hydromat machine design excellence and accuracy and repeatability.

Available in 12 or 16-station models, the HS machines have the rigidity to handle all component types within their capacity, a 102 mm cube on the HS-12 and a 76 mm cube on the HS-16. The chucks can be rotated and indexed as required to machine 5 sides without having to re-clamp the workpiece. The 12 horizontal station EPIC R/T is capable of the addition of six vertical units, while the 16 station version can handle eight verticals, that's up to 24 tools in the cut at once. Impressive.

THORN

Bar fed applications can also utilize the advantages of the EPIC R/T HS Indexing Chuck configuration. Materials up to 45 mm in diameter and 200 mm in length to be machined without problem.

The HS is fully integrated into the Hydromat machine program, so the same modular components used with Hydromat's other popular EPIC R/T rotary transfer models are compatible with the EPIC HS machines.

All of the EPIC machines feature EMC Technology, Embedded Motion Control, an advancement that brings new power to Hydromat's already impressive capabilities.

Now each station has its own CNC control system integrated into each toolspindle unit resulting in a plug & play control architecture. The by-products of this technology are substantially lower retooling costs and superior flexibility, with changeover times that are generally only 1-3 hours.

All EPIC R/T units employ a linear scale for position feedback creating a true closed loop CNC system. The Fixture Compensation feature adds an additional level of accuracy by applying individual offsets for each fixture. This impressive system has a feedback resolution of 1 micron.

Hydromat's EPIC R/T provides the ultimate in productivity combined with unparalleled flexibility for cost competitive lean manufacturing.

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www.hydromat.com 11600 Adie Road • St. Louis, MO 63043 • p 314.432.4644 • f 314.432.7552 Group. For seven and a half weeks, the students met for two hours twice a week. Only one person dropped out, and of the two students not in the industry, one took a job in a consortium shop after the class. "That means we've got a 50-percent employment rate!" laughed Hartz. The class, he said, was a strategic move to draw attention to the project and demonstrate that the Academy takes action. It worked. "It's been unbelievable. I'm kind of in awe," said Hartz. "On a daily basis, I get a new group calling for help, or for us to get involved with their projects."

According to a Workforce Development Group report, about 1,290 CNC operators worked in the South Bend region in 2002. Factoring in industry growth and worker attrition, the group estimates that by 2012, the region will be short 210 operators. Manufacturing has long been the life's blood of South Bend's economy, and Hartz wants to keep it that way. Having taken initial steps toward training incumbent workers with the Shop Math class, the Academy moved on to the recruiting part of their mission. They invited local high-school counselors to an open house at one of the consortium's facilities. Schafer Gear Works, Inc., where the educators heard a presentation about the benefits of a manufacturing career and toured the shop. By addressing the counselors directly, the consortium hoped to correct the misconception that manufacturing is a dead-end road and that a four-year degree is the only path to career success. "The counselors are trying to put every kid through college, but that's just not realistic," said Hartz.

"People don't all learn the same way," agreed Wheeler. "We need to look at different environments for young people to learn. They might not excel in an academic classroom, but they might excel in a shop setting."

Once they reached out to the counselors, they began recruiting students. The consortium companies sent representatives into schools to speak in the homerooms of every sophomore class and talk to students during lunch. So far 35 students have signed up for a fall training program. These students toured different manufacturing facilities, and through the rest of the school year, consortium representatives met with students monthly, bringing pizza and keeping in touch. "We'd give them handouts and show-and-tell items," explained Hartz. "Now my customers are involved by giving me parts to show the kids. It's great." As word spread about the consortium's efforts, community members started asking

Hartz about setting up non-manufacturing related training programs. Hartz embraced the idea. He presented to the consortium the concept of expanding the Academy to disciplines beyond manufacturing. "I was afraid to bring this up at the meeting with these manufacturing people. I thought, 'If I get too far off here, they're gonna fall off the wagon," Hartz recalls. "I put it out there. As it turned out, most said, 'I'm glad, because if it was just going be about manufacturing and not about community, I didn't want to be involved.' I almost cried. It was that emotional to me, and still is." The scope has expanded, but the manufacturing program is still on track. The second class, Blueprint Reading, another two-credit-hour class is now underway, with eight students. And a Technology Camp, "designed to expose students to the world of manufacturing by providing hands-on learning experiences," is scheduled for late July. A year after that first meeting, the Apprentice Academy is off to a running start.



From cows to CNCs: Justin Myall on his dairy farm in Mason, Mich. *Photo courtesy of Angie Smitley.* 

### Ferris State steps in

In Big Rapids, Michigan, I was standing in the hallway between the welding and machine shops at Ferris State University talking with Manufacturing Department Chair Gary Ovans about the future of U.S. manufacturing when a group of teenage boys walked in. They were kids from a vocational program in nearby Mason, Michigan, here on a field trip to learn about post-graduation opportunities. Ovans and I had spent the morning deep in conversation. He told me about the inevitable paradigm shift away from the high-pay, low-skill jobs that had made Michigan automakers go belly-up. He talked about how some educators want to push less capable students

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into vocational education because they think it doesn't take brains to negotiate a technical field successfully. He talked about the challenge of getting people to read behind the headlines to see that manufacturing in this country isn't dying, just changing - that tremendous opportunities were opening up in the industry because of turnover, allowing for rapid ascension into middle and upper management. He also told me about the challenge of maintaining enrollment numbers given increased tuition, less state financial aid, and that students have to be convinced to go into manufacturing against the tide of public opinion. "In our machine-tool program we used to start 36-40 students in two sections in the fall," Ovans explained. Now we have 10 starting in the program and one section."

I knew that recruiting new students was both essential and difficult. There in the hallway, I realized these highschoolers were the faces behind the numbers. I wanted to know if these young men were the future of manufacturing.

The students' tour-guide, Dean Krager, associate professor of Manufacturing, Tooling and Technology, talked about life and academics at Ferris. After a walk-through among the Hurcos, LeBlonds, Amerikams, and other machines in the shop, Krager asked if they had questions.

"Yeah, when's lunch?"

Krager laughed. "Are these teenage boys or what?" he joked with their instructors, Dave Van Dyk and Gregory Butts from the Precision Machining Program at the Capital Area Career Center in the Ingham Intermediate School District. Krager led the group to a classroom where he gave a presentation. He enumerated the benefits of a career in manufacturing, discussed growth industries, explained that high-tech jobs aren't moving overseas, and rattled off some impressive starting salaries. Then it was time for lunch. I talked to one young man who'd sat in the first row and had piped up with some germane, non-food-related questions.

Which is not to say he didn't enjoy his lunch. I peppered him with questions in the dining hall while he plowed through a tray heaped with cafeteria treats. Justin Myall, 18, was a senior at Mason High School who had spent half of every schoolday for the past two years at the Capital Area Career Center learning precision machining. Until Myall toured the Career Center in tenth grade, he didn't have a concept of machining but liked the idea of working with his hands. "Plus there's a lot of math and I love math," he explained. "And I've always liked machines." What appealed to him most on that sophomoreyear tour was the measuring tools. "I really liked the fact that I could make something more precise than a human hair," he said. "It's cool to have things accurate like that."

Before today's tour of Ferris State he figured he'd become a CNC operator, but after Krager's presentation, which introduced him to the role of the toolmaker, Myall decided he might do that. "I like things that are high-tech. And money." Like most students, Myall's big concern about applying to Ferris was financial. "I want to see if I can get some aid," he explained.

