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May 2006 volume 2 issue 5

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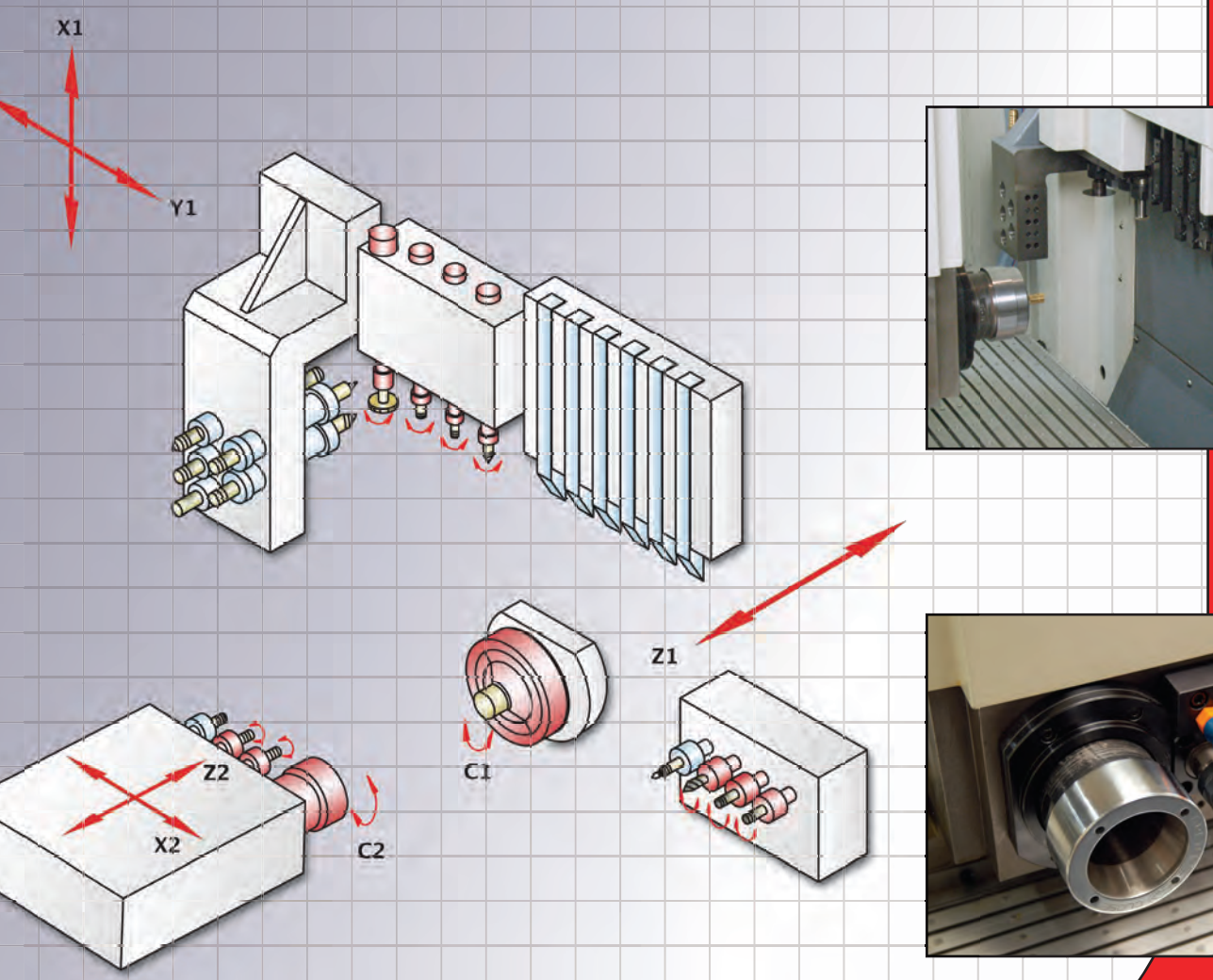

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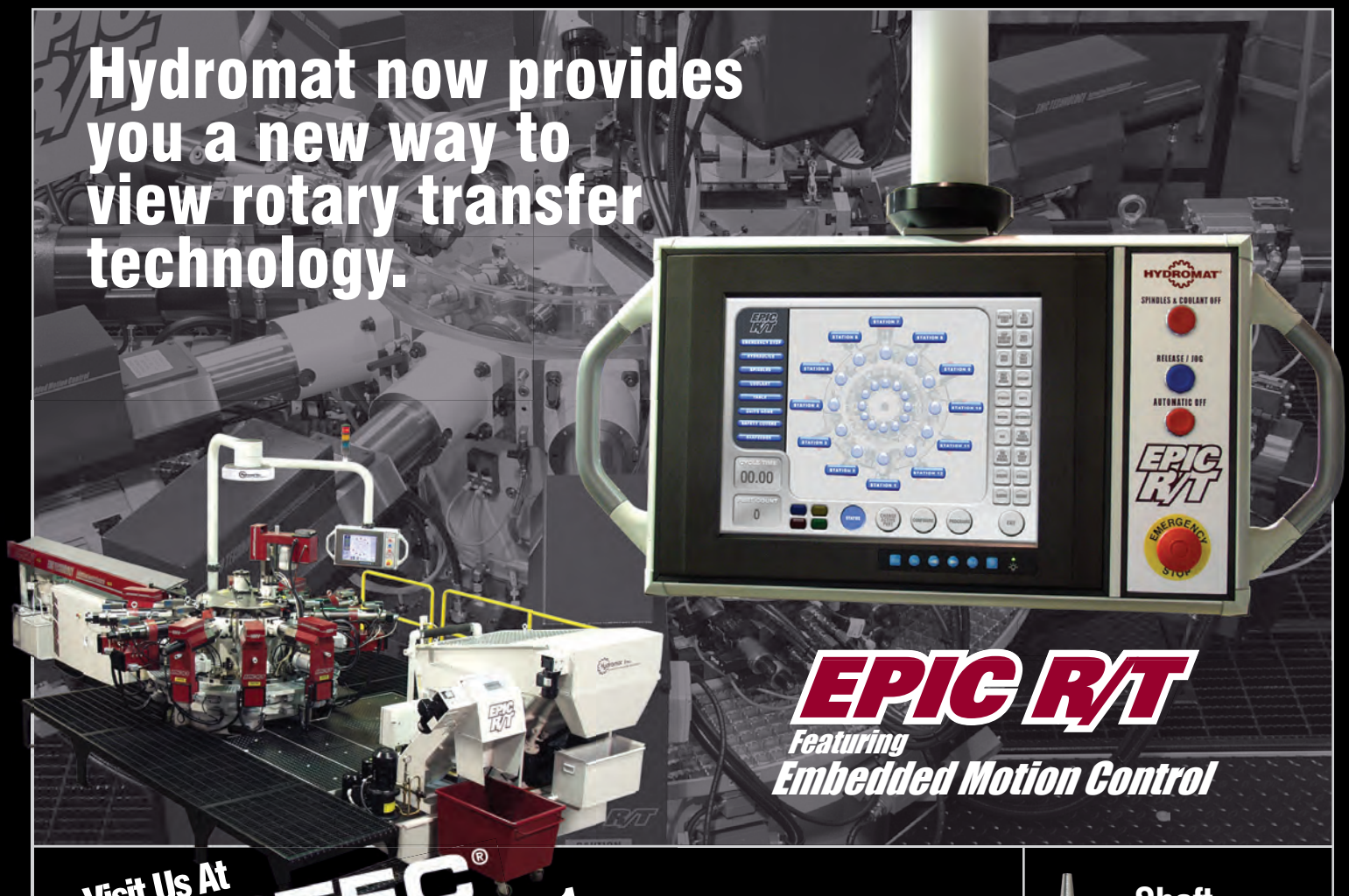

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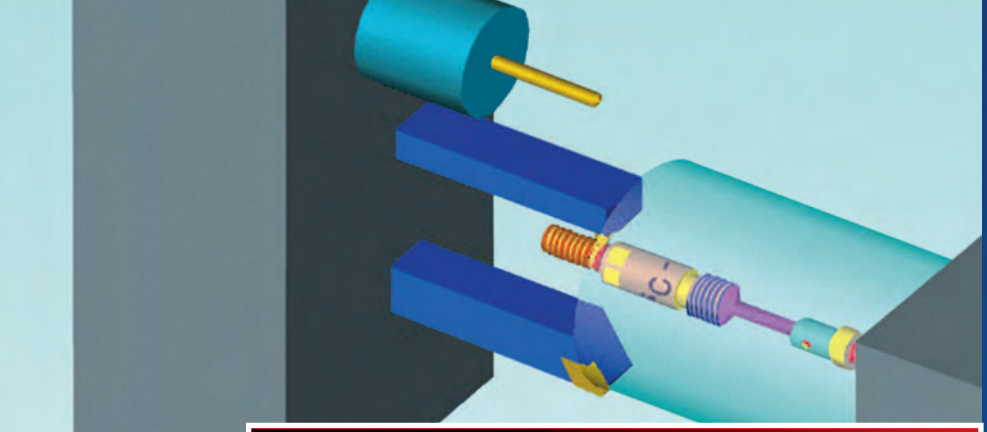

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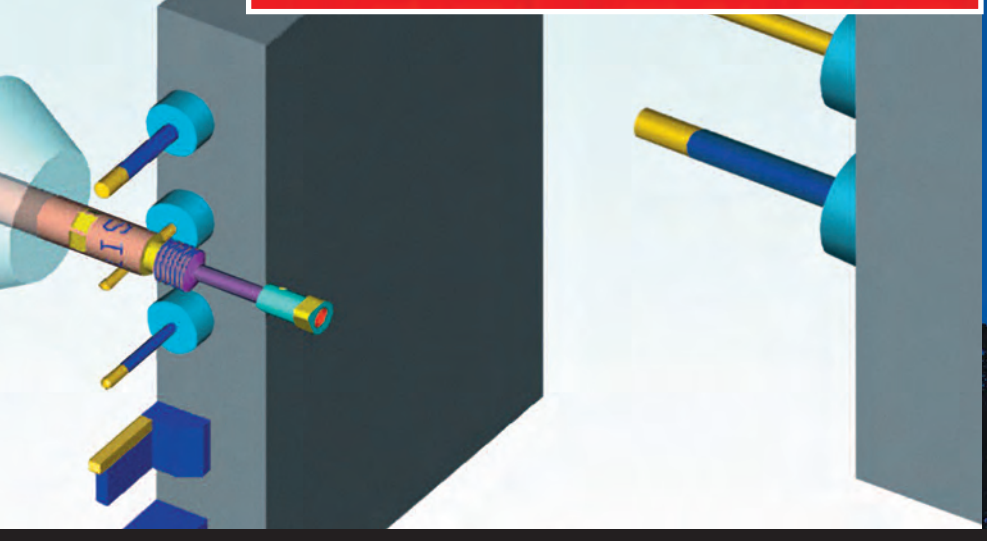

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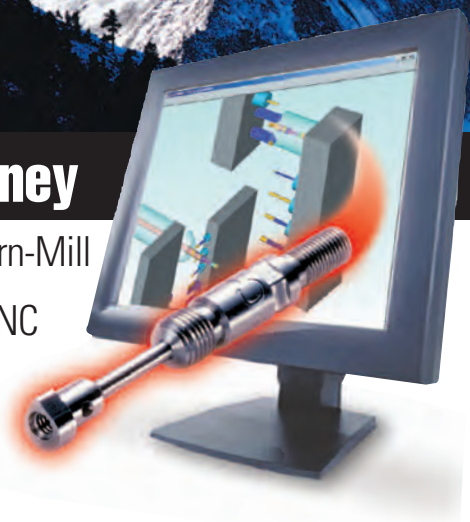

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Double Duty

I was talking to our banker recently, and he went out of his way to tell me he read the last *Today's Machining World* cover to cover. And then he asked, "How do you find the time?" I get this question a lot.

The easy answer is to say, "You can always find the time if you love what you are doing." But that is an incomplete reply to a simple question that is more difficult to answer than it sounds.

Doing two full-time jobs well is hard. When I devote a full morning to writing Swarf, I am not calling on customers or inspecting machinery. I can justify and rationalize (which I'm very good at), but the bottom line is, if I'm not at the plant during daylight hours, some of my daily responsibilities are being compressed, or delayed at best.

Doing this magazine and Graff-Pinkert is a squeeze. Doing the magazine around six eye surgeries over the last 2-1/2 years has also been a stretch. Doing it with my chaotic procrastinating approach often astonishes even me because the magazine hits its deadlines, thanks to Jill Sevelow, who always points me North when I lose my internal GPS.

Too frequently, I come home so exhausted from staring at a computer screen with half vision that I fall asleep during early the Sports Center. Fortunately, my wife Risa organizes my home life.

What I have found out is that visually-impaired, organizationally-challenged and sometimes feeling like a human taffy pull, I can still write for the magazine and do it more often and better than I would have thought possible two or three years ago.

This year, I am focusing on where I can add the most value for the machine tool trading business. I find the energy for the things I'm good at.

As we have increased the frequency of *TMW*, I have found that I am no bottomless well. Yet the issues keep getting better with practice. As a machinery dealer, compare me to Shaq or Griffey – still good, but can't play every game.

Lloyd Graff
Editor/Owner

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Today's Machining World

By the Fire

Regarding the *TMW* March issue, "Gone by Morning": Good Friday, April 1, 1994 was the day my father Earl W. Brinkman died. I returned home Sunday night to find a message to call the office; my secretary Patti told me there had been a fire.

The night shift went home not noticing one Excello thread grinder was still running. Sometime Saturday morning, the coolant pump shorted out through an unprotected leg of a three-phase motor starter. The resulting oil fire, contained by a metal coolant tank, burned for over 24 hours.

The fire generated a huge quantity of toxic, acidic soot. When highly sulfurized oil burns along with plastic wiring and covers, the byproducts are hydrochloric and sulfuric acid. The plant filled from the ceiling down to the floor with this black soup. As the hot humid fumes surrounded the machines, computers, controls, tool boxes and cabinets, the heavier cool air inside fell out and sucked the soot in.

I called my insurance agent and ServiceMaster, who sent for the Disaster Recovery Team. They quoted me $650,000 to clean and decontaminate the plant. Total damage was $1.2 million.

ServiceMaster mobilized an incredible assault on the mess in the building. We hired every available temp worker in the county. At one time, we had 160 people working, plus our employees. We started making product in one week and shipped our first rolls in 9 days. Total recovery took six months.

A piece of advice – Make sure you are not underinsured! Many companies go out of business because they can't cover the gap between what they were insured for and what they needed to clean up and get going again.

Now, all our machines running oil are equipped with 100 lb. CO_2 cylinders. We've added dampers to all mist collectors. We also tie in the fire suppression system with the fire dampers and the E-stop on the machine. We equipped many machines with a red "Power On" light, clearly visible when closing up the shop. Prevention is much better than recovery – on the nerves, the employees and on the bottom line.

Bob Brinkman
Brinkman International Group, Inc.
Rochester, NY

Belief System

Sometimes, it amazes me how stupid some smart people can be. In your "One on One" article with Marshall Brain, he is asked if he believes in God. He responds that God is imaginary. As a Christian, that is stupid to me, but hey, everyone makes their own decisions as far as religion, and then they must live with them. Then, I began thinking on the subject. Is Noah a stupid or smart person? He had a great technical article going. Then he broaches the subject of religion. Was that intended as a stab at the Christian community, or was it intended to give some personal info on Marshall? The thing with technical magazines is that they should stay technical and not theoretical. I can acknowledge that it takes faith to believe in God. I can see why there would be doubt, but do I need to read about other people's beliefs when I am only trying to learn about machining?

Why don't we all focus on the ball here. The magazine is *Today's Machining World*, not *Today's Machining and how God Relates to the Machining World*. Thanks for a great magazine. Keep up the good work.

Bryan Ray
Olsen Medical
Louisville, Kentucky

How God Relates

Thanks for featuring us in your "Women and Machining" article (February, 2006). Just to let you know, about 6-7 weeks ago "Maria," who was mentioned in the article, returned to her job. She has been doing a wonderful job setting up our Mazak 200 MSYs. She's been doing a set-up just about every day. When I arrive in the morning one of her first questions is, "What's next?" This is very ironic. I believe the Man upstairs has blessed us for shedding some light on this subject.

