

TCI'S THREE GENERATIONS

TCI Precision Metals, Los Angeles, CA has been built and managed by Burt, John and Ben Belzer for three generations, supplying “Machine Ready Blanks” to machine shops and OEMs all over the United States! —p18

NTMA-U ACHIEVES CERTIFICATION WITH THE FEDERAL BUREAU OF APPRENTICESHIP AND TRAINING, U.S. DEPARTMENT OF LABOR

NTMA Vice President Ken McCreight has announced that as of early 2014, NTMA-U is a Certified National Program with the Federal Bureau of Apprenticeship and Training (Department of Labor). —p20

MEETING THE NEXT GENERATION OF MANUFACTURING LEADERSHIP

The annual Manufacturing Challenge contest is an SME-sponsored intercollegiate manufacturing competition in which each team comes up with a manufacturing project to design and build while documenting the manufacturing processes. —p29

SPECIAL REPORT: ADVANCED TECHNOLOGIES DRIVING U.S. MANUFACTURING RENAISSANCE

The U.S. manufacturing sector is in the midst of a technology renaissance that has the potential to bring manufacturing work back to North America for years —p31

ONE VOICE

NTMA

PMA
PRECISION METALFORMING ASSOCIATION

6TH ANNUAL NTMA/PMA ONE VOICE LEGISLATIVE CONFERENCE

MAY 6-7, 2014
WASHINGTON, D.C. —P8

Time Is Money.

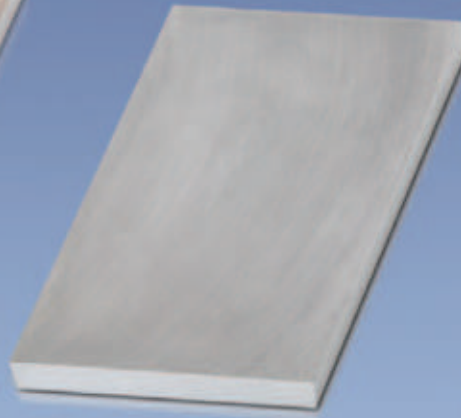
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1

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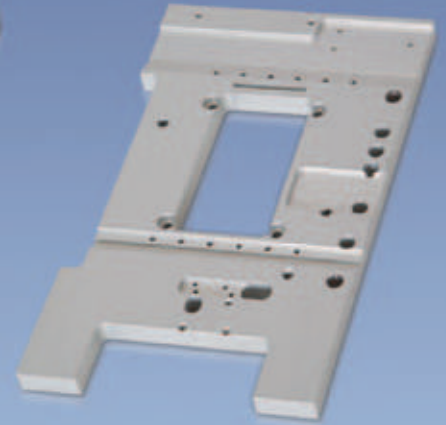
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deburring, or wasteful
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2

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receiving to
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3

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CHAIRMAN'S CORNER

TED TOTH / NTMA CHAIRMAN OF THE BOARD

As it is now my honor to serve as NTMA Chairman, I find that I have big shoes to fill from chairmen who have come before me. I am very fortunate that my peers laid a good foundation upon which to build.

Service on the executive board is quite a commitment to all who are elected. We are hoping within the next years to develop a new board structure to make the commitment more flexible and to provide more value to members.

We are also in the process reviewing NTMA's Vision, Mission and Values statements as well as membership requirements this year. Are they relevant today? It has been 20 years since they were updated. Feedback from team leaders, chapter executives, chapter officers and trustees on recommended updates is a valuable first step.

The way the Executive Team develops our strategic plan is also changing. The ET will develop a 30,000 foot level plan, including 5 strategic statements in order to give the association some direction. The member teams and staff will be working on short-term, mid-term and long-term planning. Past pressing operational issues got in the way of the ET having time to look at NTMA's long-term future plans. Further, as the ET developed their strategic plan in January of each year, there was no budget in place to move forward on the plans. Starting this year, member teams and staff will develop the year's mid-term plan before June, when the budgeting process starts, in order to provide required funding for the next year.

As with our businesses, it is time we start working *on* the association instead of *in* the association. Most of the fires are out; it is time to rebuild. The process started last

year will move forward each year. As there were great teams before me, the same level of dedication and knowledge follow my term as Chairman.

I want to take some time to review this year's theme.

With resurgence of manufacturing in the United States and its significant impact on the U.S. and global economies, we were inspired to select "*Re-Tooling Precision Manufacturing*" as our 2014 theme.

Re-tooling doesn't always refer to equipment. It can also suggest re-thinking the way we perform various tasks in our businesses. In 2014 we will help you re-tool your business by reinforcing the tools offered by NTMA.