### From cows to CNCs

Myall came back to the table with a swirl of soft-serve vanilla in a cone. "So you live on a farm?" I asked, and he nodded. "What kind?"

## "I knew that recruiting new students was both essential and difficult."

He pointed to the ice cream, swallowed, and said, "Dairy." He explained that his grandfather had established the farm and his brother runs it now. Justin does the milking every other night after school.

"So why aren't you going to be a dairy farmer?" I asked, then heard the warmth in his voice when he talked about the farm.

"I could. I was thinking we should get a lathe and a milling machine because there's always stuff to fix and no money to replace anything. All the money on a farm has to go straight back into the business."

And right then it became clear to me. Not just the wonder of being eighteen with a lifetime of choices ahead of you, but also the arbitrary reality of individual career decisions. Maybe Justin Myall will end up in a job shop, bringing his talents and penchant for accuracy to parts manufacture, filling one more slot in the skilled-worker gap. Or maybe he'll just stay on the farm. Ultimately the biggest challenge facing the industry, educators, and community leaders, will be finding ways to appeal to the fickle appetites of youth.



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# An interview with Michael Based of Contract of Contra

By Lloyd & Noah Graff

Originally from Cypress, Michael Economides holds a degree in petroleum engineering from Stanford University. He is a professor at the Cullen College of Engineering, University of Houston, and the Managing Partner of a petroleum engineering and petroleum strategy consulting firm. Three years ago he gained notoriety for predicting that oil would reach \$100 dollars a barrel.

**Lloyd Graff:** Michael, how much of the price of oil is speculation and how much is demand driven?

**Michael Economides:** There are four components to the price of oil and these go up and down. It may surprise you to find out that the price of oil should be trading a bit over \$50 per barrel.

#### LG: It doesn't surprise me.

**ME:** You need to ask how much money it takes to activate the stabilized flow of one barrel per day, for instance, and then take into account things like decline analysis. Anyway, you throw all of those things in there, you put a reasonable discount rate to make a living, business, let's say 25 percent, 20 percent, and voila you have this \$50 as an average. However, it's not going to come close to that because there are three other components that are huge fractions of the price of oil. For instance, \$30 is because of energy militant nations – Russia, Iran, Venezuela. If you look at the discount rate that involves risk in working in Venezuela, we're calculating it escalated to 100 percent. In Russia, you realize that it doesn't matter who you are, what company you are, the Russian government decides how much money you're supposed to get and they decrease it to \$25. Oil companies in Russia get \$25 a barrel and then everything else goes to the state treasury essentially feeding [Vladimir] Putin's cronies.

### LG: Right.

**ME:** Russia has a huge premium because there is no incentive for anybody to produce. \$30 is because of environmental radicals – in this country and in Europe





in particular. Those hash smoking characters of the '70s put on neckties and they are on the covers of national news magazines, and they set the agenda in many countries.

Then you add another \$25 for speculation and you have \$135. So \$50 is what it should be selling for, \$30 because of militant nations, \$30 because of environmentalism.

#### LG: So \$85 is political.

**ME:** The United States won the Cold War and lost power, which is an amazing thing. It's still very powerful, the only super power country, but projection of power right now has become very intolerable and out of fashion. For instance, we accept Hugo Chavez in Venezuela. That's not the kind of character that a super power should tolerate. Inside the U.S. no politicians are honest enough, both the left and the right, to admit that in fact environmentalism is a major, major destroyer of America's well being.

# **NG:** Do you think that fossil fuels are causing global warming?

**ME:** Yes, of course. I'm a scientist; I'm an engineer myself so there is an element, but it's certainly not the sole element. By diabolical coincidence I did my master's degree in radiation heat transfer, and there is no way in hell that anthropogenic manmade global warming is the cause of "global warming." There is

no way that the Stefan-Boltzmann Law, which controls radiation, would have shown the differences in temperature that they claim they do. It's political issue. The global warming rhetoric is yet another attempt to social engineer often coming from upper middle-class activists. This is no different then Ehrlich's Population Bomb which you had to read as a student in the '70s. You realize, Ehrlich, who's a professor at Stanford, had suggested, and people forget, that by the '80s two billion people on this earth would die from starvation because of overpopulation. This hasn't materialized and yet Ehrlich is still a cult hero among liberals.

# **LG:** Do you have a conspiratorial view of global warming theory?

ME: No, I don't, unless you want to put it like this: I want to tell every American that wants to think and listen, and I work in 70 countries, that global warming rhetoric is a full frontal attack on the United States. The United States enjoys a standard of living that no other country in the world enjoys. There are many people who believe that the United States is wasteful in the use of energy. Everybody in the world thinks that we are hogs for energy. I beg to differ. Based on my studies I have suggested that it is obvious that this country will use more energy, but what is often missed in this debate is that the use of energy generates wealth. There are no alternatives to fossil fuel sources out there in the foreseeable future. We're still going to be in the year 2030 a profoundly dependent economy on fossil fuels. Oil doesn't go. There are no alternatives for that.

# "... the price of oil should be trading a bit over \$50 per barrel."

# **Noah Graff:** Is alternative energy or conservation going to have any real effect on the price of oil?

**ME:** Conservation has never been able to reduce consumption anywhere, definitely not in the history of the United States. There is something by the way that you definitely need to quote me on known as the Jevons Paradox. Jevons, was a prominent economist of the Nineteenth Century. Let me paraphrase him. It is a confusion of ideas to suppose that the economical use

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of fuels is equivalent to a diminished consumption. The history has been repeating itself over and over again. If your car becomes more efficient, you know what you do, you buy a bigger car. If your house becomes more efficient, you buy a bigger house, or a second house or a vacation home. Why this works is because the use of more energy has been subconsciously associated with better living. So conservation doesn't fit human nature. Second, if you look at alternative [energies], there are none. Solar and wind people lie through their nose and teeth. Solar and wind will never account for more than one half of one percent of the energy mix.

## "... in fact environmentalism is a major, major destruction of Americas' well being."

NG: Then why is everybody saying the opposite? ME: First, I have nothing against solar. I'm Greek, I love the sun. In fact, in Greece it would be stupid not to use solar for space heating or heating your water. But let me give you some numbers. There is a highway called the 610 Loop that goes all around Houston. That's the size of the mirror that we would need to power Houston with solar energy – at the cost of several trillion dollars. So this idea that solar can feed the world energy is ridiculous. There is a second problem with solar – how do you replace oil with solar when oil goes to

#### LG: The link is the electric car.

ME: Okay, now how do you do the electric car? Batteries?

transportation while solar is for power generation?

### LG: Yes.

**ME:** I'm in favor of electrifying transportation myself, but it's not going to be solar. Solar is too diffuse for the amount of electricity we need here.

# LG: But if you have nuclear power and rechargeable cars don't you change the transportation dynamic? ME: Yeah, and I want it to happen by the way, but it's

a 40-year proposition. Just a little secret, please do not call me just an oil guy. I came to the energy business



from the geothermal industry, so I've been advocating electrification of transportation for many years now. But this is a 40-year proposition. It is not something that happens today.

# **LG:** But what if the General Motors' Volt is successful in 2010, that they actually pull it off? what does this do to the expectations of oil pricing?