David Thuro
Thuro Metal Products
Brentwood, NY

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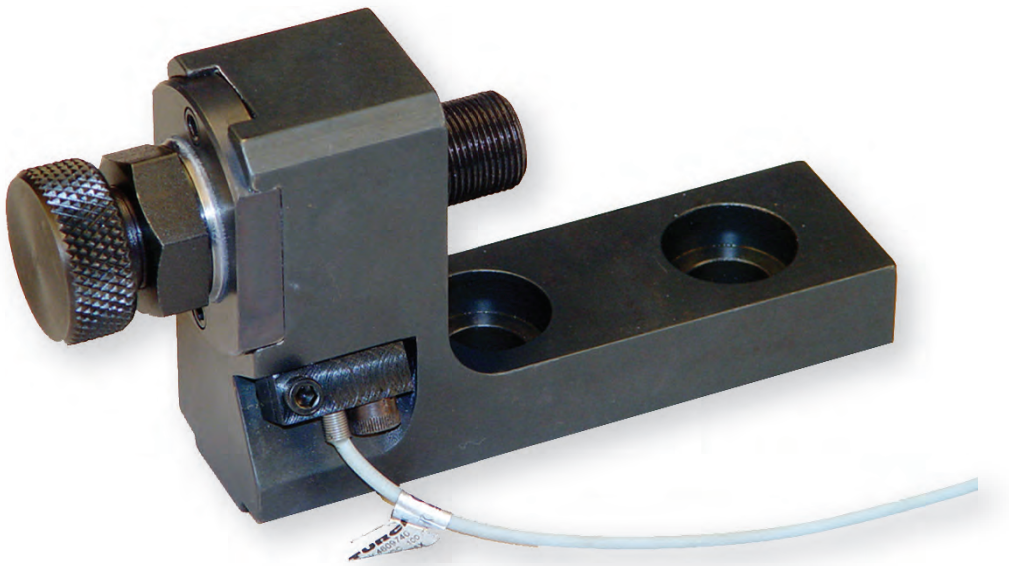

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INDUSTRY NEWS & WHISPERS

By Lloyd Graff

The Copper Market

Normally, I watch the stock market for good clues about which way business is heading. Short-term paper and ten-year Treasuries are another strong indicator. But today, my eyes are on commodities. The hot money on Wall Street is pouring into copper, steel and to some extent, oil, though that boom has slowed a bit.

If you want to play the phenomenal growth in China without gambling on the Chinese stock market, buy copper futures. Copper has become the surrogate for China. The spot price of the red metal recently popped to over $3.00 per pound on the news that China grew at 10.2% year over year during the first quarter of 2006. In a tight copper market, the incremental growth of China soaks up the production and pushes prices up. The same with steel scrap.

China, which we used to think had an unlimited supply of young workers migrating from the countryside, is starting to see labor shortages in Shenzhen and Guangdong. Wages are being bid up by eager employers.

The accelerating growth in China is being fueled by the buildout for the 2008 Beijing Olympics. We will probably see some softness by 2009, but who knows with the momentum of growth so powerful.

Chinese buying has finally pulled Japan out of its almost 20-year recession. It is also propelling a Korean boomlet. One straw in the wind; Mike McBride of KSI Swiss says they just broke ground for their new Korean machine tool factory. He says that the market for CNC Swiss lathes in Korea alone is 700 machines this year. The market in the U.S. is projected at 1200 units in 2006.

A clear signal of softness in the world economy will be quickly seen in the spot price of copper. If it falls to $2.00, your brass will be cheaper, but your customers may be gasping.

Are we in a copper bubble today? From my vantage point in Chicago, it does not look like it, but I would feel a lot more comfortable if the metals speculators were not puffing so hard with each announcement from China.

swarf

I had a talk with a friend who cuts a lot of brass to get a sense of what the rampant speculation in the metals futures markets means for people making brass nipples in Nebraska. He said it is a double-edged sword when copper is nudging $3 a pound. He says if you are running brass every day, the price swings tend to balance out. The tricky part is managing your cash flow and your customer risk profile. With each bundle of bars triple the price of a few years ago, a mistake is magnified. It also means paying more juice on the credit line. If a customer is late or files bankruptcy, both possibilities in our perilous world, the consequences are more dire than in the days of "cheap" brass.

The good consequence is that more competitors of his are no-bidding brass jobs because they cannot tolerate the extra risk. This means better margins on his non-ferrous bread and butter jobs.

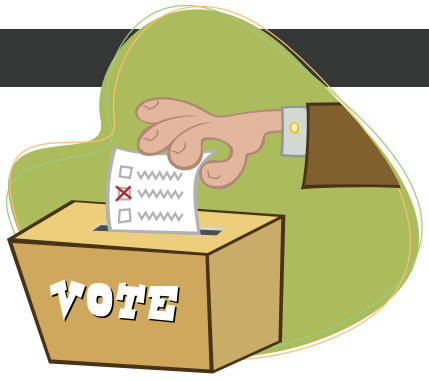
There is a lot of huffing in the news about an energy shortage pushing gasoline prices up to $3.00 per gallon. I think we definitely do have an energy shortfall, and it is getting worse, but it is not in fossil fuels, that we have plenty of – coal, oil, tar sands, nuclear, sun, etc. What we lack is positive human energy.

One place where I see an appalling waste of energy is the carping about President George Bush. The Administration is having a bad four years, but what a waste to blame everything on W, Rumsfield and Cheney. I find so many people who just can't get over Al Gore's defeat in Florida and Ohio, falling to Bush in 2004. What a waste of energy.

Then there is the Global Warming hand-wringing. Caulk your fireplace and install solar panels on your roof and stop lamenting Kyoto. And by the way, sell the Navigator and buy a fuel-efficient turbo-diesel, and don't forget to take note that these warm winters in the North knocked natural gas prices in half last winter. Global warming, if that's what it is, is making Chicago a lot more livable in January.

Let's not forget the energy wasted on complaining about immigration, legal and illegal. The most important energy imported into America, more important than oil, is human energy. Without that imported energy in America, there is no Silicon Valley, no bio-tech industry and no restaurant business. The immigration spigot probably keeps a quarter of the machines running in the job shops of this country. This is real positive energy that propels the nation, while the politicians fritter their energy on building fences, physical and paper, to shut off the valves controlling human vitality.

Perhaps the saddest waste of energy is in the schools of America. So many kids' academic lives are wasted in pathetic schools, which regard mediocrity as laudable. Excuse me for my racism, but black popular culture has accepted dumbed-down segregated schools and glorified anti-academic attitudes. The dynamism of Black America pours into music and sports, and we get a vast black underclass of wasted energy, of people who believe they cannot compete in a white-dominated America that values higher education and training.



It's 2006, so we get to elect a new Congress this year. Because of high oil prices and the unpopular war in Iraq, I imagine the Democrats will finally win back the House of Representatives and possibly the Senate. This is primarily an inside the Beltway happening. It might benefit the GOP if the Democrats ran Congress going into 2008 because it would give them somebody to blame and promote some needed house cleaning.

The 2008 election is going to be wide open and certainly fascinating. Hillary Clinton appears to be the front runner for the Dems. She has enormous positives and negatives in public perception. She would be hugely polarizing. It would be great fun to watch her run, if only to see her and Bill hold hands again.

The Republicans will have no Bush unless Jeb tries to collect his inheritance. John McCain will be in their pitching, but his maverick nature may not appeal to the right-wingers of the Party, and Senators virtually always lose.

My long-shot GOP pick is Mitt Romney, the Governor of Massachusetts. He is an attractive, capable, rich guy who is a Washington outsider. Being a Mormon won't help, but he apparently does not practice polygamy. We may get to see if America is grown up enough to elect a woman or a Mormon, or if Bill Frist somehow wows the Republican faithful, a heart surgeon.

Personally, I'd love to see Newt Gingrich run against Howard Dean. These are two guys who have ideas that they believe in, speak intelligently and have a sense of humor. It would be way more fun than 2004 with those two dolts from Yale. Actually, the same could be said for 2000. Who's your idea of a presidential dream team? Let me know.

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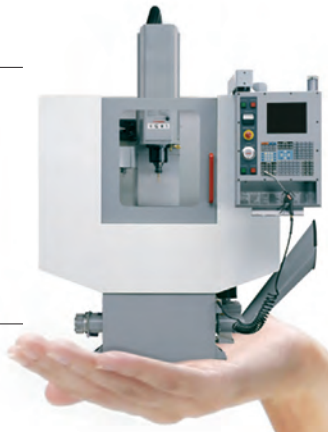

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When we planned this issue of *Today's Machining World* several months ago, featuring stories about Warsaw, Indiana, and the legal battle between a start-up tree hugger school in northern Wisconsin and the prestigious Culver Military Academy over the estate of James Lowenstine, we didn't see the link between the two pieces.

Both stories are indirectly about international market forces and estate consideration affecting business and personal lives in unexpected ways.

The dueling schools story concerns control of the huge steel service company, Central Steel and Wire, a conservative, well-run metals distributor based in Chicago. If Central Steel was a public company with shares traded every day instead of being controlled by insiders, it would undoubtedly be a target of a buyout firm or another metals company. The pressure on the Board of Directors to listen to offers would be powerful, just from the legal ramifications. Because of the interlocking interests of the Conserve School (see article) and Central Steel, the insider directors are insulated from the tug of a potentially huge buyout offer from the outside. Theoretically, the insiders can now enrich themselves without the scrutiny of external investors. Because Conserve School is the creation of the Lowenstine estate (Lowenstine controlled Central), presumably the interests of the parallel Boards coincide.

But what if Culver Military manages to win control of the Lowenstine estate, and indirectly, gain influence over Central Steel and Wire. Culver has a long and independent history. The temptation to sell the dominant stake in Central Steel for a billion dollars could be inexorable. And from a legal fiduciary standpoint, selling a messy arrangement would be a financial coup. In an odd and unintended way, the clever manipulations from the grave of James Lowenstine would be thwarted by market forces and legal constraints.

In Warsaw, Indiana, Biomet Corporation, based in the town, may be on the auction block, apparently because Dane Miller, the key founder and builder of the company, is looking for an exit strategy after a long career.

Miller has been a brilliant leader of Biomet. Today the company has a ten-billion dollar market capitalization. He and

the Board have made the calculation that this company may be more valuable to another owner than it is as an independent entity.

If a Medtronic, Johnson & Johnson or Smith and Nephew were to buy Biomet, it would be unlikely for them to shut it down and move it to China because of the enormous intellectual capital located in Warsaw, Indiana. But without Dane Miller, a resident of Warsaw, running Biomet, the company will be different and so will the town.

Unlike the Central Steel situation, Miller and the Biomet Board have no interest in perpetual insider control of the company. It is a huge asset, which will likely be sold in an orderly fashion. Market forces and legal considerations push this sale. Miller knew that he needed to go public to get the capital to compete in the fast-growing orthopedic market. Now, he apparently believes he must sell to safeguard the company and his huge personal fortune.

Central Steel and Biomet, Lowenstine and Miller. The companies probably do business with one another. So different in many ways, but both swayed by the gales of market forces and the inevitability of death and taxes.

The Central Steel and Wire – Conserve School story

reminds me of the saga a few years ago with Hershey Foods and the Milton Hershey Foundation. Publicly-held Hershey Foods, based in Hershey, Pennsylvania, was the creation of Milton Hershey, who gave his mammoth fortune to the Milton S. Hershey Foundation, which oversees the Hershey School. This arrangement has kept Hershey Foods comfortably in Hershey, PA and made for a rich and prosperous community. Then a strange thing happened. The head of Hershey Foods, who also headed the trust, asked the question nobody wanted to raise. Is it the right thing for the charitable institution to have all of its eggs in one basket – Hershey Foods – or should it diversify its assets. The obvious corollary was, should the trust entertain offers for Hershey Foods to get a pool of cash to invest in a diversified portfolio.

Such a thought is honey to the bees of Wall Street. Selling Hershey meant huge fees, hedge fund action and buyout buzz. The townspeople cringed, and the Hershey workers hid under their beds.

Ultimately, the idea was shelved, but it did push the management of Hershey Foods to shake up the company to satisfy the public shareholders.

Front: Paul, John **Back:** Bill, Ed

Central Steel and Wire is a closely held company. If Culver Military Academy were to win its case in Court, I could imagine strong pressure on the insiders to solicit buyout offers in order to meet their fiduciary responsibility of having diversified assets. The real world would quickly impinge upon the dreams of James R. Lowenstine to control Central Steel from the grave. Is this good or bad? Who knows, but it's fun to speculate.

I have been infatuated with competitive eating contests since watching the Barf-O-rama in the film *Stand by Me*. Jason Fagone has a new book coming out about the professional eating circuit, and there is a delicious excerpt in the May *Atlantic Monthly*.

Here is my favorite paragraph:

"Eating contests are poetic in their blatancy, their brazen mixture of every American trait that seems to terrify the rest of the planet: Our hunger for natural resources that may melt the ice caps and flood Europe, our hunger for cheap thrills that turns Muslim swing voters into car bombers. If anti-American zealots anywhere in the world wanted to perform a minstrel show of our culture, this is what they'd come up with. Competitive eating is a symbolic hair ball coughed up by the American id.....It seems to have a purpose, a message, and its message is this: Look upon our gurgitators, ye Mighty and despair. Behold these new super-gluttons, these ambassadors of the American appetite, these Horsemen of the Esophagus."

Perhaps the two greatest current practitioners of competitive gluttony are immigrants from Asia – the great Japanese hot dog king Kobayashi (known as Koby) and 5' 5" 103-lb. Sonya Thomas from Korea – the queen of grilled cheese.

America continues to attract the best and brightest, and hungriest.

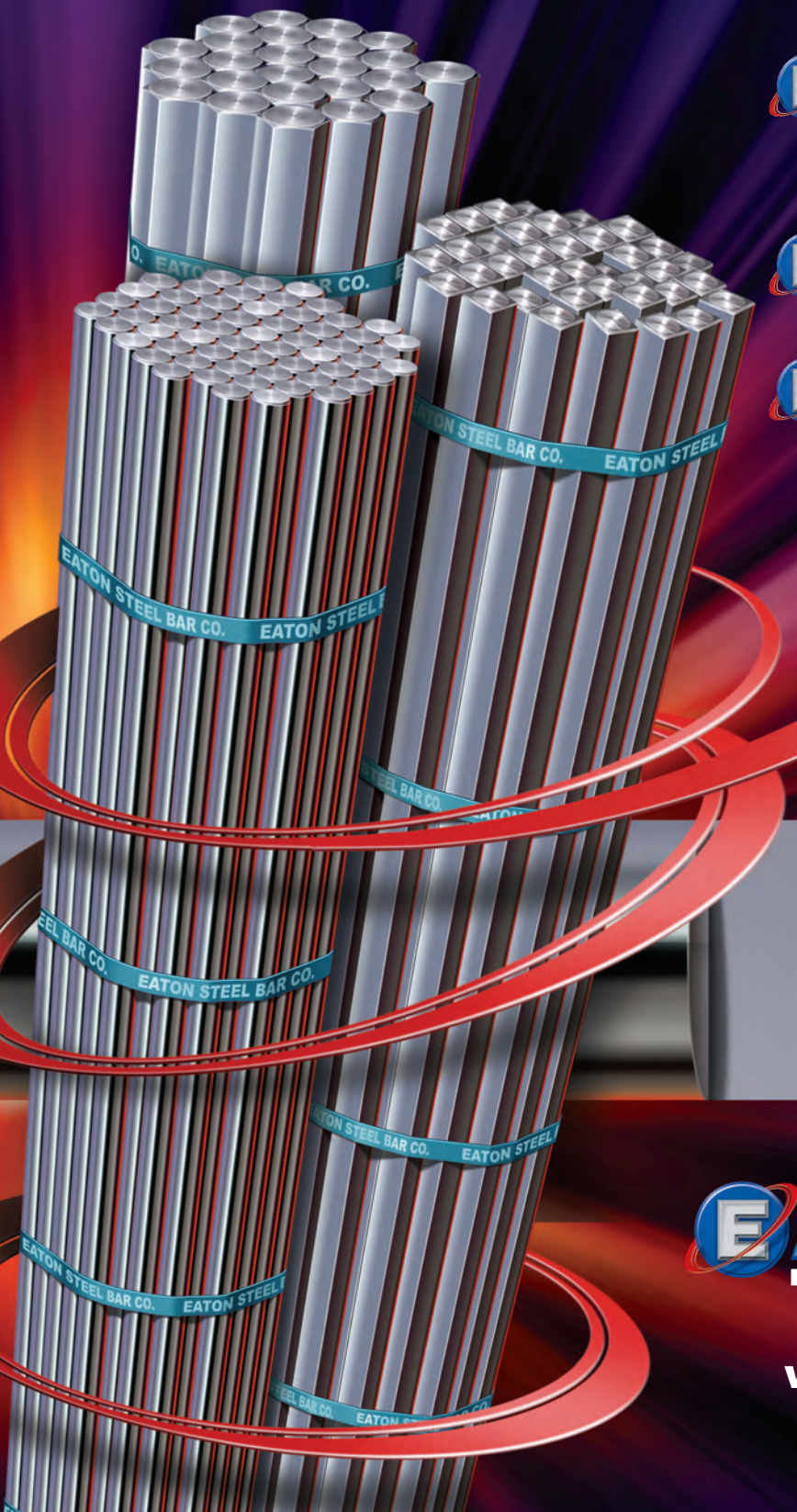
swarf

And then there are the pathetic French. The French have a national case of indigestion. As a reaction to the rioting and car burning by alienated Arab youth around Paris last year, the French political and business leaders proposed adopting an employment policy to encourage the hiring of young people. French business owners are hesitant to hire folks because it is extremely difficult and expensive to let them go once they are on the payroll. The new regulations would have allowed no sanction firing within the first two years of employment.