NTMA has a proven toolbox of resources that can help members update the ways their companies:

- Find new technology and new ideas
- Train their employees today and for the future
- Define themselves and our industry
- Recruit and retain employees
- Reduce labor through technology
- Partner at executive levels with suppliers and technology leaders

One of NTMA's greatest tools is its Teams – groups of members who develop resources and programs for our industry. The Association has four Leadership teams with 10 standing and action teams under them. Three of the Leadership teams are listed below; the fourth is our Governance Team which includes the associate oversight teams: Audit Team, Budget and Finance Team, Nominating Team, and the Board Structure Action Team.

Each month we will review some NTMA tools: programs, presentations and best practices, including:

• INDUSTRY ADVOCACY: GOVERNMENT AFFAIRS TEAM AND NATIONAL ROBOTIC LEAGUE TEAM

One Voice Action-Alerts. Manufacturing Policy. Legislative Conference. National Robotics League.

• MEMBERSHIP VALUE: NEXT GENERATION TEAM AND CHAPTER EXECUTIVE TEAM

100 Business Management Advisories. Chapter Development Summit. 175 Chapter Resources and Best Practices. HR and Employee Law. Environment Resource Center. Safety Resource Center. Purchasing Fairs. NTMA Insurance. Business Conditions Report. Benchmarking (Wage and Fringe Benefit Report and Operational Costs and Executive Salary Report). Manufacturing Suppliers' Guide. 15+ National Associates' member discount programs. Membership Directory. International Trade Missions.

Another outstanding Membership Value tool is networking at your local chapter level. Our Chapter Executive Team has assembled many tools and best practices chapters can use to bring more value at the local level.

• WORKFORCE DEVELOPMENT: EDUCATION TEAM AND MANUFACTURING TECHNOLOGY TEAM

NTMA-U. Employee Aptitude Testing. AMPED. 6S Excellence. Member Technology Award. Green Manufacturing. Intro to Quality. Intro to Lean. Reducing Labor through Technology. Careers in Precision Manufacturing. MT Connect. Membership Kit. And over 25 training publications.

• CONFERENCES (FALL AND SPRING)

Industry Roundtables. Next Generation Roundtables. Business Development Tracks. Keynote Speakers. Peer-to-Peer Networking. Technology Suites. Plant

CONTINUED ON – P5

THE RECORD

OPERATIONS & EDITORIAL

Dave Tilstone, President
Emily Lipovan, Managing Director
Editor
Sally Safranski, Associate Editor

NTMA EXECUTIVE TEAM

Theodore O. Toth, Jr., Chairman
Toth Technologies – Pennsauken, NJ

Herb Homeyer, Vice Chairman
Homeyer Precision Manufacturing – St. Louis, MO

Dave Sattler, Treasurer
Sattler Companies – Sharon Center, OH

Ken Seilkop, Secretary
Seilkop Industries – Cincinnati, OH

Robert Mosey, Past Chairman of the Board
*Moseys' Production Machinists Inc. –
Anaheim, CA*

ADVERTISING INQUIRIES

To advertise in *The Record*, or for information on publishing your corporate newsletter or sales literature, contact NTMA at (216) 264-2847 or tbryson@ntma.org for advertising, ssafranski@ntma.org for editorial content. Design & layout by Z Graphics david.zablo@gmail.com



NATIONAL TOOLING & MACHINING ASSOCIATION

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Cleveland, OH 44134
1-800-248-6862
www.ntma.org

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Tours. Chapter Development Tracks.

• OTHER NTMA TOOLS

The Record. E-Trends. The Chapter Leadership Newsletter. National Tooling & Machining Foundation (NTMF).

• SPONSORING NATIONAL ASSOCIATES MEMBERS

Many world-class companies support NTMA and our members as supply and technology partners.

How many of the NTMA tools or programs do you know about and use?

This year's goal is to remind you about the tools and to help you learn to use them effectively. And we will work to continuously improve these tools to make them even better, up-to-date, and easy to access so that you, our members, can use them to grow your businesses.

