



MULTI-
SPINDLES

MACHINING
TITANIUM

THE NYC
iPOD DOCTOR

Today's Machining World

THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY



September/October 2009 Volume 5 Issue 7

www.todaysmachiningworld.com

Electric cars –
HOW FAR
will they **GO?**

BY LLOYD GRAFF

swarf



The Scorpion and the Frog

The struggle between Mercury Marine and the International Association of Machinists and Aerospace Workers Local 1947 sounds like the story of the scorpion and the frog.

The union knows that the more it fights the givebacks the company asks for in its contract, the greater the likelihood the headquarters' plant in Fond du Lac, Wisconsin, is going to be downsized and eventually closed. But the union continues to fight, because that's what unions do, like the scorpion that bites the frog that is transporting him across the river, dooming them both to die. It's what scorpions do.

Mercury faces wicked competition these days from Yamaha and Honda in the marine space, and moving from unionized, \$20 per hour Fond du Lac to non-union Stillwater, Oklahoma, makes economic sense for the Brunswick owned company.



Aerospace

----- As a market leader in the 5-axis manufacturing technology sector, DMG offers a unique product range of high-tech metal cutting machine tools for workpiece manufacturing in the aerospace industry.

MONFORT ADVERTISING



| Structural wing component |



| Structural fuselage component |



| High pressure compressor casing |



| Impeller disk |



DMU 125 FD duoBLOCK® HIGHLIGHTS

- duoBLOCK® design for the highest precision and dynamics, plus optimum access to the work area
- **Milling and turning** in a single setup with **DirectDrive Technology** and electronic balancing cycle
- Maximum table rotational speed of 500 rpm., workpieces up to 4,400 lbs. and ø 49.2 in.
- **5-axis simultaneous milling with a milling/turning table** and an NC-controlled B-axis in the standard version
- **5X torqueMASTER®*** with up to 536.2 ft. / lbs.
- A-axis* for **negative angles up to 30°**

*Optional

www.dmgamerica.com

DMG America Inc.: 265 Spring Lake Drive, Itasca, IL 60143
Tel.: (630) 227-3900, Fax: (630) 227-3975

I am saddened to see Marshall Manufacturing in Cape Canaveral, Florida, and Lewisburg, Tennessee, are going to be auctioned off by Myron Bowling in mid-October.

I've known Marshall's Ducanis family for my entire business career. We sold them 1 5/8" RB8 Acmes to make worm gears for casement windows, which was one of their core businesses for decades.

Another big screw machine company dies. Hopefully a few of the people who worked for Marshall will start up their own shops.

On the opposite side of the spectrum, the new owners of Anderson Precision in Jamestown, New York, Steve Godfrey and Dave Archer, who bought out the long-time owner John Castle, are looking to expand.

They bought the company late last year and rode a wave of good business until the crash of 2009. They did the necessary triage to survive the worst of the crisis and now are hiring to meet new demand. Old customers are ordering and giving them a bigger slice of their business, and they plan to dedicate their Davenport Automatics to particular jobs rather than jogging on the setup treadmill. They want to expand their eight-spindle Euroturn line and add CNC machines. The partners worked for Anderson for eight years before buying the firm. Both are from upstate New York and dig 120 inches of snow. Godfrey had been in computer software before he started at Anderson, and Archer sold industrial hardware.

Enoch Manufacturing is a successful job shop in Clackamas, Oregon. The Dawes family had run the company with fiscal soundness through good times and bad. When a change of management was decided upon, the company brought in Tom Aitchison, who was an outsider in the machining world. I talked to Aitchison at length and he says Enoch has escaped the economic crevasse without damage. He says that Enoch pruned workers who were not at the top of their game or who just did not fit what the company viewed as its future. He has brought in improved IT skills and a new sales manager. The company planned to buy a new M-32 Citizen before the downturn, deferred the purchase, and then went through with the buy. They also bought new Mori-Seiki equipment and have dry powder for more machine tool buys this year.

Aitchison says they have stayed consciously diversified and expects sales to be about even with last year, which he considers to be a solid win for Enoch.

There is a huge overhang of repossessed Haas equipment on the market today. Haas Automation is not alone in having to sell against its own repos, but because the company was selling 1,200 machines a month at the peak there are a lot of machines that ended up back with the lenders.

From my observation there is still an underlying demand for the repos which is keeping the prices above the bargain basement.

The issue confronting many machining operations today is whether to bring back employees who were laid off or hire new people. Companies went into survival mode nine months ago but today most have seen a rebound and some are quite busy. I have talked to several owners lately who are hiring to catch up, but are also hiring defensively because they are fearful that they will not be able to get the skilled workers when their peers are busy. Some managers also feel that there is an opportunity to upgrade and get younger on the floor today, but the window of hiring opportunity may be short.

The Toyota Corolla was the hottest seller in the "Cash for Clunkers" program. To me this says consumers are less interested in advanced technology and going green than they are in good old reliable transportation. The Honda Civic was second on the seller list, and the Toyota Camry and Ford Focus finished third and fourth respectively. The Toyota Prius was fifth.

Les Paul, the famed guitarist, died recently at 94. He played his instrument in a jazz club until just before his death, even though he had the use of only two fingers in his left hand because of arthritis. Paul's right arm had been badly crushed in a car accident in 1948. One doctor suggested amputation, but Paul insisted that they fix it at a right angle so he could play his guitar.

He developed the first solid-body, electric guitar for Gibson. The company did not see a future for the instrument until 1952, after rival company, Fender, introduced its hugely popular Fender Telecaster electric guitar to the music market.

Paul's story is an intriguing one for me. It resonates with another tidbit I heard recently.

Crusty old Arlen Specter, 78-years-old, who had five terms in the Senate as a Republican from Pennsylvania, flipped to the Democrats in May of this year. One reason he did so was to keep more clout on appropriations for the National Institute of

Health, which funds a huge part of the medical research in the United States. Almost single-handedly, Specter forced \$10 billion into the Obama stimulus package for the NIH.

The person who told me about Specter is closely involved with medical research and said that this infusion of money is already making a big difference.

Specter is currently undergoing chemotherapy for his second bout of Hodgkin's lymphoma, an often lethal type of cancer.

Les Paul and Arlen Specter chose totally different life paths, but both have demonstrated that you can make a difference by doing what you love and never giving up, despite any supposed disability.

Doreen Koop is a gutsy young woman with a kitchen dream.

She is an industrial engineer, recently laid off from United Launch Alliance of Decatur, Alabama, where they make parts for Delta and Atlas rockets.

Doreen decided to go into the manufacturing business in her hometown, Pulaski, Tennessee, so she could do work for her old company. She needs ISO certification before United will buy from her. She decided to build a product she knew, a high-end spatula aimed at cast-iron cooking devotees.

Her father had made such a utensil for the family decades ago, and she decided to improve upon it and find a market.

