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October 2008 volume 4 issue 10

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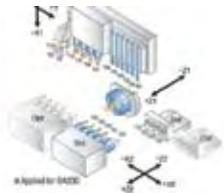
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editor's note

Noah Graff on IMTS

Unfortunately, Lloyd Graff couldn't write this editor's note. On September 2nd he underwent quadruple bypass surgery, but I'm overjoyed to say that at this moment he's at home probably eating an egg white omelet and concocting an article about the crazy experience.

He suffered heart failure the last week of August, and it couldn't have come at a worse time for the magazine. It was the week before IMTS and our editorial staff would have to go to the show without our leader, the maestro behind TMW, and the smartest man I've ever known. On top of that, we had to produce the next month's issue, without Lloyd's columns, on very limited time.

I have to say that I'm extremely proud of what we did at IMTS and how we finished this issue. Emily Halgrimson, our Managing Editor of two months, came up with great idea after great idea on how to promote the magazine in our booth that was situated in a corner behind a huge post in the room with the large machine tool builders. On the fly, she also coordinated TMW's big Monday night reception in a box at the White Sox game. When the game got rained out, she took care of business and got the White Sox people to refund all our money.

Meanwhile, I walked the floor to talk to folks and find new stories. I also got to do the issue's feature interview with Dr. Thorsten Schmidt, DMG executive board member. And though I missed my Dad like everyone else, IMTS for me was truly exhilarating and it was a great deal more gratifying having the responsibility to do it without him there.

Noah Graff
Features Editor

editor's note



Joseph L. Hazelton has written for magazines in the metalcutting industry for seven years, starting with *Gear Technology* and later with *Cutting Tool Engineering*. He majored in writing as an undergraduate at the University of Illinois, Urbana-Champaign, and then entered its graduate journalism program. After two semesters, he left the program for Michigan and started reporting for several weekly newspapers in the Lansing area. When not writing, Joseph likes to play basketball, unless he's injured, which seems to occur more often as he gets older; he spent the last 12 months resting his right shoulder after injuring his rotator cuff.



Mary Ethridge spent 18 years with the former Knight Ridder newspapers. She recently covered business news for the *Akron Beacon Journal* in Ohio where she won several awards, including her enterprise reporting by the United Nations and the Associated Press. Her work has appeared in the *Philadelphia Inquirer*, *Cleveland* magazine and the *Miami Herald*. She graduated from Princeton with a degree in English literature. Ethridge is known for getting sources to spill all: Cindy Crawford once confessed to her an addiction to blueberry Pop-Tarts.



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



Scott Livingston is President and CEO of Horst Engineering, a sixty-two year old East Hartford, Connecticut manufacturer. He is a graduate of Boston College and completed the Harvard Business School OPM program. He is an active member of the Young Presidents' Organization and chairs the YPO Family Business Network. When not battling business cycles, he makes time to run, bike, kayak, and hike, often with his favorite training partners, wife Debbie, and son Shepard. He is a passionate environmentalist and his favorite work days are those when he commutes by bicycle.

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Social Responsibility

I'm a budding machinist and I enjoy reading the pdf version of your magazine online. Through your magazine's wide berth of subjects I am both informed and educated on the global nature of machining and manufacturing. [Regarding the July 2008, interview with Benjamin Wey,] I do not agree with most of Wey's views and at times I find his views self-serving and blindly sinophilic, I appreciate your magazine for giving me the opportunity to read about Benjamin Wey's thoughts.

I am amazed by the complete lack of ethics and sense of shame by someone who has a business degree from a religious university. While I applaud Mr. Wey for his entrepreneurial spirit, his nonchalant mentioning of selling of counterfeit Levi jeans as part of his business school achievements shows hints of a narcissistic get-rich-at-any-cost mentality that is responsible for the massive offshoring of American manufacturing jobs to overseas authoritarian countries.

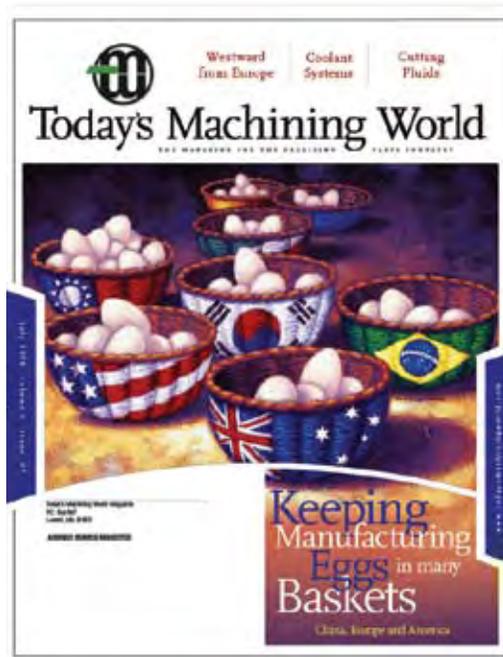
While Mr Wey professes to be an American and went as far to westernize his surname from "Wei" to "Wey," I doubt if he understands the meaning of being an American. Before "pursuit of happiness" come "life" and "liberty." Capitalism without the careful check and balance of a functional democracy is a dangerous prelude to fascism. Freedom of speech was fundamental in shaping our country but is still sadly lacking

in China. Given Mr. Wey's position on Tibet and Taiwan, he understands neither "life" nor "liberty." His condescending view of Tibet and aggression toward Taiwan is disgustingly authoritarian and sadly implies that Mr Wey is an American in name only.

China may have capitalism in its blood but it does not have democracy in its mind, which makes it a more capable adversary than the old USSR. Mr. Wey makes the typical argument that democracy can be fostered through wealth. However, over the last 10 years China has not made any significant improvement on human rights issues while its economy and military have grown without bound. The unspoken truth about China is that wealth did not bring about democracy, instead it gave China its intoxicated nationalistic swagger as evident in the Beijing Olympics.

There is no such thing as free trade or cooperation with an authoritarian country. Unfortunately we still haven't learned our lesson. The rise of the new authoritarian capitalism espoused by Russia and China does not bode well for those of us who value democracy and liberty.

John J. Wang
Indigenous Manufacturing Project
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*Something on your mind?
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Not just for the young

I just finished reading the article in the August edition of your magazine by Jessica DuLong "Moving from Help Wanted to Help Found." This is a very interesting story. I feel that people in an older age group would also add to filling these jobs. The reason I say that is I work for a company called Illinois Manufacturing Foundation. We actively have one CNC training course at our Chicago location and are adding CNC programming to our training class at the Sheridan Correctional Center in Sheridan, IL. Seeing the need for trained CNC programmers, the Illinois Department of Corrections is trying to get the funds we need to purchase two CNC machining centers. I feel if we can get manufacturers in the State of Illinois interested in our program it would be a win-win situation.

Mike Dombrowski
Program Director
IMF Spring and Machining Program

Declining interest

TMW online hosts a blog which has additional Swarf posts and provides a place for our readers to respond. Recently, an entry was posted about manufacturing's negative image in the general public as a possible explanation of why youth are not entering the field. The question "do you think your children will be interested in manufacturing?" was posed. Below is a response. To visit the Swarf blog, go to www.swarfblog.com.

No, I don't think my children will be interested in manufacturing, in particular CNC machining. The problem of not being able to attract young people into the industry is a growing trend and is due to a number of factors. The plain and simple fact is that generally there isn't as much money in it as there used to be, so there is less money to give to employees. It

is also a much more volatile industry so owners are more cautious when it comes to spending money. A job with duties that include setting up and programming a highly sophisticated and expensive machine, where you have to produce quality parts in a reasonable amount of time otherwise you are going to get yelled at, and pays \$40,000 - \$45,000 a year, I don't think there are going to be a lot of young people who come running. Not to mention the environment. I have been in a lot of shops and there are a lot that aren't pleasant.

Yes it is challenging and very interesting at times, but is it worth it?

It is also part of a cultural shift that over the past 20 years working with your hands makes you a second rate, you just have to turn the TV on to see that. One part of it is that our parents had to work hard and not in ideal jobs, and they raised their children in such a way that they don't have to do what they did.

In Europe they are ahead of us in a lot of ways and this is also one of them. Manufacturing is much more competitive, specialized, and consequently the jobs available are much fewer as they have turned to automation in a big way. And the competition for these jobs is fierce. Industry there has consolidated, and a lot of small shops have disappeared leaving only large facilities that do not go on hiring sprees, but hire a few very bright individuals that get jobs for life. Given that there is not a lot left over in terms of skilled trades for machining. And those jobs are not as well paid as you would think.

I remember when I was just starting out to become a Tool and Die maker we were told by our teacher that Tool and Die makers would never be out of work, even in a recession. That is true no longer. So with all that said I hope that there will be easier ways for my children to make a living.

Richard
Posted on www.swarfblog.com

TMW made a terrible error in Swarf in the September issue on page 15, mistakenly printing "Obama bin Laden" instead of "Osama bin Laden." Although no explanation can excuse the regrettable error we believe the slip-up was caused by the computer's auto spelling correction feature which had memorized the word "Obama" that occurred in the same entry and in numerous previous entries. We apologize to those who are offended and recognize that Senator Obama in no way deserves to be associated or compared to an international terrorist.

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What I did on my Summer Vacation

On August 29, 2008 Lloyd Graff, the Editor in Chief of *Today's Machining World*, suffered a heart attack that led to quadruple bypass surgery. The following are some of his thoughts on the experience.

By now I'm feeling extremely grateful to be home. My energy levels spike up and down. It's a process to get used to being a patient. I feel incredibly grateful to be alive. I had ignored the signs of angina for a couple of years because they didn't present themselves as normal angina. I had a lot of rib cage pain, but not what I construed as heart pain. My "wonderful" family vacation to Michigan in August turned into an incredible nightmare as my condition clearly deteriorated. I felt weaker and the pain became more frequent. But still, being in a state of denial, I ignored the signals of an impending disaster. At the end of August I thought I had the flu or maybe pneumonia. I called my internist, who works at a hospital about 50 miles away from my home and told him that I thought it was important I see him. When my wife Risa and I arrived at the hospital I was in the midst of a heart attack. They rushed me to the emergency room and went to work on me immediately. It was critically important to get a stent into my heart to enable me to gain enough strength to do bypass surgery; if they couldn't get one in, my chances of survival were slim. Fortunately, a very skilled cardiologist came through, and got the stent into my 100 percent blocked lower ascending aorta – often termed the "widow maker." Three days later, surgeons successfully performed quadruple bypass surgery.

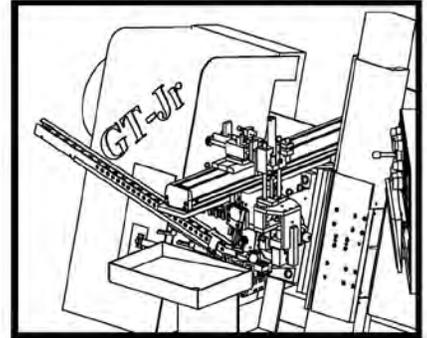
The whole experience was what I would term one of those "it's a wonderful life" moments because I got to see so many people who truly cared about me rush to my bedside to be with me. I spent 14 days in the hospital, 11 of them



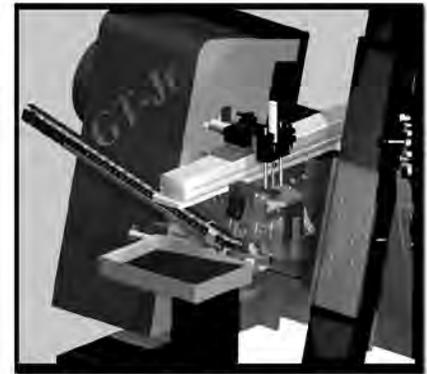


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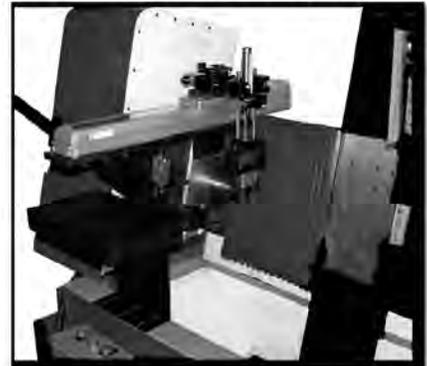


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on a ventilator unable to talk. I took advantage of the opportunity to assess some of the medical equipment people in the machining world produce parts for. I have to say that generally it worked brilliantly.