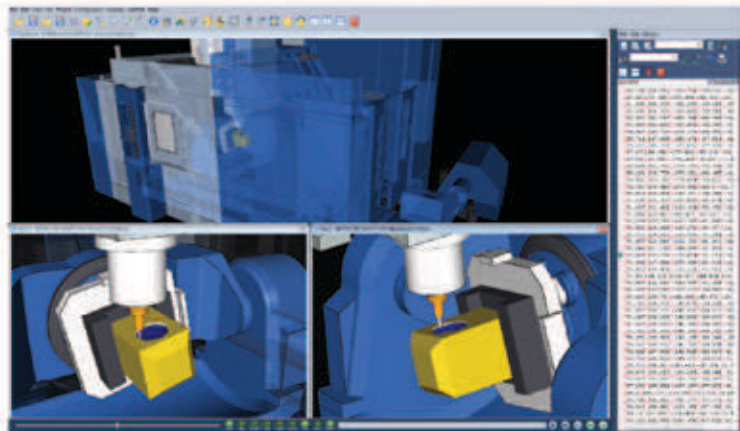
Most of our members use only 10% of available programs and still find value in their membership. How much greater would that value be if you used 25%, 50% or more of the tools at your disposal? At this time next year we will ask "What new NTMA tools did you add to your company's toolbox?"

We've heard some members say they find membership value at the local chapter level, with less perceived national value. While we agree that there is a lot of local value, we can't help but wonder what tools NTMA brings to the table that aren't so widely known or utilized.

We hope our members will understand the value our national association brings

CONTINUED ON – P6

"Do we have VERICUT?"



"I started in my new position last Friday. The first thing I asked was: Do we have VERICUT?"

Jacques Ouellet, CEO, NSE-Automatech



NSE-Automatech purchased VERICUT because Mr. Ouellet knows that if the CNC machines are making test parts, they are not making money. But eliminating the prove-out process requires assurance that the NC program won't scrap the part or crash the machine. VERICUT can create the confidence to run a part for the first time with no one at the machine. It works with all CAD/CAM/PLM systems to simulate CNC code, whether programmed manually or post-processed from your CAM system. Every day, our software is trusted by thousands of companies from all industries to simulate and optimize their machining process within a virtual machining environment.



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to their companies and will use these tools and participate in programs – these are all value-added parts of your NTMA membership. Working together at both the national and chapter levels, we can make our industry stronger.

We just came back from one our best MFG meetings ever! The Biltmore in Phoenix was impressive and had much culture and history. It in fact, designed by Frank Lloyd Wright.

We enjoyed participating in roundtables and meeting first-time attendees. The keynote and guest speakers were top-liners. The gala was first class. Awards were presented as follows:

CELEBRATING 25 YEARS OF NTMA MEMBERSHIP...

Gary Koltookian, Epicor Software Corporation (Dublin, CA)

Craig Schroer, Unitech, Inc. (Lee's Summit, MO)

CELEBRATING 35 YEARS OF NTMA MEMBERSHIP...

B.J. Bonin, Bertrand Products, Inc. (South Bend, IN)

David Lair, Dynamic Machine & Fabrication (Phoenix, AZ)

CELEBRATING 45 YEARS OF NTMA MEMBERSHIP...

Dennis Frampton, C&J Industries (Meadville, PA)

Peter LeVan, R.F. Cook Manufacturing Company (Stow, OH)

STAR CHAPTER AWARDS:

Arizona Chapter, Boston Chapter, Connecticut Chapter, Kansas City Chapter, Los Angeles Chapter, Michiana Chapter, North Texas Chapter, Northwest Pennsylvania Chapter, Pittsburgh Chapter, Rock River Valley Chapter, St. Louis Chapter, Western Massachusetts Chapter

MOST IMPROVED STAR CHAPTER:

Rock River Valley Chapter

STAR CHAPTER OF THE YEAR:

Michiana Chapter

NTMA WELCOMED A BRAND NEW CHAPTER:

New Mexico, represented by their chapter president, Mark Bogue

WILLIAM E. HARTMAN AWARD FOR EXCELLENCE IN TRAINING:

Alice Overton

NTMA DISTINGUISHED SERVICE AWARD:

Brian Papke, Mazak Corporation

THE L.A. SOMMER MEMORIAL AWARD:

Roy Sweatman of Southern Manufacturing Technologies

Bob Mosey awarded team leader awards to Grady Cope for the Nominating Team and to Fran Birch for the Next Generation Team.

JoAnn Mosey was awarded the First Lady's Pewter Tray.

Bob Mosey was awarded a plaque for his service as NTMA Executive Officer and the Past Chairman Gold Pin.

There were many other new items to announce, but I will leave them for next month.

I am honored to serve as your 2014 NTMA Chairman,

THEODORE O. TOTH, JR. (TED) /
NTMA CHAIRMAN



I2P2 IS ON OSHA'S RADAR—IS IT ON YOURS?

