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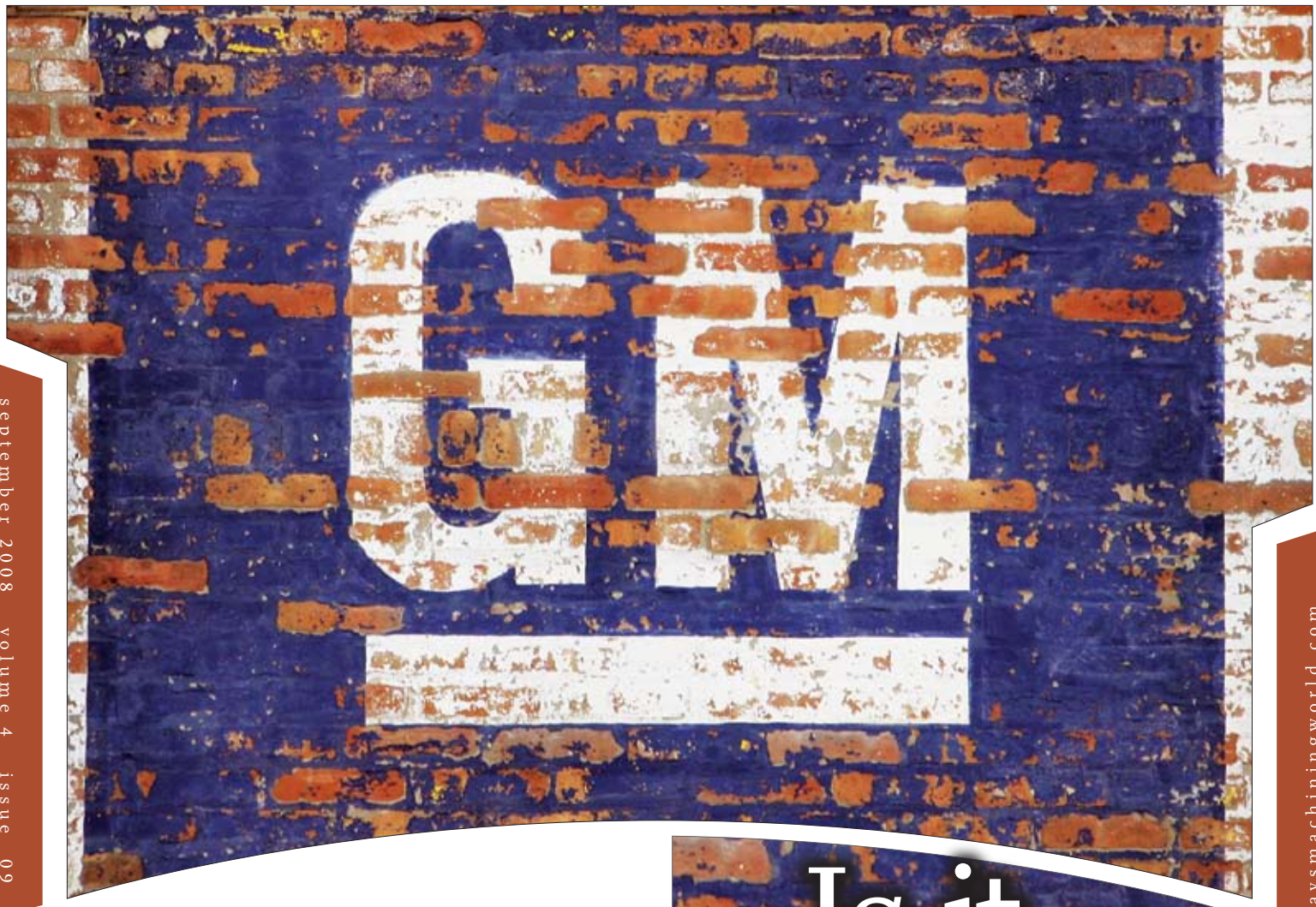
THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY



Is it fading away?

september 2008 volume 4 issue 09

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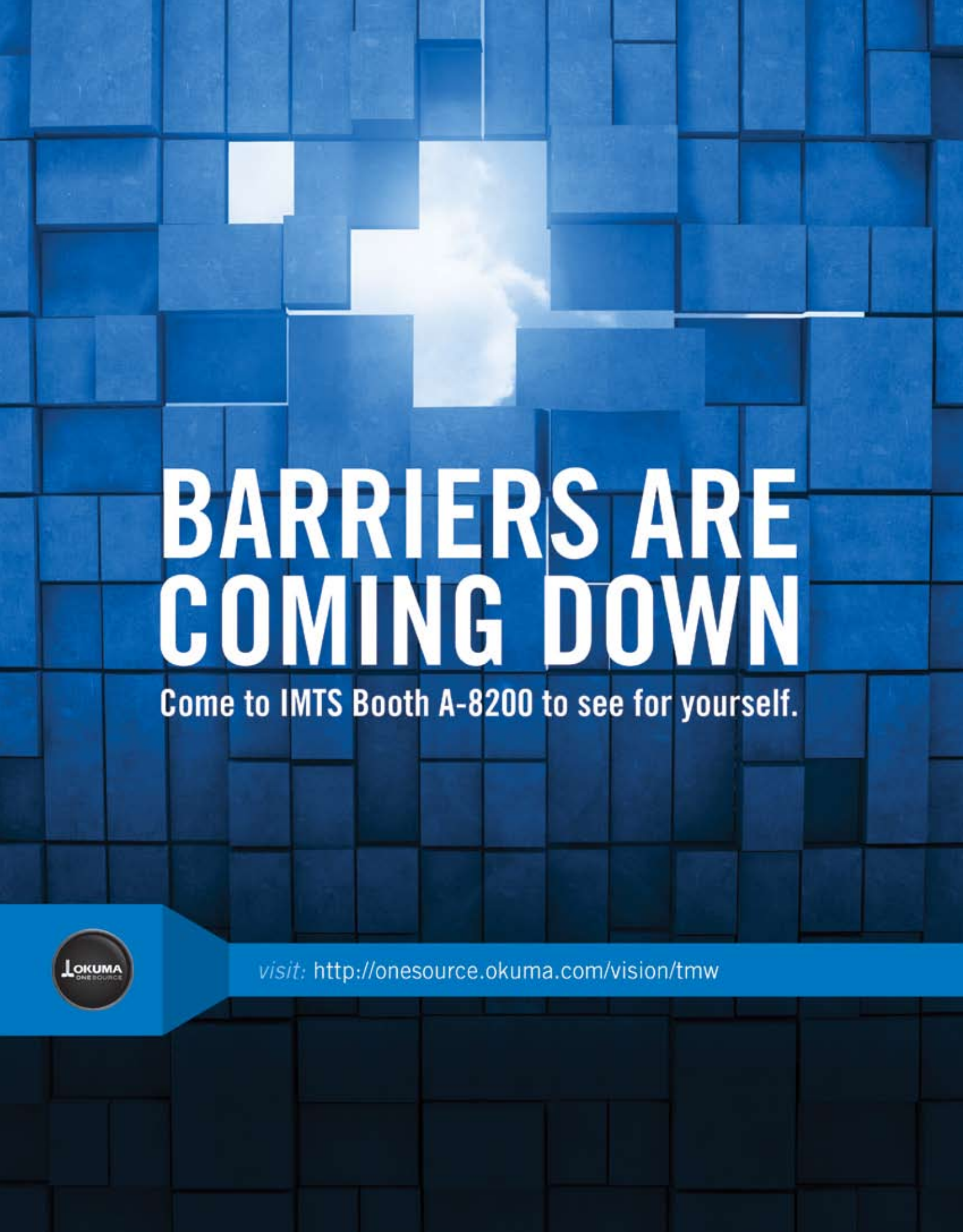
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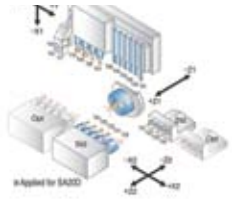

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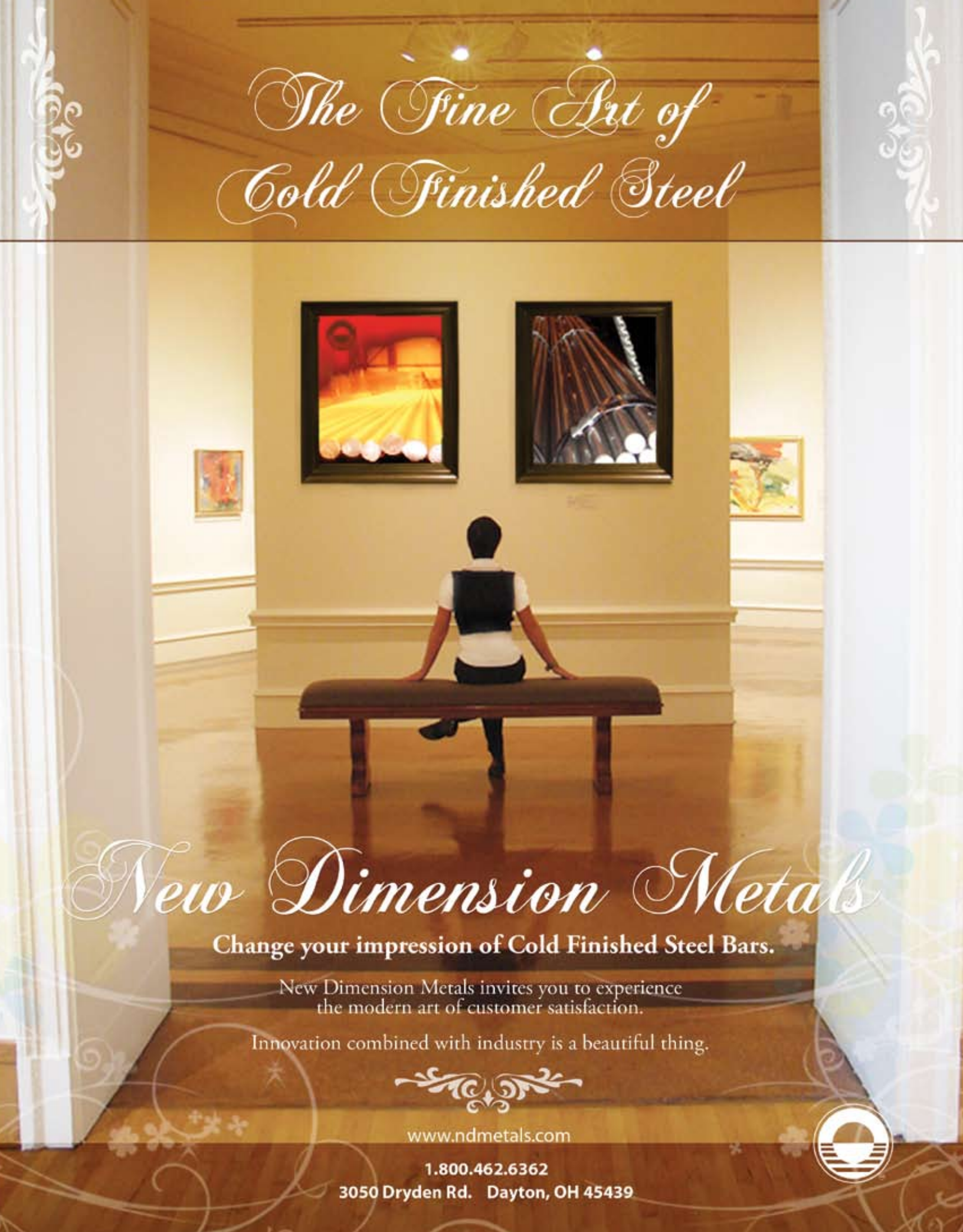
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in this issue

Today's Machining World
Sept. 2008 volume 4 issue 09

Features

Departments

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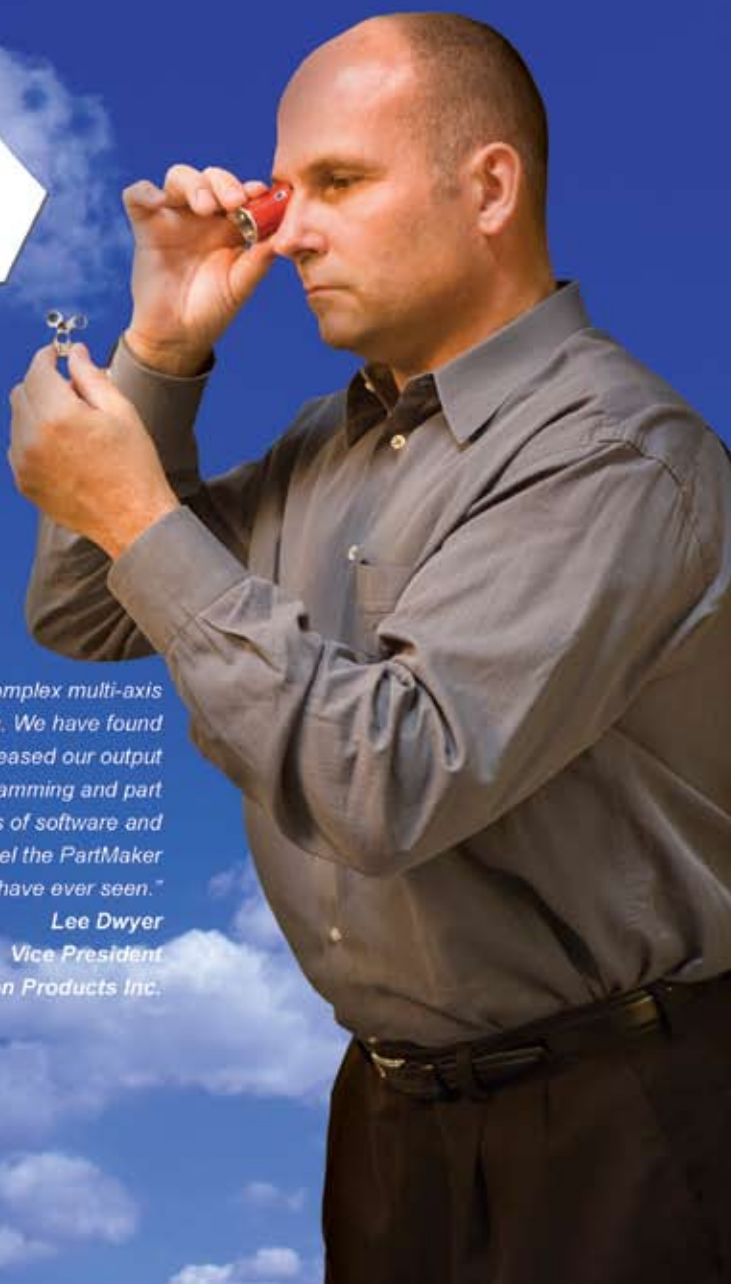

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BPA WORLDWIDE

editor's note

Changing Tides

Politics in Washington are in almost perpetual gridlock these days, which usually seems like a good thing. But I think we will see a shift after the election, whether McCain or Obama is the next President.

The country is ready for movement on healthcare and energy development. Environmentalists of the non-Gore strife are making interesting deals with corporations so both teams can advance. In California, the Tejon Ranch Corporation, the biggest landowner in the state, recently negotiated a deal which enables them to build up to 26,000 new homes but will leave 90 percent of a 422 square-mile tract of land 60 miles north of Los Angeles free of development.

