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# James P Hoffa

on the State  
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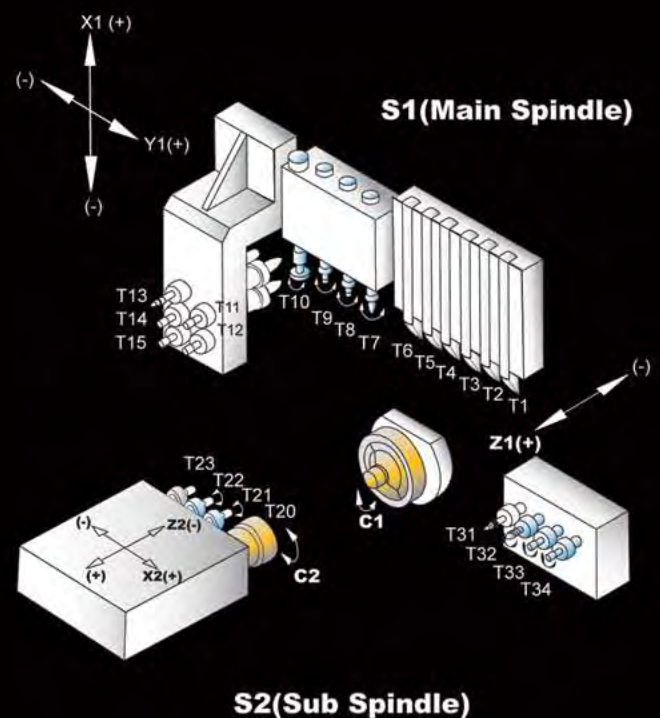


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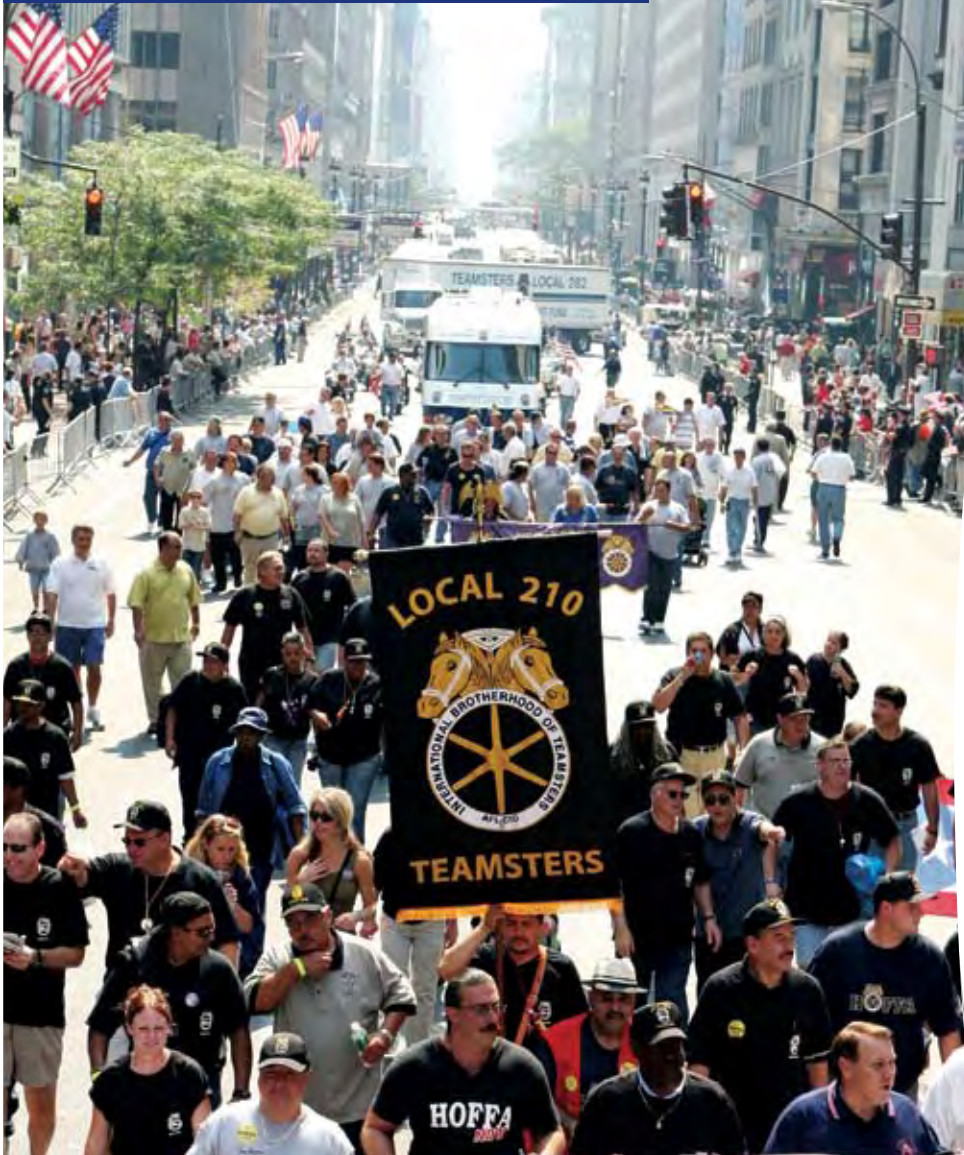


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A Screw Machine World Inc. Publication  
4235 W. 166th Street  
Oak Forest, IL 60452  
(708) 535-2200

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of *Today's Machining World*™ is prohibited. *Today's Machining World*  
is published monthly by *Today's Machining World*, Inc.,  
4235 W. 166th St., Oak Forest, IL 60452.

### SUBSCRIPTION/CHANGE OF ADDRESS:

Basic subscription rate: US\$40 for domestic/US\$55 for international.

### Send address changes and/or subscription inquiries to:

*Today's Machining World*  
P.O. Box 847, Lowell, MA 01853 or email cs-smw@e-circ.net

**EDITORIAL:** Send articles for editorial consideration to Lloyd Graff, Editor.

**ADVERTISING:** Dan Pels, Bill Papp or Dianne Lach  
TMW, Inc., 4235 W. 166th St., Oak Forest, IL 60452.  
(708) 535-2200, Fax (708) 535-0103.

**CPC Publication Agreement Number 40048288**

### Canadian Return Address:

World Distribution Services  
Station A, P.O. Box 54  
Windsor, ON N9A 6J5  
email: cpreturns@wdsmail.com



# editor's note

## Our Dance Card

Doing a face to face interview with James P. Hoffa, head of the Teamsters Union, was like trying to dance a waltz with a partner who is bouncing to the mambo. Hoffa wanted to "Lou Dobbs" me on trade issues from the getgo, which was okay, but I wanted to discuss other things too.

Hoffa is passionate about big business playing footsie with China at the expense of American workers. He feels both Presidents Clinton and Bush sold out America at the behest of lobbyists representing fat cats. This is a black and white issue for him and he believes he is advocating for the good guys, and that American manufacturers should be on board.

He wants big tariffs to even the playing field, scrapping NAFTA and American membership in the WTO. This cure is probably worse than the disease in 2007, though I'm sure a lot of readers of *TMW* would yell Hallelujah, Hallelujah, Hallelujah.

Hoffa is a genial fellow, authentic, a lawyer by training who has run a clean ship since taking over the Teamsters leadership in 1999 after a tough election. I respect his frankness and I appreciate him telling it straight from his point of view.

I want *Today's Machining World* to expose a lot of different approaches, even if I may personally dance to a different beat.

Lloyd Graff  
Editor/Owner

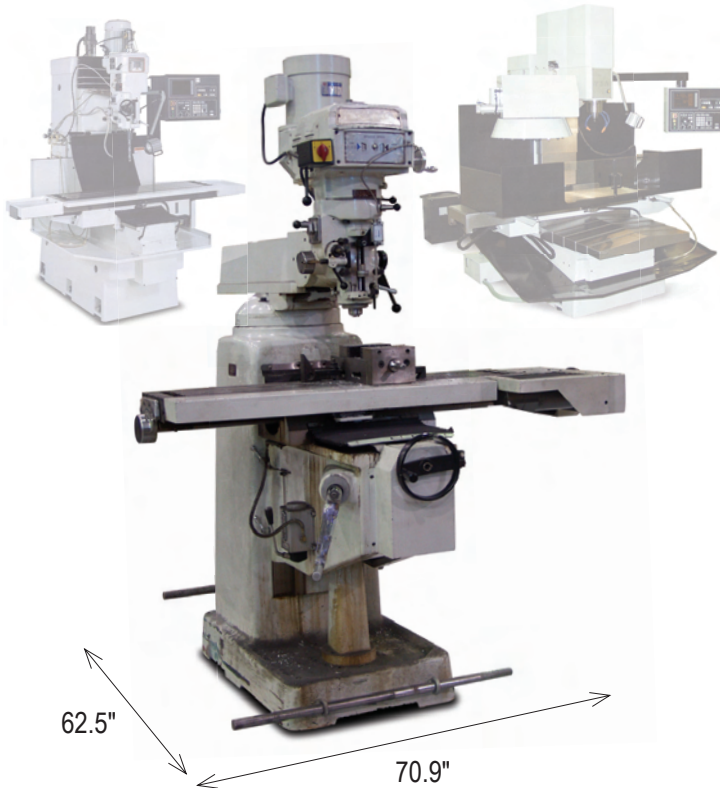
editors note



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# contributors



## Today's Machining World

FEBRUARY'S TALENT POOL.



**John Grossmann** is a freelance writer whose work has appeared in such diverse publications as *Air & Space/Smithsonian*, *Audubon*, *The New York Times Magazine, Inc.*, *Reader's Digest*, *Smithsonian*, and *Sports Illustrated*. He's often happiest writing about food, chefs, and restaurants, which he has done for such magazines as *Cigar Aficionado*, *Cooking Light*, *Diversion*, *Esquire*, *Food Arts*, *Gastronomica*, *Gourmet*, *Saveur*, and *SKY*. He has an undergraduate degree from Dartmouth College and a master's degree in journalism from Northwestern University.



**Russell Ethridge** is a lawyer and the part-time judge of the suburban Detroit community where he lives with his physician wife and three children. During stints as an auto worker, butcher, reporter, and law clerk, he managed to get law licenses in three states, which have been used mostly in civil and criminal courtrooms east of the Mississippi and in the boardrooms and work floors of auto companies and their suppliers, hospitals, and other institutions. He holds no particular qualifications to write this column except that he was a Boy Scout for a while.



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

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### Gear Anagram

Each of the five interlocking gears possess letters at its contact point.  
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Can you make out how many revolutions it will take and what the secret word is?

Send in your answer—quick! Fax Jill at 708-535-0103, or email at [jill@todaysmachiningworld.com](mailto:jill@todaysmachiningworld.com)

### Watts Linkage

The linkage illustrated is a schematic representation of the famous Watt's Linkage, which draws a figure-eight shaped curve. Part of that curve – called Bernoulli's lemniscates – is nearly a straight line.

**Who got it straight?**

Wayne Wilson from DeFoto Engineering in Blair, NE; Stephen Ivey of Rheem Manufacturing Company in Milledgeville, GA; Dennis Holby of Accu-Mold in Latrobe, PA; John M. Weber of Weber Systems, Inc. in Menomonee Falls, WI; Uli Kester of Blaser Swisslube in Rohrer Park, CA; Dick Boldt of E & A Manufacturing in Dundee, MI; Roger Stillman of Metric & Multistandard in Hawthorne, NY; Al McBride of Threading 101 in Menomonee Falls, WI; Jim Brown of Apogee Machining Services, Inc. in Salem, MA; Miles Free of PAPA in Brecksville, OH; Ron May of Hunter Engineering Company in Bridgton, MO; Steven Gredell of Empire Machine Works in Raytown, MO; Jared Crawford, 10th grade student at Wilson High School, Long Beach, CA; David Kudija of California Standoff in Paso Robles, CA; Dave Koepfer of Shur-Lok Corporation in Irvine, CA; Richard Archer of DMG Canada in Mississauga, Ontario Canada and Steve Sutton of Craft Precision in Schoolcraft, MI.

### Framework of Continuity

I read Paul Eisenstein's comments about Ford and would offer this simplistic analysis. If you pin a name of "Crisis" on Ford and GM to describe how they operate and all others as "Continuity" then you have the answer. You gain continuity by focusing on the future and making sure there are no big glitches in the way you do everything. Crisis requires short-term focus only to refocus on the next crisis. Solid brand identity is built within a framework of continuity, not crisis. End of analysis. This name tag will remain with Ford and GM until well-managed companies buy Ford and GM, clean up management and teach the remaining employees the value of continuity.

Dennis Myers  
Laguna, CA

### It's All Your Fault

The postman came late today, but as long as he brought *Today's Machining World* I did not mind. As always, I turned to the your "Editor's Note" (see "The price of anything"). It reminded me of someone's comment the other day: "Are you going to leave your children with a bunch of iron when you die?" Being almost 92, your words of wisdom made me think and take stock, particularly when I went to a 69-year-old machinery broker's funeral last week. I started to get dressed around 5:30, but then I glanced at your "Swarf" column. My alarm went off, but I was interested in the articles, so time did not matter – until it was after 6:30 and my evening widow was on the phone. We naturally missed our 7:00 date, but it was worth it. The show can play the next day, but I would have to wait another month for a new "Editor's Note." That's why it's all your fault I was late for a date. Oh well, there are a lot of widows who like to go out and have dinner. Please arrange to mail my next copy earlier in the day. I enjoy its contents, but it's still your fault that I give up other engagements just to read your words of wisdom and thoughts. Great editorial, Lloyd. Thank you for helping me think.

Austin D. Lucas  
Boynton Beach, FL

### Anagram Clicked

On the Gear Anagram puzzle in "Think Tank" of the January 2007 issue, I thought it would be a good exercise in SolidWorks to figure it out. It took about two hours to draw up all the models (I'm new at S-W) and make a simulated gear assembly with mates expressed as ratios corresponding to the numbers that were given in the puzzle. What I came up with is that  $1\frac{1}{4}$  turns clockwise on the 48t gear will result in the word LEONARDO. When the gear is turned an additional three revolutions cw (and every three after), the word is spelled out again. Thanks for the intriguing puzzle.

D. Gatzemeyer  
Lincoln Tool & Design  
Lincoln, NE

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# Meeting James P. Hoffa

There was a symmetry in my Hoffa interview in Washington, DC, across the street from the Capital. My son Noah had arranged the meeting, and we interviewed the general president of the Teamsters Union as a father-son team. James P. Hoffa is the famous Jimmy Hoffa's son and is very proud of it. The Teamsters are not a family business, but the strong facial resemblance of father and son made me feel like it could have been the 1960s.

Teamsters Headquarters, located on some extremely expensive land on Louisiana Avenue, is undergoing significant remodeling. So is the Union under James P. Hoffa. They have pulled out of the AFL-CIO and formed an alliance with the

Service Workers. They are holding their own in membership numbers – no small feat as unions continue to shrink on most fronts. The Teamsters biggest single contract by far is with UPS. Their agreement expires in 2008 and Hoffa is determined to hammer out a contract well before a strike looms. He was complimentary towards UPS management. His language regarding UPS was not confrontational. It was not US vs. THEM. He wants to show Federal Express workers and management that they can work with the Teamsters and prosper.



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**Miyano** BNE-51S, 1997, Live Tools, Twin Turret, 7-Axis, BF



**Mori Seiki** DL-151Y, 1998, Y-Axis, Twin Turret/Spindle



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## We now have the news that Daimler-Chrysler wants a divorce. Shocking.

One more stupid merger falls apart because the people couldn't get along. The Germans thought Detroit built crappy cars, and the Chrysler folk thought the Mercedes men dissed them. The hapless Dr. Z commercials were so discordant with American sensibilities even Beyoncé hood ornaments could not have saved the lines.

About the only way GM could buy Chrysler would be to trade its interest in Delphi for it. Marrying Ford and Chrysler would be a match between Alzheimer patients. Toyota needs Chrysler like it needs a UAW contract, and Carlos Ghosn now has a toothache at Renault.