Student and labor leaders made the regulations a "cause célèbe." They organized strikes and marches, and ultimately brought the great Chirac and his lackey Prime Minister Dominique de Villepin to their knees. And now France, glorious France, is paralyzed again.

France has become a country that is afraid of itself, afraid of the world. The great energy of the country is unleashed to preserve economic failure. What is the connection between the funny, goofy, wing-eating contests here and the politics of Paris? The passion, the silly excess, the ESPN coverage and the brilliant innovation of the immigrant Kobayashi, who devised the method of removing hot dogs from the buns and eating them separately, contrasts starkly with the prickly sourness of a downcast clouded Paris. I'll take the bravado of gleeful gluttony any day to the sad, fearful, shrinking spirit of today's France.

THE EATON STEEL EDGE



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book review

By Jerry Levine

The Numbers Game

In the 1950's, Major League Baseball teams began paying close attention to game statistics. In the last decade, statistical analysis in baseball has become significantly more sophisticated as successful general managers like Billy Bean of the Oakland Athletics and Theo Epstein of the Boston Red Sox have utilized shrewd number crunching to produce winning and profitable franchises.

Baseball between the Numbers, edited by Jonah Keri, details what the best practitioners of statistical analysis think about baseball numbers and how the numbers relate to winning the game. The book is comprised of chapters with provocative titles such as: "Is Barry Bonds Better Than Babe Ruth?" "Can a Team Ever Have Too Much Pitching?" "Is Alex Rodriguez Overpaid?" What Do Statistics Tell Us About Steroids?" and "Can Stats and Scouts Get Along?"

Baseball between the Numbers is filled with exhaustive statistical analysis, and while a Ph.D. in math is not required to understand its concepts, a Masters Degree would help. The book's writers loaded into computers every at-bat for every game from the past 100 years and determined the probability of just about anything that can happen in baseball. They compare the performance of thousands of batters and pitchers tens of thousands of times in the same situation, then evaluate every possible outcome to come up with a value of each player over a replacement player. The book demonstrates how the ability of each player to produce (or prevent) runs and wins over a season can be statistically determined and how each player can be ranked from best to worst. Algorithms can be developed to compare one baseball era to another. Even money and drugs can be quantitatively analyzed.

The first chapter, "Is Bonds Better Than Ruth?" examines baseball's changes since Ruth played, making it possible to compare Ruth's career statistics to those of modern players. Taking into account the main aspects of the game; hitting, fielding and pitching, Ruth's achievements are slightly better than all other players. If he had played with today's smaller fields, livelier ball and a 162 game schedule, Ruth is projected to hit over 900 lifetime home runs.

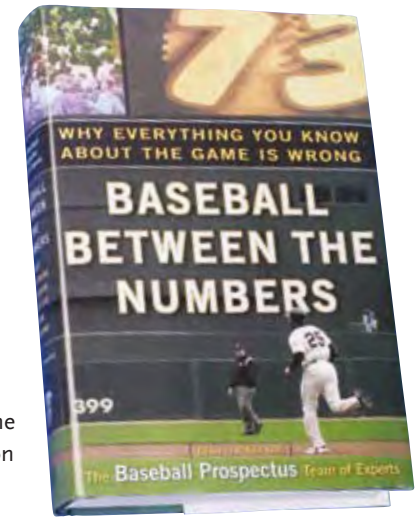
The book also quantifies the value of pitching, finding that its value equals only 50% of winning, yet, Baseball Between the Numbers also claims that pitching and defense have a greater impact in the playoffs than during the regular season because teams use stronger three or four man rotations.

The book also contains calculations of the dollar value of one additional regular season win, a playoff or World Series appearance, or the value of a new ball park. Comparing those valuations to the cost of players shows that Alex Rodriguez is overpaid, yet is still very valuable. It also shows that most players are actually paid around what they are worth.

In the past few years, several teams have stopped relying solely on conventional baseball wisdom to make their decisions and are now also utilizing the logic of young computer geeks. Baseball between the Numbers brings both perspectives together, challenging us to rethink our assumptions and providing the reader an analysis of how stats on a computer compare to gut instinct.

"Is Barry Bonds Better Than Babe Ruth?"

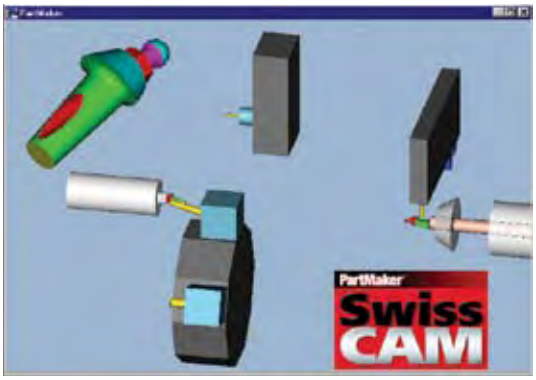
"Can a Team Ever Have Too Much Pitching?"



"Is Alex Rodriguez Overpaid?"

"What Do Statistics Tell Us About Steroids?"

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



Off to See the Wizard

PartMaker Software/IMCS Inc. will demonstrate the latest Version of its PartMaker® CAD/CAM software for CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes at Eastec 2006 in West Springfield, MA. PartMaker Version 7.8 features enhancements to the PartMaker Surface Machining Wizard (SMW) Module and PartMaker's 3D Machining Simulation Module.

PartMaker's Production Milling Module, available for the first time with the release of PartMaker Version 7.8, provides enhanced simulation capabilities for multi-axis milling attachments including 4th axis and 5th axis rotary tables and tombstone fixtures.

Using the Milling Module, the user can choose the type of multi-axis fixture being used to manufacturer his part. He can then customize the chosen fixture by just manipulating a few graphical parameters.

With Version 7.8, users now have the ability to fully simulate the operation of chuck jaws during machining. The 3D machining simulation in PartMaker Mill Version 7.8 allows users to model and fully simulate milling tool holders as well as various types of work holding.

For more information, contact PartMaker Software/IMCS Inc. at 215-643-5077.

Haasta La Vista

The new GT-20 lathe from Haas is designed to meet the needs of the increasing trend towards shorter-run, multiple-op work, small- to medium-sized shops. The compact GT-20 takes up only 8' x 4.5' of floor space, yet offers an 11" x 12" maximum capacity. The machine provides a maximum part swing of 13" over the front apron, with a 9.25" swing over the cross slide. The X axis provides 6" of travel with 2400 lb of thrust, and the Z axis provides 12" of travel with 3700 lb of thrust. Rapids are 710 ipm in both axes.

The 20-hp (peak) vector dual-drive system gives the GT-20 spindle speeds up to 4000 rpm and peak-torque of 154 ft-lb.

The base configuration of the GT-20 has a maximum speed of 3000 rpm and does not include a chuck, hydraulic system or tool turret. The machine's A2-6 spindle nose has a 3" bore and accepts a variety of optional through-hole chucks and collets. The cross slide accepts gang-style tooling.

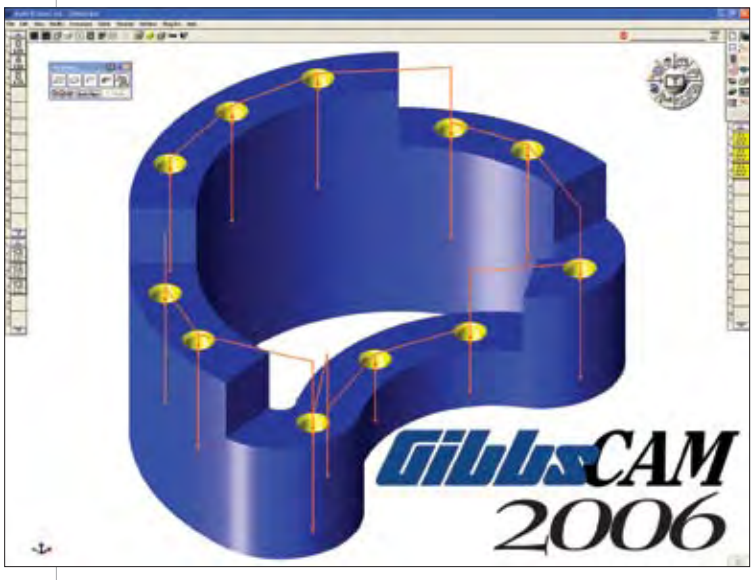
For more information, contact Haas at 800-331-6746 or visit the company website at www.HaasCNC.com.

Quick Change

The new, patent-pending Quick Change Tool Spindle Front Box from Davenport Machine was developed in conjunction with Davenport customers to cut hours off of every setup requiring a tool spindle change. The new Quick Change Box allows the steel outer housing to be aligned and installed once, and interchangeable bronze liners can be swapped in less than a minute. Changing from a stationary spindle to a revolving spindle or to a broaching spindle can be done without disturbing the spindle alignment.

All the worn boxes in a machine can be replaced easily without hours of maintenance. When used with new 672-U1-SA and 672-U2-SA Universal Backlash Collars, operators can pull a complete spindle assembly out and replace it in minutes. Features include: permanently installed and aligned Steel Outer Housing, completely assembled with the 2 most common bushing liners (Ø1.125 & Ø1.375); interchangeability with genuine Davenport Machine OEM parts; Ø1.656 ID liners are also available.

For more information, contact Davenport Machine at 800-344-5748 or visit the company website at www.davenportmachine.com.



Rock of Gibbralter

Gibbs and Associates will demonstrate GibbsCAM 2006 during EASTEC, May 23rd – 25th in Springfield, Massachusetts.

Key improvements include: Enhanced Hole Making – Hole AFR (automated feature recognition) supports intersecting holes. Profiler circles can be used as input to Hole Manager enhanced hole processes, which support multiple retract levels and depths and fixture/clamp avoidance; HSM Toolpath Modification introduces arcs and feed-rate changes to minimize the effect of direction changes in the toolpath; enhanced Tool Holder Support introduces a library of milling tool holders along with corresponding tool holder support in process simulation; surface Flow Gouge Checking introduces gouge checking to surface flow process; enhanced Network Licensing allows multiple GibbsCAM sessions to be launched on a single PC; and enhanced CAD Compatibility ensures full compatibility with popular mainstream, PC-based CAD systems: Autodesk Inventor R11, Solid Edge V18 and SolidWorks 2006.

For more information, about Gibbs and Associates, please call 800-654-9399 or visit the company website at www.GibbsCAM.com.

fresh stuff

Hot Commodity

The TechnoSHRINK Ultra is the latest in shrink fit machines, performing fast tool changes without the high cost historically associated with shrink machine investment.

According to the manufacturer, the hot area of the tool holder is covered by the induction head, and cooling begins automatically at the end of the heat cycle, so the operator does not have to move hot tools to a cooling station. Features include tool changes in only 6-10 seconds; elimination of handling hot tools; tabletop size fits practically anywhere; and easy to program for carbide and HSS.

Benefits include: improved safety in the shop; savings on initial machine capital investment costs; improved carbide tool life by 400% or more with the increased rigidity & accuracy of shrink-fit tool holding.

For more information, please contact Techniks at 800-597-3921 or visit the company website at www.techniksusa.com.

fresh stuff

BIG + Shrink

BIG Kaiser will introduce the Kaiser Integral 112 Finish Boring Heads and Speroni's New Esperia AutoShrink with ProVision at Eastec Booth #3033. The new integral-shank is designed for the popular EW2-50XL precision boring head. They will be available for CAT40, BT40, HSK-A63 and Capto C6 size spindles and provide a shorter tool than the modular shank/boring head combination.

For use with existing center-mounted boring bars (Ø.078"-2.125") and side-mounted insert holders (Ø3.15"-6.00"), these heads can be used for precision finish boring with a large adjustment dial displaying increments of .0002"/dial division and Vernier markings to accurately adjust to .00005" on diameter.

The Speroni AutoShrink with ProVision has the ability to shrink fit any kind of tool including HSS tools, ranging from 4mm to 50mm in diameter. The system features one micron Heidenhein glass scales, and its thermo-balanced and artificially aged pearlitic cast iron structures ensure that the equipment is fully isostatic and will not deform or distort over time or temperature change.

The new ProVision Measurement and Data Management System Software has sub-pixel & sub micron resolution. The software stores at least 10,000 tools, 10,000 tool kits and 250 zero points. The graphics filter allows for the display of the following file types: DWG, DXF, GIF, JPEG, PCX and WMF, in addition to the ones supplied with the Windows™ operating system.

For more information, please contact BIG Kaiser at 847-228-7660 or visit the company website at www.bigkaiser.com.

fresh stuff

Form Fitting

Detroit Precision Hommel has introduced the Opticline noncontact CNC shaft gaging system for measuring form, dimensional and positional tolerances of shaft-type parts in submicron detail, recording results instantly. The fully flexible shaft gaging systems accommodate shaft type part sizes from 0.2 mm to 480 mm diameter, 1 mm to 2500 mm long with measuring accuracies to +/- 1 micron.

Telecentric camera measuring systems and specially adapted calibration processes permit measurements of even the most complicated workpiece geometry, allowing users to effectively measure cylindrical and eccentric shafts, such as crankshafts, camshafts, compressor and turbine shafts.

Contour, diameters, length, roundness, concentricity, cones, angles, flatness, parallelism, eccentricity, stroke, threads and more can be recorded during a single pass of the optical measuring head. Measurements are easily completed within a production cycle for 100% quality control. Manufacturing checks, automatic tool correction, dimensional measurement, initial sample measurement and machine setup are typical applications. The family of gages is driven by Windows-based measuring software.

For more information, please contact Detroit Precision Hommel at 248-853-5888 or visit the company website at www.dphgage.com.

fresh stuff

It's a Twister

UNIST Inc., using their Tornado Thru-the-Tool Lubrication System, has created a retrofit for CNC drilling machines and other coolant fed drilling applications. The newly configured system connects directly to a machine designed with coolant inducers. The system includes a solenoid valve of any voltage, which allows the fluid delivery signal to be wired directly to the CNC drilling machine and a quick disconnect coaxial air/fluid line for easy connection to the inlet port on the machine. The unit can be connected to shop air or an independent air supply.

The Tornado Micro-Fluidization™ System is a positive displacement system, which produces a total range in fluid output of 1-100 drops per minute (.03cc to 3.3cc per minute). Employing UNIST's low air pressure drop technology, the Tornado System permits nearly unrestricted airflow and minimum air pressure drop to the cutting tool edge, causing the system to maintain a consistent, precise flow of lubricant throughout the cut. It may be used on any CNC machine or drill press with a coolant inducer. Use of the Tornado System presents the opportunity for drilling machine users to greatly improve their production rates, reduce downtime and eliminate fluid handling, treatment and disposal.

For more information, please contact UNIST Inc. at 800-253-5462 or visit the company website at www.unist.com.

fresh stuff

Water World

MC Machinery Systems, Inc. now includes the Waterjet line, powered by Mitsubishi CNC and available in three models; the 2-axis Classica, 4-axis with tilt-head Dinamica and 5-axis Evolution.

Waterjet is available with 1 or 2 heads and features a stainless steel table and features a Mitsubishi 700 Series Control. Dedicated Nano control helps achieve high-precision machining. The unit is controlled on a 15-inch water-proof screen, with improved graphics and NC design to simplify operation. The 2-axis Classica features 2D CAD-CAM software with nesting capabilities, and accuracy and repeatability of +/- 0.004".

Dinamica and Evolution's software features Intelligent Tapering Control, which correct tapering of the cut automatically. The CNC tilts the high-pressure water jet +/-7 degrees which allows for increased cutting speeds in a contour. Both can achieve accuracy and repeatability of +/-0.001".

The Exclusive 5-axis Evolution 3D System uses a self-positioning rotation point device on the material to automatically maintain a constant distance from the nozzle to the workpiece. This protects the nozzle through a working range from flat work to a contoured interpolation of +/-69˚.

For more information, contact MC Machinery Systems, Inc. at 630-616-5920 or visit www.mitsubishi-world.com.

fresh stuff

Laser's Edge

Pinpoint Laser Systems has introduced a new Microgage Laser Alignment System for use in manufacturing plants and production facilities. The Microgage uses include aligning CNC machine tools, checking printing press, aligning webs and rolls, monitoring plastic injection molding equipment, aligning shafts and drive assemblies, and more.

This new Microgage consists of a small compact laser transmitter that forms a very straight reference line over 150 feet long. A small digital reader picks up the laser beam and a handheld display shows the position of the reader to within 0.0001 inch (3 microns). The Microgage laser can be positioned to form a straight reference line, as shown in the photograph, for checking machinery straightness, runout, and other parameters. A rotating laser base swings the laser in a full circle defining a precise plane for checking the flatness of equipment, rolls, web systems, and more. A right-angle attachment redirects the laser beam for checking squareness of machinery aligning actuators, and precision parallelism adjustments on rollers, guides, tracks, and rails. With different adapters, the Microgage can attach to any machine providing precise reliable information on the alignment condition and guidance on how to re-optimize the equipment.

For more information please contact Pinpoint Laser Systems at 800-757-5383 or visit their website at www.pinlaser.com.

fresh stuff

In Focus

A full line of ZnSe cylindrical lenses, offered with a variety of focal lengths and sizes for refocusing a laser beam into a line shape has been introduced by Laser Research Optics of Providence, Rhode Island.