A group of environmental groups agreed to accept a deal to drill off the Santa Barbara coast, which has been sacred water since the 1969 spill. The enviros received a contractual promise that drilling would cease by 2022 and 3,900 acres of national parks would be designated.

Anyone who has wrestled with health insurance companies or Medicare knows that the American healthcare system is screwed up. We are likely to see some interesting compromises in the next few years because the status quo is deemed intolerable by so many people and will get worse as baby boomers age.

The Iraq War is ending with monthly casualties lower than the carnage of a weekend gang fight in Chicago or Los Angeles. Afghanistan is problematic, but at least we have the Germans to fight for us.

Politics certainly affect the people of the machining world. This magazine will continue to treat the big issues that change our world.

Lloyd Graff
Editor/Owner

contributors

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

D. Douglas Graham is a full-time freelance writer who lives and works in St. Louis, Missouri. He attended University of Missouri School of Journalism in the 1970s, and since that time has written more than a thousand articles on subjects ranging from manufacturing to unknown animals and natural mysteries. These pieces have appeared in a wide variety of consumer, regional and professional publications Graham has also been featured on television and radio talk shows throughout the U.S. and Canada as an expert on folklore and paranormal phenomenon.

Emily Halgrimson is the new Managing Editor of Today's Machining World. She has an eclectic background including a degree from the Eastman School of Music, a year at a Bangladeshi orphanage, training at a Zen Center, and most recently, a stint in the Peace Corps in Benin, West Africa. Emily has always loved writing and reading and dreams writing a book about her experiences abroad. In her spare time she enjoys cooking, taking walks, talking to friends on the phone, and exploring her new neighborhood in the Little Village, Chicago.

Paul A. Eiisenstein is a veteran automotive journalist based in the Motor City – that is, if you can ever find him there. His coverage of the products and people, business and trends keeps him on the road much of the year. Mr. Eisenstein has won numerous awards for his writing, including several Golden Wheel Awards. He's a board member with the Automotive Press Association and a juror for the prestigious North American Car and Truck of the Year balloting.

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Puzzle pleasures

I enjoyed the "Think Tank" in your July issue. It's not easy to find suspended beach balls, but I found I could try the experiment using my handy *TMW* in a new way: by holding two pages close together and blowing between them. I remembered what the outcome should be from my long ago physics classes, but I always find the results of this experiment delightful. The world around us is really full of marvelous surprises.

Scott Roy
Yahoo!
Palo Alto, CA

TMW videos online

The following are two comments from a video posted by TMW on YouTube. It features Lloyd Graff explaining why he has decided to vote for Obama in the potential presidential primaries. Lloyd explains that Obama's potnetial to bridge the racial gap trumps his dislike of the nominee's politics. To watch it for yourself or to see other TMW videos online visit www.todaysmachiningworld.com and click on the videos tab.

Lloyd, you are voting for an idiot who is deceiving the whole country. Apparently you must have a throw away life, because its not going to be worth much after Obama finishes taxing you and taking away your freedom!

Sunglasses20

How can you say race relations are more important than the killing of unborn babies, a moral society, the economy, putting liberal judges on the bench, guarding our borders, standing up to our enemies and having another Vietnam pullout leaving thousands to be murdered? The only thing he is good at is taking from the working class and giving to those who won't work!

Nonyabiz2

Selling yourself short

You should practice what you preach!! You are always advocating that we should all promote "branding" and "advertising." I was shocked when you let one of your magazine readers influence you into changing your Graff-Pinkert ad!! WHY?? That picture in your old ad is your TRADEMARK! Your BRAND!

You are selling yourself and your key employees short. Your new ad doesn't do anything for me!! It's not good. Go back to your old ad as soon as possible. Don't be so easily influenced by one crazy reader.

A picture is worth a thousand words!

John J. Steuby Sr.
John J. Steuby Co.
St. Louis, MO

Choice of words

Thank you for producing one of the few magazines that I am able to sit down with and read straight through until I am finished. "The Week" is another, but I digress.

I am writing to mention an impression that I had while reading Lloyd's column "Afterthought."

I feel the use of the pejorative description referring to his past teacher diminishes Loyd's effectiveness in this article. We all knew how the younger Lloyd Graff felt; he had no need to call her what he did.

As I stated, I enjoy the magazine, and find my self looking forward to Lloyd's contributions.

Keep up the good work, I look forward to seeing you at IMTS.

Mel Stark
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By Lloyd Graff

On a mission

Joe Kitterman of Oxygen Education of Indianapolis is on a mission to actually do something about the dwindling number of skilled machinists and take advantage of the huge opportunities in the post-automotive industrial boom. Joe and associate Brenda Cooley have attracted venture capital money to build sophisticated web-based training. They have done work for Haas Automation, Mori-Seiki, Index and Harley Davidson, among others. Now they want to bring their courses to machining firms and educational venues as they build a big library of Web training.

Oxygen's challenge is to connect with the new machinists, or would-be machinists, who want to better themselves. The community colleges and university manufacturing programs cannot seem to find enough students to fill their own programs, much less meet the huge demand in industry. Kitterman has the programming and hopefully the capital to build a national education company focused on the manufacturing trades.

He knows that his early emphasis on selling to the machine tool builders cannot really move the needle on the training deficit. We wish him well as he attempts to connect with the vast pool of people who don't know what they don't know about thriving in manufacturing.

In poker and in business the toughest

strategic decision is to "know when to hold 'em and know when to fold 'em." I know of so many companies in the machining business who are wrestling with terribly difficult calls these days, especially folks who have built successful businesses based on relationships with the Detroit automotive companies.

GM, Ford and Chrysler have been in a long glide towards insolvency. The insane contracts with the UAW, though now partially unwound, have bloodied the once Big Three. Complacency, arrogance and stupidity have crippled them and now higher domestic oil prices have pummeled the SUV and light truck business which was keeping them afloat. Add in excellent competitors from Japan, Korea, and Europe which have invested heavily in America, and you have a domestic car business almost on life support. So what do you do if most of your current business is with American automobiles?

The answer I see from many clients is to stay the course. They are high volume oriented in their processes, their equipment is congruent with high volume automotive, and their sales people are comfortable in the automotive world. Their businesses are based on a big book of fairly low margin work and they are satisfied with this style of business. They look at the business like the miners and farmers and fertilizer people did 10 years ago. Hang in there, stay the course and better times will come. And for the coal miners and corn farmers, and fertilizer makers the good times did finally return and they are making a bundle today. Demand and supply finally flip flopped in those cyclical industries and the survivors can look forward to a long period of good business.

The logical question is whether supplying domestic automotive is comparable to supplying corn to Kelloggs or ADM.

The demand for vehicles is currently declining but the worldwide demand is rising because of growth in China, India, Eastern Europe and Latin America. GM is successful in China and Ford is a good brand in Europe, but this does not insure the success of an American parts maker because these companies are sourcing globally. The recent weakness of the American currency has made some domestic companies low cost world producers, but the recent rise in the dollar versus the Euro threatens the export competitiveness of domestic automotive job shops.

To me it looks like the time to consider that we are entering the post automotive industrial renaissance in domestic manufacturing.

If your best customers are virtually bankrupt because their most successful products are in the toilet because of an abrupt use in gasoline and diesel prices, and they appear to be behind the competition in developing fuel efficient products, you certainly appear to be playing a loosing hand.

I find it difficult to justify an automotive parts portfolio of volume over 30 percent in today's job shop world. Even if you can get into Toyota, Honda and VW, you are committing yourself to the most competitive, unforgiving, manufacturing realm available primarily because you are doing what you have always done.

Sometimes the best strategy is to walk away. Supplying GM, Ford and Chrysler looks like a busted hand to me.

swarf

John Katics looks a little like a

lonesome cowboy with a big mustache and a motorcycle for his California steed. Every summer John rides one of this two-wheeled vehicles cross country, usually returning to his old Cleveland ranch where he toiled for National Acme for 35 years.

This year John drove his BMW R1100R to Gillette, Wyoming to meet up with a thousand others who profess that devotion. He dropped by the Graff-Pinkert/*TMW* corral to inspect a 1¼" RA6 Acme stallion, and then headed out for Ohio and Kentucky with his traveling mate- Ralph Fox, also riding a BMW. His trip up and back to Burbank, CA will be 7,000 miles.

John negotiates the L.A. freeways on a motorcycle all year long, though he retains a 1991 Dodge pickup for the occasional run to Home Depot. He puts on about 1,000 miles a year on the truck to keep its juices running.

Consider this Swarf piece the ressurection of "Show Us your Ride." Please tell us about your favorite Shelby or Saturn— even your mule or skateboard if you think it is print worthy.

What happens when a deal

flipper buys a car company? If Cerberus is the proto-type you end up with a disaster.

Cerberus bought 80 percent of Chrysler from Mercedes. The staid Germans in Stuttgart must have jumped for joy and toasted each other for months after the hand-off took place. Daimler stock had risen like an Olympic pole vaulter in the months before the sale to the naïve New Yorkers, who thought they could run a Detroit car company whose fortunes were built on SUVs, minivans and pickup trucks.

Cerberus installed the Despot of Home Depot, Bob Nardelli, as the head of the new Chrysler. Great move, put in the guy who screwed up the fabulous Atlanta retailer with bad strategy and especially high over-arching arrogance toward his stakeholders. One can only imagine how happy the "little people" at Chrysler felt about Big Bad Bob blessing them with his presence.

Cerberus and Chrysler then had the misfortune of oil inflation which made their stable of slumping SUVs and pickups almost not sellable. Chrysler's car presence is almost as invisible as a Chinese gymnast at a weight lifters event. Now we hear that the company is aligning itself with Nissan so they will be able to supply marketable cars to its dealers.

This kind of outsourcing is a desperate effort to stay in the game when nothing else is working. Chrysler is also selling the Chinese Chevy on the cheap end of the spectrum.

If the Jeep and Ram truck markets do not pick up soon the company is going to be a bag of bones for the lenders to pick through. Certainly Jeep, Caravan, and Dodge trucks have value to somebody else. Will they go in a fire sale or will Nissan absorb them? The way things are heading we may know within a couple of years.

You probably will be reading this

magazine around September 11th, seven years after the New York and Washington terrorist attacks.

In a weird way, Osama Bin Laden succeeded, though he's hunkered down in a cave and his number two henchman may have recently been killed or wounded. The attack probably gave George W. Bush the political cover to attack Saddam Hussein, which in retrospect ruined a presidency that seemed to have a lot of promise.

Unfortunately, the next president may face a similar challenge. Terrorists and bad guys (Ahmadinejad?) like to make big mischief early in a new president's tenure, maybe to see what they are made of. It's possible we could see a Vladimir Puttin try a gas supply power play in Europe, a Hugo Chavez move in Latin America or another Al Queda gambit. Jack Bauer please come back.

I have to wonder, had we allowed Saddam to be Saddam, kept a close watch on him and enforced the "no-fly zones" would the U.S. have been better off?

swarfblog.com

The unpredictability of markets

I admit to be one of the many who were duped by both Saddam and Bush into believing in the "weapons of mass destruction" hoopla. This does not automatically mean that Iran's effort to build a nuclear presence is another theatrical fraud. The Israelis really believe that Iran is determined to build nuclear weapons. They may not be bluffing about making a preemptive attack on Iran.

As we go into this election the political blather will probably be about gasoline prices which the president does not really control much.

A big issue which may confound the next president early in his presidency is what, if anything, should the U.S. do about Iran's nuclear program? Hopefully we'll have an idea of what McCain and Obama are thinking and planning before the November elections.

playing out so dramatically in 2008 that it almost validates a random approach to the price of goods and financial instruments.

If you had predicted in late 2006 that oil prices would rise to $147 per barrel in July 2008 without a war in the Middle East or a major terrorist attack, who would have believed you. If you had forecast the demise of Bear Stearns and the virtual bankruptcy of Citibank, Merrill Lynch, GM, Ford and Chrysler 18 months ago, you would have been destined for the loony bin. And this is with a 27 percent Fed. Funds rate. If you had predicted these startling developments and then added that the United States would not be in a certifiable recession you would only be termed dumber than George Constanza.

I watched CNBC, read *The Wall Street Journal*, *New York Times* and even *Modern Machine Shop*, in moments of whimsy. I'm probably better off with *The Onion* and Jon Stewart.

swarf

Seemingly, the smart people know nothing. In a recent issue of *The Onion* a spoof of Al Gore, depicted as Gore-Al showed him placing his son in a rocket to be sent to another planet.

As I write this in mid August oil in the spot market has fallen $35 from its July 2nd peak of $147 per barrel, and natural gas has dropped from $13 to $8.50. How comforting to know that the price which was supposedly all "demand driven" can fall so quickly.

The housing market, which the seers tell us will fall for the next seven years, could turn just as quickly. Unlike with oil and gas we do not have a world spot price for residential housing. It varies widely by location.

The best contrarian play today may well be the used pickup truck and SUV market. If you don't drive a lot, like me, and you like that sort of vehicle, the prices for low mileage repos are dirt. I hear Gore-Al may have used some of his Nobel Prize loot to pick up a Chevy Suburban but he keeps it underground in an environmentally kosher, green bunker.

TMW's new managing editor

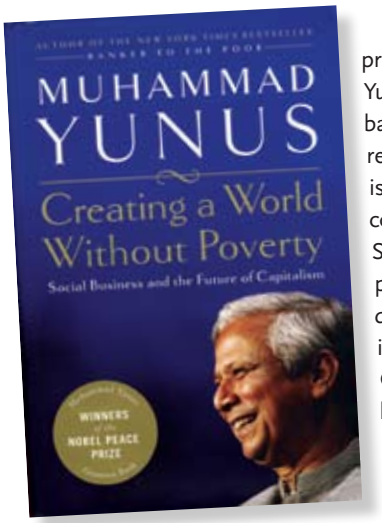
Starting a new job can be exciting and tough. On one hand you're struggling to learn everything, and on the other, you're enthused. There are new people to meet, fresh ideas to explore and a whole new field to discover. This job is something different than I've ever done before, yet I'm using the same techniques I've always used to keep my head above water. Keep an open mind, go slow, and smile a lot. I look forward to learning about manufacturing, meeting as many of you as I can, and doing whatever possible to keep *TMW* an enjoyable, intelligent and informative read.

—**Emily Halgrimson**

By Jerry Levine

Creating A World Without Poverty

In 2006, the Bangladeshi economist, Muhammad Yunus, won a Nobel Prize. But it wasn't for economics— it was the Peace Prize. As Yunus puts it, "Poverty is a threat to peace." Yunus established the concept of micro-lending for poor people in Bangladesh to help them become entrepreneurs and work their way out of poverty. He discussed micro-lending in an earlier book *Banker to the Poor*, and expands on it in *Creating a World Without Poverty.*



Yunus discovered that many Bangladshis worked long hours and had marketable skills, but that middlemen lenders, who charged relatively high interest rates, took most of the profit. The very poor could not borrow from banks at normal interest rates because they were not deemed credit worthy. He believed the poor could move up in society if they had the same access to the banking system as the middle class. With this in mind he started his own bank, Grameen Bank, where he could experiment with micro-loans. The first group of borrowers averaged loans of just $27 each.