She contacted me looking for a machine to make "Chicago screws" out of stainless steel. After grilling her about the screw and the application, I became intrigued by her story. Before I talked to Doreen, I had never heard the words "Chicago" and "screw" used together in this way.

Doreen has seven distributors lined up for her spatula, which will sell for \$32. She calls it a "Williams Sonoma" type of product. She has local Amish folk cutting her oak handles and another Amish "blacksmith" doing the metalworking. Currently she's buying her screws from Fastenal for a dollar a piece, but the engineer in her knows they should be much cheaper.

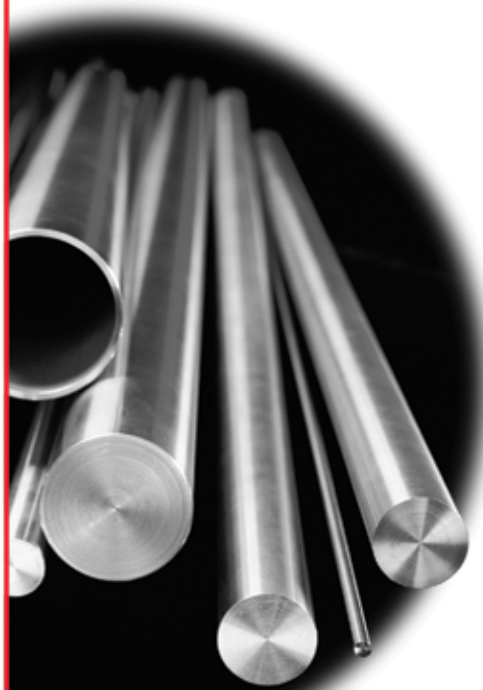
Doreen wants to make rocket parts, but the spatula now appears to be a viable project. She is now working on her next piece, a high-end fork.

If you think you can help Doreen Koop with her quest for American-made stainless steel fasteners email her at emily@todaysmachiningworld.com.

PRECISELY GROUND. PRECISELY ROUND. PRECISELY ON TIME.

AccuRod®

Ground and Polished Bar/Rod Stock



Capabilities

- Diameters from .008" to 5"
- Tolerances to .000050"
- Lengths to 20 feet
- Finishes to 3 Ra
- Straightening
- Polishing
- Bar end chamfering
- Saw cutting
- All materials

Pre Heat Treated Materials
Our ready supply of pre-heat treated materials, such as 17-4PH, 15-5PH, 440C, 416SS and M2 can be cut, straightened and ground to your exacting specifications.



11 Presidential Way
Woburn, MA 01801
Phone: 781.994.5000
Fax: 781.994.5001
E-mail: info@bostoncenterless.com



ISO 9001:2000 Certified

Toll Free: 800.343.4111 • www.bostoncenterless.com

swarf

Richard De Leon is looking for more than a few good men. He took an ad costing several hundred dollars under the "Careers" category in the Saturday *Wall Street Journal*, searching for lemon and orange pickers to work from September 17, 2009 to Jan. 31, 2010, near Yuma, Arizona.

I called Mr. De Leon at his firm, Servicios Agrícolas Mex Inc. to see how many refugees from Wall Street had applied for the \$7.95 per hour seasonal job. He was affable and informative.

I asked him why he advertised in the *Journal* and he said it has a big circulation and a long reach, so he figured something good would come from it. He needs 150 workers for the upcoming season. With the difficulty in getting traditional migrant workers across the border he is looking all over.

He admits that the work is tough. A worker must haul a 40-pound tree ladder from the site drop area. The picker carries

a bag for the fruit and clippers. I asked him if he gets many college students to pick. He says he gets several every season but they rarely last more than a few days. The temperature in Yuma averages 110 degrees in the fall.

I told Richard that my view of the job was colored by the apple pickers in the movie *Cider House Rules*. He hadn't heard of it. A few years ago I traveled to Wenatchee, Washington, during the apple harvest. I love apples and have picked apple sauce quantities from nearby Michigan orchards. I know it was "apple picking for sissies," but I think there is real value for young people to leave the comfortable settings they know and go to Africa, Peru or Yuma to feel what rigorous manual work is like, and sleep in barracks and carry a picking bag of lemons along with a 40-pound ladder.



Davenport dealer

2-3 SERVINGS

the efficiency/value leader for the competitive shop

DAVENPORT

machines
parts

Rotosaw : stocking distributor

2-3 SERVINGS

multiply your pieces per hour output, save material



118 combined yrs

3-5 SERVINGS

they know what they sell



DATSSTUFF.COM

2-4 SERVINGS

convert unneeded tooling and equipment to cash. Craigslist™ for your industry



**30,000 SQF of
New, Surplus
Tooling**

6-11 SERVINGS

- "the largest threading equipment inventory in the world"
- 126,673 item numbers - 80+ thread rolling attachments in stock

800.328.6424
www.detroitautomatic.com

detroit automatic

My brother Jim has been compiling a family tree of the Graff clan in America. He reminded me recently of the family folklore about how the Graff and Pinkert tribes hooked up in Chicago back in the early part of the 20th century.

The Graffs and the Pinkerts both came from the town of Brinsk in Russia. The Jews were pouring out of the anti-Semitic, czarist, pogrom plagued land. Most of the Graffs went to Palestine, but one man, Morris Graff, found his way to the south side of Chicago at the time of the 1893 World's Fair. He made some money, bought a big house and had a lot of children. When fresh immigrants from the old neighborhood of Brinsk came to Chicago they gravitated to Morris Graff's house and rented a bed.

One of those young guys was Simon Pinkert (formerly

Pincovich). He was a baker by trade who worked the night shift. When he came home after a long night of making bread he wreaked of yeast. He took the bed of Morris Graff's daughter, Ida, who slept during the evening. According to the lore, Ida was attracted to the scent left by the yeasty Simon. They met on the Sabbath, confirmed the aromatic attraction and soon united the Graff and Pinkert tribes in marriage.

Simon and Ida had 12 children. Louis Graff, Ida's brother, married Ethel Levinson (another, sadder story) and had five kids including my father, Leonard. Aaron Pinkert was one of 12 Pinkerts and ultimately teamed up with my Dad in the machinery and screw machine business.

Never underestimate the attraction of warm bread. 🍞



swarf blog.com

the #1 biggest difference between us and

ebay?

www.

DATS

answer:

You list for free

STUFF.com

www.datsstuff.com

BY JERRY LEVINE

Voices from the Moon

One July night 40 years ago, after probably one of the most tense aircraft landings ever, Neil Armstrong calmly announced to the world, “The Eagle has landed.” And so, with only 17 seconds of fuel to spare, space travel became a reality.

To read Andrew Chaikin’s *Voices from the Moon* is for me to be bathed in nostalgia, pride and emotion. Like Armstrong and many of the early astronauts, I am a Purdue University engineer of the 1950s—totally left-brained and pretty darn unemotional. However, reading the Apollo astronauts’ matter-of-fact descriptions of the entire 10 moon missions—from early preparation until the final splashdown—left me drained.