Laser Research CO_2 Cylindrical Lenses feature focal lengths from 5" to 30" with ±0.5% tolerance. Designed for refocusing a 10.6 µm laser beam into a line shape, they are available in sizes from 1" to 2" dia. with ±0.005" CT.

Providing a 60-40 scratch-dig surface finish and 1 fringe surface accuracy @633 nm, Laser Research CO_2 Cylindrical Lenses are A/R coated for .5% max. reflectance per surface @10.6 µm and normal AOI.

For more information please contact Laser Research Optics at 888-239-5545 or visit the company website at www.laserresearch.net.

fresh stuff

Spindle Solutions

Fischer Precise USA will show its range of spindle solutions in Booth #3004 at EASTEC in West Springfield, MA. Fischer Precise USA has been created from the recent union of companies, Fischer Ag and The Precise Corporation. Customers can now specify cost effective spindle solutions based on the full range of the combined Fischer and Precise product lines: spindle speed up to 200,000 rpm, power output up to 100 kW, and choice of ball bearing, air bearing, or hydrostatic bearing with worldwide support.

Liquid shaft cooling will be featured to show it benefits, including higher parts accuracy, greater machining reliability, and longer spindle durability because of the optimization of stable shaft temperature during cutting.

Fischer Precise USA can also provide spindle service, training, and support solutions to optimize existing manufacturing applications. Fischer Precise USA is ready to assist and provide spindle users our full resources in their machining or grinding processes.

For more information please contact Fischer Precise USA at 800-333-6173 or visit the company website at www.precise.us.

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MEDICAL CENTER

Welcome to Warsaw

Indiana's Orthopedics capital of the world

By Jessica DuLong

A timeline tracking the development of the orthopedics industry reads like the Book of Genesis: DePuy begat Zimmer. Zimmer begat OEC. OEC and Zimmer begat Biomet. And so on. Though today's market for orthopedic equipment is global and growing, it seems all roads lead back to Warsaw, Indiana. Over the past century, a cluster of orthopedic equipment manufacturers has mushroomed up among the grain fields in the northeastern corner of the state, and today this small Midwest town is the orthopedic capital of the world. Tracing the industry's history reveals how homegrown entrepreneurship and specialized local skills have led a series of small-town players to seize a spot in the global economy.

Orthopedic Photos courtesy of DePuy Ortopedics

Welcome to Warsaw

Indiana's Orthopedics capital of the world

The financial services industry has its Wall Street, technology has Silicon Valley, but how did Warsaw, a town of 12,415 people, located 120 miles east of Chicago, come to be the world headquarters of orthopedics manufacturing?

If you squint a little, it's not hard to picture a stagecoach clip-clopping past the flat-faced, cornice-topped buildings that give downtown Warsaw its old-time feel. While you sit sipping a beer in Mad Anthony's brew house, Center Street's newest and hippest eating establishment, you can catch up on local history from a poster-sized reprint of a front-page news story from 1934. Apparently John Dillinger surprised a beat cop right on this corner in the wee hours of an April morning some 72 years ago. The notorious outlaw marched the officer, at gunpoint, to the police station to steal two revolvers and three bulletproof vests. Besieged by police and reporters in the aftermath of the "sensational raid," the paper exclaimed, "Warsaw suddenly blossomed forth as a place of importance under the sun." But anyone who knows anything about the history of orthopedics knows that by 1934, Warsaw's significance had long-since been established—not by a bandit, but by a pharmaceuticals salesman named Revra DePuy.

Revra DePuy, Inventor and Pioneer

When Mr. DePuy first arrived to peddle his wares in 1894, Warsaw was a bustling market town and railroad center. Oak-board sidewalks covered the muddy paths between downtown shops, and early wood-frame storefronts had been replaced by brick buildings, including the stylish Hotel Hays. But in doctors' offices throughout the region, rudimentary medicine held sway. Fractures were all too common in farm country, and standard treatment protocols sometimes caused more harm than good. As the story goes, Mr. DePuy learned during sales calls that when physicians immobilized fractures with wood splints made from barrel staves, splinters often lodged under a patient's skin and caused infection. Presented with this problem, the 32-year-old salesman dreamed up a solution that gave birth to commercial orthopedic manufacturing. He invented the fiber, and then the wire, splint.

So invested was Mr. DePuy in the promise of his idea that he set up shop in the Hotel Hays, choosing Warsaw as the best place to launch his new enterprise. What exactly appealed to him about the town remains a mystery. Perhaps it was the railroad, the area's many lakes—over 100 in the region—or the newly opened Spring Fountain Park, which was quickly establishing itself as a major social center in northern Indiana.

Whatever the reason, Mr. DePuy's choice put Warsaw on the map. More than a century after he sold his first splint, Warsaw is home to nearly two-thirds of the world's market-share for orthopedic devices, held principally by Biomet, Zimmer Holdings, and DePuy Orthopedics, now a subsidiary of Johnson & Johnson. Other companies with a local presence include: Medtronic Sofamor Danek, Symmetry Othy, Paragon Medical, and other small suppliers. These companies design and manufacture reconstructive orthopedic implants, including joint, dental, and spinal implants, trauma products and related surgical instruments. If you or someone you know has an artificial knee or hip, there's a good chance you can trace it back to Warsaw.

Today, orthopedics manufacturing employs about 3,500 workers in Kosciuscko County, or nearly 12 % of the labor force. Last year, Zimmer achieved $3.29 billion in net sales, and Biomet reported revenues of $2 billion. (Johnson & Johnson does not report DePuy's earnings separately.) The orthopedic cluster is largely responsible for Warsaw's prosperity, according to a 2001 report commissioned by the Indiana Health Industry Forum, which notes that high wages filter through the entire local economy. Clearly, it was orthopedics manufacturing (not robbery) that actually earned Warsaw its place under the sun.

Is it something in the water?

Why Warsaw? That question evokes as many responses as there are respondents. Some attribute Warsaw's success to an indefatigable Midwestern work ethic. Others say it's simply a matter of "right place, right time." But certainly, intrepid entrepreneurship is a thread that runs through the industry's hundred-plus-year history.

"God packages people certain ways. Some people are packaged as entrepreneurs, and some people aren't." When he speaks, there's no question Toby Buck is clear which category he falls into. His booming voice creates a curious counterpoint to the image of a commander in

A portrait of inventor Revra DePuy, as well as his original splints, are prominently displayed in the hallways of DePuy.

Paragon Medical's founder Toby Buck at his desk. Founded in 1991, his company now manufactures hip, knee, spine, sports medicine, trauma, and cardiovascular applications, as well as dental implants, which are sold to Zimmer and DePuy.

Welcome to Warsaw

Indiana's Orthopedics capital of the world

battle portrayed in the painting on the wall behind him. Buck's blue, collared shirt crests over an ample belly, bordered by a pair of "good Republican suspenders" that depict men wielding signs calling for tax cuts. He calls Warsaw an "entrepreneurial incubator" and says when he set out to penetrate the orthopedic supply market, there was no question this was the place to be. "Warsaw is probably the greatest economic cluster in the smallest number of square miles in the world."

Founded in 1991, Buck's company, Paragon Medical, is a relatively young upstart in the centenarian world of Warsaw orthopedics—perhaps proof that entrepreneurship still rules the day. Early on, Paragon cut its teeth with a menagerie of polymer products from shipping pallets and playground slides to outhouses. But orthopedics was always the goal. Next, the company designed and manufactured surgical instrument sterilization cases and trays, which Buck calls "glorified tackle boxes for surgeons." Then, once the company had established enough of a track record as an orthopedic supplier, its engineers branched out into instrumentation and implantable devices. Today's product line includes hip, knee, spine, sports medicine, trauma, and cardiovascular applications, as well as dental implants, which are sold to Zimmer and DePuy, among others. But as Buck will tell you, orthopedics is no easy nut to crack. "It's difficult to break in as a supplier. The orthopedics community is like a fraternity. The industry is very close knit, very cross-pollinated. It's like a brotherhood."

The seeds for that "cross-pollinated" brotherhood were planted by Mr. DePuy, who was intent on bringing his invention to market. He had no way of knowing then that though he'd remain childless (biologically), the progeny of his fledgling company would mold the future of orthopedics for generations to come.

Mr. DePuy made his first splints after his own image, molding the devices on his own limbs. Through the late 1890s, he did all the manufacturing himself and sold sets to two salesmen who peddled them regionally. Soon, orders began to outpace supplies, and he couldn't keep up. Then, on a fateful day in June of 1905, Mr. DePuy hired a 20-year-old Western Union telegraph trainee named Justin O. Zimmer, who started making splints the following day. "Mr. DePuy and I made a sufficient number of splints during the greater part of that summer to take care of all orders," recalled Mr. Zimmer in his autobiography. Before long, Mr. Zimmer started selling splints, too. By 1919, the company had 16 employees on the payroll, which was deemed one of the important assets of the community. When Mr. DePuy died of heart trouble in 1921, he was remembered as a prominent businessman with many friends.

After Mr. DePuy's death, Mr. Zimmer continued as national sales manager for a time. But an idea had been brewing, and in 1926 he approached Mr. DePuy's widow with his concept for an aluminum splint and asked to buy an interest in the company. She refused. He was angry—and determined. So the next year, contrary to the advice of his wife and his parents, Mr. Zimmer went into business for himself, taking two coworkers with him. In the decades that followed, many more in the industry would catch the same entrepreneurial spirit and branch out on their own.

By early 1927, the basement of the Zimmer family house at Winona Avenue and Indiana Street was overrun with machinery. Mr. Zimmer and his small staff were busy preparing a display of samples to present at the American Medical Association meeting in Washington, D.C. Soon a catalog of 50 aluminum splints was available for the nine-person sales force. During the first seven months of operation, the new company outdid DePuy, boasting sales of $160,000. Mr. Zimmer and his crew delighted in proving wrong all those who'd predicted that demand for splints could not support two companies, and one or both would fail. The market was growing, not shrinking. By 1942, Zimmer's annual sales topped $1 million.

Inspired by new technologies and potential profits, a number of DePuy and Zimmer employees launched their own businesses in subsequent years. Perhaps the most significant were the founders of Biomet, a pair of ex-Zimmer employees who joined forces with two employees from another Zimmer offshoot called Orthopedic Equipment Company (OEC), based in Bourbon, Indiana. The four—Dane Miller, Niles Noblitt, Jerry Ferguson and Ray Harroff branched out on their own in 1977, just after new stringent FDA regulations sent shockwaves through the orthopedics industry. Skeptics figured the barriers to entry for the newcomer would be insurmountable. Instead, the founders simply built the company around the new rules, actually benefiting from the disruption the FDA caused at their established competitors. In fact, by 1984, the company had grown enough to acquire its progenitor, OEC. And in 1992,

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Welcome to Warsaw

Indiana's Orthopedics capital of the world

Business Week ranked Biomet number 316 in its "Top 1,000" companies and named CEO Miller the top executive in terms of return to shareholders relative to compensation.

Often cited as a classic American business success story, Biomet has grown from its modest beginnings (in a converted barn with a gutted mobile home attached) to an orthopedics world leader, reporting $2 billion in revenue for fiscal 2005. Recently, however, investors, analysts and Biomet employees were surprised when Miller, who had served as the company's top executive for over 30 years, announced his retirement in March. Rumors that the company, which recently hired Morgan Stanley to help it explore strategic alternatives, have raised questions about Biomet's future. But the company's market value, estimated at $9 billion, demonstrates how far Biomet has come. Warsaw's development as the orthopedic world leader has resulted from this kind of entrepreneurial spirit and from the depth of industry wisdom in the region.

Tribal knowledge

It seems like everyone you talk to in Warsaw knows something about orthopedics. The industry is enmeshed in the fabric of daily life in ways that are sometimes difficult for residents to quantify or explain. Everyone knows someone in the industry. An institutional memory extends community-wide.

One of the greatest surgical advances of the twentieth century was the development of the total joint replacement. The first artificial hip was invented in the early 1960s, and the first mobile-bearing total knee replacement was designed in 1977. Today more than 450,000 Americans undergo total knee replacement surgery each year, and companies like DePuy, Zimmer and Biomet compete to get surgeons to recommend their devices to patients. Each year, they showcase their products at the annual meeting of the American Academy of Orthopedic Surgery (AAOS), where they educate surgeons about their latest advancements in design and materials.

Traditionally, implants have been made with hard metal components, but researchers are constantly developing new materials, including ceramics, hydrogels and woven metals with improved tensile strength, flexibility and durability. As new materials are found to be successful, it's often a race to the FDA to get approval. The same is true for design advancements. For example, DePuy is the only manufacturer with FDA approval to market a rotating platform knee in the United States. The company's latest release is the P.F.C. Sigma

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Welcome to Warsaw

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RP-F knee that allows knee replacement patients to sit cross-legged or perform deep knee bends. For its part, Zimmer has recently focused on its growing portfolio of minimally invasive technologies, including muscle-sparing surgical techniques and instruments. Last year, the company was first to market a knee component that can be assembled within the patient, called the NexGen MIS Tibial Plate.

Unlike the components in automobile or aerospace manufacturing, the parts produced at Zimmer, DePuy, Biomet and other companies end up in a patient's body. Meticulous quality control standards are imperative. And though the plants in Warsaw look, in many ways, like machine shops anywhere, the integrity of materials and fit of these products have a very intimate impact on each patient. A bone screw is not just any screw, and surgeons understand that stringent quality assurances can contribute to higher prices. They recognize that sometimes you do get what you pay for. "I've had Brand X sell me a screw for $85 while Brand Z offers it for $17," says Dr. James Hamilton, an orthopedic surgeon, professor and chairman of the University of Missouri, Kansas City School of Medicine and a spokesperson for the AAOS. "I know Brand X's screw is priced higher because of the quality controls that go into making it. When it comes to reliability and durability, is the extra cost worth it? In some items, believe me, it is." Hamilton says the commercial orthopedics industry has benefited from a resident workforce in Warsaw that knows this business. "Highly skilled machinists are needed to do this work and geography has allowed more rapid expansion of technology than would otherwise be possible," he explains.

Even though orthopedics has gotten highly sophisticated and technological, there is an element of craftsmanship involved, explains Brad Bishop, director of public affairs for Zimmer. Nothing reveals this fact better than watching a surgeon use

P.F.C.® Sigma Knee

Above: The P.F.C. Sigma RP-F knee is the only rotating platform high-flex knee available in the U.S. designed to accommodate complex knee kinematics with up to 155 degrees of deep flexion. The P.F.C. Sigma RP-F Knee System uses a conforming cam and post that functions as a third weight-bearing condyle to decrease contact stress in deep flexion.

David Cox, a senior model maker in prototyping services, who started at DePuy in 1968, says the family element is apparent. Both Cox's son and daughter work at DePuy, and previously his father and brother worked there as well— not to mention all the folks on his wife's side of the family. Many orthopedics employees can trace similar roots in the industry.

Cox still remembers the day the company moved from the old brick building on Market Street into the new modern plant on Route 30. "That was a big day for DePuy employees. We were excited. It meant we were probably going to have a good future," he recalls. "The employees actually used their personal vehicles to move equipment. Everybody helped."

a specialized bone saw to cut away diseased tissue from a sedated patient's knee. Once the cut is made, there's no going back, and it's vital that the artificial knee implant fit precisely. "You're taking an unnatural object and fitting it to human anatomy," Bishop explains. "There's a certain level of customization, even with standard parts, which requires very specific design and innovation." The resident talent in Warsaw, developing generation after generation, has played a crucial role in innovation.

While high-tech engineering positions at these companies continue to be filled largely by graduates from nearby universities, smaller, local institutions are determined to feed the orthopedic industry their own, homegrown talent. Two years ago, Grace College launched the Orthopedic Scholar Initiative, which program coordinator Michael Harstine envisions as providing a "human capital supply chain" for the professional side of the industry. The program, which includes internships with local companies, aims to "position our graduates as the industry's preferred employees because their academic experiences were formed by the industry leaders themselves," Harstine explains.

Meanwhile, Ivy Tech Community College prepares students for employment on the production side. The college's manufacturing skills program, designed with input from industry representatives, trains entry-level CNC machinists. Classes taught by adjunct faculty, who work in local orthopedic plants, offer students hands-on experiences that reflect real-world job situations they might encounter, perhaps at the DePuy plant, which happens to be right next door.

Each new orthopedic enterprise founded in Warsaw has reaped the benefits of the industry wisdom that has evolved here. Paragon is no exception. "There is a peculiar knowledge base in the orthopedics industry that has been cross-pollinated over a hundred years," Buck explains. "Think of the amount of tribal knowledge that must exist here in this geographic area." He credits this knowledge as a key factor in his company's success. After all, when Buck went looking to fill his company's vacant CFO seat, he didn't have to go far. He hired Debra Yingling, former worldwide finance director at DePuy, whom he also happened to know through church. "I didn't have to bring somebody from outside the Midwest here to fill the job," recounts Buck. "I found probably one of the most superbly qualified candidates in the world right here."