The people Yunus initially targeted for loans were little stores, seamstresses, and beggars, who eventually became door to door salesmen of small items or had other small enterprises. One successful venture he developed was called "telephone ladies." Because there were few phone services in rural areas for most Bangladeshis, he made loans to women to purchase a cell phone in their home and rent its time to others. It took less than $50 to get started and helped not only give income to poor families, but improved communication in the country.

Grameen Bank helped tens of thousands of the very poor get their own businesses with a surprising 99 percent repayment return on loans. Many came back and borrowed more to expand. As an economist, Yunus is a strong believer in free markets and globalization. He supports these pillars of individual freedom with the concept of "social business" which joins the interest of corporations with economic development. He took basic profit maximizing capitalist behavior and added an enlightened social component.

Social business is not a government welfare program or a charitable handout to the poor. Yunus believes the role of government in central banks is to control money supply and pass reasonable regulations to limit capitalism, but he is strongly critical of government bureaucracy and corruption and its penchant for self-perpetuation. Social businesses can be designed to profitably provide products that improve their customers' quality of life and also include them as owners in the business. Yunus discusses the success of Grameen-Danone, which provides low cost, healthy, enriched yogurt to impoverished, malnourished people (mainly children) while being distributed and sold by a large cadre of its poor customers. Rather than treat Grameen-Danone as a unique case, Yunus gives examples where new social businesses could come from, who could run them, and who might invest in them. Suprisingly, his ideas seems plausable.

Poverty exists in part because we underestimate human potential. Our concepts are too narrow- our concept of business makes profit maximization the only objective, our concept of credit-worthiness automatically eliminates the poor, our concept of entrepreneurship ignores the creativity of a large segment of the population, and our concept of employment relegates humans to passivity rather than becoming active creators. Human beings have the innate capacity to take care of themselves and contribute to the well-being of others. It is possible to eliminate poverty, and Yunus has shown that something as simple as changing the banking structure can go a long way toward making the lives of millions of people better.

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

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Diligently working (right)

Diligence Inc. has introduced the 7 hour 46 minute "M" Series Programming Training System. Used for learning to program and understand the Citizen Cincom M1, M2 and M3 version Swiss machines which include the M12-M20-M32 machines. Created by a former Citizen Cincom Applications Engineer with over 25 years of manufacturing experience, this training system was created to simulate a hands-on experience by using more than 2500 different scenes, ranging from quality solid model renditions to extensive live machining footage. The training covers program structure to process creation to pick-off routines and all M and G codes the machine uses, including extensive information on the most difficult codes and techniques. A 115 page manual and a student test and answer key are included. Rapid searching is accomplished thru an extensive Menu found on the DVD format. This system was created for well seasoned programmers as well as on the floor operators.

For more information, please contact Diligence Inc. at 877-920-8665 or visit www.diligence-inc.com.

fresh stuff

HAWEmazing (right)

HAWE Hydraulics, supplier of sophisticated controls to the mobile and industrial markets, is announcing a significant expansion to the range of products for applications of NBVP16 seated valves which are designed for clamping functions in machine tools, machining centers, and energy efficient systems. HAWE has expanded the range of possible applications by designing several new flow patterns for the cone seated valves of type NBVP 16. While typical 2/2, 3/2, 4/2 and 4 way 3 position functions of directional valves can be fulfilled with either spool valves or seated valves, the seated valve offers significant advantages. Zero leak seated valves eliminate the need for pumps to continually charge a hydraulic system, as they would need to do when using spool valves.

The seated valve also offers energy-saving intermittent service, and reduces the required volume of oil. Once the clamping pressure has been reached, the valve ensures that the clamping pressure is safely maintained. The pump itself switches off or goes into circulation mode until the next clamping sequence, while the power units cool the system down through its design characteristics.

For more information please contact Hawe at 704-509-1599 or visit www.hawehydraulics.com.

Haas a lot (left)

The SL-20L and SL-30L long-bed lathes from Haas Automation, Inc., provide turning length without jumping up to a much larger and more expensive machine.

The SL-20L and SL-30L provide double (SL-20L) or nearly double (SL-30L) the turning length of the standard machines, while maintaining the same maximum turning diameter and swings. The SL-20L Long Bed offers a maximum cutting length of 40 and a maximum cutting diameter of 10.3. The maximum part swings are 23 over the front apron, and 9.5 over the cross slide. The machine is equipped with an A2-6 spindle nose and 8.3 hydraulic chuck, with a bar capacity of 2. A programmable hydraulic tailstock provides support for long work pieces, and a 10-station bolt-on style tool turret is standard, with options for a VDI turret or hybrid VDI/bolt-on turret. Featuring a 20-hp (peak) vector dual-drive system, the SL-20L's spindle delivers154 ft-lb of torque for heavy cutting, and speeds to 4,000 rpm for finish work and high surface feedrates.

The SL-30L offers 60mm of turning length and a maximum cutting diameter of 17mm. The machine is equipped with an A2-6 spindle nose and a 10 chuck, with a bar capacity of 3. Maximum part swings are 30 over the front apron, and 14.5mm over the cross slide. A programmable hydraulic tailstock provides support for long work pieces, and a 12-station bolt-on style tool turret is standard, with options for a VDI turret or hybrid VDI/bolt-on turret. A 30-hp (peak) vector dual-drive system produces 300 ft-lb of torque for heavy cutting, and speeds to 3400 rpm.

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

Heiden nothing (above)

HEIDENHAIN introduces the new ND 200 Series Digital Readouts (DROs). This display series hosts multiple inputs, is flexible in its configuration, is suitable for future absolute length gauges and features comprehensive functions. The new single-axis ND 200 DROs come in two variants: the ND 280 featuring standard functions (with monochrome flat screen) to fulfill many measuring tasks and the ND 287 (with color flat screen) which is modular in design and allows up to four inputs.

This feature allows toggling between multiple gauges, sensors and encoders to be done easily. Within the HEIDENHAIN ND 287 three additional axis modules are incorporated. Two of them are analog which permits the connection of analog sensors (such as temperature and pressure) and purely serial EnDat 2.2 units which allows for the connection and full use of absolute encoders. This DRO can also be integrated into the Ethernet, facilitating remote monitoring. SPC (Statistical Process Control) is now also available on the HEIDENHAIN ND 287, which allows writing up to 10,000 measured values to an internal memory and the ability to evaluate them statistically.

For more information please contact HEIDENHAIN at 800-233-0388 or visit www.heidenhain.com.

fresh stuff

How Kenna work? (below)

Kennametal Inc. is introducing new heavy-metal boring bars which are engineered specifically for extended-length boring applications (from 4:1 up to 6:1 diameter-to-length ratio), which work equally well in finishing and medium-machining ID turning, grooving and threading tasks. A hybrid of heavy metal construction with brazed steel heads, these boring bars are said to be more rigid for greater extended-length capability. The Kennametal design also supports the insert better than heavy metal alone, reducing failure possibilities while in use. The new bars are available in a variety of sizes, including 8, 10, 12, 16, and 20 mm and ⅜, ½, ⅝, ¾, and 1 inch.

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

Met on me

Metronics Inc. has announced the latest addition to their Quadra-Chek Line: The Quadra-Chek 330 (QC-330). The QC-330 adds 3-D measuring capabilities to Metronics' line of precision measuring systems. With its patented Measure Magic® technology and an enhanced color touch screen interface, QC-330 offers affordable 3-D measurement for manual CMMs. The QC-330 features versatile encoder interfaces making it compatible with virtually any manual CMM.

It has a large memory capacity, includes a USB port for flash drives and printers and an RS-232 port for communication to a computer. The QC-330's patented Measure Magic® technology automatically determines feature type based on probed points which simplifies operation and saves time.

And the QC-330 incorporates a range of ergonomic and display interface innovations that advance new standards for ease-of-use in a sleek, compact design that is seamlessly incorporated onto any shop floor.

For more information on Metronics Inc. please call 603-622-0212 or visit www.metronics.com.

Straight ahead (right)

NSK Precision America has introduced the PN series direct drive motor. The ultra-thin, compact 35 mm design increases flexibility, allowing for use in applications ranging from semiconductor chip inspection to tool changers for machine tools to medical liquid handling equipment. Capable of a maximum rotational speed of 2s-1, the PN series offers position sensor resolution of 2,621,440 counts/rev. An absolute position sensor provides positioning accuracy of 90 arc seconds, requiring no homing operations. The series' interchangeable motors and driver units can be combined freely. The PN series is available with a 7 diameter.

For more information please contact NSK at 317-738-5089 or visit www.nskprecision.com/pspn.

fresh stuff

Rush it to me

Rush Machinery's new Model FC-300 Grinding Oil Filtration System filters grinding oils to one micron with edge filtration technology. It is designed to integrate with most grinding, lapping and honing machines in use today. The FC-300 System provides continuous filtration, automatic back flush and clean oil on demand to your machines. An optional cooling system can be incorporated to ensure optimal grinding oil temperature. Benefits and features of the Rush Model FC-300 Grinding Oil Filtration System are: it provides one micron particle filtration for improved surface finish, it extends the life of grinding oil and wheels, it increases grinding efficiencies and reduces cycle times, it recovers materials for reclamation, it reduces machine maintenance, it filters element life expectancy of approximately 15,000 hours, it has customized systems designed to fit your machines and shop floor layout, is compatible with mineral and synthetic oils, has a recommended viscosity range: 37 - 58 SUS (3.6 - 10cSt) at 100°f and has systems available for use with both carbide and HSS.

For more information please contact Rush Machinery at 800-929-3070 or visit www.rushmachinery.com.

Sandvik Expands

Sandvik Coromant has announced an expansion to its CoroMill 490 family of milling tools. Perfect for face and shoulder milling, the new additions are designed for applications in steel and cast iron. The CoroMill 490 is capable of offering high performance for contouring, edging and slot, shoulder and face milling. The tool's design is compatible with the latest insert geometries and grades developed by Sandvik Coromant. The CoroMill has a true 90-degree square shoulder and so is capable of producing a finished piece with a single pass, typically reducing machining costs by up to 25%. Additionally, the tool's flexibility allows it to replace multiple cutting tools, simplifying production and increasing efficiency.

For more information please contact Sandvik Coromant Company at 201-794-5223 or visit www.coromant.sandvik.com/us.

Somma to it

Somma Tool Company has announced a Combination Bar Puller Cut-Off Tool for CNC. This tool saves a turret position because it is a bar puller and cut-off tool in one unit. Cycle time is reduced because there is no need to index between cutoff and pulling operations. A single screw adjustment allows the jaws to be set up and adjusted in minutes. One turn of the screw moves both jaws in or out exactly .100". The Somma Bar Puller Cut-Off Tool accepts various brands of insert style cutoff blades as well as jaws and jaw fingers.

For more information please visit Somma Tool Company at 203-753-2114 or visit www.sommatool.com.

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On The Brink:

By Paul A. Eisentein

Left photo: GM's new fuel cell technology for the new Volt. Right photo: Rick Wagoner, President of GM, posing with GM's new Volt which is scheduled to be released in 2010.

GM's Precarious Centenary

Soft hums and gentle whirs fill the small studio hidden deep within the General Motors Technical Center, in the Detroit suburb of Warren. In one corner, designers and engineers keep their heads bowed low over their CAD/CAM screens, their labors transformed, at the other end of the building, by a set of automated milling machines carving new forms out of lumps of soft clay. What emerges could shape the future of the entire company.

"We know we have a perception problem, at GM," admits design executive Bob Boniface. Where environmentally-conscious consumers look at Toyota and see "Prius," they look at GM and see "Hummer," and that's "something we have to fix." admits the former Chrysler stylist who now oversees design of the Chevrolet Volt.

First shown at the 2007 Detroit Auto Show, Volt quickly captured the imagination of motorists around the world, never mind environmentalists, regulators – and competitors, like Toyota. Unlike the Japanese automaker's hybrid-electric sedan which primarily relies on its gasoline engine backed up by an electric drive system, Volt is a so-called plug-in hybrid. In production form, it will feature an oversized battery pack capable of running the vehicle for up to 40 miles – enough for most daily commutes – solely on electric power. But on longer trips, a small, internal combustion engine will kick in, providing Volt with the added range lacking in traditional electric vehicles.

If GM can hold to an admittedly aggressive schedule, and deliver the first Volt to dealers by 2010, it could gain the critical first-mover advantage over its rivals, notably Toyota. And with its big Hummer brand likely to be sold or shuttered, the Detroit maker could paint a green aura around itself at a time when it desperately needs, once again, to be seen as a leader, rather than a follower, a position the giant manufacturer isn't used to being in.

For the better part of the last century, General Motors dominated the global auto industry. But in recent years, it has been casting a nervous glance over its corporate shoulder – especially in the home, U.S. market. Now, with the sudden run-up in fuel prices, there has been a sea change shift, with American motorists by the millions, switching from the big trucks that have long dominated GM's line-up to the small cars and "green machines," like Prius, that have made Toyota such a daunting competitor.

The two makers wrapped up 2007 in a global dead-heat, GM maintaining its position as industry king-of-the-hill by just 3,100 units. But if first-half figures hold for the rest of this year, the American maker is about to tumble off its throne. Through the end of June, Toyota held a worldwide global sales lead of about a quarter-million vehicles, and few see GM regaining its momentum anytime soon.

The automaker is drastically slashing production capacity in the U.S., shuttering or slashing production at its light truck plants, and eliminating tens of thousands of jobs.

The latest cuts were announced in July when CEO Rick Wagoner revealed plans to speed up production cuts, trim another 1,800 white-collar jobs and, overall, slash about $10 billion in costs, while raising another $5 billion to keep the vast empire funded. Only a few days later, GM delivered still more bleak news: a $15.5 billion loss for the April-June period, the third-largest quarterly loss in GM history. Wagoner continues to insist that there is "no thought... whatsoever" of bankruptcy, but frustrated

analysts and nervous investors alike keep wondering just how much longer things can continue.

It's a heck of a way to celebrate the carmaker's 100th anniversary.

Déjà Vu All Over Again?

GM has dodged many bullets. In 2000, the new CEO, John Smith, was forced to unwind what Roger Smith (no relation), who died earlier this year, had put in place. Plants were rebuilt, even replaced. Products went through massive updates. And Jack Smith outlined a series of sharp cuts in manpower and production capacity. He also, belatedly, recognized one of the most significant shifts in American automotive history, committing billions, and the bulk of GM's product development resources, to ramp up production of vans, SUVs and pickups.

While light trucks might have been the products environmentalists hated, consumers loved them, snapping up as many as GM could build, and finally frustrating the Japanese, who struggled to crack the code in segments they'd never entered before. Even Toyota seemed perplexed by minivans, pickups and SUVs, rolling out a series of costly failures.

But as GM had demonstrated before, success is a powerful narcotic, making it far too easy to ignore impending problems. Like the latest oil shock. Over the years, observers have often speculated about what would trigger the collapse of the light truck market. The answer was $4.00 gasoline.

Nancy Jaksich, who owns a Chevrolet dealership near Portland, Oregon, still hopes trucks will rebound, but her tone suggests that's just wishful thinking. The current fuel price crisis, she concedes, "is a consumer wake up call, and definitely a Big Three wake up call."

