



SELLING A  
BUSINESS

PMTS  
SHOW

DEBURRING  
PARTS

# Today's Machining World

THE MAGAZINE FOR THE PRECISION PARTS INDUSTRY



april 2007 volume 3 issue 4

www.todaysmachiningworld.com

Today's Machining World Magazine  
P.O. Box 847  
Lowell, MA 01853

**CHANGE SERVICE REQUESTED**

PRST STD  
U.S. Postage  
**PAID**  
Permit # 649  
Liberty, MO

# How-To High

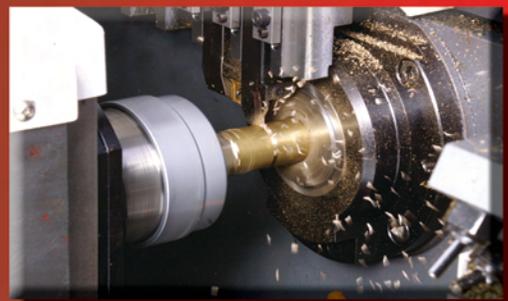
Minuteman School

# Experience



Inside the SQC32 machine

# Support



Pickoff operation

# Value



Back end working



Sub spindle threading

## SQC Series CNC Swiss Automatics

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

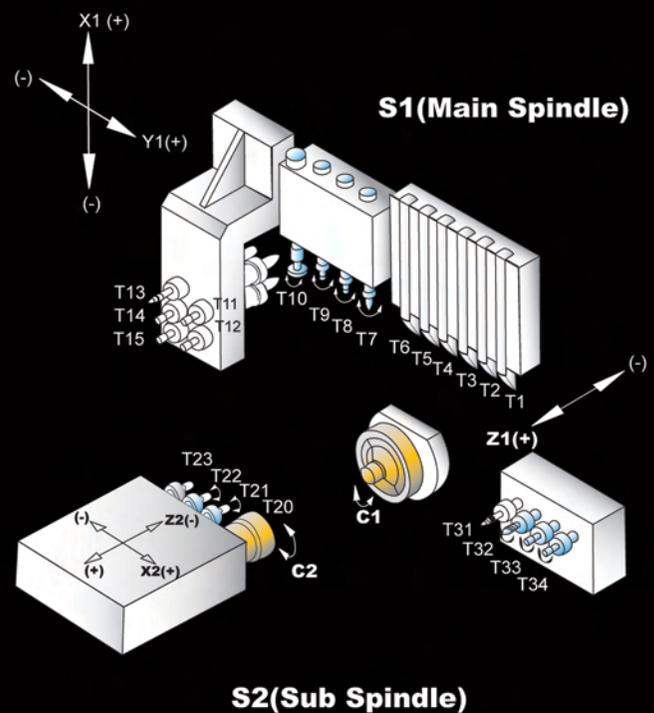


The KSI SQC Series high-precision CNC Swiss Automatics offer the most complete standard features package in their class:

- All GE Fanuc electronics and motors
- GE Fanuc 18iTB Control
- 2 year GE Fanuc warranty
- Program check by MPG
- Full C-axis main and sub spindle
- 7 axis control
- 9 driven tools (up to 13 optional)
- Rigid tap all spindles
- Off-center milling all sides
- Dual pump coolant system

Special built machines can be designed and built, please contact us for more information.

Three sizes to meet your needs: 20 mm, 32 mm, and 38 mm.



## The Best Value on the Market

KSI Swiss, Inc.  
 2999 W County Rd 42, Suite 156  
 Minneapolis, MN 55306  
 (888) 344-3330

# The Industry's New Dream Team.

TORNOS MULTI by HYDROMAT



## Power of Productivity



### The NEW Tornos Multi by Hydromat MultiAlpha 8x20

- Eight motorized spindles running at independent speeds
- Twin back working operations
- Two numeric manipulators
- Integral palletization



**H**ydromat makes history again with the addition of the Tornos line of multispindle machines to their already impressive array of rotary transfer machines, creating the ultimate line-up for the precision part making industry. Flexibility is our goal, 'Power of Productivity' is the result. Hydromat's extensive experience in the marketplace and engineering excellence teamed with a two punch rotary transfer/multispindle combination enables us to give you the right machine for the right job. The New Tornos MultiAlpha 8x20 will be displayed alongside the Hydromat EPIC R/T 25-12 in Booth #423 at PMTS 2007. Drop by and experience the *Power of Productivity*.



The Hydromat EPIC R/T 25-12 will be shown in Booth #423 at PMTS 2007



Hydromat Inc. • 11600 Adie Road • St. Louis, MO 63043  
p 314.432.4644 • f 314.432.7552  
[www.hydromat.com](http://www.hydromat.com)

# in this issue



Today's Machining World

April 2007 volume 3 issue 4



## Departments

7 From the Editor

11 Forum

13 Swarf

20 Book Review  
*Maravich*  
by Jerry Levine

22 Fresh Stuff

44 Next

46 One on One

59 Product Focus  
*PMTS Show*

70 Shop Doc

72 Changing Shocks  
by Paul Eisenstein

74 Think Tank

75 Postings

82 Afterthought  
*Multiple of One*

77 Ad Index

78 Classifieds

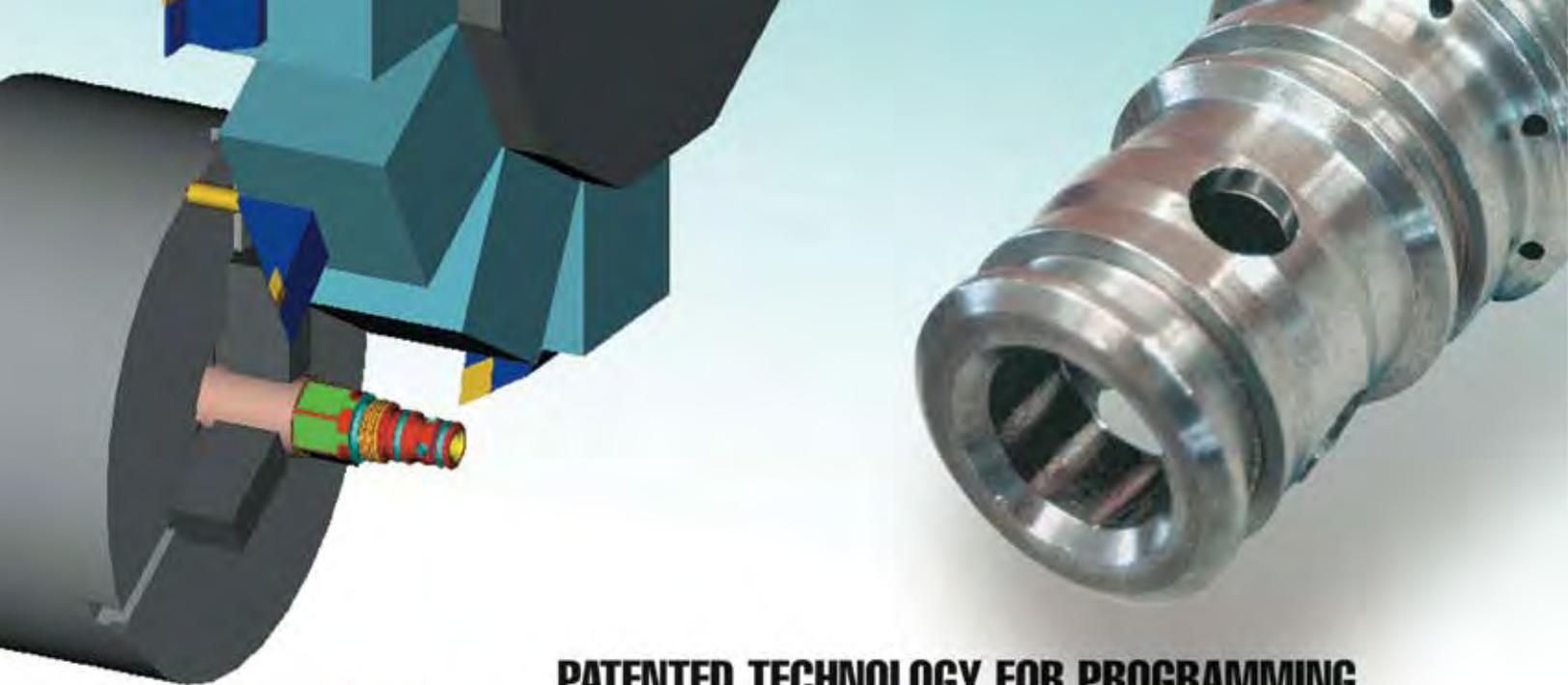
in this issue

## Features

32 Minuteman Revolution  
The new face of "How-To" education by Robert Strauss

38 Selling a Business The turmoil of letting go by Garth Stephanson

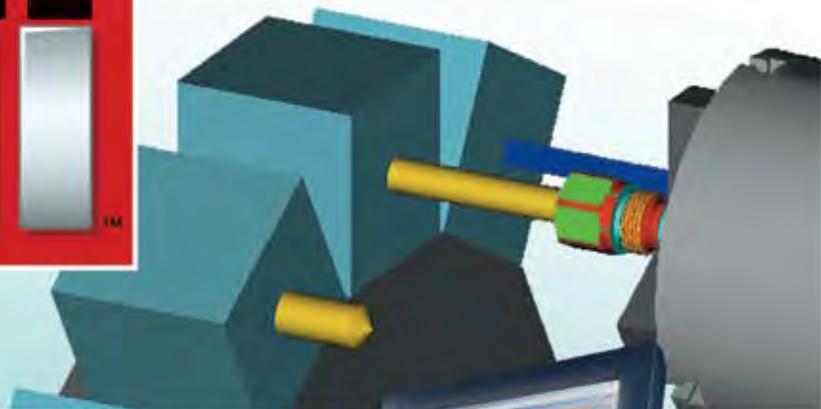
50 How it Works Deburring a part by Barbara Donohue



**PATENTED TECHNOLOGY FOR PROGRAMMING  
AND SYNCHRONIZING  
YOUR MULTI-AXIS LATHE**

**PartMaker®**  
**Turn  
Mill**

**EASIER!**



**■ Exploit the Power of Your Equipment**

PartMaker pioneered the field of CAM software for Turn-Mill Centers and Swiss-type Lathes. By generating edit-free CNC programs and proving out the results on screen with PartMaker, you'll reduce programming and setup time.



● Turn ● Mill ● Turn-Mill ● Swiss ● Wire EDM

**PartMaker®**  
● VISUAL ● INTUITIVE ● MORE PRODUCTIVE

**■ 1-888-270-6878**

**■ [www.PartMaker.com](http://www.PartMaker.com)**



# Today's Machining World

www.todaysmachiningworld.com

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

Hot Water  
Lloyd Graff  
(708) 535-2200

Publisher  
Dan Pels  
(312) 342-6557

Managing Editor  
Jill Sevelow  
jill@todaysmachiningworld.com

Features Editor  
Noah Graff  
noah@todaysmachiningworld.com

Web Forum Editor  
Noah Graff & John Iwanski  
noah@todaysmachiningworld.com

Creative Director  
Terry Ntovas  
terry@todaysmachiningworld.com

Circulation Director  
Judy Palmer  
judy@todaysmachiningworld.com

Sales Manager - East Coast  
Bill Papp - 845-613-7329

Sales Manager - Midwest  
Dianne Lach - 708-460-6383

Contributing Writers  
Barbara Donohue, Paul Eisenstein, Lloyd Graff,  
Noah Graff, Garth Stephanson, Robert Strauss.

©2007 *Today's Machining World*, Inc. All rights reserved.  
Reproduction in whole or in part without the written permission  
of *Today's Machining World*™ is prohibited. *Today's Machining World*  
is published monthly by *Today's Machining World*, Inc.,  
4235 W. 166th St., Oak Forest, IL 60452.

**SUBSCRIPTION/CHANGE OF ADDRESS:**  
Basic subscription rate: US\$40 for domestic/US\$55 for international.

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

*Today's Machining World*,  
P.O. Box 847, Lowell, MA 01853 or email  
renewalsh@computerfulfillment.com

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

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

**CPC Publication Agreement Number 40048288**

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



## editor's note

### Kernel of Truth

Orville Redenbacher is coming back to life to sell popcorn for ConAgra. The sound engineers are computer graphics folks who are making new television ads using the computer-generated voice of Orville in an animated visual format. Sounds a bit eerie to me, but Redenbacher's grandson is cool with it.

It prompts the question of the value of a personalized brand for a product. The *Today's Machining World* brand, as well as the Graff-Pinkert name, are closely identified with me and the Graff family. The financial logic of this marketing choice is to instill confidence and a sense of connectedness to the audience by humanizing the owners of these businesses. My belief is that I gain credibility for the magazine by identifying my biases and revealing my personality to the readers. I think this choice has enabled us to build a brand that feels authentic and real. I feel that you actually care about this magazine like no other business-to-business publication.

But I realize this style has a downside. Some potential advertisers find the pictures of me in the Graff-Pinkert ad and the "Afterthought" column to be an unethical effort to manipulate the audience to buy our machinery. Other people see me as a dilettante on a long ego trip. Is there a kernel of truth in either of those positions?

From a financial viewpoint, the personalized brand is an impediment to selling either business. Could Oprah sell her magazine if she retired? What is Martha Stewart's magazine worth when she's in jail?

Hard questions. Maybe Orville's video clone will give us an answer.

Lloyd Graff  
Editor/Owner

editors note



**Garth Stephenson** is a chartered accountant and former CEO and co-owner of Stegg Limited in Ontario, Canada. Garth is now offering counseling and coaching services for owners interested in selling their business. Fees are donated to Camp Trillium, a camp for kids with terminal cancer. Garth enjoys ocean scuba diving, hunting pheasant, tennis, and family time in cottage-land.



**Lloyd Graff** has an M.A. in journalism from the University of Michigan. Lloyd splits his time between buying and selling machinery, writing Swarf and swarfblog and playing Fantasy Baseball on Yahoo. He is married to Risa, a world champion in Tae Kwan Doe. He has three children and a granddaughter who are all above average. One of his life goals is to make 65 consecutive free throws on his 65th birthday.



**Jill Sevelow** has incorporated a few of her passions into her last three professions; teacher, department store buyer and managing editor of *Today's Machining World*, a role she's relishing. Jill is an avid gardener and dedicated mah jong player, volunteers her time & creative energy for exceptional organizations, and adores her friends and family. Her greatest source of pride has been raising daughters Jade and Tess, her two most favorite people on the planet.



**Noah Graff** has been working at *Today's Machining World* since 2005. He graduated from the University of Wisconsin Madison, majoring in film and history. He is the features editor for *Today's Machining World*, as well as the videographer for *TMW* and Graff-Pinkert & Co., producing training videos on screw machine maintenance and video stories for the *TMW* website. Noah enjoys investing, filmmaking and improvisational comedy. He is also a master of the sacred art of live band karaoke.

# It's hard to make money in the 21st century with 19th century technology.

*Starting at \$37,900.\**

Large travels, 8000 rpm, 15 hp spindle standard



Why are you thinking about purchasing a tool room mill or mini mill when you can get up to five times the productivity from one Hurco VM1? The Hurco Max control is the easiest control to learn and use in the industry. Not only will your operators be up and running in no time, they'll be multi-tasking while the VM1 works for your shop. Additionally, the small footprint of the VM1 doesn't monopolize your shop floor, taking up about as much space as the average tool room mill. The large, enclosed work cube provides the space you need while eliminating messes from coolants and chip removal. It's the perfect solution for today and tomorrow.

**HURCO**  
I N C O N T R O L

www.hurco.com 800.634.2416

**EASTEC 2007**  
May 22 - 24  
Booths 1304, 5313

**See our web site for additional specifications and see how you can lease a new VM1 machining center or TM6 slant-bed lathe for as little as \$550 per month.†**



**VM Series**  
General Purpose



**VMX Series**  
High Performance



**VTX Series**  
5-Axis



**HTX Series**  
Horizontal



**TM Series**  
Lathes

\*FOB Los Angeles. USA Pricing Only. Machines shown with options.

†Leasing information: Subject to credit approval by National City Manufacturing Finance. Payments may change subject to any increase in Treasury Note Rates.

# The Parts You Need When You Need Them



**The  
Service  
You  
Expect**

## **AUTHORIZED DISTRIBUTORS**

- Accu Trak Tool Corp.
- B&S Screw Machine Services
- Boyar Schultz (LDE)
- DT Tool Holders (Carb insert)
- Davenport
- M & M Mfg. Co.
- Quality Chaser Co.
- Schlitter Tool
- R.L. Spellman Co.
- Hardinge

## **IN STOCK AND READY TO SHIP**

B&S spindle assemblies • B&S #2 & #00 windows, doors & rails • bearings • belting  
• cam blanks • cams for multi spindles • carbide inserted box tools • chains •  
chasers • chip carts for B&S and Acme • chip conveyors • collets, new or used • collet  
tubes • cut off blades • cutting oil screens • deflector cables • die heads • die head  
yokes • drill bushings • gaskets • gears • knurls • lipe pusher assemblies • pads  
• pulleys • pumps • pushers, new and used • pusher tubes • rebuilt dynabrake  
motors with digital timer • schematic prints • Servo Cam units • shafts • silent stock  
tubes • spindles • tap bushings • timing cams • tool holders for single and multi  
spindles • tubing • vibra check machine mounting pads • plus some wickman stuff

# AMSCO

**AUTOMATIC SCREW MACHINE TOOL & SUPPLY CO.**

Ask for Pat Pagac or Wendell Rogers

6775 Brandt Rd., Romulus, MI 48174

800/832-6726 • 734/728-8500 • FAX 734/728-8020

Visit our Website: [www.autoscrewamsco.com](http://www.autoscrewamsco.com) E-Mail: [office@autoscrewamsco.com](mailto:office@autoscrewamsco.com)



Over 50 Years  
of Satisfying  
Customers



### Letter from Japan

I'm writing after being fortunate enough to be invited by Mitsui-Seiki to see their Tokyo plant first-hand, as well as visit their customer Aikoku Alpha in Nagoya.

I found the Mitsui Seiki plant and its commitment to precision, a vision – figuratively and literally. The newest plant has been built according to Japan's strict environmental regulations and Mitsui's dedication to ultra-precision (around 12 microns true positioning capabilities) in their vertical and horizontal machining centers. The plant was built on a 1200 mm thick concrete "bed" in order to thwart environmental shifts, and maintains a 68 degree temperature throughout (at a cost of over \$75,000 a month!), with air circulating 24 times an hour for constant thermal stability. To complete their quest for the ultimate in accuracy, machines are virtually handmade. I witnessed "hand-scraping," where an employee's dedication to hand-scraping a perfect "fit" for achieving structural robustness (of up to 250 hours per machine) was an artistic dance as well as an exact science.

I asked about the employment climate in the manufacturing sector in Japan, and was told since the depression of the 1990s,

hiring has been very slow in manufacturing, though the industry is very strong. There is an age gap between 50 year-old experienced workers and the newer under 30 year-old workers. Their solution is to hire Chinese, Korean and Taiwanese in addition to their country's engineering talent. The current immigration laws are slowly opening up to allow that to happen. They look for a personality type willing to learn their technology and an interest to stay motivated throughout his career, then develop their talent. I was intrigued and moved by the intense personal focus by the employees and their tasks at hand, both at Mitsui-Seiki and Aikoku Alpha.

My letter would not be complete without mentioning the impeccable hosting by Scott Walker, president of Mitsui-Seiki U.S.A. (who speaks Japanese fluently, plays a mean guitar and understood my desire to soak in everything, including sushi for breakfast) and Lynn Gorman, president of Gorman Communications and my perfect partner-in-crime for donning kimonos at dinner, 6:00 a.m. fish markets and addiction to Japanese salt baths. I highly recommend Japan – and a Mitsui-Seiki tour!

Jill Sevelow

### The Exodus

I read the "Future of Michigan" (February 2007): I remember the young ladies from Flint marrying out-of-state General Motors Institute students to get away from their blue collar life. I remember my exodus as a General Motors employee with a Masters of Science degree after being told they did not want that level of education working in the shops. I remember the exodus in Detroit of transient white and blue collar workers that continually stripped the city of a stable culture. I remember the exodus of employment opportunities for young people as the Big Three continued to lose their grasp of market share. Finally, on a business trip to the Detroit downtown, I saw the final sign of exodus – in a feeble attempt to put some color into otherwise drab surroundings, flowers planted the day before had been ripped from their beds and were dying in the street. Michigan needs a Lee Iacocca.

Dennis Myers  
Laguna Beach, CA

TMW Magazine 4235 W. 166TH STREET, OAK FOREST, IL 60452

JILL@TODAYSMACHININGWORLD.COM, LLOYD@TODAYSMACHININGWORLD.COM

*Something on your mind?  
We'd love to hear it.*

# Full Service Company

Do You Need Help with Your Acmes?

Just call  
**CHAMPION** 



## Service

Field Service  
Machine Testing/Maintenance  
Toolslide Conversions  
Slide Grinding/Refit  
Job Layout and Tool Design Service

## Installation

Attachments, PLC, Stock Depletion,  
Indexing Kits, Hi-Low Drive, Clutches,  
Logan Threading, Air Pick-Off, Backfinish,  
Turn key Operations, & Electrical Upgrades

## Rebuilding

Complete Machine Rebuild  
Reconditioning  
Carrier/Spindle Rebuild

## Distribution

Hardinge, Logan, Timken, CJ Winter, Kennametal,  
Schlitters, Empire, Boyar Schlutz, Watkins, Tri-Lock,  
Cyclo Index, Bokum, Somma, Ramsey, GSN,  
Ruthman Gusher, New Market, New Method,  
Whitcore Tube , Trusty Cook, Loc-Line, Slaters

## Inventory

\$2 Million in New Inventory  
20,000 sq. ft. of Quality Surplus  
300 new sets of Cams in Stock  
Acme Machines

## Experience

6 Salesmen ready to Help  
8 Outside Sales Reps  
Trouble-Shooting machine problems

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

**1** Call  
Order  
Shipment  
Source



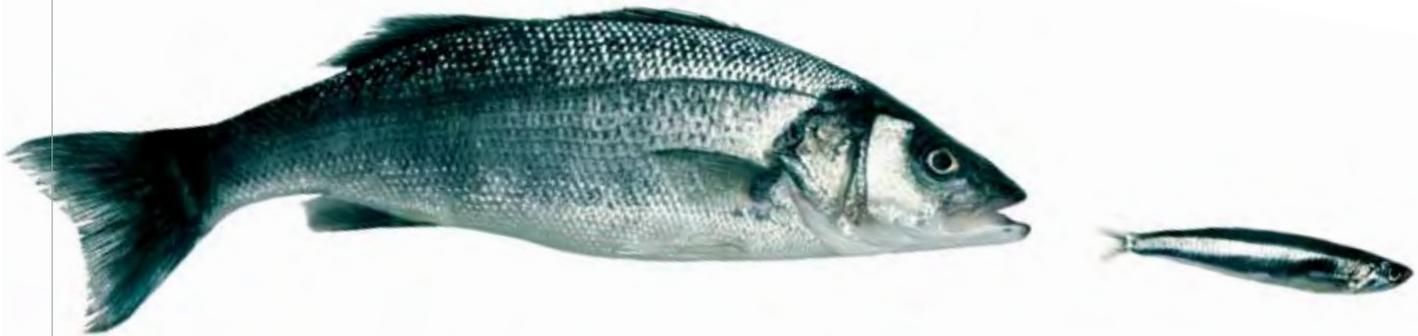
30419 Beck Road Wixom, Michigan 48393  
Phone (248) 624-4545 Fax (248) 624-8722  
Toll Free (800) 727-2763

 **CHAMPION**  
SCREW MACHINE ENGINEERING, INC.

# Big Fish in Machining

Elliot St. James is a bright, young guy with a clear business plan. He wants to dominate the turned parts business in British Columbia.

His company, Columbia Tool, based in Surrey, British Columbia, makes taping tools for the drywall trade. It's one of those profitable little niche businesses – he says he has six competitors – but highly dependent on the winds of the construction business. Elliot runs five Citizens and a Mazak to make the 70 turned parts in his taping tools. But the big opportunity he sees is becoming the big fish in machining in an area where machining skills are withering away.



The Vancouver area is thriving, but the manufacturing talents of the Baby Boomers are wasting away. Weisser Lock used to have a big factory in B.C. but its production has gone to the invisible offshore world. There are still hundreds of entrepreneurial businesses in medical, aerospace, electronics and esoteric fields like drywall taping that need precise metal parts, and they prefer to buy from somebody they can talk to in their office on a regular basis.

Elliot St. James is using his taping tool product line as a base to get into the jobbing business in the province. He is buying up job shops to get their customers. He sees

cam-operated machines as interesting relics of the Bronze Age of manufacturing. He wants to service the local clients with state of the art CNC turning machines, better attuned to the smaller lot sizes they demand. He also believes that operators for cam machines are generally eyeing retirement. His plan is to replace older machinists with eager young people who love CNC.

Elliot St. James' approach is delightfully Darwinian – survival of the fittest in a changing climate. If he executes the plan he'll be the big fish in the not-so-little B.C. pond.

# Buy – Sell – Consign – Auction

## CNC Swiss

Citizen – Star – Tsugami – Tornos Bechler  
Hanwha – KSI – Nexturn – Nomura

## CNC Lathes & Machining Centers

Miyano – Mori Seiki – Mazak – Okuma – Daewoo – Gildemeister  
Index – Traub – Kitamura – Matsuura – Nakamura Tome

## Barfeeds

LNS – IEMCA – FMB – EDGE – MTA – SMW



**CITIZEN** L(5)20VII, 1998, 3/4", 4ROT/60D/3ID/3BW, Barfeed



**Hardinge Cobra** 65, 2001, 10" Chuck, 2 1/2", Tailstock, Barfeed



**Mori Seiki** DL-150, 1998, Y-Axis, Twin Turret/Spindle



**Tsugami** BS-32CII, 2000, 1 1/4", 8 Rotary Tools, Sub-Spindle, IEMCA



*Automatics & Machinery Co., Inc.*

150 Martin Street Longmont, CO 80501

800-543-7666

Ph: 800-543-7666 or 303-651-6545 Fax: 303-651-6556

www.automatics.com sales@automatics.com

## The shifts in automotive and other high production portions

of the manufacturing economy continue to rock our world. The big M & S auction by Hilco at the end of March was part of the unwinding of the domestic auto supply business.