“Injury and illness prevention programs (I2P2) are good for workers, good for business and good for America.” OSHA administrator David Michaels made this statement in support of a plan that would require employers to develop written safety programs based on a common set of elements. In its most recent regulatory update, OSHA said it anticipates a notice of proposed rulemaking on I2P2s by September 2014.

The cost of worker injuries is staggering, and OSHA believes an approach to workplace safety with I2P2s at the center can save money. The agency estimates that implementing I2P2s will reduce injuries by 15 to 35 percent for employers that do not currently have programs. At 15 percent, that would translate to a savings of \$9 billion per year in workers' compensation costs. A 35 percent reduction would yield a savings of \$23 billion annually.

OSHA points to data from Liberty Mutual Research Institute, which reports the financial impact of the most disabling

workplace injuries in a recent year at \$53 billion. In addition to the direct costs, employers face a variety of indirect costs.

Indirect costs of workplace injuries and illness include:

- Wages paid to injured workers for absences not covered by workers' comp
- Wage costs related to time lost through work stoppage
- Administrative time spent by supervisors following injuries
- Employee training and replacement costs
- Lost productivity related to new employee learning curves and accommodation of injured employees
- Replacement costs of damaged material, machinery and property

Other costs include those related to occupational illnesses that may not surface for years or decades following exposure.

OSHA offers evidence that I2P2 programs reduce injuries and save money. For example:

- Alaska has an I2P2 requirement for

over 20 years. Five years after the program was implemented, the state saw a 17.4 percent decrease in injuries and illnesses.

- A Colorado program lets companies adopt basic prevention components in return for a reduction in workers' compensation premium. The annual decline in accidents was 23 percent, and the reduction in accident costs was about 60 percent.

- Washington State began requiring establishments to have I2P2s in 1973. Five years later, the net decline in injuries and illnesses was 9.4 percent.

Such savings are not just for large organizations or employers. Participants in SHARP, an OSHA voluntary program for small employers with elements similar to those for I2P2, showed impressive results. One study found that the average number of workers' compensation claims for SHARP employers decreased by 52 percent, and the average claim cost dropped by 80 percent.





WELCOMES NEW MEMBERS

CHEMETALL US, INC.

National Associate Member
Mr. Brian Whalen
675 Central Avenue
New Providence, NJ 07974

ADVANCED MACHINING SHEETMETAL & DESIGN LLC

New Mexico Chapter
Mr. Robert F. Sanchez
6901 Gruber Avenue NE
Albuquerque, NM 87109

CALTECH MANUFACTURING INC.

Philadelphia Delaware Valley Chapter
Mr. Jack Callender
100 Industrial Drive
Ivyland, PA 18974

CAREER TECHNICAL EDUCATION FOUNDATION (REINSTATED)

Education Institution
Mr. Paul J. Wahnish
2901 Rigsby Lane
Safety Harbor, FL 34695

CASCO MACHINING, INC.

San Francisco Bay Area Chapter
Mr. Juan M. Casillas
701 Aldo Avenue, Suite 50
Santa Clara, CA 95054-2211

CHICK MACHINE COMPANY, INC.

Pittsburgh Chapter
Mr. James Chick
118 Chick Lane
Butler, PA 16002

DELONG MANUFACTURING COMPANY, INC.

San Francisco Bay Area Chapter
Mr. David DeLong
967 Parker Court
Santa Clara, CA 95050

DUFFY MACHINE

San Diego Chapter
Michael Duffy
1930 Watson Way, Suite H
Vista, CA 92081

GENERAL DYNAMICS OTC (REINSTATED)

New Mexico Chapter
Mr. Robert F. Sanchez
6901 Gruber Avenue NE
Albuquerque, NM 87109

INSIGHT LIGHTING

New Mexico Chapter
Mr. David Patterson
4341 Fulcrum Way NE
Rio Rancho, NM 87144

J. BAUR MACHINING

Pittsburgh Chapter
Mr. Jeff Baur, Sr.
241 Clay Avenue
Mars, PA 16046

KLUBA MACHINE, LLC

St. Louis Chapter
Mr. Joseph Kluba
1904 W. Main Street
Washington, MO 63090

PRISM TECHNOLOGIES, INC.

Pittsburgh Chapter
Mr. Rich Borkowski
97 Enterprise Street
Elizabeth, PA 15037

ROSDALE TECHNICAL INSTITUTE

Education Institution
Mr. Dennis Wilke
215 Beecham Drive
Pittsburgh, PA 15205

RUCO PRODUCTS, INC.