Four dollar gas would be a serious enough problem without what GM's current CEO, Rick Wagoner, likes to call "negative headwinds," which lately are blowing at hurricane force. Start with the American economic downturn; add stiffening foreign competition; then mix in sharp increases in the cost of raw materials such as steel for body panels, and rubber for tires. It adds up to thousands of dollars in added production costs, but in the current market, automakers can pass only a fraction of that onto consumers at a time when the U.S. market has plunged to its lowest level since 1992. In July, GM

Hilary Clinton takes a tour of production at GM. *Photo courtesy of GM.*

> "The current oil prices are a wake up call, and definitely a Big Three wake up call."

posted another double-digit decline, while sales overall dipped to an annualized rate of barely 13 million vehicles – down from more than 17 million earlier in the decade.

Only a few years ago, employees at the GM Renaissance Center proudly wandered the halls wearing "29" buttons, a reference to the market share the automaker was aiming for. That was a far cry from the numbers former GM President MacDonald scoffed at, but the figure looks awfully nice at a time when the automaker could soon slip to 20 percent – or less.

If you compare the situation today to what happened under his watch, former GM Chairman Stempel says, "the '90s were a cakewalk. That was just a cyclical downturn, and there was no doubt in anybody's mind that we were going to get out of it." While he cautions that industry analysts have a tendency to "pile on," during a downturn, Stempel concedes the current situation is dire.

Piling on

It's easy to paint a fatalistic image, and certainly it doesn't help when analysts at big name brokerages like Merrill-Lynch start raising the specter of bankruptcy. But CEO, Wagoner, who has developed a remarkable skill at projecting a sense of both optimism and urgency, isn't

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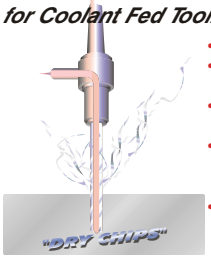

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hearing any of it. "Under any scenario we can imagine," the executive argued during a mid-July appearance in Dallas, "our financial position, and cash position, will remain robust through the rest of this year."

Nonetheless, there are reasons to see some positives working in GM's favor. This is a very different company from the one sculpted by Alfred Pritchard Sloan and mis-managed by Roger Smith. Though it still needs paring down, GM is a relatively streamlined entity, one getting leaner by the day. And it is an increasingly global entity. A decade ago, Jack Smith had to stand up against a cadre of naysayers, investing heavily to launch the Buick brand in China. Today, that's the automaker's fastest-growing market, while once-risky ventures in emerging markets like India and Russia are also helping offset troubles in the U.S. and Europe. The percentage of GM's unit sales rung up overseas has risen, in just a couple decades, from 25 percent to 50, and Vice Chairman Bob Lutz, who has spent much of his own, long career abroad expects it to reach 75 percent in the coming years.

But for now, GM's fate continues to hinge on the American market, where many of its once-prized products are now sitting, unloved and unwanted, on dealer lots. The first challenge is to come up with the products that the market is demanding, says independent auto analyst Dan Gorrell. The tougher task will be to get American consumers to put GM back on their shopping list, whatever it produces. In trend-setting markets, such as California, he cautions, that won't be easy.

The shift has begun, GM sales and marketing chief Mark LaNeve pointed out that 11 of the carmaker's last 13 launches were either cars or crossovers. And the executive noted that a number of the newest products are showing positive signs in the marketplace. But it's critical to note that passenger cars have typically delivered a fraction of the profits of a truck. Indeed, for decades, GM has struggled to minimize the money it loses on every sedan and coupe it sells in the U.S.

Of course, it didn't help that GM would often develop unique products for each of its key markets. Lutz has ordered a global consolidation of product development, readily apparent at the Saturn division, which is working in tandem with the European Opel subsidiary on products like the new Astra subcompact. There will still be regional differences, from sheet metal styling to the level of standard equipment. Considering a major new product can cost a $1 billion to bring to market, however, the savings are enormous.

Add to that the savings GM expects to generate as the result of its latest contract with the United Auto Workers Union. With its new, two-tier wage structure, Lutz expects it will eliminate "about two-thirds" of the cost gap between GM and the "transplant" assembly lines operated by foreign-owned makers, such as the Honda plant in East Liberty, OH. Other contract changes have helped GM—and its domestic brethren—rocket up the productivity charts, according to the 2008 Harbour Report. (Chrysler actually tied industry leader, Toyota, by requiring an average 30 manhours to assemble a typical vehicle. GM came in close behind, at an average 32 hours of labor.)

GM's battery testing center in Warren, MI. *Photo courtesy of GM.*

Meanwhile, a new focus on quality shows GM steadily climbing up the quality charts, as well. The new Chevrolet Malibu ranked high in the latest J.D. Power Initial Quality Survey – and was named North American Car of the Year, by a panel of 50 U.S. and Canadian autowriters. But the best payback of all, GM can't build enough to meet current demand.

GM, however, needs more Malibus and fewer Hummers. And it needs them fast, if it hopes to ensure that this won't be its last anniversary. That's why the Volt is so important. In terms of raw numbers, the plug-in hybrid won't reverse GM's sales decline, but it could give consumers a more favorable impression of the ailing automaker, just as it begins the switch back from trucks to cars. If it can't regain that confidence, no matter how much it saves, no matter how more capital it raises, GM's future will be bleak.

TMW asks Paul Eisenstein the tough questions

TMW: In the *Atlantic Monthly* about 2 months ago the price of the Volt was quoted at $35,000. In a recent interview with Phil Lebeau on CNBC the price was quoted at $45,000. How much will the Volt cost?

PE: I have heard numbers all over the place for what Volt will come in at. I am not convinced either of those numbers is correct, as Troy Clarke, president of GM North America, specifically told me, in a conversation several months back, GM expects to financially subsidize the first-generation Volt, much the same way Toyota swallowed at least $10,000 of the cost of building the Prius, for quite a few years. I wouldn't be surprised to see the lower number, perhaps something even lower. Perhaps GM has changed strategy since I spoke with Clarke, which is quite possible.

TMW: Will the Volt really come out in 2010? If two kids can put a lithium ion battery in their parent's Prius (story from a recent interview in *TMW*) and get over 100 mpg, why can't a giant like GM do it? What are the difficulties they face?

PE: I am so fed up with talk about what "kids" with aftermarket tech do. Let's look at what a well-funded venture, like Tesla is still struggling to accomplish, and in their case, they're forced to use more than 8,000 laptop computer-style batteries. They've only produced a few vehicles, and have changed key suppliers—primarily for the dysfunctional transmission—repeatedly. When Toyota can pull it off, not these kids, then we can talk. Okay, so Toyota is trying, and I've driven THEIR prototype. They're using a more conventional parallel hybrid approach. And, Toyota, for now, says it will only get a minor fraction of the battery-only range of Volt. Oh, and look for a big price tag there, too. I have heard plenty of rumors that Volt is struggling to make 2010. Frankly, if they got a few out, late in the year, and had a hard date, in 2011, for retail, they'd be forgiven -- again, if it's a successful design. Not trying to defend GM, by the way, but go apples-apples. Okay, the difficulties: batteries are by far the real challenge. But as I am now seeing other makers, like Nissan, say they're confident of their improved battery capabilities, I think GM may also be improving. FYI, Nissan's pure EV will reach U.S. fleet buyers in 2010, with a promised 100 mile range.

TMW: Why is the GM quality touted as so wonderful in China and considered generally poor here? What are they doing differently in each country?

PE: For one thing, Chinese suppliers, ahem, are bad. So any automaker who can achieve quality levels there, equivalent to bottom-of-pack (according to JD Power) here, is a star. GM has some of the most modern and efficient plants in China. This was a critical decision approved by Jack Smith, a decade ago. Many makers entered China with old-strategy plants; using lots of very cheap manpower and building old cars (market leader VW), dismissing the quality issue. Smith approved a relatively high-tech plant that was modeled after GM's world-class Eisnach facility, in Germany. Initially, it was also low tech, in terms of raw manpower, but used much more state-of-art management systems to boost quality. As production has grown, and as labor costs have risen, the Buick facility, in Shanghai (S-GM), has steadily added more robotics and automation.

> "I don't think an outsider could tame GM the way Mullaly is trying to tame Ford."

TMW: What's with GM's president, Wagoner? If any other company's stock had fallen 75 percent in the last 2 years, the CEO would have been fired. Why do you think he still has his job? Could an outsider run GM?

PE: Everyone asks this question. Myself included. This is the subject of a very long conversation. He continues to have the support of the board. Indeed, the GM board has apparently given Wagoner another vote of support. To be honest, I don't think an outsider would be able to tame GM in the way Mullaly is trying, at Ford. But I still don't understand why he remains on the job.

TMW: What brand besides Hummer would GM be most likely to sell? What other brand is valued highly enough that it could be sold if need be?

PE: There have been reports (from myself, included) that GM is reconsidering the viability of ALL its brands. GM denies it, but I believe there's a serious, internal discussion. Only Chevy and Cadillac are untouchable, and rightly so. Pontiac is a shell of itself, and Buick would be dead, but for its success in China. Ed Welburn, global design director, told me in April, that without China, Buick likely would have to go, but it'd be difficult to kill the brand in the States and not send a very bad message to Chinese buyers. Note the automaker has begun turning to its Chinese product development unit, PATEC, to lead creation of future Buicks. GMC is a clone of Chevy

> "There have been reports that GM is reconsidering the viability of all its brands."

truck, and could go, what with its market collapsing, but with that name, who'd buy it. TRIVIA QUESTION: do you know what GMC stands for??? Saturn, well, they're investing a lot in it, making it the most European of GM's North American brands. If vehicles like Astra fail, there'll be serious questions asked.

TMW: Why did GM really cut the EV1 electric car?

PE: Because it made no business sense. None, certainly not at the time. Sure, there were some high-profile folks making a lot of noise in its favor, but it was clearly the wrong technology and much too early. Again, easy to pile on GM— which often deserves it. BUT... guess what? It was the Japanese who killed the California EV market and mandate. Despite the rules on the books, Honda, then Toyota both quit the EV market well before GM pulled the plug on EV1. Everyone else walked out about the same time. Sadly, the EV1 was about the only offering with any potential, but simply not enough to make a business case. GM was losing a fortune and was never going to reverse that... not until now, when the new technology, ie Lithionm Ion batteries, has makers rethinking the EV's potential.

GM's rocky past

The bad news comes across with stunning regularity: record losses, double-digit sales declines, plant closings, job cuts. It's hard to read a headline out of Detroit that doesn't deliver another body blow to Big Three.

It wasn't supposed to be that way. Preparing for its 100th anniversary, as the year began, General Motors was forecasting a much-anticipated turnaround. Ford was hoping to gain traction of its own, with its oft-revised "Way Forward" program. And Chrysler was hoping to settle into a groove after its divorce from German partner Daimler AG and its acquisition by the huge private equity fund, Cerberus Capital Management.

Then things got rough. Commodity prices, for everything from steel to rubber to the platinum for catalytic converters, shot skyward. But the biggest price increase was for gasoline, which soared past a record $4 a gallon, suddenly triggering what Jim Farley, Ford's director of sales and marketing, described as a "sea change" in the American automotive market.

When gas prices started nudging the $4 mark, demand collapsed. As the year began, full-size pickups accounted for a full 12 percent of the American market. By mid-year, that was down to barely eight percent. In July, domestic light trucks sales were off by nearly a third, and the Big Three couldn't cut back production fast enough.

Of course Gm is not alone. The Asian companies are rapidly shifting to small cars – like the Honda Fit – and an array of hybrids and other "green machines," leaving Detroit to play catch-up. Ford plans a major "Europeanization" of its American product line-up, starting with the launch of the Fiesta subcompact, in 2010. But under current market conditions, that's a long wait, and many analysts wonder whether it can hold out, especially in light of its record, $8 billion second-quarter loss.

As part of the privately-held Cerberus, Chrysler releases only minimal financial data. CEO Bob Nardelli insists the automaker has been able to bank a billion since the year began, but most analysts see Chrysler in the worst condition of the Big Three. Without Daimler, it is all but totally dependent on the U.S. market, and doesn't have European design operations to turn to. So, the American maker is racing to partner with the likes of Nissan – which will supply it with a version of the small Versa – and several Chinese makers. If any automaker has gone to the brink before, it's Chrysler, which has an uncanny knack of getting in deep about once a decade. So far, it's found a way to improve its fortunes every time. But the current crisis may be more than it's bargained for, and the situation isn't much better for Ford or GM, either.

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SEPTEMBER 8–13 McCORMICK PLACE

Going Underground

By D.Douglas Graham

Photo: SubTropolis in Kansas City, MO. An underground storage, distribution and manufacturing facility with nearly 5-million square feet, 6.65 miles of lighted, wide, paved roads, 2.1 miles of railroad, 16-foot ceiling height, more than 1,300 employees. *Photo courtesy of Hunt Midwest*

underground

U.S. commerce is moving underground, especially in Kansas City. Lured by the promise of low overhead and virtually no infrastructural investment, some four hundred enterprises currently call subterranean Kansas City home. Working below the sidewalk offers numerous advantages beyond cost reduction, and surprisingly few downsides.

The world below has captivated mankind since that day in misty prehistory when the first proto-human shed its tail. There's something weirdly compelling about the great unknown beneath our feet, a fascination potent enough to inflame tinder in an artist's soul. Writers from Dante to J.R.R. Tolkien set portions of their most important works in the planet's entrails, as did painters like Hieronymus Bosch, whose notorious triptych The Garden of Earthly Delights is still considered by art historians and psychologists alike, the most disturbing depiction of The Region Infernal ever to curse a canvas.

In recent years, commerce has trailed the artistic imagination deep into the belly of Mother Earth.

Nowhere is this trend more evident than in metro Kansas City, where hundreds of businesses earn their living in the city's sub-terrain. Strange, given K.C.'s reputation as something of a dowager among U.S. metros, not exactly famous for a willingness to embrace progressive concepts in business practice, or for that matter, much of anything else. Yet it turns out this Bible Belt buckle of a Midwestern town is uniquely amenable to underground commerce, as it sits atop a subsurface honeycomb comprising literally millions of square feet.

"Kansas City is a natural for mining," explains Dave Melzer, project manager for Dean Realty Co., the region's first underground real estate developer. "You can cut horizontally because the rock lies at an elevation accessible to development. There's also a lot of naturally-formed, subterranean space, which combined with the mines, has created what amounts to a second land-use opportunity. This made our town more geologically suited to underground development than most, and because the environment below is also temperature-stable, green before green was cool."

"The world below Kansas City is a clean, well-lit environment of cement floors, whitewashed walls and huge rock pillars."

A Natural

Kansas City isn't flat, as often asserted by people who've never been there, but river-valley typical. Bluffs rise mightily along the Missouri, while downtown, city blocks undulate in a manner reminiscent of the urban peaks and valleys of San Francisco. These topographical attributes proved very attractive to mining companies, which launched a helter-skelter exploration of the region's limestone hills late in the Nineteenth Century. The practice of random burrowing was relatively short-lived. By the 1950s, the region's industrialists had come to appreciate the advantages inherent in creating a usable underground, and were digging for that purpose as well as mineral extraction.