M & S was a highly successful automotive subcontractor. I would call them Tier II – under \$100 million in sales, but not much. They were highly profitable in the 1990s and invested heavily in CNC lathes, CNC multi-spindles and rotary transfer equipment. They also bought top of the line inspection and metrology equipment – lots of it.

But the last several years were unkind to the owners of the business. The families that controlled the company fought over the money that had poured in during the fat years. Lawsuits amongst the key shareholders sopped the energy of the owners. The fun seeped out of the business and ultimately, so did the money.

A key client, for which the owners of M & S had gambled on \$7 million of Hydromats and other ancillary equipment, wanted out of an eight-year contract after four years because Ford was disappointed with the truck component's design. The primary contract was cut back to service component levels, leaving the Hydromats way overcapacity.

Disgruntlement turned into despair and fear at the company. The lenders, who bet on the Ford contract, were worried about the viability of M & S. The banks pushed the owners to find a buyer for the company before they were forced into bankruptcy.

The macabre dance of workout firms, consultants, appraisers, and liquidators began in earnest. Employees knew what was going on and started looking for the exits. Layoffs accelerated. Internal dissension mixed with endless meetings was causing a combustible, poisonous atmosphere in the office.

Ultimately, Robert Levy of Hilco made a financial guarantee to the owners of M & S and the creditors for the company's assets, gambling that the proceeds would at least equal his number, and the 12.5 percent buyer's premium would make the deal profitable for him and his partners.

Recently, Tom Zupan sold his big machining firm, Whirlaway Manufacturing, in Ashland, Ohio. There is plenty of private money looking for automotive suppliers expecting a turnaround soon. Despite Chinese outsourcing, there is still money to be made in the field.

Perhaps M & S could have survived if the will was there, but when the fun is gone, shareholders are in court and Ford is gasping, the impetus to lay it on the line to survive goes away.

swarf

## Ernest Gallo died recently at 97.

He and his brother Julio founded and built the wine business that carries their name and is still owned and run by the family.

The Gallo brothers started the business in 1933 after the murder-suicide of their parents, poor immigrant grape farmers in the San Joaquin Valley of California. With a borrowed \$5,900 at the depth of the Depression, they began one of the great American companies.

To the Gallo Brothers wine was a business. Success was measured in cases sold, not prizes at tasting festivals. To them a good Chianti was red and made money. In the Remembrance column of the March 10, 2007 *Wall Street Journal*, the obit writer recounted an exchange between Michael Mondavi, son the famous California vintner Robert Modavi and Ernest Gallo:

"Do you know what I do?" Michael Mondavi recalls asking Gallo when they first met. "Yes, you run the largest winery in the country," replied Mondavi, then in his mid-twenties. "No," Ernest corrected him, "I go out and visit customers in stores."

Both men understood what they, and their companies were all about. The Mondavi family built their brand around impeccable taste in wine. The Gallos built their empire on Thunderbird by the truckload. Mondavi and Thunderbird are both American icons.

One of the keys to success in any business is understanding what you are good at and going after it with a passion. Ernest and Julio Gallo, giants of American business, always stayed true to their core strength, and the members of the company and the clients never had to guess about it – make a drinkable wine and sell the heck out of it.



**TURNING  
BORING  
THREADING  
GROOVING  
BACK TURNING  
FRONT TURNING  
HIGH SHEAR**

AND EVEN  
**CUT-OFF!**

## Go Ahead We Can Take It.

If you're tired of poor metal cutting performance from your present engineered products, get the ETCO advantage. Our full line of **Mini Shank Tooling and Indexable Inserts** (*with zero radius a standard*) have the edge to outperform all others. We stock a complete inventory of qualified Tool Holders and Inserts for **Swiss Style Screw Machines** such as **Tornos, Citizen, Star, Nomura, Tsugami, Hardinge** and more.

If that doesn't cut it, our top quality **Medical Grade and Custom Grinding** capabilities will meet your exact specifications. That will improve any bottom line.

**ENGINEERED TOOLING CORP.**  
57 Grant St., Waltham, MA 02451  
**781/788-8888**  
Fax: 781/736-1987  
[www.etcotooling.com](http://www.etcotooling.com)



Thanks to the kind people who responded to my "Afterthought" column on the "anti-anti clutter movement" (January, 2007).

## I think the world is full of

creative, productive people like Jim S. from Southern Indiana, who makes a living running his 12 CNC machining centers while his desk festers with open catalogues and coffee-stained prints. Jim just bought a new Romi lathe with a 6-1/2 inch hole for 140 grand cash, but he cannot see the bottom of his desk. He describes the entrance to his eight foot by 12 foot office as a "path," but he has a proprietary product for the plastics industry which is highly successful.

Mark Crotts of Winston-Salem, North Carolina called to say the "Afterthought" column described him to a "T." He has a highly regarded machine tool dealership selling Toyota and Mitutoyo, among other lines. He has been honored by his peers at the Society of Manufacturing Engineers, but his papers still bedevil him.

One of the joys of doing *Today's Machining World* each month is reaching out and feeling connected to the people of the precision machining world. Our universe is full of neat people. Some of the most cluttered are the neatest of all.

## The downtown train station in

Chicago has recently been remodeled. Two coffee shops, one a Starbucks, the other an independent, have opened directly across from one another. The coffee is comparable at both, but the independent serves better pastries and a much larger assortment of food. The prices are similar. Starbucks has a few tables and chairs and the independent has no sitting area.

Every time I go in the new station I notice that Starbucks is filled with a waiting line and the independent is virtually empty. Why?

Starbucks has a fabulous brand. This certainly is helpful in pulling customers in the door, especially travelers who seldom go in this commuter station. But most of the folks at the downtown Metra station are daily or frequent commuters who I would think would try both shops to find the one they like best. That's what I did. And I ended up buying a coffee at Starbucks even though I hate the pastries there and I was hungry for a sweet before my ride.

What pulled me to Starbucks was the vibe, the energy,

4 Salesmen 117 Years of experience



### DETROIT AUTOMATIC TOOLING

The world's largest stock of threading equipment.

tel: (800)328-6424 fax: (888) 942-2740 [www.detroitautomatic.com](http://www.detroitautomatic.com)

...only serious  
when it counts.

# swarf

the positive feel coming out of the Starbucks. The baristas at Starbucks were young and smiling. They greeted each customer warmly and asked them how they were doing. At the independent café there was one older Chinese man who struggled with English behind the counter. He looked a little lost, like he would rather be out of sight not talking to customers about the muffins.

In retail the vibe is so critical. It's what you feel before you even enter the store. It is the great Starbucks advantage over its competitors. It's why customers come back day after day for the positive experience.

I think we underestimate the power of the vibe in industrial businesses. Every company sells something. If the energy is stale and negative, it affects the employees and turns away applicants. Even if the money is good, people don't want to stay at a negative place, and customers eventually feel it too.

I think that over time we get comfortable with our setting and don't even notice the negative vibes because they are what we are used to. Businesses need independent vibe

testers to tell the managers about their aura. And then they need to find the inner strength to rid the place of the infecting downers.

## What do you do when what you've

**been doing isn't working? That is what I've been confronting with my vision after six eye surgeries, which my surgeon terms a success, yet the quality of my vision continues to erode.**

**I recently tried new contact lenses and then tinted graduated glasses, but these approaches exacerbated my light sensitivity, glare, and double vision problems. I tried blocking the vision in my surgically-repaired right eye with a vision blocking contact, but that messed up my depth perception and put a huge burden on my "good eye" where I've already suffered a retinal tear.**

**Things finally got bad enough for me to push through my fear and inertia and try a more unconventional approach. An old friend from grade school, Lee Erman, who has gone from being a Ph.D. researcher in computer science to a massage therapist for hospice patients, recommended that I go to**



Art by "Starman"

Meir Schneider, who has a program called “Yoga for the Eyes.” I filed Schneider’s name away in my mental Rolodex, though I did purchase his video and managed to get through 15 minutes of it before giving up.

I find instructional videos generally useless in changing my behavior. Schneider’s was interesting, but it had way more information than I could absorb.

My friend Lee lives in the Bay area, and in one of life’s coincidences, is a congregant at my daughter Sarah’s (she’s a rabbi) synagogue. Every time I visited her I would connect with him and we’d often end up talking about Meir Schneider’s program.

A few months ago I got a call from Lauren, a secretary in Schneider’s office, telling me about a six-day workshop he was doing at his office in San Francisco. The timing was perfect. My vision was bothering me, I was scheduled to be in California the week before, and I could stay with my daughter in Palo Alto. The stars aligned and I said “yes” on the call.

I took four days of the workshop and two one-on-one sessions with Meir. His approach, which emphasizes relaxation exercises, a daily eye regimen of staring into the distance and receiving sunshine and vision training is a radical paradigm shift from the ideas of surgeons and ophthalmologists. But I’ve learned as a tennis player and businessman that you need to shift if you are playing a losing game.

It is early to make a definitive call, but I am encouraged. I have made more progress in three weeks than I made in three years with my sight and comfort. I feel less fatigued and happier at the end of the day. It’s another reminder of the inspiring words of Winston Churchill to the British people at the worst point of World War II: Never, never, never give up.

## Reading Jerry Levine’s book review

about the phenomenal Pete Maravich made me think about Steve Nash, point guard of the Phoenix Suns, who is on his way to his third straight Most Valuable Player award in the NBA.

Nash is averaging over 19 points with 11 assists per game for the season. When he plays, the Suns are one of the two best teams in the league. When he sits with an injury they are weaker than .500. Without Steve Nash orchestrating, Amare Stoudemire, the Phoenix center, is a nice young big. With him, he’s an All-Star. Nash doesn’t just make his teammates a little better. He makes them a quantum leap better. Steve Nash on the floor is worth at least twenty

games to Phoenix over a season.

Nash is no Maravich. Maravich was a basketball genius, a totally unique player who dominated every team he was on. If Maravich was on the floor, all eyes were on him, because he was about dazzling. Maravich was an artist on the court making incredible passes and amazing shots. And his teams generally lost. When he was on the floor the game was all about him. It was fun for a spectator, but it was not fun for the guys playing with him. At times Pete would show up his own teammate by making an incredible “through the legs, behind the back” pass that surprised him. When Maravich was on a team, he was the team.

Steve Nash is in the Magic Johnson, Bob Cousy mold. They were magnificent players within their team. Their teams won championships and they were thrilled to be a part of it.

Steve Nash is by far the greatest basketball player ever to come out of Canada – by way of South Africa, where he was born. His father was a minor league soccer player and his mother was a world-class netball player. His folks moved to Vancouver, British Columbia when he was two because they did not want him to grow up under Apartheid in South Africa. He played a lot of soccer as a kid, which helped him develop his remarkable peripheral vision on the court.

He excelled in basketball as a kid and led his team to the B.C. high school championship. To be a wonderful basketball player in B.C. is like being the best hockey player in Mexico.

No college scouted him from the United States, but Dave Davey, the coach of Santa Clara University, heard about Nash from an acquaintance. They guy knew basketball, so Davey flew up to Vancouver on a hunch. He could not believe how good the kid was – who nobody had ever heard of, in the era when scouts were checking out 5th graders with tall genes. Nash took Davey’s offer of a scholarship – the only one he received in the U.S., and ultimately became a college star.

He was a middle of first round draft pick in the NBA, starred with Phoenix, then Dallas, and now with Phoenix again after Mark Cuban refused to outbid the Suns for his services in 2004.

Steve Nash is one of the few players in the NBA I would pay to see, and I love basketball. As great as he is, Nash is never showy or flamboyant. He is the consummate team player. In every successful business you have a person like Nash who finds his glory in the success of the group. A Pete Maravich was a joy to watch, a human highlight film. Steve Nash is even more fun to watch, and his teams win.



## The smallest part you make... can make a big difference in someone's life

A tiny surgical screw, exquisitely machined and finished, can help return someone to an active and productive life. Every part you manufacture serves some purpose; each contributes in some degree to the health, safety, security, or economic well being of others. With so much at stake, how can anyone settle for less than the most accurate and reliable machine tools? At Star, we don't think you should. We don't compromise so you don't have to. That's why we design and manufacture every piece of advanced CNC machining equipment, such as our new SR-20RIII, to be the most accurate, reliable and productive system available. We understand it's not just a part, it's a part of life.



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

**star**<sup>®</sup>  
PERFECTION IN MOTION

HEADQUARTERS 123 Powerhouse Road • P.O. Box 9 • Roslyn Heights, NY 11577 • Tel: 516 484-0500  
MIDWEST 375 Bennett Road • Elk Grove Village, IL 6007 • Tel: 847 437-8300  
WEST COAST 22609 La Palma Avenue • Suite 204 • Yorba Linda, CA 92887 • Tel: 714 694-1255  
TECH CENTER c/o Numberquip • 4810 Briar Road • Cleveland, OH 44135 • Tel: 216 433-9290  
TECH CENTER 5 Craftman Road • East Windsor, CT 06088 • Tel: 860 627-7833

PMTS Booth #471

BY JERRY LEVINE

## *Pistol Pete*

NBA Hall of Famer “Pistol Pete” Maravich brought urban playground basketball to the NBA. He wasn’t the first to dribble behind his back or make a through-the-legs pass, but his circus shots and hotdog passes were considered outrageous for his era. He was a quirky player, symbolic of the 1960s, with his black, floppy, low top Chuck Taylor sneakers; often unwashed, gray socks; and flowing, unruly mane. Some basketball purists felt he was more show than substance, but his crowd pleasing antics drew unparalleled attendance.

After staying silent for two decades, Maravich’s widow Jackie agreed to speak to authors Wayne Federman and Marshall Terrill. The result is the definitive biography *Maravich*. The authors interviewed more than 300 players, coaches, journalists, fans and detractors. The epigram to the first chapter is from sportswriter, Ralph Wiley, who described Maravich, saying, “He was unstoppable. It’s as if they melted down all 12 Harlem Globetrotters, and filled up this skinny 6’-6” white frame with everything they had.” Pat Riley said, “Pete was the original. He was the best ball handler I ever saw. Ever.”

But Maravich was a tortured genius. In today’s world he might be considered to be on the autism spectrum for his obsessive-compulsive behavior and savant basketball ability.

Maravich was literally born with a basketball in his crib. His father Press Maravich, a former professional basketball player himself, pushed his son extremely hard, turning basketball into an obsession for Pete. By the time Pete was eight, his practice routine lasted eight hours a day. He brought his basketball to the movies and annoyed the rest of the audience by dribbling it in the aisle throughout the show.

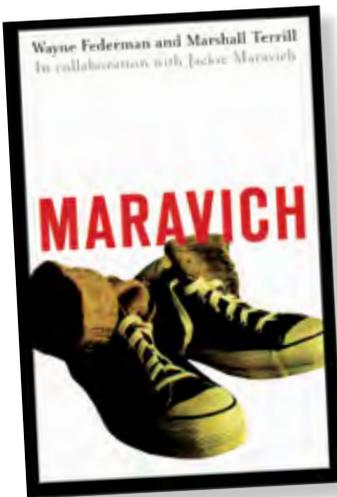
The obsessive-compulsive behavior remained throughout Maravich’s entire life. At home he was constantly washing,

vacuuming and meticulously raking leaves. He was obsessed with UFOs, practiced a vegetarian diet, Hinduism, and meditation, and believed in reincarnation. He was paranoid and depressed, and had thoughts of suicide, but eventually he found salvation as a born again Christian, only to die of heart failure at age 40.

Maravich set the career college scoring record of 44.2 points per game, which he accomplished before the introduction of the 3-point shot. Statisticians estimate that had the 3-point shot existed, he likely would have averaged 52 points per game. Yet even with his remarkable stats, Maravich’s greatest legacy was his gift for making thrilling offensive plays – wowing audiences with seemingly impossible shots, no-look passes and killer crossovers.

Some say that Maravich was more interested in being an artist on the court than winning because he never won a championship and rarely played on winning teams. Yet Maravich would often say, “I worry about winning. Statistics are for losers.”

Regardless of his true motivations on the court, Maravich’s unique flair, showmanship and passion for the game has directly or indirectly inspired the way millions of people play basketball today, even though probably 99 percent of them have never seen nor heard of “Pistol Pete.”



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





**ALL THIS STARTING  
AT ONLY  
\$99,990.00**

**WELL EQUIPPED 32mm (1.25") FOR  
ONLY \$109,990.00  
WITH 11 Live Tools and 27 Total Tools**

### **TAKE THE GANESH CHALLENGE CYCLONE-25/32 SAVINGS (THE NON GUIDE BUSHING SWISS)**

#### **4 WAYS TO INSTANTLY SAVE YOU MONEY**

(If you are doing non guide bushing work on CNC machines with guide bushings)

1. How many centerless ground bars per month?  
The Cyclone does not require the use of centerless ground barstock!
2. How much remnant material is wasted on each bar?  
The Cyclone remnant is just 3" long, not 9-12" like guide bushing machines!
3. No. of guide bushings used each month?  
The Cyclone does not use guide bushings!
4. Specialized Swiss tooling costs vs. standard off the shelf tooling cost savings  
The Cyclone uses standard 1/2" or 5/8" turning tools and ID tooling up to 1/2"



**DOING SMALL PARTS ON  
LARGE CNC TURNING CENTERS?  
SAVE VALUABLE SPACE,  
ELECTRICITY, AND MONEY**

### **INTRODUCING CNC MINITURN**

**5" Hydraulic Chuck  
8 Station Turret  
32mm (1.25" Bar Capacity)**

**STARTING AT ONLY \$37,995.00**

**Optional Live Tools, Parts Catcher Available**

**VISIT US AT PMTS SHOW  
Booth # 563**

## Heads-Up

New Rotary Broach heads, available from Genevieve Swiss Industries, Inc., feature no center indicating for CNC Swiss-type machines and gang style lathes. The compact size of the 2160 Rotary Broach heads fits into the tightest tooling areas without losing adjacent ID stations. The head diameter of 1.1" and length of 2.42" permits use in space limited sub-spindle applications. The extended shank allows for easy modification to suit specific machine and application requirements.

The Model 2160 is ideal for many medical and dental implant manufacturing (bone screws) applications as well as aerospace rated fasteners that utilize hex shapes to drive them. The 2160 is stocked in shank sizes of 16, 20, 22 and 25mm as well as 5/8", 3/4" and 1" diameters.

For more information, please contact Genevieve Swiss at 413-562-4800, or visit the company website at [www.rotarybroaching.net/nonadjust.htm](http://www.rotarybroaching.net/nonadjust.htm).



## Insertion Order

Sandvik Coromant is broadening its variety of milling inserts with CB7025, a strong grade optimized for interrupted cuts in case hardened steel. The key to CB7025's performance lies in the fine grain CBN, which controls wear and mechanically interlocks insert corners. Sandvik Coromant's CB7025 is available in a wide range of positive inserts and comes in two patented, radius wiper geometries. The grade's -WH geometry provides high surface quality with reduced cutting forces, while its -WG geometry offers the best preparation for finishing cuts while running at high feed rates.

For more information, please contact Sandvik Coromant Company at 201-794-5223, or visit the company website at [www.coromant.sandvik.com/us](http://www.coromant.sandvik.com/us).



fresh stuff



## Beam Me Up

Pinpoint Laser Systems has introduced new 2 dimensional Microgage for precision measuring, machine alignment, calibration and more.

This product combines a compact laser transmitter with a receiver and digital display. This new Microgage will operate over a distance of 100 feet with a bright red beam. Several simple accessories allow for alignment of straightness, runout, parallelism, squareness, roll & web alignment, shaft & bore alignment, flatness measuring and much more. All components are machined of solid aluminum with a hard anodized coating. A serial and USB interface connects to a laptop or PC and links to spreadsheets.

For additional information, please contact Pinpoint Laser Systems at 800-757-5383 or email [clord@pinlaser.com](mailto:clord@pinlaser.com).



## Stop It

Preferred Technologies Inc., of Stanford, Ky. has designed and patented a stop to fit into a standard CNC lathe turret or bushing. The stop will absorb all turret impact created by the pressure of the bar feeder advancing the stock. Internal adjustment allows the stop to perform over a wide range of bar sizes. When properly adjusted this stop will accurately locate the stock and prevent damage to the lathe turret and the bar feeder.

For more information, please contact Preferred Technologies, Inc. at 606-365-9430 or email [preftech@bellsouth.net](mailto:preftech@bellsouth.net).

fresh stuff

fresh stuff



## OmniTurn - Engineered to Order

.00005" resolution, .0001" accuracy  
*Made in America - Quick deliveries*

Don't settle for an import's "1 size fits all" stock machine. Compete with a machine fine tuned to your specific needs

OmniTurn offers over 50 interchangeable options.

If we don't have what you need we will build it quickly here in America.

Vertical cut off  
 Through spindle coolant  
 Spindle brake

Parts conveyors  
 Chip conveyors  
 Drill load sensor

1 or 3 phase operation  
 Automation  
 Live tooling

Direct PLC interface  
 High flow coolant  
 Parts catchers

Tool checkers  
 Short cycle drives  
 Low pressure collet closer

Tailstock  
 Network interface  
 Air Blasts



**C axis \$39,970**



*Time Studies - Tooling Layouts - Methodizing - Test Cutting  
 Training - Service - Support - Spare Parts - Tooling*

**(631) 694-9400    www.omni-turn.com    sales@omni-turn.com**

## Along Came a Spider

The new SDP Spider Mill (above) from Sumitomo is designed for high productivity face milling of gray and ductile cast irons. The SDP is a 90 degree double negative milling cutter with positive cutting insert geometry. Each insert consists of eight cutting edges. A unique positive chipbreaker insert provides less cutting force, more productivity and a longer tool life.

The SDP is available with an ACK100 CVD coated grade for high-speed milling applications and a ACK200 CVD coated grade for general purpose milling. Both grades are available for use in 3", 4", 5" and 6" cutter bodies.

For more information, contact Sumitomo Electric Carbide Inc. at 800-880-0619 or visit the Sumitomo website at [www.sumicarbide.com](http://www.sumicarbide.com)





fresh stuff

## Wex Appeal

Sumitomo's new WEX indexable insert endmills and shoulder milling cutters (below) are designed for the smooth cutting of a variety of materials. The wave-shaped cutting edges of the WEX generate lower cutting forces, even during deep slotting or milling using low rigidity machines. Consisting of heat- and wear-resistant Nano technology coated grades, WEX cutter bodies feature a highly durable surface treatment and an improved method of insert clamping into the pocket. CVD and PVD insert grades are available to offer extended tool life in steel and cast iron applications. The WEX comes in Super ZX coated ACP100, ACP200, ACP300 for steels and ACK100, ACK200 and ACK300 for cast irons.

For more information, contact Sumitomo Electric Carbide, Inc., 800-880-0619 or visit the Sumitomo website at [www.sumicarbide.com](http://www.sumicarbide.com).



**Advancing Your Productivity**

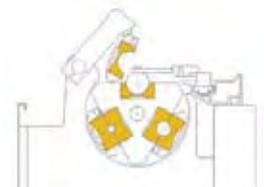


**The Trilogy is the ideal manual loading bar feeder for single spindle sliding headstock lathes with 12' bars from 3mm to 32mm in diameter.**

**Ideal for exotic materials and complex machining processes with relatively long cycle times where mar-free bar support and high machining speeds are the primary concern.**

The clean top loading feature takes up less floor space.

**Great for machining medical devices.**



**BUCCI**  
INDUSTRIES

9332 Forsyth Park Drive  
Charlotte, NC 28273  
888-55-IEMCA  
[www.bucci-industries.com](http://www.bucci-industries.com)  
[www.info@bucci-industries.us](mailto:www.info@bucci-industries.us)

A unique 3 guide channel indexing system permits fast bar diameter changeover through pre-selected ranges.



# fresh stuff

## Four Casting

Kitako has introduced the HS4200i four-spindle CNC lathe with ultra high-speed automated gantry loader. Available from SB Machine Tools, the Kitako HS4200i CNC Lathe boasts x-axis gantry loading feed rates of 6,700 ipm, along with carrier indexing time of 1.5 seconds, 0.3 second turret indexing per station.

Operating much like a pallet changer on a machining center, parts are transitioned in and out of the machining zone in as little as 0.8 seconds each. The HS4200i's four spindles are mounted in a horizontal, square pattern in a large carrier drum. The drum's positioning accuracy is ensured by a large diameter, precision-toothed, curvic coupling. Spindles are generally partnered as pairs so as the carrier is indexed 180 degrees; two spindles rotate to the machining area as two spindles move out for loading and unloading. The two spindles in the machining zone, along with the respective slides and turrets, work simultaneously as well as independently.

For more information, contact SB Machine Tools at 847-882-9600 or visit the company website at [www.sbmachinetools.com](http://www.sbmachinetools.com).



## LOCKING ADJUSTING NUT AND WRENCH (LOW COST SERVO REPLACEMENT)

### High Speed & Hand Clutch Locking Adjusting Nut

- Eliminates Low Speed Indexing – Most significant factor contributing to LOST PRODUCTION
- Designed to insure that management can guarantee the machine is operating at the Optimum Index Time (rates?) (75 Cycle – .4 second, 60 Cycle – .5 second, 45 Cycle – .7 second)  
Any combination of [Cycle Index Times with Cycle Select Drive Package](#) (CSDP-SA)
- The Adjusting Nut is heat treated and tamper proof. The unique locking design will allow for easy adjustment and provides a tamper proof positive locking force on both the hand and high-speed clutch.
- Patent Pending



# NP®

101 Rockwell Road, Newington, CT 06111

Toll Free: (800) 423-0970

Phone: (860) 666-9685

Email: [nowak@nowakproducts.com](mailto:nowak@nowakproducts.com)

# NOWAK

PRODUCTS, INC.

# fresh stuff



## High Speed Drive

IBAG North America has introduced the new 25mm HSC (High Speed Cutting) motor spindles designed for use with Swiss-type automatic lathes. These spindles fit in the linear toolholders and operate at speeds up to 60,000 rpm (optional to: 80,000 rpm) for machining applications involving micro milling and drilling tools as well as engraving and fine milling. IBAG offers a ready-to-install kit that includes the supply unit, all electrical and pneumatic lines and the the new 25mm HSC spindle to permit precision radial drilling, milling and tapping, expanding overall turning center capability.

For more information, please contact IBAG North America at 203-407-0397 or visit the company website at [www.ibagnorthamerica.com](http://www.ibagnorthamerica.com).