Chrysler is as sick as a metropolitan newspaper, which means that there are buyers on Wall Street who smell blood and money, but not in Autoland. Kirk Kerkorian might resurface for a Chrysler redux, but at 90-years-old with his slots at MGM spewing money, what does he need Chrysler's misery for?

If Dieter Zetsche and his comrades are willing to take the hit, Chrysler will be sold to a hedge fund willing to stare down the UAW in the upcoming contract negotiations. This could mean a long strike like Goodyear recently weathered. I think Daimler has no stomach for this kind of war, so they will probably bail out quickly.

Some shrewd and gutsy people will step up for the minivan, Jeep and Dodge truck franchises. Chrysler is not a basket case yet, but the sooner the Daimler Dandies head back to Stuttgart the better.

## I used to buy into the idea

that more is better in just about everything – chewing gum, movies, avocados or buttons – but now I am doubting it. When I enter into a Wal-Mart or a Safeway or even a Blockbuster Video, I immediately feel overwhelmed by the options. If I go to the supermarket for garlic powder I find four different brands, several sizes of cylinders, varying prices per ounce, and no way to make an intelligent buying decision. Is McCormick worth more than the house brand if you are just seasoning hamburgers and chicken?

I've been looking for a bigger conference table/desk/



# swarf

lunch area for my office for a couple of years to replace the small, utilitarian but spartan wooden card table I've been using. Going to Ikea or Chicago's Merchandise Mart would blow a day, exhaust me, leave me utterly confused and nauseous. This I do not need – so the table issue remains tabled – indefinitely.

For the table problem, I need fewer choices, not more, just like garlic. It's the same for magazines and screw machine tooling, too.

In a world that constantly overwhelms us with possibilities, the allure of a few reliable smiling options is irresistible.

In our business lives we often fall into the trap of trying to provide something for everybody. We think that our client is going to shop the world to find exactly what he thinks he wants at the lowest price. But in the real world, that customer is so time-crunched and overwhelmed by this job's demands that he will often jump at the chance to simplify his life with the safe, the reliable, and the smiling option. Too many choices are befuddling and dangerous.

Simplicity, safety and courtesy can often be shown to be cheaper in the long run when factoring in the costs of returns, waste and aggravation.

In the precision parts business, the opportunities lie in building relationships with clients and reducing their preferred options to you and your company. In many cases they really want his themselves, even if they will not articulate it explicitly.

These days I'm shopping in smaller shops with smiling faces – and one brand of garlic. Try that flavor out with your clients, too.





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## In the December "Afterthought"

column I asked for feedback on *Today's Machining World* and also on how people feel about the machining business. I received a bundle of faxes and some phone calls. Thank you.

One thing I learned from the questionnaires is that you want more technical pieces. You want the "inside baseball" of the machining trades. Our challenge will be to deliver that to you in a readable, informative fashion with the caliber of writing in sync with the *Today's Machining World* style. This can be accomplished, and I promise you will see more material on the nuts and bolts of cutting metal as the year goes by.

You also said you want stories about industry leaders and their companies. I believe this means you want to learn from other people's unique knowledge and experience. I will be doing more interviews with the most astute individuals I can find to bring out their smarts and intuition. I have shied away in the past from allowing potential advertisers to use such articles as forums to advocate for their products, and I will adhere to that policy. But I will look for more perceptive people to educate us through this magazine. An interview with a Gene Haas or a Bruno Schmitter like we have done can be extremely worthwhile, even if their companies do advertise, as long as the piece does not extol their products. But the bulk of our interviews will be with hands-on folks

involved with the machining community, whose success or failure can teach us. I gleaned from the responses that you really are reading *TMW* and you look forward to receiving it every month. A majority of the responses said they would pay \$20 per year to get it. Virtually every responder said that "Swarf" was a favorite. Though it's nice to be loved, this is a little scary for me because I do not want the magazine to be Lloyd's rag.

The last question was a query on your feelings about the machining business. The choices were:

1) The best business to be in; 2) A lousy way to make a living; 3) On the verge of extinction in North America; 4) A business I wish my children would go into; and 5) Other—here is what I believe.

Most people who answered me wrote a comment. They ranged from being in love with the business to being totally frustrated. These are some samples: "I would never get my children to enter this industry," "I love my job but I fear its days are numbered," "If you believe you can, you will," "A struggle," "This is a great business if you have your own products," "Machining is the most interesting and the most necessary."

Amen. Amen. Amen.

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# swarf

## How do you adjust your

business plan if your core expertise and your primary equipment is aimed at high volume, high production for North American customers, and that market shrinks year after year?

This is the problem that so many machining and equipment companies are sweating today. To say that I have a silver bullet to solve the problem is presumptuous folly, but I can suggest some approaches.

**Idea #1:** Give up. If you are not emotionally prepared to make shifts in focus and people, the best thing to do is sell or liquidate or quit, and try to do something that you love to do. This is not dishonorable or wimpy. It is courageous and wise to identify a losing hand and fold. It may very well be the financially responsible approach, rather than betting the farm on a pair of deuces.

**Idea #2:** Hire a consultant. When you are playing a game that is uncomfortable for you, find an expert who can give

you some winning advice. Frankly, the consultant knows less than you do about your business, but he or she is good at advising. It will enable you to discover your own wisdom, and then confirm your good sense and push you to action. The shrewdness of the consultant approach, which big business employs every day, is that it gives you the political cover to move out of action-killing inertia and indecision.

**Idea #3:** Hire some new people who have different life and work experience than you currently have in the company. Perhaps you need a salesperson who has fresh energy and different contacts and points of reference. Maybe a product development person who has connections with the invention community. Perhaps a person with different kinds of manufacturing expertise like wire EDM or waterjet or laser could bring a new eye to old opportunities.

**Idea #4:** Move. Big companies do this often because it enables them to clean out the dead wood, which accumulates over a long period of time. The new people in a new location will probably be younger and cheaper and more eager to please.

**Idea #5:** Pick through your current business and find the good customers who you can serve well and make money with. Every business has good customers and they usually have more business available if you spend the time with them to understand their needs. I have a client who was



Art by "Starman"

renting space to a big printer. He found that the company was in need of a repair company for its huge presses. He had a big Lucas boring mill, which was perfect for fixing their rolls. This was the genesis of a nice piece of new business.

The high volume, high precision world is far from dead here, but even if it is nicked up and haggard at the moment, the people serving it still have options. The best ones may not be high volume.

## The genius of the global economy

comes together in Iceland, the island country of 300,000 people in the North Atlantic. It was discovered by Norse explorers who were attracted by its temperate climate. They named it Iceland, hoping the moniker would keep immigrants away.

The genius of the free movement of capital both financial and intellectual enables an Iceland, an Israel, an Ireland to become world players because smart, aggressive people see the opportunities to make money through unique attributes of each place.

Iceland's unique and valued attributes in today's global marketplace are easy access to enormous quantities of geothermal energy, and genetic homogeneity combined with long and meticulous record keeping.

Alcoa has recently invested billions of dollars in aluminum-making complexes in Iceland. With its newest factory now coming on stream in a remote Icelandic location, the country is now one of the world's great producers of the metal. Aluminum requires bauxite and electricity – lots of it – and the history of the aluminum business is the relentless chase for the least expensive ingredient.

Huge quantities of aluminum used to be made in eastern Washington because of the cheap hydroelectric power available in the area. After the utilities found buyers in California who would pay more than Alcoa, Big Aluminum left. Today Google, Yahoo and Microsoft are putting in gigantic server farms in Wenatchee and Quincy, Washington, where Alcoa used to make silvery light metal for the aerospace industry.

One reason why Alcoa is considered a hot takeover candidate today is its Icelandic investment. Iceland is the Saudi Arabia of virtually non-polluting electricity. No carbon

taxes from geothermal. Aluminum is the almost perfect vehicle to export geothermal electricity.

Iceland's other hot commodity is genetic data mining. A few years ago, a University of Chicago Ph.D. from Iceland identified an incredibly valuable asset in the country – potentially as important as cheap electricity. He convinced the country's health services to share the extensive medical records of its remarkably homogenous population with his company, deCODE genetics Inc. He believed that biotechs, Big Pharma and universities would pay mightily for data on disease patterns, which were the purest and most detailed in the world. Reykjavik has now become a hub of the world's genetic research.

The global marketplace is ruthlessly dynamic, but it works brilliantly at times to enable cheaper materials and more transparent DNA for the people of the world.

## One of the utterly fascinating

things on the Web is the Wikipedia; the free, open source, constantly changing receptacle of knowledge that almost every high school kid gleans for his research papers. I was amazed to see that there was an entry on "Screw Machine," but it was hardly worthy of the lofty goals of the Wikipedia. I'm laying down the gauntlet to everybody out there to add your vast knowledge to the "Screw Machine" Wikipedia entry, post your ideas on swarfblog or send a handwritten note to TMW for us to integrate with the current article. Go to swarfblog for the complete blog entry.





Star

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By JERRY LEVINE

# book review

## *Marriage and Caste in America*

The latest data on unwed mothers in the U.S. is pretty grim, and the children of unwed mothers are hit hardest. Regardless of economic status – but especially for lower-class families – kids are directly affected from their birth.

While no one wants to sound judgmental or stigmatize single women who choose to have children, to be truly fair first requires telling the truth. Kay Hymowitz, Senior Fellow at the conservative Manhattan Institute, in her new book, *Marriage and Caste in America* makes a strong case for the value of marriage.

Since the sexual revolution of the 60s, there has been a decline in the traditional nuclear family. Increasingly, children are being raised by single mothers – widowed, divorced or never married. Today's typical single mom is in her 20s, is not college educated, has no career skills and is not prospering. Children raised by such single mothers are at increased risk for about every social ill from drug and alcohol abuse to school failure to crime – and to the perpetuation of the cycle of unwed parenthood.

Race adds confusion to the mix. Today, almost 70 percent of all black children are born to single mothers – including educated mothers – compared to 25 percent of non-black kids. But the real issue is the division in the country between those for whom marriage is an indispensable condition of child-raising, and those for whom it isn't. Ms. Hymowitz warns that this marriage gap will have a profound negative impact on the future of our country.

Marriage carries with it a coded life script, which we only dimly recognize, but one which all married families, whether rich or poor tend to follow. Ms. Hymowitz calls this script "The Mission." The Mission aims to pass on to our children the vision of unlimited human possibility inherent in the American dream.

And while The Mission is usually absent in poor single parent families, the commitment to children is also usually

missing in typical middle-class couples who are living together, according to Hymowitz. Couples living together tend to think more about themselves and having fun. Children often come second, she maintains, whereas married partners begin strategizing their children's development right from birth. Far from strategizing the next generation's success, low-income single mothers are more likely to think their children will

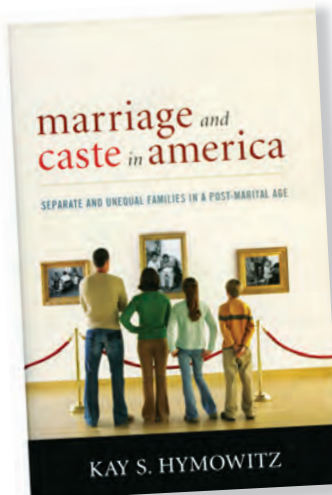
somehow develop naturally, and assume the schools will take care of providing growth skills, Hymowitz declares.

Ms. Hymowitz devotes an entire chapter to Bill Cosby and his formula for a successful life: 1) graduate from school, 2) be married and over 21 before getting pregnant, and 3) do a better job of parenting. As marriage has disappeared from the urban poor, they have lost the middle-class life script, the sequence of events which teach young people the path to a successful life.

Recently there is some slight hint of a turnaround. The Census Bureau reports that between 1996 and 2002 the number of black children living in two parent families increased for the first time since the

1960's from 35 to 39 percent. While rates for black unwed mothers continue to grow, black teenage pregnancy has plummeted. Hopefully, when these women reach their twenties, they will marry before having children. And needless to say, much needs to change for the fathers of all these children, but that might be the subject of another book.

This rather pessimistic book ends with positive message of hope, but the bright future appears to be geared toward the middle-class and not toward the fatherless urban poor. New thinking about children and marriage is crucial for the future of our country.



Comments? You can email Jerry at [jerroldlevine@yahoo.com](mailto:jerroldlevine@yahoo.com)





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WESTEC Booth #3500



## Gear Head

Haas Automation's newest horizontal machining center – the EC-630 – features a 40" x 33" x 35" work envelope, 50-taper geared-head spindle, dual pallet changer with 630 mm pallets, 50-pocket side-mount tool changer and a built-in 1-degree pallet indexer.

The EC-630's geared head couples the motor directly to the spindle through a Haas-built gearbox, which provides 450 ft-lb of torque for heavy material removal, and speeds to 6,000 rpm for finish cuts. A protected load station allows the operator to safely load and unload parts or change fixtures on one pallet, while parts are being machined on the other – keeping spindle run-time at a maximum.

For more information, please contact Haas Automation at 805-988-6922, see them at WESTEC Booth #3200 or visit the company website at [www.haasCNC.com](http://www.haasCNC.com).



## For Singles Only

Index has introduced the C65 CNC Single Spindle Bar Machine, which includes a heavy-duty counter-spindle and Y-axis, and features an optional 1½ inch or 2½ inch bar capacity, a maximum spindle speed of 6300, respectively 5000 RPM at 20KW or 26Hp at 100 percent (60min) duty rating and 105Nm (77ftlbs) torque. Both turret slides and the counter-spindle slide offer a 1g acceleration rate, and rapid traverse rates of 25 and 50m/min (75 and 150 ft/min).

Three tools are in cut simultaneously almost all the time. Both axes are electronically coupled with the second turret (slave- axes). An additional innovation is the Polygon Generating capability resulting from the counter-spindle operating as a polygon generating attachment. The slides are based on a plate-type slide system. The slide surfaces are made of a match between a cast iron plate, and steel strips with ceramic-coated slides.

For more information please contact INDEX Corporation at 317-770-6300 or visit [www.index-usa.com](http://www.index-usa.com).



# fresh stuff

## Heavy-Duty

Hardinge has introduced its SR-Series, positioning it as a heavy-duty chuck and bar turning center with up to 25 percent more torque and horsepower and 24 percent more speed than previous Hardinge turning centers. The SR 150, 200 and soon to be released 250 all feature superior vibration damping accomplished through the use of heavy-duty linear roller guides mounted to a HARCRETE-reinforced cast iron base.

Key attributes of the Hardinge SR-Series machines include Hardinge/GE Fanuc i-Series SR control unit; Fanuc Manual Guide i conversational programming system; Robust spindle horsepower (up to 30 hp) and torque (up to 270 ft-lb) combination; Hard Turning and Hard Milling capability and Exclusive Eppinger top plate option designed for high accuracy, zero clearance tool location, repeatability and live tooling system.

For more information, please contact Hardinge at 800-843-8801 or see them at WESTEC 2007 Booth 3316.



## Play Misty For Me

Five new oil mist collectors from LNS America, Inc., with capacities of 170 – 1250 CFM, efficiently filter water soluble or straight oil coolants to eliminate mist, vapors, smoke and odors. Although designed for wet applications, the devices can also be used in mixed (wet/dry) situations. All five models use a 3-stage filtration system that includes a 3-part pre-filtration cartridge, a centrifugal filter that drains remaining liquid, and a fiberglass extended filter with 99% average efficiency. The patented design enables quick and easy filter replacements that reduce maintenance time to just five minutes.

For more information, please contact LNS America at 513-528-5674, visit their website at [www.LNSamerica.com](http://www.LNSamerica.com) or see them at PMTS Booth # 380.

# fresh stuff

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## It's in the Box

Mori Seiki's new NMV5000 DCG increases machine rigidity with DCG technology and a Box-in-Box Construction, and implements DD (Direct Drive) motors on the B and C axes. The NMV5000 DCG also includes MAPPS III, the latest iteration of Mori Seiki's standard setting control. MAPPS III maximizes the NMV5000 DCG's user-friendliness and offers improved hardware specifications, operability and shorter programming times.