ME: That is something that we do not really know. First of all, I have news for most of my American friends. Don't look at the energy world as America-centric. You have China, you have India. 1,000 new cars enter the market in China per day right now. The turning point of per capita income is about \$1,000. That's when private ownership takes off. In the United States we have 1.2 cars per one person right now. In China, the ratio is one car per 120 people, and in India it's even worse. So it is going to be a very excruciating transition from fossil fuels to electrical. I don't think that batteries will ever solve the issue, but I do think hybrids or electrical cars may work if we develop guide ways in the future so people can pick up electricity from the highway of the future itself. Again, this is trillions of dollars of infrastructure, nothing happens overnight. But you're in the right direction in this area.

"Solar and wind will never account for more than one half of one percent of the energy mix."

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# **NG:** Do you see wind as something that could generate much power?

**ME:** That's where a lot of people lie. You need to be careful not to confuse installed capacity and actual output into the grid. Wind energy capacity means that somebody built a windmill. However, how much of that wind will actually output electricity into the system? I'm just going to give you my own take on this. In the Greek islands last summer windmills caused enormous misery - even deaths - because there was no wind on a couple of islands where they depend on it. They shut down their diesel generators and people actually died because their air conditioners were not working. In Europe, I have a report that I'm checking, that somebody has shown that wherever windmills have been built, natural gas generators followed shortly thereafter, and here is why: wind is very unreliable and so you have to have something to kick in, and that thing to kick in is usually natural gas. The problem is not the equipment. The wind itself may not be reliable. That's the problem with windmills.

### LG: Would you argue that we have an oil bubble?

**ME:** A bubble that may burst at any time and take the price back down to \$75 or \$80. I don't think it's gong to burst down like that. The reason is because energy militant countries are not going to let it happen. By the way, this is a margin business – one-half of one percent over or under supply can have a devastating impact on the price of oil. And I agree with you, it's possible. But it's going to be a very temporary thing. Venezuela today is producing at the lowest level it has produced since the first nationalization in the '70s and yet the revenues of Venezuela are triple what they were just a couple of years ago.

LG: On a one to 10 scale, one being extremely unlikely or virtually impossible and 10 being almost certain: what is the number that you would put on the likelihood of seeing \$75 oil within the next five years? ME: Zero. One. Extremely unlikely.

### NG: What would have to happen?

**ME:** What would have to happen is substantial drilling in the United States. That would make a lot of difference.

# **LG:** If we started drilling offshore and in the ANWR would that change the perception?

**ME:** I would say a serious announcement that we're going to do that would cut the price of oil about \$35.

## "In the United States we have 1.2 cars per one person right now. In China, the ratio is one car per 120 people . . ."

# **LG:** Would you say the person most likely to be able to pull that off would be Obama?

ME: That's an interesting and paradoxical question. If [Obama] wins he may have the right flavor to level with people because nobody has leveled with the American people about their lack of options today and how much the United States, the super power in the world today, is kicked around by the likes of Hugo Chavez. By the way, being traditionally a Democrat, I have been telling all of my Democrat friends that energy should be the most populist of issues. It should not be any different than the air we breathe, the water we drink, and the food we eat. It should not have been delegated to the right-wing fringes of the Republican Party with a dark knight like Dick Cheney. It should be a Democrat issue. But in this topsy-turvy political landscape in the United States, it went the other way; and that's ridiculous.

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by Noah Graff

Today's gas prices

have left light trucks

and SUVs rotting

on dealers' lots, yet

Americans still

remain attracted

to these vehicles.

# By 2015, will there be a major industry that retrofits gas guzzling trucks and SUVs into fuel efficient vehicles?

next

First, since the biggest win is in reducing gallons/miles not increasing MPG, the bigger the vehicle that's all or partially electrically powered, the better the benefit. (Turning a 50MPG Prius into a 100MPG plug-in hybrid saves 1 gallon/100 miles; turning a 15MPG pickup truck into a 30MPG PHEV saves 4 gallons/100 miles. Second, since most vehicles stay on the road for about 15 years and then often are shipped to Mexico and other places for another decade or two, we're going to be stuck with gas-guzzlers for a long time. If we can power a significant part of their daily miles traveled with electricity that's cheaper, cleaner and comes from domestic sources, rather than imported gasoline, it's a huge win. CalCars.org is working with several companies to demonstrate that this can be done effectively and, soon, economically. We expect that companies will be making aftermarket conversions of PSUVs (pickups, SUVs and vans) into viable businesses well before 2015.

#### Felix Kramer Founder of California Cars Initiative

The SUV, with the exception of its more grotesque manifestations, is actually an extremely good form factor. It provides comfort, a good view of the road, a flexible interior and hauling capability. Its liability is its weight and drag, therefore traditionally poor mileage. With plug-in Hybrid systems, composite materials, next generation batteries and plasma fuel injection there is no reason not to expect a 100 MPG SUV before 2015. I will bet existing car companies will provide the new platforms and a surge of small companies will emerge with kits to recycle the existing inventory. All this is technically

> feasible and economically sound. The question is will buyers abandon the SUV as a negative symbol like they did with the convertible because of safety. The technology and entrepreneurial potential exists. The unknown is how the market will respond to the end of an era: design challenge or a social retreat.

Matt Taylor: futurist, designer, inventor, and facilitator of organizational transformation MG Taylor Corporation

Chevrolet Suburban modified into a Plug-In Hybrid with 60 miles of all electric range.

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I would say probably not, as [SUVs] are a poor platform to start from if you are serious about fuel economy. That would be like putting a sticking plaster over a broken bone. They're big, heavy and aerodynamically inefficient – exactly the attributes we target when designing a car for economy.

A holistic approach to vehicle design is required to achieve better economy. In Europe a vehicle manufacturer's "fleet average" CO2 output of 120g/Km is soon to be mandated by law – you simply don't get anywhere near that by powertrain modifications alone. You need strong yet lightweight, aerodynamically efficient vehicles equipped with modern propulsion.

Dollar for dollar a modern common-rail diesel makes a cogent case if you want a cost effective, fuel efficient powertrain. We must remind ourselves that the current breed of hybrids primarily benefits in the urban part of the drive-cycle, so whether this is the right powertrain choice for you depends on your lifestyle.

#### Richard Adams

MIRA Ltd. Product engineering, testing, consultancy and certification organization, UK

## the facts:

A plug-in hybrid (PHEV) is a hybrid car which can recharge from any 110-volt outlet. After a PHEV is charged it essentially becomes an electric vehicle with a gas-tank backup and can potentially obtain more than 100 MPG efficiency. Today there is a growing trend to retrofit standard hybrid cars (often Toyota Priuses) into PHEVs. This requires installing either lead-acid batteries which range from \$6-\$10,000, nickel-metal batteries for \$8,000 or more, or lithium chemistry batteries which sell for \$10,000 or more. www.calcars.org

From 1987 through 2007, the average American vehicle gained nearly 900 pounds, nearly doubled in horsepower and was eight percent less fuel efficient. Wall Street Journal

Ford will supply 20 stock Escape hybrid SUVs to Southern California Edison, to be placed with "average consumers." First, real-world baseline data will be collected from the vehicles, and by 2009, Ford will convert the Escapes to plug-in hybrids with lithium-ion battery packs, then return them to consumers for comparison testing. www.team-fate.net

**GM is currently developing the Chevy Volt,** A PHEV which it says will go **40 miles entirely on battery power and be recharged in about six hours in a standard 110 volt home outlet.** It plans to have the cars in showrooms by the end of 2010. www.gm.com

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Have a technical issue you'd like to address? 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. With Noah Graff

# shop doc

### Dear Shop Doc,

We are running a job from 1.0" 12L14 square stock on our Y-axis lathe. The part ends up with a square flange in between two turned diameters. The square has a toleranced corner break on both sides of the square all the way around. We are milling it using a pointed end mill at 20 IPM. It takes 30 seconds which is killing us. Is there a better way?