## NEW CNC EZ Rollers™

### ATI Landis Threading

- Create stronger threads faster and with better finishes
- Roll threads from #0-80 to 5/8"
- Metric forms available
- Compact designs, for use on CNC turning centers and Swiss autos
- Simple to set-up and operate
- Minimal startup cost
- Chipless operation
- Ideal for large and small production runs

Create threads with 20% or more strength and finishes of 32 $\mu$  in. or better with new CNC EZ Rollers™ from ATI Landis Threading. Roll threads 3-times faster than cutting on materials with hardness to 24 Rockwell C.



Call today for more information or visit our website at [www.atilandisthreading.com](http://www.atilandisthreading.com)

 **ATI Landis Threading**  
Allegheny Technologies  
Threadmaking  
answers:

360 South Church St. • Waynesboro, PA 17268-2659  
Toll-Free: 800.358.3500 • Toll-Free Fax: 888.718.2922  
In Canada: 888.828.6340 • Fax: 717.762.7126

# fresh stuff



## Robo-Crop

A new configuration of the Fanuc RoboDrill, the RoboDrill T-21EL DDR 700 V size vertical machining center from Methods Machine Tools is available with a choice of 10,000 or 24,000 rpm spindles and employs a direct-drive indexing system to achieve positioning and cutting speeds in the 4th axis. The 4th axis indexer has a built-in synchronous servomotor with an  $\alpha$ iCZ sensor. Its gear-free, zero-backlash linear motors are capable of unclamping, rotating 180°, and reclamping in approximately 0.4 seconds at a table-rotation speed of 150 rpm. Indexing precision is  $\pm 0.0055$  degrees ( $\pm 20$  seconds). The 140-mm unit has a maximum torque of 192 ft-lbs and a maximum loading capacity of 220 pounds. A large 40-mm through-hole allows for pneumatic or hydraulic fixture actuation. The 3-taper RoboDrill offers feedrates to 2362 ipm, rapid traverses to 2125 ipm, accelerations to 1.5 G or more, and 0.9-second tool changes (tool-to-tool.)

For more information please contact Methods Machine Tools, Inc. at 978-443-5388, visit Methods Machine Tools at PMTS in booth #762 or visit the company website at [www.methodsmachine.com](http://www.methodsmachine.com).

## Count Fuji

Fuji's new FS4-3500 compact automated turning center with 4 position turret is changing parts with a loading/unloading time of less than 5 seconds. This machine allows loading and unloading of the workpiece during spindle rotation. The FS4-3500 incorporates a 30 degree bed design. The saddle and cross slides are coated with TURCITE type material to reduce stick slip.

The FS4-3500 is especially suitable for bearing applications, as well as transmission parts requiring short cycle times. The FS4-Series can be applied to most applications that require both OD and ID turning. The machine can be connected with a part flip station for complete OP-10 / OP-20 turning. Maximum part diameter is 6.0".

For more information, please contact FUJI Machine America at 847-436-2744 or visit the company website at [www.fujimachine.com](http://www.fujimachine.com).



# WORLD-CLASS PERFORMANCE



\$71,900

# AFFORDABLY PRICED

- Features:**
- 10,000 RPM Spindle (Oil Cooled)
  - 25HP (MTDR) 30 minute
  - 20 HP (Continuous)
  - X Axis 40"
  - Y Axis 20.5"
  - Z Axis 20"
  - CAT-40 Tooling
  - 24 Tool double arm tool changer
  - 1.9 Second tool to tool
  - 1417 IPM rapid rate X & Y axis
  - 1102 IPM rapid rate Z axis
  - Chip auger with bucket
  - Fanuc Oi-MC Control
  - 8.4" Color LCD
  - MPG Manual pulse generator
  - Manual guide Oi
  - 2 Year control warranty
  - 13,860 lbs Machine weight

Contact us at 888-424-6224 or [info@gbicincinnati.com](mailto:info@gbicincinnati.com)



Rex Magagnotti  
Sales

Lloyd Graff  
Owner

Jim Graff  
Owner

# Meet the Graff-Pinkert family

We provide the machines to make your precision parts.

**Graff-Pinkert & Co., Inc.**

4235 West 166th Street, Oak Forest, Illinois 60452 • 708-535-2200 • [www.graff-pinkert.com](http://www.graff-pinkert.com)



Martin Whitfield  
Wickman Service Engineer

Cathy Heller  
Wickman and Index  
Parts Manager

Manny Buenrostro  
Wickman Tooling and  
Attachment Specialist.

Greg Buenrostro  
Wickman Service Technician

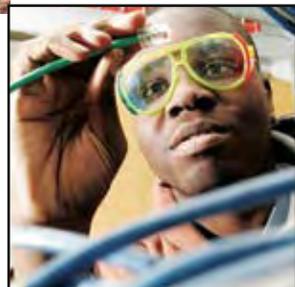
Since 1941 your company's success has been our business.

With our worldwide contacts and over 60 years of machinery experience, we can find, set up and help you maintain the machine you need.



# The **Minuteman** Revolution

Photos: Rick Friedman Photography BY ROBERT STRAUSS



how-to high



Carl Segerstrom was wielding a mighty vacuum hose, cleaning up shards of shaved metal all around the lathe he had just used to make a model project for his machinery class. While Carl had become pretty proficient at shaping his model, it was clear that vacuuming was not previously on his list of skills.

“Carl, this is part of the whole thing. Here, here, here, here,” said his teacher, pointing to places all around the lathe where those shards dropped. “You don’t run a successful shop if it is all a mess.”

Carl is one of the 703 students at Minuteman School of Applied Arts & Sciences, only a few hundred yards from where the Shot Heard Round the World – the first spark from a gun that started the American Revolution – took place. Minuteman, the regional technical high school, too, is a leader in a revolution, this one being how to make technical secondary education relevant to today’s business world. And while Minuteman does not necessarily teach cleaning up lathes, its curriculum does cover everything from academics to technology, working with both hands and minds. And, yes, to know that vacuuming can be a customer-incentive activity is integral to preparing hands-on type folks for the workplace of the 21st Century.

“You think about what technical high schools meant 30 years ago and the general thought is that they were a dumping ground for all the school district’s problems,” said Thomas F. Markham III, Minuteman’s assistant superintendent-director, the head man of the school while a search is on for a new superintendent. “This is Minuteman. We operate on a different standard.”

### Educational Philosophy

Minuteman offers 22 different technical concentrations, from the traditional, like automotive, health care, and carpentry, to the modern, like biotechnology, environmental technology and telecommunications. There is no stinting on academics either, since the Common-

wealth of Massachusetts requires high school graduates everywhere to take four years of math, science, English, and social studies, as well as develop proficiencies in physical education and foreign language.

The philosophy at Minuteman, though, is that there are academic learners, and then there are hands-on learners, and that too often, the hands-on types are looked upon as less valuable or slower, when they are merely looking at things through a different set of eyes or, more accurately, accessing information from a different cortex.

“In a vocational school, about 85 percent of students are right-brained, and, thus, are more hands-on,” said Sebastian Paquette, an English teacher at Minuteman for more than 20 years, and also the high school’s Learning-Styles Specialist, the fellow who makes sure teachers and students learn each other’s ways of gaining and imparting knowledge. “A right-brained kid would sit through a 48-minute lecture and just not retain enough. He needs to do projects, to see what things are, to touch them, to maybe take in a little bit at a time. He is equally as smart, but he has to learn differently, but at an academic high school, he often gets lost.”

### The Guru and the Vision

The guru for Paquette and Markham and virtually everyone who has ever come through Minuteman was Dr. Ronald Fitzgerald, who set up Minuteman in the 1970s and retired in 2004.

“He was a visionary in using scientific and brain-specialization techniques and methods to education,” said Markham. “His mission was to connect the eyes and

ears to the brain and hands, as opposed to just sitting in a classroom and listening to a teacher talk. That is fine for, say, 40 percent of kids, but up to 60 percent are best served by applying, rather than reading, a lesson.”

This may sound esoteric, but in practice the theory has worked for Minuteman. The sophistication of its offerings, counseling and individual attention to students is more reminiscent of an elite private school than a public technical high school.

In fact, Minuteman is a sending high school from 16 towns just west of Boston, perhaps the most academically oriented city in the country, which makes the school’s technical innovativeness all the more special. One of those towns, Weston, has the highest median family income in the state – more than \$153,000 a year – and five of the other 15 – Concord, Sudbury, Wayland, Winchester, Lincoln – are in the top 12 in the state. Also feeding Minuteman is Arlington, a large working-class town near the city, and some rural areas to the west.

“It is a diverse area, but primarily a wealthy one, which has its own set of challenges for schools like ours,” said Markham.

Fortunately, Minuteman also has partisans like Kemon Taschioglou, one of Minuteman’s 16 Access Committee members comprised of one from each town. The son of Turkish immigrants, Taschioglou worked his way through the Massachusetts Institute of Technology and Harvard Business School and then did well enough in the tech business to retire early and devote his time to education.

“I live in Lincoln, one of the wealthiest towns in the country, but I saw this technical high school and wondered what I could do to help it succeed,” he said. “Sure, we all want to see our kids go to Ivy League schools, but we should also want them to know how to do things with their hands. There should be no dichotomy in those who run a good plumbing business or who know biotech research skills or who become lawyers. We all benefit from a society that enhances everyone’s best skills. Technical high schools of the best sort, like Minuteman, complement the academic track and are the ones that are going to keep all businesses in this country viable.”

## Business Boost

Merrissa Shock wheels around on her teller’s stool and smiles at the next customer in line at the convenient Cambridge Savings Bank branch. It is her week for the

noon shift and she doesn’t mind eschewing lunch for that time.

The difference is that Merrissa is a sophomore in high school, a bit younger than the usual Cambridge Savings Bank teller. The convenient branch is inside Minuteman School of Applied Arts & Sciences, in what Minuteman folks call “The Mall,” which also has a bakery, a crafts shop, a beauty salon, a flower shop and The Fife and Drum, a small restaurant – all run by Minuteman students and their supervisors.

“It is a good experience, since there are real customers who come here,” said Merrissa, who lives in Arlington, the town that provides about a quarter of the Minuteman students. “I find out how to put it all together, how to see what a future job would be like. And it’s fun, not just some regular class.”

“The best technical high schools are the ones that are going to keep all businesses in this country viable.”

Besides the stores on The Mall, Minuteman students have other retail outlets. There is a child-care center for kids from two to five years old, an auto body shop, an auto mechanic shop, a printing business, welding services, a catering operation, and even an HVAC shop, all staffed by Minuteman students.

“People set up appointments and come in to get their brakes done or some body work or whatever,” said assistant superintendent Markham. “We get senior citizen buses in to get hair done or go to the bakery or the restaurant.

“That is why we teach calculus and business and English composition,” he said. “These students are learning how to run businesses, do business plans, write letters they would need to do to run, or even work in, businesses.”

## Cooperative Effort

As with many technical high schools, Minuteman has co-operative work-study programs with area employers, but it is only a small part of the curriculum.

“It is only during senior year and only for some

students,” said Paquette. “Basically, we like to have our students get the academics they need in high school, and we have a lot of shops and practical things here. It is important to keep good relations with the business community so they learn about the real working environment, though. So for those who really want it, we have the work-study program.”

Three years ago, four Minuteman students worked on the 25th anniversary building project for the PBS show, “This Old House,” for instance. Though generally, the students find that staying on campus is the most valuable experience.



### The Minuteman Effect

Zack Simmons is on his way to Minuteman. He was a good student in middle school in Bolton, but said, “I really hadn’t found my way.” Many students in Bolton, where the average family income is more than \$108,000, go to the public high school there intending on going to Ivy League or Ivy-like colleges. Simmons decided on Minuteman as an alternative.

“I’ve gotten a whole different experience here. I guarantee I couldn’t have learned about robotics otherwise,” said Simmons, who has won district championships in Skills USA competitions, similar to science fairs and spelling bees, but for hands-on students. Those elite colleges are now recruiting him, among them Rensselaer Polytechnic Institute, one of the top engineering schools in the country. Simmons intends to become a mechanical engineer or industrial designer. “I know, hands-on, how this kind of business works. Who knows whether I could have learned that in a regular academic setting?”

Certainly even the most sophisticated academic high school would not have a whole floor designated for robotics and large machinery. They would probably not have a faculty member with the title “Department Chair: Robotics Technology/Pre-Engineering” as does George Taliadouros.

“Machining may be a dying art, so much of it is going to China,” said Taliadouros, walking among CNC machines, various robotic machines, and even simple lathes. “But everyone here is expected to learn how to use the machines, if only to see how their business might work if they run one. The sophisticated machines work on the principles of the simple ones.”



He shows off small bolts and screws made by the students, but is often more enthusiastic about their academic prowess.

“We teach them principles of engineering, statistical analyses, the material sciences of aluminum, brass and steel,” he said. “But it is not, ‘Here is a book. Read it.’ These are different kinds of learners. It is a whole different philosophy.”

### Hands-On Emphasis

Paquette, the learning styles coordinator, said that teaching at Minuteman is no easy task. Teachers have to buy into the left-brain/right-brain split idea and cater to students who learn at different rates and in different ways. For some, the traditional lecture-discussion-test route will work, for others, it will have to take creativity.

Paquette walks over to one of his many boards around the English computer lab showing some of those different ways of teaching. This one shows how to write an

eight-paragraph essay.

“You take an academic kid, a left-brain person, and he or she will do this sort of thing from first to eighth paragraph. They will be better or worse, but they will do the essay in the traditional way,” said Paquette. Then he shows off what looks like a snake with boxes and circles attached. “A right-brained student will have to see each paragraph separately, maybe do one to three today, then go back and do the next few a little later. He will have to be encouraged to connect them to the main idea.

“They will both come out in the same place, but the hands-on kid will have to have a hands-on solution,” said Paquette. “That’s how we do things at Minuteman, but it takes a lot of effort. I have teachers come through here from other schools and they get excited, but it takes an administration willing to take time with this and get everyone on board. It takes money and commitment. So it just won’t happen everywhere.”

## Technical Issues

Markham admits problems even in his Mecca of tech. There are still an overwhelming number of special education students at Minuteman – 51 percent of students compared to 16 percent in the average Massachusetts district. Minuteman still has to do a lot of marketing to middle-school parents and students to convince them a technical school can be as good as the average hometown one. Minuteman does not have “technical” in its official name, Minuteman School of Applied Arts & Sciences. Markham shows off a 10-minute DVD aimed at potential parents and students, an extensive website for the school, a glossy-backed promotional kit. That DVD has videos of automotive classes and the cheerleading squad, but it also has several shots and comments by Kelsey Byers, a recent Minuteman graduate who got perfect SAT scores, got into Harvard, and then rejected it and went on to MIT.

“The average parent of an eighth-grader is in his or her 40s or early 50s. That means they went to school in the 1970s and 1980s, and think of the reputation of technical high schools then. We’re preparing kids for real careers now and we have to be constantly in all kinds of markets,” he said.

The school has constant job fairs and speakers from companies in the community. The biotech people come to look for lab people at Minuteman and the high-tech corridor around Boston has a constant need for robotics

operators and engineers, computer techs, telecommunications experts of all sorts and electronics folks. The emphasis Minuteman puts on coordinating academics with practical technical education wears well in sophisticated Boston-area businesses.

## Success Story

Nearly 100 percent of Minuteman students pass the state exams for a Massachusetts high school diploma the first time they take them. Markham said that he doesn’t remember anyone not passing the exams on retesting.

Further, more than 70 percent of Minuteman graduates continue on to some type of college, which belies the stereotype of technical high schools being terminal.

“This is our real success, to show people that just because you want to work with your hands, you aren’t also working with your brain,” said Markham.

“Minuteman kids are learning to apply what they learn, which is part of being an experiential learner,” said Markham. “Industries today have a set of standards that isn’t as minimal as it used to be, whether you are a biotechnician or a carpenter or a school administrator. We’re not just teaching a McDonalds cashier here, and that is what is exciting.”

## Biological Marvel

Kelsey Byers appears prominently in the Minuteman promotional DVD. She graduated in the Biotechnology Academy concentration at the school in 2003 and got a perfect 1600 on her Scholastic Aptitude Test. She went to the Massachusetts Institute of Technology, where she will graduate in June with a bachelor’s in biology and a minor in music. She said her grounding at Minuteman was a big plus when in competition with the other students at one of the world’s great research universities.

“Doing research at Minuteman allowed me to get a job in high school working on the Human Genome Project, which gave me experience that was invaluable in conducting independent research here at MIT,” said Byers. “It also made it much easier to start research before my sophomore year. In general, students need to take the first biology lab class before professors are comfortable having them in a lab, but my research and lab experience from Minuteman meant that I was able to start research before taking that class.”



# TSUGAMI



*Defining Precision In North America Since 1978*

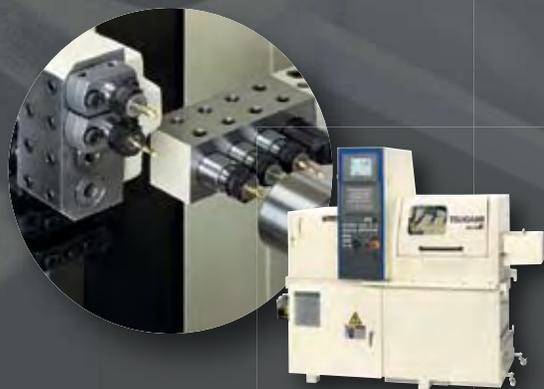
**SUPERIOR ACCURACY**

**EASY TO USE**

**BLINDING SPEED**

## Does your machine measure up?

Since 1937, Tsugami Corporation or PTW (Precision Tsugami Works) has been a synonym for speed, rigidity and accuracy. Originally a producer of metrology equipment, they developed high technology machine tools that became benchmarks for all the others to follow. Today, Tsugami Swiss Turns are a leader in sliding headstock automatics, with 7mm to 38mm capacity and tool changers. Tsugami machining centers are known for their ruggedness and reliability, turning out parts to print year after year. If you've looked somewhere else first and paid the price, then maybe it's time to call Tsugami. There is no substitute.



34 Bradley Park Road  
East Granby, CT 06026

**TSUGAMI**  
Rem Sales, LLC

860.653.0071  
[www.tsugamiusa.com](http://www.tsugamiusa.com)

# Selling the Family Business

## The Turmoil of Letting Go

**O**n March 21, 2004, we sold our family business. I was 58 years old. When I got the first check for several million dollars, I didn't know if I should jump for joy and drink champagne or bang my forehead and cry in my beer. I wanted to celebrate because my father, who had started the business in 1956, would have been so proud that his little company had grown so big. On the other hand, I had just sold the family jewel, so I wanted to cry. I'd made a lot of money, yet I felt as if I had done something wrong.

BY GARTH STEPHANSON



Stegg Limited of Belleville, Ontario, is a contract manufacturer of precision-machined components for the automotive, medical, electronics and munitions industries. It had been part of our family for 49 years. Between 1972 and 2004, it grew more than 100 times in sales and had consistently maintained its position in the top 10 percent of our industry in North America, reaching \$15 million in sales in 2001. We had experienced the enormous boom in the electronics industry in the late 1990s and shivered during the high-tech bubble burst of 2001, but we were always debt-free and profitable. The 60 core team members had been at the company for many years.

Three years ago my brother Garry and I, who were equal partners, were both getting tired. Garry was 65 and had been at the business for more than 40 years. I constantly – and aggressively – encouraged him to sell his shares to me and retire, but Garry refused; he was comfortable with his lifestyle and income stream. The issue set the tone for continuing sibling unrest. To achieve resolution, I could have used the shotgun clause in the buy-sell agreement, but I was not prepared to trade

my life savings or incur major long-term debt. For the next several years, we remained in a state of unresolved conflict. Although profit margins remained robust, sales were decreasing because of my lack of focus to promote new contracts. The company could not remain in that state, and I was frozen in indecision. There were also no prospects for family succession; my two university student daughters had not displayed any interest in entering the family business, and Garry was childless.

In 2002, our third largest customer was sold, and its 42-year-old CEO, Bob Stokes, accepted a golden parachute. He had an impressive academic background as an engineer and had rocketed to excellence in his previous manufacturing career. Bob was now anxious for a new adventure.

### Early Morning Walks

In March 2003, I invited him for a friendly early-morning walk. It turned out to be the first of many hour-long meetings that included exercise. Originally, I thought he would coach me on our long-term contracts with his previous employer, but he had a different agenda.

Bob used our meetings to learn about our company – and I learned he wanted to acquire it. He had experience; he had bought and sold several companies while serving as president at his previous employer. After several months of cultivating a thorough understanding of our successes and family dynamics, he began to inquire about our succession plans and suggested a sale.

My original reaction was that I was too young to sell. Our company was well established, tightly managed and profitable. We had an excellent team and a solid customer base. On the other hand, I was in denial about our unresolved family conflict and its destructive effects. Other challenges included the enormous pressure for price reductions from the North American automotive industry, the long-term effect of aggressive pricing from global suppliers including China, and our failure to continually upgrade equipment during the past several years. I knew that eventually we would sell and had been researching the issue over the past three years. For me, it was a question of timing.

### The Offer

Eventually, I disclosed the financials. Bob was pleasantly surprised and even more anxious to proceed. He presented a letter of intent, conditional on exclusivity as a prospective buyer. Though he hadn't considered taking on partners, he ultimately teamed up with a sales manager and a CPA who had worked for him at his previous employer. They were silent partners until the sale closed.

Bob's offer was reasonable, and we accepted it in October 2004. Then the real negotiations began. This deal would be a win/win, and I recognized such opportunities were rare. I had personal experience with four precision machining competitor companies that had gone bankrupt because they failed to identify the right time for sale.

The perfect choices to represent us as the sellers were an independent, sophisticated experienced business valuator, negotiator and CPA, and a meticulous, ethical and seasoned lawyer who had done dozens of these deals. Researching, identifying and retaining these two professionals proved to be extremely important. As sole practitioners, each grew to understand our file intimately, and, as the process moved closer to closing, they each devoted the required time, including evenings and weekends. In addition, our chief financial officer did a masterful job in responding quickly and accurately to their data requests. Together, our group formed an excellent team.

As time progressed, Bob incurred increasingly larger administrative fees from the financing group. If the deal didn't close, that money would be lost. In addition, the letter of intent stipulated a "break fee" of several hundred thousand dollars, applicable to the buyer or vendor, so by this time we were all truly committed. Garry and I were coached to distance ourselves from negotiations. It was one of the wisest moves we made. The advisor felt that the offer was excellent and advised us to accept it. We respected and trusted his opinion, and to this day, we have no regrets. It's like going for a heart bypass operation: When you are on the operating table, you don't get to tell the doctor how to handle the scalpel. The best approach is to do research on the surgeon before the operation.

**“When you are on the operating table, you don't get to tell the doctor how to handle the scalpel.”**

Shortly after finalizing the letter of intent, Garry and I met with our senior managers and informed them of our intentions and current status. They were absolutely stunned. Since my brother was seven years my senior, they had anticipated that eventually I would purchase his shares and he would retire. We requested their confidentiality and support in the transaction and, thankfully, received unanimous affirmation. During the following weeks of due diligence, daily activities continued as normal.

### Closing the Deal

On Friday, March 19, 2004, Bob, Garry and I, together with our wives, met at noon at Bob's lawyer's office in Toronto to sign the papers for the sale closing. With all the related documentation, final negotiating and corrections, we were there until midnight. The formal closing date was Sunday, March 21, 2004, and the funds were transferred in trust until the following business day Monday, March 22.

That Monday, Garry and I met with all members of the staff to announce that the company had been sold. We introduced the three new owners and assured

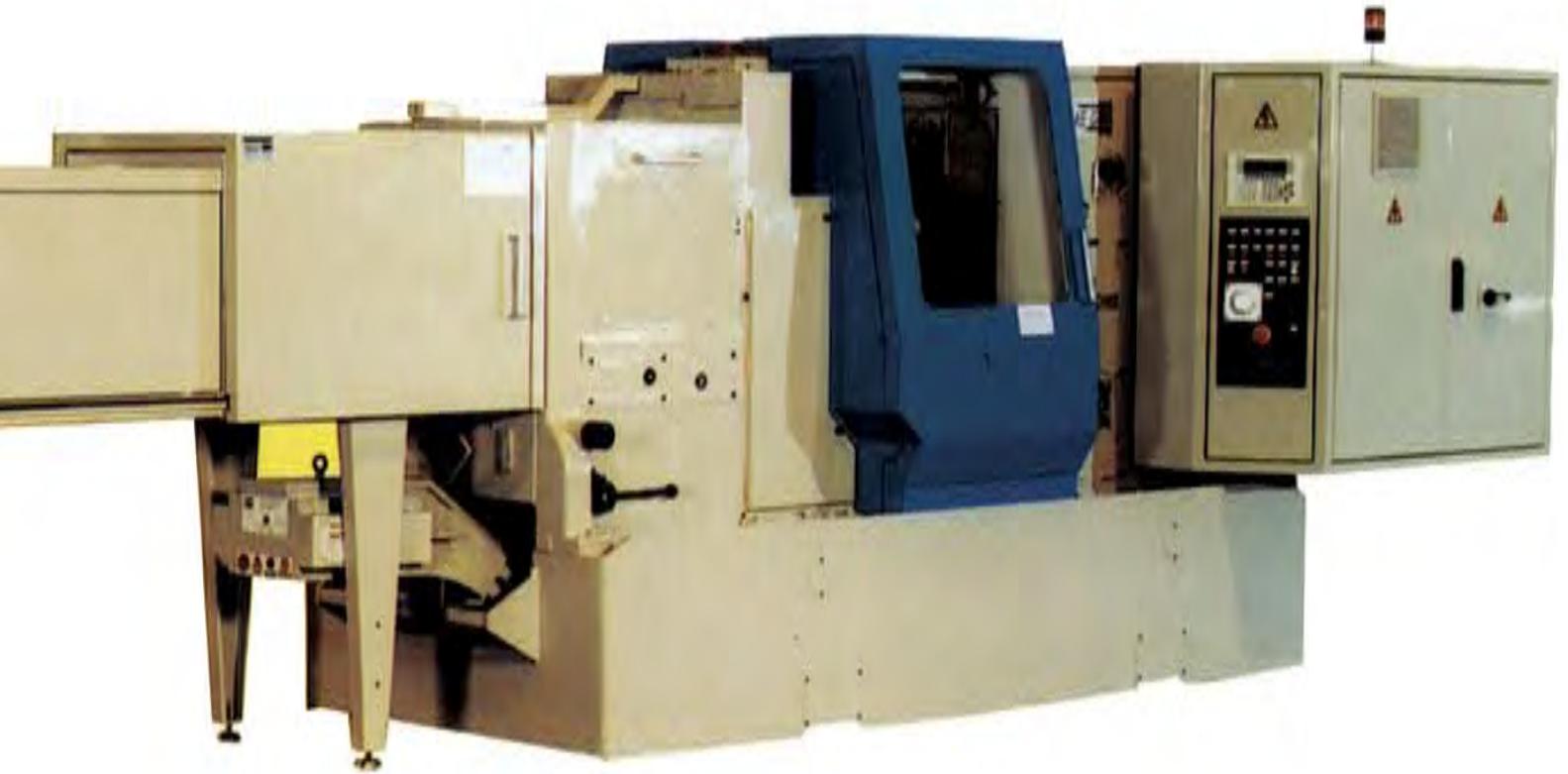
# The Easy To Set Up Wickman Just Got Easier!