Mori Seiki's DuraTurn lathe line was developed with an extremely rigid body to minimize the effects of vibration and increase accuracy, even over long-term operation. With four models of varying size, DuraTurn machines allow for a maximum turning length ranging from 13.2" to 20.9". The DuraVertical 5100 machines possesses a standard tool storage capacity of 30 tools and provides a tool-to-tool tool change time of just 1.3 seconds.

For more information, please contact Mori Seiki at 847-593-5400, visit their website at [www.moriseiki.com](http://www.moriseiki.com) or visit them at WESTEC Booth #3300.



# fresh stuff



## Tough Stuff

The new GC4230 insert grade from Sandvik Coromant offers improved edge line toughness, boosting cutting speeds and metal removal rates. Sandvik Coromant will also introduce multiple new insert grades. GC4235 provides security in both steels and stainless steels. The CC6060 and CC6065 grades of round ceramic inserts achieve 4-6 times the cutting speed of conventional carbide inserts in medium to roughing operations. CB7025 will optimize cutting results in light to heavy interrupted cuts of case hardened steel.

A new dampened silent version of the CoroMill 390 will make its debut at WESTEC 2007. Through the integrated dampening, the new CoroMill 390 eliminates vibration to improve performance in deep cavities and pockets. This allows cutting parameters to be increased without risk to workpiece quality. The new CoroTurn TR improves clamping stability and security through a robust T-rail interface between the insert and holder.

For more information please contact Sandvik Coromant Company at 201-794-5223, visit their website at [www.coromant.sandvik.com/us](http://www.coromant.sandvik.com/us), or visit them at WESTEC Booth #3250.

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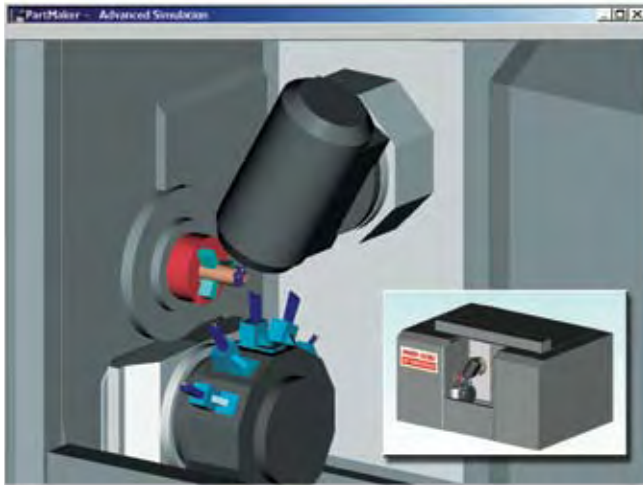


# fresh stuff

## 8 Degrees of Simulation

PartMaker Inc. will unveil its latest release, Version 8 of its PartMaker® CAD/CAM software for CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes. PartMaker Version 8 features the introduction of the PartMaker Full Machine Simulation module which allows the user to view a photo realistic 3D model of the machine for which they are programming a part.

This new simulation module will provide improved error checking and collision detection to PartMaker users by allowing them to perform an even more robust machining simulation than currently offered in PartMaker. The machine model being simulated incorporates machine specific tool holders and attachments to assure that any possible collisions that could occur on the machine will be detected off-line on the user's PC. The ability to detect such problems off-line is beneficial for CNC programmers and machinists because it means they will have to spend less time in setting up new jobs and performing dry runs to assure there are no collisions on the machine.



For more information, please contact Partmaker at 215-643-5077 or visit them at WESTEC Booth #D-3275.



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# fresh stuff

## Win-Win Software

Hurco Companies, Inc., will demonstrate the power of its new WinMax Control software at WESTEC 2007. WinMax will be the standard control software on all Hurco CNC mills and lathes later this year.

Two new machines, VMX42SR and the TMM8, will be on display at the Hurco booth in addition to the specialty VM1 Graphite vertical machining center. In addition to a small footprint, the VMX42SR includes the WinMax control software module specifically designed to simplify 5-sided programming.

The TMM8 is the new Hurco lathe with live tooling. It has an 8" three-jaw chuck and a spindle speed of 4,800 rpm. The TMM8 has a base price in the mid \$70s. Hurco is also developing the TMM10 with a 10" three-jaw chuck.

For more information about Hurco, go to [www.hurco.com](http://www.hurco.com), call 800-634-2416, visit them in Booth #2500 at WESTEC.



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# fresh stuff



## And Away Rego

REGO-FIX ER will feature the powRgrip® collet system and the REGO-FIX Swiss Screw Cylindrical Holders at WESTEC. The REGO-FIX powRgrip® collet system utilizes a toolholder and collet that are joined through the application of six tons of clamping force. The powRgrip® uses the mechanical properties of the holder material to generate a gripping force with a run-out below 0.0001". The system can press in a tool or remove it from the holder in less than 10 seconds. REGO-FIX will also showcase its ER collet system, which achieved the status of DIN standard 6499 in 1993. It is used for a variety of machining applications including boring, milling, reaming, tapping, and grinding. The REGO-FIX ER collet system is available in two levels of precision, standard and ultra-precision (UP). Both levels range from the ER 8 to the ER 50 series and are available in standard and metric sizes. This broad selection of ER collets can accurately clamp tool shanks ranging from 0.2mm (0.0079") up to 3w4.0mm (1.3386").

For more information, please contact REGO-FIX at 317-870-5959, visit the company website at [www.rego-fix.com](http://www.rego-fix.com), or visit them at WESTEC Booth #2428.

## Realm of the Sensors

Perceptron, Inc., has announced the ScanWorks® V5™ sensor. A scanning rate of up to 458,000 points per second allows users to measure areas faster while maintaining a dense point resolution of approximately 14 microns (0.0005"). Specifically designed for hand-held use, the V5™ also projects the sensor's field of view onto the target scanning area so the user can visualize the best scanning strategy. The V5™ sensor is light and compact enough to facilitate measurement in even the hardest-to-reach areas, while its amazing dynamic range enables the sensor to produce accurate measurements on highly reflective and dark surfaces in all lighting conditions without the need for prior surface treatment.

For more information, please contact Perceptron at 734-414-6100 or visit the company website at [www.perception.com](http://www.perception.com).





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James P. Hoffa

An interview with James P. Hoffa,  
president of the International Brotherhood of Teamsters Union.

# State of the Unions

WITH LLOYD AND NOAH GRAFF

**LG:** I'm curious about growing up in Detroit in a union family and what memories you have about dinner table conversations.

**JH:** I had a wonderful childhood. I had a wonderful father, a wonderful mother, great sister. My sister is a circuit judge in St. Louis. My early memories are talking union over the table, but also I remember in the '50s the whole family getting in the car, going to eat dinner somewhere and then going for a Sunday drive. UAW used to have a radio program, and we'd listen to it in the car. Invariably we'd end up on a picket line where my dad would say, "How's the picket line going?" We'd end up pulling our car up and visiting with the pickets. I'd get out at 8 or 9 years old and be walking a picket line. I remember going to union meetings at an early age, sitting in these smoke filled meetings back in the

late '40s, '50s and '60s. I remember at 18 years old my father swearing me into the union.

**LG:** Our readers are people in the machining business and people on machining floors, small and large manufacturers of the precision parts industry. I'm interested in how you see the intersection between the interests of the Teamsters and manufacturing.

**JH:** I think there's tremendous intersection, because the Teamsters Union is one of the most outspoken unions with regard to the unfair trade practices going on. The fact is that American manufacturing is being eliminated by unfair trade deals where you have exports from China and Japan, South Korea, the Far East, India – driving the American manufacturers out of this market. That's because of the trade policies being pursued by this

James P. Hoffa





Teamsters march in Atlanta.  
Photo: Jim Saah Photography

administration and the Clinton administration. Both have one thing in common – basically unfair trade. Open the markets to everybody in the world and let them have trade barriers where they can create export economies that basically attack American industry with unfair exports into this country.

**NG: We certainly see it.**

**JH:** You see it every day, whether it was NAFTA or whether it was WTO, which Clinton did. To ship auto parts into China you face a 30 percent tariff. You can't ship auto parts into South Korea. They have completely protected economies, but they have complete access to our economy. They ship stuff over by boatloads. Hyundai ships from South Korea, they put ramps down and drive thousands of cars off a ship in Baltimore. Now there's no ship of Ford Focuses going over to Seoul, Korea, because they won't allow it. Because of the trade bills they've been able to sucker us into, and we've been stupid enough to do, these companies have created an atmosphere where American manufacturing is at a disadvantage.

**LG: What would you do?**

**JH:** I would completely change the way we trade. It's very simple. The first thing you do is scrap NAFTA. There's a 60-day termination. You write a letter and end it and negotiate it all over again.

**LG: What would be fair?**

**JH:** The answer is equal access. Let's take South Korea and equality; you trade with me; I trade with you. If you have access to my economy, I have access to your economy. The trade deficit is crazy, and it's getting worse because we have the wrong trade policy. And the answer is: Anytime we have a trading partner that's getting out of

line, we basically cut him off. Right now China's great idea is to flood our markets with a cheap car. It'll probably be a pretty good quality car called the Chery, and they're going to start shipping these in. Thousands of these cars will come here and they'll sell them for \$6,000. Americans will buy them and they'll devastate our already hurting auto industry. There should be a \$4,000 tariff on those cars. You've got a \$6,000 car; it should go for \$10,000 so they don't have an unfair advantage over our products.

**“I would completely change the way we trade. The first thing you do is scrap NAFTA.”**

Number one, they won't let our cars into their country. They're smarter than we are. They go to General Motors and say, “Oh, you want to do business in this country? Build a factory.” GM has to build a factory and put all the Chinese people to work and then they're going to have a Buick Century. Oh that's great. Great for them. Who won that battle? Did General Motors win? What are they going to get, a small piece of every car sold? How does that benefit our economy?

**NG: A lot of people take the consumer point of view and say, “Oh, we're thrilled to get that \$6,000 car.”**

**JH:** That's the Wal-Mart theory.

**LG: Can I move the topic slightly? You talked about UPS, your largest company you deal with. I saw today that UPS showed smaller earnings this past quarter because they said manufacturing was off in the United States. You have**

Photo Below: James P. Hoffa with presidents of rail unions that merged with the teamsters. Photo: Jim Saah Photography



**a contract coming up in 2008. With 250,000 UPS workers, how do you prepare for the negotiations?**

**JH:** We have a UPS division and a UPS director by the name of Ken Hall, who is the lead negotiator. We're in negotiations right now. We polled the members and said, "Are you interested in early negotiations?" And about 98 percent came back and said, "Yes." We think we're going to get an excellent agreement. UPS is an extremely well-run company. They are heavily unionized and yet make incredible profits. What does that say? It says, "Good management." Working with a good union, with the right flexibility, it can grow, and we are growing our membership at UPS every day. UPS bought a number of companies including Overnight, which is now UPS Freight. We're looking forward to having a Card Check agreement with them and getting 20,000 new members. We have a very good relationship with UPS. They are making a lot of money, heavily unionized, paying good wages, good health care and good pensions. It can be done in America.

**LG: When would you get involved in UPS negotiations?**

**JH:** When we get to the end, I'll be there, sure. I get a daily report of what's going on. They're negotiating out by Dulles Airport right now.

**LG: FedEx is not union?**

**JH:** FedEx is not union, but the pilots are. UPS is under the National Labor Relations Board. For some reason FedEx was able to get in on the Railway Labor Act. The only way you can organize that company is do to it system-wide. With the turnover in that company, it would be difficult, but not impossible. One area that the NLRB (National Labor Relations Board) cut out is FedEx Home Delivery. At FedEx Home Delivery we just won an election, I think, of 100 people. It's the first time we've organized

FedEx, so I was really excited about it, and we're getting a lot of interest from people in this area.

**NG: Could you explain the Card-Check Bill?**

**JH:** The Card-Check Bill is what we call the Employee Free Choice Act. If the workers come and show that they have 51 or 58 percent of the cards, you're recognized. Makes sense to me. Why is that good? There's so much intimidation of workers, so much fear in workers. The way they do things right now at the NLRB is not working. Number one, a large corporation with an unlimited budget can take on some local union that wants to organize a 100 people at a warehouse. They have so much money, they can tie that up in the NLRB forever. The other thing is the intimidation. If it's a manufacturing company, they tell me, "If you guys don't get rid of the union, we're going to move to Mexico. We're going to move to Cambodia." They actually say that.

**LG: The counter to that is the argument that there will be intimidation of the workers who vote against the union.**

**JH:** Well, I wouldn't buy that. Either they sign a card or they don't sign a card.

**NG: I interviewed a non-Teamster, independent operator truck driver who owns his own truck. We asked him, "If you got a chance to talk to Mr. Hoffa, what would you ask him?" And he said, "What would I gain by being part of the Teamsters?"**

**JH:** Well very simply, he would have an organized life. He wouldn't have to be working 60-70 hours a week with all kinds of unpaid down time. If he owns his own truck and gets in a wreck or the truck breaks down, what happens to him? What if he still has a truck payment? Disaster. What if he gets in a terrible accident and can't work for two years? What happens to his mortgage payments, his car payments, his truck payments, his insurance payments? Does he pay workman's compensation on himself? It's a tremendous burden. I know independent truck drivers, and there's a certain type of people that think that life is romantic. But the reality is they have a tremendous dislike of being dictated to. A driver will be called at 2:00 in the

morning, drive all night to pick up a hot load at 6:00 a.m. in Richmond, Virginia. Then he gets there and hears the load's not there and won't be there until 8:00 at night. He's got to wait. He doesn't get paid. He only gets paid by the mile when he's running.

Now there's a cowboy-type of person who says, "That is the life for me." We certainly see them as brothers of the road with our Teamsters. I have the ultimate amount of respect for independent truck drivers. But their life is fraught with peril because if they have one thing go wrong, they are really in trouble. I have a relative who started driving a truck that way who finally said, "It's not for me because it's just too much down time. When I compute the cost of my truck, the amount of hours I spend, I'm not making much money. After I pay for my truck, pay for my fuel, pay for the tires, pay for the oil, pay for workman's comp, I worked 70 hours and I made a relatively small amount of money."



**LG: Why do you think the over-the-road trucking business has gone virtually all to the owner/operator?**

**JH:** Well it's just deregulation. But you do see the JB Hunts, the Swifts, the Werners, those really big companies rolling down the highway. You're working on the highway, but the truck is owned by the company. There are variations; you can own your own truck or just





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lease the truck. Or you're completely independent, where you own the truck, and you do everything. The other variation is you are non-union but working for Swift. They give you the truck, but then you run mileage.

**NG:** It appears most of organized labor has lined up with the Democratic Party. Traditionally the Teamsters in their history have been aligned with Republicans. Do you think it's wise that virtually all of organized labor is walking with the Democratic Party or is it in your interest to play both?

**JH:** I think that's one of those things that made sense 20 years ago. The Democratic Party basically follows ideas that are more oriented towards the middle-class and workers. You have seen a change in the Republican Party as just this party of rich people. They basically are the

“The Democratic Party basically follows ideas that are more oriented towards the middle-class and workers.”

cheap labor boys, the WTO people that want to move capital around the world. They are completely devoted to that. The terrible tax cuts that Bush enacted have gutted our ability to pay for services. He's privatized most of the war in Iraq. Today we don't have any cooks anymore. He goes to Halliburton to make food for people. The Republican Party, especially since Ronald Reagan, is so pro-business, so anti-labor, so anti-worker that they no longer can compete for the loyalty of working people.

**LG:** Tell me about getting your first union card.

**JH:** I worked at a military base in Alaska back in the 60s on a ballistic missile system Ford Philco had just put in. It's still there – they had three giant screens, each one the size of a football field, and we could see the missiles coming over the horizon. The job was in the middle of nowhere, but it was the greatest job I ever had. We had 24 hours of daylight up in Alaska in the summer, so we worked nine hours a day, six days a week, 54 hours a week.