Kansas City Chapter
Ms. Brenda K. Rupert
2620 SW Hwy 40
Blue Springs, MO 64015

SPIRE MANUFACTURING SOLUTIONS, LLC

Rocky Mountain Chapter
Mr. Tony Feltman
775 N. Murray Blvd.
Colorado Springs, CO 80915

VICTORY TOOL, INC.

General
Mr. Frederick Simonson
1151 McKinley Street
Anoka, MN 55303-1094

WORLD WIDE HONING, INC.

San Fernando Valley Chapter
Mr. Efren Diaz
12990 Branford Street, Unit K
Pacoima, CA 91331

NTMA WELCOMES NEW NATIONAL ASSOCIATE: CHEMETALL US, INC



Chemetall is the only globally dedicated metalworking fluid and surface treatment company. Headquartered in New Providence, NJ, Chemetall has been developing, manufacturing and supplying state-of-the art specialty chemical products since 1909. The ISO 9001:2008 certified company offers a wide spectrum of metalworking products and systems to meet the needs of many industries and applications. Find more information at www.chemtallamericas.com.



CALYX: IT SERVICE AND CONSULTING

Calyx provides IT solutions and services to small and medium businesses, and manufacturers throughout the United States. Their cloud-driven solutions deliver more value, and at a lower total cost of ownership, than when done on premise or in-house. But great technology is only half of the equation. The heart of the Calyx promise is their customer service and the relationships they form with their clients.



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6th Annual NTMA/PMA One Voice Legislative Conference



May 6-7, 2014
Washington, D.C.

Invitation from Association Chairs

Come bring some common-sense solutions to Washington and join us for the sixth-annual NTMA/PMA One Voice Legislative Conference in Washington, D.C., May 6-7, 2014. This is your chance to have your voice heard directly by the policymakers who are creating the laws of the nation.



Ted Toth, NTMA 2014
Chairman of the Board

The new year saw 55 tax credits and provisions expire, including Section 179 Equipment Expensing and the R&D Tax Credit. At the federal agencies, the EPA, OSHA and NLRB are embarking on an aggressive agenda with a focus on increased reporting and making data public.

Meanwhile, manufacturers around the country continue to face a shortage of skilled workers.

The November 2014 midterm elections are only months away and public officials are listening especially closely to manufacturers. Your Senators and Representatives in Washington, D.C. must

hear from you on these and other issues important to your business.

For first timers and those seeking a refresher, the One Voice Washington Office will offer a pre-conference webinar on April 24 to brief participants on what to expect during the congressional visits and the latest policy developments.

We need your help and participation to make sure Washington hears our voice. Please join us May 6-7 in Washington, D.C. to represent manufacturing in America.



Jody Fledderman, PMA
2014 Chairman of the
Board

Agenda

Monday, May 5, 2014

4:00 p.m. – 5:30 p.m. – Early Conference Registration
5:30 p.m. – 6:30 p.m. – Optional Early Arrivals Reception

Tuesday, May 6, 2014

8:00 a.m. – 11:30 a.m. – Conference Registration
11:30 a.m. – 1:00 p.m. – Conference Opening
Remarks, Briefing and Lunch
2:00 p.m. – 4:30 p.m. – Capitol Hill Visits
5:30 p.m. – 6:30 p.m. – Networking Reception
Reception sponsored by APPI Energy



Wednesday, May 7, 2014

8:00 a.m. – 9:30 a.m. – Breakfast, Issues Presentation
10:00 a.m. – 4:00 p.m. – Capitol Hill Visits
Includes lunch with members of Congress

All events take place at the hotel except for Capitol Hill visits.

Conference Location/ Hotel Accommodations

Washington Marriott Hotel
1221 22nd Street NW
Washington, D.C. 20037
Phone: 800-228-9290
Rate: \$239 per night (plus tax)

Registration for BOTH the conference and hotel will close on April 1, 2014. Please mention the "NTMA/PMA Legislative Conference" to receive the group rate at this hotel.

To register, visit www.metalworkingadvocate.org
for online registration.
Registration deadline is **April 1, 2014**

Questions? Contact info@metalworkingadvocate.org
or **202-393-8250**.



LATEST NTMA BUSINESS CONDITIONS REPORT NOW AVAILABLE ONLINE



The most recently published NTMA Business Conditions Report covers the last half of 2013, a projection for the first half of 2014, and is a geographical “snapshot” of business trends and conditions in the special tooling and machining industry.

This Report, based on information from 154 NTMA member companies, indicates that overall business conditions during the period ending December 31, 2013 were Very Good to Excellent for 67% of respondents; however, this is a slight decline from the previous reporting period. There appears to be optimism on the part of 62% of respondents that the next six months will show a moderate to substantial increase in business conditions. Less than one percent of respondents are expecting a substantial decrease.