Going Broke

### Dear Broke,

Yes. Have you ever seen an old shaper machine? They cut metal by a ram pushing a fixed tool across the work, shaving the metal off. You can use the same principle to put in your corner breaks. Put a tool with a 45 degree leading edge in a turning holder. Position it above the workpiece using the Y-axis, then feed it down along the Y-axis shaving in the corner break. In 12L14 you can feed as fast as 300 FPM or 3,600 inches per minute.

I doubt your lathe is capable of such speeds, so let's use 300 inches per minute for a feed rate. At 1.2 inches per pass, two passes per side, and eight sides total, I come up with 19.2 inches total feed distance.

If you take 19.2 inches and divide by 300 IPM you get 0.064 minutes or 3.84 seconds. If you have an additional 8 seconds of idle time for Y- and C-axis positioning, you are looking at roughly 12 seconds total time for a savings of 18 seconds. Plus, the tool is a whole lot less expensive than a carbide pointed end mill. When the edge dulls, offset the X- and Z-axis by an amount slightly greater than the corner break to bring up a fresh edge.

> Dan Murphy Regional Sales Mgr. Tsugami/Rem Sales

### Dear Shop Doc,

We are working on reducing setup times on our CNC Swiss. Our people spend a lot of time developing a setup that faces the part with every tool to a set center height. Is there a better way?

#### Quick Change

### Dear Quick,

Use a dial indicator mounted in a comparator stand to measure the tool height BEFORE you mount it in the machine. Record the offset and load them in as you begin the changeover. This is a good way to externalize an activity by carrying it out before the changeover begins.

> Dan Murphy Regional Sales Mgr. Tsugami/Rem Sales



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# one on one

# Andrew & Chris Ewert

Brothers Chris, 25, and Andrew, 21, Ewert took their parents' Toyota Prius and added a lithium-ion battery pack to work in tandem with the nickel hydride battery that came with the car. The extra battery pack has the capacity to power the car for 25 extra miles and can be recharged in a regular wall socket at home. When the battery pack works together with the Prius' fuel system it's possible to achieve 100 miles per gallon or more.

# **NG:** What inspired you to modify your parents' Prius into a plug-in hybrid?

**CE:** There was a sermon that our pastor gave about what it means to be an environmental steward. He encouraged us to live as if we were living in the world the way that it should be. **AE:** And, we were very intrigued by the idea of being able to run a car off of extra batteries. So running off of some pictures that we found online from somebody else who had done something similar, we made our own conversion. Chris is an electric engineer, and I'm a software engineer, so naturally we found this very interesting and challenging.

#### NG: How does the car reach 100 miles per gallon?

**AE:** If the battery is fully charged, driving in pure electric mode for the first 25 miles you won't use any gas. If you are driving in mixed mode the stock Prius gets 50 miles per gallon, and with the additional electricity from our extra battery pack you're able to offset the amount of gas displaced in regular hybrid mode, enabling you to achieve 100 miles per gallon or more.

#### **NG:** And you just plug it into the socket at home.

**AE:** Yep, it just plugs into anywhere in your garage. It's no different than any other kind of plug. The great thing is you're able to get about 20 miles using the same amount of electricity that you would use if you left two 100-watt light bulbs on for a day.

# **NG:** Could you do this on a Honda hybrid or a Chevy hybrid?

**CE:** Different hybrids are designed differently. The Prius, the Ford Escape, and now I think the Highlander are the only ones I

know of that have a system where you can engage in an all electric mode where you can actually drive the car just on electricity. What Honda's done with the Civic, for example, is actually put in a very small electric motor. It allows you to shut the engine off when you stop at a stoplight, and it allows you to have a smaller gasoline engine. But it's a fundamentally different design than the Prius or some of the other hybrids.

# **NG:** What improvements do you plan to make on your current conversion model?

**CE:** What we'd really like to do is a conversion where we keep the trunk intact and take out the original battery. That would be doing it the right way

# **NG:** Do you plan on making a business out of this? Are you planning on selling conversions?

**AE:** No, the main reason that we did this is to prove that it was possible, that if two college kids can do this in their parents' garage, then surely a multibillion dollar car company can do it.

# **NG:** What do the Toyota people think of this? I'm sure they've heard of you by now.

**CE:** They've heard of us. I mean we're kind of trying to demonstrate that something that they're saying can't be done can be done, and so I'm not sure they really appreciate that. It's not something that can be installed on the same cars production-wise. But getting closer to it with the lithium-ion, that is something that could be more widely adapted. We think Toyota can do this a lot better than we can do it.

By Barbara Donohue

# how it works



# Financing with

## Let this year's tax incentives help pay for your new machines

aybe you've been thinking your shop needs some more equipment. You may have your eye on a multi-function turn/mill machining center that could slash production time on a family of parts. Or you've got enough work coming in to justify adding a couple more Swiss-type screw machines. Pricey machines, but you know they could earn their keep.

How to pay for them? Cash? Bank loan? Lease? You'll find there are quite a few options.

And when should you buy? The answer to that, for many companies is: now. Economic stimulus tax incentives may make 2008 the best time ever for you to acquire the equipment you need.

#### Now's the time

If you're in the United States, you've probably heard of the Economic Stimulus Act of 2008 and most likely have received a check intended to increase your personal spending. In addition to sending cash to individuals, Congress included in the program two pretty hefty tax incentives that make major equipment purchases very attractive right now.

The two incentives for equipment purchase allow you to deduct, or "write off," on your 2008 tax return a much-largerthan-usual portion of the cost of equipment you acquire and put into service this year. If your company is paying federal income tax at the rate of 35 percent (typical for a corporation), every additional dollar you deduct means 35 cents less you pay in taxes. Increased deductions may also reduce your state and local taxes. If you can use these incentives, your tax savings can, in effect, help pay for the equipment. Here is a very simplified description of the tax incentives.

#### Bonus depreciation

In calculating your company's income for tax purposes, you subtract your expenses from your revenue. Many of your expenses, like wages, office supplies, and utility bills, are simply deducted in the year you pay them. When you buy a piece of equipment with a long life, sometimes called "capital equipment," the tax code requires you to depreciate it – deduct the cost over a period of years.

With the bonus depreciation incentive for the 2008 tax year you can deduct 50 percent of the cost of the machine as bonus depreciation, plus the normal depreciation on the remaining 50 percent of the machine's cost.

How much can this save you? Calculating depreciation can be complicated and every company's situation is different, but here is a simple example:

You buy a machine for \$600,000 and install it in 2008. With bonus depreciation, you can deduct 50 percent of the "With bonus depreciation, you can deduct 50 percent of the purchase price."

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purchase price (\$300,000) plus \$42,000 (the normal depreciation on the remainder) for a total deduction of \$342,000.

Without the bonus depreciation, you could only deduct \$84,000 as normal depreciation.

The difference in income tax? \$119,700, at the 35-percent tax rate.

### Expensing

Section 179 of the tax code allows you to deduct the cost of capital equipment up to a certain amount in the current year, rather than depreciating it. Again, this increases your deductions in the year and reduces your taxes.

For 2008 only, the economic stimulus package increases the section 179 amount to \$250,000, double the amount allowed in 2007.