Today the world below Kansas City is a clean, well-lit environment of cement floors, whitewashed walls and huge, rock pillars. This vast, subterranean realm is

subdivided into hundreds of roomy designer spaces, which appear from common areas like storefronts in a shopping mall. Claustrophobia is no problem. Unless one goes looking for a window, it is easy to forget the surface is more than one-hundred feet overhead.

Subterranean Superlatives

So why go underground? It's cheaper, for one. The price of new construction is not a factor, since all the structure one needs is right there waiting to be exploited. Square footage lease fees are much-reduced as a result, along with the costs of preparation. In dollar and labor terms, the occupation of a previously undeveloped space usually entails nothing more punitive than the installation of a little flooring, lighting and plumbing, and a few fire sprinklers.

> "The price of new construction is not a factor, since all one needs is right there."

Cost-saving point two; the temperature below ground averages a cozy 70 degrees no matter what may be happening upstairs, translating to a roughly 20 percent utility expense reduction. This advantage segues to another, even more important in the long run. When fossil fuel usage decreases, carbon emissions travel in the same direction. The point is that doing business underground is environmentally civilized.

"Kansas City can get blisteringly hot in summer, and just as cold in winter," comments Hugh Gardner, area manager, Priority Envelope Inc., a printer/manufacturer of envelopes with one of three facilities in the K.C. Underground. "Utility costs can be pretty high above ground, but in a subterranean space they're not a big deal. That, combined with low square foot leasing cost, had a significant impact on our decision to move down here. We've been in our underground facility for more than two years, and while we've had to make some accommodations to humidity, everything has worked out pretty well."

Priority's subterranean factory consumes 38,000 square feet, and employs 35 people. Like a basement, the space traps humidity, a major issue for a company for whom paper products are stock-in-trade. To get around what might otherwise be a deal-killer, special dehumidifying gear was installed throughout the facility to great effect. A cruise through the plant is like a walk on the beach. The temperature never rises above 70 degrees. Natural ventilation freshens everything, and customized dehumidifiers steal moisture hanging in the air.

"We had to run a lot of lighting and dehumidifying equipment to make the underground concept work for us," Gardner recalls. "But even after all of that was factored into the equation, it still made good economic sense to set up shop down here. The scope of envelope-manufacturing is very large, and until quite recently, plants were rarely air conditioned. A facility will get really hot in the summertime, so compared to the megabucks

Shows machining of priority envelopes underground in Lenexa, KS. *Photo Courtesy of Meritex Enterprises.*

Another machine in underground Lenexa, KS. *Photo Courtesy of Meritex Enterprises.*

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SubTropolis in Kansas City, MO is the current underground home to nearly 50 local, national and international businesses. Tenant companies include warehousing, distribution, cold storage and light manufacturing operations. *Photo courtesy of Hunt Midwest.*

we'd have to throw at A/C, the costs of extra lighting and dehumidifying are practically negligible."

Ventilation also factors in other types of light subterranean manufacturing. This is certainly the case for Byrne Custom Woodworking Inc., a K.C.-based producer of mid to high-end residential and commercial wood products. According to owner Ian Byrne, the dust clouds generated in furniture making necessitated an investment in exhaustive vents for every piece of equipment in the facility.

"It wasn't cheap," owner Ian Byrne recalls. "We had to lay out roughly $40,000 for a single dust dispersing unit with multiple attachments. Dust is only one of the issues you have to cope with when making furniture in a closed space. Another is fumes, for which the cost of an exhaust system is more than we can currently afford. In some ways this slows us down. We offer a line of pre-finished cabinets, but because of the hazards you run into with fumes, we've have no choice but to work on them off-site."

Fumes are potentially destructive not only to the lungs of employees but the facility itself, Byrne adds. A single spark can be enough to cause a massive explosion in a vent-less, fume-permeated space, a sobering fact that all by itself cancels any possibility of doing finishing work underground.

What About Shop Work?

The answer is "yes," with stipulations. Take the case of K-Ter Imagineering Inc. a machinery and tool manufacturer with several years in subterranean K.C. According to President Roger Gubbels, working below imposes limitations on manufacturing operations that can have hampering effects on operational efficiency.

"Ceiling space is at a premium," he explains. "Sixteen feet is all we've got, and sometimes that's not enough. You also can't do spray painting underground because of

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air quality issues. We used to paint frames with a brush and roller, but when that became impractical we gave up on painting altogether. There are strict regulations in effect, limiting what you can and can't do in a closed environment, and we have to abide by every one of them."

"The assets earned operating underground more than outweigh the liabilities."

But the assets earned operating underground more than outweigh the liabilities, Gubbels admits. Some affect areas of business one might not normally think about in that context. Insurance is one example. K-Ter's rates have gone down overall because the company no longer has to worry about being on the receiving end of a twister, or some other act of God arriving out of the blue. K-Ter also pays less for fire protection by virtue of the fact that limestone doesn't burn. A sudden conflagration may take out equipment, or God forbid, people. A limestone mineshaft, it can't destroy.

"The underground offers manufacturing operations like ours a number of significant cost and comfort perks," adds Robin Collins, office manager, Collins Machinery Inc., a manufacturer of sawmills and portable backhoes. "Our facility is nearly 15,000 square feet, big enough to contain 17 employees, a forklift, four welding machines, a Miller mig welder and a plasma cutter. The welders and assembly people love the space because they get to work in a temperate environment all year long. I love it too, except in late August when we get our yearly gnat infestation. That inconvenience lasts only a month, and the remaining eleven more than make up for it."

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

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

SCHUTTE
SF 51, DNT, 1985 (2)

CNC
Star SR-20, 1998
Index G200, 1997

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

DAVENPORT
3/4" thdg., pickoff, longbed (4)
3/4" 1981 (4)
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With Noah Graff

shop doc

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

Dear Shop Doc,

I am trying to bump roll a thread behind a shoulder on a #2 Ultramatic Brown & Sharpe. I have experience with bump rolling on Brownies, but can't seem to get this one. I'm running free cutting brass. Why can't I hold a consistent thread size? Any suggestions?

Threadless in Chicago

Dear Threadless,

Bump rolling is a good process and very inexpensive. It involves one roll and a simple roll holding device. However, it doesn't work in all applications. Brass can be one of the more difficult materials to bump roll, even though it cuts well. Attributes that make for good cutting don't necessarily make for good forming. Also, brass will tend to push away, making for tapered or incomplete threads. Use a minimum of 100 surface feet per minute for thread rolling.

Let's go to the basics. First, there is the blank size to consider. Inconsistent threads can be due to blank size variations. Remember that the blank diameter will affect the OD and pitch diameter at a 3 to 1 ratio. Increase the blank diameter .001" and the OD will increase .003".

There are several conditions that can cause variation in bump rolling. The cam rise needs to be correct. Too slow an advance can cause splintering; too fast can result in incomplete and inconsistent threads (material doesn't have enough time to move). Also, you can cause damage to the cross slides, levers, rolls and pins if you consistently put excessive pressure on the linkage.

Also, bump rolling on CNC lathes is very difficult. Most of the time the spindle bearings aren't made to take the side pressure necessary, or the slide itself won't produce the required force to bump a thread to full height.

An alternative to bump rolling is tangential rolling or pinch rolling. Now you need two rolls and a special threading head. However, the size is held between the two rolls and the thread should be very repeatable, assuming you can control the blank diameter. Reed makes tangential-type rolls and holders, and CJ Winter makes pinch-type roll heads. Because the tangential and pinch rolls require much less force, the process is excellent for Brownies and CNC lathes.

You can form up to a 1" work face with these types of rolls. They are faster than die heads and much quicker than single point threading. Many people think these types of rolling attachments are for multi-spindles only, but they are a productive solution for single spindle machines as well.

There can be clearance issues using these thread rolling heads. I recommend using them from the front cross slide whenever possible as that minimizes the interference issues.

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

next

BY NOAH GRAFF

U.S. home values in the second quarter of 2008 posted the largest year-over-year decline in the past 12 years.

In three years, will the average home price in the U.S. be higher than it is today?

The median price of a previously-owned home in June 2008 was 6.1 percent below the price one year earlier. However, home price trends vary widely across the country. Several metropolitan areas – mostly in the mid-section of the country – have posted price increases while areas in Florida, California, Arizona and Nevada have experienced double-digit declines. As buyers take advantage of improved affordability and buy up the inventory of homes on the market, prices will stabilize and begin to rise. During the next three years, the National Association of Realtors expects that a modest rate of price appreciation will lift the national median sales price to a level well above the previous peak of $221,900 reached in 2006. Some of the hardest hit markets will take longer, but nationally, home prices will in all likelihood be higher in three years than they are today.

Paul C Bishop
Managing Director of Research
National Association of Realtors®

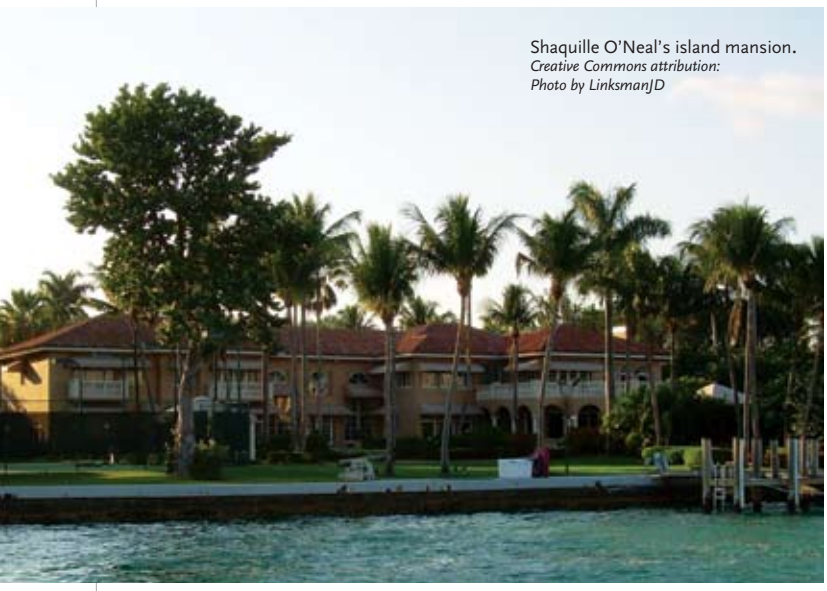
Real estate is made up of local markets, and just like it is adjusting (mostly down) today, I believe you will have markets that are up and markets that are down. Overall, I think in three years we will be within five percent to eight percent of today's prices in most markets (give or take). I think we will go down five percent to eight percent a year for another 12 to 24 months, and in three years we will be at the beginning of a shifting market where the prices are level and starting to go up again. It may take four to six years in some areas to get back to 2006 prices.

Ron Wexler
Keller Williams Preferred Realty
Homewood, Illinois

No. We're about halfway to our forecast of declines in the 35 to 40 percent range. What's driving prices down is excess in inventory. There are about 1.8 million more properties than normal, and we think it will take at least until the end of 2010 to get rid of them. Another factor that's going to keep houses depressed is high fuel costs, because most houses have been built in outer suburbs.

There will be more interest in smaller houses, factory built houses and rental apartments, and for the first time since the 1930s, some people will believe a place to live and a great investment are no longer in the same package – your house.

Dr. A. Gary Shilling
Economic Consultant, Writer, Journalist



Shaquille O'Neal's island mansion.
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fact: In an effort to sell his island mansion in Miami Beach Shaquille O'Neal has trimmed his asking price from $35 million to $29 Million.

the facts:

Nationwide, for those who purchased their home since the beginning of 2003, nearly one in three **(29.1 percent) now have negative equity,** meaning they owe more than their home is currently worth. all sources - Zillow.com

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U.S. home values in the second quarter of 2008 **dropped 9.9 percent** from the year-ago quarter and **1.7 percent** from the first quarter to a U.S. Zillow Home Value Index (HVI) of $206, 919.

Zillow's Q2 2008 survey showed that nearly two out of three homeowners **(62 percent) believe their home's value has increased or stayed the same over the past year;** however, the reality is that 77 percent of U.S. homes have declined in value. (See Pie Chart on left page)

The Center for Responsible Lending, a nonprofit research group, **estimates that a home's value is reduced by about one percent for every home that is foreclosed on or sits vacant in the neighborhood.** *Wall Street Journal*

By Larry Espinoza

Your aching feet

Dr. William Scholl said, "When your feet hurt, you hurt all over." Efficiency level, concentration, willingness to work and attitude decrease when experiencing foot pain. In 1993, the American Podiatric Medical Association reported that 83 percent of the U.S. industrial work force had foot or lower leg problems resulting in discomfort, pain or orthopedic deformities.

The Causes of Foot Pain

Two major causes of foot problems and pain are the way a person stands and the way a person walks. Standing for long periods of time causes a decrease in the blood supply to the lower extremities which increases fatigue and soreness in the muscles. Research suggests that working and standing for

"As the workforce ages, lower extremity injuries are being reported at an increased rate."

long periods of time is hard on your body and lower extremities, while jobs that offer mobility are easier on the feet. At a stationary workstation the feet and legs are under unrelenting pressure, causing localized pressure points in the heels and the balls of the feet.

Old age is another factor that contributes to foot pain. As the work force ages in factories and industries where standing all day is a job requirement, lower extremity injuries are being reported at an increased rate. As a person ages, all the tissues in the body, including ligaments, tendons and fascia, lose their elasticity. The aging person also loses the fat pads on the bottom of the feet that help absorb shock, and there is a decrease in the range of motion in older employees due to arthritis.

Anti-fatigue Remedies

One of the best ways to prevent foot problems is anti-fatigue mats, which are designed to decrease stress on the feet and legs by providing a cushioned surface for people who stand in one place for long periods of time. Another solution is the use of shoe insoles, which are ideal for mobile workstations. At a plant where there are numerous stations that require moving supplies repeatedly from one area to another, mats can be a tripping hazard. Insoles can provide relief by absorbing shock and preventing the degeneration of bone joints and bone structure.

Being prepared for work

Taking care of your feet with exercises to keep the muscles and ligaments warmed up can help you get through the work day without excessive pain. Rolling a 12-ounce aluminum can under the arch of each foot for five minutes is useful in stretching the plantar fascia that runs along the arch of the foot, and picking up a towel off the ground, using only the toes, 30 times, will stretch the forefoot muscles. Stretching the calf muscles by leaning against a wall with one knee bent and the other leg straight out behind you with both feet flat on the floor can also be beneficial.

Taking care of your feet is economical. A diagnosis of plantar fasciitis is expensive. It can lead to weeks of therapy (up to $150 every visit), followed by functional orthotics (at approximately $400 per pair), and possible surgery (approximately $5,000). Always honor your feet.

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one on one

Interviewed by Noah Graff

For the past 18 years, **Jim & Mary Rickert,** managers of the Prather Ranch in Northern California, have sold animal tissue from their organically raised, closed herd, to biotech companies for use in medical procedures and to produce medical components such as bone screws. They also run a world renown organic beef business.

Noah Graff: What is a closed herd, and how did you get into selling animal tissue?