## Checking in on Card-Check:

The role of the union, the National Labor Board and the Employee Free Choice Act.

Card-Check is a method of organizing employees into a labor union in which employers enter into an agreement to recognize the unionization of its employees if a majority of employees sign authorization forms, or “cards.”

The signed cards are then submitted to the National Labor Relations Board, known as the NLRB. Under current U.S. law, the employer may choose to not to recognize the union as its employees' collective bargaining representative, even if it has been found that a majority of employees have expressed their intent to join the union under Card-Check, also called majority verification process.

The Employee Free Choice Act, introduced in the United States Congress in 2005, would require that the NLRB recognize the union's role as the official bargaining representative if a majority of employees have authorized that representation via card check.

Among the advantages of the Card-Check process over traditional NLRB elections cited by organized labor groups are that it avoids the anti-union campaigns that can accompany elections and that it leads to healthier workplace relations by avoiding a direct confrontation between employer and its employees. Critics of card check organizing argue that the process takes away from employees the right to vote for or against the union in a secret ballot.

From Wikipedia.com.

They had an airplane there, so on our day off everybody put in \$50 and we would fly this airplane to go fishing. We'd catch huge rainbow trout. When I think about it, these guys didn't know how to fly. It was unbelievable. Those are the great memories I have.





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# The BY JOHN GROSSMANN Mormon Missionary



Mormon Mission



Pilkington Metal Finishing employs 110 workers and does upwards of \$5 million a year in aluminum anodizing work out of a 72,000 square foot building five minutes from the Salt Lake City airport.

From his desktop computer, with the help of specially designed software, company founder and president Van Pilkington can monitor and track in real time, the jobs in progress of each of his production workers.

But it wasn't always so. The business, he recalls only too well, began a quarter century ago about as modestly as an enterprise possible can: in a cinderblock garage that he rented for \$145 a month. With nobody but himself on the payroll, Pilkington loaded jobs into the back of the family pickup after his afternoon classes at the University of Utah, did them himself on the little tank line that he and his father had set up in the garage, delivered them a day or two later, then scurried home to type up invoices.

His father, who'd retired from the Air Force and worked for a Fortune 500 company that supplied chemical and process equipment to the metal finishing industry, had helped with \$4,500 in seed money – and more importantly, suggested an eager account – a medical devices company that needed many of its expensive parts refurbished. “This is something we don't want to do in-house,” the company's purchase agent told Pilkington. “It's a good opportunity for an enterprising young man like yourself.”

Then in his early twenties, a year short of graduating with a degree in organizational communications, married, and already a father, Pilkington knew absolutely nothing about metal finishing. But he knew plenty about himself. Thanks to a uniquely challenging and rewarding two-year experience, he'd already braved the unknown and successfully tested his mettle. Pilkington had every reason to believe he could rise to this challenge too.

## On a Mission

Like many young Mormons, he'd volunteered for missionary service at age 19. Two years later he returned from his mission in the Netherlands changed in many ways. This volunteer service, familiar to most Americans as a duo of well-groomed young men standing at the front door in white shirts and dark pants, has a clear function: spreading the message of The Church of Jesus Christ of Latter-day Saints and bringing new members into the fold. But for most of the 50,000 or so who volunteer each year (a small fraction are women; their postings last 18 months and don't start until age 21), this stint away from home, potentially anywhere in the world, affords an extraordinary time of personal growth. An entrepreneurial spirit and budding business acumen are not intended outcomes of LDS missionary service, but they are the collateral benefits for many who serve.

It's not by accident that the first chapter of a new book, *The Mormon Way of Doing Business* (Warner Books, 2007), is titled “On a Mission.” The book's author, Jeff Benedict explains:

“The missionary experience in the Mormon Church comes in the formative years of a young man. At age 19, most American boys are headed to college, to jobs, to the military; they're exploring alcohol and women. In the Mormon Church, young men are sent all over the world, and for two years they are intensely focused on a disciplined lifestyle that prohibits dating, entertainment, work or employment, and demands a disciplined focus on service, without compensation. You are an ambassador for The

# Advantage



**Left:** Van Pilkington  
**Center:** Diversity in Labor  
**Right:** Managers & employee working together.

Photos courtesy of Pilkington Metal Finishing

Church of Jesus Christ of Latter-day Saints, and the experience of literally wearing a badge on your chest each day with your name on it and the church's name under your name instills in you a sense of responsibility and obligation that is very foreign to most 19-year old adolescents."

Benedict, whose own Mormon missionary experience sent him across the continent, from Connecticut to Seattle, Washington, continues: "Conventional wisdom would say that when these guys come home at age 21, they'd be behind in schooling and work experience, but in fact, in two years they have gained an enormous competitive advantage, especially if they are going to become entrepreneurs, businessmen or any sort of professional, because they obtain a set of experiences and skills that cannot be replicated in any institution of higher learning or business school. Skills like planning, discipline, drive, commitment, perseverance.

"If you don't have perseverance, you're not going to be an entrepreneur, because entrepreneurship is all about overcoming failure and hurdles and sticking to dreams and imagination - seeing it through. And a mission is two years of obstacles, hurdles and overcoming rejection. Selling religion is the hardest sell job in America. If you can do that for two years and come away with a smile on your face and your chin up, you can do just about anything. That, and the fact that you learn how to relate to people on a mission, because whether you go to the slums of Brazil or the streets of London or to China, you are going to understand people and what it means to be on their level."

The top executives featured in Benedict's book hail from big business [see box] and major institutions like the Harvard Business School. But what might be called the Mormon missionary advantage, as we'll see in the case of Van Pilkington and two other Utah-based entrepreneurs, also benefits small businessmen.

### Can Do Spirit

Pilkington began developing an entrepreneur's essential "can do" spirit in "must do" circumstances the moment he landed in the Netherlands. He'd just completed the customary two-month's mission training and language tutoring (preparing the way for leading LDS lesson sessions

in the destination country). But upon entering the Amsterdam airport terminal he froze: "This can't be the language I've been studying."

Of course it was – and his challenges and lessons had only begun. One of the first things he learned was how effectively his mission organization kept all 180 missionaries on task. Heading the organization was a president who traveled with two assistants, missionaries nearing the end of their tour of duty who served as "life mentors" to newer arrivals. Zone leaders oversaw the training and teaching and monitoring of roughly three-dozen missionaries. Beneath them, district leaders were charged with five or so missionaries. Each newly arrived missionary, or "greenie," was assigned to an experienced companion. As tours ended and new arrivals came, assignments changed and the better performers stepped up to become district and zone leaders.

**"A mission is two years of obstacles, hurdles, and overcoming rejection."**

"The mission organization was very effective at communicating messages, at keeping us informed. We knew what our tasks were and exactly what was expected of us," says Pilkington, explaining the daily regimen began at 5:30 a.m. with individual prayer and scripture study, then study with your companion. "We were out the door by 9 a.m. and home by 9:30 at night, when we reported to the mission president. By 10 o'clock the mission president knew where all his missionaries were.

"It's quite powerful to be in a group that acts in accordance with a set of principles that they have chosen to align themselves with. Then you police yourselves as a group to see how well you're holding to those sets of promises you've made – that's where the growth comes from and the power of missionary work comes from," he continues, explaining that years later, when his business started to grow and his workforce swelled, he decided to

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build his company from a similar mold. This has proved essential, as, over time, his workforce has taken on a United Nations cast, relying heavily on recent arrivals from Vietnam, Laos, Chile, Argentina and Iraq. Stitching this quilt of many nations together, he explains, is “an underlying degree of respect” that starts at the top, with management.

“Borrowing a bit from the Boy Scouts and my church background, we’ve created a quality statement and an employee policy statement that emphasizes integrity, honesty and respect, and the importance of keeping commitments,” he continues. “It can be in their native language, but I make everyone memorize them. And when we get together we rehearse them.”

## Drawing From the Well

Sitting as he does, atop an organizational structure that bears a strong resemblance to the districts and zones of his missionary experience, Pilkington leads in the manner of his Dutch mission president – down to knowing, via his special computer software, the equivalent of where all of his charges are at the end of the day.

He explains that his missionary experience, though decades in the past, is such a part of who he is, that even today it provides a well of experience that he can draw from for guidance whenever a problem arises, invariably asking himself, “How would I have dealt with a situation like this as a young missionary?” Running a successful business, Pilkington has learned, “involves processes – and processes can be improved. You can get better. That is really fundamental to a Christian ethic – the belief that you can improve and change and get better.”

Eric Forsberg, who could not be happier with his career change from technical writing to manufacturing parts for Jeep enthusiasts, credits his Mormon missionary experience not just for empowering such an entrepreneurial leap of faith but also for the ever growing success of his Logan, Utah, based company, Novak Conversions. With his father Dewey, an aerospace industry machinist, Eric Forsberg, Novak’s vice president, bought the company in 1999 after the death of its founder, Lloyd Novak. The much-loved Novak had long served Jeep aficionados by manufacturing transfer case adapters and other specialty parts to enable performance enhancing conversions as transmission and engine replacements. Forsberg, owner of a ’69 CJ-5, had been one such loyal customer, someone, he admits, “who could never get my mind off Jeeps.” When he learned on a message board that Novak had died and that the business was faltering, Forsberg decided to forsake a career he enjoyed but wasn’t passionate about, for something that did light his fire.

“I learned to listen to and follow my heart on my mission-

ary experience,” he says, explaining that his experience in Switzerland and France from 1991 to 1993, which pushed him “to the limit” and taught him how versatile he could be, also gave him the confidence to pursue his hobby as a business. Since acquiring Novak’s good name and client list and a small inventory of 85 different parts, the Forsbergs have grown company revenue five-fold and now manufacture more than 400 parts.

Novak Conversions sells worldwide to a wide array of customers – and does so more effectively, Forsberg believes, because of his time overseas as a Mormon missionary. “We have a lot of customers and suppliers whose cultures span the spectrum. We have interactions with PhD types and many individuals who maybe didn’t finish high school and then everyone in between.

“I learned in Switzerland,” he continues, “that when I discussed religion and beliefs that it was best to find the common thread and then build from there. I think this translates well into business – machining, Jeeps, or anything else. The more kinds of individuals our people can comfortably sell to, source from, or partner with, the better chance we have of running a healthy company.”



The anodize gang at Pilkington Metal Finishing

## Problem Solving Skills

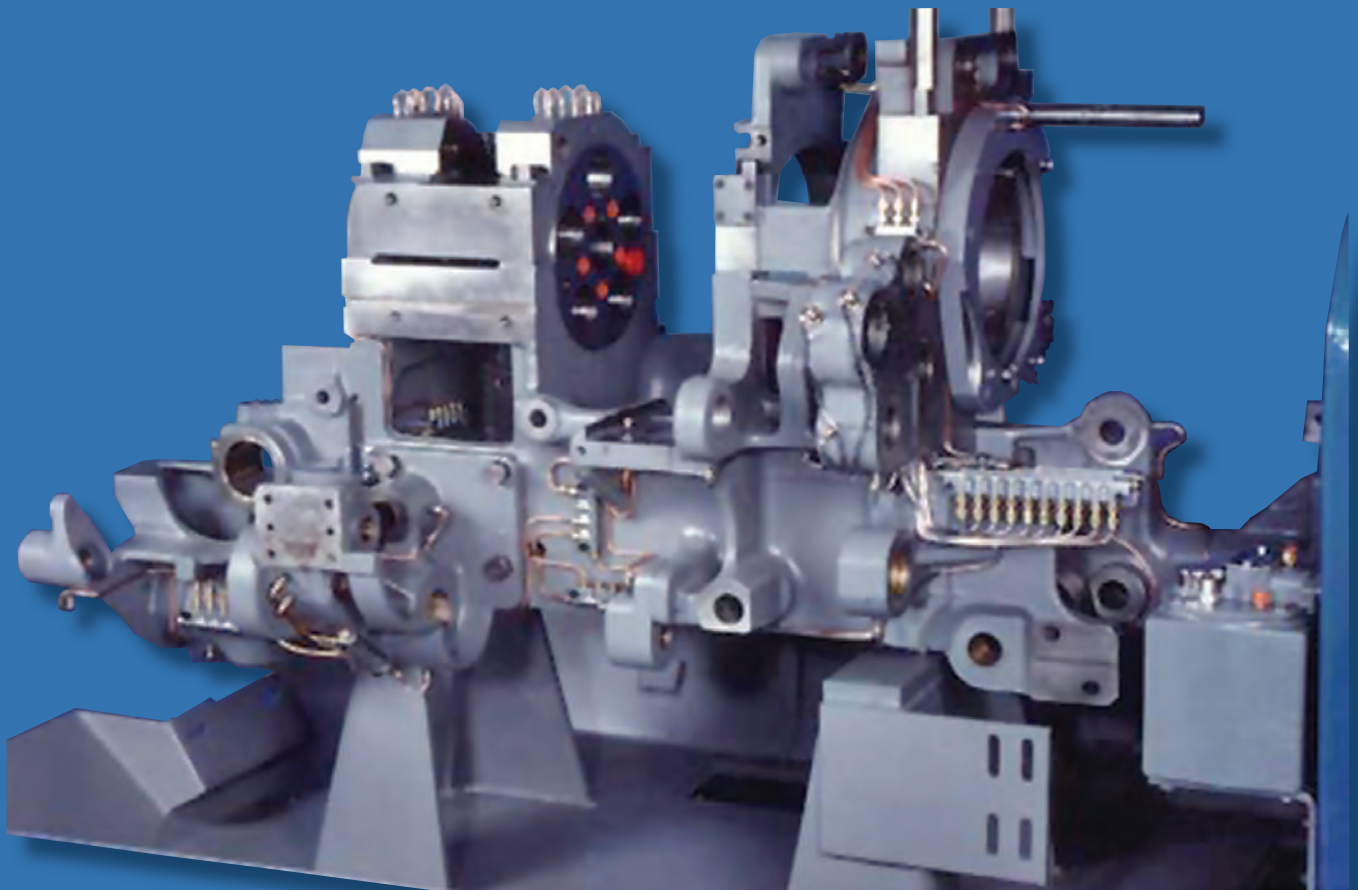
Brad Simons, founder of Cottage Homes, a construction company in Draper, Utah, also believes that he learned many of the necessary skills and attributes of an entrepreneur on his Mormon mission – which forced him to mature and adapt under especially challenging circumstances. Arriving in Bahia Blanca, Argentina in 1981, to a country ruled by a military dictatorship, the first thing he saw was the barrel of an M60 machine gun pointed at the door of his plane – a gun in the hands of someone who looked no older than 12. “I live in the West and I hunt. I’ve shot guns all my life,” Simons says, “but I wondered, ‘What the heck have

Photo courtesy of Pilkington Metal Finishing

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I gotten myself into?”

Every day was an exercise in problem solving. Simons spoke very little Spanish, his missionary companion spoke no English, yet they had to communicate and work together. When the Falklands War hit the country later in his stay and wartime rules made it impossible to knock on doors, Simons had to adapt.

Far from his mission president, who in those days was reachable only by telegram, he learned to take initiative. By then in a leadership role, Simons rode buses to neighboring towns and held training sessions for Mormon elders and visited with their local members. “You’re six hours away from your leadership and you’re making decisions. You get used to it. And I think that’s what an entrepreneurial spirit is: You have to make your own decisions, want to jump out there and be in charge.”

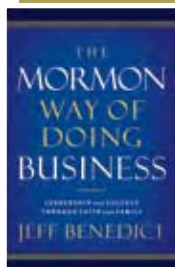
His missionary service provided indelible lessons in interpersonal relations that now aid him in running a company that built 40 homes in 2006 and expects to build twice that many this year. “When you’re sitting on a dirt floor teaching someone a gospel lesson, there’s no heat and you’re cold, you have to love that person for who they are. That gives you a tremendous amount of empathy,” he says, citing a necessary entrepreneurial skill for “rallying human resources and creating a team that can excel.”