Chaikin takes quotes from over 150 hours of interviews with the astronauts and pairs them with breathtakingly beautiful photographs taken by the explorers to create an extraordinary first person chronicle of one of the greatest achievements in human history.

Reflecting back, there’s an ironic contrast between the first flight, Apollo 8, silently and peacefully orbiting the moon on Christmas Eve, 1968, and the anything-but-silent-and-peaceful turmoil of that year back on earth—arguably one of the least peaceful years of the 20th century.

The Cold War space race drove the moon project. Ironically, on the same day Neil Armstrong and Buzz Aldrin walked and slept peacefully in the “Sea of Tranquility,” a Soviet aircraft crashed and burned in the “Ocean of Storms” on the moon.

Such great potential morality plays this era could inspire, but the astronauts were engineers and pilots, not philosophers and poets.

They did not wax poetically. They were boring. They just did their jobs—like the thousands of other extraordinary people on their support team—and they did them all so flawlessly.

The astronauts were chosen for their scientific ability and trained until all emotion was washed out. The key was training—practice, practice, practice. So much practice that the real event became almost mundane.

Yet the astronauts were still caught off guard by situations unanticipated on the training simulator. For example, there was Bill Anders’ first view of Earth as he circled out from behind the moon—earthrise! “The most beautiful thing that I had ever seen,” he proclaimed. Totally unanticipated because “we were going to the moon and not looking back.” *Voices from the Moon* has a great selection of beautiful first photographs of Earth taken from space.

Several astronauts commented on how as they entered the moon’s shadow the command module began to round the dark side of the moon where there was total blackness in front of them—a gigantic black hole. No one was quite sure if they would be sucked right into the void. But then suddenly, whoosh—they went sliding into the sunlight, a mere 60 miles above the surface. Frank Borman describes the moon as resembling what Earth must have looked like before there was life. Anders added, “This space shot is man’s first step away from his home planet. We’re talking about a second Genesis.”

Walking on the moon was awe-inspiring. Dave Scott said, “Oh, the beauty—the spectacular beauty. I didn’t expect it. You are not heavy in one-sixth gravity, but you have the sensation of slow motion. You step and wait to be drawn back to the surface.”

Most of the astronauts had great anticipation, even jitters ahead of lunar liftoff. At one-sixth gravity, liftoff was more powerful than what they experienced in practice and shocked some of the astronauts. Mattingley said, “You’re really moving out. You can see the moon get small. I’m leaving that sucker. And you really don’t want to. Because, I mean ... I can’t go back tomorrow.”

In spite of themselves, these left-brainers often do wax poetically. They were 240,000 miles away from home

reading Genesis and experiencing it in a new way.

But it was still the science and engineering that got them there and brought them home safely. The program sent engineers to the moon and brought back home-spun poets and philosophers, which may be a miracle of sorts. They traveled a half million miles round trip and splashed down only minutes off schedule. That took some plain old science and engineering miracles too.



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



The yet-to-be-released GM Segway PUMA (Personal Urban Mobility and Accessibility) is an all electric two-seater that will be marketed for city dwellers.

Photo courtesy of Segway

Electric cars – HOW FAR will they GO?

BY PAUL EISENSTEIN

IT WASN'T QUITE CHRISTMAS IN JULY, BUT WHEN PRESIDENT BARACK OBAMA AND HIS VICE PRESIDENT JOE BIDEN FANNED OUT ACROSS THE AMERICAN MIDWEST, EARLIER THIS YEAR, IT MIGHT HAVE WELL BEEN. THE TWO LEADERS HANDED OUT THE FIRST CHUNK OF WHAT WILL EVENTUALLY BE \$2.4 BILLION IN FEDERAL AID DESIGNED TO KICK-START THE COUNTRY'S ADVANCED BATTERY INDUSTRY.

The Growth of Battery Power

At the moment, there's but a single plant in all of the United States capable of producing lithium-ion batteries from their raw materials. But if the Obama administration has its way, the nation will soon be on a par with the Asian nations, notably Japan, China and South Korea, that currently lead the race to develop the reliable, affordable and high-powered Li-Ion chemistry that could soon transform everything from telecommunications to the auto industry.

The auto industry, in particular, is becoming increasingly desperate for these advanced batteries, for they're the critical link in the push for what's become known as "electrification." Whether to curb the dependence on foreign oil or to reduce the production of emissions linked to smog and global warming, there's a growing consensus that automakers must move away from the time-tested internal combustion engine.

How soon that can happen is a matter of debate, but by now, virtually every major manufacturer has announced plans for some sort of battery-based drive train, from so-called "mild" hybrids, all the way up to pure battery-electric vehicles, or BEVs.

A New Kind of Car

Just days before the White House giveaway, in early August, Nissan Motor Co. CEO Carlos Ghosn grabbed the spotlight in Yokohama, Japan. But the dedication of the carmaker's new corporate headquarters was just the backdrop for the unveiling of the much-discussed but as yet-unseen Nissan Leaf. Due to market in roughly a year, the Li-Ion-powered 5-door is part of a grand plan by the Brazilian-born Nissan Chairman Carlos Ghosn to take the lead in the electric car market. Initially, Leaf will be marketed to fleet buyers who can control and monitor the car's use and performance, but by 2012, Nissan believes it will be able to market Leaf to consumers.

Of course, there is a drawback—a maximum 100-mile range. To downplay that restriction, Nissan plans to equip the BEV with an advanced infotainment system that will not only help you navigate to your destination, but constantly monitor Leaf's state of charge and show the driver the way to the nearest charging station.

"This car represents a real breakthrough," said Ghosn, who also serves as CEO of Nissan's French alliance partner, Renault. "We have been working tirelessly to make this day a reality—the unveiling of a real-world car that has zero, not simply reduced, emissions."