Mary Rickert: We'd been managing [the Prather Ranch] for a little over 10 years, but we had begun making it smaller because it just wasn't making money. More by accident than anything else, we just hadn't added any animals to it. In 1990, we were approached by a friend of ours, a plastic surgeon who had developed a patent using collagen from bovine hides. He was looking for a herd of cattle that was in an area somewhat isolated and pristine and not surrounded by other cattle; we met all the criteria of what he was looking for. We attributed a lot of his thought process to a gentleman by the name of Claude Miller, who realized that the Mad Cow Disease going on in the United Kingdom could very easily come over here, which it eventually did.

NG: When did you start selling the bones?

MR: Well, we also sold blood for awhile and we had another company that worked with arteries for a long time. As far as bones, it was originally for the Florida tissue bank associated with the University of Florida. We shipped them just a few bones and they stuck them in baboons and everything seemed to work really well. It's been in the last couple years [they've been used with humans].

NG: What is your opinion of the conventional meat you buy at the store?

Jim Rickert: I think that it's a mass produced, commoditized product. Something like 90 percent of the beef slaughtering in the United States is done by about three companies and there's some Brazilians who are trying to buy all three of them. A normal commercial slaughter plant does between 1,000 to 4,000 head per day. But, I think [the U.S.] has relatively good quality. I think USDA does a pretty darn good job given how big the situation is, and we've done a lot of work with the breeding herds as contrasts to other parts of the world. Yet [Prather] does very low volume. We slaughter one day a week. I think our smallest slaughter was 18 beef and our biggest was 25.

NG: Define organic for me.

JR: It basically means that you don't use synthetic animal production items and the land that the animals graze or the feed the animals receive is raised in an organic manner. That means basically [that there are] no synthetic fertilizers, no growth hormones, no antibiotics fed in the feed, no little things like feeding them cow manure and chicken manure.

NG: Does your meat taste different?

JR: Yes, we do a few other things on the meat side of it that are kind of unusual, but they're very traditional in my family. A real important part for meat quality is handling [the animal] very gently and making sure it's not stressed out. When animals are stressed, there's a lot of stress hormones that come out and they don't make good meat. We also do dry aging. We hang the beef for at least two weeks in a cooler at about 36 to 38 degrees before we cut it up. What happens is about three percent of the moisture evaporates from it and it concentrates the flavor. Also the muscles start to relax and basically it becomes more tender.

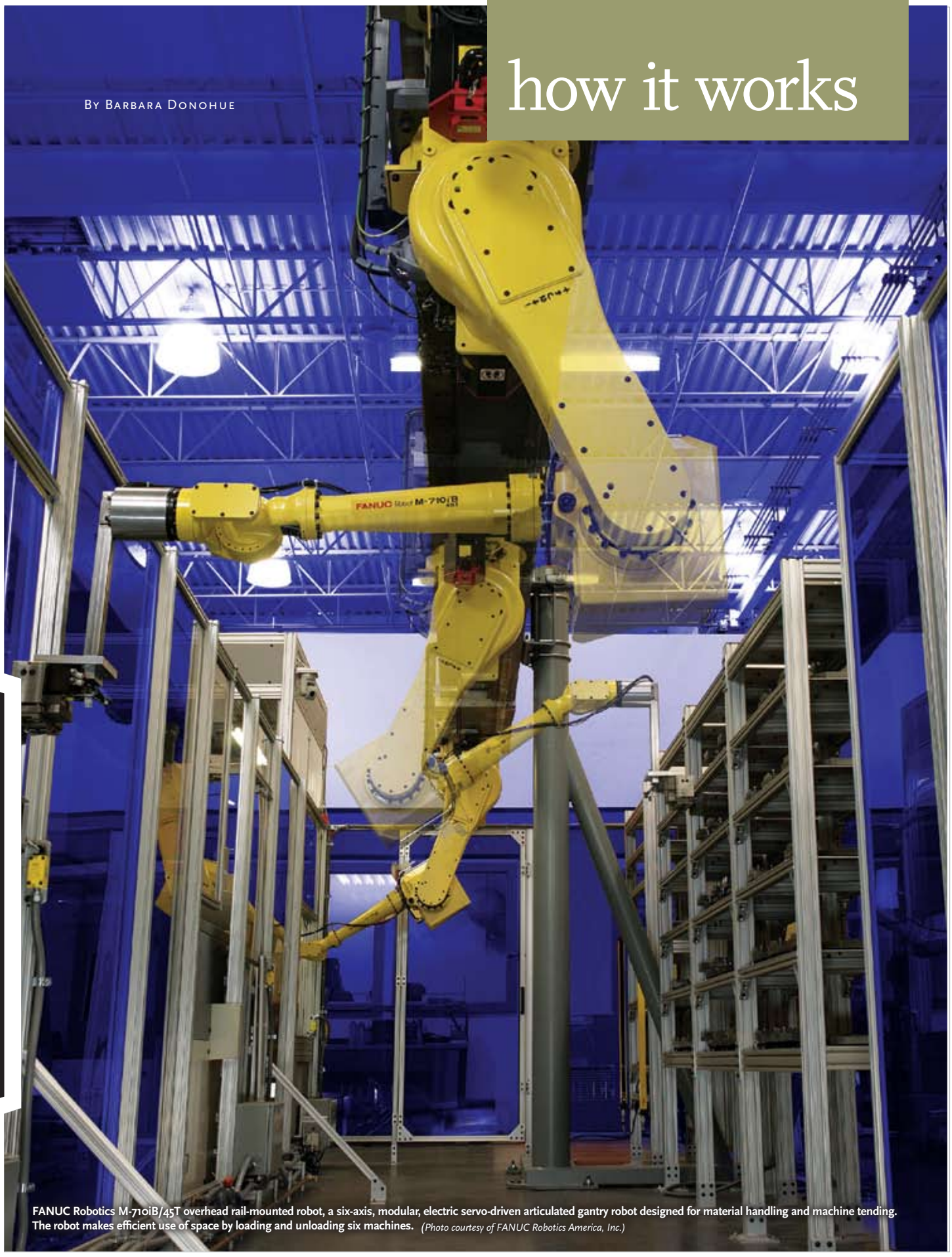
NG: What are you most excited about for the future of agriculture, beef?

JR: Well, it's interesting. In a little business like ours it's kind of returned to what it was like in the United States let's say about 1900. There were a lot of little slaughter plants and little localized businesses that provided products and hired local people. At least there's a few of them now out there doing that, and I wonder if this might be the future that we don't have the mega facilities. In these rural areas, we've had a hard time keeping young people in our communities. They're just dying from that standpoint. Our schools are getting smaller and smaller, and wouldn't it be exciting if young people could come back and produce jobs in our area, and they could raise families here and we could not just have a greying community out here.

PHOTO: *Left to right Jim, Mary and son James Rickert on the Prather Ranch in Northern California*

how it works

By Barbara Donohue



FANUC Robotics M-710iB/45T overhead rail-mounted robot, a six-axis, modular, electric servo-driven articulated gantry robot designed for material handling and machine tending. The robot makes efficient use of space by loading and unloading six machines. *(Photo courtesy of FANUC Robotics America, Inc.)*

Untouched by hands

Robot load/unload systems change parts quickly to help maximize spindle time.

With constant pressure from customers to reduce costs, and your own need to maintain profitability – and stay in business in the face of offshore competition – consider finding a way to cut overhead and increase spindle up-time.

Tending a machine automatically with a robot instead of a human operator can save a little time on each cycle. Over weeks and months, even a few seconds per cycle can add up to a significant increase in production. And, since one operator can supervise a number of robot-fed machines, your labor costs can go down, as well. The bottom line? More profit.

"The key factor in machine tending is designing the system to keep the machine tool in operation as much as possible," said Mike Harper, director of packaging business– Americas, Adept Technology, Inc., Livermore, Cal., in an e-mail interview. You're only adding value while metal is being cut. "The cell must be set up so the robot unloads a finished piece from the machine tool, and replaces it with a raw piece in as little time as possible," said Harper.

Why a robot?

For every piece of a particular part, the loading-cutting-unloading process is the same. CNC machine tools automate the cutting process. Imagine how slow production would be if you still had to run a machine by hand. You can look at the load/unload process in a similar way. If it's the same every time, why not get a machine to do it?

If you have a dedicated machine running the same or similar parts all the time, you could come up with a cost effective system to automatically feed, load and remove parts without a robot. If you're running a variety of parts, a robot-based system will give you the adaptability needed to handle different geometries and operations.

A robot arm with a gripper on the end can reproduce many of the same movements as a human arm and hand. Sometimes it can do more– lift a heavy part, for example. The robot can "learn" where to get the raw parts, how to place them in the workholding device, and where to put the completed parts. Then it goes through the same motions every time for every part, with no errors, no breaks, no time off, no leaving for another job. And it can learn to do similar operations for other parts run on the same machine. Or it can be redeployed to another machine in your shop. Or it could tend multiple machines.

Where should you use a robot?

Installing a system for robotic loading/unloading makes sense in several different situations, said Harper, where you have

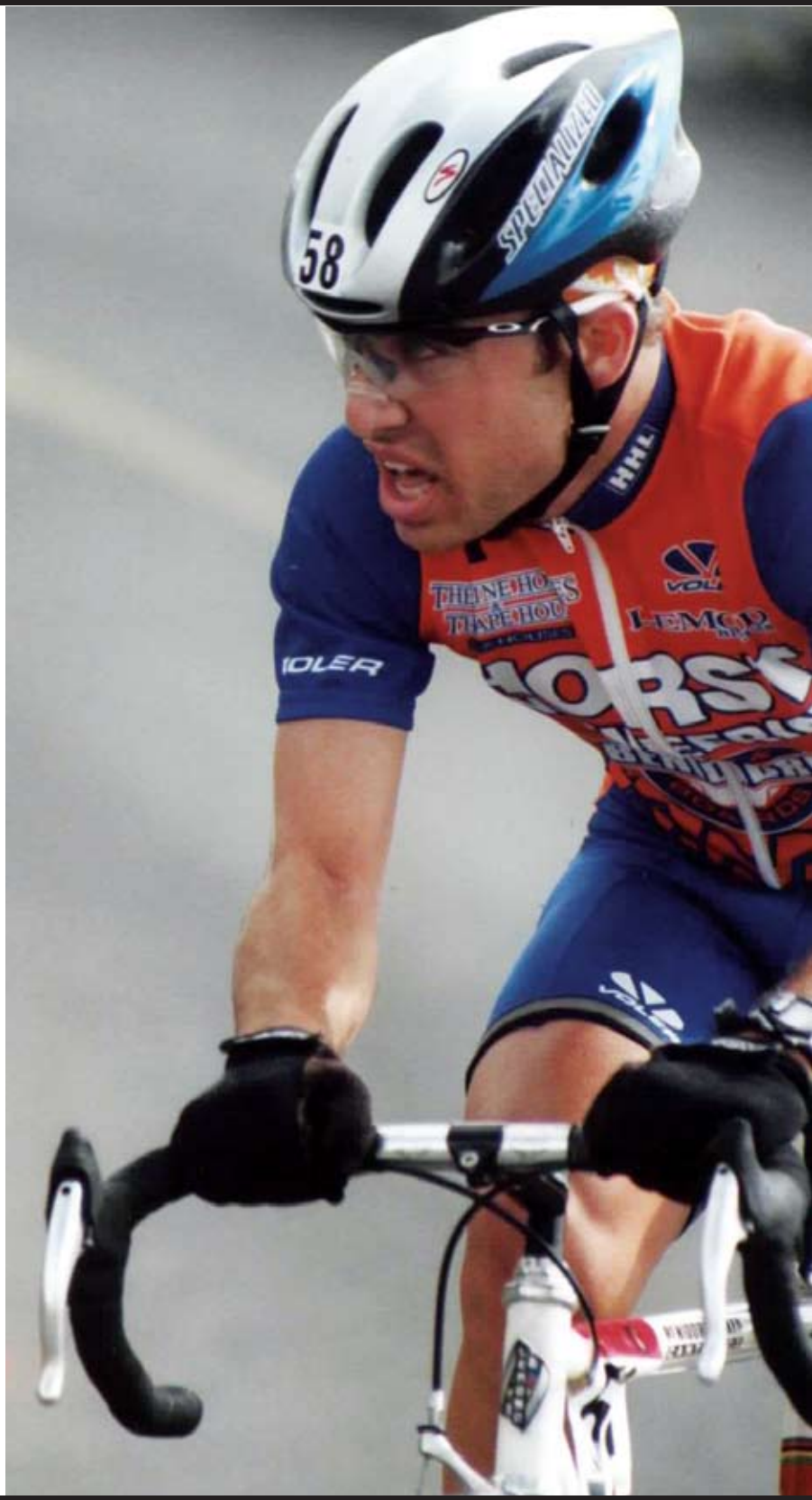
- a long run of a single part or a family of similar parts
- parts that can be fed to the machine in bulk – on trays, or from a feeder or conveyor
- heavy parts
- parts that can't or shouldn't be touched because they are hot, cold, sharp, radioactive or otherwise dangerous to handle.

Some applications may be more suitable to non-robotic solutions, such as automated feeding systems for small parts, or perhaps a manual or automatic pallet system. You'll want to

WHO READS

Driven folks like
Scott Livingston,
president *of*
Horst Engineering & Manufacturing Co.
in East Hartford, CT.

"I live my life at warp speed, but make time to read ***Today's Machining World.*** *I read the magazine for best practices and ideas, and not just about business. Friends often wonder why I pile so much on an already full plate. I'm a husband, father, CEO of a precision machining company, runner, cyclist, kayaker, hiker, board member, photographer, writer, and environmental advocate. I can't see past the pile of books next to my bed and my Amazon.com "wish list" will break me. I'm a Gen-X'er with eclectic interests.* ***Today's Machining World*** *delivers the mix I like."*



Today's Machining World?

A Motoman SK120 robot unloads a machined wheel and loads a raw part into a CNC lathe. *(Photo courtesy of Motoman, Inc.)*

A Motoman SK120 robot with mechanical gripper loads/unloads wheels into/from two lathes in this machining cell. *(Photo courtesy of Motoman, Inc.)*

look at all your options before deciding on the one that makes the most sense for a particular part on a particular machine in your shop.

What's in a robot cell?

"A machine tending system consists of the robot, robot tooling, the stand or other structure the robot is fastened to, part feeding and offload systems, and safety guarding," Harper said. "You can also include mechanical gaging or machine vision inspection equipment, if you want."

The machine tool will need to have automated chuck or other workholding device.

You'll need a way to feed the raw parts to the robot. This is often a special tray that holds each part in the correct position for the robot to pick it up. Some machine vision systems enable the robot to "see" parts randomly oriented in a bin or on a conveyor, and correctly pick up each one.

In addition, the robot control will need to "talk to" the machine control so they can coordinate during the load-machine-unload cycle.

How do the robot and machine communicate?

"The [communications] interface to the machine will typically be the most difficult part of the integration," said Eric Hershberger, senior engineer, Applied Manufacturing Technologies, Orion, Mich. in an e-mail interview. The degree of difficulty will mostly depend upon how old the machine is, what sort of interface it has, and what sort of control is possible.

"The whole handling system is brought together through the robot programming," Harper said. Typically, the robot program is completely separate from the machine tool program, and the two systems communicate through 'signal handshaking.'