I also realized the importance of being around positive people. Contrary to what the medical profession might think, patients (at least me) are conscious of what's going on around them and pick up negative vibes about themselves very easily. The first night after my surgery I heard my nurse talking about pneumonia and it scared the hell out of me, but my wife and daughter stayed with me the whole time and held my hand. I received positive energy from them – what I'd call a "life force." It counteracted the negativity I had picked up – whether it had been real or imagined – from the ICU nurse. It reinforced an idea I've always had in business, that being positive and being around positive people is one of the most important keys to success.

Right now I'm at home and trying to understand the magnitude of the surgery. Everyone's been optimistic and I'm feeling much better than before the surgery. But being a patient is a huge adjustment.

Another thing I've found out about is home nursing care. The doctors want you to get out of the hospital quickly – first, for insurance purposes, but also because hospitals, though wonderful places for surgery and treatment, are danger-

ous places for infection. I know that they're always trying to calculate the best time to get you out of the hospital. I was extremely anxious to get out, yet when the time came to leave I also had great trepidation. I wasn't sure if I was ready or if I would have the support system I needed. But we did leave – on a Saturday morning, 15 days after I got to St. Francis hospital in Evanston.

Each day now is different, and almost every day has been better. For that I'm enormously grateful. My strength comes in waves. I find myself still acutely interested in the magazine, which is why I wanted to do this Swarf piece. During my stay in the hospital my son Ari filled me in on what was happening with the Sara Palin nomination and other events which I found enormously entertaining and fascinating. Even if the patient seems to be out of it, they may not be as out of it as you think. I remember most of the notes I wrote in my conversations and seeing all the people who visited me. Coming back is a process. I'll probably start a cardiac rehab program in three to four weeks. I expect to be working from home throughout that period, but I don't know when I'll be back at the office part time or full time. My brain is active, I'm thinking very positively about *TMW* and I'm hopeful, extremely hopeful, that things will be a lot better now than during my downward slide into a continual state of denial about how I was really feeling.

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Scott Livingston,
President and CEO of Horst Engineering

IMTS 2008 blasted into Chicago and captivated the attention of folks from all over the world. The show appeared to be a success for both exhibitors and attendees. Bucking overall economic trends, many metal manufacturing related industries continue their drive for productivity improvement, and this means more reinvestment. It would be a stretch to assert that all of manufacturing is healthy right now, but precision parts related industries are doing much better than the overall economy. The automotive industry may be a wreck and the aerospace industry is teetering on the edge of a slow down, but despite those areas of concern, it still seems as if innovative machining and support technologies are in serious demand.

Due to the high cost of travel and accommodations I made efficient and targeted two-day trips to the show. I focused my attention to the items on the list of objectives

that I drafted prior to my visit. Marketing at the show was intense, so it was inevitable that I would be attracted to other items that weren't on the original checklist. I tried to stick to my plan with 2009 and 2010 capital equipment budgets in mind.

When I started making the rounds from booth to booth, my first observation was that the atmosphere was buoyant. I mingled with thousands of people over the course of my two days. I sensed solid optimism from most of those we spoke with. There seemed to be a very strong emphasis on big parts. The booths were big. The machines were big. The tools were big. There was also a noticeable trend towards highly complex processes. Whether it was conventional machining or EDM, it was evident that larger and trickier niche work is where U.S. based manufacturers are headed. The machines, controls, and inspection equipment needed for this high end work is equally as complex.

I spoke with several exhibitors and they expressed their pleasure with how the show turned out. "There were a lot of high quality folks that came into our booth," said Rod Allen, Vice President of Royal Master Grinders Inc. Allen was pleased with the results despite his lead count being slightly down from past shows. That didn't concern him. He said that potential buyers didn't bring their whole "vertical team" this year. The "head guys" were there and they were serious.

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John Antignani, Executive Vice President of Marubeni Citizen-Cincom Inc., said, "Our booth is always crowded and the attendees are real serious." He said there weren't as many "tire kickers" this year. The tight confines of the Citizen booth contributed to the crowd factor. Speaking from experience, it isn't easy to see what is going on in a Swiss screw machine under normal conditions, never mind at a trade show. You could have easily mounted and machined a Citizen casting on many of the other vendors' milling machines. They were that big. Regardless, the seriousness of buyers was a consistent theme with a lot of folks.

Some things that caught my eye (in no particular order):

Multi-axis capability is no longer a differentiator for the machine tool builders or for the buyers. Mazak continues to lead the way with their Integrex line of machines. Their presence was demonstrated by a massive booth with lots of machines and sales people. The Haas booth was consistently crowded. Their full line was on display, but it was difficult to learn more. Fortunately, they have a robust website. It was clear that they have something for every shop and the congestion demonstrated their popularity. Many of the other huge machine builders, including: Mori Seiki, Okuma America Corporation, DMG and Makino had massive presentations and lots of machines on display.

There were several small component equipment producers that caught my eye. Citizen, despite the crowded booth, showed a developmental machine known as the H32. It will be a step up from their flagship M32. Tsugami presented a totally redesigned line of Swiss screw machines and launched a revamped high pressure pump business. Nakamura Tome displayed an array of multi-axis turning centers and Methods Machine Tool partnered with some clever software folks to offer turnkey solutions. Amada Wasino had new paint jobs on its line of highly accurate machines, and Star had a large presence.

I was positively blown away by the speed and action of the Index machines. Schutte had similar multi-spindle/multi-axis machines, but the Index offering stood out for me. Did you see them making a different chess piece on each spindle? They were quiet, fast, and conveyed power. If you have a profitable job that will fit these machines, you are doing something right. On the other end of the spectrum, I was attracted to the simplicity of the Southwestern Industries booth and their ProtoTRAK machines. Talk about going from multi-tasking to singular focus.

Fanuc was omnipresent with its amazing robots, ubiquitous controls, and RoboDrill line of milling machines. Abrasive machining/grinding had its own room and was loaded with EDM, surface grinding, cylindrical grinding, centerless grinding, and other vendors. Okamoto had a huge display. Traditional centerless grinding machines are basic, but those coupled with lots of automation, such as in the Royal Master

booth, are the wave of the future.

On my 2nd full day at the show, I finally made it to the Lakeside Center which featured CAD/CAM software; ERP systems, inspection equipment and a whole bunch of other miscellaneous stuff. Even Biglia had one of its three-turret Eurotech machines squeezed in amongst the cleaning systems and other miscellaneous equipment. Interestingly, in a room full of stuff other than machine tools, this one stood out.



Mastercam, Delcam Partmaker, Esprit, Gibbs, and all the other major CAM packages had competing demos and lots of activity in their booths. Epicor had a prominent spot showing its Vantage/Vista software. Amongst the more obscure offerings, I was impressed with the efficiency of Hanel's storage systems. Hexigon and Mitutoyo had the "Mori Seiki sized booths" of the quality assurance/inspection equipment pavilion. Lots of CMMs, surface roughness, and roundness systems were on display. So were a bunch of machines in a new category called multi-sensor systems. Those machines incorporate CMM, video, and comparator technology in one small to mid-sized package. They were most appealing to me. OGP specializes in these systems. Another unique shop floor quality system is the Orion SPC System. I'm not sure how it would fit in to a high mix/low volume environment, but it was still cool.

There was so much to see at the show. What attracted my eyes were the brand names that I was already familiar with, the recommendations of others, and my pre-show research. I never even made it to the tooling/workholding building. I'll just have to attend IMTS 2010. Before leaving McCormick for 2008, I made it a point to visit the ThomasNet booth to see what was new with their website support services, advertising, and other customer acquisition tools. One lesson I learned a long time ago; if you are going to go shopping at IMTS, you better have the business to justify it.

IMTS 2008 by Bill Papp, TMW Sales Manager

Some of us IMTS veterans have witnessed many changes from the past. Remember the old McCormick Inn and Donnelly Buildings? They're gone. We used to walk outside from building to building, even over the train tracks to see people. The existing Convention Center was rebuilt, annexed and connected. It is now so huge that I sometimes can't remember what direction Lake Michigan is.

The show inside has really changed too. Massive overhead company signage, beer and lunch being served in the booth, ice sculpturing, prize drawings, trapeze acts, and a female string trio playing up-tempo classical music were attention grabbers, and all were effective. *Today's Machining World* had the Chicago Tin Man, a local street mime, in front of the booth. To me, the show had a carnival atmosphere.

I honestly cannot recall a previous IMTS that came close to the excitement and enthusiasm generated by IMTS 2008. There was energy in every exhibit hall I visited. Happy faces on both sides of the booth. You would never guess that according to the media, the economy was down — especially in manufacturing. According to some exhibitors, the government stimulus package definitely helped, but there were restrictions to the program and not all buyers qualified.

As part of my conversation with exhibitors I asked what they thought of the newly condensed 6-day show schedule. Some said that they were not paying any less to exhibit but were getting 1/3 less show. Most, however, said they liked it because their company paid less in hotel bills, airfare (no need to fly in a second-shift sales team), and business entertainment. Show attendees knew that it was now only a 6-day show so they attended earlier than usual, which made the show floor very busy. One big concern for exhibitors was the anticipated move-out drayage charges. The show ended Saturday afternoon which didn't leave much time to clear booth displays out of the convention center.



Today's Machining World at IMTS

At the very back of the enormous west hall near the door people used to catch a smoke and among the enormous machine tool builder's booths, sat the 10' x 15' *Today's Machining World* booth. Located just after the last turn towards the big guys we were easy to miss, except for our show-saving entertainment that lured the overstimulated to catch a break while wondering if our metal looking man figure was



real or a magnificently machined statue. As the Chicago Tin Man stood poised waiting for someone to innocently toss a business card into his plastic bucket, the crowd would gather waiting for something to happen. Neighboring booths began telling people they just had to stop and see the metal man at the *TMW* booth. People were asking when the next show would be. As much as our bad position prevented heavy foot traffic, it allowed us to connect with lovers of the magazine on a more personal level. Cards were exchanged and writers presented ideas. Longtime friends and readers stopped to say hi and new subscription cards were filled out. After communicating through e-mail and phone it's refreshing to meet those faces on the other end. Even it seems like you have to walk to the end of the earth to get there.

— Emily Halgrimson, Managing Editor





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Adding Spice to the Melting Pot

America is the world's largest melting pot. Ethnic groups that come to these shores take pride in their uniqueness, but after that first step on American soil, a part of them becomes American. To truly prosper one must assimilate into the larger community. Bridging that gap can often be very difficult.

In *The American Muslim Teenager's Handbook* by the Hafiz family — teenage daughter and son with input from Mom — provide a humorous and insightful guide for both the Muslim and non-Muslim reader. Islamic, Christian and Jewish communities don't come together easily or often, and there are many misunderstandings among them, especially after September 11th.

The book's dedication reads, "... to all the teenagers out there who are searching," which implies both Muslim and non-Muslim alike. Research for the book began by submitting questionnaires to teenage students at 40 Muslim parochial schools across the country to understand their concerns. Although the authors present a range of practice from liberal to conservative, the responses in the book are often witty, tongue-in-cheek and represent moderate Islam. For non-Muslims, the handbook provides a basic understanding of Islam and an inside view of the thought processes of those who practice.

The authors start with Islam's central belief — there is one God and a requirement to perform good deeds. God (Allah) is the same God of Judaism and Christianity. Many of the prophets of the Old and New Testament also appear in the Quran, but Islam recognizes Muhammad as the last chosen messenger of God in the year 610 AD. The Quran was revealed to Muhammad by the Angel Gabriel over a 23-year period.