Simons’ two year stint in Argentina also taught him something else that he finds crucial to his success in the homebuilding industry, initially with a small company he helped expand to a national power, and now with Cottage Homes, which he co-runs with his brother Kyle. The Mormon missionary experience, he explains, is a very single-minded pursuit. “You don’t worry about money. You’re celibate, so you don’t focus on girls. You’re not thinking about your college education. You’re able to focus 100 percent on the missionary work.” Simons points to that bred in the bones ability to focus as just as important to running a business. “I’m in the process of starting an insurance business with some friends of mine. We’re trying to do it while running our other businesses.” His solution? “I have to turn off the world – turn off the phones, the pagers. Technology is great, but it has complicated our personal lives. I need a half-day to think, so I’ll often go home, rather than stay at the office. I’ll turn off my cell phone. The house will be quiet, and then I can really focus on the task at hand.”

Simons, who serves on the National Association of Home Builders, often running training sessions, has found that the trade organization’s three weeklong meetings each year offer him additional opportunities for this kind of intense, uninterrupted focus. When others hit a host city’s night-spots after dinner, Simons generally retreats to his hotel

## Mission Possible:

JetBlue’s David Neeleman comments on his mission experience.



Someone who had always struggled in school, Neeleman didn’t yet know that he suffered from the now much more widely recognized learning disability known as Attention Deficit Disorder. “I had always thought I was kind of stupid or slow. I got down there to Brazil and I was on a regimented schedule – morning study

and things I had to do, the devotion aspect of being totally committed to a cause, and I really excelled in that disciplined environment,” he says. “For the first time in my life I felt like I could succeed. I got to a leadership position and was helping run the mission. When I came home after two years I felt completely different about myself and my prospects, my confidence level, and how I felt about people, more compassionate.”

An egalitarian CEO who spurns such typical corner office perks as car services, Neeleman is known for occasionally joining his flight attendants greeting and serving JetBlue passengers en route. “Missionary service is all about service – 100 percent giving of yourself,” he says. “Leadership is all about service. There is dictatorial leadership and then there’s servant leadership. If you’re a servant leader, people want to follow you a lot more than if you’re a dictator. Everything I know about service I learned on my mission.”

From *The Mormon Way of Doing Business* by Jeff Benedict.

room. The TV stays dark as he drafts business plans or contracts, or addresses nagging business issues.

“On your mission you’re really taught to study, as much as two hours a day, and the only one thing you’re studying is the gospel,” he says, explaining that having learned that discipline in adolescence, he now finds it easy to work well past midnight, and does some of his most creative and analytical work in such sessions. The only trouble, he acknowledges, is the bated breath back in the office that greets his return from such trips. Everybody’s wondering: “What’s he going to have us change now?”

Photo courtesy of Warner Books/Hachette Book



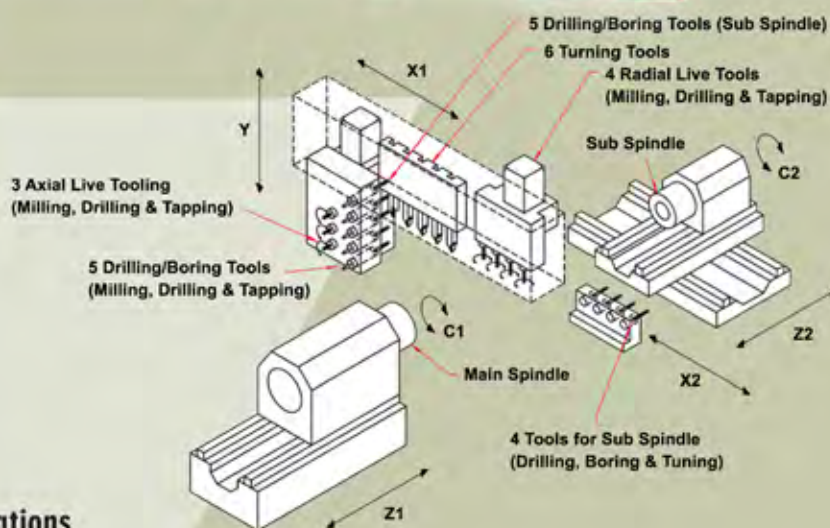
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A continuing column in which we ask smart people to discuss their views on topics related to the future of manufacturing

next

BY NOAH GRAFF

*Over the last 10 years,  
the American economy  
has had significant  
economic growth,  
yet many Americans  
feel left behind.*

## In 10 years will Americans feel wealthier than they do today?

Economic history suggests the unsexy answer: Some Americans will feel wealthier and some won't. But might there be something unique about how wealth acquisition plays out over the next decade. Two trends are of concern. First, while our economy has been generating impressive income growth, the fruits of that growth have not been broadly shared; instead, they have been concentrated among the wealthiest and have not largely reached working families. Second, in about 10 years, the front end of the baby boomers will begin to retire, and there are salient concerns as to whether significant numbers of these boomers are adequately prepared to finance a dignified retirement – concerns that are amplified by unsustainable increases in health care spending and predicted fiscal imbalances. Both of these issues, inequality and retirement adequacy, can absolutely be dealt with. But we need to start now.

Jared Bernstein  
Economic Policy Institute

In 10 years, just as today, people will feel wealthy or poor depending how they've planned for their financial future, and simply how they define "wealthy." If you compare yourself to the top one percent of all wage earners, haven't planned for your financial future, and feel like you're always on the outside looking in, there's a decent chance you will feel poor, even if you make more money than you can spend. On the other hand, if you have planned for your financial future; your retirement fund, you've minimized debt, etc., there's a good chance you'll feel good about your financial status even if others might consider you poor. Whether Americans will be realistic as to money's real impact on their lives will, in the end, determine whether they feel wealthier or poorer in the future.

Mark Cremonni  
Merrill Lynch



### the facts:

**"In 1979, median weekly earnings for workers with a bachelor's (or higher) degree were 38 percent more than those of high-school graduates with no college experience; last year, that differential was 75 percent. Similarly, over the same period, the gap in median earnings between those completing high school and those with less than a high-school education increased from 19 percent to 42 percent."**

Federal Reserve Chairman Ben S. Bernanke  
February 6, 2007  
[www.federalreserve.gov](http://www.federalreserve.gov)



Since World War II, the world economy has experienced steady growth, translating into improvements in average living standards over 20 percent every decade. The odds are strongly in favor of a significantly richer world in 2017 than today. The new technologies in biology, pharmaceuticals, communications, computers and robotics are transforming our lives and increasing productivity growth, and globalization has reenergized the world. But will we feel richer? That is a harder question, since technological developments and globalization create winners and losers. While globalization will undoubtedly benefit the American economy as a whole, there will be those who lose their jobs as a result of the process of outsourcing or the import of cheaper goods from the rest of the world. There will also be those who adjust their aspirations so that the rising incomes do not make them feel as happy as they should.

Daron Acemoglu  
Kumho Visiting Professor of Economics  
Yale University

## Earnings of Americans 2000-2006

Median usual weekly earnings in current dollars. Full time wage and salaried workers (excluding self-employed) 25 years and over with bachelor's degree or higher. All industries and occupations.

Year	Annual
2000	\$ 891
2001	\$ 921
2002	\$ 941
2003	\$ 964
2004	\$ 986
2005	\$1013
2006	\$1039

U.S. Department of Labor  
[www.bls.gov](http://www.bls.gov)

Median usual weekly earnings in current dollars. Full time wage and salary workers (excluding self-employed) 16 years and over of any education level. All industries and occupations.

Year	Annual
2000	\$ 576
2001	\$ 596
2002	\$608
2003	\$620
2004	\$ 638
2005	\$ 651
2006	\$ 671

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- (2) Micron Multistar CNC Rotary Transfer Machines (2000)
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one on one

## Dominic Tramonte has been an over-the-road truck driver

for the last seven years, and an owner/operator of a Kenworth semi truck for the last two.

**NG: What was your occupation prior to being a truck driver?**

**DT:** I have double master's degree in engineering from the University of Texas. I was a field engineer. I built a lot of chemical plants, office towers and prisons mostly. But I'm just too old to work 100 hour weeks anymore. I drive because I don't like to sit in an office and draw blueprints that other people get to go into the field and build.

**NG: Do you prefer sitting in a cab all day?**

**DT:** Yeah, that doesn't bother me. I don't work that hard. Every now and again I'll put in a 12 or 14 hour day, but usually I only work five or six hours a day. The rest of the time, I put my feet up, read and play computer games.

**NG: Which jobs make you the most money?**

**DT:** Oversized freight and freight that you've got a lot of time pressure on. I personally won't load anything for less than about \$1.50 a mile. The best job I got was for \$6.00 a mile.

**NG: How do you acquire freight jobs?**

**DT:** I have an agent who does the work for me, and I pay him 8 percent off the top. I'm leased to Dallas & Mavis, and use their authority to haul freight. They also get a percentage.

**NG: If you could ask James Hoffa, head of the Teamsters one question, what would it be?**

**DT:** I know nothing about the Teamster Union life. I'm curious about what they're buying with the money from the members. I'd like to know what the members have that I don't. I don't see that they have any greater job security. I don't see them taking home better money. Maybe it's the organization for political purposes. For me personally, I'm an owner/operator making my own decisions. When I screw up, I don't have anybody to point the finger at, and when I do well, I don't have to pat anybody else on the back.

**NG: What's one of the most interesting things you've carried?**

**DT:** I once hauled a load from Boston to Huntsville, Alabama in a box trailer. It was one 8 by 11 manila envelope. I guess it was blueprints or something, and for some reason they didn't send it UPS or FedEx. They closed the door, and they put four padlocks on the handles. Then they FedExed the keys to the guys who were on the receiving end of the envelope.

**NG: Has anything frightened you about driving?**

**DT:** I drove an empty high-band trailer across the I-5 bridge from Portland, Oregon, into Washington State across the Columbia River, and the wind was howling in off of the Pacific at about 100 miles an hour. I was half-way across that bridge, and a gust would come in and snatch my truck from the left-hand lane and rub it up against the guardrail. That was the longest three minutes I have ever spent in my entire life. When the police came they said, "That bridge has been closed to high profile traffic for 11 hours. Wasn't there a cop on the other side that told you not to go?" I said, "No, you mean I risked my life like that for nothing?" He didn't say a word. He just started laughing and walked back to his car and drove off. That's the most frightened I've ever been driving a truck.

**NG: What do you do to pass the time when you're driving?**

**DT:** I think. It's one of the reasons I love the job. I'm a private person, and I'm a thinker. It gives me hours and hours every day. And I just listen to the sound of the engine. That way I can hear the sirens and hear what the truck is doing.

**NG: If you could be any machine, what would you be?**

**DT:** A CNC milling machine. You can do beautiful work with those.

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1-3/4" 8-spindle, 1970  
2-1/4" 6-spindle, 1973-79 (3)  
3-1/4" 6-spindle, 1982  
5-5/8" 6-spindle, 1979  
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1-1/4" RB8, 1975  
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2" RB6, 1979, Direct Drive Rebuild (2)  
2" RB6 collet chucker, 1980  
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## GILDEMEISTER & SCHÜTTE

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SE25 Schütte 1970

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Citizen L25, Type VII, 1998  
Citizen L-16, Type V, 1996

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Model 62 2-1/4" 6sp., 1975  
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Mectron laser measuring machine mfd. 2000  
Miyano ANC 45, 1987  
Barrett 1100 chip spinner 1986

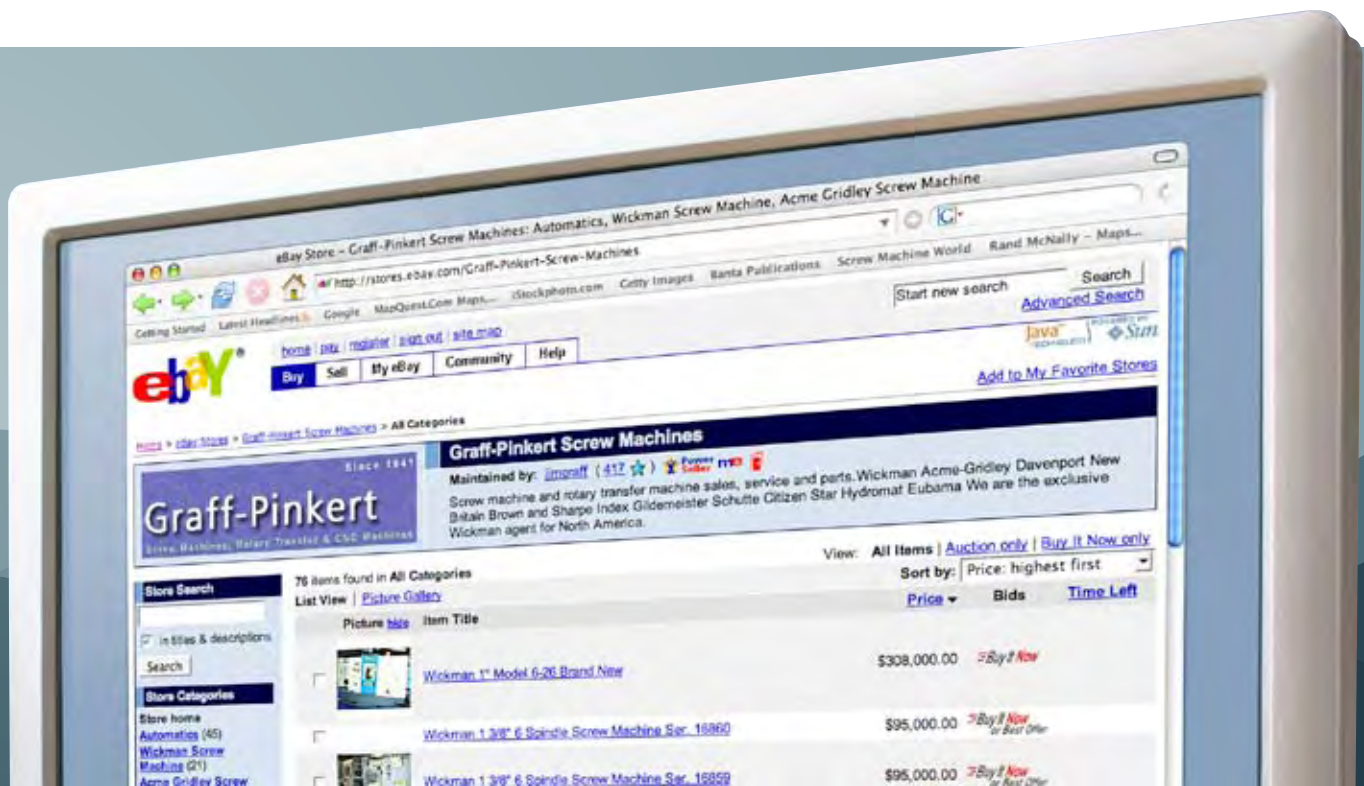
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HB45-12 1997-1995  
HB45-16 1996HS-16 2000  
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how it works

BY BARBARA DONOHUE

# Keeping Tabs on your tools

Monitoring tool breakage and wear can help make your operation more efficient and profitable.

tool monitoring



A drill breaks and then the reamer tries to do its job, and it breaks, too. On a machine running unattended, a tool wears prematurely and creates thousands of bad parts. A large, high-priced indexable tool hits a misaligned part and destroys itself.

Shops commonly change out tools on a schedule conservatively based on experience. But tool breakage and wear can be unpredictable. What if a machine could sense exactly when a tool breaks or wears beyond usefulness, then shut itself down, or even load a new tool?

Many different technologies offer tool and machine monitoring, from detecting whether an intact tool is present to measuring a tool's profile. Some can even measure the power consumed by the spindle motor and use that information to control the

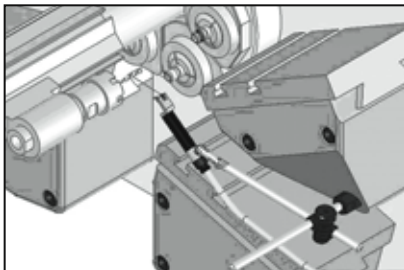
feed rate and minimize machining time. Here are a few of the many options available for keeping track of the condition of your tools.