Harper described the process: "The machine tool tells the robot 'I am done machining this piece.' The robot then tells the machine tool it is swapping parts. When the robot grips the part in the chuck, it tells the machine to release the part and signal [when] the release has happened. This back-and-forth continues until the part swap is complete. Then the machining process begins again."

Install the robot yourself or hire it done?

Is it feasible for a shop to design and install its own robot system? "Depending upon the electrical and mechanical skills available, you may want to buy a used robot and integrate it in-house," Hershberger said. A large engineering consulting company like his could provide assistance as needed.

Motoman UP50N robot loads/unloads pairs of wheel hubs into/from two identical machining centers and a gauging fixture. *(Photo courtesy of Motoman, Inc.)*

Closeup of Motoman UP50N robot loading a pair of wheel hubs in a machining center for a drilling operation. *(Photo courtesy of Motoman, Inc.)*

"A tech-savvy shop could do a robot integration, with some effort invested in training and research of robot cell designs," said Harper. However, this could take two or three times as long on the calendar as using an experienced systems integrator. "If the shop is honest about the real cost of design and integration hours," he said, "then the cost savings will typically amount to 10 or 15 percent of the cost of using an integrator."

"If you decide to go with a professional systems integrator, ask robot companies for recommendations," Harper said. "If several robots are under consideration, then look at several integrators. Proposals should be broken down to show capital equipment (robot), fabricated parts (guarding, stand, tooling), and engineering costs," he said.

"If an integrator looks at you and says 'Yes we can do that, no problem,'" then be hesitant, Hershberger said. A good integrator will do the research up front and make recommendations in the quote about the hardware/software systems. "And be sure to check references," he said.

"A typical system will probably run $50,000 - $100,000," Hershberger said, "depending upon options." To help keep your costs down, consider buying a used robot. "There are hundreds of used quality robots available for purchase," said Hershberger. "I have bought robots for $5,000 that will run for five years with no problems." The older the robot the fewer options or spare parts might be available. If the robot is several years old, buy two or three for spare parts, he suggested.

Safety is a major consideration in robot installations. "The entire work envelope must be protected by a safety system," Harper said. This could be a combination of safety fencing, light curtains, and safety mats. Any point within the robot's reach must be guarded against human entry, as specified by the Robot Industries Association standard RIA 15.06.

What can a robot do?

Two applications featured on the Web site of Motoman, Inc., West Carrollton, Ohio, show how robots can operate in the shop.

In one work cell, two lathes turn aluminum automobile wheels 14 to 17 diameter, and in five different widths, which weigh 40 to 45 pounds. One lathe turns the back edge of the wheel, the other the front edge. A Motoman SK120 robot removes a wheel from the infeed conveyor, loads it into the first lathe. When machining is complete, the robot places the wheel on an outfeed conveyor. When changing from one wheel size to another, all the operator has to do manually is change the chucks in the lathes and some locating pins.

In another work cell, a Motoman UP50N robot automatically

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Machine specifications		
Item	L20 V	L20 VII/VIII
Max. machining diameter	ϕ20 mm (.79")	ϕ20 mm (.79")
Max. machining length	200 mm (7.87")	200 mm (7.87")
Main spindle speed	10,000 rpm	10,000 rpm
Back spindle speed	8,000 rpm	8,000 rpm
Live Tools		4/7 Std

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how it works

loads and unloads ten-pound wheel hubs in two maching centers. It also tries the hubs on a gauging fixture and places bad parts in a reject chute. The robot tool holds two raw parts and two finished parts simultaneously.

Is there a robot in your future?

"Robots for loading and unloading bring with them additional benefits besides minimizing the time the spindle must stop at part change," Harper pointed out.

A properly programmed and equipped robot will handle parts predictably and won't often drop them.

Robots do not need to take a lunch break, a vacation, or any time off at all, other than a minimal amount of time for maintenance. Do you need to run machines around the clock?

Ask a robot to help

On the negative side, there is the initial cost, $100,000 to $250,000 for a robot work cell, according to Harper. And the robot does require maintenance, which a person would not.

A robot may have a hard time handling parts that vary a great deal in size or are out of tolerance.

Finally, the robot won't do the quick visual inspection a person can do when unloading parts. "You can make up for this, to some degree, by incorporating a machine vision inspection system into the robot cell, for $15,000 to $50,000." Harper said.

Is it worth installing a robot? You'll have to make the calculations yourself. And you may find that a robot load/unload system will pay for itself in a year or two, by providing shorter cycle times, extended hours of machine operation, and a reduction in labor costs.

For more information

www.abb.us/ProductGuide/ – ABB Robotics – select "Robotics"
www.adept.com – Adept Technology, Inc
www.appliedmfg.com – Applied Manufacturing Technologies
www.arobotics.com/technical/tutorials.aspx - Applied Robotics, Inc. (tutorial on grippers)
www.ati-ia.com – ATI Industrial Automation
www.danesys.com – Dane Systems, LLC
www.fanucrobotics.com – FANUC Robotics America, Inc.
www.kawasakirobotics.com - Kawasaki Robotics (USA), Inc.
www.motoman.com – Motoman, Inc., (select "Case Studies"), also
www.motoman.com/motomedia/articles/Business Case for Robots.pdf
www.rimrockcorp.com – Rimrock Corporation
www.robotics.org – Robotic Industries Association
www.staubli.com/en/robotics/robot-solution-application – Stäubli Corporation (select "Machine Tending")

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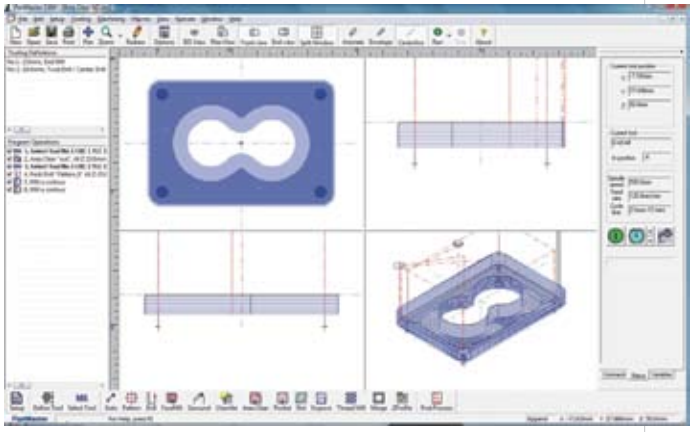
The following are companies who have given information on CAD/CAM software.

product focus

CAD/CAM, or computer-aided-design and computer-aided manufacturing, has become an integral part of the machining process. Hanan Fishman, president of IMCS/Partmaker says, "As machine tools become more complicated, lot sizes shrink, tolerances become tighter, geometries become more complex and skilled labor becomes ever more scarce, the role of CAD/CAM software in the precision machining business has become more important. CAD/CAM software needs to be powerful enough to support the most complex applications, but easy enough to be implemented quickly and provide a rapid return on investment."

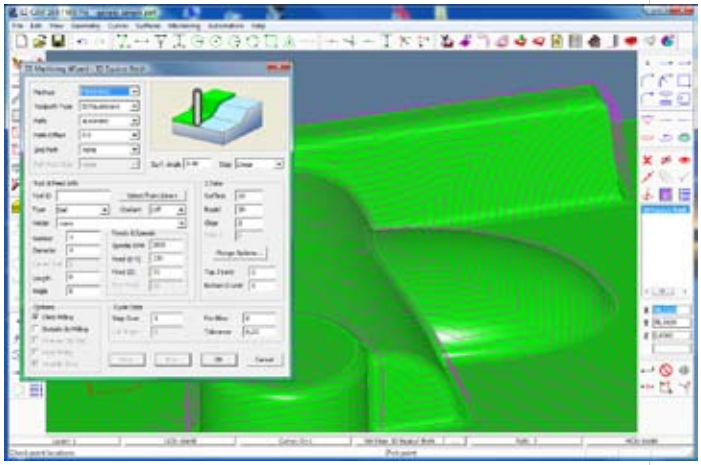
Dolphin CadCam Systems Ltd



Dolphin PartMaster Level 1 CAD software has been designed to be easy to use yet a productive 2D CAD system. Highlights include named layer controls with show - hide - print attributes, automatic parameter assignment, B-Splines that can be created and modified, multiple document interface, horizontal, vertical, parallel, radial, circular, angular or leader line dimensions, a customizable toolbar and screen layout, DXF import & optional IGES import, and 2 & 2.5 axis machining.

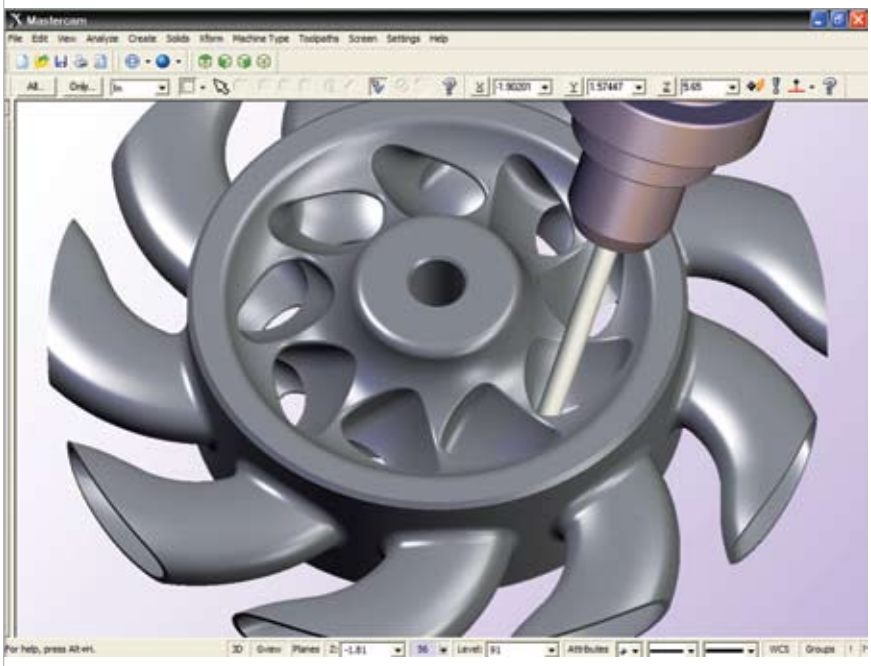
For more information, please contact Dolphin CAD/CAM USA at 570-301-6750 or visit www.dolphincadcamuse.com.

EZCAM Solutions, Inc.



EZCAM Solutions, Inc., is a family of CAD/CAM software products for milling, turning, mill/turn, 4-axis wire EDM, and NC code editing/optimization/back-plotting/DNC. The newly released EZ-CAM V16 delivers a broad set of product improvements, the highlights of which are a new 3D Machining Wizard, which greatly simplifies the creation of 3D toolpaths, and a new surfacing toolpath engine that introduces many advanced toolpath generation capabilities including Equidistant Finishing and Automatic Re-roughing. The new 3D Machining Wizard presents all available surface-machining strategies using simple ,easy-to-understand choices in a single dialog box. A graphic help window within the wizard displays a graphic image for each parameter and option.

For more information, please contact EZCAM Solutions at 212-452-2460 or visit www.ezcam.com.



Mastercam X3

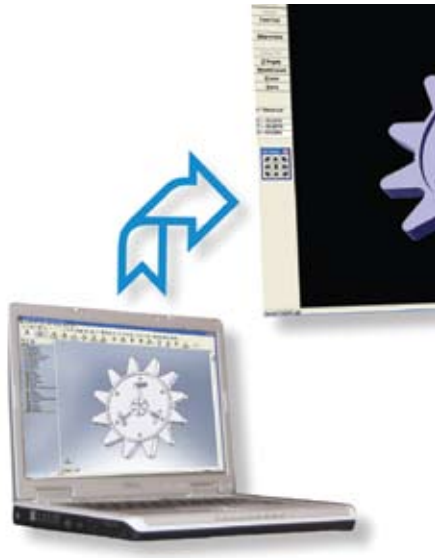
The recently released Mastercam X3 offers expanded machining flexibility and an increased emphasis on speed and automation.Feature based machining, new high speed tool motion, and faster toolpath generation combine with additional new enhancements intended to improve shop-floorproductivity. The most significant highlights and functions of Mastercam X3 include: Feature based machining which evaluates a part's features and automatically designs an effective machining strategy; 2D high speed toolpaths, which are optimized for high speed cutting and hard milling, and have a superior finish and long tool life; and faster multiaxis toolpaths, which are substantially faster and combine with enhanced control sets.

For more information, please contact CNC Software at 800-228-2877 or visit www.mastercam.com.

MazaCAM (left)

MazaCAM is an advanced off-line programming system for the Mazak CNC machine tools. SolutionWare Corporation, the developer of MazaCAM, has released MazaCAM CAD/CAM and Editor – Matrix Edition Version 4.6. This edition of MazaCAM includes various changes to improve on previous versions. For example, MazaCAM now has the ability to take a 3D Mazatrol program and convert it to another Mazak control. It can also convert to Matrix from Legacy controls.

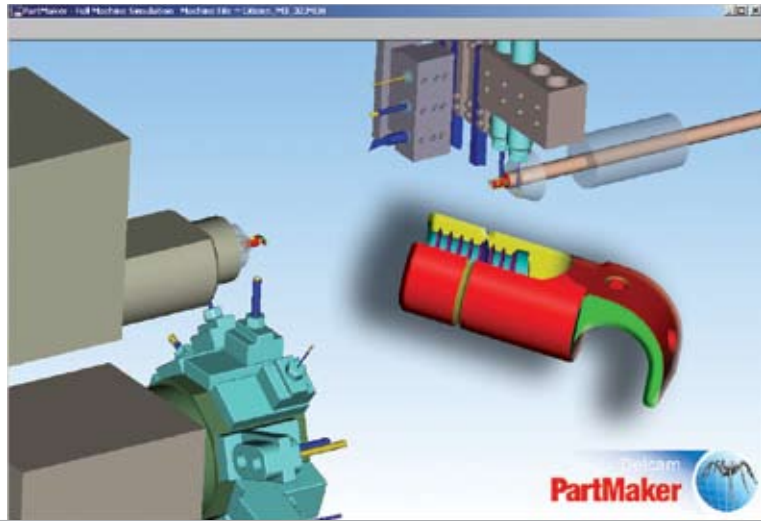
For more information, please contact SoloutionWare Corp. at 408-249-1529 or visit www.mazacam.com.



Partmaker Inc. (below)

PartMaker Inc., a subsidiary of Delcam Plc., has announced it is now shipping Version 8.6 of its PartMaker® CAD/CAM software for CNC Mills, Lathes, WireEDM, Turn-Mill Centers and Swiss-type lathes. PartMaker Version 8.6 features a variety of new functionality and enhanced capability. The focus of this release is an improvement in Solids-based programming with the introduction of Face Planes and improved sectioning techniques. Other improvements in PartMaker Version 8.6 include enhancements to the software's Surface Machining Wizard module, improvements in tool selection, enhanced control over grooving tools and a number of improvements in the software's full machine simulation module.

For more information, please contact Partmaker Inc. at 888-270-6878 or visit www.partmaker.com.