NTMA members can download the complete report at www.ntma.org; log in and click on Resources>Reports>Business Conditions Reports.



MICHAEL J. FRANCEK: AKRON ASM OUTSTANDING ACHIEVEMENT AWARD

Michael J. Francek received the ASM (Akron Chapter) Outstanding Achievement Award at the Chapter’s Engineers Week celebration in February.

Mike is Vice President and General Manager of McAfee Tool and Die, Inc., located in Green, OH (member of Akron Chapter). Mike is a Journeyman tool and die maker, having been with McAfee Tool and Die for 33 years. He instituted the company’s Engineering and Quality Manuals and oversaw the installation of their CAD Design System and

also the implementation of their ISO Quality System.

McAfee Tool and Die has long been considered a leader in the metal-working industry. The company focuses on tool and die making and advanced machining processes such as CNC, wire EDM and laser cutting machining along with metal stamping and fabrication. Congratulations, Mike!



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NTMA VISITS TO MEMBERS' SHOPS

2014 HAS ALREADY BEEN A BUSY YEAR FOR NTMA STAFF MEMBERS. PLANT TOURS AND VISITS TO MEMBERS' SHOPS AND OFFICES ARE AMONG THE HIGHLIGHT OF THEIR TRAVELS.

Clockwise from top left: Glenn Vannoy, Darla Walker and Lyle Anderson of C&H Machine and EDM Services – Escondido, CA. Justin Homeyer, Tiffany Bryson and Gretchen Homeyer, Homeyer Precision Manufacturing of Marthasville, MO . Rick Johnson and Mark Muskgrove of CJ Manufacturing of Tempe, AZ.



Above: Lyle Anderson and Roger Acevef of C&H Machine and EDM Services of Escondido, CA.
Below: Ken Linnenger, Keith Garrison, Cheryl Garrison of GBF Enterprises of Santa Ana, CA and Mark Osterstock, Vice Chairman of the LA NTMA Chapter



Clockwise from the top left: Mike Dailey of Prescott Aerospace and Jeff Walmsley. Glenn Vannoy, Heather Russell, Sean Tillett, Mike Brown, Tammy Tillett, Cliff Manzke, Lyle Anderson and Cathy Teal. Michael Holmes, CEO and Shannon Sparks, HR of Cadence Aerospace in Phoenix, AZ with Executive Staff, Jeff Walmsley of NTMA.



Installation of Officers for the LA Chapter – Ben Belzer of TCI, Mark Osterstock of Q-Mark Manufacturing, President Darin Martinez of ATR Sales and 2014 National NTMA Chairman, Ted Toth



Above: NTMA President Dave Tilstone and Joe Koenig of Exactitude, LLC of Mesa, AZ and Vice Chairman of ATMA. Below: Mark Weathers and Steve Borrowdale, QC Manager from Excalibur Precision Machining of Peoria, AZ



AVOID HIGH ELECTRICITY BILLS

The 2014 polar vortex caused many residential and commercial customers to experience costly electricity bills this winter. Some electricity suppliers dramatically increased their charges; some even quadrupled the variable prices billed to customers. If you noticed an increase in your electricity bills, then your bill and contract should be analyzed as soon as possible. Some sup-

pliers charge customers a variable month-to-month, market-based price when their fixed-price supply contract expires. The electricity market is very volatile, causing market-based prices to often be significantly higher than fixed prices.

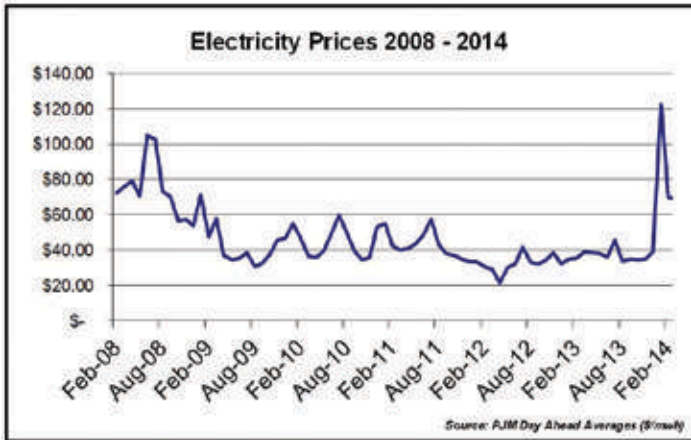
“After their fixed-price contract expired, some business owners that were paying a fixed price of approximately six cents per

kilowatt hour (kWh) began paying a variable price as high as 24 cents per kWh,” said Michael Payne, JD, LLM, Executive Vice President and Corporate Counsel of independent consulting firm APPI Energy. “Moreover, some customers saw


their bills substantially increase—doubling and then tripling—in increments, month after month.”