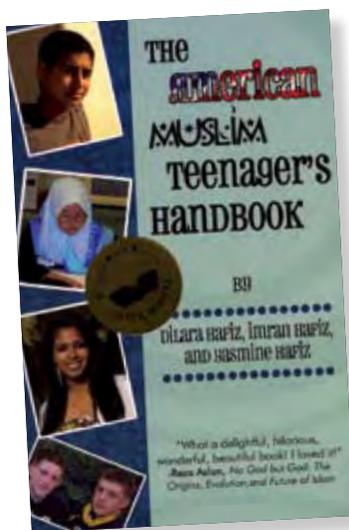
The book addresses the five pillars of Islam — declaration of faith, prayer, charity, fasting, and a pilgrimage to Mecca, and then continues on to practical details of American teenage life, starting with the "four Ds" (drinking, drugs, dating, and dancing). Drinking and drugs are forbidden and are dismissed with a "just say no" attitude. Dating and dancing present more cultural conflict. Many Muslim parents forbid

dating altogether. They believe dating is only a preliminary step to marriage and that one is not ready for marriage as a teen. Dancing is okay in all male or all female environments, but frowned upon with members of the opposite sex. For a Muslim teenager bridging the gap in the 21st century, American culture is probably quite difficult.

On the issue of female rights the authors come down firmly on the side of total equality, stating "Discrimination against women goes against the principles of Islam." This is one of the weak spots in the book. The authors are clearly liberated women, and I'm sure they believe what they say. Although it is very appealing to American ears, this attitude is definitely not the case throughout most of the world, where restrictions for women exist in walking on the street, driving a car, testifying in court and inheriting and owning property, to name a few.

The authors also soft-pedal the issue of terrorism. Since September 11th, Muslims have been profiled and scrutinized, and they have developed a great sensitivity to the issue. The Quran, like other religions, condemns murdering innocent civilians, and the authors attribute terrorism to a few irrational people. Unfortunately, one can sit down and list dozens of countries around the world where innocent civilians are specifically targeted and murdered in the name of Allah, including about 3,000 in the US.

I believe the way the U.S. approaches problems like this is different than other countries. Our history, values, basic decency and acceptance of one another set a higher standard than anywhere else in the world. This book has the potential to improve understanding of one another, break down stereotypes and create friendships and long lasting relationships. If it can do even a little of that, God bless.

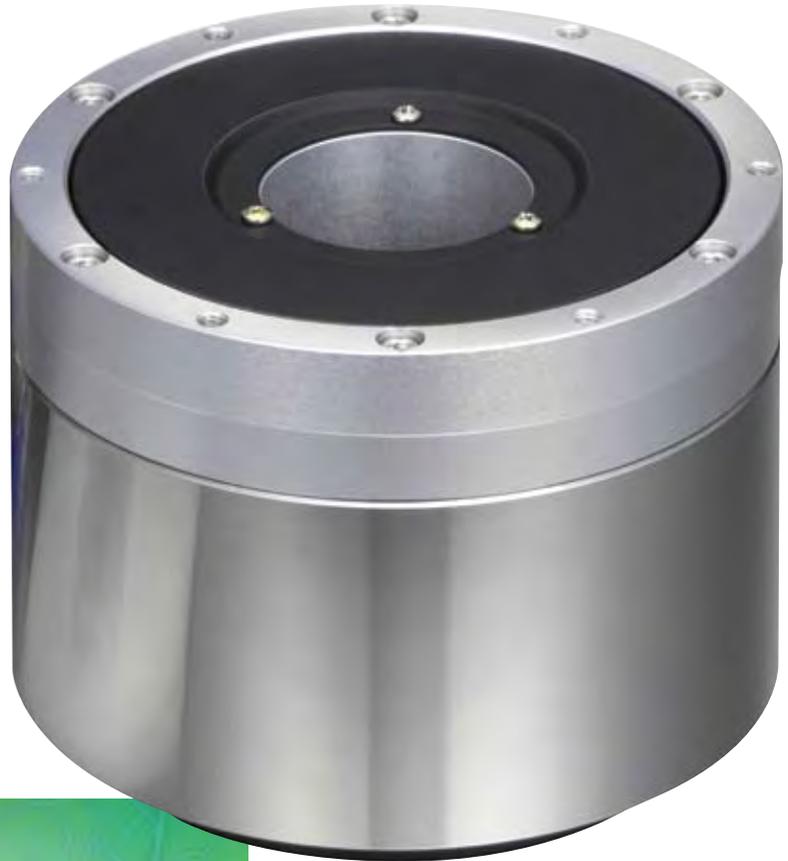


Comments? You can email Jerry at jerroldlevine@yahoo.com

Mega tool

NSK Precision America's new Megatorque™ Motor PS series offers high speed, high resolution movement in a compact design. The series of lightweight direct drive motors provides high accuracy and high torque, and is best suited for applications in the semiconductor, medical and machine tool industries. Capable of a maximum rotational speed of 10s-1, PS series motors incorporate an absolute position sensor with a resolution of 2,621,440 counts/rev and positioning accuracy of 90 arc seconds, thus requiring no homing operation. Additionally, the series' interchangeable motors and drivers can be combined freely. NSK also designed the PS series with a new servo algorithm that shortens settling time to less than 1/5 of that of previous NSK motors.

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



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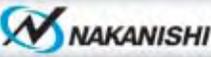
Doing it right

The new Puma MX2100ST turn-mill adds true milling capabilities to the Doosan Infracore turning center. The 12-station turning-tool post is non-lifting to protect the coupling from chips and other contaminants, and indexes station-to-station in 0.2 seconds. Live or static tools can be mounted at any station, and oriented toward either the main or sub spindle. Live tools are powered by a 7.5 Hp (15 min.) motor with a maximum speed of 5000 rpm. The motor is built into the headstock casting, with its spindle fully encased in an oil cooling system. The beltless design eliminates backlash, feedback error and vibration, resulting in lower maintenance with superior precision and finish. The Puma MX2100ST can cut, drill or tap above or below the centerline, or mill flats and key-ways. It can machine angular features and provide a solid platform for heavy-duty machining. The milling spindle is powered by a heavy-duty 25 Hp motor, and generates spindle speeds up to 12,000 rpm.

For more information, please contact Doosan Infracore at 770-831-2200 or visit www.doosaninfracore.com.

More bang

The Mori Seiki NZ series of machine tools are ideally suited for mass production machining. The NZ series machines can be configured with up to three turrets, all using Mori Seiki's BMT® (Built-in Motor Turret) technology. By placing the motor inside the turret, heat generation and vibration are kept to a minimum and transmission efficiency is improved. Cutting performance, speed and precision are also significantly increased. The new NZ Series of multi-axes machines offers not only turning, but also excellent milling with the Y-axis. With the longest Y-axis stroke in its class, it achieves



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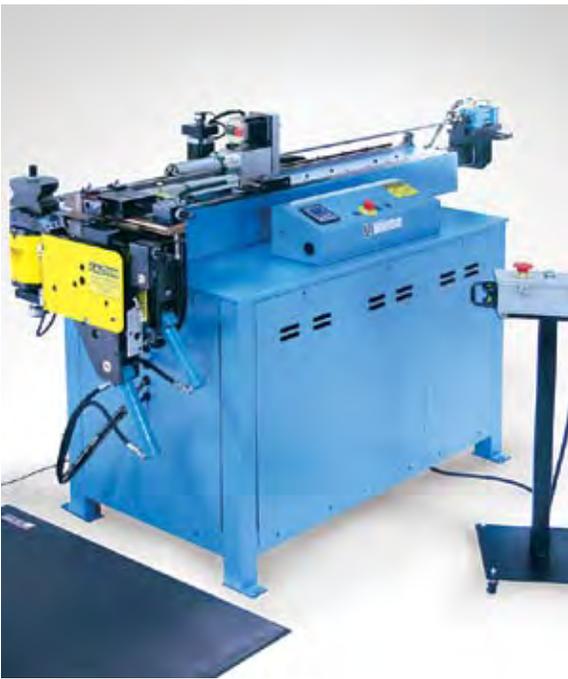
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high precision, high efficiency machining. In addition to developing post processors for the Mori Seiki NZ series line, GibbsCAM post processors are also available for Mori Seiki's NMV series of 5-Axis machine tools.

For more information, please contact Mori Seiki at 847-593-5400 or visit www.moriseikius.com.

From CAD to Bender

Winton Machine introduces its newest rotary draw bending machine the RD30eCNC, which is an economical and easy-to-use 3-axis CNC rotary draw bender. This PLC driven machine offers an optional PC interface that enables the user to import a STEP file right from CAD to the bender without typing in a single data point. This capability not only saves time



but cuts down on programming errors. The series consists of 20mm, 30mm, and 50mm machines with a tubing range from 1mm OD to 50mm OD. An optional PC interface allows for programming and data storage.

For more information, please contact Winton Machine at 888-321-1499 or visit www.wintonmachine.com.



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By the number

NCL multi-axis machining software for the aerospace, automotive and turbo-machinery industry, introduces new strategies for multi-axis machining within NCL designed to create complex turbine components requiring 5-axis machining. New toolpath strategies have been added for efficient machining of hard materials such as stainless steel and titanium. The new strategies are designed to decrease machine type, provide longer tool life, and create optimum finishes. This application helps to speed up the programming of such complicated parts, allowing the user to be more productive.

For more information, please contact Numerical Control Computer Sciences (NCCS) at 949-553-1077 or visit www.nccs.com.

Sandvik Capto

Sandvik Coromant has released a new range of Coromant Capto® machine adapted clamping units (MACU) for lathe machines. Ideal for both turning and milling applications, the Capto products provide flexibility to change from one system to another very quickly, and also channel high pressure coolant from the latest CoroTurn HP cutting heads, reducing temperatures and improving



chip control. The machine adapted clamping units will be available for Mazak, Mori Seiki, Nakamura, Tome and Okuma machines.

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

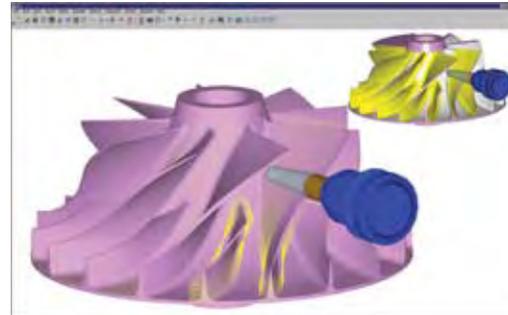
Speed it Up

The new FI440CCS is capable of machining materials with a wide variety of wire diameters and yields a 38-in2/hr. production rate with a 0.012" The FI440CCS is also equipped with the energy efficient CC generator, a digital generator based on high-tech components. ThermoCut and Integrated Collision Protection (ICP) also come standard on the FI440CCS. ThermoCut, a unique high-speed and maintenance-free wire threading system, boosts productivity by stretching wire and cutting it under the effect of heat, bringing the spark-to-spark time down to less than 24 seconds. Additionally, the collision protection works effectively at a high XYUV feed-rate of 2 ips, allowing the FI440CCS to cut variable work piece thicknesses like mold inserts.

For more information, please contact GF at 800-282-4336 or visit www.gfac.com/us.

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For more information, please contact Kurt Manufacturing at 800-343-9884 or visit www.kurteletronics.com.



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LEADING A

IT IS, IN AREA, THE SMALLEST OF OHIO'S 88 COUNTIES. BUT IF WE'RE TO BELIEVE THE EXPERTS, LAKE COUNTY IS (PICK A PHRASE) THE EPICENTER, BELLWETHER, PROVING GROUND, SWING REGION AND/OR GAME-CHANGER OF THIS YEAR'S U.S. PRESIDENTIAL ELECTION. IT HUGS 31 MILES OF LAKE ERIE COASTLINE IN THE NORTHEAST PART OF A STATE CONSIDERED TO BE A MUST-WIN FOR THIS YEAR'S VICTORIOUS CANDIDATE. THESE DAYS, LAKE COUNTY — A SOMEWHAT QUIRKY MIX OF UPSCALE CLEVELAND SUBURBS AND BLUE-COLLAR STRONGHOLDS; SEA-THEMED STOREFRONTS AND MID-SIZED MANUFACTURERS; WINERIES AND WIRE-MAKERS — TRAFFICS MAINLY IN SPECULATION.