### Detecting broken or absent tools

Small, simple tool detectors check for the presence of a drill or other cylindrical-shaft tool. Their small size and simple operation adapt them well for many environments, including machining centers, screw machines and transfer machines.

A small cylindrical housing contains

an electric or pneumatic actuator which rotates the detector wire (or "needle" or "wand") through an arc. Mount the detector so the wire will touch the tool and stop if a tool is present and undamaged, and swing right by if the tool is broken. Only the head of the detector device, containing the actuator and the wire, is located inside the machining area. It can be positioned on fixing rods, with magnets or by drilling and mounting, said Joel Rutzen, manager of service/customer support at SPC Innovations, Inc., Stevensville, Md.



Installing the Detector Type 202 broken tool sensor from SPC Innovations.  
Illustration courtesy of SPC Innovations.

SPC  
Innovations  
Detector  
Type 202  
broken  
tool sensor  
installed in a  
single-spindle  
CNC machine.

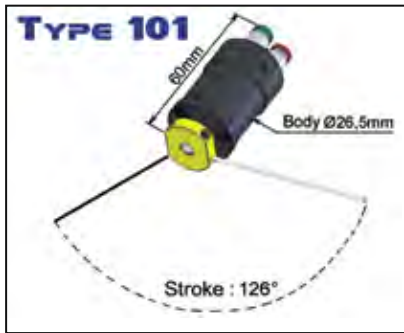
Photograph  
courtesy of  
SPC Innovations.



PCS Positive Contact Tool Monitor from TPS International, installed on a transfer machine.  
Photo courtesy of TPS International.

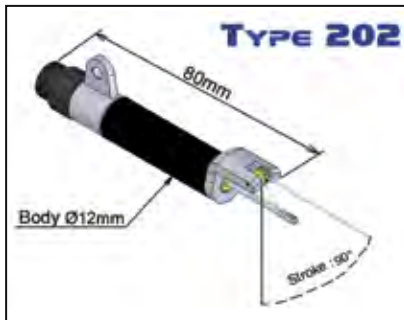


# how it works



Detector Type 101 broken tool sensor from SPC Innovations.

Illustration courtesy of SPC Innovations.



Detector Type 202 broken tool sensor from SPC Innovations.

Illustration courtesy of SPC Innovations.



PCS Positive Contact Tool Monitors from TPS International, installed on a multi-spindle screw machine.

Photo courtesy of TPS International.



TPS International PCS tool monitoring system, showing sensor, control box, sensing cable and mounting bracket.

Photo courtesy of TPS International.

When the detector is actuated and the tool is intact, the wire touches the tool, rests briefly, and then returns to its original position. If the tool is broken or absent, the wire sweeps past where the tool should be, and an external switch or control unit sends a signal to the machine control to stop the machine.

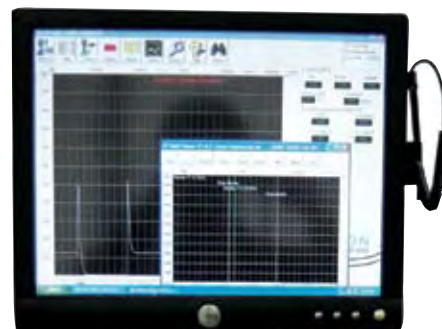
“Generally, a tool monitor [is] best compared to an air bag,” said Dean Bentzien, CEO at TPS International, Sussex, Wis. “It won’t prevent a tool breaking, [but] it will minimize the damage done after it has broken.” For example, if a drill breaks, the machine can be stopped in time to prevent damage to the tap used in the next operation.

This type of direct-contact tool detector is available in many different styles and typically costs in the neighborhood of \$1000. For example, SPC Innovations offers two models of air-actuated Detector broken tool sensors, type 101 and type 202, both with \$895 price tags. TPS International’s Positive Contact sensors, PCS 100 and 250, are electrically actuated, and can be installed for “under \$1000,” according to Bentzien.

In a study performed by TPS International, customers found that contact tool monitors paid for themselves in under a year, sometimes in as short a period as one week, and one customer said the payback period was one day.

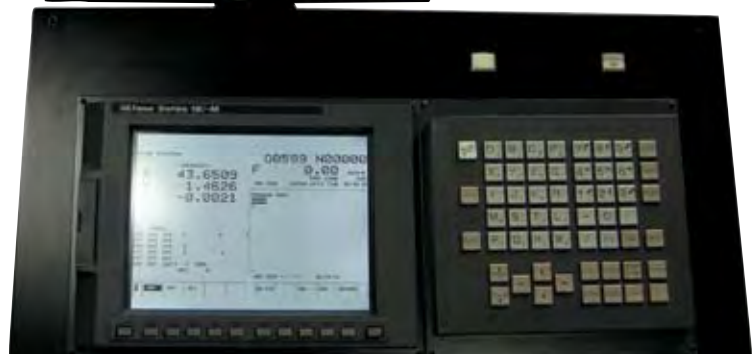
## Power monitoring

Directly monitoring the power consumed by the spindle motor allows you to understand exactly what is happening with the tool. A new, sharp tool requires less power to cut than a worn, dull tool. Power monitoring systems are available that take their data directly from the motor controller; others measure with transducers on the wiring to the motor.



Machine control, with separate Caron TMAC power monitoring system display.

Photo courtesy of Caron Engineering.





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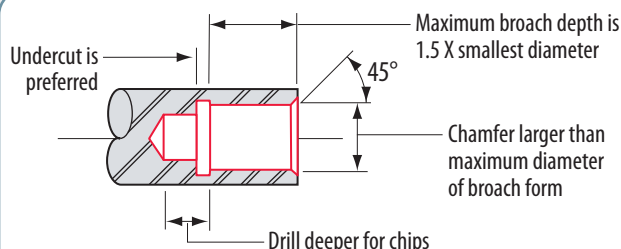
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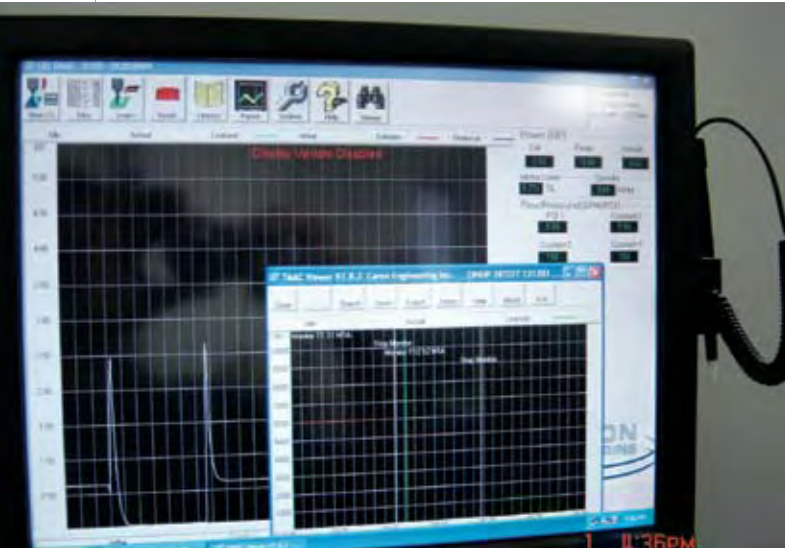
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# how it works



Caron TMAC power monitoring system display.  
Photo courtesy of Caron Engineering.

“We call what we do ‘sensory perception’ for machines,” said John Maher, director of business development at ARTIS Systems Inc., Livonia, Mich. “[The system obtains] information that would not otherwise be detectable and notifies the operator as soon as possible when there is a problem.”

When first setting up a job, you run a “learn” cycle with new, sharp tools, during which the power monitor takes data, which it “remembers” for future reference. The monitor sets a range of “normal” operating levels, or you can manually set the limits you want.

Then, when you’re running production, the monitor notices when the power goes beyond one of the limits for the particular tool that is running. If the power goes up suddenly, that may mean a crash or a broken tool, and the monitor sends a stop signal to the machine control. Also, as the tool wears, the power it requires goes up gradually. You can set the monitor to send a stop to the machine control when the power has risen to a certain level due to wear. If the power is much less than expected, this may indicate that the tool is missing or is not contacting metal.

These systems are not inexpensive, but they can pay for themselves over time, sometimes quickly, especially if one is using expensive indexable tooling. “One customer was blowing multiple drill bodies per day,” said Rob Caron, president of Caron Engineering Inc., Wells, Maine. The monitoring system “paid for itself in about two weeks,” he said.

“Another big piece is unattended operation—one guy operating nine machines,” Caron said. “Monitoring allows them to do that.”

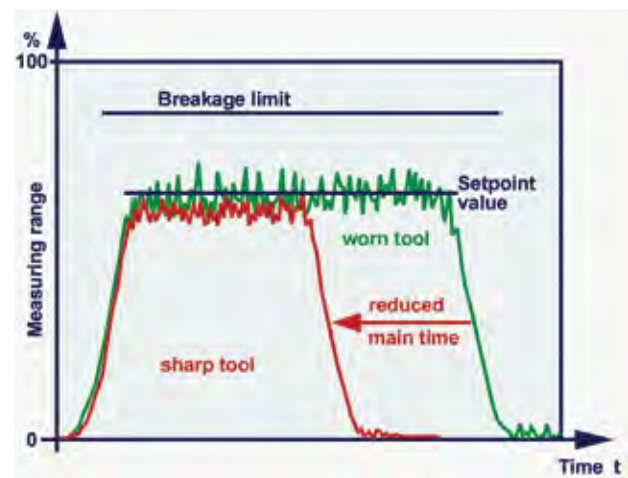
Wear monitoring can help make lights-out machining fea-

sible. “We have customers who go home at night, often running \$300 to \$500 tools,” Caron said. When the power monitor detects excessive wear, it can signal the machine control to initiate a change to a fresh tool from one of the spares provided in the tool carousel, and keep on cutting.

## Adaptation

Not only can power-monitoring units detect broken or worn tools, but with an “adaptive control” option, you can use them to control the feed rate, reducing machining time, yet extending tool life by keeping the tool load constant and well under maximum stress.

Under adaptive control, the monitor tells the machine control to increase the feed rate when the tool load is low, when the tool is new and sharp, for example, and reduce the feed rate when the tool load goes high, as when the tool gets worn and dull. Versions of adaptive control are offered as options on the ARTIS and Caron systems. Within adaptive control, you can also manually set limits to the range of feed rates at which you want the machine to run.



Adaptive control, coupled with power monitoring, makes it possible to reduce machining time, while keeping the tool load at the desired level.  
Graph courtesy of ARTIS Systems.

“Machining times can routinely be reduced by 7 to 20 percent, sometimes as much as 40 percent” by using adaptive control, Maher said.

Caron related comments from two adaptive control users. At one customer, the monitor would shut down a machine before the tools broke, so they could be reground and re-used. “The tooling budget went down so much that the procurement guy [got curious and] asked why they weren’t buying.” A customer





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# how it works

that makes aircraft parts told Caron that on machines with adaptive control, they hadn't broken a tool in five years.

An ARTIS CTM system, including setup and training, ranges from \$7,000 to \$12,000, depending on features included, such as adaptive control. A Caron TMAC 7 system lists at \$12,000 including board, installation, software and training. Integrating adaptive control with the TMAC 7 system adds \$1100. Coolant monitoring is also available, with transducers from \$1500 to \$3200, depending on pressure and maximum flow rate.

## Laser focus

A laser tool monitoring system, such as the LaserControl NT from Blum LMT, Erlanger, Ky., can measure the length of the tool, its diameter and its form, on the machine.

When a tool interrupts the laser, the instrument produces a trigger signal to read measurements based on the axis position. A laser unit can monitor single-edged tools and can also monitor multiple-edged tools as they rotate. Tools can be measured while rotating at speed, so you can make a runout measurement. Also, the laser can be used to measure changes due to thermal expansion and mechanical effects. And, said Paul Meinhardt, general manager at Blum, "We can feed the measured value for [actual] offset compared to the programmed value, to correct it in the [CNC] program."

Some laser systems from Blum (pronounced "bloom") use a U-shaped transmitter/receiver housing like the one shown, which is often mounted to the table in an out-of-the-way location. If there is no convenient mounting position in your machine for this type housing, a configuration with separate transmitter and receiver units is also available. During machining, the optics are protected by a pneumatically operated

mechanical shutter, and, during measurement, an air blast prevents contamination of the optics.

Blum laser systems are often installed by the machine tool manufacturer or rebuilder, but they are also available as retrofits. The cost for a Blum system is around \$12,000 to \$15,000, including installation, said John Sherrick, manager of system integration at Blum.

## Tapping monitor

Always a challenge, tapping is frequently the last process performed, so a lot of machining and labor hours may already be invested in the part. Sensitive torque monitoring during tapping can detect tool wear and damaged threads, so the monitor can call for a machine stop within milliseconds of sensing a problem.

The DDU4 noncontact sensor from ARTIS Systems has piezoelectric sensors that install on the toolholder. A stator unit receives the data from the sensors. The DDU4 can be installed as a standalone unit or integrated with the machine control through an ARTIS CTM card system. The DDU4 senses both clockwise and counterclockwise torque, and both positive and negative feed force. With CTM integration, it can detect deviations in core hole diameter and thread depth. A standalone DDU4 system is priced at \$4000 to \$5000. DDU4 with CTM card integration is in the \$8,000 to \$10,000 range, said John Maher of ARTIS.

## Force

Monitoring cutting force is especially useful for some processes. Force measurement is often made indirectly, by placing a sensor on the machine in an area that experiences strain proportional to the force you want to measure.

Srinivasa Prasad, national sales manager at Montronix, Inc., Ann Arbor, Mich., gave an example. "On a CNC lathe what we do is embed a 3-axis load cell beneath the turret. This gives the machining forces in the x-y-z [axes, from measuring] the bending moments on the turret."

"Cutting tool degeneration is not predictable," said Prasad. "By monitoring in real time, we have an idea what is happening in the machine, so we can optimize tool change frequency." Machining centers, CNC lathes, drilling and reaming processes are ideal applications for force monitoring, he said.

As with other monitoring techniques, force measurement can tell you about the condition of the tool and also signal the machine to stop when there is a major problem such as a misloaded part. You can monitor the mini-collisions and crashes, and minimize the damage, so you can have the machine back



Blum LaserControl NT laser tool measurement system.

Photo courtesy of Blum LMT.

in operation quickly, Prasad said, "breaking the tool instead of breaking the machine."

### Listening to small tools

Very small tools, 2mm or less in diameter, can be difficult to monitor using force, torque or power. For this situation, ARTIS Systems offers an acoustic monitoring technique. A small acoustic sensor is installed in a location where it can "hear" differences due to breakage or wear. The monitoring system learns the sound/vibration characteristics of normal machining, and sends an alert or stop signal when it detects a deviation outside the normal range. The standalone version is \$3,000 to \$4000; integrated with the ARTIS CTM card, it is \$7,000 to \$8,000.

### Is tool monitoring for you?

Tool monitoring offers solutions to many machining challenges. "By monitoring in real time we have an idea what is happening in the machine," said Prasad. He offered the following guidelines for deciding whether you should consider tool monitoring on your equipment.

- If you are using very expensive tools or making very expensive parts

- If your tooling costs are abnormally high
- If you have had a series of wrecks on a machine and are not able to control the amount of downtime and maintenance
- If you want to reduce cycle time

When you run into everyday frustrating problems - an end mill breaking mid-cut, a worn tool producing bad parts - consider the benefits and investment value of tool monitoring. A monitoring system may pay for itself in a fairly short time. And from day one it could save you from some of the headaches that seem to be part of the machining business.