Neighborly Competition

Business analysts are quick to tell us that in a global economy it no longer matters whether you do business in Dubuque or Dubai. If that's true, could there be any advantage for DePuy, Zimmer, Biomet, and many of their suppliers to be neighbors? Drawing from a common, highly skilled, industry-specific talent pool seems to be one benefit. Another seems to be the way proximity fosters relationships.

Take it from the new guy on the block, who chose this location strategically. "It's all about relationships," says Buck. "And it's much easier to build relationships when you're located right next to a client cluster. If you were a Zimmer or a DePuy, wouldn't you want a dominant supplier that offered a comprehensive portfolio of solutions right next door?" With all the talk of how technology mitigates geography, Buck recognizes that his location allows him to "have eye contact during working sessions right here, right now, within 10 minutes if I need to." Video conferencing is all well and good, but sometimes an in-person conversation makes all the difference.

But what happens when you're not just near your clients, but also your competitors? It seems small-town neighborliness, even between members of competing organizations, is the norm. "My next-door neighbor is a DePuy development engineer," explains Zimmer's Bishop. "We go to the same church. Our kids play together. Our rule is, when it comes to business, the less said, the better. You can talk about what your kids are doing in school, but you shouldn't talk about what's going on at work."

Over the years, Warsaw residents have mastered a chummy rivalry between competing companies, on par with that between school sports teams. It helps that for the most part, the competition doesn't play out in Warsaw. Instead, it happens at conferences and in hospitals where surgeons choose what equipment they install. What also helps is the shared mission. "When it comes right down to it, we're all about patient care," says Mary Beth Sellers, a DePuy employee for 15 years. "There's plenty of market out there for everybody. Here in this community, we all get along very well."

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1-3/8″ 6-spindle, 1980
1-3/4″ 6-spindle, 1965-1979 (3)
1-3/4″ 6-spindle, factory rebuild
1-3/4″ 6-spindle, thdg., 1969
1-3/4″ 8-spindle, 1970
2-1/4″ 6-spindle, 1973-79
2-1/4″ 6-spindle ACW 2004
2-5/8″ 6-spindle, 1982
5-5/8″ 6-spindle, 1979
6-5/8″ 6-spindle, 1979

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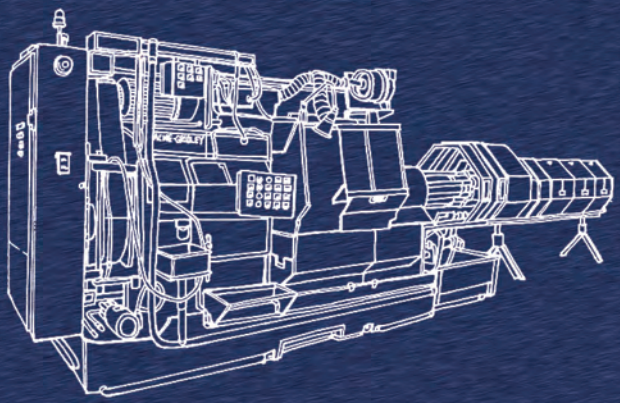
1″ RAN6, 1975
1-1/4″ RA6, 1973-1958-1982 (6)
1-1/4″RA6 collet chucker, 1982, superb
1-1/4″ RB8, 1956-1979 (5)
1-5/8″ RB8, 1980, pickup (2)
1-5/8″ RBN8, 2000-1975
2″ RB6, 1979-1985-1956
2-5/8″ RB8, 1975 (5)



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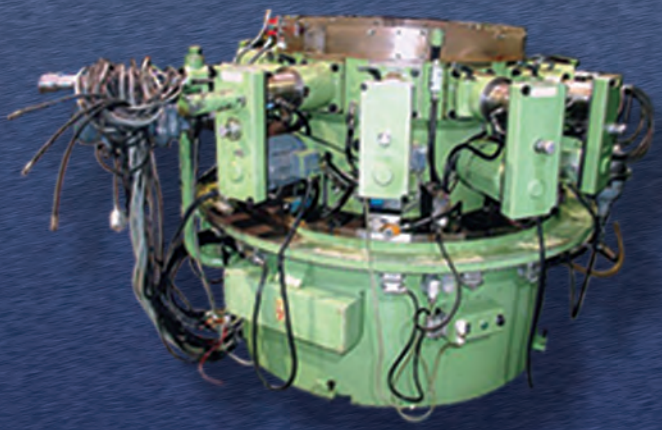

Hydromat HW 25-12, 1984
Hydromat HB3245-16 2002 CNC
Hydromat HW 25-12, 1984
Hydromat HW2 25-12, 1985
Hydromat HW 25-12, 1985
Hydromat V-12, 1986 Trunnion
Hydromat 30-60, 36-100, 20-80 units for drilling, threading, recess

Swiss-CNC
Sliding Headstock
Citizen L-32, 1998
Citizen L-20, 1996, Type VII
Star SA-12, 2000
Tornos Deco 26mm 2002

Brown & Sharpe
#2 1-1/4″ CNC Allen Bradley 8200 1986

CNC Machines
Miyano ANC 35S, 1989

Davenport
3/4″ Davenport chucker, 1986 (5)
3/4″ Logan Clutches, Rebuilt 2001
3/4″ Model B, 1989
3/4″ Model B, 1970-89 (7)

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Model 52 1-1/4″, 1979

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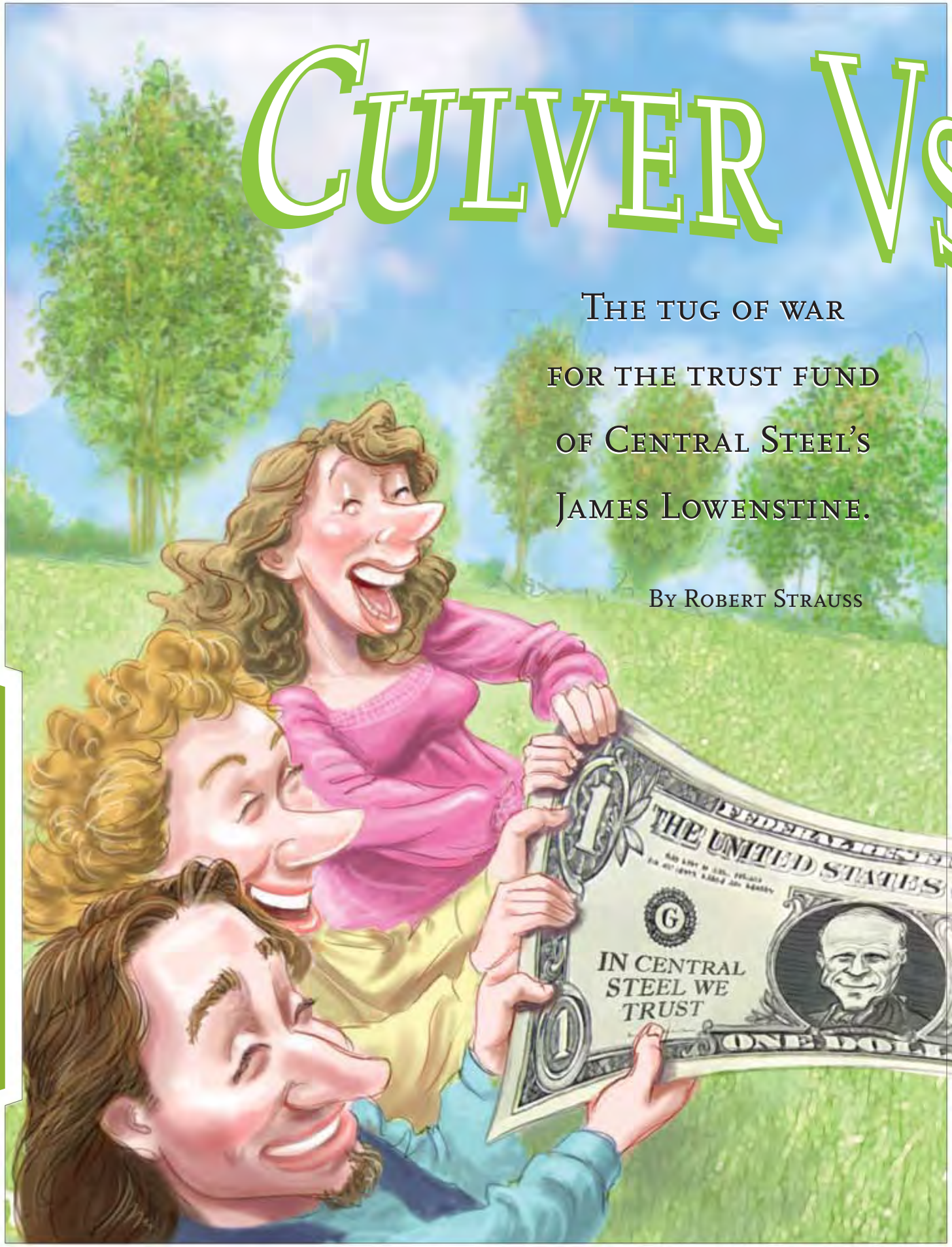
Culver Vs

The tug of war for the trust fund of Central Steel's James Lowenstine.

By Robert Strauss

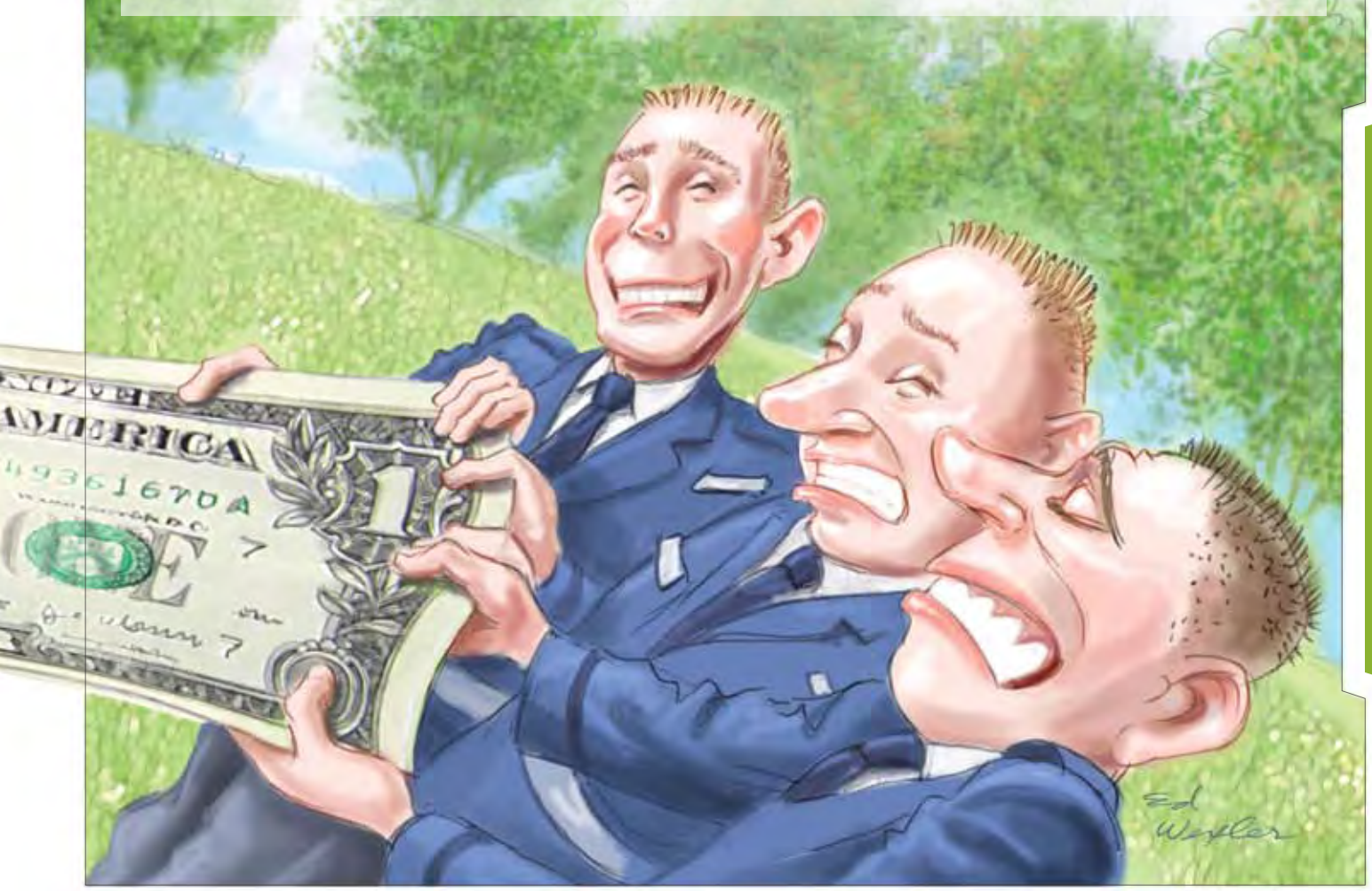


Conserve

"Imagine..." reads the white lettering over the bucolic green, leafy cover of the Conserve School brochure. "The Dream... The School... The Future..."

Each set of ellipses in this case means not things left out, but the story of a man's imagining of the dream school of the future.

The man was the late James R. Lowenstine, and if they made a follow-up to "Citizen Kane," the Conserve School would be his Rosebud, the icon that inspired him through an otherwise hardnosed career as the Chairman of the Board and President of Central Steel & Wire Company in Chicago.



Culver Vs. Conserve

Lowenstine spent most of the spare time of his adult life on his 1,200-acre estate, Lowenwood, in the north woods of Wisconsin, near the resort town of Land O' Lakes. It was a marvelous contrast to the urban toughness of the South Side of Chicago, where he ran the Central Steel & Wire Company, founded by his father.

Long before his death in 1996, Lowenstine decided that upon his death, Lowenwood would transform into a unique boarding school, emphasizing environmental studies and living with the land. He created a trust to do just that in 1981, the trust getting 56 percent of Central Steel voting stock. There was a particularly vital line in the trust document, indicating Lowenstine's intent to keep his business connected to his dream: "I recommend Central Steel stock not be sold."

Now Lowenstine's imagined dream, the school, is a reality, but one of the other dear places in his life says it is not part of the future. The Culver Military Academies, a prestigious prep school in Indiana from which Lowenstine graduated, has brought suit against Central Steel's board of directors, which oversees the Conserve School, saying there is no way Conserve can be successful in the long run and that Culver should be getting the residue of Lowenstine's trust, which could be running in the hundreds of millions of dollars.

The trust says clearly that Lowenstine wanted the Conserve School and wanted his board, most of whom were long-term friends of his and near-lifetime employees of Central Steel & Wire, to control its establishment and growth. He did have a failsafe for the money, however. The trust states that if putting together and then operating the school Lowenstine dreamed of is too impractical, the proceeds of the trust should go to Culver.

Just as the Conserve School was preparing to graduate its first four-year class, the Culver Educational Foundation filed suit against Conserve's trustees alleging those trustees – the Central Steel & Wire board of directors – "knew that a sale of the shares of the company could affect their positions as directors and management employees." Since the trust's assets are at least, according to figures quoted by Central Steel & Wire trustees, $217 million, that chunk of change would clearly pay a lot of bills at the Culver Academies.

Since the complaint was filed in U.S. District Court in Chicago last November 14, both sides in

the dispute have taken a relatively silent stance, claiming that they have been instructed to comment as little as possible on pending court action.

"We have had conversations with Culver in the past, but they seemed to have gone nowhere," said Ronald Kazmar, Central Steel & Wire's chief financial officer, a board member, and managing trustee of the Conserve School. "Culver has filed a lawsuit and they just want all of the money. They allege that the trustees breached their fiduciary duties. The Conserve School is, in their minds, impractical, and all the money should go to them. Obviously, we don't agree."

The Culver Academies, for its part, has a boilerplate official response, provided by a spokesman, Doug Haberland:

"The issue of the suit is a lack of diversification of the assets of the Trust," the statement reads. "Responsible financial policy requires for a certain level of diversification, and a majority of the assets of the Trust are represented by one company – Central Steel & Wire. The decision not to diversify could result in depletion of the assets of the Trust, and this would be contrary to Mr. Lowenstine's wishes."

All of this baffles Stefan Anderson, the Conserve School's headmaster, who came to Conserve in the summer of 2001 as director of admissions and became headmaster a year and a half later. He had been dean of students at the Breck School, a top private school in Minneapolis, Minnesota, but viewed the chance to be at a school at its inception as "the opportunity of a lifetime," he said.

"I couldn't resist the chance to get in on the ground floor of an institution with a great mission," said Anderson, noting that being out in the back woods, rather than in the hustle of a big city, was something that did not bother him.

"I studied geophysics and did glacier research, so I have been in remote places," he said. "My wife, Jennifer, grew up on a farm in Southern Minnesota. We wanted to do a lot of cross country skiing and there are 17 kilometers of groomed trails here. Whatever it is, you have to find the place that works for you. It is not the right environment for everyone."