“Everyone — everyone — would like to say they know what’s going to happen in Lake County,” said John C. Green, director of the Ray C. Bliss Institute of Applied Politics, a non-partisan center at the University of Akron. “No one out there is saying they already do.”

Why is this relatively quiet corner of the country such an intrigue? Mainly because its voting record mirrors Ohio’s more accurately than any other county in the state, according to an analysis by Cleveland’s *Plain Dealer*, the state’s largest daily newspaper. And Ohio, as even the most casual election observers know by now, has proven to be vital to presidential contenders.

The Buckeye State can go either Democrat or Republican — blue or red in today’s vernacular — but it’s usually with the winner of the U.S. presidential race. Ohio has voted along with the winner for 11 consecutive elections.

NATION

No Republican has been elected president without winning Ohio and just two Democrats have done so since 1900. In the 2004 election, it gave Republican President George W. Bush the electoral votes he needed to win.

Ohio is one of only eight states to vote for Democrat Bill Clinton in 1992 and 1996, and then switch parties and vote for Republican George Bush in 2000 and 2004. Among those states, Ohio is considered the most important with 20 electoral votes, nearly twice the number of votes on the line in any of the other seven states.

As of *TMW* press time, the latest available Quinnipac University research poll had Obama leading McCain 44 percent to 43 percent at the end of August across Ohio. A full 11 percent of Ohio voters said they were undecided.

Bush won Ohio with 50.8 percent of the vote in 2004, while he took Lake County with 51.1 percent — a difference of less than 1 percent. Bush's margin in Lake County in 2000 was off from the state margin by 1.7 percent.

**“NO REPUBLICAN
HAS BEEN ELECTED
PRESIDENT WITHOUT
WINNING OHIO.”**

OHIO SWINGS THE TICKET

Lake County, though small in size, is the 11th most populous in the state. The approximately 230,000 residents are, as a group, about as educated as the rest of Ohio. About a quarter of them have attended college, and 22 percent received a higher education degree. Its economy contains retail, health care, agriculture (particularly wineries) and tourism, but it is still primarily invested in manufacturing.

But while seen as powerful indicators of a national direction, the voters of Lake County aren't known to be particularly predictable, said Justin S. Vaughn, assistant professor of politics at Cleveland State University.

"They've shocked a lot of people in the past," said Vaughn. "Given its manufacturing and blue-collar roots — and what happened to manufacturing jobs under Bush — I remember being truly surprised in 2004 that it went Republican."

But Lake County is not just blue-collar territory. It is also home to the people who own and run companies that employ those workers. Experts say that while traditional Ohio manufacturing jobs have declined significantly under Bush, the story of manufacturing overall, particularly in Lake County, is more complex than that decline might suggest. Add to that shifting racial demographics, a changing economy and evolving feelings on non-economic issues such as national security, and you've got a mighty tough crowd to read this time.

"This is a time you just have to scratch your head and say, 'let's just wait and see.' Our guesses are educated, but they're just guesses," said Vaughn.

Concerns over jobs and the manufacturing economy in particular have created a lot of tough rhetoric on the part of both parties in Northeast Ohio, but neither one has convinced Lake County residents it has the answer.

There are about five registered Democrats for every four Republicans in Lake County, but experts say this year party affiliation doesn't seem to mean much. North-

east Ohioans have shown "a good bit of cynicism" about party politics, said Green of the University of Akron.

"This year, we see all kinds of people in the middle. It's a very, very close race," said Green. "We're seeing a lot of people who say 'I might just change my mind' before Election Day. It is not a slam dunk here for anyone."

If Green needs examples, he need look no farther than the barstools at Lake County's Liberty Tavern where Karl Walker of Painseville and Dennis Nelson of Willoughby are sharing a table, a pitcher of beer and a sense of indecision about the next president. Both men are mulling the merits of the two major tickets and remain unconvinced. Although their political leanings have historically been at odds, they share a sense of urgency about the economy in this area once ripe with high-paying, blue-collar jobs.

"It's been a hard time. The price of gas, low wages. I'd say that's what's on people's minds here," said Walker who is looking to get out of the challenging business of trying to sell horse trailers to Northeast Ohioans intent on reigning in luxury lifestyles. "It may just mean leaving here — this part of the country."

Nelson was laid off this summer from his manufacturing job at a local wire clip company — "a job that didn't pay enough in the first place," he said.

"I made more in 1974 than I did last year," he said. "I'd say something has to change. Everyone agrees on that."

But just how and by whom are up for grabs in Lake County. The party battle lines on economic health have been in place for decades with Republicans seen as favoring free trade as the key and Democrats viewed as supporting at-home job creation programs. Those positions are far more complicated than that, of course, and so are the statistics used to support them.

Automakers, still an important part of Northeast Ohio's economy, are beginning to invest in building more efficient vehicles. GM is putting \$350 million into



POPULATION
227,511

ACTIVE VOTERS
126,461

DEMOCRATS
31,501

PCT DEMOCRAT
25%

REPUBLICANS
24,629

PCT REPUBLICAN
19%

PCT WHITE
95%

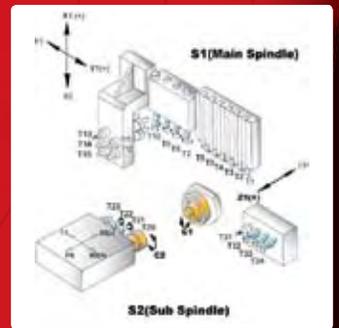
PCT BLACK
2%

PCT HISPANIC
2%

FIGURES: U.S. CENSUS BUREAU AND OHIO ELECTION OFFICIALS, 2008

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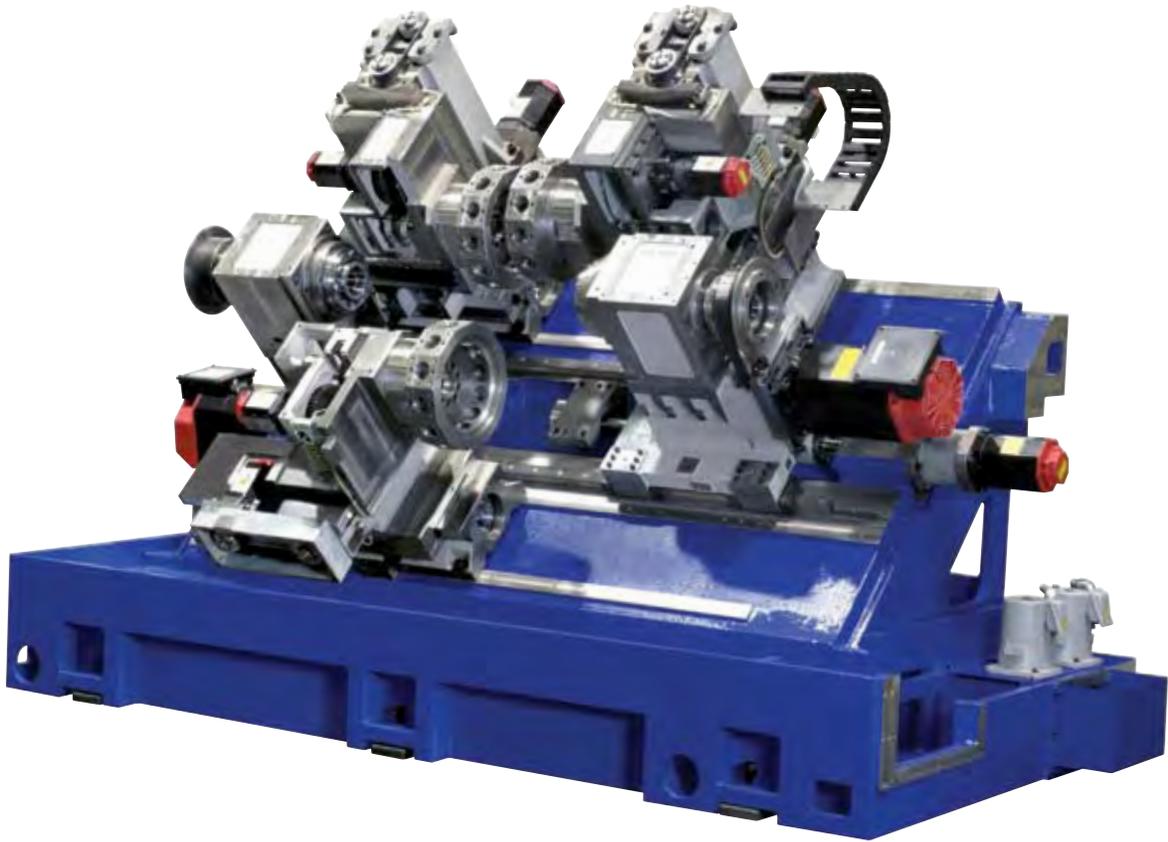
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“I’VE OFTEN MARVELED AT HOW LAKE COUNTY HAS HELD ITS OWN IN MANUFACTURING, WE’RE A BIT OF AN ECONOMIC OASIS.”

its Lordstown factory in Northeast Ohio to build fuel-saving Chevrolets. Foreign automakers who have a large presence in Ohio are doing fairly well. Some manufacturers have even found U.S. goods more attractive overseas because of a weak dollar.

Nevertheless, manufacturing jobs declined nearly 17 percent from 2001 to 2006 across the state, according to figures from a study by Cleveland State researchers. Ohio’s overall unemployment rate reached 7.2 percent in July, its highest level in 15 years. That compares with the U.S. jobless rate of 5.7 percent.

But many experts say the loss of those manufacturing jobs has come about because of investment in efficiency — and that efficiency is being built by people in design, engineering and management, people who live in Lake County alongside their blue-collar counterparts.

That may be why employment has held steady or increased slightly at Lake County manufacturers. The county’s 15 largest employers include Firstenergy Corp. (electricity); Avery Dennison (labels); Lubrizol Corp. (specialty chemicals); Steris Corp. (decontamination and critical care); ABB Inc. (automation systems); Lincoln

Electric (robotic welding), and Parker Hannifin (control products and systems). The increase in jobs at those manufacturers over the past two years has ranged from flat to 25 percent, according to figures from the Lake County Development Council. Overall unemployment in Lake County was 6.1 percent in July, significantly lower than the state’s 7.2 percent, according to the Ohio Department of Development.

“I’ve often marveled at how Lake County has held its own in manufacturing,” said David Gilmer, executive director of the non-profit council. “We’re a bit of an economic oasis.”

The county’s tourism and agriculture (wineries) segments are also healthy, Gilmer said, which somewhat offsets weaknesses in manufacturing. The creation of a Lake County Port Authority last year has promoted some optimism for retaining and attracting jobs in high-growth industries such as health care and bioscience.

Federal figures also suggest that manufacturing companies are doing reasonably well in a tough economy. The value of the goods they produce — the sector’s gross domestic product — rose 5.9 percent from 2001 through 2007, not far behind the 6.9 percent growth for the rest of the state’s economy.

But other economists call the GDP measure too basic because it doesn’t account for products assembled in Ohio that have components made overseas, which skews the numbers artificially high. If you add to that the fact that those laid off in blue-collar jobs end up taking lower-paying service jobs, the complexities of the issue — and the major parties’ abilities in assessing it — begin to emerge.

Although Lake County, like the rest of the industrial Midwest, has seemed to have weathered the loss of high-paying manufacturing jobs to date, it is still heavily invested in making things. It ranks in the top 10 percent of Ohio counties in the number of manufacturing employees.