Below: Chevy Volt series hybrid chassis.
Photo courtesy of GM

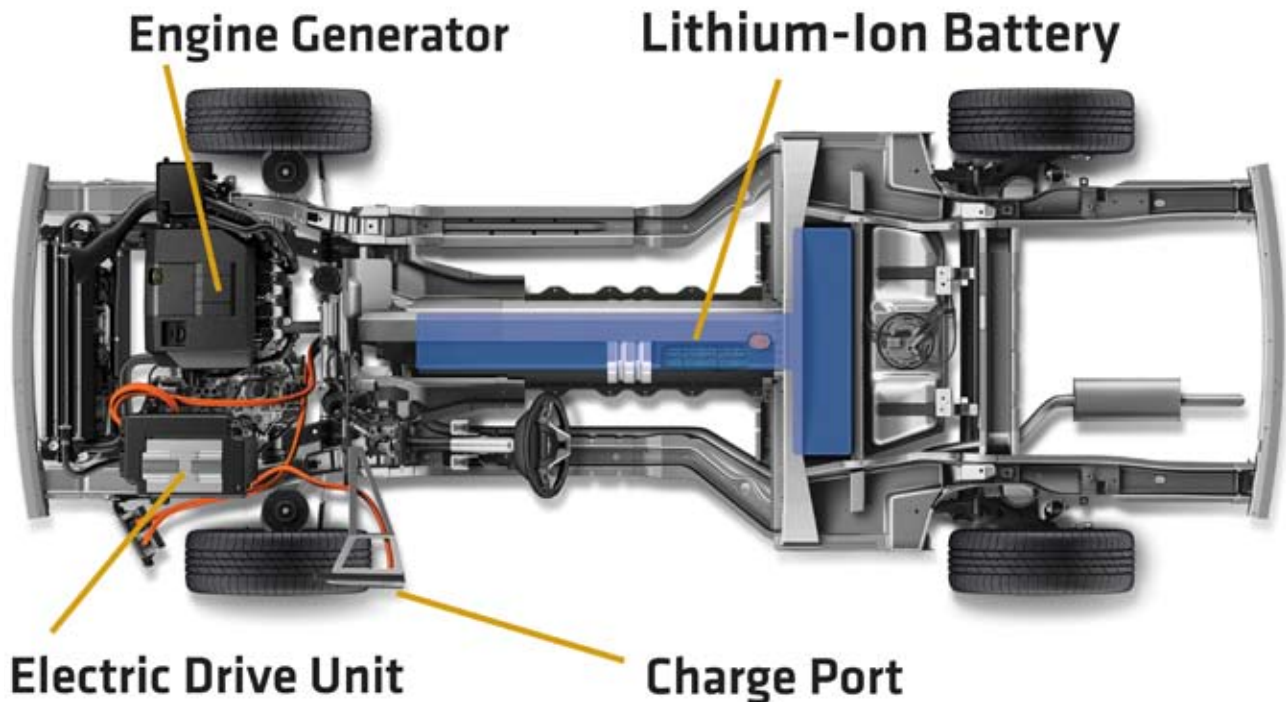
New Technology, New Restrictions

Nissan isn't the only automaker hoping to find a market for pure battery vehicles. Ford Motor Co. will launch a BEV version of its new Transit Connect van in a little more than a year, and follow it with a Focus battery car, in 2011. Toyota also promises a BEV by then, though the maker seems to be reacting more to competitive pressure than out of a sense that there's a real market waiting for the technology. There are serious limitations to Li-Ion technology, cautions Jim Lentz, the Japanese automaker's top-ranked American executive, underscoring his belief that there is no "silver bullet, single solution to the need for alternative power." Toyota may pass on Lithium for now.

General Motors officials echo that point, noting that they're working on everything from hydrogen-powered fuel cell vehicles to mild hybrids, like the Saturn Vue. But the automaker has been making plenty of hay over the 230 mile-per-gallon rating its new Chevrolet Volt is expected to receive under a proposed fuel economy measurement system designed specifically for electrified vehicles.

Leading the Way—The Volt

GM is also promoting the fact that Volt won't be limited to local jaunts, like pure battery vehicles. Chevy's so-





called “extended-range electric vehicle” or EREV, will carry just enough batteries to run 40 miles on electric power, though GM Vice Chairman Bob Lutz, asserts that will be more than necessary “for 70 percent of American commuters.” On a longer drive, Volt’s small internal combustion engine will fire up. A serial hybrid, the engine serves only as a generator, providing power to the motor driving Volt’s wheel, or to recharge the battery.

Though its official introduction doesn’t come until the fourth quarter of 2010, GM just began low-volume production of Volt, which will be put through extensive testing over the next 14 months.

The automaker, newly emerged from bankruptcy, can’t afford any big unforeseen setbacks in the program. The 230-mpg rating given to Volt is generating plenty of controversy—as is the fact that Leaf will be rated at 367 mpg. How, ask the skeptics, can that happen when the Nissan BEV only has a 100-mile range?

Better, But Cheaper, Too?

Even the assertion that battery cars will be cheap to run is a matter of debate. It’s true they’ll likely be more affordable than a gasoline-powered vehicle if you’re only looking at energy costs. Using off-peak electricity, GM estimates it will cost just \$0.40 to fully charge Volt. With Leaf, a dollar would cover its 100-mile range. Even plugging in at peak hours would do no more than double

to triple those numbers, which of course would still be significantly less expensive than running on gasoline.

Of course, that’s only part of the equation. GM’s EREV is expected to command a price tag of somewhere between \$35,000 and \$40,000 when it launches in late 2010, nearly twice as much as a comparably-priced sedan. “That’s high,” admits Henderson, but he stresses that “new technology is always more expensive.” The goal is to boost volumes, enhance the economies of scale, and then get to Volt “gen-two,” in industry lingo, as quickly as possible.

Toyota saw a nearly 50 percent drop in the cost of its second-generation Hybrid Synergy drive, used in models such as the popular Prius. But that didn’t happen

with the recently-released, third generation hybrid, acknowledges Lentz. “We got there with the motor, the controllers and most of the rest of the hardware,” he notes, “but not with the battery.”

To make a business case for battery technology, manufacturers are looking at a variety of non-traditional approaches. “We may opt for selling consumers the car but leasing them the battery at a price roughly equal to what they’d expect to spend each month on gasoline,” suggests Tom Lane, Nissan’s director of global product planning. Nissan is just one of several makers considering alternatives to the eventual disposal of automotive Li-Ion batteries. Though they might no longer be good for use under the hood, they’d likely have enough life left, says Lane, to work as back-up storage at power plants, particularly with green energy generators, like wind, solar and wave, that can suffer tremendous shifts in power output moment to moment.

How Far Will it Go?

Cost is just one of the issues with batteries, however. Range is arguably even more of a challenge. Tesla founder and Chairman Elon Musk insists the technology is making significant gains, and he hopes the 200 mile range of his company’s little 2-seat Roadster, it hopes, will double by the middle of the coming decade.

Some of the most promising claims are being made



Above: The interior of the new Tesla Roadster.

Photo courtesy of Tesla

by the Chinese automaker, BYD. Short for Bring Your Dreams, the company actually started out as a Li-Ion battery maker and continues to serve as one of the largest suppliers to the cellphone industry. Technologists note there are more than a dozen distinct families under the broad Lithium-Ion umbrella, and BYD claims its Lithium Ferrous Phosphate chemistry will deliver 250 miles on a charge of as little as three hours. Better yet—at least if the technology delivers as promised—BYD’s battery comes in at \$500 per kilowatt hour, roughly half what other automakers are targeting for other lithium-ion formulations.

“No bloody way,” asserts Tesla’s Musk. But BYD’s technology is enticing enough that mega-investor Warren Buffet has invested \$230 million in the Chinese firm—garnering 10 percent of its stock.