Clearly it was for Lowenstine. He had inherited the mantle of running a tough steel business from his father, but yearned for the ease and tranquility of a rural retreat. He bought 1200 acres adjacent to the Sylvania Wilderness of the Ottawa National Forest on the Michigan-Wisconsin border, 260 miles northeast of Minneapolis, and 360 miles – a good, long day's drive – from his hometown of Chicago.

"Mr. Lowenstine had always said his mother carried him in the womb up to that part of the world,"

Culver Vs. Conserve

said John M. Tiernan, the retired president of Central Steel & Wire and the first managing trustee of the Conserve School. "His father was a big trout fisherman and started going up there in the late 1800s.

"Mr. Lowenstine was going up there just shy of 73 years," said Tiernan from his home in Florida, where he moved after retiring from Central Steel & Wire last year. "That to him was really home. He loved that property. He wanted all future generations to enjoy the clean air, the lakes, the streams, the same as he did as a child and growing up. He wanted the students to be good stewards of nature."

Lowenstine and his wife of 30 years, Elaine, had no children. She died in 1994, two years before him. Thus, there was no challenge by relatives when he set up the trust in 1981. Years before, in 1965, he wrote a poem that presaged his bequest:

To the future young folks of Lowenwood:

I wish you all love, hope, happiness,
And a long and healthful life.
May your understanding of mankind
Be broadened through
your association with
And, I am sure, your
love of Lowenwood.

Tiernan said that Lowenstine was conservative both in the old and new meaning of the word politically. He sought to conserve the environment, to be sure, but also was conservative in business and how citizens should feel about the United States.

"Mr. Lowenstine was in World War II and a very, very patriotic man," said Tiernan, noting that he went to Culver when it was primarily a military academy. "He was an outstanding American. He used to pass out American flags for us to wear on our lapels. The sales force really had to do that. You were almost required to believe in God, your family, the country, and the company, probably in that order. He was serious about that."

He was also a conservative businessman, said Tiernan. The point was to have the company exist for a long time, not just the next quarter. When Lowenstine died, Tiernan said, everyone on the board of directors had been at the company for 30 years.

"He had loved his mom and dad, and he knew what was important and how to treat people and to run a business," said Tiernan. "And to think he felt blessed despite having his wife pre-decease him and having no children. He said to me that he just wanted future generations to be able to enjoy the things he did as a youth, so that is why the school is important to all of us."

Still, the Culver Academies suit implies that no matter how important the Conserve School is to Tiernan or its current managing director Kazmar or headmaster Anderson, it may be too much money chasing too small a dream.

Since Central Steel & Wire's stock is so thinly traded, it is difficult to compute what the trust is worth is at any particular moment. Steel companies have seen their stocks – or if privately owned, their values – rise fairly well of late. It may be that the 56 % of Central Steel & Wire in the trust may be worth considerably more than the couple hundred million the trustees admit to.

"There has been a consolidation over the last several years, when bankruptcy cleaned out the bad guys," said an observer close to the steel industry, who preferred to remain anonymous in case his comments offended some companies. "Three years ago, some of these companies were dead men walking."

"Then the Chinese came in and took the slack out of the market. Suddenly, you went from the customer dictating the price to the healthy companies left doing that," said the informed observer. "If you believe that the rest of the world aspires to our American level of consumption, then these materials, like steel, are going to be tight all around the world for a long time."

He said that Central Steel & Wire could be even in a better position than the regular steel producers. Central Steel & Wire's business is selling steel bars in smaller quantities. In some eras, that would not provide a premium, but the observer said in today's tight market, Central Steel & Wire can do well.

"They have always been the warehouse people to go to for steel bars," he said, noting that a big manufacturer may sell in 20-bar loads, but the buyer may only want four or five, in which case they would go to a company like Central Steel & Wire. "They now look at themselves as a service center. They sell to the accounts the mills will not bother with. Their value should shoot up in the years to come."

Kazmar agrees and credits the long-term potential

of the Central Steel & Wire to good business practices instilled by Lowenstine.

"He preached good moral character and good business practices and always looked ahead," said Kazmar. "It is the same way we approach, as trustees, the Conserve School."

The Conserve School now has 140 students, most from the Upper Midwest, in grades 9 through 12. The curriculum is designed to meet general accreditation standards for high schools, but also focus on Lowenstine's principles, according to the school's materials: "environment, ethics and community, innovation, critical thinking, effective communication, and creative expression."

Anderson, who got his degrees at St. Olaf College in Minnesota and the Massachusetts Institute of Technology, does not agree with the Culver Academies' premise that the school is over-funded. For one thing, it took upwards of $60 million just to build the campus. For another, there is evidence, he says, that good new schools can die without what some feel is over-funding, at least initially.

"The Shackleton School in Boston went belly up after only a few years, and that was a school that already had a good reputation for education," said Anderson. "I am sure a lot of that had to do with the stock market going down in 2000 to 2002, which dried up its funding. Programmatic ideas don't close schools, demographics and finances do."

For the time being, the trustees at Central Steel & Wire feel the Conserve School is safe, but they are taking the Culver lawsuit seriously. Still, they cleave to their friend Lowenstine's desires and have made them their own.

"Jim was always of the opinion that the betterment of mankind came either through education or medicine," said Kazmar, noting that Rush University Medical School would be the tertiary beneficiary of the trust, were it to make it that far. Rush has pretty much stayed on the sidelines in the snit between Culver and Conserve. "When it came time to start thinking about what he wanted to do with his estate, he decided to build the school. We didn't have anything to do with it, but we have embraced the idea and are all ecstatic about having to implement it."

Interviewed by Noah Graff

Buddy Portugal

has practiced psychotherapy for over 30 years, and for the last 27 years, he has served as an organizational consultant for large, medium and small-sized companies. In addition, he and another psychologist, Bob Mark, started a men's program in 1985 called the "Men's Room," now called "Victories of the Heart," where men work on healing emotional wounds and building stronger relationships.

What is a common pattern you find in the mental health of people in companies?

We find that both in companies and outside of companies throughout this country, probably at any given time, 30-35 percent of people will either be depressed or experience periods of depression. And that can be said for companies of any size.

Can you define "depression" verses "clinical depression?"

Clinical depression refers to a physiological or a biological depression—something in the chemistry of one's body that can cause people to have depressive reactions at different times. A non-clinical depression is usually seen in people experiencing depressive moods related to loss, or they're upset with themselves or a situation. Depression is also anger turned inward toward somebody or toward one's self.

What type of depression do you deal with most?

I think the largest percentage of depression has a lot to do with anger that people turn towards themselves.

How do you deal with a boss who is suffering from depression?

You have to be as supportive as you possibly can of that person. You have to be extra tolerant. And you have to be very open and honest if the depression begins to impact work negatively.

If a CEO suffers from depression, could he remove himself from his problems and still make good decisions and be successful?

I think a lot of CEOs are functional with depression and do very well. It depends on the severity.

How do you deal with an employee or many employees who are suffering from depression?

I think depression requires understanding. I think it requires compassion. And I think it requires limits in terms of how much will be tolerated. In other words, if a person is really depressed and they're not performing well, then something has to be done.

What if the president of the United States was depressed? What would you do if you were his shrink?

He is [depressed]. And I would do the same thing for the president that I would do for a CEO or an employee. I would be as understanding and compassionate as I possibly could, and if he couldn't perform his duties, I would gently ask him to remove himself after he has attempted to get help.

So you would recommend that the vice president step in?

Well, it depends on who the vice president is. In this case I probably wouldn't.

What is one of the things you like most about your job?

I like people a lot. And I like the feeling that I have an ability to have a very positive impact and a very health producing impact on the lives of the people I've treated for 33 years.

What's the thing you hate most about your job?

It takes a lot of energy if you do it right. It can be very draining.

If you could be any machine, what would you be?

A movie projector, so I could finally rest and find the time to see some of the movies I've been dying to see.

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

BY NOAH GRAFF

In 10 years will cam operated screw machines be in widespread usage in the United States?

CNC has enabled new functionality and capability to be built into today's multi-spindle machines. CNC can easily perform difficult jobs such as back work, cross holes, mill flats and other complex features. They also significantly improve tolerances and provide the capability of lights-out operation; nevertheless, cam machines still remain the predominantly used equipment for American manufacturers.

Absolutely. Cam machines are too efficient and too economical to die out in the next ten years. I foresee thousands of Davenports still running ten years from now because there will still be no better way to produce parts best suited for a Davenport Model B. Single-spindle machines will be replaced with CNC, as they are simpler and cheaper to produce. The Servo B will become more popular due to faster changeover and flexibility of control at a reasonable price.

Robert J. Brinkman
C.E.O., Davenport Machine, Inc., Rochester, NY

I believe cam-operated screw machines will still be required 10 years from today. They may have a diminished role as higher precision machines are being required by the customer base. This shift to higher precision machines is necessitated by more complex parts being designed. In addition, 100% inspection is are being utilized to certify parts to 0 PPM (at least as close as possible). The issue of training comes into play also. If we do not continue to train personnel on how to use the cam operated equipment, who will run the cam operated equipment?

Andy Istvan
General Manager, K & Y Manufacturing Inc., Canton, MI

Although CNC machines are wonderful in many regards, the cost to replace all our cam machines in the next ten years would be prohibitive. We certainly will look at new projects with the latest technology in mind. Cams are very appropriate for many applications. How many CNC automobiles are presently on the road? Yes there are many electronic controls, as on screw machines, but the motion is still primarily cam actuated because it's appropriate to the use.

Ed LeClair
V. P. of Operations, Curtis Screw Co. Inc., Buffalo NY

Cam-driven Swiss and multi-spindle machines will not survive 10 years in any meaningful capacity because users can achieve better machining precision with CNC. CNC multi-spindle technology will have a bigger percentage of the business due mainly to control improvements. If the pace of control and software development keeps up, we will be at cycle times of 2 seconds per part, matching the cam-driven multi. We also foresee a huge shift into the CNC multi as the cam machine knowledge base retires.

Olaf Tessarzyk
President, Index Corporation, Noblesville, IN.

Machine Type	Single Spindle	Multi-Spindle	Swiss Screw Machine	Rotary Transfer
Manufacturers	(Brown & Sharpe) Warner & Swasey, Index, Hardinge	Davenport, National Acme, New Britain, Acme-Gridley, Wickman, Cone, Greenlee	Tornos Bechler, Escomatic, Strohm, Peterman	Hydromat, Eubama, Mikron, Hahn & Kolb, (Kingsbury)
Description	Bar Fed or Chucking, Cam Driven	Bar Fed or Chucking, Cam Driven 4-8 Spindles	Bar/Coil Fed Sliding Head Stock, Cam Driven Small Dia. _" CNC Available	Rod, Coil, Parts. Rotary indexing 12-16 work stations (tools) CNC or hydraulic controlled
Typical Run	500 – 50,000 pieces	5,000 – 1,000,000 Pieces	500 – 1,000,000 Pieces	20,000 – 1,000,000 pieces
Set-Up Time	4-8 Hours	10-25 Hours	20 Hours. Swiss: 3 Hours Esco.	20-50 Hours
Tooling Cost	Low – Med Cams, Perishable tooling	High, Collets, Cams, Feed Fingers	Low-Med.	Very high. Collets for each work station
Cycle Time	Accumulation of each operation (Medium)	Dictated by longest operation, _ single (Med-fast)	Slow – Fast	Fast 3 – 25 seconds
Efficiency Factor	70-80%	70-75%	70-80%	60-80%
Tolerance	.001" – .002"	.002"	.00025" – .0005"	.001" - .005"
Other Operations, Etc.	Easy set-up. Fastest for simple parts.	Each spindle, single operation Chucker for secondary operations.	Bushing moves material past tool. Single point tools result in tighter tolerance. Excellent surface finish.	For complex parts, multi-operations. Tools rotate, work piece fixed

Chart courtesy of the Prcision Machined Products Association.

April, 2006

Ladies and Gentleman:

I would like to send this note to all our IEMCA customers to show my appreciation for the patience and support during our start up period, beginning January 1, 2006.

We had many obstacles to overcome the first two months, and I am sure we have tested your patience. I would like to recognize any inconvenience you might have experienced during this start up period, and I assure you that I took all the necessary steps and actions to increase our organizational quality.

I also would like to recognize the outstanding support of your local IEMCA dealers during the last months, and we will continue to mutually support you together with your local dealer and representative.

I guarantee you that this organization of 65 employees will support our product at the highest level. Our Service and Part support is open from 8:00 a.m. to 7:00 p.m. eastern time. Parts are available within 24 hours on to your shop floor, and I ask you to call me personally should you experience anything other than that.

Sincerely,

Manfred Sprenger
Executive Vice President
Bucci Industries USA Inc.

Bucci Industries USA Inc., 9332 Forsyth Park Dr. Charlotte, NC 28273
Phone 704 583 8341
Fax 704 583 8486
www.bucci-industries.com

By Noah Graff

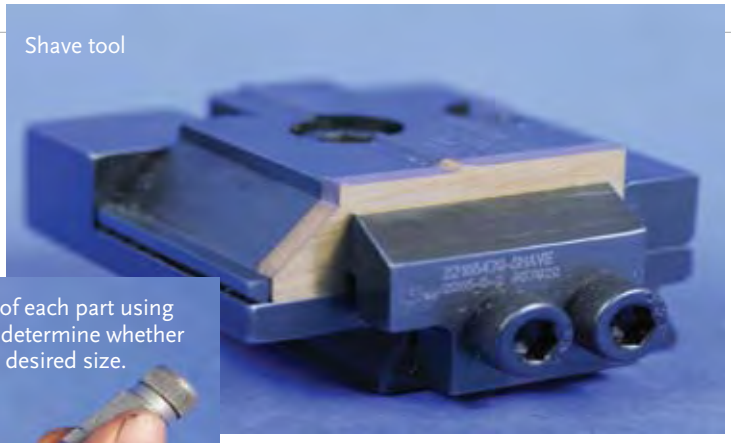
Shave and a Hair Cut Two Tenths

No matter how new or state-of-the-art your screw machine is, sometimes the finish and accuracy it produces are still not acceptable for your job. Shaving overcomes the two main causes of variability on the diameter of screw machine parts, infeed error and spindle index error. It overcomes infeed error by feeding past part centerline, and it overcomes spindle index error by floating on the part. On any type of screw machine in good condition, shaving will yield diameters that are round and on size within +/- .0005. Jim Barnette, shop foreman at Graff-Pinkert & Co., who has successfully used shave tool holders for over 30 years, recommends the following approach for setting a shave tool.

How to Set a Shave Tool

Shave Tool Holder

Photos by Robert Bocok


Shave tool

1 Determine whether shaving is necessary by running 20 pieces off of each spindle of the machine and then measuring the accuracy of each piece using a micrometer (See A). If you determine that your present finish is unacceptable, employ a professional tool maker to build the proper shaving cutting tool to meet the specifications of your print.

2 Once you have the proper cutter and roll, make a blank with the exact dimension needed, on a lathe. On a workbench, slide the blank between your roll and tool, then preset the distance between them to achieve the perfect fit (See B). Many people use dial calipers to measure the distance between the roll and tool instead of making a blank. If you decide not to create a blank, you must use trial and error on the machine to achieve the correct accuracy. Making a blank will save time and material, and you can use your blank as a reference for future jobs.

3 With a depth indicator, measure the depth from the top of the holder to the base. Set the dimensions equal on each side. Make a scribe line on the back of the shave tool to show the taper line (See C). This will enable you to reset the tool at a later date without having to use a depth micrometer. Remember to save the roller, cutter and blank. Always take a measurement from the tool when the machine is in the back position (the farthest stroke before it indexes). Measure from the point of the tool down to your bar to see if you are on center.


Check the finish of each part using a micrometer to determine whether you can hold the desired size.

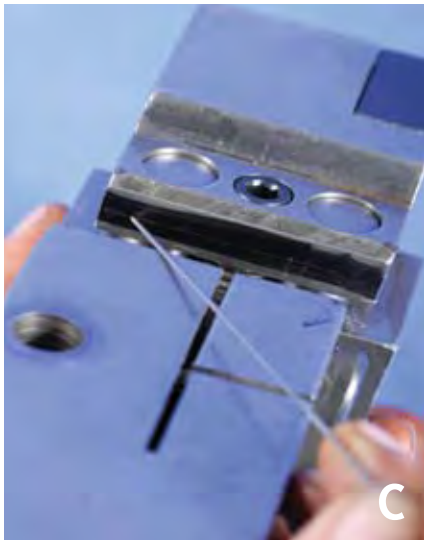
A

4 The shaving tool must be positioned in the shaving attachment so its cutting edge is in line with the center of the roll (See D). This is accomplished by clamping the shaving tool in the shaving attachment, so the cutting edge is in line with the face of the attachment. Use a straightedge to line the cutting edge with the face of the shaving attachment. Slide the blank between your roll and your tool to get the perfect fit.

5 Mount the roll block on the shaving attachment. Using the roll block adjusting screw, adjust the position of the roll block, so the distance between the roll and the cutting edge of the shaving tool is exactly the same as the finished size of the part.


B

Preset the dimensions on a workbench, setting the distance between the roll and the tool.


C

Make a scribe line on the back of the shave tool to show the taper line.