PCT IN POVERTY
5%

PCT CHURCH MEMBERS
53%

LARGEST CHURCH GROUP
CATHOLIC

PCT AGE 17 OR YOUNGER
24%

PCT AGE 18 TO 34
20%

PCT AGE 35 TO 49
25%

PCT AGE 50 TO 64
17%

PCT AGE 65 OR OLDER
14%

FIGURES: U.S. CENSUS BUREAU AND OHIO ELECTION OFFICIALS, 2008

Yet there remains in Lake County a yearning among blue-collar workers that the high-paying union jobs of the 1960s and '70s that allowed them to earn more than college graduates will return, said Green.

"Northeast Ohioans are quite concerned with economic troubles. Some of those are short-term — like gas prices and others are strong and persistent, such as a concern about the loss of high-paying manufacturing jobs. The story is 40 – even 50 years old, but it's not going away," he said.

Michael Duffin, spokesman for the Precision Machined Products Association, a national trade group based south of Cleveland, said his members — which include Lake County manufacturers — are deeply concerned labor doesn't recognize the significance of global competition. He said that until last month, an Ohio coalition of labor unions was working to pass a bill that would mandate that any company with more than 25 employees offer each person seven paid sick days a year.

"That is something that should be negotiated on the shop floor, not in the halls of government," he said. "We don't need those kinds of mandates in these days of global competition.

Duffin said his members are also concerned with where the U.S. presidential candidates stand on the issue known by its organizers as the "Employee Free Choice Act" and by its opponents as "Anything But." Under the Free Choice Act, a bill now in the U.S. Congress, workers could sign cards if they favor union representation. As soon as more than 50 percent sign such cards, the employer would have to recognize the union as reflecting the sentiments of all. The bill's opponents said such an open card signing system — with no private, anonymous ballot — would most likely not represent a true majority because people would sign cards just to "fit in" with co-workers. Union supporters say it would give leverage on the shop floor to those who need it — laborers, and help rebuild America's middle class.

"We have had private voting since Taft-Hartley. Why would we change it now?" said Duffin. Republican Candidate John McCain has said he would veto such a bill. Democrat Barack Obama, one of the bill's co-sponsors, obviously supports it.

Stephen Norton, vice president of communications for Steris Corp., a sterilization system company headquartered in Lake County, declined to address specific legisla-

tion or candidates but agreed with Duffin in general on governmental mandates.

"I think manufacturers are sensitive at the federal level to any changes that would make us inherently less competitive. That includes unfunded regulatory mandates, increased taxation — anything that would make us a non-robust competitor in the global market," he said.

“IF THIS YEAR’S ELECTION IS AS CLOSE AS THE PAST TWO, DEMOGRAPHIC SHIFTS IN THESE COUNTIES COULD MAKE A BIG DIFFERENCE.”

Green said the political split between laborers and their company management on such issues is as old as Adam's Curse.



FIGURES: U.S. CENSUS BUREAU AND OHIO ELECTION OFFICIALS, 2008

"Among blue-collar workers there has historically been more of a sympathy for social welfare programs because they or their neighbors would be more likely to benefit from them," said Green. "It's up to the candidates to reach past these sorts of issues to find broad appeal."

That broad appeal may be harder to find in an increasingly diverse county such as Lake. It is whiter than Ohio as a whole; about 92 percent of residents are white compared to about 84 percent in all of Ohio, according to the most recent numbers released by the U.S. Census Bureau. But here's the twist. It is — like many of the nation's so-called swing counties — less white than in previous elections. Since the start of the decade, the number of Hispanics in Lake County has grown by 73 percent and the black population has increased by 47 percent, according to the census. Those could be significant changes in a county President Bush won so marginally in 2000 and 2004.

"That's got to be good news for (Democrat) Barack

Obama, bidding to become the first black president," *USA Today* reasoned in an article on the census bureau figures. "If this year's election is as close as the past two, demographic shifts in these counties could make a big difference."

Vaughn of Cleveland State University agreed — to a point.

"There will always be someone who will or won't vote for a black man because he is black, but most regular people care about more than just one thing. They aren't only concerned with race — or abortion, or unions, or national security. They're a little concerned about a lot of things," Vaughn said. "The ticket that can address the largest number of these concerns most effectively will be the winner."

And who will that be?

Vaughn let out a sigh.

"I guess we'll just have to wait until Election Day," he said.



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Thorsten Schmidt

Photos courtesy DMG.

Noah Graff Interviews

Thorsten Schmidt

In 2006, at age 34, Dr. Thorsten Schmidt became a member of the Management Board responsible for Sales and Service at DMG, Germany's largest machine tool manufacturer. Previously, he was in charge of East Coast Sales and Service at DMG's American branch and served as the Managing Director of DMG Asia.

NG: First, give me your story. How did you come to work for DMG?

TS: I started working for DMG at the beginning of 2002. The first contact was during a couple of consulting projects which I was doing previously. One was a large market survey for Gildemeister. That morning I got in touch with Dr. Kapitza (Chairman of the Management Board of Gildemeister) and I was very positively surprised. Even though I'm coming more from the business side – business, sales, marketing of B2B products – all of a sudden I saw a company that was quite fascinating in regards to technology and market orientation. As always, you need to have some kind of mentor – a person who carries you forward. And this I found with Dr. Kapitza.

NG: Then you came to the U.S.?

TS: I started in 2002 as a business manager responsible for business development. I had a couple of merger and acquisition projects I took care of, in dealer sales in our headquarters, and after a year I moved to the U.S. There I became the managing director of DMG Charlotte (North Carolina). I was in charge of East Coast sales and service activities for DMG for two years as the managing director, and then I moved to Shanghai and was in charge of our Asian operation. I lived in Shanghai and Singapore for two years and ran our DMG sales and service capacity throughout Asia – from India through China, Southeast Asia, Japan, Korea, and Taiwan, where we have all of our technology centers. Then I was asked to join the board of Gildemeister. That's now close to two years ago.



DMG Technology Center and National Headquarters in Itasca, IL.

NG: Can you give me a bit of background on DMG?

TS: DMG itself has a background of 135 years. It's a company that initially was founded with the name of Gildemeister, a very traditional turning machine manufacturer in Germany that started with a manual lathe, and of course it's still now focusing on lathes. In the late 1990s, we purchased Deckel Maho. Deckel and Maho, also former competitors at one point, produce our milling machines. Deckel-Maho-Gildemeister leads to our brand DMG. [It's a company of] 6,200 employees, focusing only on CNC metal cutting machines. We have 12 production facilities and 73 technology centers worldwide. The company itself has a turnover this year of €1.8 billion and an order intake of €2 billion or \$3 billion. And this year, if things go as expected, we will sell roughly 7,000 machines worldwide. We're under represented in the U.S.

NG: They said at the DMG press conference that few Americans know of the great DMG technology. What does that mean exactly?

TS: Of course it's a fact that DMG is mainly still a European player. We've also had some success in the U.S., but it's not comparable of course to European markets. In Germany, for example, we have a market share of 25 percent. No company [there] would buy a machine tool without considering the DMG equipment. Here it's something different. Yesterday I talked to a company with 250 employees and they were not aware of the company DMG, and because of the size of the [U.S.], you have the end-user dealer structure with a lot of distributors still involved. With our direct sales and service channel,

it's of course a challenge to penetrate everybody who potentially uses our equipment.

NG: What is DMG doing to try to better penetrate the U.S. market?

TS: First of all, we have a new product line called DMG ECOLINE, quite an interesting and attractive product line that is able to help our end-customer to migrate to higher technology levels. With this new product line, with 2- and 3-axis lathes, 3- and 4-axis milling machines, and highly aggressive pricing we can pick up a lot of U.S. machine tool users at their current technology level. So companies who are using Korean, Taiwanese, partly Japanese, partly U.S. manufactured equipment, now see that they can transfer to DMG without going to 5-axis, or to turn-mill centers on the turning side. They can migrate to equipment with the number of axes they are used to. We provide them with a more stable machine with a better control system and in a year, or two or three, they can upgrade their technology level even further. Another approach of course is to expand our representation in the U.S. There's the question of how many sales [people]

“I truly believe that Haas is doing a good job, but our ECOLINE is clearly a competitive line against Haas.”

and service engineers to have, and where to have technology centers. We just installed a technology center in Los Angeles. Houston will be next. Boston is under consideration. We have to diversify and regionalize our presence because we all know that a U.S. customer expects somebody in driving distance to help him out, to support him. And I think he has every right to ask for that.

NG: Why not use distributors like other machine tool companies?

TS: It's a strategic decision of the company to mainly go direct. In the key areas where machine tools are being consumed, we are also working with distributors in the U.S. We believe in building up a direct communication channel and relationship to the end-user. If we are able to supply them with the application support, with a good

service team locally, I believe that the added value that a distributor can bring is quite limited. And the distributors here and there have the tendency to also sell the customer the machine for which they get the highest commission, which might not be the ideal machine.

NG: Do you see the ECOLINE as a competitor to Haas?

TS: I would say that Haas is exactly our ECO market. I truly believe that Haas is doing a good job, but our ECOLINE is clearly a competitive line against Haas.

NG: Do you think the new economic stimulus plan in the U.S. is going to help your business?

TS: I hope so. So far DMG has sold 60 percent more than last year. So we are on the right track. The machine tool business itself in the U.S. is also going quite well. After all, the market is plus 17 percent until July, so it's developing positively. Of course, we ask ourselves: What is the dollar to euro ratio going to do after the election? I'm a small guy to make any suggestions, but I would suggest that the new president take a close look at the further economic development of the country.

NG: Any plans to manufacture inside the U.S.?

TS: Of course. DMG is currently analyzing and developing a business plan of manufacturing in the U.S. We see it in our ECOLINE especially. We see products that need to be manufactured close to our end-customer. If you produce them in Europe you have to do the sea-worthy packing, the transportation, the custom duty. For machine tools you pay I think 4.4 percent custom duty to bring it in the country. This leads to the lack of being close to the end-user, as well as the [tough] cost structure itself. We want to be a little bit more flexible there. We believe the U.S. market will be in the top five countries in regard to consumption for machine tools for the next couple of years.

NG: Which countries make up the top five?

TS: As you may know, we have factories in Germany, in Italy, Poland, and China. The factory in the U.S. would add to our global approach of sourcing equipment locally and providing customers not only the sales and service, but also on the production side by being closer to them and being able to react to them.

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NG: So there's a plan to do it.

TS: Clearly. We have approval from the supervisory board, but we want to do it step-by-step with a forward analysis as Germans always do it, so the business plan needs to stand. We're currently reviewing what kind of state makes sense, or what kind of potential existing location makes sense to see if we would need to build our own facility or if we could start quicker purchasing an existing site. And we are reviewing which kind of components can be sourced locally – what kind of cost advantage can be realized to identify what kind of product portfolio is ideal for this new manufacturing site.

NG DMG does not sell many multi-spindles in the U.S., correct?

TS: DMG has one factory in Italy called Gildemeister Italiana. They produce multi-spindles, and in the U.S., we [sell] between eight and 10 multi-spindles annually.