Where Will the Batteries Come From?

According to Nissan battery chief, Toshiyuki Motohashi, his company and its partner, NEC, have found a way to produce flat, or laminate batteries, rather than conventional, cylindrical cells—such as those used in the Tesla Roadster.

That saves space and weight, meaning in practical terms, more energy stored and longer range.

Nissan, meanwhile, has set up a variety of joint ventures around the world, including a consortium in Israel in which a network of battery swap stations will

be established. Though the Israeli EV can be recharged like a conventional battery car, it will also be able to have its batteries switched out almost as quickly as a gasoline-powered vehicle could refuel.

The push to electrify the automobile has created some strange bedfellows. Virtually every major automaker has established a relationship with one of the leading battery manufacturers. GM, for example, will use some of the federal battery grant money to set up a factory in suburban Detroit where it will assemble battery packs for the Volt. But the basic manufacturing will still be done in South Korea, by its partner, SG Chem.

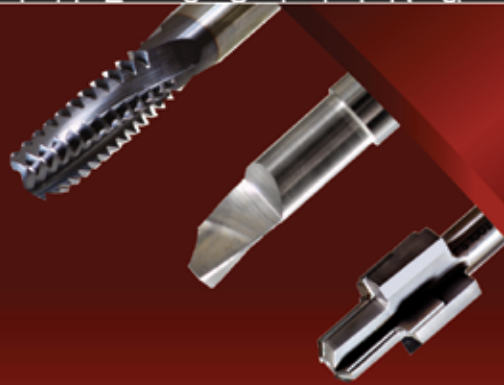
And that underscores the concerns of the Obama Administration, which fears that Asia—notably Japan, China and Korea—could effectively gain control of the most fundamental components of the battery industry without a concerted U.S. effort to set up a competitive manufacturing base in the States. Right now, there is only one domestic, high-volume producer of Li-Ion batteries, a factory in Indianapolis that’s a subsidiary of Ener1, Inc.

That battery maker it turns out, is now the largest stakeholder in the Norwegian-based BEV manufacturer, Th!nk, which emerged from bankruptcy protection at the end of August, and should restart production of its 2-seat Th!nk City battery car by year’s end.

Th!nk and Tesla are just two of the automotive wannabes who are betting billions that electrification will open up an industry that has long frozen out new entrants.



THE CUTTING EDGE



NEW CATALOG! NEW PRODUCTS!

Face Grooving
Engraving Tools
Profile Boring Bars
BSPP/BSPT Thread Mills
Undercut Grooving Tools
UNJ External Thread Mills
Back Chamfer Boring Bars
Mini Boring Starting at .015" Diameter
Acme and Stub Acme Internal Threading Tools

PREMIUM MICRO-GRAIN SOLID CARBIDE FOR LONGER
TOOL LIFE AND INCREASED FEEDS AND SPEEDS

HUNDREDS OF SIZES IN STOCK

CUSTOM, MINIATURE AND
LEFT-HANDED TOOLS AVAILABLE

TIALN COATED TOOLS IN STOCK

SCIENTIFIC CUTTING TOOLS, INC.

110 W. Easy Street / Simi Valley, CA 93065 / 800-383-2244 / 805-584-9629 [fax] info@sct-usa.com / www.sct-usa.com



SOUTHWICK & MEISTER, INC.

OVER HALF A CENTURY SERVICING THE SWISS-AUTOMATIC INDUSTRY

Specializing in the manufacturing of

COLLETS, CARBIDE GUIDE BUSHINGS, BARLOADER COLLETS & ALLIED TOOLING

for all

SWISS TYPE AUTOMATICS



BARLOADER COLLET

HEADSTOCK COLLET

GUIDE BUSHING

PICKOFF COLLET

We still have a number of customers that we started with in 1952.

We feel this is a positive reflection on our engineering service, consistent quality and timely deliveries that we have provided over the years.

ALLIED TOOLING INCLUDING PRECISION 5-C AND 16-C COLLETS

MPC collets and holders (ER style), ISCAR insert tooling, brazed tool bits, knurling tool holders, cam blanks, pushrods, flags and replaceable tips, ESCO collets, bushings, wire guides, feed roll sets and tool bit blanks.

Meriden, Connecticut 06450-0725

Phone: (203) 237-0000 • Fax: (203) 634-4509 • www.s-mcollets.com



Above: The GM Segway PUMA.

Photo courtesy of Segway

Not Just for Cars

One of those companies that sees expanded opportunities is Segway, the producer of the quirky, two-wheeled Personal Transporter. In April, the company unveiled a prototype 2-seater, dubbed PUMA, for Personal Urban Mobility and Accessibility, that it developed in a joint venture with GM. PUMA has only two wheels, but rather than a conventional, tandem design, PUMA's passengers ride side-by-side, as they do in a conventional automobile, thanks to the same stabilization system used in Segway's one-person PT. A more advanced version of the skeletal prototype, shown at the New York Auto Show, could be revealed by early next year.

Segway has already drummed up support, including some financial assistance, from a number of cities around the world, including London, which sees an opportunity for the downsized alternative to a conventional automobile.

There's been similar interest by traffic-snarled cities, like London, in smaller BEVs being developed by BMW's Mini division and by the Mercedes-Benz sibling, Smart.

One of the curious paradoxes of our day, notes Professor

Bill Mitchell of MIT's Smart Cities program, is that the more urbanized the world gets, the more its citizens want their own personal transportation.

So vehicles like Volt, PUMA or the Smart ED (for Electric Drive) have tremendous potential. But Dr. Mitchell cautions that just because a vehicle is green won't be enough to win over an audience. "You can't get people to accept a vehicle solely on the basis of saving the planet," he stresses. "It also has to be fun and fashionable." And functional. And reasonably affordable.

Will it Work?

That underscores the risk the industry is facing with its increasing emphasis on Li-Ion technology. It works in cellphones and laptop computers, but whether it will deliver reliably in the challenging environments faced by the typical automobile is yet to be proven. But with government regulators in most major markets enacting tougher emissions and fuel economy standards, automotive

planners simply can't wait to find out for sure. In turn, governments can't afford to let the industry fail, which is why the Obama Administration's cash infusion is both critical and unavoidable.

The U.S., of course, isn't the only country making a push into battery power. Governments from Beijing to Berlin are coming up with subsidies for manufacturers and the new generation of suppliers that will be needed to move the world of the electric automobile forward. Some traditional parts manufacturers are hoping to get into the game. Those who don't could face an increasing struggle to survive should the internal combustion engine become as dated as the buggy whip. But how soon that will happen is uncertain.

There are plenty of skeptics who say it never will. They insist battery technology is simply too inefficient and expensive. And in some segments of the market, they may be right. GM's new product development director, Tom Stephens, notes that it takes 100 litres of batteries to store the energy of a litre of gasoline. That may be fine for small vehicles, like Volt or Leaf or the Tesla Roadster, but it likely

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 can also check out the *TMW* online forum at www.shopdocforum.com.