## How?

With the addition of a computer-controlled variable feed/speed motor system combined with the quality of a Graff-Pinkert rebuild.

- No gear changes
- Significantly reduced set-up time
- Dial in the perfect RPM and feed adjustments for extended tool life

Your multi-spindle operators will love it!



Come visit us

Booth #372

at the Precision Machining Technology Show  
Columbus, Ohio April 24-26, 2007

**gpc**

And see for yourself why we believe Wickman is your best choice for your precision parts!

everyone that the transaction was friendly and we wholeheartedly supported the new shareholders. Bob's opening comments were enthusiastic and positive. He communicated a message of stability, expressing his group's intent to retain all existing staff and grow. During the hours that followed, many employees expressed surprise but gracious acceptance, agreeing to assist the new owners in days ahead. One of our long-tenured production supervisors stopped me in the plant and gave me a full-body hug.

"This must be incredibly difficult for you, Garth," she said. "It is," I replied, suppressing a tear as I thanked her.

Although I had been professionally coached, my emotional reaction was completely unpredictable. I really did have the wrong idea of what was important. I thought that the issues were obtaining the highest possible sale price, ensuring that funds would be paid after the closing and securing a long-term management contract. But the real question was "How would I feel after the sale?"

## The Aftermath

What a strange feeling for me to return to the office that Monday morning after the marathon Friday midnight closing, knowing that Bob was the new president, the controlling shareholder and the Grand Pooh-Bah! It was like having surgery to remove several internal organs. It didn't take long before he took charge of communications and quotations with our major customers – that had been my job!

Bob did not consult with me on his decisions or company operations. He sent a very strong message. Our adviser reminded me that it was normal for the seller of a business to remain less than six months and that I should not take it personally. He was right.

At first, the experience left me filled with tremendous emotional turmoil. On the one hand, I knew that this had been the right time to sell. We had a perfect buyer, who had the enthusiasm and drive to make the business succeed. He would provide continued employment for the loyal team members who had devoted their entire careers to this family organization. And the sale would guarantee financial freedom for our retirement. For almost 50 years, it had provided our family with the excitement, joy, stimulation and satisfaction of building the organization, but Garry and I did not have the vision, energy or desire to take this

great company to the next level.

Ownership could not and would not pass to our next generation. Fortunately, our respective families were supportive. They were relieved that the source of sibling disagreements was eliminated. In the end, we all admitted that the sale had been the right thing to do, and the timing was impeccable. On the other hand, we were giving up ownership and control of the legacy that Dad had started 49 years earlier, and I felt a profound sense of emptiness. For years, the business had consumed me, and now I had been put out to pasture.

Although my morning walks with Bob stopped, our connection remained congenial. Within 12 months, four of the oldest and most senior of the original team left the company or retired. Bob began to encircle himself with a new hand-picked group imported from his previous companies. The transition happened slowly, and the new team had the opportunity to assume control before the older senior management left. Although the company's sales dipped for several months following the transaction, they have rebounded and grown since then. Bob's CPA partner stayed with him for only seven months and then returned to Toronto. His sales manager partner is still with Stegg.

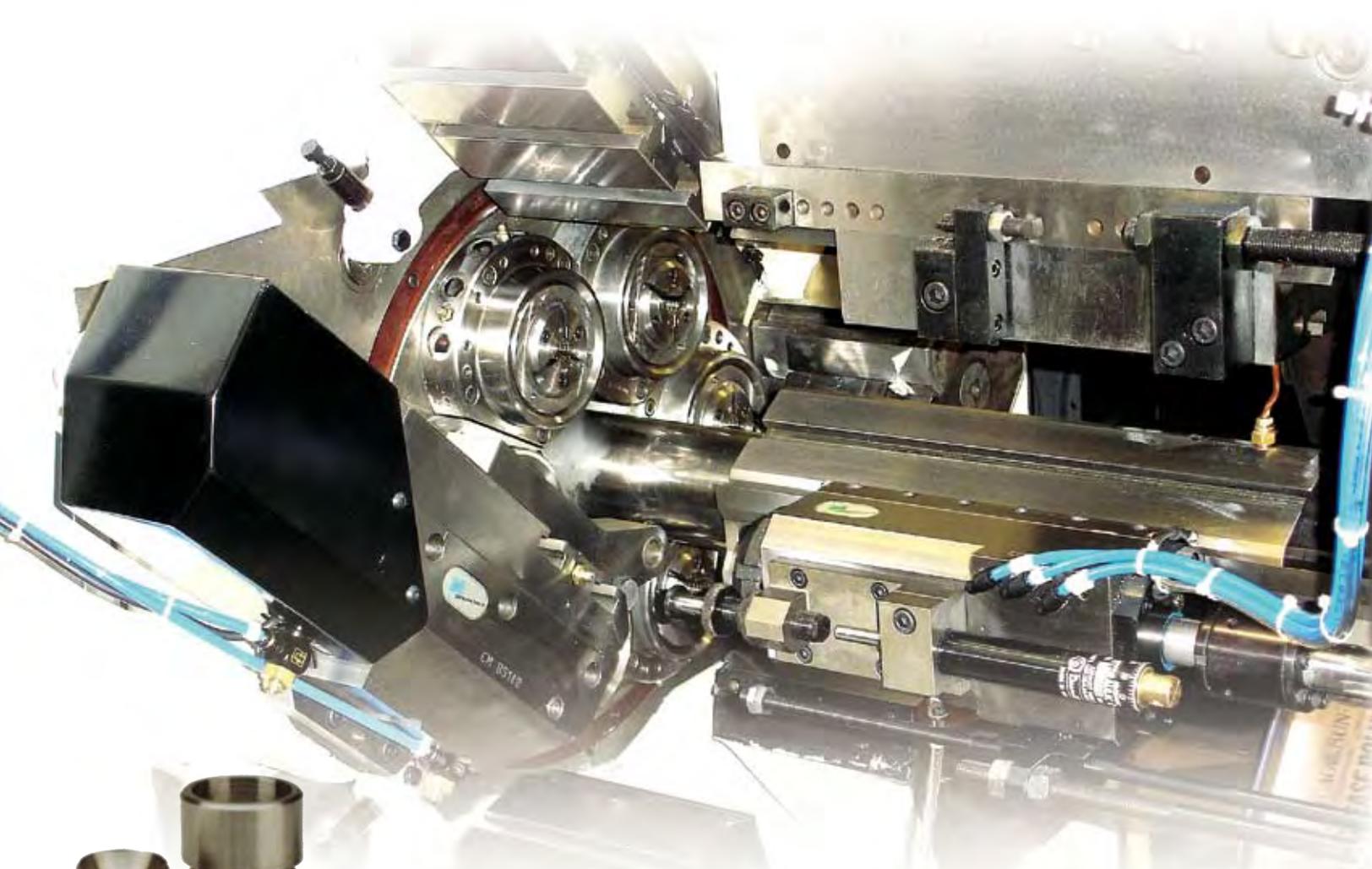
On Aug. 10, 2005, I had lunch with Bob and received the last payment for shares and the management termination contract. That was a very important day for me, and a pleasant, friendly experience.

As the months passed, I realized that the emotional trauma of the wind-down was far less than I had expected. I lost interest in production meetings, delivery schedules, budgeting, variance analysis and all the other drivers that once excited me. My separation from the company filtered in slowly. I don't miss the adrenalin of the business or the office. But one thing is for certain: The stakes don't get any higher. Owning the business was the thrill of a lifetime, and I wouldn't have missed it for the world. Two years ago, I would have emphatically denied my ability to let go. Today, on those rare occasions when I enjoy libations, they bubble in a shallow glass. Yes, it's champagne!

*Garth Stephanson is a former second-generation owner of Stegg Limited in Belleville, Ontario, Canada. John Parikhal, a New York-based writer, consultant and speaker, assisted in the preparation of this article.*



**With the C&M pickoff  
and backfinish combination,  
you can backdrill up to 1" in depth  
in free machining material.**



Graff-pinkert is now the exclusive agent for the advanced  
and robust C&M pickoff and backfinish attachment.

**See it at Booth # 372**

**at the Precision Machining Technology Show  
Columbus, Ohio April 24-26, 2007**

No more wimpy backfinish chamfers.

**gpc**



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

## If skilled technicians were offered double their current pay, would enough people choose those professions to satisfy U.S. industry?

*For the past few years, many companies have complained that they cannot hire enough skilled workers to satisfy their production needs.*

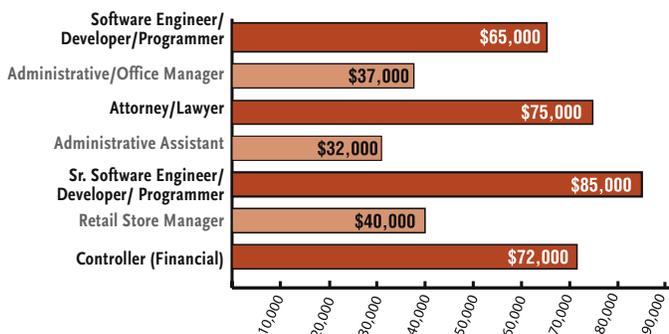
A significant increase in compensation would make a huge difference in recruiting new talent to the field. But there are two caveats. First, the increase would have to be substantial – enough to bring wages in line with white-collar technical jobs such as computer programmers. Second, in order to retain these new entrants to the field over time, manufacturers may have to change their HR practices. Pay can get people through the door, but keeping employees depends on their relationship with their boss, the nature of the work they are doing, opportunities to grow and develop, and what they think about their company.

Barry MacLean  
Senior Compensation Advisor  
PayScale Inc.

Many employers who are having difficulty finding adequately skilled workers are already increasing pay rates, but what is happening is they are simply hiring away workers from each other. The long-term issue is that the skilled labor pool in the U.S. is shrinking because of lower birth rates and an aging population.

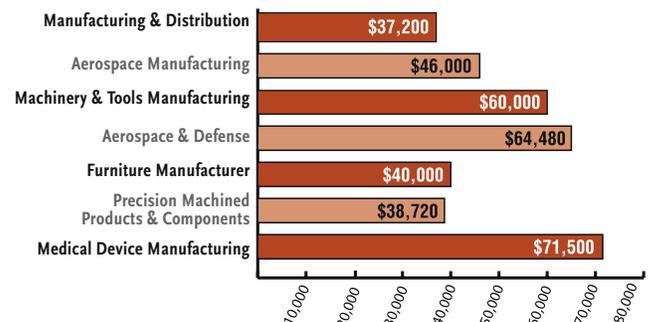
We must focus on re-skilling and retraining our workforce so we can bridge the gap between unfilled jobs and unemployed individuals. Government, employers and individuals all must play a part in confronting the talent crunch. Government needs to invest in education and vocational training and work to improve public-private initiatives. Employer involvement can include enhancing their links with schools, making

Median Salary by Non-Manufacturing Jobs in the U.S.A



Source: www.payscale.com

Median Salary by Industry: CNC Operator and Programmer in the U.S.A.



workplaces cleaner and more attractive, tapping into unemployed and underemployed sources, redesigning jobs and promoting inclusiveness. Individuals need to recognize the importance of keeping their skills up-to-date throughout their careers.

Melanie Holmes  
Manpower Inc.

We already pay high salaries – an average of \$66,000 a year. While jumbo salaries might entice some, our greatest barrier is the negative, outdated image of manufacturing. It is viewed by students, parents and educators as dark, dirty and in decline. The jobs today that are highly skilled in a technology driven environment are unknown to those entering the job market. That dull, dim perception cannot be overcome by just big salaries. Our job is to show them the reality, as we do in our “Dream it. Do It” campaign.

Phyllis Eisen  
National Association of Manufacturers

## the facts:

Based on data provided by 450+ manufacturers, non-exempt **hourly employees in manufacturing averaged salary increases of 3.4 percent in 2006 (compared to 3.7 percent across all industries)**. Salary increase plans for 2007 in **manufacturing are targeted at 3.5 percent**, whereas the average for **all other industries is 3.8 percent**. (Stats are for non-union members)

WorldatWork [www.worldatwork.org](http://www.worldatwork.org)

81 percent of respondents to the Institute/NAM 2005 Skills Gap survey said they could not find qualified workers to fill open positions.

National Association of Manufacturers

# FIND MACHINES AND MORE

**MACHINES**

**TOOLING**

**AUCTIONS**

**WANTEDS**

**COMPANIES**

**JOB BOADS**

**FORUMS**



## MACHINETOOLS.COM



The Global Metalworking Marketplace

[info@machinetools.com](mailto:info@machinetools.com)



one on one

**Mike Rowe** hosts the Discovery Channel's hit program *Dirty Jobs*. He's leaped into a multitude of blue-collar occupations including some off-the-beaten-path jobs: Shark Suit Tester, Copper Foundry worker, and Road Kill Removal Specialist. No matter how disgusting, dangerous or strenuous the job, Rowe continues to approach it with enthusiasm.

**NG:** What jobs did you aspire to do when you were a kid?

**MR:** I honestly had no aspirations, at least none that I can recall. I mainly remember feeling panicked by the idea of doing any one particular thing for the rest of my life.

**NG:** What is the "dirtiest" job you've ever had to do?

**MR:** Removing a broken lift pump from a wastewater treatment facility has to be near the top of the list. Someone must enter the shaft from the bottom, swim through tons of human waste, climb to the top of the pump, and tie off a cable. Unforgettably bad.

**NG:** What's the strangest job you've done – on or off the show?

**MR:** I worked the midnight shift at the QVC Cable Shopping Network for three years. I also sang in the opera for a few years. A great place to meet girls while dressed like a Viking.

**NG:** In what job have you felt most endangered for your life?

**MR:** Shark suit tester, lumberjack, coal miner, alligator farmer, golf ball recycler – in no particular order.

**NG:** What's the most physically difficult job you've had to do?

**MR:** In terms of physical abuse, it's hard to separate the agonies of railroad work from hot-tar roofing, or indoor deconstruction from blacksmithing. Anything that involves swinging a sledgehammer for 12 hours in a row is going to leave an impression.

**NG:** What is something that you would absolutely refuse to do?

**MR:** Direct.

**NG:** How do the people you are working with feel about their jobs?

**MR:** The people I meet, by and large, appear happier, more balanced, and better adjusted than most of my friends with white-collar jobs. They genuinely seem to love what they do. Most of them seem to be in on some sort of joke that your typical professional doesn't get.

**NG:** What's the most important thing you've learned from all of the jobs you've had?

**MR:** One of my favorite lessons is the importance of having visual cues in our daily work lives, and the forgotten benefits of working on a job that allows you the satisfaction of having actually done something. Bricklaying, road-kill removal, whatever. Seeing a finished product or the fruits of your labor is something a lot of the white-collar workforce no longer experiences, and it's important.

**NG:** If forced to choose one job from the show as your lifelong occupation, which would you choose?

**MR:** I think I'd like to run the machines at a scrap metal yard. The magnet, the claw, the shredder; they are all very satisfying. Farming taro in Hawaii was also gratifying. I wouldn't eat the poi, but farming the taro is good fun.

**NG:** How do you stay so upbeat and positive?

**MR:** I get to leave at the end of the day.

**NG:** If you could work alongside anybody living or dead for one day, who would that be?

**MR:** That's a tough one. I'd like to navigate a riverboat with Mark Twain, or maybe drive some spikes with John Henry. I'd like to see if he really died with a hammer in his hand. Mostly, I believe I'd like to split some logs with my grandfather.

# Graff-Pinkert & Co., Inc.

4235 West 166th Street, Oak Forest, IL 60452

www.graffpinkert.com



Lloyd Graff  
Owner

Jim Graff  
Owner

Rex Magagnotti  
Sales



## Wickman and Index Tooling Specialists

**Tooling:** Complete assortment of new and used spare parts and attachments.

**In stock:** Threading, pickoff, cross slides, etc.

phone 708-535-2200

fax 708-535-0103

*Shop Graff-Pinkert online  
for web exclusive listings and prices*



<http://stores.ebay.com/graff-pinkert-screw-machines>

# CURRENT INVENTORY

**Serviceman available with machine purchase. All machines can be equipped with threading, pickoff or thread chasing. As you want it.**

## WICKMAN

5/8" 6-spindle, thdg., pickoff, 1971-88 (8)  
1" 6-spindle, 1960-1992 (9)  
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, 1973-79 (3)  
3-1/4" 6-spindle, 1982  
5-5/8" 6-spindle, 1979  
6-5/8" 6-spindle, 1979

## ACMES

3/4" RA8, 1973  
1-1/4" RA6, 1975  
1-1/4" RB8, 1975  
1-5/8" RBN8, 1994-2000 (3)  
1-5/8" RB8, 1980, rebuilt 1996. pickoff  
2" RB6, 1979, Direct Drive Rebuild (2)  
2" RB6 collet chucker, 1980  
2-5/8" RB6-1977

## GILDEMEISTER & SCHÜTTE

SE25 Schütte 1970

## SWISS-CNC SLIDING HEADSTOCK

Citizen L20, Type VII, 1996-98 (2)  
Citizen L25, Type VII, 1998

## NEW BRITAIN

Model 52, 1-1/4" 6sp., 1979 (3) pickoff  
Model 62 2-1/4" 6sp., 1975  
Model 62 2-1/4" 1960, \$5750

## INDEX

MS 36E, 1993  
MS 25 6-spindle, 1990  
GB 30 1990 (2)  
GFG 450, 1987 (4)

## DAVENPORT

3/4" thdg., pickoff, 1985-1965 (10)  
3/4" chucker, 1985 (4) Tamer  
3/4" with Tamer & Logan clutches

## CNC MACHINES / CNC LATHE

Mazak VQC 15/40, 1987

## CLEARANCE

Davenport cross drill 3rd and 4th  
Hydromat Inverter for 25-12  
Hydromat flanges for HW25-12  
30-60 Hydromat units \$5500 each  
Davenport chucking package \$2500  
Alps bar loader for CNC Swiss \$3950  
Davenport spindle stopping clutches \$35 each

Ring-type chucking package for 1-1.4"  
RA6 \$2500  
Mectron laser measuring machine mfd. 2000  
Barrett 1100 chip spinner 1986

## HYDROMATS

HW25-12 1986 (3)  
HB45-12 1997-1995  
HB45-16 1996HS-16 2000

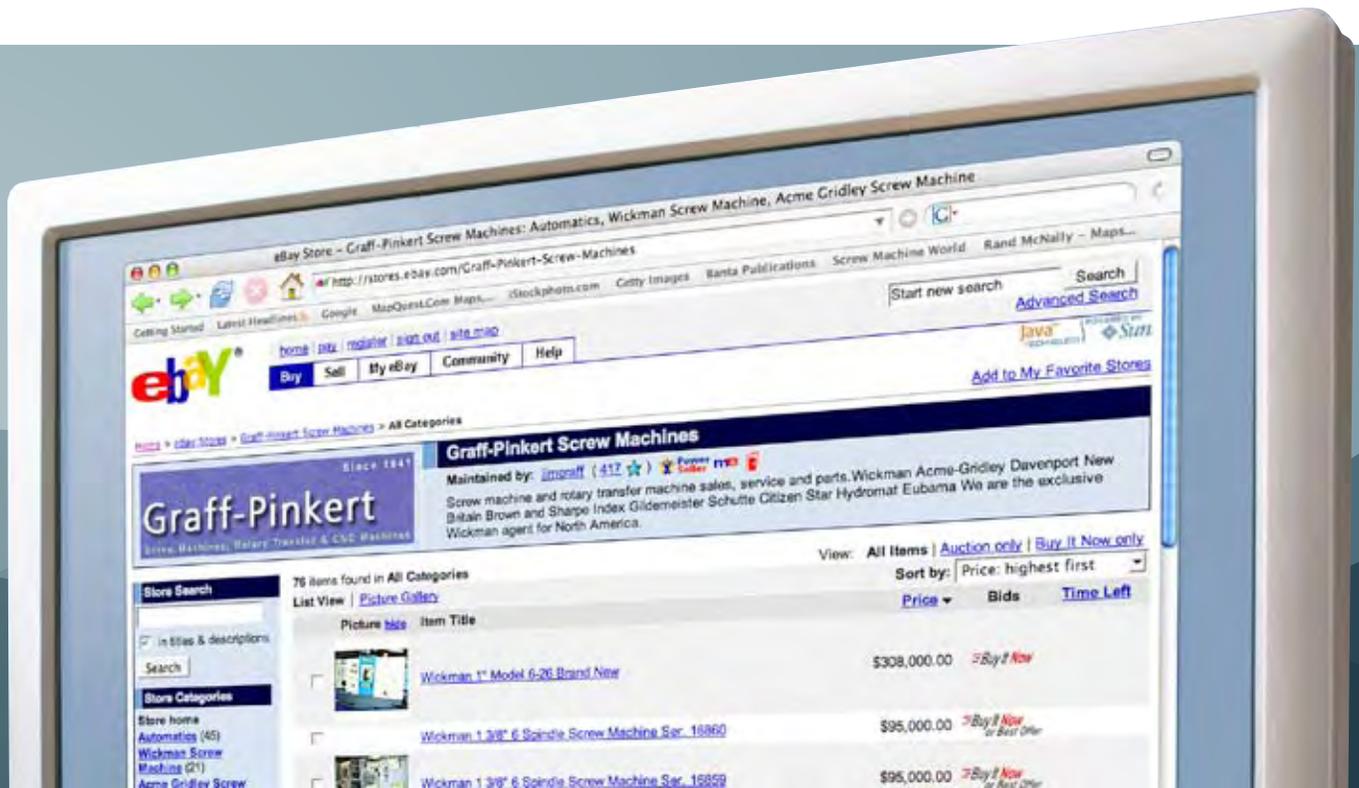
## MISCELLANEOUS

Cincinnati DG325-42 twin grip grinder  
EWAG RS-12 Optical profile grinder

**COME VISIT US AT PMTS BOOTH #372**

**ASK FOR OUR IN-HOUSE  
PARTS EXPERT**

Cathy Heller Wickman and Index Parts manager  
Phone 708.535.2200 Fax 708.535.0103



BY BARBARA DONOHUE



Putting the finishing touches on your parts

# Burrs and deburring

If you cut metal, you are going to have burrs. They will vary from little feathery bits that look as if they would blow away in a light breeze to sturdy protrusions of the part material.

All photos above courtesy of Weiler Corporation.

The traditional methods of burr removal – by hand, tumbling, vibratory deburring and abrasive blasting – take care of these unwelcome bits of metal most of the time. However, for problem burrs, you may want to investigate other technologies.

According to LaRoux Gillespie, a consultant in Kansas City, Mo., and the author of the *Deburring & Edge Finishing Handbook*, there are at least 119 different deburring processes, 80 of which are in industrial use somewhere in the world today.

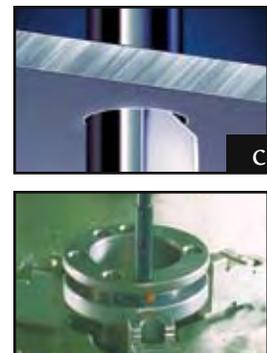
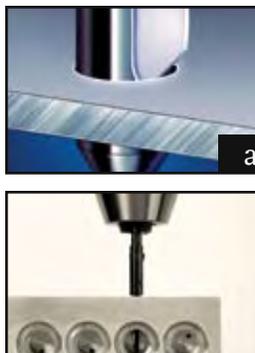
Here are some old and new techniques that you may find useful. Most companies that offer deburring products and services will be happy to work with you to develop deburring procedures tailored specifically to the burrs on your parts.



### Hole deburring

Several brands of hole-deburring tools are available. Most have a spring-loaded cutter that mounts in an arbor. The cutter has a taper at the bottom end which deburrs and can chamfer the front side of a hole as it enters. The center part of the cutter is smooth, with edge, so it passes through the hole without damaging the bore. As the tool backs out of the hole, the edged taper at the top of the cutter blade deburrs the back side of the hole.

Deburring tools from E-Z Burr Tool Company, Plymouth, Mich., feature replaceable cutters and can be customized to perform the specific deburring/chamfering tasks you need. Standard sizes run up to two inches, and larger custom tools are available. A drill can be incorporated into the design, as well as a separate cutter for chamfering or countersinking. E-Z Burr also offers a line of Micro deburring tools for holes as small as 1 mm in diameter.



PHOTOS ABOVE: a,b,c. Hole deburring tool deburrs front and back of the hole. d. Micro deburring tool from E-Z Burr Photo courtesy of E-Z Burr Tool Company.

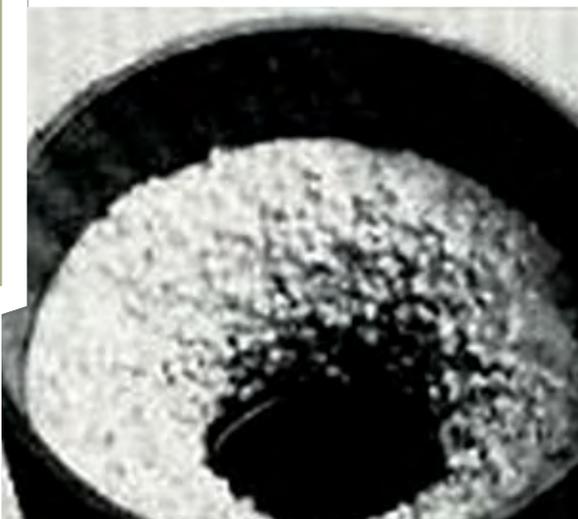
# how it works



Brush-deburring a crankshaft.  
Photo courtesy of Weiler Corporation.