Now is an important time to review your electricity bill and electricity supplier contract. Are you paying a fixed price or a variable price for electricity? What are the expiration conditions of your contract? NTMA endorsed APPI Energy to reduce costs for member businesses. APPI Energy has vetted more than 100 electricity suppliers across the U.S., and has approved 40 reliable suppliers to serve NTMA members. The unbiased consulting team can review your supplier contract and negotiate a new supply agreement.


If you have any doubt about your electricity bill or contract, send a copy of your bill to Carrie Shepard at APPI Energy at 410-749-8769 (fax) or cshepard@ap-pienergy.com. She may also be reached at 800-520-6685.




The month-to-month increase in day-ahead average electricity prices in January 2014 was the largest increase in four years.



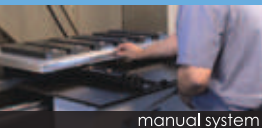
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GF Machining Solutions, formerly GF AgieCharmilles, recently named two new heads of sales to enhance the sales, service and support for the company's milling, EDM and laser texturing solutions in regions of the United States that are experiencing continued manufacturing growth. Roy Cripps and Jon Walker fill these critical roles for the West Coast and Midwest, respectively.



Roy Cripps

Based in Yorba Linda, CA, Cripps is in charge of the overall sales and service for the company's machine tool selection, including advanced 5-axis technology, consumable offerings and automation solutions in his territory. He is also responsible for ensuring that his customers receive top-notch technical training, applications engineering support as well as turnkey solutions.

Having held senior sales management roles with capital equipment and machine tool companies, Cripps brings extensive and extremely beneficial experience to his new role at GF Machining Solutions. Furthermore, he has a bachelor's degree

in engineering and business from Sheffield Hallam University in England.

"GF Machining Solutions has long been a global innovator in the manufacturing industry, especially when it comes to high-speed, high-precision 5-axis technology," said Cripps. "I look forward to contributing to the future growth of the company as well as using its advanced solutions, extensive resources and global expertise to help my customers achieve more productivity and profitability."

Walker joins the company's Lincolnshire, IL headquarters with more than eight years of sales, management and new business development experience in the machine tool industry. He has a bachelor's degree in business, management and marketing from Elmira College in New York where he graduated Cum Laude.



Jon Walker

In his new role, Walker is responsible for managing and enhancing the company's sales in the Midwest. This includes reinforcing a strong direct relationship with end users and educating the marketplace on the

company's diverse product portfolio for a wide range of industry segments, including aerospace, automotive, electronics and medical.

"It's exciting to work for a company that continues to raise the bar not only in terms of technology, but also customer service and support initiatives," said Walker. "My goal is to ensure that manufacturers throughout the Midwest know that GF Machining Solutions has everything they need to optimize their part production for almost any application."

According to Gisbert Ledvon, director of business development for GF Machining Solutions, Cripps and Walker join the company at a time when it is strengthening its presence and capacity in areas of the United States where demand for advanced, highly efficient machining technology is rapidly growing.

"We're excited to have these sales professionals on our team. With their complete understanding of the machine tool industry and highly successful track records, I'm confident they will be a valuable asset to us as well as to our customers," said Ledvon.



MOUNTED POINTS & ABRASIVE WHEELS CUSTOMIZED FOR ROBOTIC FINISHING CELLS

A full line of cotton fiber mounted points and Type 1 abrasive wheels that are ideal for a wide range of robotic metal finishing and surface preparation applications is available from Rex-Cut Abrasives of Fall River, MA.

Rex-Cut® Mounted Points and Type 1 Abrasive Wheels are made from multiple layers of nonwoven cotton fiber that are impregnated with aluminum oxide or silicon carbide abrasives, laminated, and then pressed and bonded together. Ideally suited for use in robotic applications, these cotton fiber abrasive products can be custom fabricated into different

shapes, bonds and grits to achieve specific metal finishing and surface preparation requirements.

Constantly revealing fresh abrasives as they work, Rex-Cut® Mounted Points and Type 1 Abrasive Wheels provide controlled metal removal, will not change a part's geometry, run cool, and debur and finish in one-step. Points come in A, B, W and special shapes and the Type 1 wheels can be made in varying thicknesses. Applications include deburring slots, holes and vane edges as well as mechanically removing braze, flux and residual surface oxides.