Dear Shop Doc,

I'm trying to run a part that is made from extruded aluminum stock. The dimensions of the material are not symmetrical top to bottom or left to right. I've heard that Swiss-type machines are well suited for running this shape of material. How do I set up my machine to utilize this material?

A Little Off

Dear A Little Off,

You are correct that CNC sliding headstock (Swiss-type) machines are well suited for making parts out of extruded material. One of the benefits of a sliding headstock is that you can machine very small extruded material that will be supported by the guide bushing as the material is being machined.

Before we get started, make sure your machine has these capabilities: Revolving guide bushing, spindle phase synchronization and diametric capacity (measure across the points of the extruded material). Also, the keys in the main spindle, guide bushing and sub-spindle must be aligned (phase synchronized). All new machines will already have the keys phase synchronized with each other. If you have an older machine, then you should verify this before setup.

Now for the collets and guide bushings. Most major workholding companies will know how to make profiled collets and guide bushings. Simply send a drawing of the part to your preferred collet company and indicate where you want the center line to be. Also, indicate the radial position you want the key ways to be. This will allow you to position the profile exactly where you want for part pick-off and live tooling. The workholding company will then EDM the desired profile into the main spindle collet, guide bushing and sub-spindle collet.

After you receive your collets and guide bushings, install them making sure all of the keys are aligned. The tension should be set similar to how you set standard round collets and guide bushings.

For programming, your "C 0.0" will position the keys up. This will allow you to program the features of the extrusion and maintain positional accuracy for live tooling processes. During the pick-off process, you'll need to add a phase synchronization code to your program. Do this during your normal programming after the rpm synchronization code. Depending on the age of the machine, you may want to add some G4s after the rpm and phase synchronization codes.

Now that you have your workholding completed, the rest of the setup is the same as for machining round material. The one thing I would add, just to be on the safe side, is to command your rpm and phase synchronization codes in MDI mode and test to make sure the sub-spindle is aligned by bringing the sub-collet over the material. Clamp and unclamp the collet, then inspect the part to make sure there is no damage of the material. If there is damage to the pickoff area, you'll need to adjust the machine parameters (not the program) for the sub-spindle to align the phase of the sub-spindle.

David Cogswell
Ellison Technologies

David Cogswell is a Tsugami product manager at Ellison Technologies in Santa Fe Springs, CA.

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,

My 1-1/4RA6 Acme-Gridley is having trouble machining consistent diameters. We are seeing outside diameter variation from spindle to spindle that has gradually gotten worse. We can no longer produce parts within specification. We put an indicator on the spindle carrier and checked the endplay. That seems good, but when we checked the carrier rack with moderate pressure we found more than .004" radial play in the carrier. The locking pin spring is fine and the pin is fully engaged. What do we do now?

Inconsistent Play

Dear Inconsistent Play,

It sounds like your locking pin and blocks are worn and need to be reconditioned. You have to pull out the spindle carrier to do this.

There are other things you want to consider while the carrier is out of the machine, but we will address only the carrier lock-up issue here.

Once the carrier is out of the machine, remove the locking pin sleeve from the headstock. You can either grind the I.D. of the old sleeve and reuse it, or replace it with a new sleeve. Replace the old locking pin with a new one. The O.D. of the new pin has to be ground to fit the I.D. of the sleeve. This should be a slip fit of about .0007"-.0009".

Next you have to grind the drop step in the new pin using the old pin as a guide to establish the depth of the step. This step engages the positive side of the locking block and locates the spindle carrier on index. This keeps the carrier aligned properly as designed by the OEM.

Now remove the old locking blocks from the spindle carrier, making note of the orientation. You have to install six new blocks in the carrier and these must be ground to fit. The blocks have a positive side (squared inside face) and a lockup side (tapered inside face). Grind the outside of the block on the lockup (tapered) side until you have a press fit (.0005"

max.) with the carrier cavity. You may have to remove them again pending the results of a test you will perform later, and a tight press fit will make them harder to remove. Install all six blocks onto the carrier.

Once you have the carrier back in the machine you will need to perform a block test to check your index spacing. To do this install two knee turn tools on the main tool slide in the first and fourth position to cut on the radial centerline of the spindles. Then machine about a 1/2" long diameter on soft bar stock such as 12L14 at slow speeds and feeds as close to the spindle as possible. Index the carrier until cuts have been made on all six spindles and check the diameters for variation. OEM standard specification calls for .003" diameter maximum variation across all six spindles.

If you have more than .003" variation, remove and grind specific blocks on the positive side (inside square face) to correct them and reinstall them in the carrier. Once that is accomplished the block test should be repeated to verify the results.

Keep in mind that in order to perform a valid block test your main tool slide and stem cannot have more than .001" lift and your tool slide guide block cannot have any taper, as that will affect the results of the test.

Dave Johnson
Champion Screw Machine Engineering Inc.

Dave Johnson is the rebuilding manager at Champion Screw Machine Engineering Inc., an Acme reseller and rebuilder, and supplier of replacement parts, tooling and attachments for wide range of multi-spindle screw machines.

THE FOLLOWING COMPANIES HAVE PROVIDED
INFORMATION ON MULTI-SPINDLE MACHINES.

product focus

The CNC multi-spindle builders have found a market for the manufacturers of high-value, sophisticated, turned parts, but the downturn in the automotive and hydraulics industries have hampered the demand. The new builders are struggling with overcapacity at their European plants because automotive suppliers have virtually stopped buying. They are looking to high volume medical and military buyers to step into the depressed market.

▼ Davenport Machine

Davenport Machine, the manufacturer of the precision oriented Davenport HP machine, is the only American owned and operated multi-spindle screw machine builder in the United States. The Davenport HP machine is ideal for long or short runs of small parts and boasts a powerful PLC controller allowing for reduced set-up times and quicker adjustments. The Davenport HP allows operators to concentrate producing more complete parts rather than spending time fine-tuning. Davenport Machine manufactures Davenport Screw machines, tooling and genuine Davenport replacement parts. With our legendary Davenport Model B and the precision oriented Davenport HP.

For more information, please visit Davenport Machine at www.davenportmachine.com.