Here is a simplified example of the section 179 deduction:

In 2008 you buy equipment worth \$600,000 and place it in service. If you elect to use only the section 179 deduction, you can deduct \$250,000 of the cost this year. Then, you depreciate the remainder normally.

Using the section 179 deduction by itself is a good deal. The really good news is that for 2008, you can apply both the section 179 deduction and bonus depreciation.

### Combining the incentives

If you bought that \$600,000 machine and placed it in service in 2008, you could combine the two types of tax incentives something like this:

You could deduct the first \$250,000 of the cost under section 179. You could deduct \$175,000 as bonus deprecation, 50 percent of the remaining \$350,000.

You could deduct \$24,500 as normal first-year depreciation on the remaining \$175,000.

# how it works

"If you expect your income to rise significantly in the near future, you may prefer to opt out of bonus depreciation."

So, in this case, you could deduct a total of \$449,500 in 2008. The reduction in taxes: \$157,325 at the 35 percent rate. For comparison, the deductions for the same purchase in 2007 would have reduced taxes by only \$67,025. Your tax savings this year could be almost \$90,000 more than usual.

These are simplified examples, and many factors may be different for different situations; your tax advisor can tell you about the value of these incentives to your company.

### **Fine points**

Why would you not take advantage of these incentives?

"The financial implications of the current stimulus package and future tax code changes can be different for different companies," said Liz Nicolson, government relations director for The Association For Manufacturing Technology, McLean, Va. If your company's income is too low, you won't get so much benefit.

If you expect your income to rise significantly in the near future, you may prefer to opt out of bonus deprecation and take normal depreciation, to defer the benefits to years when you have higher income.

Many states use the income from your federal tax return to calculate your state income tax. However, some states do not conform to this and won't allow the bonus depreciation, said Steven I. Hurok, JD, CPA, Lazar Levine & Felix LLP, New York, N.Y., certified public accountants and business consultants. If yours is a multi-state company, state-to-state differences can create a burden of accounting paperwork that you may prefer to avoid, and opt out of bonus depreciation.

There are many fine points, rules and exclusions within the tax code, and you'll

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have to depend on your knowledgeable tax advisor to guide you.

For example, the section 179 deduction phases out, dollar for dollar, if you put in service more than \$800,000 worth of depreciable items in 2008; when you hit \$1,050,000, the section 179 deduction goes away entirely.

#### How to finance

OK, so you've decided to get more equipment. Unless you've got a lot more cash on hand than most companies, you probably won't be writing a check. So you'll be looking at taking out a loan or leasing the equipment.

Your preference for loan vs. lease may depend on how much down payment you're comfortable with, said Darryl Schoen, president of Manufacturers Financing Services, Santa Fe Springs, Cal.

If you borrow the money, the purchase qualifies for the tax incentives. Some leases qualify and some do not. Check with an accountant on this technical point.

#### Bank loans

Conventional bank loans have financed many a company's equipment purchases.

Your banker will want to know what type of machine you're buying and how it fits into your manufacturing scheme, said Donald Lonnberg, vice president at Beverly National Bank, Beverly, Mass. You'll need to show you have enough cash flow to make payments on the loan, and you'll usually need to make a down payment of 20 percent of the purchase price. Terms at his bank are often five to seven years, depending on the type of how it works

equipment, Lonnberg said.

You'll need to provide financial documents, such as

• Three years of business tax returns, or, if you have them, financial statements prepared by your accountant (profit/loss and cash flow).

- Interim financial statements for the current year.
- Personal financial statements and/or personal tax returns.

• Information about the equipment you're buying, including a purchase-and-sale agreement, if available.

If your company doesn't meet the requirements for a conventional loan, Lonnberg suggested investigating loan programs available through the Small Business Administration (SBA).

#### SBA loans

The 504 loan program offered by the SBA provides funds for purchases and projects in the range of \$500,000 to several million, according to Carol Brennan, director of business development at New England Certified Business Development Corp., Wakefield, Mass.

For equipment purchase, the project may consist of multiple machines, Brennan said, and may include used equipment, an option not available for some conventional financing. A 504 loan for equipment features a low, fixed interest rate over ten years, she said.

A 504 loan provides 90 percent funding for an applicable purchase or project: 50 percent from a bank, and 40 percent from a certified development corporation.

When you want to obtain a 504 loan, Brennan recommended approaching your bank and also contacting your local business development corporation (found on the SBA website).

#### Leasing

Leases are available through finance companies, machine tool manufacturers and other sources.

"Different types of leases have different tax implications," said Schoen. Some leases qualify for the 2008 tax incentives, others do not. Your particular financial situation will determine what type of lease is most beneficial.

A capital lease, sometimes called a "one-dollar buyout" lease, qualifies for the tax incentives, according to Tammy Sherrill, marketing manager at Intech Funding Corp., Monrovia, Cal. a finance company specializing in industrial equipment. You make payments for the term of the lease, and at the end of the lease, you buy the equipment for one dollar (or a similarly small amount).

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# how it works

Most machine tool manufacturers either provide financing directly, or refer you to a finance company. You may find that a manufacturer's own customer finance division is extra-motivated to make your loan/leasing experience as easy as possible, in hopes that you will think of them next time you're in the market.

### Other sources

"The financing markets are going through turbulent times, leaving many to wonder what alternatives they have when it comes to financing," said Brian J. Basil, director, Grant Thornton Corporate Finance, Southfield, Mich. Basil's company, an investment banking group, advises businesses in buying, selling and capital-raising transactions, matching providers with companies seeking funding. "We can find sources they wouldn't think of," said Basil. If bank financing doesn't seem to be working out, Basil said, ask your banker to refer you to an investment bank.

Taking the leap and acquiring new (or new-to-you) equipment can be daunting – you have to gauge the return on investment, find funding and cope with "sticker shock" as you look at prices. But this year, at least, the tax incentives can help ease the pain.

As Intech Funding's Sherrill said, "You can either pay taxes with the money, or buy the machine."

### Continued on next page



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### For more information

### Business assistance:

www.sba.gov/services/counseling

Information on 2008 tax incentives: www.sba.gov/stimulus/

Mazak customer finance: http://www.mazakusa.com/financing.asp

**SBA 504 Loan program:** www.sba.gov > click on ervices > click on SBA Loans > click on CDC/504 Program

#### SBA lenders:

www.sba.gov > click on Local Resources > choose or click on your state > click on SBA Lenders (under the Resources heading)

**Small Business Administration:** www.sba.gov: *Today's Machining World,* Swarf, July 2008

# how it works

#### Contributors to this article:

www.amtonline.org – Association For Manufacturing Technology www.bdcnewengland.com – New England Certified Development Corp. www.beverlynational.com – Beverly National Bank (Beverly, Mass.) www.gt.com – Grant Thornton Corporate Finance www.intechfunding.com – Intech Funding Corp www.lazarcpa.com – Lazar Levine & Felix LLP, CPAs and business consultants www.mfslease.com – Manufacturers Financing Services

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# product focus

 $E^{\rm very}$  other year Chicago hosts the International Manufacturing Technology Show (IMTS); the largest machining conference in America. Featuring cutting-edge equipment, professionals from around the world, seminars, and presentations, IMTS 2008 boasts

1,500 exhibitors and 91,000 buyers from 119 countries. Below is a sample of some of the machines you will see demonstrated during the three-day show. Visit www.imts.com for more information.