Harper Mini centrifugal barrel finishing machine  
Photo courtesy of Chas. G. Allen Co, Inc



## Brush deburring

Specialized brushes can perform burr removal, especially on-machine, where the brush can be included as one of the tools in the tool changer. Weiler Corporation, Cresco, Pa., provides a wide range of engineered brush products, including nylon abrasive filament disc brushes, designed for deburring flat-surfaced parts with multiple surface holes, slots or cavities.

When using brushes, “If you’re looking at automating a deburring application, you typically have three options,” said John Sockman, director of engineered solutions at Weiler Corporation, Cresco Pa. If you want to use a robot for deburring (see “Robotic deburring,” below) you can either take the part to the brush or take the brush to the part. In a horizontal or vertical machining center with live tooling, he said, you can put the brush into the tool changer. Or you can have dedicated equipment to deburr a part or family of parts.

“In a machine deburring solution,” said Sockman, you have to ask, “what is the geometry of the part, what is the burr geometry and what is the work material? Can we get filaments on the burr? If the part masks the burr we can’t do it.”

Sockman pointed out a particular advantage of deburring parts at the machine: “Single-point accountability for the quality of the part. It is relatively common in high volume [production] for the operator to be responsible for the parts, not the burrs, neglecting that there’s a deburring issue downstream [caused by] running too fast or waiting too long between tool changes.”

## High force centrifugal deburring (Harperizing)

Harper centrifugal barrel high-energy finishing machines, also known as “Harperizers,” have been around for about 50 years, said David Krupp, president, Chas. G. Allen Co, Inc., Barre, Mass., manufacturer of the machine.

In a centrifugal barrel machine, several cylindrical containers are mounted to a rotating base, which may be vertical or horizontal, depending on the machine. The base rotates in one direction and the barrels rotate in the opposite direction. This generates high forces so that the centrifugal barrel machine can deburr and finish parts in a fraction of the time required in a conventional vibratory or barrel finishing machine. In spite of the high forces produced, the action of the finishing media on the parts is gentle enough for critical small medical parts like “little stents and tiny biopsy pincers,” said Krupp, as well as larger parts.

## Centrifugal disc finishers

Another type of high-force finishing system is the centrifugal disc finisher. This type of unit provides a container in which you place your parts and finishing media. A disc at the bottom of the chamber rotates rapidly, causing the contents to rotate and move outward toward the wall of the container, up and back down again.

Left photo: Centrifugal disc finisher makes the parts and media circulate to the sides of the container, up, down and back. Photo courtesy of Nova Finishing, Inc.



# HEXAGON AND SQUARE HOLE CUTTING TOOLS

## SLATER TOOLS ROTARY BROACH HOLDERS

### ADJUSTMENT FREE



BROACH DIA.	BROACHING CAPACITY
.315"	.050" thru .375"

.315" .050" thru .375"

• No Center Indicating

• Use Standard Broaches

\* Multiple Shank Sizes Available

### INTERNAL ADJUSTABLE



BROACH DIA.	BROACHING CAPACITY
.315"	.050" thru .375"
.500"	.050" thru .625"
.750"	.625" thru 1.125"

.315" .050" thru .375"

.500" .050" thru .625"

.750" .625" thru 1.125"

\* Multiple Shank Sizes Available

### EXTERNAL ADJUSTABLE



BROACH DIA.	BROACHING CAPACITY
0.94"	.125" thru .375"
1.57"	.250" thru 1.00"
2.31"	.875" thru 1.50"

0.94" .125" thru .375"

1.57" .250" thru 1.00"

2.31" .875" thru 1.50"

\* Multiple Shank Sizes Available

### DEEP BROACH ATTACHMENT



FOR MULTI-SINGLE MACHINES

- ACME
- NEW BRITIAN
- CONE
- WARNER & SWASEY
- WICKMAN

## SLATER TOOLS ROTARY BROACHES

### HEXAGON BROACHES



BROACH DIA.	ACROSS FLAT DIMENSION
.315"	0.064" thru 0.410"
.500"	0.095" thru 0.757"
.750"	0.253" thru 1.020"

.315" 0.064" thru 0.410"

.500" 0.095" thru 0.757"

.750" 0.253" thru 1.020"

\* Metric Sizes Also Available From Stock

### SQUARE BROACHES



BROACH DIA.	ACROSS FLAT DIMENSION
.315"	0.064" thru 0.410"
.500"	0.095" thru 0.757"
.750"	0.253" thru 1.020"

.315" 0.064" thru 0.410"

.500" 0.095" thru 0.757"

.750" 0.253" thru 1.020"

\* Metric Sizes Also Available From Stock

### 6-LOBE BROACHES



BROACH DIA.	HEXALOBULAR FORM
.315"	T-7 thru T-25
.500"	T-15 thru T-40
.750"	T-25 thru T-40

.315" T-7 thru T-25

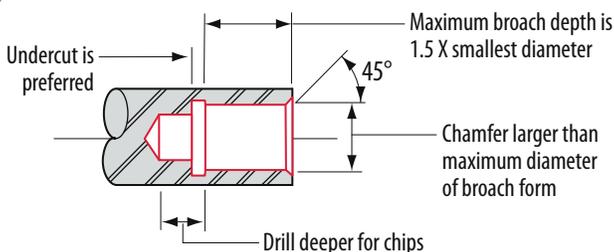
.500" T-15 thru T-40

.750" T-25 thru T-40

### SPECIAL BROACHES



- INTERNAL AND EXTERNAL
- STANDARD M2 STEEL OR PM-4 OR T15 MATERIAL
- AN, CN AND TN COATINGS
- VENT HOLES
- SPUN GROUND DIAMETERS
- SPECIAL LENGTH & TOLERANCE



## SLATER TOOLS BROACHING TIPS

ORDER FACTORY DIRECT

**586-465-5000**

24 Hour Fax: 586-465-3030

**www.SlaterTools.com**

44725 TRINITY • CLINTON TOWNSHIP, MI 48038



Magnetic deburring in action. Photo courtesy of Earth-Chain USA



Parts before and after deburring by electrochemical machining.

Photo courtesy of Extrude Hone Corporation.



The CoolPulse electrochemical machining system.

Photo courtesy of Extrude Hone Corporation.

The forces produced are nearly as high as those in a centrifugal barrel finisher, said Tony Kenton, president of Nova Finishing, Inc., Huntingdon Valley, Pa., manufacturer of small centrifugal disc finishing units. Finishing time in a centrifugal disc finisher is a small fraction of that required by more common deburring methods. The Nova website gives an example: "For every 100 minutes a standard barrel tumbler operates at 1g ( gravity/ pressure ) a vibratory system will produce the same results in 10 minutes at 8g's and a centrifugal disc equals 1 minute at 24g's." Here, "g" indicates the acceleration due to gravity, used as a measurement of relative force produced.

Centrifugal disc finishing lends itself to many small-part applications in industries such as automotive and medical devices. Extremely small parts may not work, however, as there is a gap between the disc and the container. "On a disc finisher the determining factor is the gap between the disk and the wall. The standard dimension is 0.020", and you can get [units with] 0.005," Kenton said.

### Magnetic deburring

Magnetic deburring offers another alternative to traditional methods. "What we do is we excite tiny magnetic pins in a magnetic field," said Greg Webb, vice president of sales, Earth-Chain USA, Indianapolis, Ind., manufacturer of the sPINner deburring system. "This creates a deburring action on small precision parts," including their inside diameters, without damaging the surfaces or removing stock.

You place your parts and the stainless steel pin media in the deburring container, add the deburring solution and turn the unit on. As the magnets beneath the container rotate, the pins

circulate and jump about, striking the parts inside and out. The deburring solution is a soap and water mixture, which helps to suspend the pins during the process. Parts made of magnetic materials may need to be fixtured within the deburring chamber. Average cycle times are 10 to 20 minutes, Webb said.

Applications include "anything coming off a Swiss-type [screw machine]," Webb said, typically parts 2" in size or smaller. The sPINner units are available in different sizes, including one that is mounted on casters and can be brought to the machine as needed.

### Electrochemical machining

Electrochemical processes may be thought of as "reverse plating," where material is removed from the part rather than added to it, explained Jim Koroskenyi, electrochemical machining business unit manager at Extrude Hone Corporation, Irwin, Pa.

Electrochemical machining (ECM, not to be confused with EDM – electrical discharge machining, a spark erosion process) may be used for deburring. Koroskenyi described the process: You use a tool the shape of the edge you are deburring. The tool and the part are immersed in an electrolyte solution with a gap of 20 to 30 thousandths between the tool and the edge being deburred. The tool is made negative, the part positive, and current flows. The part material nearest the electrode dissociates, causing the metal to migrate out into the electrolyte. There it forms an insoluble compound, which precipitates out of the solution. The tool is not affected by the ECM process.

ECM deburring usually takes only 10 to 30 seconds, maybe a little longer if the edge needs to be broken. Multiple parts can be fixtured in an ECM system to be deburred at the same time. Deburring is done quickly and inexpensively at room temperature and does not consume the tool. However, for conventional ECM, deburring, you do need that customized tool for each part.

In addition to the large ECM systems used in a shop's deburring area, small ECM systems can be used on the bench next to a screw machine for on-the-spot deburring.

### A new type of ECM

Extrude Hone has developed a new ECM technology, CoolPulse, which overcomes some of the limitations of conventional ECM. In the CoolPulse system, parts are suspended between two metal plates immersed in a proprietary electrolyte – you don't need a part-specific tool. The electrolyte solution is optimized for edge effects, so that the CoolPulse process "finds" the sharp edges that need to be deburred or radiused. It can also reach inside holes up to about half the hole diameter.

# how it works

The process takes perhaps one to three minutes, said Koroskenyi. While it deburrs, the CoolPulse also polishes the part's surfaces. This new technology is ideal for small precision medical-industry parts, Koroskenyi said, such as the miniature tools used in laparoscopic surgery.

## Abrasive flow machining

Probably the most ingenious deburring technology available today is abrasive flow machining (AFM) from Extrude Hone. Invented in the 1960s for the aircraft industry, AFM uses abrasive grains embedded in a polymer material. The process can finish complex surfaces, removing burrs and leaving a very smooth surface, even in areas that are completely inaccessible to conventional deburring and finishing methods. "We take a puttylike substance filled with abrasive [and flow it] back and forth," said Tom Kohut, vice president, abrasive flow machining division at Extrude Hone. "It acts like a grinding wheel," but conforms to any surface shape. "You can achieve surface-finish improvements of 90 percent," said Kohut. "Starting with 100 [Ra] you can easily take it down to 10. . . We have generated surface finishes under one micro-inch."

AFM finds application in a very wide range of industries, anywhere superior surface finish is required, and especially among parts that are difficult or impossible to deburr and finish by more conventional means. In the diesel industry, for example, Kohut said, AFM is used to treat fuel system components. It's not uncommon for pressures within a diesel engine fuel system to exceed 30,000 psi, he said, and any sharp edges or burrs on holes act as stress raisers and can cause failure.

Ultra-pure applications in the pharmaceutical and semiconductor industries make use of AFM to finish tubing, valves and other components to smooth surfaces so they can't harbor even microscopic amounts of contaminants. AFM also imparts ultra-pure surfaces to implantable medical devices such as heart valves and knee joints. In a lot of these applications, even a 10 Ra finish from machining leaves too much opportunity for contaminants to stay on the surface. Other applications include automotive manifolds and heads, and rotating parts in aerospace applications. "In one particular [helicopter turbine] engine," Kohut said, "we do 21 different components." The smallest holes processed with AFM were 40 microns in diameter, he said, and the largest part was "in excess of 10 feet in diameter, with 320,000 holes under 1/4" [diameter]."

Extrude Hone sells AFM and other deburring/finishing equipment and also provides contract finishing services at plants located in different areas of the country.

## Thermal energy method

The thermal energy method (TEM) is another problem-solving technology available from Extrude Hone. TEM uses the energy from ignition of a fuel/oxygen mixture to "burn" off burrs anywhere on the part, even in small, deep holes or passages. It also removes stray chips from the part.

The parts are placed in the TEM chamber, which is then tightly sealed. The chamber is filled with a mixture of oxygen and a fuel gas such as natural gas or hydrogen. "The gas goes into all the nooks and crannies of the part. When it is ignited, burrs or chips are oxidized," said Koroskenyi. The part absorbs any remaining heat energy. The amount of fuel/oxygen is determined based on the burrs to be removed, and other factors, to provide enough heat to take off the burrs, but not to harm the part.

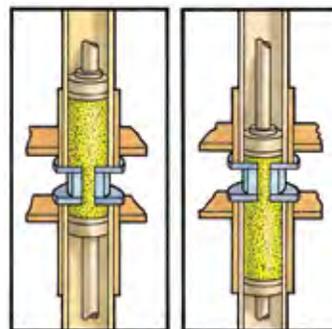
"Many parts can be put into the chamber at the same time. Very often, small screw machine parts can be bulk-deburred in a basket," said Koroskenyi. Fixturing is required only for parts that need protection from nicks or scratches, such as those with an O.D. thread, or finish-turned surfaces.

Where does the burr material go? "You've converted the burr into an oxide, which resettles on the part," explained Koroskenyi. The oxide is removed from the part during subsequent heat treating or plating, or you can use a simple cleaning process. "Basically [TEM] converts the burr into something you can wash off the part," said Koroskenyi.

## Robotic Deburring

For some applications, using a robot to deburr a part may make sense for complex edges that retain burrs, parts that will be in high volume production for a long time, and where close tolerances are not required.

You have to profile every edge that has a burr if you are using a robot, author Gillespie pointed out. He recommended using flexible tooling, and providing for the tool to back off when it encounters a surface it doesn't expect.



This diagram shows how the abrasive media is pushed back and forth through a part in bi-directional abrasive flow machining.

Photo courtesy of Extrude Hone Corporation.

# how it works



Small parts deburred with thermal energy method.

Photo courtesy of Extrude Hone Corporation.



Flexdebur Model RC-660, a robotic deburring tool from ATI Industrial Automation.

Photo courtesy of ATI Industrial Automation

## Turbo-abrasive machining

Turbo-abrasive machining (TAM), an innovation of Turbo-Finish Corporation, Barre, Mass., gives a fine, isotropic surface finish to complex rotating parts for the aerospace and other industries. Available through Chas. G. Allen Co, Inc., Barre, Mass., TAM machines rotate a part in an aerated bed of abrasive. For most parts, all surfaces can be deburred and finished without special fixturing or hand work. Non-rotating parts can also be finished with TAM if they can be appropriately fixtured in the machine.

## Controlling your burrs

Burrs that are small and consistent in size help all these deburring technologies to do their job. Even better are the burrs that aren't there and don't need to be removed. Consider the following concepts and suggestions from Gillespie and his *Deburring & Edge Finishing Handbook*.

- While there may sometimes be a burr created where the tool enters a part, there will always be a burr where the tool exits the part, if the part is made of a ductile material.
- Sharp tools and appropriate feed rates can help minimize the size of burrs.
- Plan the machining steps to minimize burrs. Burrs generated in one cut may be removed by a subsequent operation.
- You may be able to machine a part to create the burr where it is easy to remove, or does not interfere with fit or function (in which case it may not need to be removed).
- When turning, you can use a form tool to minimize the number of burrs.

The size, condition and location of burrs affect whether your chosen deburring technique will work. "You have to understand that if the burr is larger, it is harder to remove," said Sockman. To help quantify the range of burrs, his company, Weiler Corporation, has a classification system for burrs, rating them from one to five, depending on how large the burr is and how it is attached.

Since burrs are a fact of life in the machining business, Gillespie recommended having a written standard, so you and your customers all know what you mean by "burr free." This needs to include the inspection procedure, so you're not saying

"burr free to the naked eye," while your customer is thinking, "burr-free at 40x magnification."

Though many deburring technologies may seem to work wonders, they won't perfectly remove just any burr. New users of an automatic or mass deburring system are often disappointed, until they learn what it can and cannot do, said Koroskenyi of Extrude Hone, echoing the comments of others in the deburring business.

"When the machine arrives, they think they can cut faster and use the tools longer, because they have a 'magic deburring machine,'" said Koroskenyi. "This is one of the most important things for a customer to realize: there's no magic out there." Deburring systems "have limitations. For customers to automate deburring, it means they have to pay attention to the machining side, make the burrs as small as possible, and uniform – stay in a relatively narrow range."

No, they're not magic. But when integrated as part of your machining process, these deburring technologies can help improve product quality, customer satisfaction and your bottom line.

for more information:

### Web sites:

Abrasive flow machining, thermal energy method, machining: [www.extrudehone.com](http://www.extrudehone.com)

Brush deburring: [www.weilerabrasives.com](http://www.weilerabrasives.com)

Centrifugal disk deburring: [www.novafinishing.com](http://www.novafinishing.com)

Gillespie, LaRoux, consultant, author:  
[www.DeburringTechnology.com](http://www.DeburringTechnology.com)

Harperizer systems: [www.harperizer.net](http://www.harperizer.net)

Hole deburring: [www.ezburrr.com](http://www.ezburrr.com)

Magnetic deburring and video:  
[www.earth-chainusa.com/deburring-equipment.htm](http://www.earth-chainusa.com/deburring-equipment.htm),  
[www.earth-chainusa.com/spinner-movie.htm](http://www.earth-chainusa.com/spinner-movie.htm)

Turbo-Finish systems: [www.turbofinish.com](http://www.turbofinish.com)

### Books by LaRoux Gillespie:

*Deburring & Edge Finishing Handbook*, 1999, Society of Manufacturing Engineers.

*Mass Finishing Handbook*, 2006, Industrial Press

SINCE 1977

# Why do We always choose The HANWHA XD series?

The most powerful tooling capabilities available combining 30 tools (14 driven tools) in the same field. The compact design minimizes floor space. Solid one piece cast base ... **XD series**



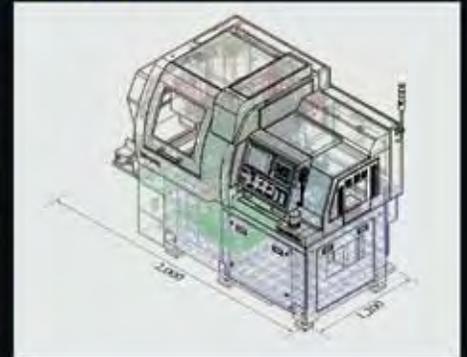
| Complex working improvement



| Modular type Cross driven tools



| Compact design



**HANWHA MACHINERY  
AMERICA**

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

Tel. 262-373-1600 Fax. 262-373-1111

N57 W13666 Reichert Ave., Menomonee Falls, WI 53051



Precision Is Parody.

## Precision Is Paramount.

### At our level, every part counts.

That's why Miyano designs and builds the highest quality turning centers in the industry. Miyano is the world leader in the manufacturing of precision machining equipment. Our machines are put to the test in the most critical operations, and pass with flying colors time and time again.

Our BNJ Series is designed to provide high-performance, cost-effective simultaneous front and back machining. These advanced Turning Centers feature a stationary left spindle and traversing right spindle, which can take advantage of either the twelve-tool main turret (with six live tools) or the six-tool back-working turret. The available Y-axis opens the doors for a new set of machining capabilities, such as plane milling, pocket milling, and large diameter helical threading.

For more information, please call us, visit our website, or stop by our booth (#614) at PMTS.



**Miyano**  
The World Leader in Precision

630-766-4141  
[www.miyano-usa.com](http://www.miyano-usa.com)

# product focus

THE FOLLOWING EXHIBITORS HAVE  
SHOWCASED THEIR WARES:

If you haven't visited the Precision Machining Technology Show, slated for April 24-26th, 2007 in Columbus, Ohio, we highly recommend spending a day or two. There you'll find over 200 manufacturers, suppliers and end users of products and services dedicated entirely to the production of precision machined products and turned parts. A multitude of technical sessions will compliment the show's focus. Hope to see you there! **The following exhibiting companies supplied information for their PMTS booth:**

## AMT MACHINE SYSTEMS – Booth #852

AMT Machine Systems of Columbus, Ohio will introduce the UltraTurn™ II. Available with or without a transmission, the UltraTurn™ II is a blend of Brown & Sharpe speed and the versatility of a CNC Screw Machine. Advantages of the UltraTurn II include elimination of hundreds of mechanical parts, and setups easily under an hour. Users could reasonably expect to double their production over cam-operated Brown & Sharpe machines.

The UltraTurn™ II includes an OSHA -compliant enclosure, servo-controlled bi-directional turret indexing, full HMI (human-machine interface) that runs the VisualCNC™ software at the machine, and machine rebuilding to customer-requested specs. The ServoCam® turret-slide system and UltraTurn™ for CNC Brown & Sharpe will also be cutting parts in the booth. Bring any part or print for a free cycle-time analysis.

Phone: 614-451-3366 [www.amtmachinesystems.com](http://www.amtmachinesystems.com)

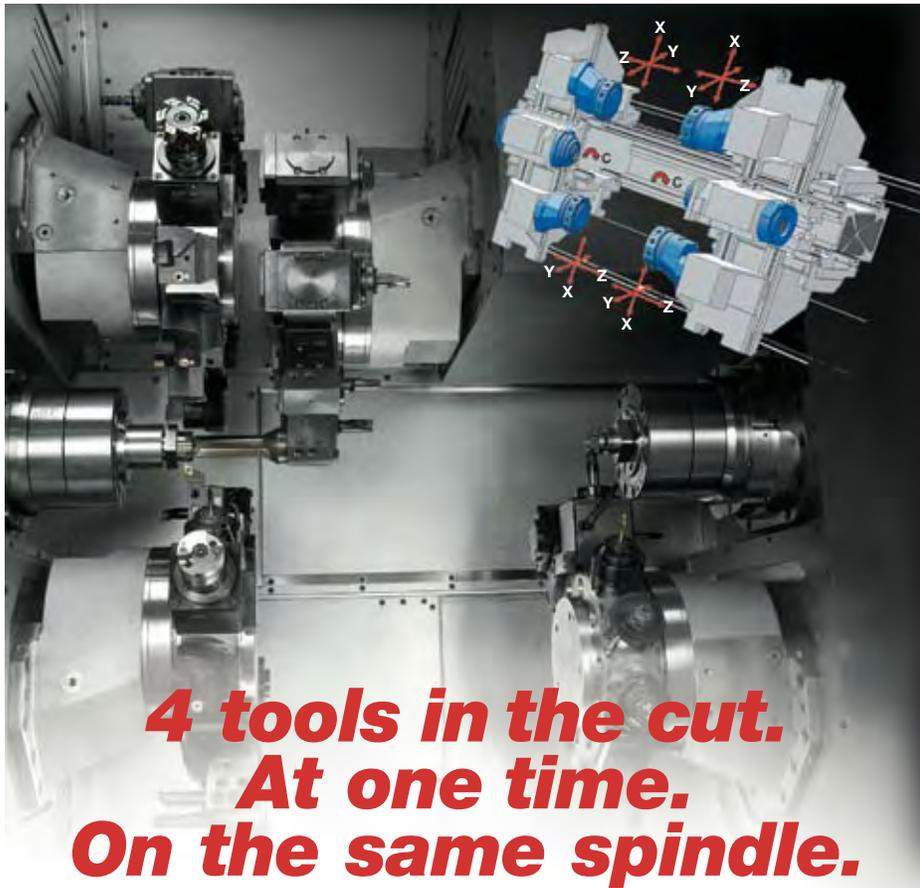


## CHAMPION SCREW MACHINE – Booth #705

Champion Screw Machine Engineering, Inc. of Wixom, Michigan, unveiled the 'Lectronic' electric stock depletion unit at PMTS 2005. Attendees at this year's show will see a new and improved version. The engineering staff at Champion has made some design changes resulting in an increase of component life and a more robust stock stop. The length of engagement of the head and plunger has been increased. All new units have a longer one piece proximity switch cable, which eliminates connection problems. A revolving head for larger machines comes standard.

Phone: 800-727-CSME [www.championscrew.com](http://www.championscrew.com)

# product focus



**4 tools in the cut.  
At one time.  
On the same spindle.**



The new modular design TNX65/42 turn-mills sport twin opposing spindles and 2, 3, or 4 identical, fully independent tool turrets with optional Y axes. With double tool holders, they can deliver up to 80 tools. And they can put any tool - fixed or driven - to either spindle any time for very quick bar, chuck or shaft processing. Up to three

tools on a spindle at a time. That's unequalled process flexibility. And productivity that puts you in the global fast lane.

*The TRAUB TNX 65/42 CNC Turn-Mill Centers. Profit centers for complex part machining.*



**Make Better Parts – Faster!**

INDEX Corporation ■ 14700 North Pointe Blvd ■ Noblesville, IN 46060 ■ 317.770.6300  
Visit : [www.index-usa.com](http://www.index-usa.com) Email: [sales@index-usa.com](mailto:sales@index-usa.com)



## DAVENPORT – Booth #700

Davenport HP owners can now meet digital-age, global production level demands with the speed, accuracy and flexibility of their Davenport HP machines. The Davenport HP machine works for long or short runs of small parts. A simple, PLC-based man-machine interface (MMI) means reduced set-up times and adjustments and allows for operators to concentrate more on producing parts rather than fine-tuning adjustments. Davenport also features a High Precision Head.

Phone: 800-344-5748 [www.davenportmachine.com](http://www.davenportmachine.com)



## GENESIS ON SITE – Booth #476

Genesis On-Site Recycling has found a way to break the cycle of rental and service parts washer systems. The ProClean PC is a parts cleaner which utilizes distillation to recycle your parts washer solvent for continuous use. The ProClean PC takes the dirty solvent from your parts cleaner and uses a patented, low temperature vacuum process to separate your solvent into two parts: oil and clean, water-like solvent. The pure solvent is returned to your parts washer and the oil can be combined with your used oil. Delivery and installation as well as technical support and periodic service are offered.

Phone: 877-900-0326 [www.genesisonsite.com](http://www.genesisonsite.com)

# Product focus



## FLP TOOLING – Booth #849

Applitec makes significant upgrades to its marquee insert brand: Top-Line. First, a new wear resistant carbide grade was added for tooling abrasive materials. Next, new cut-off tools were launched for larger size bar stock (up to 1.15"/44 mm). Applitec has also redesigned the Cut-Line brand of parting and grooving tools. The clamping system was vastly improved to promote longer tool life and high precision tooling performance.