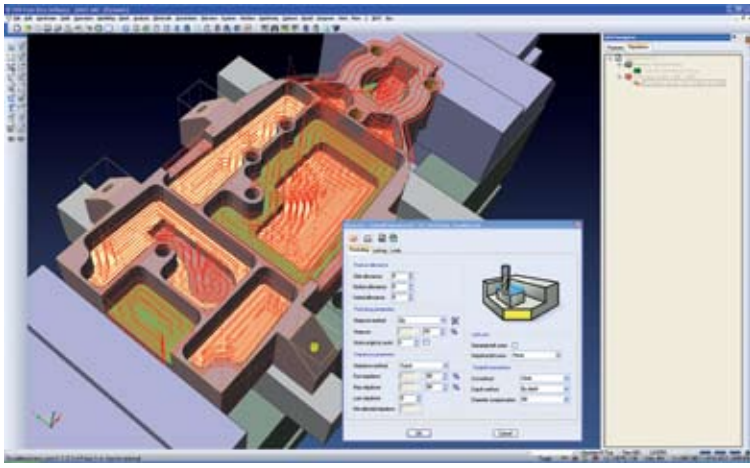


product focus

PowerCAM (above)

SolutionWare Corporation, the developer of CNC programming solutions, announces PowerCAM for Lathe Live-Tooling/Mill-Turn. A solution for programming live-tooling CNCs, PowerCAM for Live-Tooling is a programming assistant that works within SolidWorks and uses solids to generate CNC programs. PowerCAM works with feature-based solids as well as imported files such as solid IGES or solid STEP. Within SolidWorks, partnering with SolutionWare, you may load your CAD file and select features or geometry to make your programs. PowerCAM works directly with SolutionWare's CAM products, GeoPath and MazaCAM, to automatically generate CNC code in the various formats needed for virtually all CNC machines, including G-code and Mazak's Mazatrol.

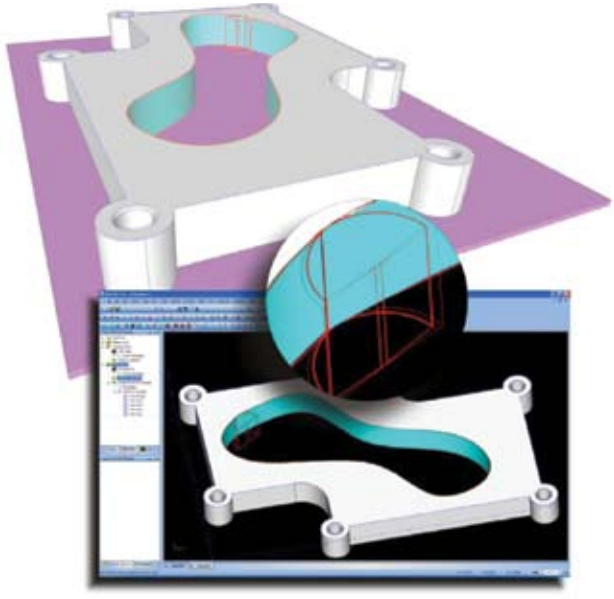
For more information, please contact SolutionWare Corp. at 408-249-1529 or visit www.solution-ware.com.



Vero USA (above)

Vero Software creates and distributes CAD/CAM/CAE software for aiding the design and manufacturing process in plastic injection molds, sheet metal stamping dies, progressive dies, shoe molds, electrode production, multi-axis laser cutting, Wire EDM and others. They service various industries including automotive, electronic, medical, white goods and aerospace. Vero Software has offices in Italy, England, Japan, France, Canada, USA and China. The company now has a user base that numbers more than 20,000 and supplies products to more than 40 countries through its wholly owned subsidiaries and a network of distributors and competence centers. Vero Software solutions include: VISI, PEPS, SMIRTware and Machining STRATEGIST.

For more information, please contact Vero USA at 888-540-8376 or visit www.veroint.com.



product focus

CNC Computer (below)

CNC Computer Integration introduces WireFreeCNC, a new communications system which enables you to visualize productivity in your manufacturing environment and monitor real-time or historical events such as cycle on/off, setup, parts count, spindle and alarm conditions. All data is stored in an ODBC compliant database which can be used to generate browser based reports directly or is interfaced to ERP systems for automated input and evaluation. It also enables you to gather metrics such as OEE, MTU, PM, TLM, OE and others for a variety of lean plant initiatives.

For more information, please contact CNC Computer Integration, LLC at 860-306-7560 or visit www.wirefreecnc.com.

BobCAD-CAM (left)

BobCAD-CAM recently released their new 2 & 4 Axis Wire EDM CAD/CAM software. The new Version 22 BobWIRE system provides an intuitive interface that gives the operator improved control over managing the program from start to finish. As a complete solid and surface CAD system with an expanded list of import file types, the operator can use outside CAD systems or design the part in-house. The built-in toolpath associativity between the part geometry and the wire machining features in the CAM tree manager, make on-the-fly geometry edits or modifying cutting variables simple. Some of the new features include automatic Open and Closed Shape machining, operator definable cutting conditions for different machines, as well as the ability to specifically assign cutting conditions to part files for future use.

For more information, please contact BobCAD-CAM at 877-262-2231 or visit www.bobcad.com.

Send in your answer, quick!
Fax Emily at 708-535-0103, or email
emily@todaysmachiningworld.com

Sudoku Puzzle

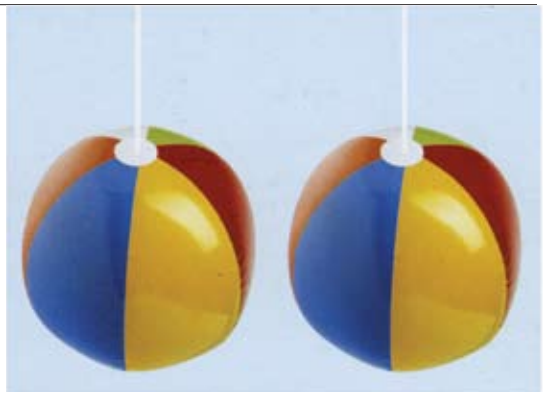
A				M				
	R		H	A				
E	N				R			
		R		H			A	
		M				H		
	A			N		C		
			N				C	I
				R	H		Y	
			M	Y				R

MACHINERY

Each Sudoku has a unique solution that can be reached logically. Enter letters from M to Y into the blank spaces. Every row must contain each letter in the word "machinery," along with every column and every 3x3 square.

Bernouli's Surprise

The balls will move toward each other. The air moving between the balls has a lower pressure than the surrounding air, which pushes the two balls together. This is a simple demonstration of Bernoulli's principle, which links air speed and air pressure. This is also the basis of airplane flight.



Who's just beachy?

Steve Richards of Yamazen Inc. in Milwaukee, WI; **Sheldon Wheaton** of Garmin International in Olathe, KS; **Jim Brown** of Apogee Machining Services, Inc. in Salem, MA; **Roger Stillman** of Metric & Multistandard Components Corp. in Hawthorne, NY; **Greg Tetrick** of Cass Screw Machine Products in Minneapolis, MN; **Joe Archibald** of Ray H. Morris Co. in New Britain, CT; **Scott Hauser** of Tsugami/Rem Sales in Hoffman Estates, IL; **Robert Bates** of Weffo Performance in Atlanta, GA; **Mark Kressner** of Mikro Industrial Finishing in Vernon CT; **Alan Szymanski** of Do-Rite Die & Engineering in South Chicago Heights, IL; **Greg Tetrick** of Cass Screw Machine Products in Minneapolis, MN; **Bob Cookson** of Bowes Machine in N. Andover MA; **Hank Zuidmulder** of Renco Machine Co. Inc. in Green Bay, WI; **Dan Cronin** of Advanced Microscopy Group in Mill Creek WA; **Ron May** of Hunter Engineering Company in Bridgeton, MO; **Jeff Kovalenko** of Key Machine Tool Inc. in Elk Heart, IN; **Joel VanAntwerp** of H&R Screw Machine Products, Inc. in Reed City, MI; **Jerri Landman** of General Electrodynamics Corp in Arlington, TX; **Richard S. Rudy** of BASCO, Inc. in University Park, IL; **Tim A. Evilsizor** of Micro Enterprises LLC. in Springfield, Ohio; **Tony Campbell** of Industrial Strength in Carlsbad, CA; **Jim Riddell** of Baker College in Flint, MI.

postings

Noteable and newsworthy information and events for the month of October

FABTECH International and AWS Welding Show

Las Vegas, NV

October 6th ~ 8th

www.sme.org

2008 SME Fall Meeting

Toronto, Canada

Oct. 24th ~ 26th

www.sme.org

Tooling for Composites

Seattle, WA

Sept. 29th thru Oct. 1st

www.sme.org

Lean to Green Manufacturing

Portland, OR

October 27 thru October 29

www.sme.org

Advanced Manufacturing & Technology Show

Dayton, Ohio

October 22nd

www.dtma.org/events/AMTS/AMTS.html

2008 PMPA Annual Meeting

Oct. 17 ~ 21

Waikoloa, HI

www.pmpa.org

2008 MLB regular season Final day

Sept. 28th

www.mlb.com

"Saturday Night Live" premiered

First host George Carlin

Oct. 11, 1975

www.nbc.com

Xerox introduced the copy machine

Oct. 22, 1938

www.xerox.com

Model T introduced by Henry Ford

Oct 1, 1908

www.modelt.ca

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-GILDEMEISTER -SCHUTTE -EUROTURN -INDEX
-TORNOS -WICKMAN

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ENGINEERING MANAGER – up to $105K + perks – Ft. Worth TX – OEM, high volume, cnc machining, swiss cnc lathes, multi spindle screw machine, project management, new product launches, APQP, direct technical process experience, leadership, relo assist and solid benefit package

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SWISS CNC MACHINIST – up to $26/hr – St. Louis MO – set up, operate, edit, troubleshoot, great benefits, all shifts, relo assistance

SWISS CNC LEADMAN – up to $30/HR – S. Boston MA – aerospace, close tolerance, fantastic benefits, 1st shift, over 3-5 operators, set up, program, train, lead, guide

SWISS CNC PROGRAMMER – up to $72K – N. Boston MA – medical implant OEM, international corp., 3 weeks vacation, medical insurance from day one, 5 yrs. exp. programming swiss lathes, looking for advancement – this is the one

SWISS CNC MACHINIST up to $27/hr – N. Boston MA – large OEM, expanding, many new swiss lathes, medical, all shifts, 401K up to 6% match, pd. education, 11 holidays, medical, dental, vision, life, long/short term disability, well lit, AC

SWISS CNC MACHINIST – up to $25/HR – E. Cleveland suburb, OH – growing company, newer equip., increased sales, aerospace engine components, all shifts

SWISS CNC MACHINIST – up to $27/hr – W. Cleveland suburb, OH – set up, edit, operate, OEM, good insurance, all shifts

SWISS CNC MACHINIST / PROGRAMMER – up to $30/hr – Harleysville PA – OEM, purchased another company, set up, operate, edit and/or program, train, mentor, 7 years of swiss lathe exp.

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SCREW MACHINE ENGINEER – up to $67K + bonus – W. Cleveland suburb OH – knowledge of multi spindle automatics, tool design, layouts, select tools, gears, cams and attachments

MANUFACTURING ENGINEER – up to $78K – Boston MA – major fluid controls manufacturer, process and tool multi spindle/single spindle automatics, must have cam driven screw machine, full relocation, all major benefits, open due to promotion of valued employee, relo assist

CNC MANUFACTURING ENGINEER – up to $78K – Exton, PA – tool selection, cycletimes, process program, customer contact, R&D, GD&T, debug, problem solve, large corporation, relo assist.

MANUFACTURING ENGINEER – up to $90K – Ontario CA – electronics OEM, cam driven swiss lathes / screw machines, Tornos, Bechler, Peterman, will consider multi spindle exp., estimate, tool, process, troubleshoot, continuous improvement, relo assist

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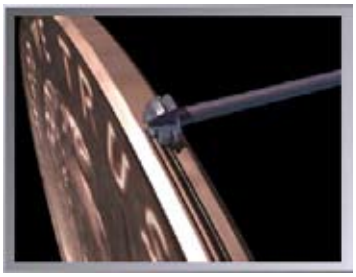

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afterthought

Auction combat

An auction is combat with nods and blinks rather than fists or swords. I love the rush of competition as my left jab gets mushier and my swordsmanship less reflexive.

I recently participated in an auction in Philadelphia orchestrated by Jeffrey Luggen of Cincinnati Industrial Auctioneers. Time will tell whether I won or lost, but I do know I really sweated.

The first sale I ever attended as a participant was in New Britain, Connecticut, a lifetime ago. I was 17 (a very good year), and my father sent me out to an Industrial Plants Auction to bid on a New Britain Model 656 chucker. He thought he was looking out for me by calling a dealer acquaintance, Max Noble, who sold Brownies out of a storefront on Centre Street in New York. My Dad figured Noble would have no interest in a multi spindle chucker. This proved to be a grossly incorrect assumption, not because Noble really wanted the New Britain, but Izzy Grand, a Centre Street foe, seemingly fell in love with the 656 that I was supposed to buy. Maybe Izzy coveted the machine because I was dispatched to bid on it, but as soon as he put his hand up to bid Max Noble countered. I did end up buying the machine, but for more money than I was supposed to pay.

"I always wonder if I've been played at an auction. But it is a lot like Blackjack in Vegas."

After the sale Bobby Botwinik, a partner in Industrial Plants, came up to me and asked me, "kid, do you know what you just bought?" At 17, I knew it was a New Britain, it had six spindles, and three jaw chucks. It was enough to quiet him but left me uneasy in my machinery ignorance.

On a sweltering July day in 2008, 46 years later, with my new short sleeve Joseph Bank dress shirt retaining three gallons of sweat, Jeff Luggen put up the first six spindle Wickman screw machine. Ironically, it was a machine that Graff-Pinkert had sold new in 1984 to Southco Corp., which was now selling it. In the revolving world of screw machines this is not that rare, since Graff-Pinkert has sold most of the Wickmans cutting metal in North America.

I bid against somebody. Was it the "House," the auctioneer, the selling consortium of owners, or a slealth bidder? I could not discern. I could not tell because I was staring at Luggen and concentrating on my bidding limit.

Jeff Luggen is a very successful auctioneer, and I'm sure he could read my body language like a *New York Post* headline. I bought the machine for $12,000 plus a 12 percent buyers premium – a fair price, but no steal.

I always wonder if I've been played at an auction sale. But it is a lot like Blackjack in Vegas. The House has the advantage, but with homework and nerve, the player can still win. On Wickmans, I know more than Luggen – but he controlled the bidding. This is the reality of the industrial auction and I willingly came to play. I was satisfied with the outcome and in talking to him after the sale, he felt that he came out OK too.

Auctions may promote the myth of "fair and open" bidding, but often they are neither. They are unpredictable, sometimes crazy, competitive contests of knowledge and will.

After 46 years of bidding I still sweat – and damn it, I still love it when I think I won.

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Stroke	320mm
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Back Tool(Driven)	4(2)
Off-Center(Driven)	2(2)
Cross Tool(Driven)	4(4)
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Dimention (LXWxH)	2,720x1,304x1,775mm

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