### BIG KAISER (right) - Booth #F-2114

Visit BIG Kaiser to see the newest in precision tooling from BIG Daishowa, Kaiser, Speroni, Sphinx, Unilock and more. BIG Kaiser's new EWN Digital Boring Head offers diameter adjustments of 1 micron that can be easily seen on a high-contrast LCD display. Kaiser's EWB-UP heads will also be shown for the first time with inch graduations. These heads feature easy-to-read dials with divisions of .00005 on diameter. Two new angle heads from BIG Kaiser include the ONBS and the Compact Angle Head. Also new from BIG is the OPT1500 Touch Probe. The OPT1500 offers an accuracy of +/- 1 micron. BIG Kaiser will showcase its Unilock Clamping System, designed to reduce setup time and part-processing time.





### Bridgeport (left) - Booth #8032

Bridgeport is introducing the newest members of their GX-Series VMCs -GX 1300 and GX 1600. The Bridgeport GX 1300 and GX 1600 feature a stiff and thermally-stable spindle, a rigid C-frame fixed column design, and fixed pretensioned double-nut ballscrews on all axes. The unique heavy-duty linear guide and truck configuration provides added stiffness, damping and surface contact area. The machines are configured with two guideways and six guide trucks on the X and Z axes; two guideways and four guide trucks on the Y axis. The 30-tool side-mount/swing-arm automatic tool changer (ATC) features random access, bidirectional indexing and 4.5-second chip-to-chip change time.

# International Manufacturing Technology show (IMTS)

### Datron- Booth #B-6564

Datron will demonstrate its new "M10 Power" vertical machining center. Designed for machining in non-ferrous materials such as aluminum and plastics, the M10 offers up to 40,000 rpm with a 3.0 kW high frequency spindle. The toolchanger holds 11 small mills and drills with diameters ranging from .002 to .375 for a host of applications in aerospace, medical, and electronics. The M10's X, Y, Z work envelope is 40 x 28.5 x 9.25.





#### Emuge- Booth #F-2667

At IMTS 2008 Emuge Corporation will showcase a new series of Miniature Solid Carbide Thread Mills designed for machining difficult materials such as stainless steels, titanium, K-monel, hastelloy, and inconel. The new thread mills eliminate the possibility and consequences of tap breakage. Thread mills are available in both 1 flute and 3 flute versions, with the latter being ideal for high volume output needs. The new thread mills eliminate the need for hand tapping during full bottom threading applications. Bottom threading can be performed to within 1 pitch.

# product focus

J6805

### Enshu- Booth #A-8717

Enshu will feature their high-speed JE8oS horizontal machining center with a 300-tool matrix-style tool magazine and 18-pallet Flexible Manufacturing System (FMS). Enshu's JE8oS features 31.5" X, Y & Z travels atop of 500mm pallets within a comparatively small machine footprint. The standard dual-contact 40-taper spindle ramps up to 15,000 RPM in 1.9 seconds and develops 24.8 HP at 1,061 RPM. The JE8oS achieves rapid traverse rates of 3,543 IPM at 1G acceleration.



#### Booth #F-2423

Genevieve Swiss Industries, Inc., will feature high precision tooling and accessories designed for users of Swiss Type machines and the broad range of small parts manufacturing equipment. Included are UTILIS® Swiss made inserts providing repeatability of less than .0004" for turning work 1" diameter and below, Thread Whirling system featuring 12 cutters for higher bone screw production rates. Other tools include a range of micro sized solid carbide slitting saws, floating reamers holders and micro reamers, compact straddle knurling tools and axial feed knurl dies ideal for small parts. In addition, high speed spindles for Citizen Machines, magnetic finishing & deburring units, quick change collet holders and Premium Swiss cutting oils as well as Speciality Swiss Type tooling application solutions.



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# product focus



### Haas Automation-Booth #A-8000

Haas Automation's will showcase the EC-550, their newest horizontal machining center. The EC-550 features a 30 x 34 x 32 work envelope, 50-taper geared-head spindle, dual pallet changer with 550 mm pallets, 50-pocket sidemount tool changer and a built-in 1-degree pallet indexer. Haas will also feature the Mini Mill 2 CNC machining center with extended travels of  $20 \times 16 \times 14$  (xyz) – a 4 increase on each axis.

### HAINBUCH-Booth #2973

HAINBUCH America will unveil the new TOPlus hexagonal mineral cast chuck as well as feature several other recently-developed workholding technologies. Attendees can see HAINBUCH's new B-Top3 chuck, the HYDROK hydraulically-actuated stationary chuck, the MANDO T212 segmented mandrel, and the patented, automatic zero-positioning CENTREX Interface Centering System.



### Hydromat- Booth #A-8435

Hydromat has formed a new division as they introduce a new "Productivity Center," the ICON 6-250. The design of the ICON 6-250 combines flexible machining center principles with Hydromat's rotary transfer production philosophy while incorporating engineering excellence with the finest materials and components. The ICON's part sizes range from a 2" cube to an 8" cube and features up to eight tools in the cut at once with 8 machining units; four horizontal and four vertical units on a fully equipped ICON. These four cutting stations produce 5-sided machining with 4-axis interpolation. Each machining unit is equipped with it's own 10-tool changer equipped for specific applications. A Fanuc CNC controller has been incorporated as standard equipment on all ICON 6-250 machining centers.





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# product focus

### IEMCA- Booth #A-8274

IEMCA will showcase its newest bar feeder and gantry loader technology. The Elite 112 bar feeder will operate on a Star CNC lathe. The Elite can feed bars of 0.8 mm to 12.7 mm. An IEMCA Smart 320 bar feeder will be operating with a Tsugami CNC lathe inside the booth. The Smart is designed for sliding headstock lathes. The Smart 320 accommodates small-diameter bars (3-23mm), and offers automatic remnant recovery and bar-headstock synchronization. IEM CA's compact Prodigy bar feeder will be operating with a Doosan. The Prodigy's dimensions make it ideal for use when floor space is limited. The Automata gantry loader system will also be on display at IMTS, operating with an Okuma Captain L370. The Automata is designed for increased productivity and efficiency of lathes, grinding machines, rolling machines and machining centers.



### Kellenberger- Booth #A-8032

Kellenberger is introducing the Kel-Vita, a universal ID/OD grinding machine that meets the diversity of customer's needs and workpieces up to a length of 1000mm. The Kel-Vita features numerous wheelhead configurations, low friction linear rails and a newly-developed CNC control. The Kel-Vita is offered in three models: Kel-Vita 600, Kel-Vita 800 and Kel-Vita 1000 with the number representing the betweencenters capacity in millimeters. Center height is 175mm for all machines.





### Kurt Manufacturing- Booth #A-8218

Kurt Manufacturing will exhibit its new 45 metric ton Chipmunk metal compactor briquettor, along with the recently introduced larger 125 metric ton model. Both Chipmunk models utilize a hydraulically driven infeed auger that separates most unwanted solids from chips prior to the compacting cycle. The Chipmunk system is designed with a unique mechanical kinetic energy drive. In comparison to 50 hp and up for hydraulically driven compactor systems, the Chipmunk utilizes only a fraction of the power yet produces up to 50,000 PSI compaction force transforming metalworking chips into dense, dry pucks. These pucks are automatically discharged from chute to container ready for shipment to the recycler. A floor tray holds recovered coolant.
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### LNS America- Booth #A-8755

LNS America, Inc. will display the latest technologies in bar feeding, chip conveying, coolant management and workholding products. Products include the Quick Six S2 Bar Feed, which provides quick and easy changeovers of the guide tube system for greater range and productivity. Also featured are the Hydrobar<sup>®</sup> Sprint 565 and 552 Automatic Bar Feeds, which incorporate the latest in bar feeding technology in highly stable, compact designs to boost productivity with increased machine spindle RPM and extended tool life.