Applitec introduced new tooling systems to their revolutionary Modu-Line modular tooling series designed with a built-in coolant supply feed. These new systems will be compatible with Citizen-Cincom, Star and Tornos screw machines. In addition, Applitec has launched a new line of high performance guide bushes. The line features the most widely used category of guide bushes for screw machines.

Phone: 310-306-0987 [www.flptooling.com](http://www.flptooling.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](mailto:info@bostoncenterless.com)

PMTS Booth #828



ISO 9001:2000 Certified

Toll Free: 800.343.4111 • [www.bostoncenterless.com](http://www.bostoncenterless.com)

# Need Special Tools?



## No Problem!

For over **90 years** the **Detterbeck's** have been solving,  
Special Tool Requirement Problems.

**You don't last that long without doing it right!**



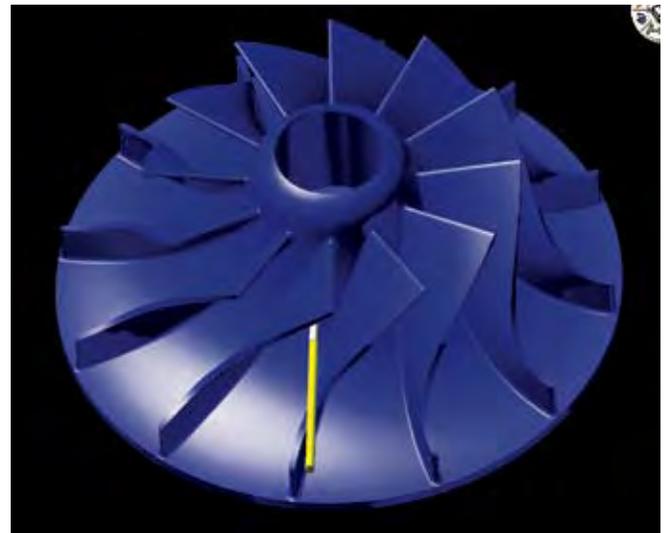
Lester Detterbeck Enterprises Ltd.  
3390 U.S. East  
Iron River, MI 49935  
1-800-533-3328 Fax 1-906-265-6195

## GIBBS & ASSOCIATES – Booth #822

Gibbs and Associates, developer of GibbsCAM, software for programming CNC machine tools will be introducing the GibbsCAM Machine Simulation option. This capability, which complements GibbsCAM Cut Part Rendering process simulation functionality, allows for entire machine tool motion of a CNC program to be validated in an accurate simulation.

Gibbs and Associates has formed key partnerships with a number of machine tool vendors which are focusing on multi-tasking as part of their strategic market position, such as Index, Matsuura, Mazak, Mori Seiki and Nakamura Tome. The updated version of GibbsCAM Machine Simulation being demonstrated adds support for turning, mill/turn and multi-task machine tools to the previous version which supported milling machine tools. Machine tool models can be built and setup like the real machine tool, then the CNC program is simulated to validate it prior to running the CNC program on the actual machine tool.

Phone: 800-654-9399 [www.GibbsCAM.com](http://www.GibbsCAM.com)



## KNURLING PROBLEMS?

With the most knowledgeable engineers and sales staff, Accu Trak has the answers to any technical question regarding the knurling process.



We have available for immediate delivery a huge variety of knurling wheels and holders in both "INCH" and "METRIC" sizes as well as custom knurls made to your exact requirements with the fastest delivery in the industry.

For more info on how to ensure your next knurling job runs smoothly



visit us online at  
[www.accu-trak.com](http://www.accu-trak.com)  
or call  
(800) 433-4933.

# product focus



## HARDINGE – Booth #600

The Super-Precision QUEST GT27 S gang tool turning center will be unveiled. The QUEST GT27 S includes a precision sub spindle, Hardinge's world-renowned collet-ready spindle, and patented interchangeable tool top plate. The machine can be used as a stand-alone unit in a high production environment with a bar feed, or a fully automated system with the robot option. The QUEST GT27 S features a special-accuracy 5C collet main spindle, providing .000015" part roundness capability.

The standard 2-axis programmable sub-spindle supports typical machining operations such as facing, chamfering, grooving, threading, drilling, spot drilling, tapping and boring. It features a Fanuc 3-hp (2.2-kW) drive system with speeds from 0 to 8,000 rpm – clockwise and counter-clockwise. Included is an air-actuated collet closer that utilizes S25-HS Dead-length® hardened & ground collets.

Phone: 800-843-8801 www.hardinge.com

## Parts, Parts, Parts, Parts, Parts, Parts Attachments, Attachments Machinery

**BECHLER • ESCO • STROHM • TORNOS**

Over the recent years we have acquired the Swiss Automatics spare parts stock from Currier Machine Sales, Hirschmann Corp., Noble Machinery Corp., and Rombach Machinery. Items not in our stock will be located or reproduced for you.

**Over 100 Automatics in Stock • Request Our Stock List**



D6-R (SR) S/N 2121



R125



Bechler

### CNC Automatics Bought and Sold

North America's only machinery dealer with Tornos • Bechler and Escro factory trained engineers. We know and service what we sell.



NEW • MACHINE TOOLS • USED

SCREW MACHINE EXPERTS

145 Front St., Bridgeport, CT 06606 • 203/334-2196 • Fax: 203/334-1184

## ipcc Industrial precision components corporation

145 Front St., Bridgeport, CT 06606 • 203/334-2196 • Fax: 203/334-1184  
email: [ipcc@conversent.net](mailto:ipcc@conversent.net)

Precision Machinery • Equipment • Swiss Automatics  
Engineering, Training, Repairs, Spare Parts, Tooling  
Parts and operators' manuals for Swiss Automatics, Escomatics and related machinery from \$40 to \$99,500

**AB-175** DISTRIBUTORS FOR  
DIAMOND WHEEL GRINDERS  
We rebuild any make diamond wheel grinder

**ARYMA** CENTRIFUGAL OIL EXTRACTORS  
1/8 gallon to 7 gallons capacity

**Multimatic** AUTOMATIC PARTS CLEANING SYSTEMS  
Uses chlorinated or hydrocarbon solvents

**NSK** ELECTRIC, AIR OR BELT DRIVEN SPINDLES  
We design and build special attachments



profiltec corp. doebeli PeTeWe

**CNC & Manual Profile and Form Tool Grinders  
Centerless Grinders with CNC Dressing Cycle.**



FSM 150 CNC Profile Grinder,  
Fanuc 18M



DPA 200 Wheel Dresser & Profiler



SLR 250 Centerless Grinder,  
.080" to 4-3/4" Capacity

# product focus



## MARUBENI CITIZEN – Booth #536

MARUBENI CITIZEN-CINCOM is excited to introduce their newest CINCOM, the K16 Type VII NGB. PMTS attendees will be the first to see this new version, which features a non-guide bushing design.

MCC will also display state of the art CINCOM L720 Type VIII with the ALL axis simultaneous Cincom System M7 control; M320 Type V with user-friendly editing function incorporating multi-line/multi-axes; programming with superimposed/synchronized control A20 Type VI and R07 Type VI with a top spindle speed of 12,000 rpm with Rotary Guide Bushing.

All of the MCC lathes will be exhibited with dedicated CINCOM barfeeds. Cool Blaster high pressure systems, thread whirling, 1.5mm gun drilling, and Flexible Guide Bushing systems will also be displayed.

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

## ***The Tooling Connection, Inc.*** Master Rebuilders of National Acme's Since 1976

We have earned the reputation of building the most reliable and productive Acmes, and we back our reputation with a two-year warranty. **Over 80% of our annual business is from repeat customers!**

All machining, grinding, fitting scraping, boring, sleeving and assembly work is done in-house by our skilled technicians who have over 200 years of combined Acme experience.

**In plant service:** All types of machine repair, maintenance, set-up, maintenance training, attachment and PLC training and PLC installation. Trouble shooting on Allen Bradley, Omron, GE Fanuc, Square D, PLC Direct and others. Complete installation of all attachments.

**Ask about our FAST CYCLE machines that will out-produce all other automatics and cost 40% less!**

Capacities of 1" – 1-1/4" – 1 5/8" – 6 and 8 spindles.

### ***Over 75 National Acme 6 & 8 spindle machines For Sale Now***

7/16" RA-6 1980-1965 threading-pickoff-back fin conv.-plex (15)  
9/16" RA-6/RAN-6 1980-1948 various attachments (1 spindle stop)  
3/4" RA-8 1975 threading-pickoff-back finish-shelf-conv-plex  
1" RAN-6 1983-1967 threading-pickoff-back fin(5) 1 spindle. Stop  
1" RA-6 1956 Rebuilt-flat tool sld-Cyclo Index-Hi/Lo clutches-loaded  
1-1/4" RA-6 1993-1976 threading-pickoff-backfin-conv-plex (7)  
1-1/4" RB- 1974 & 1973 threading-shelf's-pickoff-back fin-conv-plex  
1 5/8" RB-6 1976-1952 threading-reaming-5 slides-conv-plex (5)  
1 5/8" RB-8 1975 & 1965 threading-reaming-shelf's-conv-plex  
2" RB-6 1983-1965 threading-reaming-5slides-conv-plex (4)  
2" RB-8 1980 threading-reaming-shelf's (1 with new P/O & B/F)  
2- 5/8" RB-6 1976 - 1954 threading-reaming-5 slides-conv-plex  
2-5/8" RB-8 1974 & 1969 threading-3rd shelf-6thpocket-conv-plex  
3-1/2" RB-6 1966 - 1957 threading-reaming-5 slides-conv-plex (4)  
3-1/2" RB-8 1970 plain-conv-plex  
4" RB-6 1979 & 1967 (1 with threading-reaming-(1 reaming) 5 slides  
5-1/4" RAC-6 1962 threading very, very nice  
6" RPA-8 1970 threading-4slide-3 jaw single index - CHEAP  
3/4" Davenport 1981 –1972 threading-pickoff-back burr-conv (4)

***The Tooling Connection, Inc.***

Ph: 419-594-3339 Fax: 419-594-2000

Email: [toolco@bright.net](mailto:toolco@bright.net) Web: [www.toolingconnection.com](http://www.toolingconnection.com)

# Product focus

## INDEX – Booth #401

The new INDEX Traub TNX65/42 turn-mill centers are designed to machine complex parts from bar diameters to 65mm (2.60 in.) and a length of up to 300mm (11.8 in.) at costs that are globally competitive. The modular design machine includes identical 37.5/32.2 HP (28kW/24kW) main and counterspindles and may be equipped with two, three or four turrets, each capable of holding 10 live or fixed tools, and each of which can travel in X and Z direction 175mm (6.9 in.) and 650mm (25.6 in.), and optionally +/- 40mm (1.57 in.) in the Y direction.

Up to 80 tools can be accommodated using double tool holders, reducing setup times even further for complex parts processes. For the first time Traub offers unsurpassed simultaneous use of four tool carriers—four tools in cut—plus main and counterspindle in combination with powerful tool drives (7.4 HP/5.52 kW, 6,000 RPM) permits productive, diverse machining processes in a single setup.

Phone: 317-770-6300 [www.index-werke.de/](http://www.index-werke.de/)



## High Production, Precise Execution, Enhanced Flexibility and Versatility.

To learn more, contact Mikron today or visit [www.mikron.com](http://www.mikron.com)

**Mikron Corp. Monroe**  
PO Box 268  
Monroe CT 06468  
203 261 3100  
Fax 203 268 4752  
Email: [mmono@mikron.com](mailto:mmono@mikron.com)



These are the minimum requirements Mikron customers have learned to expect from our machining systems and cutting tools.

With nearly a century's worth of experience behind us, Mikron understands the importance of providing transfer systems and tooling that allows its customers to produce from a few hundred thousand up to several million units per year — dependably, accurately and quickly; all while providing the return-on-investment your organization requires to meet is overall goals.

If you serve the automotive, electronic, medical device or any other market where precision, speed and reliability is critical, Mikron can help you meet your machining system and cutting tool needs.



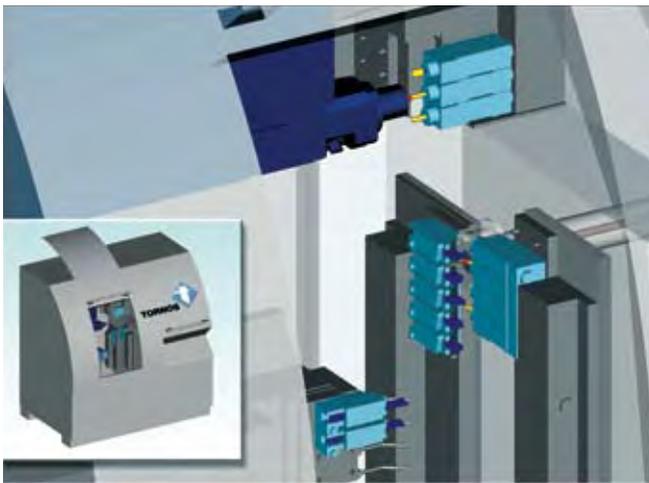
**MIKRON**<sup>®</sup>  
Machining Technology



## MAXIM INTERNATIONAL – Booth #622

The Nomura YB 25 series (above) is a machine with a sub-spindle that comes standard with 5 OD tools, 4 front drilling tools, 3 back drilling tools, 2 back turning tools, 6 live cross drill/mill tools, and 2 back live drill/mill tools. Both the main spindle and back spindle come standard with a .001 degree C-Axis. A variety of options are available which include a front and back eccentric drill unit, and various combinations of turning and drill/mill units.

Phone: 800-496-2946 [www.maximint.com](http://www.maximint.com)



## MIKRON – Booth 137

MIKRON Machining Technology has developed the Rotary Transfer Multifactor machine, available with 8, 10, 12 or 15 stations; the number of stations is defined with the amount of machining operations. The maximum work piece size is 4" x 4" x 4". The machine can be tooled with CNC units. All Multifactor models can be automatically fed with blanks or pre-machined parts. Multifactor transfer machines can be inter-connected or coupled with other machines.

Mikron will also present the Multistar CX-24 rotary transfer machine with new 3-axis CNC machining units, as well as the CrazyDrill small drill (below). Mikron has expanded their range of small drills and stocks small diameters, starting from .0295" (0.75mm) and with internal cooling! The available standard lengths are 6xD, 10xD and 15xD; and in incremental diameters of .002" (0.05mm).

Phone: 203-261-3100 [www.mikron.com](http://www.mikron.com)



## PARTMAKER – Booth #544

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

This new simulation module will provide improved error checking and collision detection to PartMaker users by allowing them to perform an even more robust machining simulation than currently offered in PartMaker. The machine model being simulated incorporates machine specific tool holders and attachments to assure that any possible collisions that could occur on the machine will be detected off-line on the user's PC.

Phone: 215-643-5077 [www.partmaker.com](http://www.partmaker.com)

# product focus

## REM SALES – Booth #200

Rem Sales, LLC has announced the North American Introduction of the NEW Tugami BR20 sliding headstock lathe. Boasting true simultaneous operation of the main and sub spindles, the BR20 features 10,000 RPM main and sub-spindles and a 5,000 RPM tool spindle. Speed is more than spindle rpm; the ability to maximize functional cutting time is critical. Tugami's unique opposed gang slide design typifies this by allowing for the shortest possible chip-to-chip time. The BR20 features a Fanuc 31i-A 3-path control, A.C. drives, six controlled axes, and 8 5/8 inches of stroke.

Phone: [www.remsales.com](http://www.remsales.com).

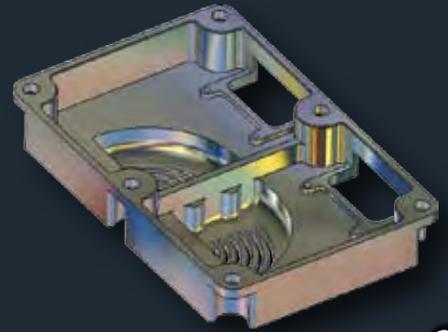
## ROYAL PRODUCTS – Booth #662

Royal Products has introduced the Royal Roto-Shield™, which consists of an oversized steel coolant slinger machined into the center's rotating point, combined with a long-life, spring-loaded neoprene seal that is resistant to abrasion, high temperatures, and virtually all metalworking fluids. The Royal Roto-Shield™ produces a dramatic increase in bearing life by deflecting coolant, protecting bearings against harmful chips, fines, and dust, minimizing seal wear, and maintaining grease consistency. All Royal live center models equipped with Royal Roto-Shield™ technology are rated for high-pressure coolant applications up to 2,000 psi and have a guaranteed runout accuracy of +/- 0.000050" TIR.

Phone: 800-645-4174 [www.royalprod.com](http://www.royalprod.com)



# Machine with Confidence



## High-Performance CAM Software

ESPRIT is a high-performance computer-aided manufacturing (CAM) system for a full range of machine tool applications. ESPRIT delivers powerful full-spectrum programming for 2-5 axis milling, 2-22 axis turning, 2-5 axis wire EDM, multitasking mill-turn machining and B-axis machine tools, and high-speed 3- and 5-axis machining.

ESPRIT is easy to use for quick jobs, yet packed with power to handle the most complex production milling work. Whether you are programming 2 1/2-axis parts or 5-axis machining, ESPRIT will give you the programming power you need and the ease-of-use you are looking for.



The Right Choice

For more information about the benefits of  
CNC programming with ESPRIT:

[dptechology.com](http://dptechology.com)  
800•627•8479

Come see us  
at EASTEC  
Booth #5560

# EDM Wire Ready H.S.S. BARS

www.sommatool.com

## Economical – Minimum Waste!

- Heat treated and ground
- Standard bar sizes in stock, can also be made to your specifications
- Use only what you need for each job
- Available in M2, M42, T15PM and 76PM high speed steel
- For those who have wire EDM equipment

CALL TODAY FOR OUR FREE TOOLING CATALOG

# SOMMA TOOL CO., INC.

109 Scott Road, Waterbury, CT 06725  
phone: (203) 753-2114 fax: (203) 756-5489  
email: sales@sommatool.com



## SNK AMERICA – Booth #349

SNK's Prodigy GT-27 gang tool lathe features a C-Axis spindle as standard, a polymer base and precision components for small parts turning. The Prodigy GT-27's spindle speeds reach up to 6,000 rpm. The Prodigy GT-27 lathe uses three axes of motion that can be commanded in absolute or incremental modes. The Prodigy's C-Axis spindle allows for indexing and positioning as well as more advanced functions.

Precision and versatility is achieved through the incorporation of non-heat generating collet closers, the absence of a turret and full C-Axis indexing positioning. The Prodigy GT-27 can index in .01 degree increments. As a result, live tooling can be used for side drilling and milling operations. The Prodigy GT-27 can also perform rigid tapping. Maximum production bar work is up to 1 1/16" diameter.

Phone: 866-379-6068 www.snkamerica.com.

Floating  
Reamer Holders



Since 1942

Non-Marring Feed  
Fingers Pushers &  
Pads

## The Original Non-Marring Feed Finger for Automatic Screw Machines

**Green Feed Fingers can not mar. Period.** Even the softest materials can not be damaged because only precision synthetic molded rubber contacts the entire bar circumference surface.

Aeme Gridley  
Aeme Bar Machines  
B.S.A.  
Brown & Sharpe  
C.V.A.  
Cleveland  
Cone  
Davenport  
Euroturn  
Gildemeister  
Gridley Bar Machines  
Greenlee  
Index  
New Britain Gridley  
Shutte  
Tarex  
Tornos  
Warner Swasey  
Wickman

For over 60 years, screw machine operators have trusted **Green** when machining Aluminum, Brass, precious metals, or polished and ground stock. Anytime marring or witness marks are forbidden, **Green** is the only reliable solution. **Period.**



**Green Technologies, Inc.**  
112 Hawick Street  
Rockton, IL 61072  
815-624-8011  
Info@greentechnologies.biz

Call us, visit us on the web, or  
ask your Distributor for a  
catalog



# product focus



## UGITECH USA – Booth #714

UGITECH USA is the North American subsidiary of UGITECH, which is a Stainless & Nickel Alloy Long Products business unit of SCHMOLZ + BICKENBACH AG. Expansion of their global manufacturing base in 2007 includes a state of the art stainless bar processing facility in the greater Chicago area due to be completed by midyear.

UGITECH'S six stocking locations are strategically located throughout the country. Their products include stainless steel and nickel alloy bar, wire and wire rod. Services include immediate product availability, custom orders, customer-dedicated inventory programs and strong technical support with both in-house metallurgical and mechanical engineering support.

Phone: 877-844-6387 [www.uginestainless.com](http://www.uginestainless.com)



## *“Varland’s Unique Barrel Plating Services make the difference!”*

- Monitored plating cycles.
- Plating thickness, X-rayed tested.
- Excellent adhesion and full coverage.
- Careful handling and segregation of parts.
- Computer controlled loading and cleaning.
- Quality checks by operator, Q.C. Depart audit.
- Bar Code labeling and direct shipments.
- Certifications of plating specification.

### **Barrel Finishes:**

Nickel, Copper, Bright Acid Tin, Zinc, Matte Alkaline Stannate Tin, Zinc-Iron & Tin-Zinc Alloys, Clear & Yellow Dyed Trivalent Chromate, Cadmium, Brass & Electroless Nickel.

Web Site: [www.varland.com](http://www.varland.com) • E-mail: [sales@varland.com](mailto:sales@varland.com)

Phone: 513.861.0555 • FAX 513.961-7017

**VARLAND** METAL SERVICE, INC.  
3231 Fredonia Ave. • Cincinnati, OH 45229

## Immediate Machining Capacity Available

Centrally Located in Southern Ohio • ISO Certified – Machining and Assembly  
Can operate as Tier 1 or Tier 2 Supplier

Specialize in machining steel alloys used in Automotive, Medical, Aerospace, Semiconductor, Food/Chemical

- (4) **Twin Spindle Volume Turning Line – 10mm to 300mm Dia. Turning, Gantry Loader**
- (1) **New Twin Spindle – 25mm – 450mm Dia. Tuning, Gantry Robot Loader**
- (2) **New Twin Spindle VTL's, high precision, 800mm Swing**
- (2) **New 500mm Horizontal Machining Centers**
- (14) **50 Taper CNC Vertical Machining Centers, designed for steel alloys**
- (2) **High Speed, High Precision CNC Vertical Machining Centers, New equipment, pallet changers Other Processes**
- (1) **Production CNC Hone – Robot Loading**
- (1) **Robotic Packaging System**
- (2) **Laser Marking Systems**
- (2) **New CMM's, Advanced Cleaning Equipment**
- (2) **In-Line Non Destructive Test units**

### **Omni Integrated Technologies, Inc.**

275 Nortpointe Drive, Fairfield, Ohio 45014

Phone: 513-942-6338 Fax: 513-942-1883 email: [jsturtevant1@mac.com](mailto:jsturtevant1@mac.com)

# shop doc

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 technical problems. We invite our readers to contribute suggestions and comments on the Shop Doc's advice. If you consider yourself a Shop Doc or know a potential Shop Doc, please let us know.*

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

We are a Davenport shop having a problem doing a 1/4 -20 thread in 303 stainless steel. No matter what we try we are getting torn threads. Someone suggested changing the slip clutches to disc clutches. Before we spend the money, is there another solution?

**By a Thread**

## Dear Thread,

Disc clutches are a good style, but slip clutches can do this job. I will go through some troubleshooting methods for slip clutches.

Make sure your spindle speed gears are not rubbing on the threading gears, because they are running different rpm. That will cause the machine to labor and affect threading.

Check the shifting cam for the clutches to see if it has moved. The 3/8" square head collar screws are too long when they're brand new and can bottom out inside the hole. You might think the cam is tight, but it's not. Grind off two threads and put the screws back in.

Now inspect the clutches themselves. Take the clutches apart and inspect the parts for cracks, loose carbide blocks, undersize bearings and deep pit marks from the bearings. Pit marks are the reason we do not leave the clutches hooked up and shifting while they are not in use. Without centrifugal force to hold the bearings to the outside and pit evenly, gravity will obviously hold the bearings at the bottom, causing pitting on one side of the clutches.

Clutch cones can still be garbage if the keys are intact. If clutch cones are not gripping, you can cut

them in half. You can now buy them in two pieces. Brand new clutch cones are 1.010" or 1.011" in length. Measure the length of the used cones (minimum length is 0.995"). If the cones are shorter than this they are garbage. Cones with bronze keys are definitely stronger but are never needed on the high side. As it is, the low side does all the work of cutting and forming the threads. The high side is just chasing itself out of a threaded hole. An easy way to tell if your clutches are slipping is to just put your hand on the clutch. It should feel warm, but if it feels hot it means it is slipping instead of driving.

A trick I use to check the timing of the shift is to put a tommy bar in the hole on the low side of the clutches, and a tommy bar in the hole of the cam lever on the threading spindle. As the machine is running empty watch the two tommy bars. The bar in the clutches should shift just before the bar on the cam lever starts to drop back. Set the depth for 4 or 5 threads to see how much pullout you have – it just needs a little pullout. This is called the "cushion." I hope this solves your problem.

**Jim Gross  
Davenport Doctor  
Niagara Falls, Ontario Canada**

# New!

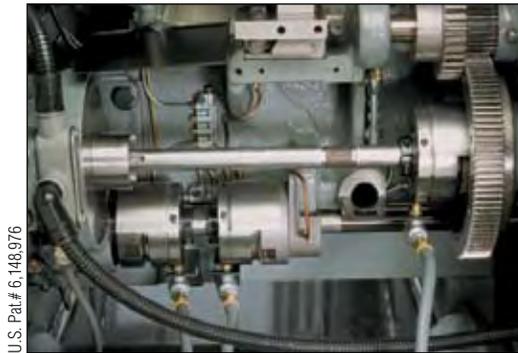
## Logan Hi-Lo Retrokits - NOW BETTER THAN EVER!