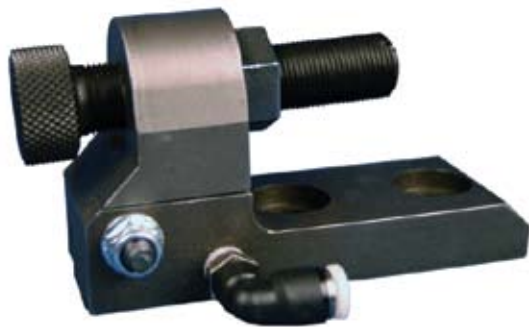




▲ INDEX

The new INDEX MS40C is an affordable, fully CNC multispindle for nearly unlimited operations on small workpieces from bar up to 40 mm diameter or for chucking up to 120mm. With six fully independent liquid-cooled, hollow-shaft CNC spindle drives each capable of up to 7000 rpm, the MS40C includes a main spindle drive with increased stiffness, and hydrostatic guide bushings on each carrier slide which eliminate wear and the transmission of vibration to the tool. The main spindle provides quick acceleration and high torque, helping to reduce cycle times. With liquid cooling, spindle and drum cooling is accomplished away from the work area through a local or central cooling system; heat can be released into the plant to utilize heat energy or outdoors to lessen the summer cooling burden.

For more information, please visit INDEX at www.index-usa.com.



◀ Champion Screw Machine Engineering, Inc.

The New-Matic was developed to be a direct replacement for the old Acme pneumatic stock stop. Where the old stop is difficult to set, prone to malfunction and impossible to keep operational, the New-Matic is easy to set, has a robust simple design and provides continuous hours of carefree operation. The New-Matic offers all the advantages of short part detection without the hassles. The strong, patented hinge design has a long service life. Internal components are easily replaced and low in cost. The unit works with your existing air control package.

For more information, please visit Champion Screw at HYPERLINK "<http://www.championscrew.com>" www.championscrew.com.



▲ Tornos

The new MultiSigma 8x24 offers a complete and unique solution to produce complex parts in one setup. Eight powerful and independent spindles allow flexibility while an integrated robot allows for the automatic unloading of parts into a pallet. The new MultiSigma 8x24 is supplied with the latest generation of motorspindles and a very powerful, well proven motorspindle technology found previously in the MultiAlpha line. The new MultiSigma machines are equipped with latest generation spindles which feature synchronous motors. Each spindle functions independently of the others for cutting rpm, spindle stops and indexing. The spindles with independent speed settings enable the full range of cutting tools to be employed.

For more information, please visit Tornos at www.tornos.us

▶ ZPS

The only 8-spindle machine in the industry, the new ZPS TMZ 867 can accommodate bar stock up to 72 mm diameter and can operate as an open-front chucker. Provided with a double Siemens 840 D CNC, the European-built machine offers up to 72 CNC axes and can perform nearly any metal cutting operation on precision parts from drilling and tapping to milling and hobbing. The TMZ 867's standard features include eight independent AC-driven CNC horizontal spindles, 8+1 independent compound slides (X and Z), eight independent tool carriers with 8 12000-rpm driven tools, five backworking tools (three driven), and a wide range of standard presettable VDI tooling.

For more information, please visit www.zpsamerica.com.



F A S T C O M P A N Y



TC



WHEN IT COMES TO SPEED AND PERFORMANCE, EDDIE TROTTA AND THUNDER CYCLE DESIGNS RULE THE ROAD. For Eddie, the results speak for themselves. "Our customers expect only the highest quality most intricately designed parts on our custom bikes. Trusty-Cook liners allow us to machine these complex parts to meet my standards at speeds that keep up with part demand."



Eddie Trotta

When you need speed and performance in the shop, remember Trusty-Cook Urethane CNC Spindle Liners.

TRUSTY COOK'S PATENTED URETHANE CNC SPINDLE LINERS



Full length round, hex, square, or other irregular shaped inner diameter liners are available for maximum

MAXIMIZE MACHINING CONTROL OUT PERFORMS METAL, NYLON, DELRIN AND OTHER SPINDLE LINER MATERIALS COMMONLY USED

- Increase control
- Increase machining speeds by as much as 30% or more
- Increase profits
- Protect bar stock from marring and scratching
- Minimize machine vibration
- Custom made to fit ANY CNC lathe

SATISFACTION GUARANTEED

For more information on any of our products, or to place an order call or e-mail Jeff.

1.877.240.2462
www.trustycook.com

End user and dealer distributor inquiry welcome.

10530 E. 59th Street Indianapolis, IN 46236 PH-317.823.6821 FAX-317.823.6822



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

think tank

Truth City

You are on your way to Truth Town, where the inhabitants always tell the truth. At one point you reach a fork in the road, with one branch leading to Truth Town and the other leading to Liar Town, where the citizens are all liars. The road sign at the junction is confusing, but there is a man standing there from whom you can ask directions. The only problem is you don't know if he is from Truth Town or Liar Town.

If you have time to ask him only one question, what question will ensure that you will be headed to Truth Town?



think tank

Sudoku Solution

Puzzle found in the July/August 2009 issue

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

Who are the number whizzes?

Robert Vogt of Fortress Forms Inc., in New Berlin, Wis.; **Dave Rosbottom** of Bucci Industries USA in Charlotte N.C.; **Cathy McDaniel** of A-1 Machine Works Inc. in Bristow, Okla.; **Ken Hill of LaserCut Machine Inc.** in Dallas, Texas; **Fred Indoe** of Crowley Tool Co. in Hendersonville, Tenn.; **Patricia Rueb** of Northruck Industries, Inc. in Medford, N.Y.; **Matthew Ecker** of Hunter Engineering in St. Louis, Mo.; **Terry Acosta** of Weatherford International, in Woodward, Okla.; **Al Grella** of National Distribution Inc. in Farmingdale, N.Y.; **Ron May** of Hunter Engineering Company in Bridgeton, Mo.; **Rick Stein** of K. Key Products Inc. in Milwaukee, Wis.; **Neal Kauffman** of Kauffman Doors in Lincoln, Mo.; **David P. Smith** of ElectroSwitch in Raleigh, N.C.; **Jerry Levine** of Today's Machining World in Oak Forest, Ill.; **Dan Cibulskis** of Aurora Air Products, Inc. in Aurora, Ill.; **Ram Chandran** of Muller Martini Mfg. Corp. in Newport News, VA; **George Stringe** of Highland Service in Frederick, Colo.; **Uli J. Kuster** of Blaser Swisslube in Rohnert Park, Cal.; **David R. Weitz Sr.** of Davlan Engineering Inc. in Saint Louis, Mo.; **Larry Willenborg** of Iowa Screw Machine Products Inc. in Carroll, Iowa.; **Tamara Hawn** of Sunnen Products Co. in St. Louis Mo.; **Douglas Edwards** of BorgWarner Emissions/Thermal Systems in Fletcher, N.C.

postings



Noteable and newsworthy information and events for upcoming months.