### Lyndex-Nikken- Booth #E-2139

Lyndex-Nikken will be showing their VC Toolholder, which operates at up to 40,000 rpm. The design characteristics of the VC result in high accuracy (runout is within 0.00012 at 4xD) and finishes. Dampening of micro harmonic vibrations is achieved with the use of a groove under the nut. A thicker wall at the base of the VC, and its short gauge length, allow for greater rigidity and static stiffness. The VC design features a TiN bearing nut that makes greater torque possible by reducing the friction associated with nut tightening. The VC is available in 30-, 40- and 50-tapers, as well as HSK and Nikken 3-Lock models.

# product focus

### MAG Fadal- Booth #A-8218

MAG Fadal will show on a newly designed VMC 4525 equipped with a 15,000 RPM air/oil spindle and the Infimatic Freedom NC200<sup>™</sup> control. Tolerances to ±4µm  $(\pm 0.00016)$  can be achieved on this machine. A MAG Fadal VMC 6535 HTX, tooled with brazed and solid-carbide cutting tools will be cutting titanium through use of a 50-taper, 6,000 RPM high-torque, air/oil spindle delivering 35.8 kW (48 hp) peak power, 600 Nm (441 ft-lbs) peak torque. It has an X/Y/Z axes travel of 1,651 mm x 889 mm x 787 mm (65 X 35 X 31. Two machines from the MAG Fadal FX Series will be demonstrated: a VMC 3016 FX (with a 10,000 RPM spindle) and a VMC 4020 FX (15,000 RPM spindle), both powered by the Infimatic Freedom NC200 control.





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### Metronics- Booth #D-4268

Metronics Inc., will feature the Quadra-Chek 300 (QC300), a digital readout system that combines multiple video measuring functions in a single compact display unit. Metronics proprietary technology combines video display, cross line generator and automated edge detection. The QC300 features a large, high-resolution LCD monitor for vivid, full color display of parts, 2-D measurements and controls, plus integrated direct camera input that provides "live feed" video display. Parts and video measuring routines are displayed in one line of sight, on one screen. Automated video edge detection is also offered. The QC300 is ergonomically designed with intuitive, touch screen functions and graphical icons, is easy to learn, use, and install.

### MIDACO- Booth #F-2217

MIDACO Corporation will feature a new series of Robotic Part Loading and Unloading Systems adaptable to most CNC lathes and vertical machining centers. Available with a variety of different robot brands, these units can load and unload one or two machines. Mounted on linear guides, the system can be moved out of the way when not in use to facilitate conventional operation of the machine tool.



### Mori Seiki- Booth #A-8400

Visitors to the Mori Seiki booth will debut the NT6600 DCG<sup>®</sup>/4000CS. Mori Seiki's NT6600 DCG/4000CS boasts the world's largest Y-axis travel, as well as the fastest Z-axis rapid traverse rate and tool change in its class. The NT6600 DCG/4000CS contains a B-axis that uses a DD (Direct Drive) motor, eliminating backlash and making high-speed rotation possible. Visitors will also see the NMV8000 DCG, a 5-axis vertical machining center which accommodates work-pieces up to a diameter of 39.7, weighing up to 2,200 lbs. this class of machines, the JIG 1200 actually provides positioning accuracy of .99 mm. Additionally, Mori Seiki will provide information on its new Digital Technology Laboratory Corporation (DTL).

# product focus

### Mitsui Seiki- Booth #8767

Highlights in Mitsui Seiki's booth will be its new Laser Drilling Machine and its lineup of "Heavy Metal" Horizontal and Vertical CNC Machining Centers. The "VLD-300" is a small, vertical, Nd: YAG laser drilling machine for 12-in. cube parts (300 mm x 300 mm x 300 mm in X, Y, Z axes). The VLD-300 offers positioning accuracy and repeatability in X, Y, Z-axes of 0.00004 (0.001 mm). A axis positioning accuracy is  $\pm 6$  arc seconds; repeatability ±3 arc seconds. C-axis accuracy is ±4arc seconds; repeatability ±2 arc seconds. X, Y, Z-axes cutting feed rate is 0.004 ~ 787 (0.1 ~ 20,000 mm) X, Y, Z-axes acceleration rate is 1.5g. Mitsui Seiki partnered with a European laser company for the Nd:YAG version of this new machine.



### NT Tool (below)- Booth #F-2160

NT Tool will display their new SDM Tool Holders that feature one-touch drill length adjustment without the need for tools. Drill projection length can be adjusted by hand rotating the knurled guide ring on the outside of the SDM Toolholder. Axial adjustment range varies from approximately 10mm – 25 mm (0.394 – 0.984) depending on the size of the given tool holder. SDM Tool Holders utilize NT Tool's FDC Collet System which provides guaranteed run-out accuracy to be within 0.0002 (5 $\mu$ m) at 4xD (for AA Class collets). FDC Collets are available from stock in sizes ranging from 0.5mm (0.020) to 22mm (0.866). FDC–OH and FDC–C Coolant Collets can accommodate coolant pressure as high as 1,000PSI either through the drill or alongside the drill.



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### OSG- Booth #F-2154

OSG is forming the future with OSG Form Taps. Form taps displace the work material rather than removing it, thereby eliminating the most common cause of tape failure known as chip-packing. Versus cut threads, OSG forming taps produce smoother and stronger threads at faster speeds. They also last 30% to 50% longer than equivalent cut taps. OSG NRT forming taps work in a wide range of materials including aluminum, carbon steels, alloy steels, and stainless steels up to 35Rc. Please call 800-837-2223 or go to www.osgtool.com for more information about OSG Form Taps.

### Rollomatic- BOOTH #6805

This year, the focus for Rollomatic's new products is on nano-precision and shop floor efficiency. New machines displayed in their booth include: GrindSmart 620XS - 6-Axis CNC tool & cutter grinding machine; GrindSmart 600XL - a fully-hydrostatic CNC tool & cutter grinding machine; GrindSmart 620Xi - a 6-Axis insert grinding machine with Fanuc robot; Nano6 – a micro tool grinding machine with hydrostatic axes; Nano5 – a micro bur grinding machine; ProfileSmart – a CNC Automatic wheel dressing machine; and the VGPro –the next generation of Virtual-Grind Software for the GrindSmart & Nano series.

### Royal Products (right)- Booth #W-2124

Royal Products will be exhibiting their new Rota-Rack, Parts Accumulator. The Royal Rota-Rack, is a lean device that enables any bar-fed CNC lathe to run unattended for extended periods of time. The unit indexes each time a finished part exits the machine, safely collecting and protecting finished workpieces. Benefits of the Royal Rota-Rack, include: the ability to run a second or third shift with existing equipment and no additional employees, first-shift employees are freed up to handle more productive tasks, risk of part damage is greatly reduced, and parts are kept in order for quality control purposes.

# product focus



### Rush Machinery (above)- Booth #B-7221

Rush Machinery, Inc. will introduce a new production-rated Carbide Rod Cut-Off machine for the carbide tool and carbide rod manufacturing industries. The "Auto-Cut," a CNC Carbide Rod Cut-Off Machine, can double the production rate for cutting carbide rod. It has easy to use CNC controls with a touch screen operator interface. Parameters can be quickly set for rod diameter and length. The machine automatically loads and cuts rods from a large capacity magazine. Capacity of the "Auto-Cut" is .055 (1.4mm) to 1-9/16 (40mm) diameter rod, up to 16 long, and comes standard with a flood coolant system.