D

Place the cutting tool in the shave tool holder, setting it on center of the tool holder.

Set the shave tool attachment on the cross slide of the machine and tighten the bolts.

6 Mount the assembled shaving tool and attachment on the cross slide and position the tool laterally, relative to the work piece (See E). Clamp the shaving attachment in place. Using the cross slide adjusting screw, move the shaving tool, shaving attachment and cross slide toward the work piece slowly until the roll contacts the work piece. Continue advancing the cross slide until the cutting tool is drawn to within .010 of the work piece.

7 With the feed disengaged, run the main drive motor so only the spindles rotate. While the bar stock is rotating, use the cross slide adjusting screw to slowly move the cross slide toward the work piece until the shaving tool and roll reach the centerline of the work piece. The tool has reached the centerline of the work piece when further advancement of the tool fails to produce any chips. A mirror can be helpful to observe the chips being cut as the tool is advanced. Limit the travel of the tool beyond the centerline to the absolute minimum. Then, tighten the cross slide locking screws in place.

Before proceeding, you must always check the clearance between the attachment and slide.

8 Jog the machine to be sure the work piece clears the shaving attachment and tool when the machine indexes. Finally, measure the OD of the test part and adjust the roll block with its adjusting screw as necessary. If you do presets, you will save a lot of time and material during your shave tool setup.

Special Thanks to Slater Tools for lending us a shave tool holder for this article's photos.

Additional sources for article
Slater Tools Inc. & Schlitter Tools Inc.

how it works

Trouble shooting potential shave tool problems

Tools wear excessively

Spindle speed high
Reduce spindle speed

Tool set ahead or behind roller
Reset to centerline of roller

Tool going past center
Reset throw of tool

Tool material not correct
Select tool material for abrasion resistance qualities

Feed too heavy
Reduce feed per revolution

Chatter

Feed per revolution heavy
Reduce feed

Spindle speed high
Reduce spindle speed

Roller and/or pin worn
Check and replace

Shave holder worn
Check and replace or shim to snug up

Not enough rake
Increase rake possibly up to 20°; rake generally used is 3°/5°

Too much material being removed
Check and reset to a minimum; i.e., .0015 to .003 on a side

Vibration
Grind 2° shear angle on front of tool; set tool ahead of roller center line; decrease amount of lift of tool holder; attach a large piece of lead to shave tool holder; use heavier springs in holder.

Machine spindles worn/ index
Check and correct condition

Variation of part diameter

Built up edge heavy
Increase rake; decrease feed; change coolant; hone rake

Tool dull
Resharpen

Tool edge ahead or behind center line
Reset tool on center

Blank tapered
Straighten out form tool

Roller or pin has flats or is not round
Replace roller/pin

Too much material being removed by shave tool
Reduce amount of material to be removed on a side; .0015/.003 is best to hold size and roundness.

Tool chips on edge

Spring in holder weak or broken
Replace

Built-up edge high
Reduce feed; increase rake; use proper coolant; grind rake smoother or hone

Workpiece breakage

Tool diving into piece
Increase cam rise and/or reposition tool to center line of part

Piece set too far from collet
Reset job closer to collet

Tool removing too much material
Reduce blank size diameter

Tool ahead or behind roller center line, causing excess pressure
Reset tool to roller center line

Shaved diameter tapered

Tool not squared with roller
Reset tool

Tool not ground square
Resharpen

Defective holder
Check and replace

Holder not square
Adjust

Rough finish

Dull tool
Resharpen

Tool form finish is rough
Remake tool or replace

Blank diameter too large
Reduce blank diameter

Improper or inadequate coolant
Use proper coolant in copious amounts; for steel use active sulfur oil

Blank surface rough
Resharpen blank form tool and increase rake on this tool (use Dykem on blank prior to shave cut; if traces of color are visible after shave cut, blank is too rough)

Tool not set on roller center line
Reset tool

Built-up edge heavy
Increase rake angle; decrease feed; change coolant; increase speed; grind rake or hone extra smooth.

Wickman 6-26

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THE LOWEST PRICED HIRTH COUPLING MULTI-SPINDLE

- ☑ Hirth coupling for rigid drum locking and accuracy
- ☑ Reduced noise levels, 79.5 dba
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- ☑ Servo adjustable feed rates
- ☑ Adjustable feed camming
- ☑ Interchanges with all exisisting 1″ 6 spindle Wickman attachments, toolholders, collets, and reaming spindles
- ☑ Larger coolant tank capacity to extend tool life
- ☑ Immediate machine delivery from our warehouse

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l. to r.: Cathy Heller, Manuel Buenrostro, Martin Whitfield, Greg Buenrostro

MEET YOUR WICKMAN TEAM

CATHY HELLER has been the Wickman and Index Parts manager for over 12 years. She has extensive knowledge of parts, maintains an inventory of almost $1 million worth of parts on our floor, and works diligently to get you the best price and best service around.

MANNY BUENROSTRO has been our Wickman tooling and attachment specialist for over 16 years. Manny is now also responsible for pulling, packing and shipping your orders. Need a part off one of our machines? We'll get it to you, and Manny is the guy to get it done.

MARTIN WHITFIELD, our newest addition, was a Service Engineer at Wickman in Coventry, England. Martin's extensive knowledge as a long-term Wickman Engineer makes him the consummate technical expert on Wickman repair and attachments. He is another Wickman Repair Specialist, available for on-site repair in your shop.

GREG BUENROSTRO has been our Wickman Service Technician for over 17 years. He has been responsible for the repair and rebuilding of all sizes of machines. His "hands-on" ability to understand the mechanics of the machine has made him the "go-to" guy for troubleshooting. Greg is also our Wickman Repair Specialist, available for on-site repair in your shop.

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Graff-Pinkert & Co.

708-535-2200

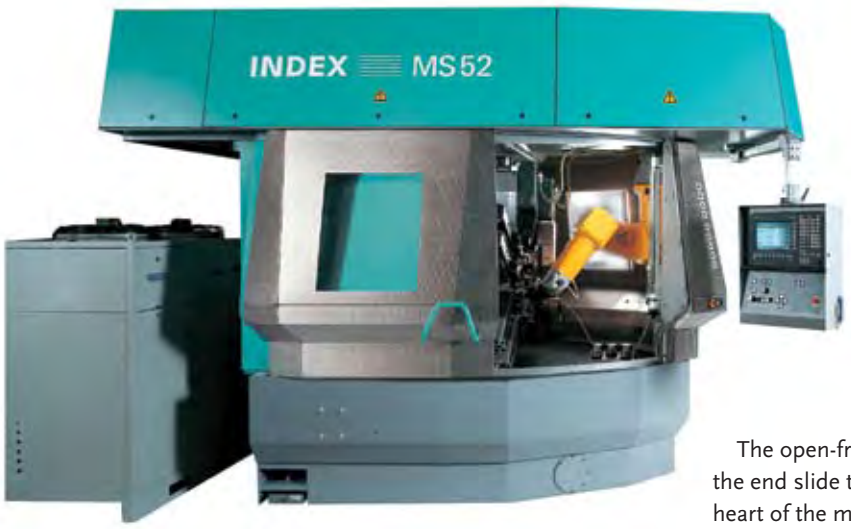
product focus

The following are "multiple" companies that provided information on their multi-spindle machines.

When you hear the term "multi-spindle," the image you conjure up in your head is a multi-tasking machine with multiple spindles that work in synchronization, allowing for the machine to multi-task on a part. With 4, 6 or 8-spindles, an automatic bar machine allows multiple tools to cut multiple work-pieces simultaneously.

Due to its design, a multi-spindle machine creates parts quickly because more than one cutting operation can be performed at a time. Because there are many variations of machining and multiple spindle heads, each spindle on a multi-spindle machine is intersected by two independent axes of tool movement.

Advances in design have allowed for easier set-up on multi-spindles, allowing for quicker changeover and quality execution. For high-volume, complex turned parts, multi-spindles have earned their place in today's competitive manufacturing world.



Index

INDEX Corporation has introduced the MS52 6-spindle CNC Bar/Chucker with 52mm/2" bar capacity and 100mm/4" chuck capacity machine. The chucker (MS52C) can be equipped with a high-speed, heavy-duty Staubli robot for automated part loading and unloading.

This machine is the first CNC multi-spindle chucking machine with an open front work area, permitting robot loading of all types of forgings, castings or extrusions up to approximately 100mm or 4" diameter.

The open-front design is made possible by the absence of the end slide tool carrier and the opposed headstock. The heart of the machine is the spindle drum, with the unique three-ring face tooth coupling mechanism. Six independent spindle motors allow optimum cutting speeds for each tool.

The CNC Tool Carrier concept is a vertical arrangement for quick change pre-settable tooling. OD, ID or live tools may be employed in any slide position. Up to three ID tools can be mounted in a gang-style arrangement on any one of the two-axis slides.

A variety of live tool attachments can be mounted in any spindle position, for drill/mill operations, as well as polygon generating and gear- hobbing.

For more information please contact INDEX Corporation at 317-770-6300 or visit the company website at www.index-usa.com

product focus

Wickman

The Wickman 6-26 has been developed to meet the needs of the medium to large user, looking for high productivity on a multi-spindle lathe. The latest generation of Wickman machines have been reborn with new improvements, including a Hirth-type drum locking for improved positioning accuracy; improved work spindle arrangement to allow spindle speed up to 5000 rpm; helical drive gears; toggle-free clamping; safety clutches fitted to the upper and lower camshaft; Tetra Servo feed motor for optimum cycle times; and constant forward positioning on cross slides and upper cam shaft quadrants to optimize cutting strokes when using pre-set tooling.

6 cross slides, 2 independent slides in station 4 and 5, stock carriage with acoustic cover, and a removable swarf conveyor and coolant tank are all standard features on a Wickman 6-26. All accessories and attachments used on a 1" Wickman can be fitted onto the Wickman 6-26. Additional options include spindle stopping, Logan threading clutches, Logan pickup and break, and CNC cross slides and pickup.

For more information on Wickman machines, please contact Graff-Pinkert and Company at 708-535-2200 or visit the company website at www.graffpinkert.com.

Multi-Spindle

Schütte

Schütte's next generation of it's CNC lineup is in production and will complement the PC series machines. In keeping with the Schütte tradition, these machines will offer speed with extreme precision and be built with the quality to assure return on your investment. Schütte's primary objective is to provide the manufacturing community with the most flexible lineup of production machines.

With Schütte CNC automatics you can pursue the most difficult parts and materials with speed, accuracy and rigidity. Fully independent spindles and compound slides, linear technology and tremendous backworking capability are all on a Schutte platform. Both the PC and SC series machines will be on display at IMTS 2006, booth # A-8261.

For more information please contact Schütte MSA, LLC at 517-782-3600 or visit the company website at www.schuttemsa.com.

product focus

Tornos

Tornos has developed the MultiDECO 20/8d, an eight-spindle machine with two independent, 3-axis back working stations. In operation, positions 1 through 6 are used to perform operations on the front of the part. Every two indexes, two parts are cut off in positions 7 and 8. Those parts are then clutched by two independent pickoff spindles and presented to as many as five tools per part for a variety of back working operations. There are eight independent motorized spindles. Adjustable spindle speeds range from 0 to 8,000 rpm. With non-independent spindles, each has to operate at the same rpm, which is determined by the position running at the slowest speed.

The MultiDECO 20/8d accommodates part diameters up to 20mm, is maintaining part tolerances of 0.0002 (0.006 mm) and can produce 40 parts per minute. Additionally, the MultiDECO 20/8d can be equipped with a palletizer, useful for more delicate parts. With the palletizer, pick and place mechanisms move the part out of the working area and onto a pallet stacked in a wheeled cart for easy transport to a washing or shipping area.

Completing the MultiDECO 20/8d system are the chip and oil management unit and Tornos' dedicated computer-controlled automatic bar feeder that holds up to 80 bars of stock. Standard "live" tool machining attachments permit rotary milling, polygon and thread milling, broaching and cross drilling operations.

For more information please contact Tornos at 203-775-4319 or visit the company website at www.tornos.com.

Multi-Spindle

Gildemeister

The GMC 20 ISM multi-spindle machine from Gildemeister offers a complete production package, with flexible lot sizes in the entire diameter range up to 0.8". The indexed spindle drum leads to a job-time reduction and features a newly developed 3D Programmer. The GMC 20 ISM supplements the GM automatic lathe program for the diameter range up to 0.8". Even medium size lots can be machined efficiently, due to high flexibility and precision. A unique feature is the implementation of linear drives in the x-slides on both finishing stations.

Highlights of the GMC 20 ISM / linear include a working area comparable to cam-controlled machines, making for easy training of traditional machine operators; better dynamic properties and structural stability, giving same cycle times as mechanical multi-spindle machines; 6 integrated motor spindles with independent speed for constant surface speed in all spindle positions; 5 CNC compound slides, cut off cross-slide and slide for back working side machining.

For more information, please contact DMG America Inc. at 847-781-0277 or e-mail daniel.wetterkamp@dmgamerica.com.

product focus

Maxim International

Maxim International, a Gosiger company, recently introduced a new six spindle automatic lathe, the Euroturn 6/26. Soundly built with six independent cross slides, six independent end working slides, five independent compound slides and an independent back working slide, the Euroturn 6/26 is ideal for high volume turning applications, especially the automotive and aerospace industries.

The Euroturn 6/26 offers as a standard feature and advanced control, incorporating an operator-friendly Graphic Programming System. Complete with an onboard CAD/CAM system, the operator has the ability to draw a picture of the part to be machined using the CAD, program the part drawing using the CAM and then run the lot. All directly from the machine control.

Maxim International, a division of Gosiger, was established in 1992 to create a dedicated organization to service the needs of the high volume turned parts industry. Maxim stocks over $10,000,000 in machine tools, spare parts and accessories for Euroturn. This inventory position combined with the staff of installation and service technicians, provides a superior level of support for our customers.

For more information, please contact Maxim International at 937-463-7699 or visit the company website at www.maximint.com.

C.J. Winter

C.J. Winter Machine Technologies offers the new family of Quick Change Tooling for the multi-spindle Davenport. Quick Change Tooling takes changeover of side-working and end-working tools on the Davenport from hours to minutes and eliminates time-consuming adjustments and changing of tools. This substantial reduction in set up time means less labor, faster turnout of parts and easier training.

Tool holders all have a standard dovetail design at the base of the tool holder to allow easy installation and removal from the slides – simply slide on and off. QCT tooling works with both Davenport and CJ Winter slides.

After removal and installation of the tool holder, location from collet is maintained. QCT Spindles and drill holders have a patented fast start thread configuration. The new QCT tooling allows set-up for the next part run to begin on a machine while it is still making parts from the last run. During long runs, sharp tooling can be pre-set in spare holders to replace worn tooling with minimal, or no adjustment made to the machine.

Parts will typically be complete, de-burred and ready for shipping. No secondary machining work is required on most parts produced. The family of QCT tooling includes Form Tools, Shave Tools, Tool Spindles, Tool Spindle Front Box, Drill and Tap Holders, Slides and Adapter Plates, and Pre-set Fixtures.

For more information, contact CJ Winter Machine Technologies 800-288-7655 or visit the company website at www.cjwinter.com.