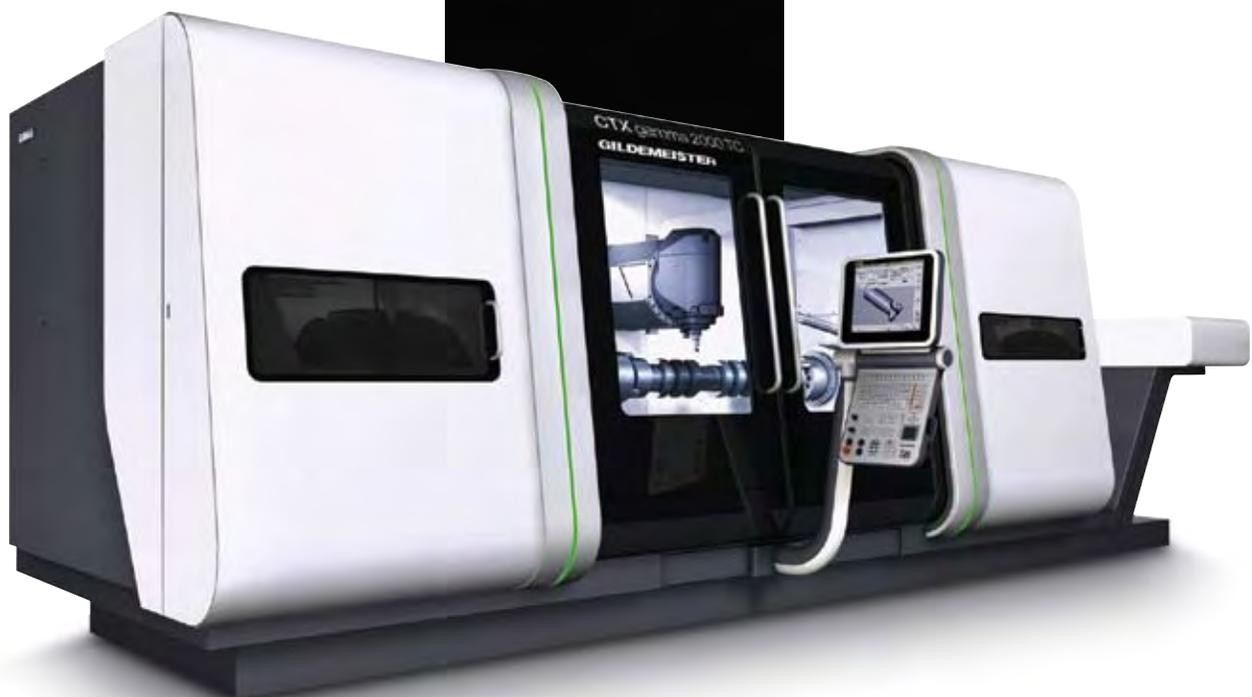
NG: Do you think that could change? Is it important to DMG to sell multi-spindles in the U.S.?

TS: Of course, it's an important strategic foot that we want to keep in the door on a global level. The multi-spindles for us are highly competitive. But DMG

always has the struggle with its broad product range, to focus on certain product lines. A salesman needs to be comfortable [with the technology] because it's a technology sale. [Some salesmen don't know the multi-spindle technology that well], and therefore they are a little bit afraid of the product. [Sometimes] I'm not even able to describe the CNC multi-spindle in detail. But it's definitely interesting for us, and we see a market in the U.S. Especially for the high productive parts, the era of the CNC multi-spindle is approaching.

NG: Emerging markets. What countries are you the most excited about – Brazil, China?

TS: Currently I'm most excited about Eastern Europe. Eastern Europe for us is an excellent market. Your manufacturers in Germany, Eastern Europe, Poland, the Czech, Russia, Romania, Croatia – these are all markets which have a tendency to like German equipment. We are close to them. Our factories are close to them, and they are growing quite rapidly. So that's one key area for us. We have an excellent structure in China. We sell each year close to 700 machines there. In Latin America, we've had a very successful year in Brazil. It's a market where we want to expand further.





NG: Russia?

TS: Russia is an excellent market. People in Russia love DMG. We have provided [machines] to Russia for 70 or 80 years already. In Russia, you do not have that many local manufacturers, so they import everything. We sell there on an annual basis €60 to €70 million of new equipment. The equipment you see here [at IMTS] is ideal for the aerospace industry, and Russia is significantly investing in aerospace projects.

NG: What are the things that you're most excited about for the future of DMG, aside from the ECOLINE.

TS: I think the most exciting thing is that we have the global platform now with over 2,000 people in sales and service – our own staff in 50 countries. In 45 countries I think we now have our own setup — so almost everywhere. This allows us now to roll out strategies quite quickly. Now when you have the product, you can release it to the different markets. You can monitor the success. You have the feedback and can use the information for more research and development projects. This innovation in combination with our local presence with the sales and service structure really excites me.



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1" 6-spindle, 1960-1992 (9)
32mm 8 spindle, 1997
1-3/8" 6-spindle, 1967-1979 (3)
1-3/4" 6-spindle, 1965, 1993 (10)
1-3/4" 8-spindle, 1970
2-1/4" 6-spindle, 1962, 1973-79 (3)
6-5/8" 6-spindle, 1979

ACMES

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

B & S and INDEX

G200, 1997
G300, 1997
B60, 1967
B42, 1974
00-R/S 1/2"

SCHUTTE

SF 51, DNT, 1985 (2)

CNC SWISS

Star SR-20, 1998

NEW BRITAIN

Model 51, 1980
Model 52, 1980, thdg., pickoff
Model 62 2-1/4" 6sp., 1975, heavy thdg.

DAVENPORT

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

HYDROMATS

Pro 20, 1999
HW 25-12, 1994
HB45-12, 1996
HB45-16, 1987
CNC 36/100 HSK tool spindles w/2-axis
CNC flange and valves w/ 6-axis CNC,
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Reed B-13 thread roll attachment (3)
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IMG recess 1-5/8" RB6 (2)
3 1/2" RB6 threading
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WITH NOAH GRAFF

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

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

Dear Shop Doc,

We're using a horizontal band saw with automatic feed. Until recently we were cutting 12L14 RD material and we had a nice, straight cut. Then we changed to cutting 6061 aluminum SQ material, and we keep getting a tapered cut. What can we do to get rid of the taper when cutting the new type of material?

Tapered Out

Dear Tapered Out,

There are a few possible contributing factors related to your question. 12L14 is a relatively hard material, so if you were sawing too fast it could have led to premature dulling of your blade. So perhaps when you started sawing 6061 aluminum; the blade was already dull.

To prevent premature blade life the saw operator must use their eyes and their ears.

First, you have to look at the chips. They should be the same color as they were when you started cutting. If they're thick to the point of turning to a blue or brown color that indicates you're overfeeding. On the other hand, if the chips are really skinny and resemble rice kernels that indicates that you're not using enough feed pressure. This can do additional damage, as it can actually work harden the material and eventually cause premature dulling of the blade.

Second, you must listen to the cut — the harmonics should be pleasant sounding. If it's "screaming" during the cut, that tells me that there's too much vibration, which will also lead to premature wearing of the blade.

The other factor that's very critical is the coolant, or cutting fluid ratio. We recommend

using a water to cutting fluid ratio of 10 to 1. Use 2 quarts of cutting fluid to every 5 gallons of water. Cutting fluid has three functions in bandsaw applications. It flushes, cools, and most importantly provides lubricity (viscosity). You need a little slickness so the chip doesn't adhere to the gullet of the blade itself. If the cutting fluid is too weak, you'll get the flushing and the cooling action but you won't get the lubricity needed. That can lead to chip weld along with premature dulling of the blade. When you mix the cutting fluid, always add the fluid to the water or it won't mix properly. Just remember the acronym O-I-L: "oil in last." It's the same as dressing a salad. You have to pour the oil on after the vinegar; otherwise the vinegar will just slide off.

Another thing to remember is making sure the chip brush is adjusted and working properly. The chip brush itself should not be positioned any deeper than the shallowest gullet on the blade. If you position and align the chip brush too deep, the saw blade will cut the bristles and render the chip brush useless.

Hope this solves your problem,

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

next

BY NOAH GRAFF

The following are perspectives on IMTS 2008 from several exhibitors.

The 2008 International Manufacturing Technology Show (IMTS) was dubbed by its organizers as IMTS's "strongest showing since the year 2000."

IMTS definitely makes sense [for us]. We receive a return on investment for every dollar [we spend], but I don't know if this is the case with every manufacturer.

I believe the importance of tradeshow will be there for the next couple of years. It's the best marketing possible to get in contact with end-users and demonstrate your [product]. Our machines cannot be sold through the Web only. People need to touch the machine; they need to listen to the spindle; they need to see the work piece being cut. Then they're ready to invest the money in the product being released.

Dr. Thorsten Schmidt
DMG

[For students the show is important for getting a reaction.] Trying to teach on the Internet works reasonably well for some stuff, but like George Bush says, "you've got to look into their souls." You've got to look at the students and see what their reaction is, and whether there is any reaction.

We've met so many people in the course of conversation. And everybody goes away knowing more about what the ideas are. If you can't do that at a place like this, I don't know where you can do it.

Professor Dave Dornfeld
MTConnect



MAG Industrial Automation Systems had the largest booth spanning 2550 square meters.

next

In the morning it's good, in the afternoon it always stinks. After lunch, there are more exhibitors in the booth than there are attendees.

Michele Tajariol
TAJMAC – ZPS

For the fifth straight day, nobody made more money than McCormick Place.

Anonymous man from Hurco in McCormick Place parking lot.

the facts:

IMTS 2008 was shortened to six days from eight days in 2006. Total registration for the show was 92,450 from 119 countries, with 1,803 exhibiting companies covering 1,233,878 square feet of exhibit space.

Registered Attendees at IMTS 2000 – 2008

2000 -- 100,000	2006 -- 91,000
2002 -- 85,000+	2008 -- 92,450
2004 -- 86,232	

www.imts.com



Cutting tools manufacturer, Sandvik Coromant, boasted passing out 30,000 yellow bags with its logo, erecting an ice bar serving drinks in glasses made with ice brought in from Sweden, and a Swedish ice sculpture artist brought in specifically for the event.



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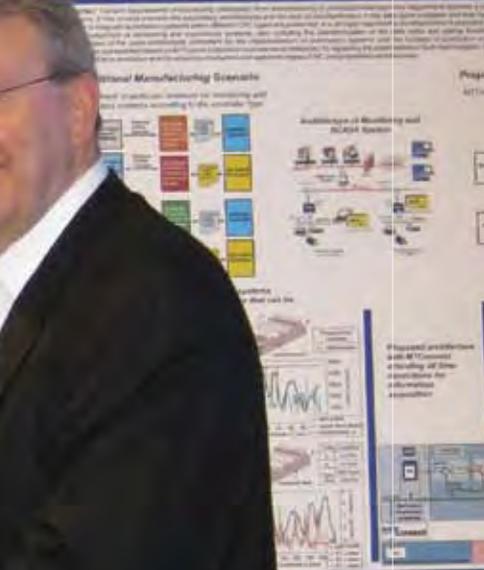
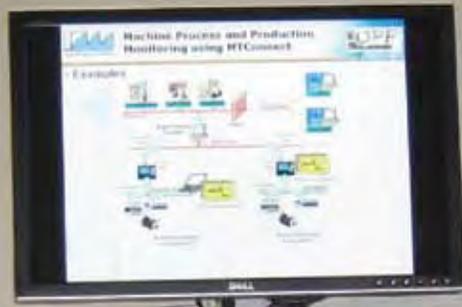
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EXTENSION

Machine Process and Production Monitoring Using

ISSP
Laboratory for Optimization of Manufacturing Process, Department of Mechanical Engineering, School of São Carlos, University of São Paulo
(F. Furtado Junior, E. J. de Silva, A. C. Brito)



Conne

Emerging Center

Student

Competi

one on one

Professor **David Dornfeld** and **Athulan Vijayaraghavan** of UC Berkeley are part of a team which created MTConnect, a software interoperability standard that enables machine tools and other manufacturing equipment to communicate in the same format.

What does it mean for different equipment to communicate with each other?

David Dornfeld: The analogy we've been using is that every machine tool speaks a slightly different language but represents the same concepts and thoughts. MTConnect is a common language for communicating critical data and information about the operation. It can communicate between different types of machines; milling machines, lathe, waterjet, EDM, and different brands of machines; Mori [Seiki], Okuma, Mazak, etc.

Which is harder to integrate, different types of machines or machines of different brands?

David Dornfeld: The bigger issue is probably different brands because different companies have their own format for representing the same information. A 5-axis milling machine for one company versus another is going to have three linear axis and two rotary axis. They're all going to be labeled X,Y,Z,A,B. They're going to have encoders on each axis that are going to give you some degree of resolution and information about their position. The structure of the machines is the same, but how they actually structure the program of the control etc. is quite a bit different.