SOUTH-TEC

Exposition & Conference

Oct. 15-16

Charlotte, NC

www.sme.org

Canadian Manufacturing Technology Show

Toronto, ON, CANADA

Oct. 19th to the 22nd

www.sme.org

Aerospace Measurement, Inspection & Analysis Conference

Baltimore MD

Sept. 29th to Oct. 1st

www.sme.org

Wisconsin Machine Tool Show

Oct. 6th thru 8th

West Allis, Wisconsin

www.expoproductionsinc.com

ICALEO Intl Congress on Applications of Lasers & Electro-Optics

Orlando, FL

November 2nd to 5th

www.laserinstitute.org/conferences/icaleo/conference

EMO Milano

Oct 5th to the 10th

Milan, Italy

www.emo-milan.com

MLB World Series

Oct. 28th

Black Tuesday
Stock market crash of 1929 begins.
12.9 million shares traded.
Oct. 24, 1929

Birthday Jimi Hendrix

Nov. 27, 1942

Microsoft Windows
version 1.0, released
November 20, 1985



Today's Machining World

ad index

- 45 **ACCUTRAK** Link with the pros in knurling and roll forming. Contact us at 800-433-4933 or visit www.accu-trak.com.
- 10 **AMSCO** Stocks a large variety of parts and tools for B&S, Davenport, Acme, New Britain and Lipe Bar Feeds. Call 800-832-6726.
- 15 **BOSTON CENTERLESS** Supplier of round bar material and grinding with unmatched quality. Call 800-727-CSME or visit www.bostoncenterless.com.
- 45 **COMEX** Swiss CNC & cam experts. Large stock of automatics, attachments and replacement parts. "Turnkey" including training. AMEA-CEA certified appraisals.
- 16-17 **DETROIT AUTOMATIC TOOLING** World's largest stock of supplies and repair parts for multi-spindle automatics. Visit www.detroitautomatic.com.
- 13 **DMG** Technologies for tomorrow. Visit www.dmgamerica.com.
- 40 **EATON STEEL** Producers of cold drawn steel bars and distributor of hot rolled steel bars. Call 800-527-3851 or visit www.eatonsteel.com.
- 24-25 **GRAFF PINKERT** Specialists in multi-spindle automatic screw machines and rotary transfers. Call 708-535-2200 or visit www.graffpinkert.com.
- 9 **HURCO** A global automation company designing & producing computer controls, software & machine systems. Call 800-634-2416 or visit www.hurco.com.
- 2 **ISCAR** Supplier of precision carbide metalworking tools, carbide inserts, end mills and cutting tools. Call 817-258-3200 or visit www.iscar.com.
- 53 **LESTER DETTERBECK** Manufacturer of special cutting tools, tool blanks, cams and tool holders for the turned parts industry. Call 1-800-533-3328.
- 52 **MACHINETOOLS.COM** Connecting the machining community. Visit www.machinetools.com.
- 68 **MARUBENI-CITIZEN-CINCOM, INC.** A joint venture company—Marubeni Tokyo & Citizen Watch Co., Ltd., builder of precision Swiss-type lathes.
- 3 **NEXTURN-TYLER MACHINE COMPANY** The CNC Swiss machine leader. Call 603-474-7692 or visit www.tylermachine.com.
- 33 **NSK AMERICA** Upgrade your machines to flexible, multi-purpose machining centers. Call 800-585-4676 or visit www.nskamerica.com.
- 6 **PARTMAKER** PartMaker Inc, a Division of Delcam Plc. PartMaker Software is the world leading CAM system for automating the programming of multi-axis lathes and Swiss-type lathes. Contact PartMaker Inc. at www.partmaker.com or toll free at 888-270-6878
- 67 **SCHMOLZ & BICKENBACH** Manufacturer, processor and distributor of special steel long products. Call 800-232-5569 or visit www.schmolz-bickenbach.us.
- 47 **SCHÜTTE** A whole new approach to CNC multi-spindle machining. Call 517-782-36 or visit www.schuttemsa.com.
- 31 **SCIENTIFIC CUTTING TOOLS** Always on the cutting edge. Call 800-383-2244 or visit www.sct-usa.com.
- 4 **SLATER** The broaching experts. Call 586-465-5000 or visit www.slatertools.com.
- 53 **SOMMA TOOL** Broaches, dovetails, hollow mills, quick-change insert tooling and more. Experience honest-to-goodness service. Visit www.sommatools.com.
- 31 **SOUTHWICK & MEISTER** Manufacturer of collets, carbide guide bushings an allied tooling for ALL Swiss-type automatics. Call 203-237-0000 or visit www.s-mcollets.com.
- 19 **STAR** The most complete line of advanced Swiss-type CNC machines. Visit www.starcnc.com.
- 23&44 **TODAY'S MACHINING WORLD** Join our email list and receive additional Swarf. Email emily@todaysmachiningworld.com with "add me to your mailing list" in the subject line.
- 57 **TRUSTY COOK** Maximize machining control with patented urethane CNC spindle liners. Call 877-240-2462 or visit www.unist.com.
- 46 **WMW MACHINERY** Manufactures machine tools, markets a line of WMW HECKERT Production Milling Machines, and imports and distributes a broad range of heavy-duty flat bed lathes and radial drills. Visit www.wmwmachinery.com.

advertisers



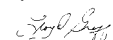
US Postal Service Statement of Ownership Management and Circulation

TITLE: *Today's Machining World*
 PUBLICATION # 024-909
 FREQUENCY OF ISSUE/6x, bi-monthly
 NO. OF ISSUES PUB. AN./ 6x, bi-monthly
 MAILING ADDRESS
Today's Machining World, 4235 West 166th Street, Oak Forest, IL 60452
 PUBLISHER: Lloyd Graff, 4235 West 166th Street, Oak Forest, IL 60452
 EDITOR: Lloyd Graff, 4235 West 166th Street, Oak Forest, IL 60452
 MANAGING EDITOR: Emily Aniakou, 4235 West 166th Street, Oak Forest, IL 60452
 OWNER: Screw Machine World Inc., 4235 West 166th Street, Oak Forest, IL 60452
 BONDHOLDERS, MORTGAGES OR OTHER SECURITIES HOLDERS

DATE OF FILING
 September 3, 2009
 ANNUAL
 SUBSCRIP. PRICE
 \$40.00
 NONE

EXTENT AND NATURE OF CIRCULATION	AVERAGE FOR	AVERAGE FOR
	12 MONTHS	JULY/AUG. 2009
Total Number of Copies	17,794	16,700
Individual Paid/Requested Mail Subscriptions	9,588	9,244
Paid and/or Requested Circulation Sales through Dealers, Carriers, Street Vendors, and Counter Sales	0	0
Requested Copies Distributed by Other Mail Classes through USPS	0	0
Total Paid and/or Requested Circulation	9,588	9,244
Free Distribution by Mail (Samples, Complimentary And Other Free)	7,056	6,848
Free Distribution Outside the Mail (Carrier or Other Means)	205	0
Total Free Distribution	7,261	6,848
Total Distribution	16,849	16,092
Copies Not Distributed (Office Use, Left over, Spilled)	945	608
Total	17,794	16,700
Percent Paid and/or Requested	53.89%	55.39%

I certify that the statements made by me are correct and complete.

 Publisher