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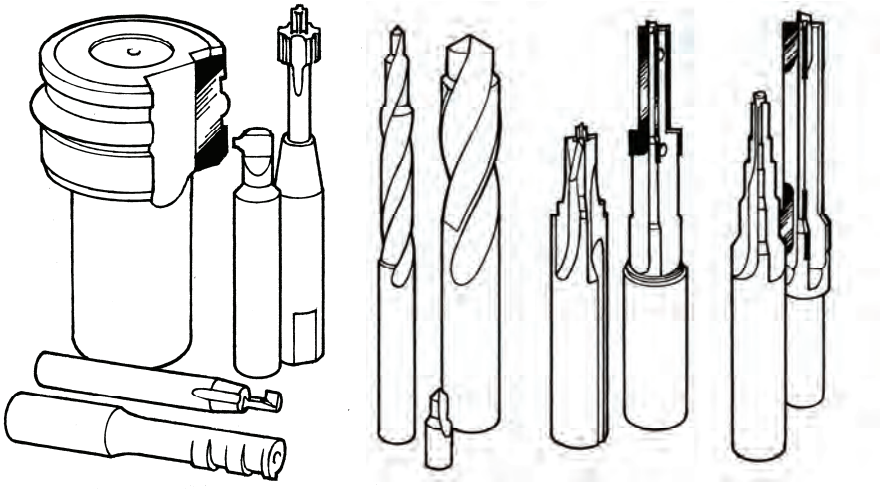

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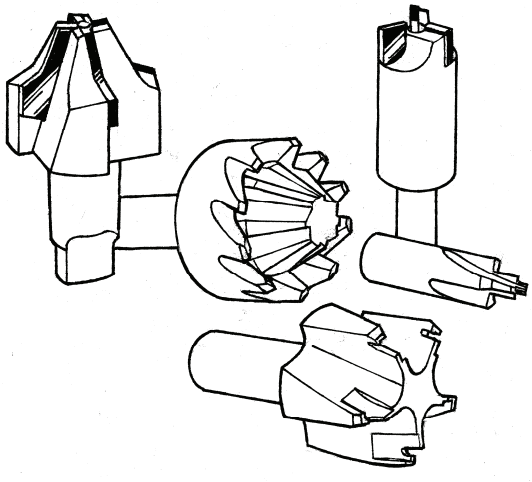

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postings

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

June 6~8

Precision Grinding & Abrasive Machining
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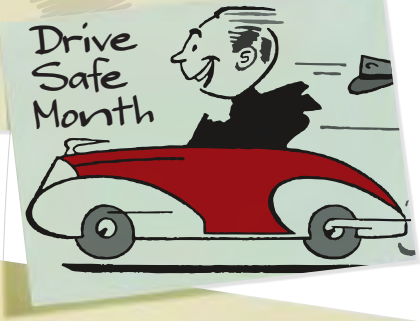
Owens Community College
Toledo, OH
www.sme.org

MD&M East
Medical Design & Manufacturing Expo and Conference
Jacob J. Javits Convention Center
New York, NY
http://www.devicelink.com/expo/east06/

South Texas Machine Tool Show
June 14~15
Houston TX
Reliance Center
www.expoindustrialshowes.com/expo/southtexas.htm

Drive Safe Month



International Forum on Design for Manufacture and Assembly (DFMA)
Product developers manufacturing
Providence, Rhode Island
JUNE 20~21
www.dfma.com/forum

June 24

U.F.O. Day
First documented UFO sighting on this day in 1947 near Washington's Cascade Mountains
www.butlerwebs.com

Quality Expo Detroit
Rock Financial Show Place,
The show for quality-focused manufacturing professionals
June 7~8
Novi MI
www.qualitydetroit.com

Father's Day
June 18th

2nd week of June
National Little League Baseball Week

Marilyn Monroe
born June 1st 1926

National Fresh Fruit & Vegetable Month

calendar

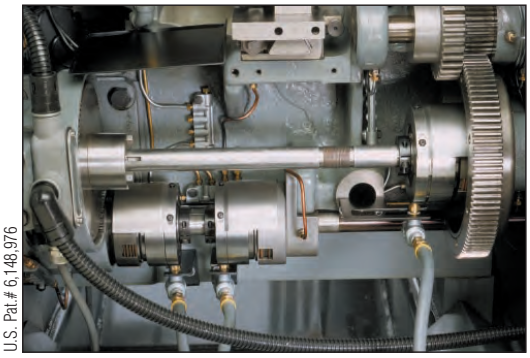
New! Logan Hi-Lo Retrokits - NOW BETTER THAN EVER!

Hi-Lo Retrokit Features:

- Replaces mechanical clutches, roll clutch, band brake and linkages with fast acting air-actuated Logan Clutches
- Positive crisp Logan Clutch engagement - Guarantees cycle time repeatability
- Simplifies clutch maintenance - No disc pack adjustment or slippage
- Quick Stop Power applied brake - Prevents machine coasting
- Ideal for bar loader applications

Savings:

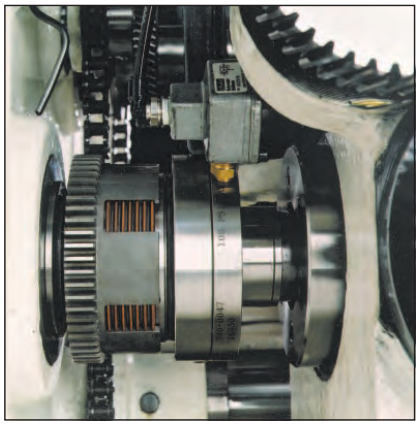
- Increase productivity from 10-20%
- Tools can be positioned closer to the work piece due to repeatable high and low speed clutch engagement
- Better machine utilization - More productivity from existing machines, operators and floor space



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

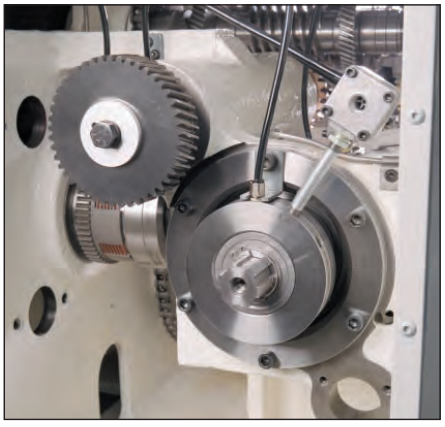
For Model B Davenports

New! Roll Clutch Removal Option



U.S. Pat.# 6,050,162

For New Britains; High speed Conversion Kit - no slippage!



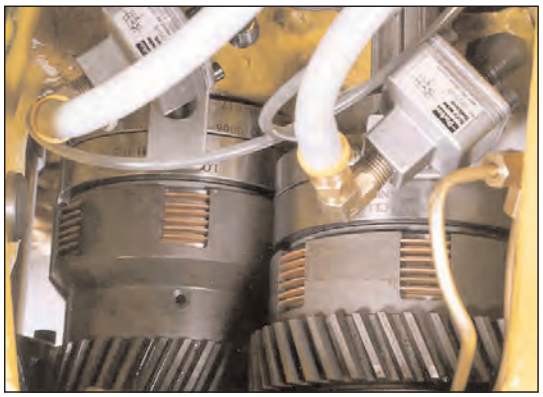
New! Roll Clutch Removal Feature

So you think you need more production capacity?

Logan Hi-Lo Retrokits increase your existing screw machines daily and weekly output from 10-20%, leaving you room for additional capacity and productivity.

Positive, fast acting Logan Clutch engagement allows your screw machine to change speeds much faster than conventional mechanical clutch methods

Reduce cycle time dramatically. Position tools closer to the work piece due to repeatable high and low speed clutch engagement.



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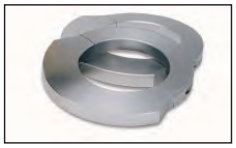
Hi-Lo Retrokits Controlled By:



1. Cams and Limit Switches

2. CS 2001XT8 or XT16 microprocessor control

3. CS 2001 micro-processor control

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Bass Attack

By Larry Hurst,
President, L & R Specialties

Have you got a favorite ride? Looking for antique cars, skateboards, motorcycles or anything else that gets you around. E-mail your story and photo to jill@todaysmachiningworld.com.

Can you imagine running 11 miles up the lake at 7:00 a.m. going 70 mph in 30 degree temperatures in search of largemouth bass? I am here to tell you, that's bone chilling cold. But my hobby is bass fishing, and my wife and partner Wanda and I do just that. I also fish quite often with my other partner, my brother Robert.

I started bass fishing in 1967 in a 14' flat bottom aluminum Jon boat with a 6 HP Evinrude. I settled into my first Triton recently and came to realize that Triton has a superior product. From a safety standpoint, my boat can be filled with water and will float in an upright and level position, and has a retractable boarding ladder for emergency use.

We often settle in behind the dual console of our Tr-20x HP DC state-of-the-art boat, which is powered by a 225 HP Mercury Optimax and is more fuel efficient than the 150 HP we just traded in (and it meets and exceeds strict environmental standards). We ride in the most comfortable cushioned bucket seats, enjoying the smooth ride that takes even the roughest water with ease. This Triton is the boat that was used by the pros in the annual Bass Masters Classic.

I can use the many features from the digitally controlled console like in the cockpit of an airplane – with power steering, tachometer, speedometer, volt meter, fuel and engine water pressure gages, etc. Wanda (who has a lead foot) enjoys driving this boat as much as I do. I am guided to our favorite fishing spots using the Lowrance sonar/GPS that allows me to mark and return to our "honey holes" with precision. Storage is abundant as the many rods, (and a guy likes fishing rods like women like shoes!), tackle, built-in cooler for water and soft drinks, extra clothing (and all Wanda's 'woman stuff') are tucked away in the many waterproof locking storage compartments. After the first fish is caught, the timer controlled aerated insulated livewells are activated to keep the fish alive and well and ready to be released after weigh in at days end.

My brother, Robert, and I hold the modern day record for Lake Wylie, SC for a 10 fish limit weighed in a tournament at 59.95 lbs. Wanda and I have enjoyed several exciting tournament wins, with many tournaments drawing as many 220 two-man-team boats.

I feel blessed to have had a hobby for many years that I enjoy so much, and the Tr-20x HP DC Triton just makes it all the sweeter. Over the years I have made a lot of special memories from fishing with my Daddy and my brothers, my father-in-law and special friends – and most of all Wanda and our son Chip who is a great fisherman also.

With Noah Graff

shop doc

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

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

Dear Shop Doc,

I've been tapping parts on Acmes for years, mainly running 12L-14 material. I have a new job, and I have to run titanium. I normally tap the material using a bump cam to start the tap. Now I'm finding that when the tap backs out, I've got elongated threads. What could be the problem?

You can address this problem in two ways. Rather than using a bump cam, you could use a cam with the exact rise necessary to tap and return on the machine. However, they're expensive and time consuming. It could take 6-8 weeks for delivery.

Another way to approach this issue is to take the threading hanger, slide and the base off the machine. Then, machine the base and add linear bearing rails to it. After that, attach the slide to the linear bearing rails. Now you should be able to move the slide easily. With just the movement of your little finger, the slide should move back and forth. The friction and build up will be gone. That way, the tap will engage without applying any pressure, and you will get good threads.

Rex Magagnoti
Machinery Sales, Graff-Pinkert

Dear Shop Doc

In the last few years, we have begun updating our threading attachments using new Logan air clutches to reduce the older electric trip air cylinder shifted mechanical clutches. We experience fewer problems, but we have experienced some problems with the Logan style clutches. One problem that we have had with the Logan style is that they shift so fast it causes a backlash on the tapping chain, which can break the tapping chain. This problem has only occurred when we are running soft steel, and the threading spindle rpm is very high. The high rpm of the threading spindle cause a momentary jerk when shifting from high to low. The tapping chain will fail before the clutches.

Some time ago, we ran into a similar issue. After going through a number of tapping chains on different machines, we came up with a solution. We adjusted the air pressure going to the clutches to what we thought would be the minimum they would need to operate safely. We felt this would allow for a little play, which would help absorb the backlash. Sure enough, it worked, and the tapping chains stopped breaking. We found this out on a job that already broken three tapping chains in 2 weeks. This is highly unusual by any circumstance, but the rpm was running 1164 rpm in a 1-5/8 RB8, which is fast for that large a machine. The tapping chains stopped breaking, so we must have been correct on our theory.

Wes Szpondowski
Tool Room Leader, Wyandotte Industries, Wyandotte, MI

New Puzzle

There are four factors of the number 6 – the whole numbers that can divide into 6 and leave no remainder. Between 1 and 100, there are five numbers that have exactly twelve factors. Can you find all five?

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

Cat Attack Puzzle Answer

The problem is not a difficult one, except for the large number of mice (i.e., for 35 mice, the answer would be 5 cats killed 7 mice). The solution to xy=1,111,111 is required. In other words, the factors of 1,111,111 are needed. The immediate answer is available if the reader notices that the number 1,111,111 is of the form (10 n – 1)9, where n=7; and knows that Lucas in his L'Arithmetique Amusante provides all the factors of such numbers up to n=18. But, if the reader does not know of such a book or find it readily available, how can the solution possibilities be narrowed? The x and y must be composed of pairs of numbers ending with (1,1), (3,7) or (9,9), as these are the only pairs multiplying to yield a 1 in the last digit position. In addition, the x and y must be prime numbers. Otherwise, their factors could combine to yield multiple possibilities for (x,y). With these clues, a table of primes can be searched to find the answer by trial and error. However, the last digit of almost all primes is 1, 3, 7, or 9. So, last digit examination only eliminates the primes 2 and 5. But, at most only the primes until 1051 (about 175 of them) will have to be investigated (i.e., divided into 1,111,111 to yield another prime number in order to solve the problem), even in the worst case, where both primes are of about the same magnitude. In actuality, only about 50 need to be investigated before finding that the only factors of 1,111,111 (besides 1,111,111) are 239 and 4649. Since there was more than one cat, and each cat killed more mice than there were cats, there had to have been 239 cats. Each cat killed 4649 mice.

The problem is related to the security of the Internet because that security is based on the difficulty (for even large numbers of parallel-processing computers) of factoring huge numbers with hundreds or thousands of digits into their two prime factors. Such numbers having only two prime factors can be used to create powerful encryption systems for electronic data.

Who let the cat out of the bag?

Nat Torberson of Hydratight in Antigo, Wisconsin; **Rich Hartmann** of Nazareth College of Rochester, NY; **Arny Rusnak** of National Acme (retired) in Northfield, OH; **Joe Cusimano** of Homematic Machine, Inc. in Boylston, MA; **Steve Reinsel** of Linvatec, in Largo, FL; **Dave Cibulskis** of Aurora Air Products in North Aurora, IL; **Don McCarty** of Parker Hannifin in Canton, PA; **Bryan Willman** (retired) in Kirkland, WA; **Brian Thomson** of L.H. Thomson in Macon, GA; and **Kevin Fite** of Methods Machine Tools, Inc. in Wixom, MI.

Puzzle courtesy of Henry Dudeney, elaborated and submitted by Richard Kaplan.

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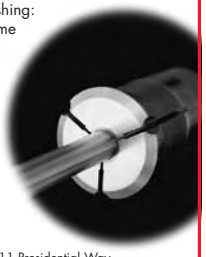

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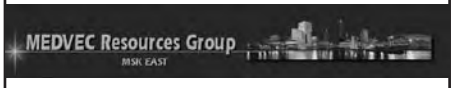

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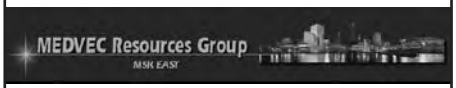

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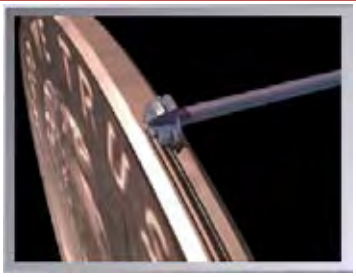

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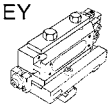

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Building Momentum

As I write this column in the coffee shop six doors down the strip mall from Walgreens drug store, the wreckers have exposed the skeleton of the office building that housed the venerable drug store.

Walgreens is ripping the store down, destroying a three-story office complex and evicting a beauty shop and optometrist because the old store just isn't competitive enough for 2006. The new Walgreens in the Cherry Creek Shopping Center will be ready in November with a drive-through pharmacy and no liquor department.

When I first heard that Walgreens was going to close for eight months, flatten a viable office building, evict the neighbors and make a mess of the parking lot where my Starbucks is, I was shocked. But upon reflection, I realize that Walgreens is shrewd and aggressive. We can learn from them.

Walgreens is in a long-term struggle with Wal-Mart, CVS and institutional drug suppliers for the prescription drug sweet spot. They will do whatever it takes to get the best locations. They believe they can win the local battles with the drive-through convenience and easy parking. Local real estate pros have told me that Walgreens will outbid every competitor for a spot they feel is optimal. They are taking a long-term view of their position as a pharmaceutical retailer. The old store was ok. It was making money. It had a nice location. But it was land-locked. They want every possible store to have a drive-through. One solution was just close the place, but that would have invited CVS in. The radical solution was pay the dough, knock down the office building and build a drive-through in the Cherry Creek Mall.

Is there a lesson here? I think back to National Acme and New Britain about 1979. The Japanese builders of CNC lathes with Fanuc controls were just starting to sweep into the American market. Hydromat had recently arrived in St. Louis. The multi makers were selling hundreds of machines per year into automotive, and the world looked safe and rosy. A few years later they were toast.

If Acme had been smart and courageous like Walgreens, they would have hired away Hydromat's top designer and built a killer rotary transfer or developed a top CNC lathe. Warner-Swasey was giving up too. If they were gutsy, they could have bought Swasey and done battle with the Mazaks and Mori Seikis early in the game. But they stuck with what they knew. They wouldn't cannibalize their bread and butter. Would you?

There is opportunity in your business. Maybe it is different technology – water jet, laser, robotics. Perhaps it's in services, ideas, consulting. Maybe it's in China, India, Czech, Brazil. Or, in new customers who might be around the corner – but you never asked them for business.

What Walgreens is doing in Cherry Creek takes guts. It's counter-intuitive to tear down your store, flatten the neighbors, be virtually out of action for eight months, just so your customers can drive through for their Lipitor. But it ain't dumb if you're facing down Wal-Mart and CVS, who play the game with knives.

Your competitors in Shenzhen, Bangalore and Minneapolis want to take your business. Your customers do not care about your leases.

I have often heard the excuse from machining clients that they cannot buy the machine they really need to move ahead because they have no space, they have no people, or they have no money. This is National Acme kind of thinking. This is the way to lose what you have by playing it "safe."

Walgreens, you have the right idea. Knock it down. Build it up.

Lloyd Graff

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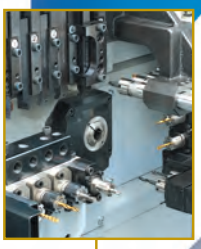

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