### Hi-Lo Retrokit Features:

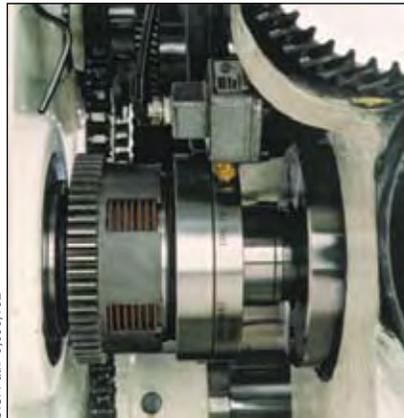
- Replaces mechanical clutches, roll clutch, band brake and linkages with fast acting air-actuated Logan Clutches
- Positive crisp Logan Clutch engagement - Guarantees cycle time repeatability
- Simplifies clutch maintenance - No disc pack adjustment or slippage
- Quick Stop Power applied brake - Prevents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

### Savings:

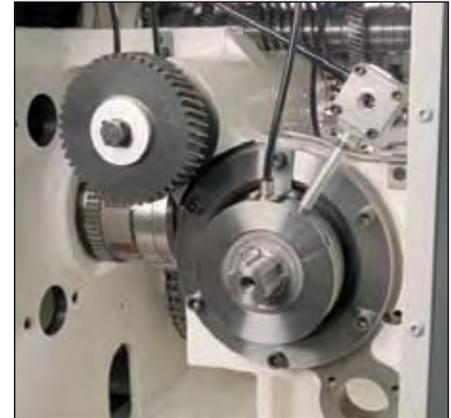
- Increase productivity from 10-20%
- Tools can be positioned closer to the work piece due to repeatable high and low speed clutch engagement
- Better machine utilization - More productivity from existing machines, operators and floor space



For Model B Davenports



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



### So you think you need more production capacity?

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

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

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



FIELD SERVICE AVAILABLE!

Call today for your Free Logan Hi-Lo Retrokit and Indexer justification worksheet or check us out on the Web at:

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



### Hi-Lo Retrokits Controlled By:



1. Cams and Limit Switches



2. CS 2001XT8 or XT16 microprocessor control



3. CS 2001 microprocessor control

 **Logan Clutch Corporation**<sup>®</sup>  
Productivity enhancements  
for the screw machine industry.

28855 Ranney Parkway, Cleveland, OH 44145  
PHONE 440.808.4258 • FAX 440.808.0003  
800.5.CLUTCH or 800.525.8824 • sales@loganclutch.com

AN ONGOING AUTOMOTIVE COLUMN  
BY PAUL A. EISENSTEIN

## No Silver Bullet

At America's first auto show in New York just over 100 years ago, potential buyers were offered an array of options: battery cars, steam cars, even cars running on gasoline. It took the discovery of cheap and plentiful supplies of petroleum before the internal combustion engine came to dominate the market.

A century later, the search is on all over again, thanks to global warming and the politics of petroleum. Dozens of alternatives were on display at the latest Bibendum Challenge, a more-or-less annual traveling road show, sponsored by Michelin, designed to highlight fuels and powertrains that could reduce both CO<sub>2</sub> emissions and our petroleum dependence.

The latest Challenge, in Paris, included an array of fuel cell vehicles. This technology promises to be the clean alternative the world is seeking. Combine hydrogen and oxygen in a fuel cell stack and you get current to power an electric motor. Think of the technology as a refillable battery that produces nothing but water vapor as its by-product. No wonder automakers around the world are racing to put fuel cells into production.

Indeed, during his most recent state of the union address, President Bush spotlighted hydrogen as a way "to make our air significantly cleaner, and our country much less dependent on foreign sources of energy."

Unfortunately, there are several problems. While hydrogen is abundant, it is not found in its free form, so it must be produced, usually by electrolyzing water or cracking common hydrocarbon fuels, such as coal or natural gas. That's energy intensive and can actually increase pollution if you don't use green sources, such as wind, solar or geothermal energy. Meanwhile, shipping and storing the lightweight gas is difficult, and experts estimate it would cost at least \$10 billion to upgrade the existing service station infrastructure alone.

So, if the hydrogen economy remains a decade or more out, are there other alternatives? There is no "silver bullet," cautions Michelin CEO Michel Rollier. "On the contrary, there's a vast array of solutions."

The Toyota Prius is one possible answer. This popular hybrid-electric vehicle, or HEV, primarily relies on a conventional, internal combustion engine, but its batteries recapture energy normally lost during braking or coasting, reusing that power during launch and hard acceleration.

General Motors, meanwhile, hopes to bring its prototype Chevrolet Volt, a plug-in hybrid, to market. Unveiled at this year's Detroit Auto Show, PHEV technology one ups Prius by plugging into the electric grid to give a car, like Volt, enough range to handle the typical commute on battery power alone.

"We believe very deeply in the principle of energy diversity," declares GM's car czar, Bob Lutz. The automaker is also a proponent of ethanol, which it contends could supplant a sizable share of our imported oil. Then there's bio-diesel, an alternative to that high-mileage fuel. You can produce it from used French fry oil – or soy beans, if you're gearing up for high volume.

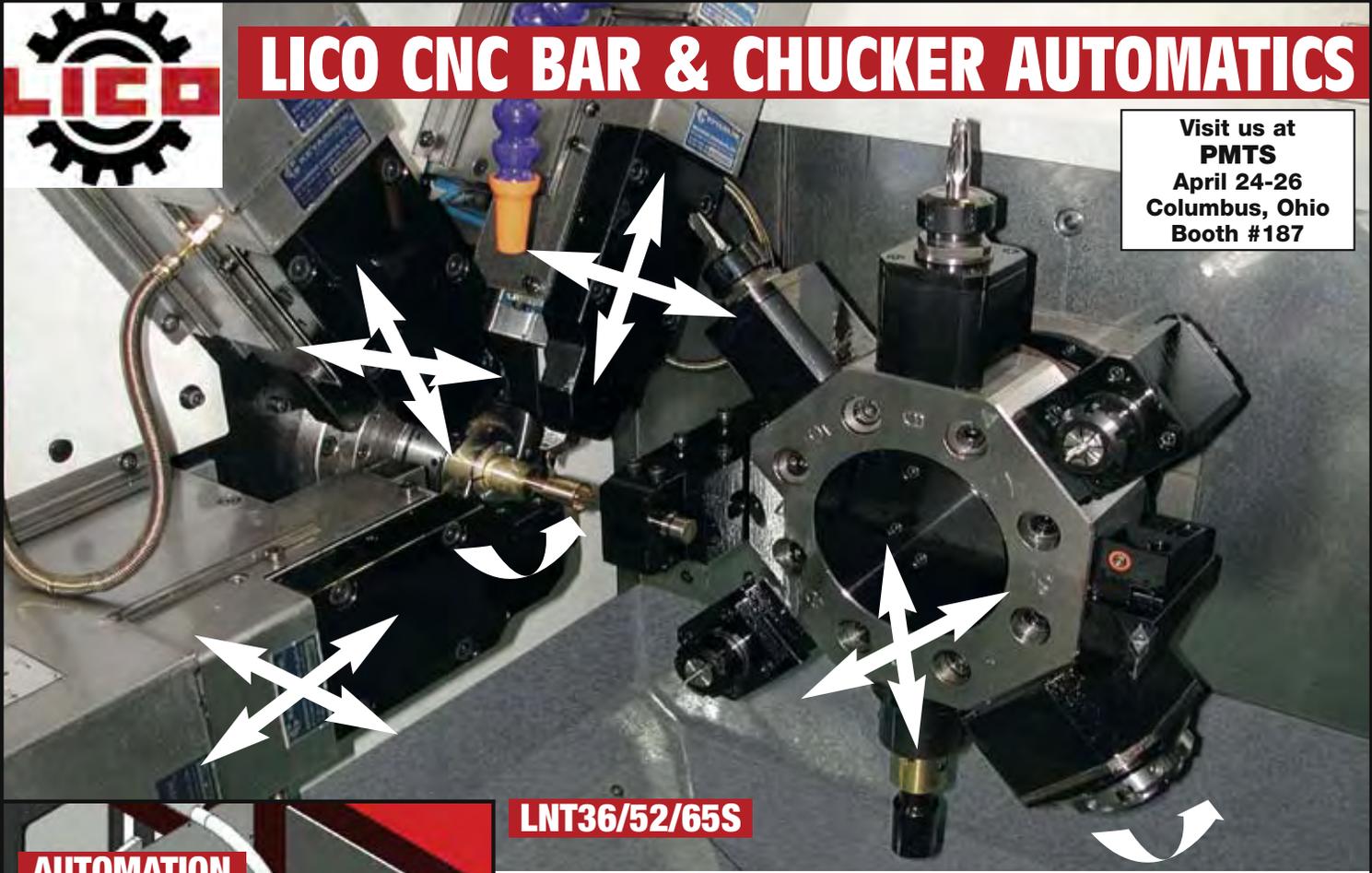
In fact, no single alternative, whether hydrogen, hybrid, diesel or battery car, is likely to replace the gasoline-fueled internal combustion engine anytime soon. If anything, the next decade or so will likely see us rely on a vast array of powertrain options, much as we did at the turn of the last century.



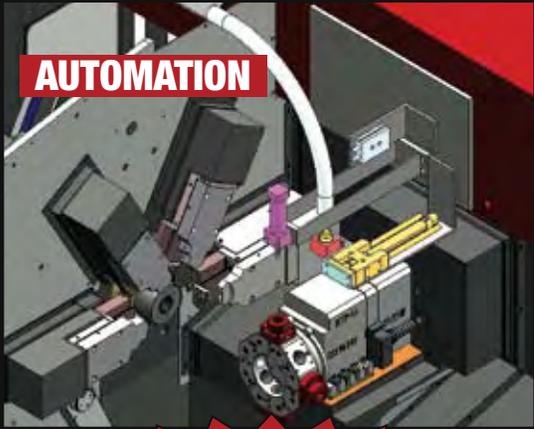


# LICO CNC BAR & CHUCKER AUTOMATICS

Visit us at  
**PMTS**  
April 24-26  
Columbus, Ohio  
Booth #187



**LNT36/52/65S**

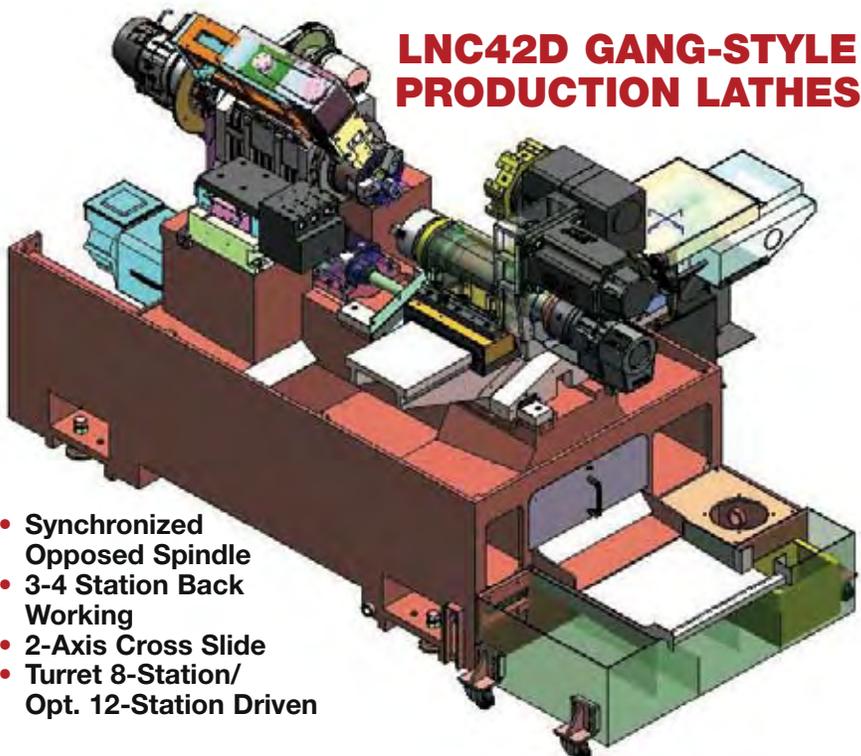


**AUTOMATION**

**GANG-STYLE AUTOMATICS  
IN A WIDE VARIETY OF  
CONFIGURATIONS FOR BAR  
OR CHUCK WORK**



**LND42/65**



**LNC42D GANG-STYLE  
PRODUCTION LATHES**

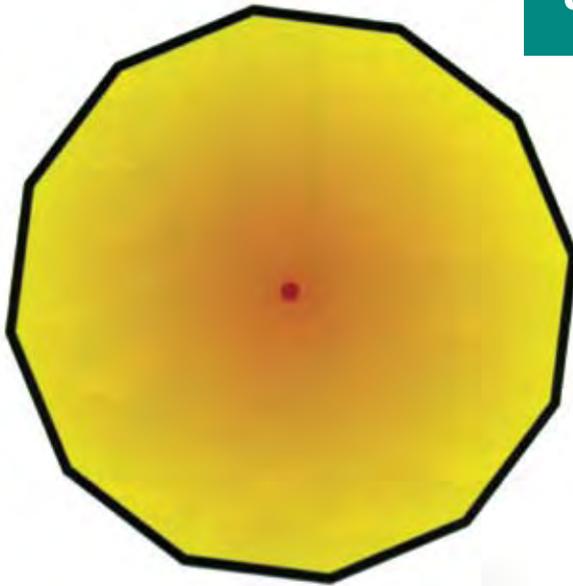
- Synchronized Opposed Spindle
- 3-4 Station Back Working
- 2-Axis Cross Slide
- Turret 8-Station/  
Opt. 12-Station Driven

**LIPOCO ENTERPRISES, INC.  
LICO MACHINE WAREHOUSE**  
TOLL-FREE: 1-800-364-1641  
Tel: 310-329-6092 • FAX: 310-329-6073  
WEB: [WWW.LIPOCO.COM](http://WWW.LIPOCO.COM)  
EMAIL: [SALES@LIPOCO.COM](mailto:SALES@LIPOCO.COM)

**H.L.MILLER MACHINE TOOLS  
LICO SALES OFFICE**  
847-551-1553 • Fax: 847-551-1643  
APPLICATIONS: JOHNNY AT 630-240-5646  
EMAIL: [JPMHLM@AOL.COM](mailto:JPMHLM@AOL.COM)

# Shadow Garden

think tank

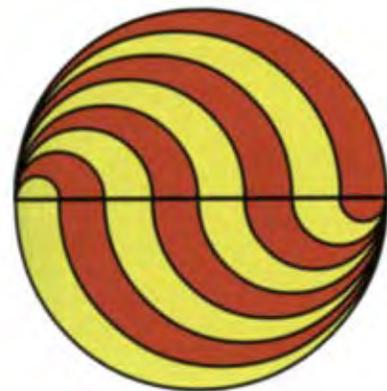


Send in your answer—quick!  
Fax Jill at 708-535-0103, or email at  
jill@todaysmachiningworld.com

All twelve walls of a dodecagonal garden are illuminated by a single lamp, which is positioned in the garden's center. Can you redesign the garden so that even though a lamp is placed at its center, each of the twelve walls is partly or entirely in shadow? The walls must be straight, but they don't have to be the same length.

## Circle Divisions

A circle can be divided into any number of regions of equal area using a compass and a ruler. Simply divide the diameter into the number of equal divisions required and from those points draw semicircles, as shows. Ancient Chinese mathematicians knew of this method; the yin-yang is an example.



Who went around in circles with me?

**Roger Stillman** of Metric and Multistandard in Hawthorne, NY; **Jeff Kovalenko** of Key Machine Tool in Elkhart, IN; **Jim Gnesa** of El Camino Machine & Welding in Salinas, CA; **Steve Richards** of Yamazen, Inc. in Schaumburg, IL; **Kenneth F. Harkin** of American Laubscher Corporation in Farmingdale, NY; **Mark Drouin** of T & A Screw Machine in Terryville, CT; **Gary Sewell and Lynne Weixel** of GS Design and Machine in Tallahassee, AL; **Janet Querido** of G.H. Berlin Oil Company in East Hartford, CT; **Uli Kuster** of Blaser Swisslube in Rohnert Park, CA; **Ron May** of Hunter Engineering Company in Bridgeton, MO; and **Jerry Morgan** of K & Precision Products Co. in Dexter, MI.

# postings



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

## EASTECH

2007

Exposition

W. Springfield, MA

May 22-24

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

Meeting of the Society of Tribologists and Lubrication Engineers

May 6-10

Philadelphia, PA

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

## 3D SCANNING:

Reverse Engineering, Inspection & Analysis

Detroit, MI

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

May 1st & May 2nd

## Metallurgy Certificate Program

Nashville, TN

May 8-10 2007

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

## Certified Manufacturing Technologist Review Program

Springfield, MA

May 22nd thru May 24th

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

Montreal Plant Maintenance & Design Engineering Show

Montreal, QC CANADA

May 15-17

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

Online Auction

CNC & Manual Fabricating & Toolroom, Inspection & Facility Support Equipment

May 16-17

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

Birthday Clint Eastwood

May 31, 1930

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

Mother's Day

May 8th

May 1st 1978

The First unsolicited bulk commercial e-mail (later known as "spam") was sent.

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



# BOLD

*Bold Ideas • Bold Solutions • Bold Results*



Give your business the competitive advantage of **EASTEC 2007**, the East Coast's premier manufacturing event. Decision makers from aerospace, defense, medical, consumer products and other leading industries know **EASTEC 2007** is their best source of new suppliers, equipment, technologies, and ideas. Connect with leaders at the technology-focused Automation, Lean & Quality Resource Center, plus Meet the Buyer, Energy & Environmental Assessment, Medical Device Manufacturing, and Aerospace & Defense Supplier days. Bold manufacturing begins at **EASTEC 2007**.

**EASTEC**<sup>®</sup>  
ADVANCED PRODUCTIVITY EXPOSITION

May 22-24, 2007  
Eastern States Exposition Grounds  
West Springfield, Massachusetts



The APEX Series of Events is produced by SME

*The East Coast's Largest Annual  
Manufacturing Event*

For more information visit [www.sme.org/eastec](http://www.sme.org/eastec). Or call (800) 733-4763.

# ad index



Today's Machining World

- 62 **ACCUTRAK** Link with the pros in knurling and roll forming. Contact us at 800-433-4933 or visit [www.accu-trak.com](http://www.accu-trak.com).
- 10 **AMSCO** Amasco stocks a large variety of parts & tooling for B&S, Davenport, Acme, New Britain, and Lipe Bar Feeds. Call 800-832-6726.
- 14 **AUTOMATICS AND MACHINERY** Buy – Sell – Consign – Auction used CNC equipment and more. Call 303-651-6545 or visit [www.automatics.com](http://www.automatics.com)
- 61 **BOSTON CENTERLESS** Single source supplier of round bar material and grinding with unmatched quality and precision. Visit [www.bostoncenterless.com](http://www.bostoncenterless.com) or call 800-343-4111
- 25 **BUCCI-IEMCA** For all your bar feeding needs. Call 704-583-8341 or visit [www.bucci-industries.com](http://www.bucci-industries.com).
- 12 **CHAMPION SCREW MACHINE** Your headquarters for tooling & replacement parts.
- 63 **COMEX-CONT. MACH. EXCH. CORP.** Swiss CNC and cam automatics experts. Large stock of automatics, attachments and replacement parts. "Turnkey" including training is available. AMEA-CEA certified appraisals.
- 16-17 **DETROIT AUTOMATIC TOOLING** World's largest stock of threading equipment; new, surplus tooling and repair parts for multi-spindle automatics. [www.detroitautomatic.com](http://www.detroitautomatic.com).
- 67 **ESPRIT** Machine with confidence. The most powerful CAM software ever. Visit [www.dpotechnology.com](http://www.dpotechnology.com).
- 15 **ETCO** The largest manufacturer of QUALIFIED SWISS INDEXABLE INSERTS & TOOLHOLDERS, specializing in grooving, turning, backturning, threading, boring & custom specials.
- 21 **GANESH** Fast, efficient & affordable small parts turning & milling centers, Call 888-542-6374 or visit [www.ganeshmachinery.com](http://www.ganeshmachinery.com).
- 29 **GBI CINCINNATI** World class performance, Affordably priced. Call 513-841-8684 or visit [www.gbicincinnati.com](http://www.gbicincinnati.com)
- 30-31 **GRAFF-PINKERT** Specialists in multi-spindle automatic screw machines and 41,43 rotary transfers. Family owned business for over 60 years. 48-49 Check out [www.graffpinkert.com](http://www.graffpinkert.com).
- 68 **GREEN TECHNOLOGIES** Since 1942 manufacturing non-marring masters, feeders, inserts and floating reamer holders for automatic screw machines. Call 815-624-8011.
- 57 **HANWHA** Professional Swiss-style CNC turning centers. Call 262-373-1600 or visit [www.hanwhamachinery.com](http://www.hanwhamachinery.com).
- 9 **HURCO** A global automation company designing and producing interactive computer controls, software and machine systems. Call 800-634-2416 or visit [www.hurco.com](http://www.hurco.com).
- 4 **HYDROMAT/EDGE TECHNOLOGIES** Unique and innovative manufacturing solutions with the world's finest precision transfer machines. Call 314-432-4644 or [www.hydromat.com](http://www.hydromat.com).
- 60 **INDEX** For productive precision parts manufacturing that exceeds expectations, call 317-770-6300 or visit [www.index-usa.com](http://www.index-usa.com).
- 63 **IPCC - IND. PREC. COMP. CORP.** Machinery and equipment for the precision machining industry. Support equipment for screw machine users. Swiss and Esco layouts, cams, tooling, set-up and repair.
- 2-3 **KSI SWISS** Specializing in new, fully equipped CNC Automatics and multi-spindle machinery. Call 952-486-8592 or visit [www.ksiswiss.com](http://www.ksiswiss.com).
- 27 **LANDIS THREADING** Thread making answers. Call 800-358-3500 or visit [www.landisthreading.com](http://www.landisthreading.com).
- 62 **LESTER DETTERBECK** Manufacturer of Special Cutting Tools, Tool Blanks, Cams and Tool Holders for the Turned Parts Industry for over 90 years. 1-800-533-3328.
- 73 **LIPOCO** LICO CNC bar and chucker automatics. Call 800-364-1641 or visit [www.lipoco.com](http://www.lipoco.com).
- 71 **LOGAN CLUTCH** Better machine utilization: More productivity from existing machines, operators and floor space.
- 45 **MACHINETOOLS.COM** Visit [www.machinetools.com](http://www.machinetools.com) - The global metalworking marketplace for jobs, machines, auctions, tooling and more.
- 84 **MARUBENI CITIZEN-CINCOM, INC.** A joint venture company—Marubeni Tokyo & Citizen Watch Co., Ltd., builder of precision Swiss-type lathes.
- 65 **MIKRON TECHNOLOGY GROUP** Leading supplier of transfer machining systems and cutting tools. Call 203-261-3100 or visit [www.mikron.com](http://www.mikron.com).
- 58 **MIYANO** Building the highest quality turning centers in the industry. Call 630-766-4141 or visit [www.miyano-usa.com](http://www.miyano-usa.com).
- 26 **NOWAK** Patented Nowak wedge chucking system for Davenports and Acmes, plus rebuilding and parts. Call 800-423-0970 or visit [www.nowakproducts.com](http://www.nowakproducts.com).
- 83 **NTK CUTTING TOOLS** Great quality. Great precision. Widest selection. Call 866-900-9800 or visit [www.ntkcuttingtools.com](http://www.ntkcuttingtools.com).
- 69 **OMNI INTEGRATED** Specializing in machining steel alloys. ISO certified. Call 513-942-6338.
- 24 **OMNI-TURN** Engineered to order, built in America. Call 631-694-9400 or visit [www.omni-turn.com](http://www.omni-turn.com).
- 6 **PARTMAKER SOFTWARE** PartMaker CAD/CAM greatly reduces part programming time for CNC Mills, Lathes, Wire EDM, Turn-Mill Centers & CNC Swiss-type lathes. Call 888-270-6878 or visit [www.partmaker.com](http://www.partmaker.com).
- 37 **REM SALES/TSUGAMI** The perfect combination of speed and power. Swiss-type, mill-turn and machining centers. Call 800-808-1020 or visit [www.tsugamiusa.com](http://www.tsugamiusa.com)
- 53 **SLATER TOOLS** THE broaching experts. Call 586-465-5000 or visit [www.slatertools.com](http://www.slatertools.com).
- 76 **SME** Society of Manufacturing Engineers invites you to EASTEC May 22-24th, 2007 in West Springfield, MA. Visit [www.sme.org/eastec](http://www.sme.org/eastec) for more information.
- 68 **SOMMA TOOL** Broaches, dovetails, hollow mills, quick-change insert tooling and more. Experience honest-to-goodness service. Visit [www.sommatool.com](http://www.sommatool.com).
- 19 **STAR** The industry's most complete line of advanced Swiss type CNC machines. Visit [www.starnc.com](http://www.starnc.com)
- 64 **TOOLING CONNECTION** Master rebuilders of National Acmes since 1976. Call 419-594-3339 or visit [www.toolingconnection.com](http://www.toolingconnection.com).
- 69 **VARLAND METAL SERVICE** Specialists in high quality, precision barrel electroplating since 1946.

services

**METAL CUTTERS AND METAL FORMERS**

Eliminate Mist, Slippery Floors, Costly Filters, Skimmers, Flood Coolants, Un-Healthy and Dangerous Working Conditions.

www.UNIST.COM  
Writing the book on non-friction™

**Wickman Specialist**

With more than 30 yrs. experience I can cater to all your needs.

Rebuilds, maintenance, problem solving, tooling, set-ups, training and more.

Based in IL, will travel anywhere. Reasonable rates.

Call Brian Madden at  
(815) 282-5418 or  
(815) 520-0375 (cell)  
e-mail  
brian.madden@insightbb.com

**VARLAND**  
*Electroplating*  
METAL SERVICE, INC.  
www.varland.com

513.861.0555 • FAX 513.961.7017  
3231 Fredonia Ave. • Cincinnati, OH 45229

threading tools

www.landisthreading.com

Threading tools for high volume, small diameter applications.



Toll-Free: 800.358.3500 • sales@landisthreading.com

software

The Right Choice  
d p t e c h n o l o g y . c o m

wanted

Set up and operation training for Single spindle, Multiple spindle and CNC bar available at SE Wisconsin at Milwaukee Area Technical College.  
FOR DETAIL INFORMATION CONTACT TOM OLSON AT 414-297-7281 OR EMAIL TO OLSONT@MATC.EDU.

help wanted

**SWISS MACHINISTS**

Growing RF Connector Manufacturer looking for quality minded individuals wanting to grow with us. Strong wage/benefit package, including holidays, vacation, 401K, medical etc. 5 yrs min. experience setup/operator.