### For more information

ARTIS Systems Inc.: [www.artis-systems.com](http://www.artis-systems.com)

Blum LMT Inc.: [www.blumlmt.com](http://www.blumlmt.com)

Caron Engineering Inc.: [www.caron-eng.com](http://www.caron-eng.com)

Montronix, Inc.: [www.montronix.com](http://www.montronix.com)

SPC Innovations, Inc.: [www.spcinnovations.com](http://www.spcinnovations.com)

TPS International: [www.tpsintl.com](http://www.tpsintl.com)



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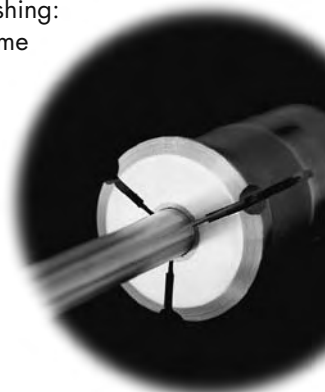


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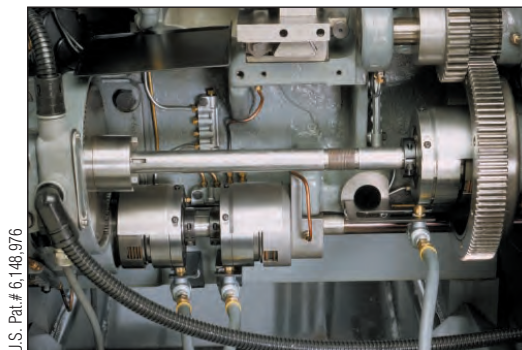
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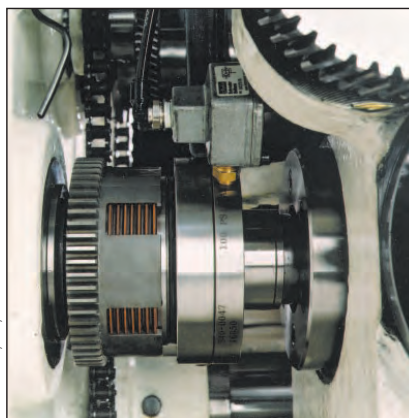


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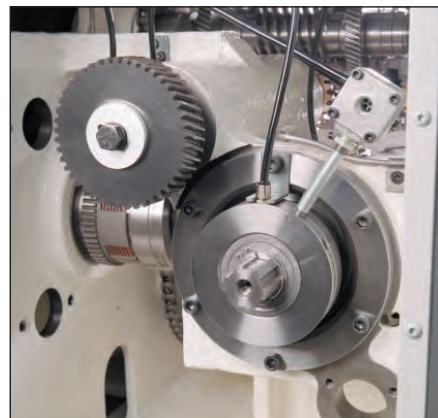


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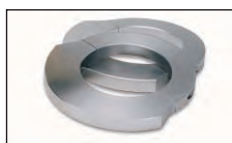
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# product focus

THE FOLLOWING COMPANIES HAVE TURNED  
OUT INFORMATION ON SWISS TURNING CENTERS:

Each month, *Today's Machining World* works to help you understand how the precision parts marketplace works, what's available in the industry, and how you can use available resources, as well as knowledge, to run a more efficient and effective shop. In every issue, we'll feature a product category and focus on equipment key to remaining competitive in our marketplace.

Bill Cox of Cox Manufacturing in San Antonio, Texas, said Swiss-type turning first originated because of the need of producing fine watch components for the Swiss watch industry. Bill says, "The unique arrangement of their sliding headstock design gives them a distinct advantage on miniature and micro machining of turned parts with an unusually long and slender profile. Although cam-operated Swiss type screw machines are still widely in use, CNC versions of the Swiss style sliding headstock lathe are the modern day solution for many turned parts made from exotic materials and difficult to machine alloys, and can excel in complex part configurations while completing it in one operation."

Out those who were solicited for information, the following companies provided information:

## Traub

The Traub TNL26 series offers the advantages of both fixed and sliding headstock turning processes in the same machine concept. The machine design saves the user set up time, material cost, and capital cost while providing high-precision Swiss-type and screw machine type turning capability in a single machine. Bar stock capacity up to 32mm (1.25 in.) diameter. The concept can be configured to match the user's needs: TNL stands for long/sliding headstock Swiss-type turning, and TNL-K for short, fixed headstock screw machine type turning machines.

The TNL26 is available with two fast-indexing 12-station turrets (Y-axis optional on both turrets), a 5-station end-working tool carrier, a heavy duty counter-spindle, and a 5-station back-working

tool carrier. Z-axis travel is approx. 10 in. on the L- version and 4 in. on the K- version. The maximum number of tools is 58; of these 32 can be live tools with a 5.5KW/8.0 HP drive. Both the main and the counter-spindle offer the same high horsepower: up to 10.7KW/14.6 HP. The design of the work tool-carrier and axis drive arrangement allows the coupling of a second or third tool-carrier to the first, permitting up to four tools in the cut at one time.

For more information please contact Index Corporation at 317-770-6300 or visit the company website at [www.index-usa.com](http://www.index-usa.com).





# product focus



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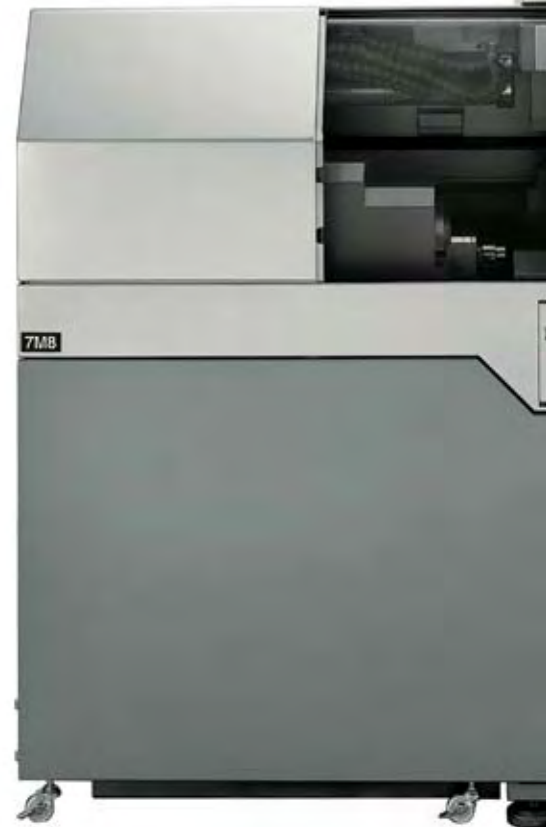
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www.nskamericacorp.com e-mail: info@nskamericacorp.com Manufactured by NSK Nakanishi Inc.

## Marubeni Citizen

Marubeni is offering U.S. manufacturers the opportunity of obtaining a turning center with all related accessories including CAV Integrated Bar Feed Systems, Cool Blaster Coolant Systems and Cool Blaster Mist Control 850 systems, while providing a single resource for all their service and support needs through the "Single Source Advantage" with its U.S. partner, Citizen Machinery America. MCC provides high-tech Citizen Swiss turning machines, which are used extensively to manufacture an array of products, including medical, electronics, fiber optics, automobiles, business machines, aerospace, defense, firearms, tools, valves, fasteners, and more.

For more information about Marubeni Citizen-Cincom and their full line of Swiss-type turning centers, please go to [www.marucit.com](http://www.marucit.com).





# Product focus

## KSI Swiss

KSI Swiss is launching a new series called the SM series, in the 12/16 mm range. These smaller machines will have live tools for the front side, as well as pick off, and will be introduced at the beginning of second quarter of 2007.

Their SQC Series Swiss Automatic machine is offered in three sizes, 20 mm, 32 mm, and 38 mm. Features of the SQC Series include: All GE Fanuc electronics and motors, Full C-Axis in both spindles, rigid tap in all spindles, 7 axis control, from 9 to 13 driven tools, off-center milling on all sides, and a dual pump coolant system.

For more information, please contact KSI Swiss at 952-564-3290 or visit the company website at [www.ksiswiss.com](http://www.ksiswiss.com).



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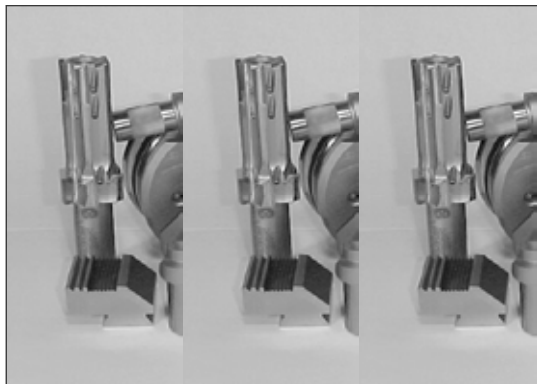
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## Tsugami/REM Sales

Rem Sales has announced the introduction of the BS12C-V, a 12mm (0.472") bar capacity Swiss-turn. The BS12C-V comes standard with (11) end working stations, (5) of which are dedicated for work with the sub spindle, (8) turning tools, (3) cross rotary units, and a parts catcher.

Tsugami's opposed gang slide design can reduce chip-to-chip time to less than one second, and boasts rapid traverse rates as high as 1260 IPM. It is capable of simultaneous operation of the main and sub spindle. Equipped with the Fanuc 31i-A two path CNC, the BS12C-V utilizes high precision drives directly coupled to continuously lubricated ball screws. Placed in line with the axes motion, these axes deliver faster acceleration and deceleration times with less back lash and more accuracy. All axes move on automatically lubricated linear roller ways to minimize stick slip, improve response and ensure thermal stability.

For more information please contact Tsugami/REM at 860-653-0071 or visit the company website at [www.remsales.com](http://www.remsales.com).





# product focus



## Ganesh

The Ganesh Cyclone-25 CS is a 7-axis 1.0% (26mm) bar diameter sliding headstock CNC lathe without a guide bushing. The Cyclone-25 CS configuration also allows for shorter cycle-times because the counter spindle can work simultaneously with the main spindle. The Cyclone 25/32 CS does not require the use of ground barstock. The CYCLONE-25 CS CNC screw machine configuration also allows for shorter cycle times due to the enhanced rigidity and the ability to aggressively rough-out material and finish with a second tool, all while achieving greater tool life.. The Cyclone's advantages are particularly evident in shorter work pieces with lower length-to-diameter ratios.

For more information, please contact Ganesh Machinery at 888-542-6374 or visit the company website at [www.ganeshmachinery.com](http://www.ganeshmachinery.com).

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R125



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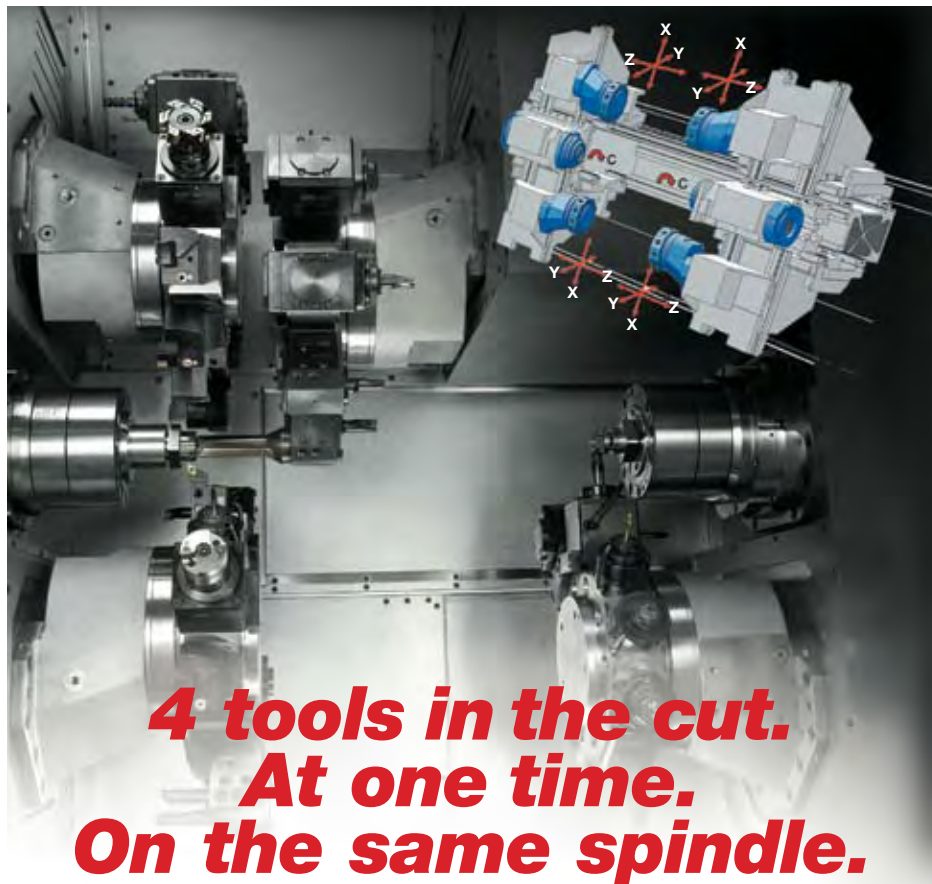
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# product focus



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**INDEX**



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*Today's Machining World's "Shop Doc" column taps into our vast contact base of machining experts to help you find solutions to your technical problems. We invite our readers to contribute suggestions and comments on the Shop Doc's advice. If you consider yourself a Shop Doc or know a potential Shop Doc, please let us know.*

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

We are a job shop manufacturing turned parts on screw machines and CNC lathes for a variety of customers and industries. On parts with multiple diameters some customers call out a concentricity specification. Others will use run-out and some show a position requirement. Aren't they really all asking for the same thing? Why do they say it three ways, and can they be used interchangeably?

### Call of Confusion

Dear Call,

Concentricity, run-out and position are all methods that can be used to control the "coaxiality" of part features. "Concentricity" is still a term commonly used by designers and machinists when describing how much deviation is allowed between coaxial diameters. There are however, significant and sometimes critical differences between the three terms as described in the current standard ASME Y14.5M-1994. This standard has been adopted by the Department of Defense and the majority of companies in the public domain. It is generally recognized as the last-word regarding dimensioning and tolerancing issues in the USA.

Regarding "concentricity," the standard specifies that the median points of all diametrically opposed elements are on the axis of a datum feature. The standard does not say that the features have to be circular or that there is any rotation around the datum axis. This means that this control can apply to any shape feature such as an ellipse, rectangle, square, etc. The measuring method used is generally very complicated and usually not necessary. In most cases concentricity may be what the designer is asking for but is not the appropriate control for turned parts.

The "run-out" definition states that there is "rotation about an axis." It also mentions that the tolerance can be expressed as "full indicator movement." From the designer's perspective, run-out is

usually the proper control for rotating applications such as a pulley on a shaft. From a manufacturing perspective, run-out has the advantage of being checked with simple and low cost measuring equipment. When you are rotating a part on a pin or in a collet fixture and sweeping a diameter with a dial indicator, you are in fact checking run-out, not concentricity.

"Position" is usually the least used of the three controls but has many advantages in both design and manufacturing. When defining position, the standard talks about the "actual mating envelope" of the features. This means that the size of the feature can also be considered in the equation. A good application for position would be two or more internal diameters that assemble to a mating part with outside diameters. If the design intent only requires the part to assemble without interference, this control is a good choice. A position control allows you to use a simple "hard" gage that simulates the mating part. It also allows you to play with the relationship between size and coaxiality. It is then possible to take advantage of the things your process does well (size control on a CNC) and get some relief on the things you have less control over (run-out between two chuckings). If you understand the function of the part and have a dialog with your customer, suggest position as a possible alternative to concentricity or run-out for these applications

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# Divided Loyalties

I think I made a huge mistake. I left my job of 12 years to join a rival across town. The two companies compete for the same work and use many of the same vendors. While shooting the bull with my new co-workers, I thought I'd "raise" my stock in their eyes by revealing "inside" information about my old employer. I bragged about some special fabrication techniques, and I mentioned a little trick we played with U.S. Customs that saved my old company a bundle when it came to classifying some imported material. Everyone was impressed, but now my new boss wants to drag me to the customs office to spill the beans on my old gang, who I still really like. He's also expecting me to reveal everything I learned over 12 years. I don't know that they're doing anything wrong with customs, but the investigation will be a hassle, and everyone will know my new company is behind it. I'll look even worse when my former employer sees that my new employer finally solved a production problem using a process we used at the old shop. I feel sick about it, like I'm Benedict Arnold.