MTConnect is offering a student competition, please explain what the students are competing to produce.

David Dornfeld: We started a contest to try to get students involved – to see if they could use MTConnect to provide some value added solutions. For example, if you're doing work on metal cutting research and toolware sensing, show how you can use the MTConnect to take the data out of your toolware sensing strategy and make it available to a number of different controllers, not just one controller. If you're doing some modeling work or CAM or CAD modeling try to see if you verify the CAM model by extracting data from the MTConnect. If you're doing a cell simulation or a process simulation, or you're accumulating data on the efficiency of the operation use MTConnect to show how you're doing that and how you're getting some value added from that.

What technology trends in machining are the most exciting to you?

Athulan Vijayaraghavan: Integration. [Every year] we have better software tools, better standards, machines which work better with other machines. As the complexity of machine shops, products, and enterprises keep increasing it's more and more important to integrate these systems. If you walk around [IMTS] you see lots of booths with signs and devices from other [companies] at the show. That's a great sign that the industry is working a lot together, and you need more of this to have more efficient manufacturing facilities.

Do you ever feel that older professors are out of touch with the newest technology trends?

Athulan Vijayaraghavan: I don't think most students would want to be taught by someone their age. Technology keeps changing but what makes technology work doesn't change. Professor David Patterson, who jump-started this process several years back, has more than 30 years of experience. Some of the best classes you take are with the professors who have actually seen it all. When you're the new kid you see something and say, "this is cool." But then they say, "no, this was done 10 years back and it didn't work. This is why this may work."

Do you think more students are seeing that machining isn't just a down and dirty job?

Athulan Vijayaraghavan: I don't think it's a down and dirty job. If you actually look at the engineering and the science that goes inside a machine tool it's pretty significant. I think it's more a question of how accessible it is.

David Dornfeld: It is clear that manufacturing and machine tools don't have the best image in the minds of many students. The whole purpose of MTConnect was to get that buzz into manufacturing. And I think by doing that you also communicate to the students how they can take part of it, how they play a role and how it's actually interesting. The worst lecture you can give is "You ought to do this because it's fun." If you have to tell me it's fun, it can't be fun.



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Better Than New

Retrofitting a centerless grinder with a new CNC and other components can make it better than it was when it was new.

A machine shop can benefit from retrofitting a manual or CNC centerless grinder with a new computer numerical control via increased accuracy or improved productivity for less than purchasing a new centerless grinder.

A retrofit may be worthwhile even if the grinder is slightly older but working well, because the machine shop will be able to avoid the headache of parts and service becoming less available as the grinder gets older.

A retrofit of a centerless grinder with a CNC, however, goes beyond the operator panel, the control cabinet and their wires.

CNC Retrofit: A Definition

A retrofit is the refurbishing and updating of a machine to include a new CNC. The machine, in this case, a centerless grinder, may already have a CNC, but the control may be older and need updating so the machine can grind more precisely. Refurbishing replaces the machine's components as needed, cleaning the machine, repainting and testing it.

A retrofit can also include the addition of automation, a robot, for loading and unloading workpieces.

The CNC

A new CNC can add new capabilities to a centerless grinder or improve its existing capabilities.

When retrofitting a manual grinder, an obvious new capability is dressing complex profiles, ones with multiple diameters, angles and radiuses, into grinding wheels without using cams. A manual grinder needs cams, each one manufactured with the shape of a profile or a segment of a profile so its dresser can follow a cam's shape and thereby dress the shape into the grinding wheel.

In a retrofitted grinder, the CNC can be programmed so the dresser follows the path needed to create the specified profile in the grinding wheel. "On a CNC machine, the computer is cutting that wheel perfect," said Frank Tarolla, president of the machine shop Aarstar Precision Grinding in Franklin Park, Ill., which had a manual grinder converted into a CNC one.



A manual centerless grinder will likely require a number of new parts and assemblies when being retrofitted to become a CNC machine. (Photo courtesy of Allways Precision Inc.)

Replacing an older CNC with a new one can enhance a grinder's capabilities, too. For example, a new control's software may make it easier to take advantage of modern technology elsewhere in the machine, such as servo motors capable of motion control of fine resolution. According to Romas Juodvalkis, president of Allways Precision Inc., Plainfield, Ill., a rebuilder of centerless grinders, a CNC centerless grinder retrofitted with modern servo motors may have a motion-control resolution as small as 0.5 microns. New software aids the grinder in making such small moves. "It's easier for the software to actually handle the motor," Juodvalkis said.

Installing a new CNC involves replacing the operator panel, the control cabinet and the wiring between the cabinet and the grinder's five motors and two pumps.

Rewiring ensures the new control can transmit its signals to the motors and pumps, which are connected to the grinder's main assemblies. "You're not going to take the chance that you have a damaged wire," Juodvalkis said.



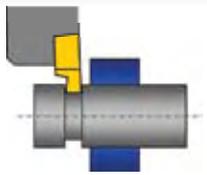
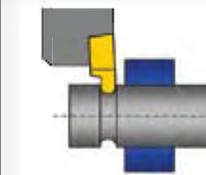
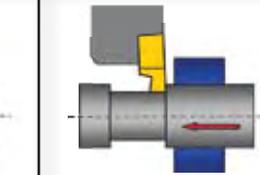
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how it works

The motors consist of one connected to the grinding wheel, two connected to the grinding wheel's dressing unit, a fourth connected to the regulating wheel and a fifth connected to the slide stack, which moves the regulating wheel into position. As for the pumps, one is connected to the hydraulic system and the other to the coolant system.

The Motors in the Machine

A grinder's five motors will be inspected. They may be cleaned, tested and reinstalled if they're in good order and sufficient for the machine shop's purposes. If not in good order, they'll be replaced.

Even if in good order, they would be replaced if they're insufficient for a shop's purposes. For example, the shop may want to grind parts that require more powerful motors, so a grinder's 15-hp motors would have to be replaced with 30-hp motors.

Or the shop may want greater precision from its grinder, requiring the installation of new servo motors. Equipped with encoders, these DC motors are used for precise, repeatable positioning and are therefore beneficial when connected to the grinding wheel's dressing unit or to the grinding wheel itself. Precise, repeatable positioning aids the grinder when it's dressing a complex profile into a grinding wheel

and when it's moving to engage a workpiece.

A servo motor can also be useful when connected to the regulating wheel because it ensures the wheel will move smoothly.

The Spindles

The grinding wheel's spindle will be disassembled and inspected. The spindle may need to be hand scraped to restore smooth rotation or be replaced if it's too worn. Also, the spindle bearings may need to be adjusted or replaced.

The spindle, however, may need little work if it uses hydrodynamic wedge bearings. If manufactured and assembled well, the spindle and bearings avoid the metal-to-metal contact that results in wear. "When the spindle turns, it actually floats on a film of oil and never contacts the bearing shoe, so there really is no wear if it's correctly adjusted and correctly scraped," Juodvaskis said.

Work on the spindle would include grinding and scraping it. Also, Juodvaskis recommended the spindle be coated for greater wear resistance. The coating can be ceramic or carbide. "Carbide seems to last longer," Juodvaskis said.

After the coated spindle is ground, the bearing shoes will also be scraped to fit the spindle for height and for contact points across the spindle.

The grinding wheel's dressing unit will be removed and cleaned as well, with its gibs being ground, hand scraped and reinstalled before the unit is returned to the grinder.

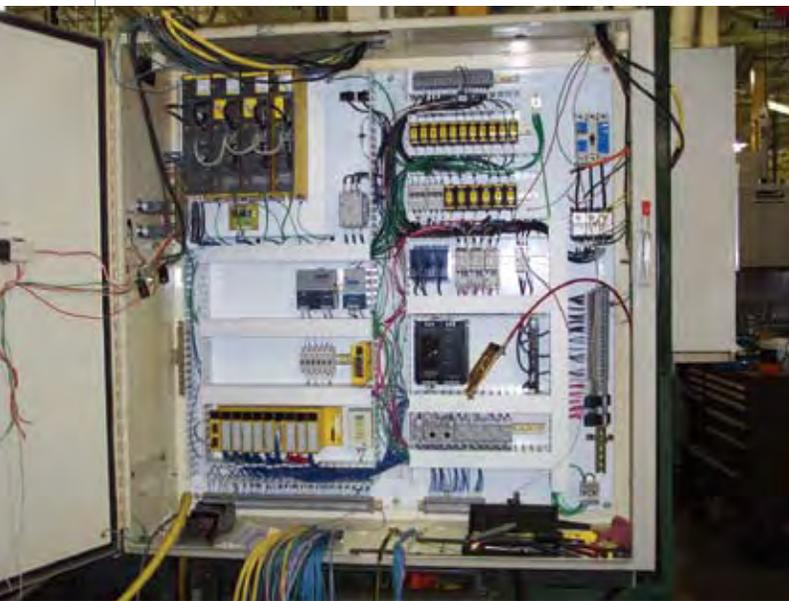
Refurbishing the regulating wheel's spindle is similar to refurbishing the grinding wheel's spindle. If the spindle

As part of a retrofit, refurbishing the grinding wheel and regulating wheel assemblies requires considerable work, including grinding and hand scraping the wheels' spindles after the assemblies are taken apart. (The grinding and regulating wheels shown here are wrapped in plastic so the retrofitted grinder can be shipped to its machine shop.)

(Photo courtesy of Allways Precision Inc.)



how it works



A CNC retrofit of a centerless grinder includes rewiring the machine's control cabinet to ensure transmission of signals from the CNC to the grinder's many moving assemblies.

(Photo courtesy of Cincinnati Service Rebuilders Inc.)

can be reused, it will be rescraped, reground and possibly recoated. The spindle's bearing shoes will be checked and rescraped or replaced.

The regulating wheel also has a dressing unit. If it's a manual dressing unit, the shop may want to leave it that way during a retrofit rather than replace it with a CNC unit. "Generally, you stay with manual because you don't dress the reg wheel near as much as you do the grinding wheel," said Steve Combs, president of Cincinnati Service Rebuilders Inc., Cincinnati, a rebuilder of centerless grinders.

The Slide Stack, The Ballscrew

A grinder's regulating wheel is moved forward and backward by the machine's slide stack and its ballscrew drive. The stack will be removed, disassembled and inspected. Its ways will be inspected and cleaned.

As with the grinder's other moving assemblies, ways accumulate material over time from the machine's grinding wheels and workpieces. "Movement is restricted and then you have problems with the accuracies on the machine," said Sachin Shah, vice president of RSS Grinders & Automation Inc., a Lombard, Ill.-based rebuilder of centerless grinders. After being cleaned, the ways are ground and hand scraped, as needed.

The stack is lubricated with way oil supplied at high pressure. After the stack is reground and rescraped, its still-mounted lubrication lines are checked. If they're in good condition, they'll be cleared of debris so they're clean and open. If damaged, they'll be replaced. The stack will then be reassembled and reinstalled.

The stack's ballscrew drive will also be inspected and replaced, as needed.

A shop may want the ballscrew drive replaced with a new one even if it doesn't want to extend the machine's capabilities. The new drive would be an improvement just because of its more advanced technology. "You get better stiffness," Combs said. "You get better repeatability, less backlash."

The Hydraulic, Coolant Systems

The hydraulic system supplies oil to the grinding wheel's spindle, slides, dressing unit and the regulating wheel's in-feed unit.