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### SAV North America- Booth #2345

SAV North America will present its full line of workholding components. The company is a designer, manufacturer, and supplier of standard and custom-engineered workholding solutions. The product line includes material handling devices, precision mechanical and magnetic workholding, demagnetizers, custom sine tables, custom rail milling systems, and more.



# product focus

### Sterling Edge- Booth #F-2637

Sterling Edge, Inc. will exhibit its 3-D Profile Milling Tools. Visitors to the booth will see the company's steel tool bodies with replaceable carbide inserts. The product line includes Ball Nose finishing and roughing tools, Flat Bottom and Backdraft finishing tools, and Button Cutter shell mills. Tools are offered in both US and metric sizes. Special carbide grades and coatings are available to maximize insert life in individual applications, including the cutting of extremely hard alloys such as INCONEL.



### Sunnen (left)- Booth #B-7200

Sunnen will showcase its new SV-310 vertical CNC honing system, which combines multi-spindle machine configurations with wide tooling choices and 762mm/30 stroke for bore sizing of small and medium-sized gas/diesel engine blocks, large gears, air compressors, aerospace parts, refrigeration compressors and similar small or large multi-bore parts. The machine's servo-controlled, straight-line stroke motion is driven by a ballscrew at rates of 1-160 strokes per minute, while a 5.5 kW/7.5 hp spindle provides ample torque for fast metal removal with tools outfitted with metal-bond cubic boron nitride and diamond abrasives or standard aluminum oxide and silicon carbide.

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# product focus



### Toolmex Machinery- Booth #A-8535

Toolmex Machinery will demonstrate its newest MN/CNC lathes. Toolmex visitors will be able to inspect several top-quality long bed MN/CNC lathes under power and discuss a unique program now offered by Toolmex. "Build Your Own Turning Solution" is the cornerstone behind the new Toolmex philosophy, which gives customers the benefit of tailoring each Toolmex lathe to their specific application requirements. Toolmex associates will educate visitors on a choice of performance levels that will best serve their individual production.

### Vega Tool Corporation- Booth #F-2984

Vega Tool Corporation will feature the XTF Forming Tap, a high-performance TiCN coated tap ideal for high-speed tapping of stainless and carbon steels. The XTF Forming Tap's crests are rounded off to promote smooth plastic flow

and prevent cracks and burrs in the root of the internal thread. The XTF Forming Taps feature a high Cobalt HSS substrate, which improves the taps' hardness and heat-resistance. The TiCN coating further enhances these properties, allowing the XTF Forming Taps to perform at higher feed rates than competitive forming taps.

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# think tank

Sudoku Puzzle

		8		2	7				
7		4		1			2		
		9	3						
4				8					
3	2		1				7	1	
				5				9	
	3			1.1.2	8	2			
	6			2		4		7	
			9			5			

Each Sudoku has a unique solution that can be reached logically without guessing. Enter digits from 1 to 9 into the blank spaces. Every row must contain one of each digit. So must every column, as must every 3x3 square.

### Euler's Formula

The result will always be 1. The operation you work out: points – sides + regions = 1 is Euler's Formula. It is an important mathematical relationship and a beautiful example of simplicity amid complexity.

### Who's #1?



**Kevin Albright** of Gear Headquarters in Kansas City, KS: **Scott Michael Driscoll** of Nu-Forge Tool in Lees Summit, MO; **Steve Taylor** of Global Shop Solutions in The Woodlands, TX; **Greg Tetrick** of Cass Screw Machine Products in Minneapolis, MN; **Mark Brown** of Eagle Tool Company in Dyersville, IA; **Ken Lang** of Technical Renovations in Union Bridge, MD; and **Gary Sewell & Lynne Weixel** of G S Design in Tallassee, AL.

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#### ACMES

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

#### B & S and INDEX

B60, 1967 B42, 1974 #2, 1-1/4" Ultramatic 00-R/S 1/2"

#### SCHUTTE

SF 26, DNT, 1989 SF 51, DNT, 1985 (2)

SWISS CNC Star SR-20, 1998

#### **NEW BRITAIN**

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

### DAVENPORT

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

#### HYDROMATS

HB45-12 1996 HB45-16, 1987 CNC 36/100 HSK tool spindles w/2-axis CNC flange and valves w/ 6-axis CNC cabinet. New in 2006- ran prototype work only! Customer never got production job!

#### **MISCELLANEOUS**

Davenport Noise Tamer Acme Recess 3-1/2 RB6 Davenport slotting- \$1,850 Hydromat flanges for HW25-12 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) Davenport chucking package \$1250 Trion air cleaner (10) Davenport cross drill, pos. 3 or 4 Hydromat recess unit New Britain 3rd position slide Davenport chip conveyor Wickman long turn 2-1/4"

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# afterthought

### My Cousin Donnie

Donnie and I were 18, in our senior year of high school. We were both in a silly English class with a nasty martinet of a teacher grilling us on *Catcher in the Rye.* She probed Don with a question about the book and he muffed it. She smelled blood and continued to quiz him and embarrass him in front of his peers. Finally Don bolted, fled the class, and ran out of the school. He ran and ran. The school authorities called his father Jerry, who called his brother Leonard, my father, and they both hurriedly drove to the school to search for my first cousin Don.

Don Graff and I grew up together. We played softball and baseball on the same teams and played spirited ping- pong battles in our basement. We were not close friends but we were cousins. We lived within five miles of each other and had a lot of the same DNA.

### "Maybe I knew Donnie was fragile, but I don't think I thought about it much."

Maybe I knew Donnie was fragile, but I don't think I thought about it much. I was so focused on playing basketball, making grades and impressing girls, Don's psychological issues passed right over me.

I never saw Don again after that confrontation with that bitch Mrs. Rosenthal. Don ended up in the psychiatric ward of Chicago's famous Michael Reese hospital. He stayed for close to a year. I went off to college and Donnie went somewhere else. I do not know where. Thinking about Don was very scary for me. I deleted him from my memory most of the time. I asked my father about him from time to time and he would tell me if he was in a hospital or in a school or working, but the details were sketchy. I occasionally asked my uncle Jerry how Don was doing and ultimately learned he was living alone in Washington, D.C., had a federal government job, and was "getting along."

This satisfied my quite satiable curiosity about my cousin Don.

Jerry died a few years ago at 83. I went to his funeral

and all I could think about was Don. Would he be there? What would I say to him. What would he look like? How would he remember me? Would he remember me?

Don did not show up. I asked his sister Lynn about him and she said he wasn't up to coming to his father's funeral.

The story of Don Graff came up for me because I recently read a brilliant, moving article in the May 31, *Wall Street Journal* about the West family of Portland, Ore., who had their three-year old retarded son Ricky committed to a state mental hospital 40 years ago and were recently reunited with their lost child for the first time.

It was a sad story, not because the parents were ogres and the State's care was bad. The parents were loving people and the boy is now living in a group home and seemingly fairly happy with a job and a girlfriend. His parents now know where he is and can envision him as a man.

As for me and Don, if he called me I would be happy to connect, but after all these years of separation, I don't think I'll initiate the contact. My sister Susan lives in Washington D.C. and whenever I visit her I think of trying to find Don, but then promptly shelve the notion.

It's still too scary after all these years.

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