Since the "damage" is already done, what's the ethical dilemma; whether or not you should continue to beat yourself up for enhancing your status at the expense of your old company? Who are you worried about – the people who may now regret not keeping you? Before you whip yourself raw, ask yourself what you've really done "wrong." Assuming you're not under some sort of confidentiality agreement or trade secret situation, your guilt bag is a product of loyalty which you no longer owe. This isn't to say that you shouldn't harbor respect and admiration for the old gang, but you're now in competition with them, and the information you revealed is fair ammunition in the business world. Can you imagine a professional football player refusing to tell his new team how to read his old team's defense out of some sense of loyalty?

You have a real interest in your new employer's success. You were hired precisely because you bring experience and

expertise gained over 12 years with its competition. I'll assume there were good reasons why you moved across town. If there was something secret about your old employer's operation, shame on it for failing to get your loyalty reduced to writing. If the old firm didn't consider something important enough to protect it, why should you worry about it? As far as the customs trick, if it is legal, you're just bringing a best practice to your new workplace. If it is illegal, why should you let your new employer lose out to a cheater? Loyalty doesn't mean throwing the fight because you respect the other fighter. It doesn't mean forgetting what you learned from the last time you fought him or the last time you traded training techniques at the gym. Loyalty means respect and fairness, and there is nothing about loyalty which requires amnesia.



TMW will explore business ethics monthly. Have an ethics question? email [jill@todaysmachiningworld.com](mailto:jill@todaysmachiningworld.com).



Send in your answer—quick!  
Fax Jill at 708-535-0103, or email at  
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## think tank

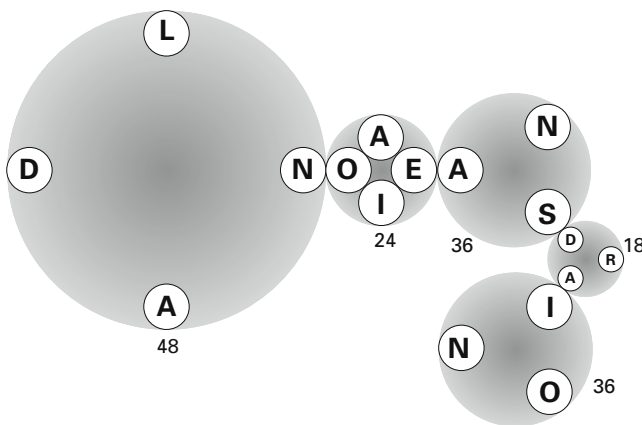
# Triple Duel

Amos, Butch and Cody decide to settle their differences with a gunfight. The three cowboys draw lots for the shooting order and then take one shot each until only one is left standing.

Amos and Butch are sure shots and never miss, but Cody can hit the mark only 50 percent of the time. From that information, can you work out who has the best chance of survival?



## Gear Anagram



If you turn the first gear (48 tooth) clockwise 1.25 revolutions, it spells out LEONARDO.

Who's gears clicked for the gear anagram?

**D. Gatzemeyer** of Lincoln Tool & Design in Lincoln, NE; **Jessica M. Hooper** of Accu-Mold in Latrobe, PA; **Jeff Kovalenko** of Key Machine Tool in Elkhart, IN; **Steve Gredell** of Empire Machine Works in Raytown, MO; **Steve Richards** of Yamazen, Inc. in Milwaukee, WI; **Tom Edge** of QMI Parts in Pryor, OK; **Wayne and Joie Cheeseman**; Rich Hartmann of Nazareth College in Rochester, NY; **Matthew Robson** of Technical Arts, Inc. in Placentia, CA; **Salim Ozgenc** of Taurus Precision, Inc. in Little Falls, NJ; **Daniel K. Schlepp** of Wacker Corporation in Menomonee Falls, WI; **Abdul Khatri** of Kamet Manufacturing Solutions in Sunnyvale, CA; **Uli Kuster** of Blaser Swisslube in Rohnert Park, CA; **Jim Brown** of Apogee Machining Services in Salem, MA; **Jason Kurtz** of Hard Metal Solutions in Marysville, WA; **Chris Morgan** of K & M Precision Products in Dexter, MI; **Randy Seibel** of Inspirnetics, Inc. in Rancho Cucamonga, CA; **Nick MacGregor** of Greer Engineering in Mountain View, California; **Steve Taylor** of Global Shop Solutions in The Woodlands, TX; **Steve Manthey** of Stipe Machine Company Plymouth, WI; **John M. Weber, Sr.** of Weber Systems, Inc. in Menomonee Falls, WI; **Mike Blechle** of Parker Hannifin in Washington, MO; **Russell Bernard** of Specialized Products in Clintonville, WI; **Tamara Hawn** of Sunnen Products in St. Louis, MO; **Don Peca** of Next Intent, Inc. in San Luis Obispo, CA.

# postings



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

## Composites

Manufacturing  
2007

Salt Lake City,  
UT

April 11-12

[www.sme.org](http://www.sme.org)

## CIMT

China  
International  
Machine  
Tool Show

Beijing, China

April 9 thru 15

[www.cimtsow.com](http://www.cimtsow.com)

## PMTS

Precision Machining  
Technology Show

Columbus OH

[www.pmts.com](http://www.pmts.com)

April 24,  
thru  
April 26

## Moldmaking Expo

April 18-19

Rosemont  
IL

[www.moldmakingexpo.com](http://www.moldmakingexpo.com)

## Manufacturing Machinery Exchange (MMX) #19

CNC & Manual  
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Support Equipment

April 18 9:00 AM PDT

April 19, 11:00 AM PDT

Online: [www.dovebid.com](http://www.dovebid.com)

Auction

## APW Enclosure Systems, Inc.

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April 6, 1930

[www.wikipedia.org](http://www.wikipedia.org)

Birthday  
Hugh Hefner,

April 9 th  
1926

[www.wikipedia.org](http://www.wikipedia.org)

## Passover

April 3-10th

[www.jewfaq.org](http://www.jewfaq.org)

## Easter

April 8th

## Income Tax Day

US income tax  
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Monday April 16th

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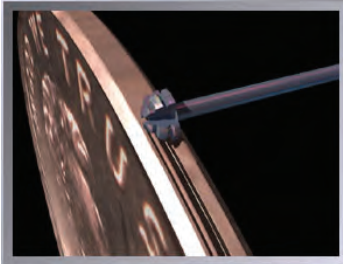


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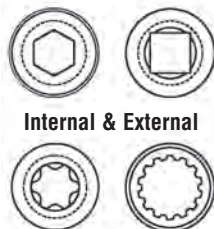
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# afterthought

## Selling on Love

When you sell hope and compassion for a beloved companion, you are not competing by the penny. Eddie and Leslie Grinnell have built a business and a life since 1989 by attending to the needs of ailing dogs, their anguished owners and the animal healing community.

They are brilliant champions of the “Follow your passion,” “Believe in your intuition,” and “If you build it, they will come” philosophies. They live the clichés of the Brian Tracey, Tony Robbins and Jim Collins books, making wheelchairs for dachshunds with degenerating discs, and spaniels with failing spines.

They have built a market where euthanasia was the first option a few years ago. Their custom conveyances made salesdogs out of their own four once-disabled dogs.

According to Leslie, their company, Eddie's Wheels for Pets, started because their dog Buddha needed a way to get from here to there in the local woods after disc disease hobbled her. Eddie couldn't stand seeing her misery, and built her his first custom dogcart, a variation on the human wheelchair.

Eddie himself was ailing from severely flat feet, which made his long gigs standing on cement as an engineer specializing in big installations of complicated machinery, a labor of pain.

Buddha needed wheels. Eddie needed a career shift. The two coalesced in Eddie's Wheels in rural Western Massachusetts.

Word spread about Eddie's wonderful handmade dog wheelchairs. Orders trickled in, and he refined the product. He and Leslie went to veterinary medicine conventions and product exhibitions a few times a year. Knowledge of the product spread amongst dog lovers to Japan and Europe.

Animal surgery became more sophisticated in the 1990s, and vets and owners demanded recovery devices. Eddie's Wheels rode the building wave of reconstructive medicine and the business grew.

Eddie and Leslie bought the components for their dog conveyances from local distribution houses and job shops. They priced the product from \$300 to \$1200 per wheelchair, depending on how large and complicated the job was. The key to success was getting perfect measurements to

exquisitely customize the product. What worked for a Siberian husky wouldn't suffice for a leggy greyhound.

There are a few other dogcart builders now, but Leslie says her website and referrals keep Eddie's Wheels growing. She says people call and ask her what the price is. She asks them about their dog. After a half hour of listening to the story of love and woe that each owner tells, price is no longer the point.

Eddie's Wheels recently won a Massachusetts Exporter of the Year award. The advent of pet health insurance has been a boon to the business.

Eddie just invested \$50,000 in a small Hurco vertical machining center, the first sophisticated machine tool in their 4000 square-foot plant in bucolic Shelburne Falls, Massachusetts, overlooking a pond.

Leslie is shifting her marketing focus to the holistic pet healers. The animal chiropractors and acupuncturists are gaining respect in the veterinary medical community. They are interested in Eddie's Wheels.

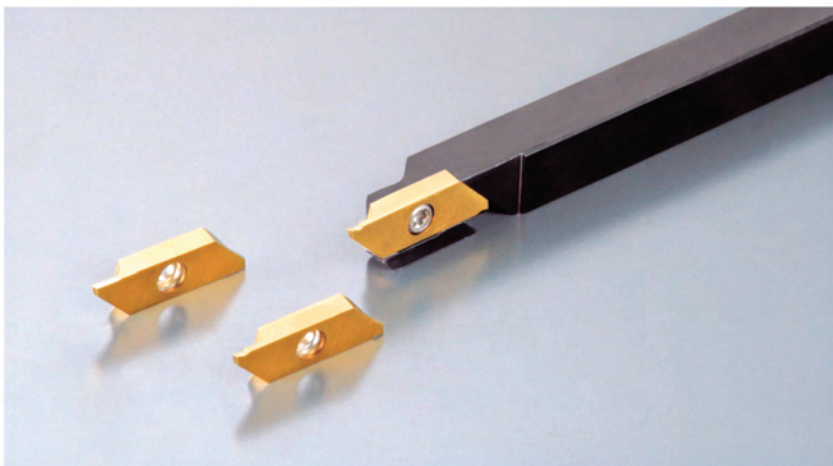
The story of Eddie's Wheels is feel good music for the small business magazines. Leslie says that Daisy, her dachshund, is by far her best salesdog, as she cavorts after a chipmunk next to the plant. But the wonderful vibe of Eddie's Wheels does not deny 17 years of hard work and dreaming to build a business that sells on love, not on price.

Lloyd Graff

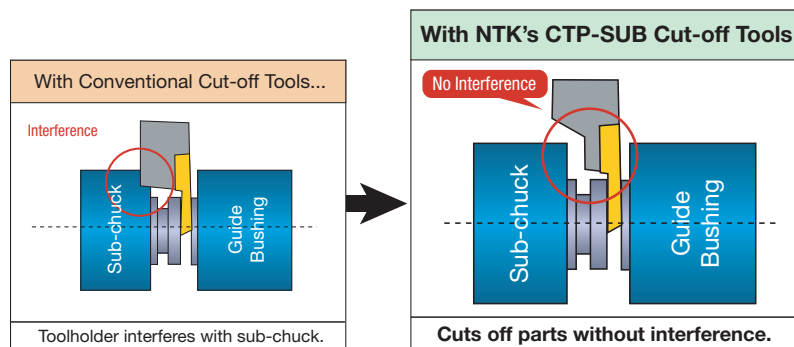


# CTP-SUB Series Cut-off Toolholders

*When it comes to the important criteria,  
NTK CTP-SUB series always makes the cut.*



## *For parting-off small parts*



- Allows cut-off of small (short) parts near guide bushing for maximum rigidity.
- Cuts off parts as close as .177" (4.5mm) to sub-chuck, even with right-hand tools.
- Provides enough clearance for sub-chucks as large as 1.417" in diameter.

## NTK CUTTING TOOLS

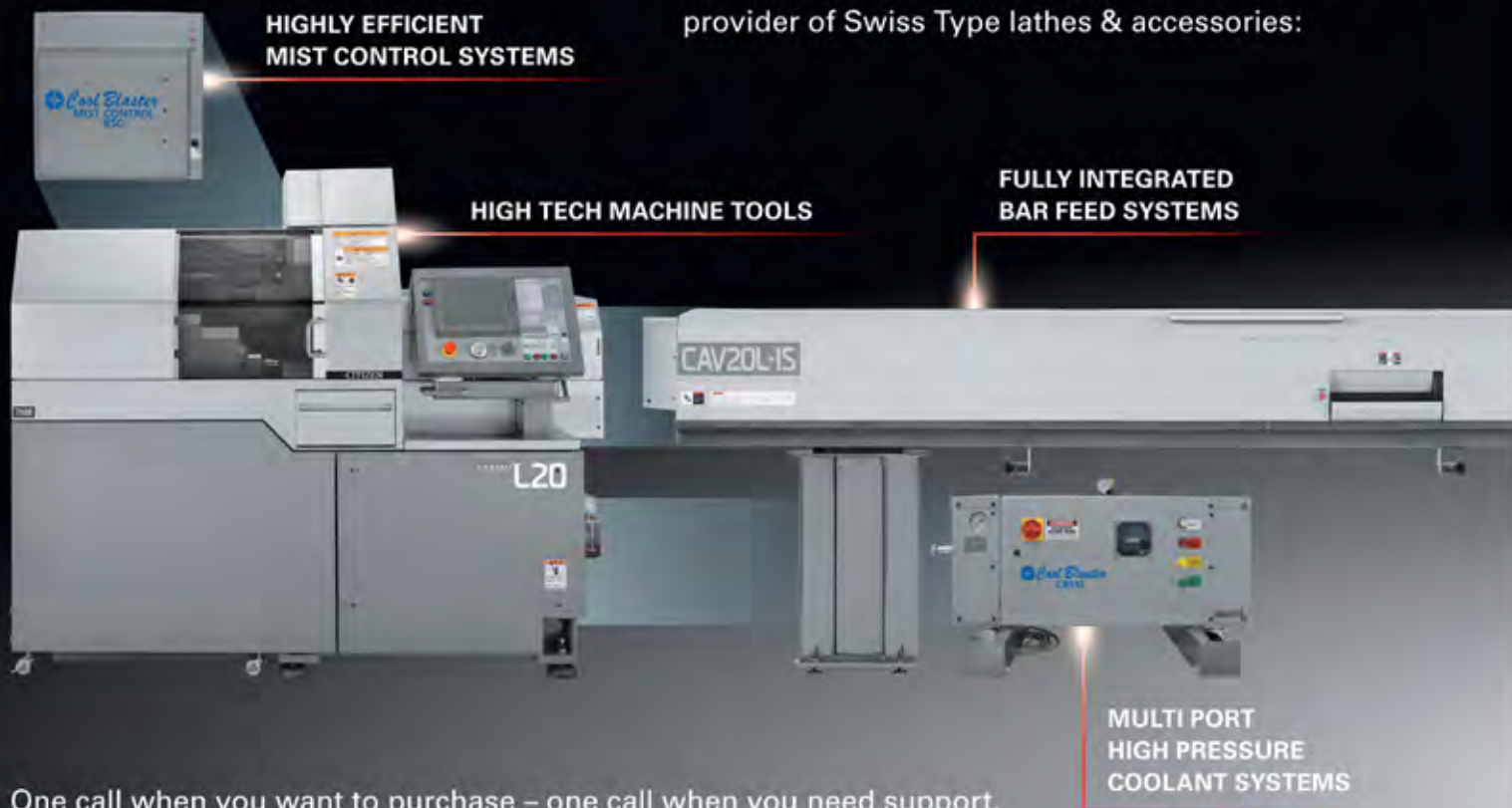
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