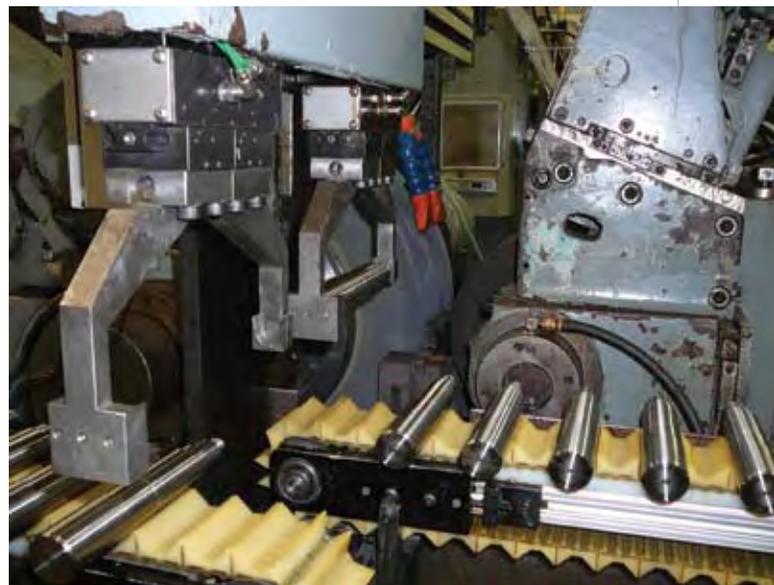
During refurbishing, the system would be cleaned, its tubes and other fittings cleared of debris and its pump checked for volume and pressure, as well as for strange noise during operation. If the pump checked out, it'd be cleaned and reused; if not, it would be replaced.

The system stores its oil in an internal cavity in the machine base. This cavity should be painted with an oil-resistant paint to prevent oil absorption and rust.

The coolant system's pump uses an electric motor, so it may need to have its windings checked and cleaned or replaced. The system's impeller would also be checked. If not in good shape, it would be replaced.

More Than Touching Up

Repainting a grinder does nothing except make it look nice again, unless the repainting is done wrong. Then it'll hurt the grinder's performance.



Retrofitting a centerless grinder with an automation system, like this pick-and-place system, can increase the grinder's productivity.

(Photo courtesy of V-S Industries Inc.)

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Repainting is more than touching up the old paint or putting a new coat on the old one. The problem is grime on the current coat. "You have a very thin layer of oil on the paint, which is very hard to remove with degreasers," Shah said. Even if the oil is removed, a new coat of paint can peel off in chips and fall into the grinder's work area.

Instead, the paint should be sandblasted off, stripping the grinder's base down to its bare metal. A new coat of primer and a new coat of paint can then be applied, ensuring that the new paint is there to stay.

Testing

After being retrofitted, the grinder will be tested. An initial test will be done by the retrofitter at its location. It may be a standard test. That test allows the retrofitter to compare the grinder's performance against the standard, which lays down tolerances for the grinder's operation and the resulting workpieces.

A shop, however, may want its grinder tested via a runoff of a specific part at the retrofitter's location, its own location or at both. According to Shah, a runoff at the shop's location may take as little as 30 minutes if the shop only wants a representative of the retrofitter present when the grinder is first turned on and used to ensure it's working properly.

Or the shop may want its operators trained on a new control, in which case the representative may be there for several days during the shop's runoff.

Automation Systems

A retrofit may include adding an automation system to increase the grinder's productivity.

The type of system for loading and unloading a part or a family of parts depends on the parts themselves and may be a bowl feeder, a pick-and-place system, a conveyor system or a gravity-fed magazine loader.

Combs cautioned that the system shouldn't reduce access to a grinder's components, like the regulating wheel's dresser. "You put a bunch of automation around a grinder and it makes it hard for a guy to even reach it," he said.

An automation system can be part of a grinder's electrical cabinet or be controlled separately by a programmable logic controller or a second electrical cabinet.

However, John Blume, operations manager of machine shop V-S Industries Inc., Wheeling, Ill., advised against two separate controls because their communication with each other can breakdown. "The benefit of having one control to control the machine and automation is less communication issues," he said.

Blume spoke from experience. V-S Industries retrofitted one of its centerless grinders with a new custom-made automation system in 2006. The grinder's previous system had its own control.

Possible issues include a system loading a part in the grinder when another part is still in the work area. When two workpieces collide during grinding, the result seems inevitable. "They're scrap," Blume said.

An automation system equipped with a sensor can also reduce the number of workpiece collisions. Aarstar uses a sensor with a system retrofitted to a centerless grinder that makes more than 18,000 parts per month. The sensor detects a workpiece passing by as it exits the grinder's work area. If the sensor doesn't detect a part passing by, the system won't load another part into the work area. "There are no crashes," Aarstar's Tarolla said.



A touch screen is one of the most obvious differences in a centerless grinder when it is converted from a manual machine to a CNC one. (Photo courtesy of Aarstar Precision Grinding)

It Takes Time

As described, a retrofit can be comprehensive and may take up to 20 weeks, depending on the availability of components. If a machine shop can't afford to lose its grinder for an extended period, it could look for a rebuilder that can give it another grinder to use in the meantime.

The time needed for a retrofit, however, ultimately depends on a shop's intended use of its centerless grinder. "It's application driven," Combs said. "You have to look at the process."

For more information

Aarstar Precision Grinding: (847) 678-4880
Allways Precision Inc.: www.alwaysprecision.com
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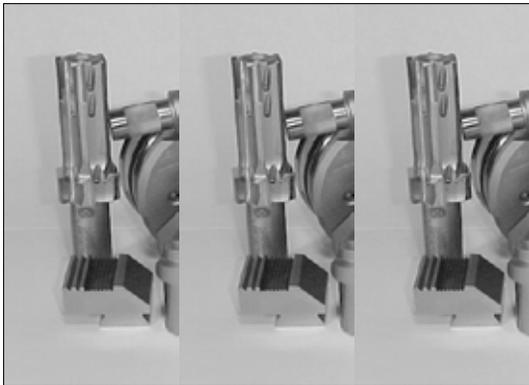
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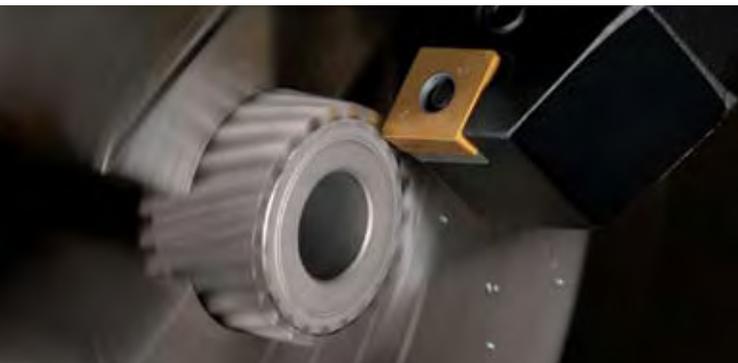
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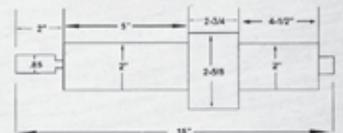


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product focus



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The Open Road

Here is a picture of my ride. Me and my wife Dori love to take off on my 2007 Harley Davidson Heritage Softail and explore the great USA. I have been riding since 1964 starting out with a Cushman Eagle and riding many miles on only gravel roads where my family farmed in northwest Iowa. In the early 1970s I was called by Uncle Sam to serve my country, and ended up in Germany for 1.5 years working in a large communication site. I bought a 1972 "750" Norton Commando and put on over 10,000 miles enjoying the roads in Europe. I was able to purchase a Harley Davidson at the start of the 21st century and my wife and I have enjoyed the thrill of the open road together ever since. There is still something about riding a Harley that gets your good old USA blood going, and I love the feeling.



Above: John and Dori Wallenburg at home on the Road.



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

Sudoku Puzzle

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

Who got their numbers aligned?

Peter Bagwell of Slater Tools Inc. in Clinton Township, MI; **Kevin Albright** of Gear Headquarters in Kansas City, KS; **Ron Smith** retired from Kaddis Manufacturing in Rochester, NY; **Terry Acosta** of Weatherford International, Woodward, OK; **Mark J. Brown** of Eagle Tool Company in Dyersville, IA; **Jim Warda** of Viscount Equipment Company Inc. in Fraser, MI; **Dan Cibulskis** of Aurora Air Products, Inc. in Aurora, IL; **Patricia Rueb** of Northrock Industries Inc. in Nedford, NY; **Rick Stein** of Key Products Inc. in Milwaukee, WI; **Daniel Sites** of Rickson Truck Wheels in Hunt Valley, MD; **Jeff Kovalenko** of Key Machinge Tool, Inc. in Elkhart, IN; **Dan Thomas** of PFI Precision Machining in New Carlisle, OH; **Uli J. Kuster** of Blaser Swisslube in Rohnert Park, CA; **Dan Horn** of Contour Wire EDM in Chicago, IL; **Tamara Hawn** of Sunnen Products in St. Louis, MO

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postings



Noteable and newsworthy information and events for the month of November

ROANKE

www.smc-events.com

Industrial EXPO

NOVEMBER
5th - 6th

Roanoke,
Virginia

CNC Machining Clinic

Oak Brook,
Illinois

Nov. 4th - 6th

www.sme.org

Oklahoma City Industrial & Facilities Show

www.expoindustrialshows.com

November
5th & 6th
Oklahoma

Manufacturing Technology Fundamentals

Brownsburg,
Indiana

November
13th
& 14th

www.sme.org

November
18th - 19th

Aerospace Measurement, Inspection & Analysis Show



Fort Worth, Texas

www.sme.org

LEAN PRODUCT DEVELOPMENT

Milwaukee, WI

November
18 - 20

www.sme.org

November



4th

ELECTION

Timecard Clock

invented on

Nov. 20, 1888

www.wikipedia.org

NBA

season
begins

Oct.
28th

www.nba.com



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

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

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

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

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

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

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

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

With all the advanced CNC capabilities of Embedded Motion Control coupled with the legendary Hydromat HS Indexing Chuck design, don't you think it's time you should take a look? IMTS # A-8435



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SWISS CNC ENGINEER – up to \$76K – Hartford CT – swiss lathe specialist, degree no required, hands on, develop process prior to production, tool, program, debug, outstanding benefits

SCREW MACHINE ENGINEER – up to \$80K – S. Boston MA – tool, layouts, cycletimes, cost estimates, troubleshoot, process improve, multi spindle screw machines, cam driven machine tools, high volume, large fluid power OEM, great benefits

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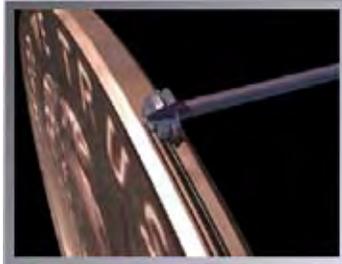
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- (1) National Acme Gridley RB8 2 5/8", 8-Spindle, (3) RB6 2" 6 Spindle Automatic Bar Machines (to 1997)
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Selling on Love

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

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

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

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

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

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

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

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

Eddie and Leslie bought the components for their dog conveyances from local distribution houses and job shops. They priced the product from \$300 to \$1200 per wheelchair, depending on how large and complicated the job was. The key to success was getting perfect measurements to exquisitely customize the product. What worked for a Siberian husky wouldn’t suffice for a leggy greyhound.

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

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

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

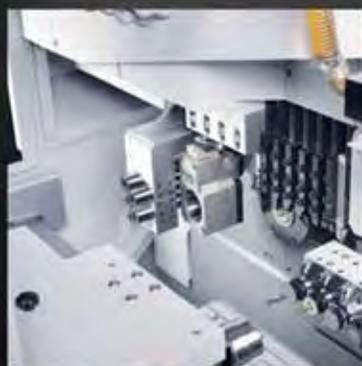
Leslie is shifting her marketing focus to the holistic pet healers. The animal chiropractors and acupuncturists are gaining respect in the veterinary medical community. They are interested in Eddie’s Wheels.

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

Lloyd Graff

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Front Tool	5
Back Tool(Driven)	4(2)
Off-Center(Driven)	2(2)
Cross Tool(Driven)	4(4)
Power	Main 5.5/7.5kW Sub 2.2/5.5kW
Weight	4,050kg
Dimension (LxWxH)	2,720x1,304x1,775mm

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