SWISS CNC – Citizen, Star, Tornos  
SWISS CAM – Tornos MS-7  
CNC LATHE – Index ABC

**SAN-TRON, INC.**  
Contact: Matt (978) 356-1585  
matt@santron.com



www.SANTRON.com

WANTED

Freelance technical writers for ongoing articles/columns. Knowledge of CAD/CAM, Tooling, Metals or Software helpful. jill@todaysmachiningworld.com.



Finally, the Best Source for Connecting Talent and Companies within the SWISS CNC INDUSTRY!

Companies - Post Your Swiss CNC Jobs!  
Employees - Find Your Dream Job!

SwissCNCjobs.com

help wanted

Gates Albert recently lost one of its most talented technical leaders. Not only were his contributions to Gates Albert legendary, but his practical approach was revered. We must now begin the difficult task of searching for a suitable replacement. If you are a proven leader, with superior technical skills and a practical approach second to none, then we encourage you to apply to Gates Albert at your earliest convenience.

Gates Albert is a leading precision turned products company with over 65 multi spindle screw machines, including Davenport, Servos and New Britains. Gates Albert is an ISO 9001:2000 plant with excellent benefits offering personal growth opportunities through our variety of training programs and a strong sense of community. We operate a drug free, smoke free workplace and are an equal opportunity employer. Relocation assistance is available.

To apply please fax, mail or e-mail your cover letter and resume to:

Gates Albert, Inc.  
3434 Union Street  
North Chili, NY 14514  
Phone: 585-594-9401 Fax: 585-594-4305  
e-mail: hr@gatesalbert.com

**NEED A NEW JOB? NOW HIRING!**

Don't Rely on any Tom, Dick or Harry!  
**LSI Manufacturing Solutions**  
Has placed more people in the Swiss CNC Industry than any other Firm! New Jobs Daily! More Satisfied Companies, More Satisfied Candidates!

Too Many Job Openings to List!  
Send Your Resume Today!  
When You Need the Best,

Contact  
**Lance Solak Bill Kubena**

**LSI MANUFACTURING SOLUTIONS**  
Ph. 330-273-1002 Fax 330-225-3985

**Jobs@LSIJOBS.com**  
See www.LSIJOBS.com for the Largest Selection of Swiss CNC and Screw Machine Job Listings in the USA!  
The USA's Leading Firm Staffing the SWISS CNC & SCREW MACHINE INDUSTRY!

## help wanted

### ENGINEERING JOBS

DEGREEED AND NON-DEGREEED POSITIONS AVAILABLE

#### Hydromat Engineer

rotary, dial transfer, tool, process, troubleshoot, up to \$75K - NE OH

#### Hydromat Engineer

tool, process, troubleshoot, rotary transfer, launch new products, OEM, up to \$75K - IN

#### Screw Machine Engineer

large co. APQP, tool, layouts, problem solve, up to \$78K - N. SC

#### Process Engineer

Acme, Davenport, tool, layouts, OEM, up to \$70K - W. NY

#### Swiss CNC Engineer

process, program, product launch, medical OEM, up to \$75K - PA

#### Process Engineer

swiss CNC, process, program, tool design, large growing OEM, up to \$68K - NJ

#### Manufacturing Engineer

CNC, European screw machines, small components, electronics, tool, process, up to \$75K - AZ

#### Process Engineer

(swiss CNC, no degree required, program, tool, process, multi axis, state of art swiss lathes) up to \$76K - CENTRAL CT

#### Screw Machine Engineer

(Autocad, Acme, tool, layout, OEM, great benefits, no degree required) up to \$65K - NO. NC

MEDVEC Resources Group  
MIR EAST

All Positions Listed on  
[www.MRGCareers.com](http://www.MRGCareers.com)

Contact Tom Medvec  
(330)722-5171 Fax (330)722-7360

EngineerJobs@MRGCareers.com  
MORE JOBS ~ MORE OFTEN

### SALES OPPORTUNITIES ~ NOW HIRING ~

MEDVEC Resources Group  
MIR EAST

#### Sales Manager

machine tool, swiss cnc, OH, IN, KY, MI, IL territory (past swiss CNC sales exp) up to \$85K + comm.

#### Director of Sales

machined components, auto supplier, management, marketing, multi-plant operation, up to \$120K - SE MI

#### Sales Rep

screw machine components, automotive, growing co., account management, APQP, up to \$90K - NEW ENGLAND

#### Account Manager

multi-spindle screw machine components, large manufacturer, current accounts, APQP, up to \$75 + comm. - SE MI

#### Sales Manager

swiss CNC products, medical, electronic, aerospace, up to \$80K - NE IL

All Positions Listed on  
[www.MRGCareers.com](http://www.MRGCareers.com)

Contact Tom Medvec  
(330)722-5171 Fax (330)722-7360

SALESJobs@MRGCareers.com  
MORE JOBS ~ MORE OFTEN

### TOP \$\$\$\$\$\$ MANAGEMENT POSITIONS

MEDVEC Resources Group  
MIR EAST

#### Plant Manager

OEM, Lean, leadership, high volume - up to \$120K - NE OHIO

#### Supervisor

multi-spindles, train, over 20 employees up to \$75K - W. MO

#### Supervisor

multi-spindle, Acme, New Britain, Davenport- up to \$65K - W. NY

#### Plant Manager

(leadership, lean, screw machine, 20% growth) up to \$105K - WESTERN NY

#### Production Supervisor

multi-spindles, growing OEM, engineered products- up to \$75K - MA

#### Engineering Manager

multi-spindles, hobbing, shaving, CNC medium size corp- up to \$100K - SE MI

#### Plant Manager

swiss CNC, operations, growing co., leadership up to \$135K - NE IL

#### Engineering Manager

(screw machine, product launches, continuous improvements, large projects) up to \$100K - WESTERN NY

All Positions Listed on [www.MRGCareers.com](http://www.MRGCareers.com)  
Contact Tom Medvec

(330)722-5171 Fax (330)722-7360

ManagementJobs@MRGCareers.com

### SWISS CNC RECRUITERS

MEDVEC Resources Group  
MIR EAST

Largest List of Career Opportunities  
[www.MRGCareers.com](http://www.MRGCareers.com)

#### Swiss CNC Programmer

Star, Citizen, product launch, medical OEM, up to \$30/hr - SE PA

#### Swiss CNC Cell Leader

set up, program, troubleshoot, train, up to \$28/hr - W. MO

#### Engineering Tech

program, troubleshoot, R&D, medical, up to \$70K - NE OH

#### Engineering Tech

tool, process, program, set up, OEM, R&D, up to \$70K - E. MA

#### Swiss CNC Machinist

set up, troubleshoot, edit, great benefits, electronic OEM, up to \$25/hr - E. KS

#### Tornos Deco Machinist

relo assist, minutes from beach) up to \$30/hr - Southern CA

#### CNC Swiss Leadman

set up, troubleshoot, program, supervision, up to \$28/hr - WI

#### Swiss CNC Machinist

medical, newer machines, set up, edit, great retirement, up to \$27/Hr - NE OH

#### Swiss CNC Machinist

electronics OEM, connectors, setup, edit, up to \$30/hr - SE MA

#### Swiss CNC Machinist

large growing corp., set up, operate, edit, relo package, medical up to \$28/hr - E. FL

SWISS CNC LATHE MACHINISTS WANTED  
THROUGHOUT USA

POSITIONS CHANGE WEEKLY.

Contact Tom Medvec  
(330)722-5171 Fax (330)722-7360

SWISSCNCJobs@MRGCareers.com  
MORE JOBS ~ MORE OFTEN

### MACHINISTS WANTED \$\$ - USA - \$\$

Hydromat Machinist (growing company, busy shop, set up, troubleshoot, repair) up to \$25/hr - NORTHERN IN

Acme Set up Machinist (outstanding benefits, set up, operate, repair, huge OEM) up to \$25/hr - SOUTHEAST PA

Set Up Operator (multi spindle screw machine, great benefits, growing, relo package) up to \$23/hr - WESTERN MO

Acme Chucker Machinist (OEM, fasteners, engineered products, relo package, sunny south) up to \$22/hr - CENTRAL GA

Hydromat Machinist (plant expansion, rotary transfer, set up, repair heads, valves, units) up to \$25/hr - NORTHWEST PA

Davenport Set Up (SUN, SUN, SUN, expanding OEM, relo package) up to \$18/hr - CENTRAL GA

Screw Machine Machinist (any brand of multi spindle automatics) up to \$28/hr - CENTRAL RI

Tornos Multies Machinist (southern OEM of fittings, relo package) up to \$20/hr - NORTHERN NC

MEDVEC Resources Group  
MIR EAST

All Positions Listed on [www.MRGCareers.com](http://www.MRGCareers.com)

Contact Tom Medvec (330)722-5171  
Fax (330)722-7360

MACHINISTSJobs@MRGCareers.com

MORE JOBS ~ MORE OFTEN

### DO YOU NEED CAREER ASSISTANCE?

- Most Experienced Recruiters
- Over 20 Years Developing Contacts
- Salary Negotiation
- Interview Training
- More OEM Job Openings
- Experience that Counts - \$\$\$
- Career Advancement

Let Team MRG do the leg work  
to find your dream job!

AMERICA'S #1 SEARCH FIRM

MEDVEC Resources Group  
MIR EAST

WHY MRG?  
MORE JOBS ~ MORE OFTEN

All Positions Listed on  
[www.MRGCareers.com](http://www.MRGCareers.com)

Contact Tom Medvec  
(330)722-5171 Fax (330)722-7360

Recruiter@MRGCareers.com

For Sale

## CNC Lathe Spindle Liners

*Maximize Machining Control*

10530 E. 59th Street  
Indianapolis, IN 46236  
Ph: 317.823.6821 • Fax: 317.823.6822  
Toll Free: 877.240.2462

Visit us on the internet at  
**www.trusty-cook.com**  
email: trustycook@sbcglobal.net

## CNC Lathe Spindle Liners

**REGO-FIX®**  
Swiss Precision Tools

WWW.REGO-FIX.COM  
800.999.7346

**SOMMA TOOL CO., INC.**

Call us for Broaches, Dovetails, Holders, Quick Change Insert Tooling, Cutoff Blades, and more. Quick quotes on specials tool

PHONE: 203.753.2114 | FAX: 203.756.5489  
www.sommatool.com

**VARLAND** METAL SERVICE, INC.  
*Electroplating Specialists since 1946*

www.varland.com

513.861.0555 • FAX 513.961.7017  
3231 Fredonia Ave. • Cincinnati, OH 45229

**AVAILABLE IMMEDIATELY**



**Citizen M20**

Call for pricing and more details

**GRAFF-PINKERT**  
**708-535-2200**

## Highest Quality Precision Cutting Tools



Reamers/Drills • Thread Mills  
Thread Whirl Inserts  
Dovetail Forms, Shaves, Flatforms  
All Special Form Tools • Quick Quotes  
Carbide, HSS, Cerammet  
Tool Design Service and Engineering  
Tight Tolerances  
Micro-Medical Tooling

www.completotool.com  
www.completotool.net  
email: info@completotool.com  
763.571.4242 • Fax: 763.571.4406  
7760 Elm Street N.E.  
Minneapolis, MN 55432

Quality • Service • Value

# Complete Tool Grinding

The Tooling Connection, Inc.

Master Rebuilders of National Acmes since 1976

Ph: 419-594-3339 Fax: 419-591-2000

Email: toolco@bright.net

www.toolingconnection.com

**hardingetooling.com**

- COLLETS
- FEED FINGERS
- PADS

**RAY H. MORRIS CO.**

The Industry Leader  
Parts, Tooling,

Accessories, Davenoprt, Brown & Sharpe, Multi & CNC

Tempered Sheet Steel Round  
Edge Flat Wire

**800-243-0662**

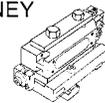
www.rhmorris.com



**New Market Products Co., Inc.**  
800-238-2240 or 607-292-6226

A PRE-SET TOOLING SYSTEM TO SAVE  
SCRAP, TIME & MONEY

- ♦ Dovetail Form Tool Holder
- ♦ Compact Rigid Cutoff Holder
- ♦ Ultra Quick Change Shave Tool Holder



**QUALITY you can count on! ...  
a proven REPUTATION!**



**OIL MIST & SMOKE  
IN YOUR SHOP?**

**ARE YOUR  
FLOORS SLIPPERY  
AND DANGEROUS?**

www.mistcollectors.com  
Tel: 1-800-645-4174

**Great For Swiss CNC's  
and Screw Machines**

**www.greentechnologies.biz**

Non-marring Feed Fingers & Pushers  
for All Automatic Screw Machines



Since 1942

815.624.8011  
Green Technologies, Inc.

**Mastercam**

The world's #1 choice for CAM.

www.mastercam.com

For Sale

**Mini-Skimmer™ Oil Skimmers**  
Remove Tramp Oils From Coolant!

- 30 Stock Units Types and Sizes!
- 5 Standard Belt Lengths
- Sold Since 1990!



**FREE CATALOG!**

**Wayne Products Inc.**  
Web: [www.wayneproducts.com](http://www.wayneproducts.com)  
Email: [info@wayneproducts.com](mailto:info@wayneproducts.com)

**Precision Tapping Systems**



**Tooling That Gives You The Competitive Edge!**  
Toll Free: 1-888-COL-LETS  
[www.centaurtools.com](http://www.centaurtools.com)

**CENTAUR PRECISION TOOLS INC.**  
An ISO 9001:2000 Certified Company

**EATON STEEL**  
COLD-DRAWN & HOT ROLLED PRODUCTS  
800-527-3851  
[www.eatonsteel.com](http://www.eatonsteel.com)

**9 For Your Tools**

**Make the call to save your profits**

Tools can break at any time. Be prepared. Positive Contact Sensors can detect broken drills, taps, end mills or reamers before the costs of chain reaction broken tools, machine damage, downtime and scrap breaks you.

**The #1 Sensor**  
Made in the USA

PO Box 143, Sussex, WI 53089  
e-mail: [info@tpsintl.com](mailto:info@tpsintl.com)

[www.tpsintl.com](http://www.tpsintl.com)  
**800-423-4031**



Collets, bushings, barloader collets and allied tooling for all Swiss-Type Automatics

Call Southwick & Meister, Inc.  
203-237-0000

Or visit [www.s-mcollets.com](http://www.s-mcollets.com)

Serving the Swiss-Automatic industry for over 50 years!



**SLATER TOOLS™**  
Number One for Rotary Broaching

**ROTARY BROACHES & BROACH HOLDERS**

- Fast, accurate method of producing polygon forms while the machine spindle is rotating
- Internal and External toolholders available

**FAST DELIVERY ON ALL POLYGON FORMS**

**CENTER LIVE RETRACTABLE**

- Precision bearing placement for greater rigidity
- Independent inner housing provides rigidity while allowing center shaft to retract
- Spring loaded design compensates for workpiece center variations

**SHAVING DOVETAIL TOOL HOLDER**

- Produce smooth uniform diameters within 1/-0005
- Complete in less revolutions than an end working operation
- Floating body compensates for index or spindle errors
- Loose jaw design gives easy tool removal
- Various block configurations available

**ORDER FACTORY DIRECT**  
**586-465-5000**  
24 Hour Fax: 586-465-3030  
[www.SlaterTools.com](http://www.SlaterTools.com)  
44725 TRINITY • CLINTON TOWNSHIP, MI 48038

**BROWN & SHARPE SPECIALISTS**

COMPLETE LINE OF NEW REPLACEMENT PARTS FOR BROWN & SHARPE AUTOMATIC SCREW MACHINES

Competitive Pricing  
Same Day Shipping  
HYE-TECH MACHINE ENTERPRISES INC.

Toll-Free: (888) 484-9900  
Fax: (631) 287-3638  
Web: [www.hyetechn.com](http://www.hyetechn.com)



**ROTARY TRANSFER MACHINES**

TYPE 60-15  
ALL MACHINES UNDER POWER IN OPERATION  
15 STATION CENTER CHUCKING  
AUTO PICK & PLACE (LOAD/UNLOAD)  
DRILLING, MILLING, TAPPING,  
MULTISPINDLE HEADS  
HIGH PRESSURE COOLANT SYSTEM  
AND MORE

CONTACT: CARLOS MARTINEZ  
**HILITE INTERNATIONAL**  
CARROLLTON, TX  
PHONE 972-389-4109  
FAX 972-389-4127



## The Multiple of One

The full page color ad in the February 2007 *Dwell* magazine immediately grabbed me.

It showed a sketch of a swan-necked faucet with a sliding handle to turn it on and off and regulate the temperature of the water. Elegant design, but it was the copy that really caught my eye. The ad asked me to design my own faucet and shower. This was the perfect illustration of the manufacturing process merging the multiple and the singular approach.

The product is the brainchild of Symmons Industries of Braintree, Massachusetts, a 70-year-old family business famous for its hotel room shower heads.

Symmons is a niche player in the bathroom fixture universe. In the U.S., Delta, Moen and Kohler dominate, but Grohe of Germany and Toto of Japan vie for pieces of the

“ I am fascinated by modifying the mass into the unique and using manufacturing as a sales strategy.”

market, and the Chinese generics aim for the lower end. How does a Symmons set itself apart from the crowd, particularly Kohler, which is huge and privately owned with loads of marketing money to project a luxury image?

I spoke at length to Jeffrey Reilly, vice-president of marketing at Symmons, because I am fascinated by this snowballing trend toward modifying the mass into the unique and using the manufacturing process as a sales strategy.

What Symmons is doing quite adroitly is enlisting the designers of hotels and condominiums into the plumbing manufacturing process. They have a collection of interesting fittings to start the conversation, but they really want the designer to build a unique look for every big project. The invitation to designers made in print ads, at shows, and in one-on-one presentations asks them to put their imprint on the bathroom brass. They will take the designer's ideas and produce a prototype within a few days using their CAD/CAM equipment and material layering machinery to turn the idea into tangible pieces of wood and metal to be studied, felt,

and then tweaked. The valves and fittings behind the walls are usually standard high quality Symmons products, but for the designer of a Four Seasons hotel or Jackson Hole condo the faucet is clay to be shaped.

Reilly says this approach of moving out of the catalog into the imagination has been the wedge to make significant inroads into the high-end market, especially one of a kind destination hotels.

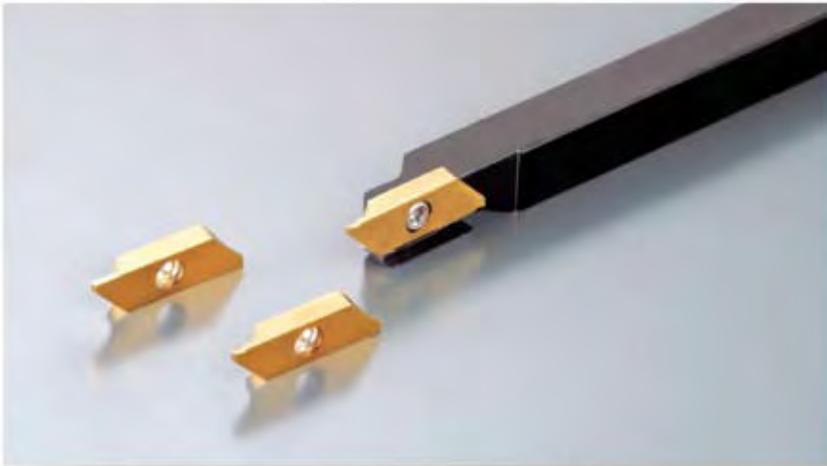
Because Symmons produces its products in the U.S. they can be in production on a unique hotel product in four months, which Reilly says is fast enough to accommodate one of these large projects like the Mohegan Casino in Uncasville, Connecticut, a 1200-room high-end hotel which they got when another supplier failed in the clutch.

Symmons is showing how a forward-thinking smaller company can compete with multi-billion dollar firms on the elite jobs by changing the way the game is played. The Symmons approach reminds me of the open software movement and the rise of YouTube as a challenge to traditional TV and movies. By enlisting the designer community in the process, rather than simply offering a portfolio of previously used options, Symmons is appealing to the creativity of its buyers. By using the new manufacturing tools proliferating today to convert the mass into the individual at a competitive price, the company is drafting onto the most dynamic force in the product game today.

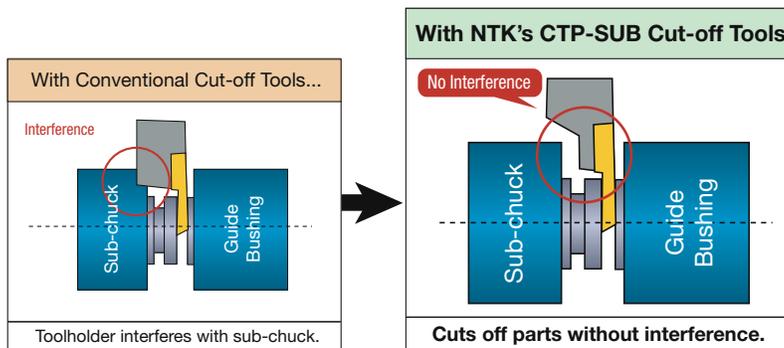
Combining the universal and unique is the future of manufacturing in this country, whether the product is spinal implants or the back massaging shower heads of Symmons.

# CTP-SUB Series Cut-off Toolholders

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



## For parting-off small parts



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

## NTK CUTTING TOOLS

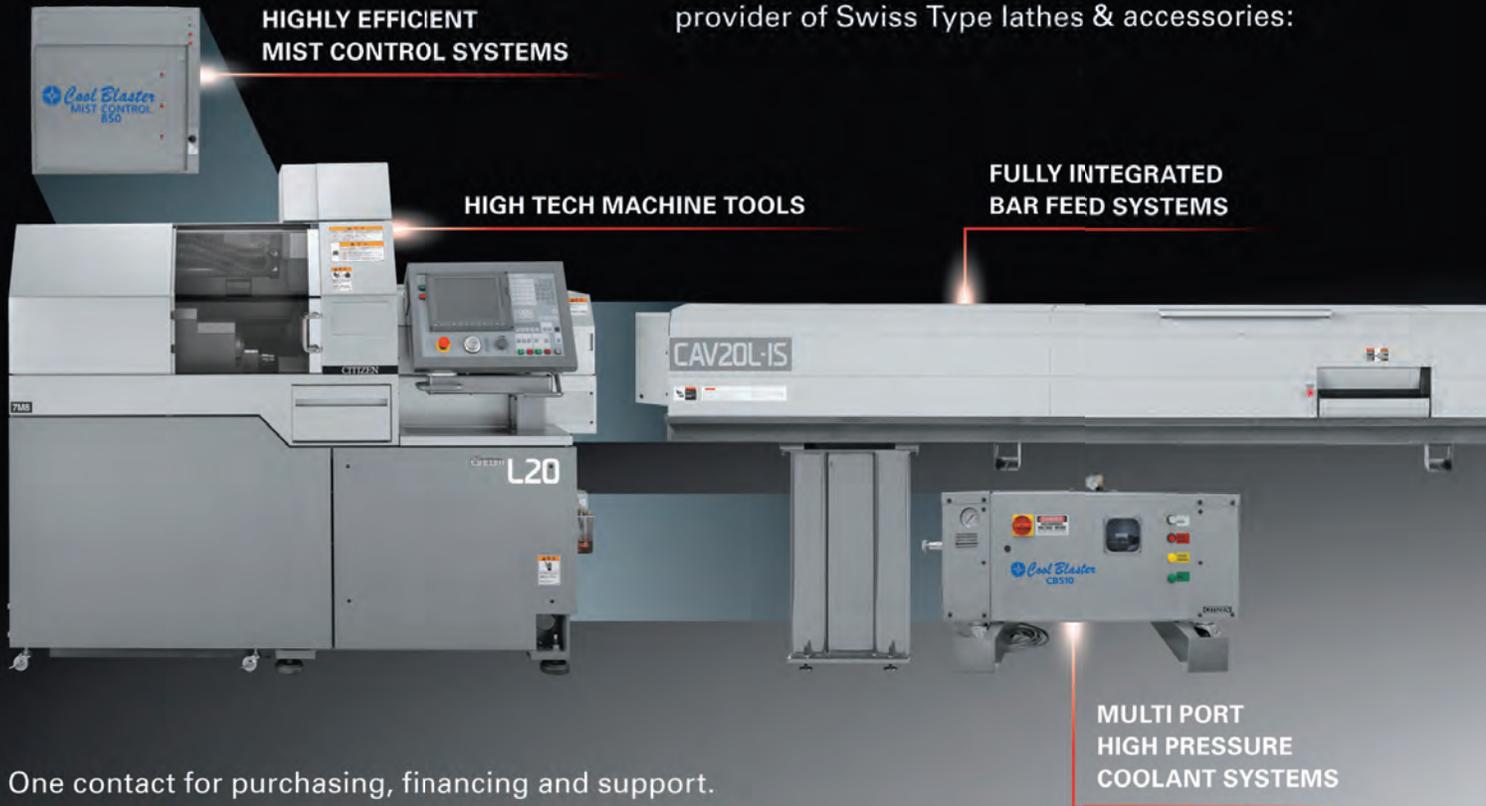
Division of NGK Spark Plugs (USA), Inc.

46929 Magellan Dr., Wixom, MI 48393 U.S.A.



**SINGLE SOURCE Technology**  
**SINGLE SOURCE Support**  
**SINGLE SOURCE Financing**

Marubeni Citizen-Cincom is your single source provider of Swiss Type lathes & accessories:



**HIGHLY EFFICIENT  
MIST CONTROL SYSTEMS**

**HIGH TECH MACHINE TOOLS**

**FULLY INTEGRATED  
BAR FEED SYSTEMS**

**MULTI PORT  
HIGH PRESSURE  
COOLANT SYSTEMS**

One contact for purchasing, financing and support.

Citizen machines and these accessories are exclusive products provided by Marubeni Citizen-Cincom and Citizen Machinery America. Financing provided by MCC Capital.

# Cincom

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

**PMTS Booth #536**

**Marubeni Citizen-Cincom Inc.**

Contact Marubeni Citizen-Cincom or your local Citizen distributor and learn more about the **SINGLE SOURCE ADVANTAGE**

Allendale, NJ  
(201) 818-0100

Elk Grove Village, IL  
(847) 364-9060

Fountain Valley, CA  
(714) 434-6224