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THE BROCK BABB MEMORIAL SCHOLARSHIP

PURPOSE

The Brock Babb Memorial Scholarship is an annual tuition scholarship created by the National Tooling and Machining Association in support of students advancing their education and pursuing careers in manufacturing.

Successful scholarship applicants will receive a minimum award of \$1,000. It is the intent of the Association to award these scholarships on an as needed basis.

SELECTION

The NTMA Education Team shall serve as the selection committee, and shall make the final selection of the scholarship recipient from a list of those students making application under criteria outlined in the Eligibility Requirements.

ELIGIBILITY REQUIREMENTS

All Applicants Must:

- Be at least 18 years at time of class start.
- Be a member of a high school senior class and is planning to attend an accredited educational facility; or be a high school graduate enrolled to continue his or her education in a manufacturing industry related discipline.
- An individual who is recommended by an NTMA Member Company.

- Reside in the United States, and attend a trade school, technical college, apprenticeship, or an accredited college or university in the United States with the intention of enrolling into manufacturing coursework.
- Provide a high school or college transcript.
- Submit scholarship application and supporting documentation by April 28, 2014.
- Provide a written summary stating their career goals, describing interests, classes, and any work-related activities voluntary or paid.

AWARD

The NTMA Babb Scholarship Fund will be paid upon proof of acceptance into appropriate education facility as defined above.

SUBMISSION

Submit all information to:

Ken McCreight
National Tooling and Machining Association
1357 Rockside Road
Cleveland, OH 44134
Phone: 1(800) 248-6862; Fax: (216) 901-9190
E-mail: kmcCreight@ntma.org

THE EDWIN VOBEDA MEMORIAL SCHOLARSHIP

PURPOSE

The Edwin Vobeda Memorial Scholarship is an annual tuition scholarship created through a charitable donation to the National Tooling and Machining Foundation from the Edwin F. and Mildred Vobeda Charitable Remainder Trust in support of students residing in the Central Time Zone advancing their education in a tool and die apprenticeship program to pursue careers in the tool and die industry. Successful scholarship applicants will receive a minimum award of \$1,000 and a maximum award of \$5,000 annually. It is the intent of the Foundation to award up to three (3) scholarships annually.

SELECTION

The NTMA Education Team shall serve as the selection committee, and shall make the final selection of the scholarship recipient from a list of those students making application under criteria outlined in the Eligibility Requirements.

ELIGIBILITY REQUIREMENTS All Applicants Must:

- Be at least 18 years at time of class start.
- Be an employee of and nominated in writing by an NTMA Member Company in Good Standing located in the Central Time Zone and enrolled in a registered tool and die apprenticeship program.
- Be a high school graduate and achieved a minimum high school GPA of 2.5.
- Submit scholarship application and supporting documentation by April 28, 2014.

- Provide a written essay stating career goals, and why they should receive the Scholarship.
- Provide a written resume describing interests, classes, and any work-related activities voluntary or paid.
- Provide two (2) letters of recommendation from business professionals (employer, teachers, clergy, etc.) who are aware of their desire to pursue a career in manufacturing.

APPLICATION

Applicants are requested to read carefully all of the above conditions of this program and submit a fully executed Application by April 28, 2014.

AWARD

The NTMF Edwin Vobeda Memorial Scholarship will be paid upon proof of acceptance into appropriate education facility as defined above.

SUBMISSION:

Submit all information to:

Ken McCreight
National Tooling and Machining Association
1357 Rockside Road
Cleveland, OH 44134
Phone: 1(800) 248-6862; Fax: (216) 901-9190
E-mail: kmcCreight@ntma.org

ST. LOUIS CHAPTER MEETING'S FOCUS: IMPROVING PRODUCTIVITY

Members of the St. Louis Chapter met at Hartwig, Inc. to hear from industry expert Larry Schwartz. As now-retired President and CEO of Okuma America Corporation, Larry has a unique perspective and vast experience in manufacturing and a passion to provide comprehensive solutions to the industry. In a very frank and sometimes humorous way he spoke about productivity – today, tomorrow and forever. Comments were made that this is one of the best meetings, subjects and speakers ever heard, with requests for copies of the presentation to take back to their shops.

The Chapter welcomed new members U.S. Integrity Machine and Delta Gear.



Speaker Larry Schwartz, retired President and CEO, Okuma America Corporation



Ed Hinders (CBIZ) and Nick Berilla (Hartwig, Inc.) present membership plaque to Paul Muckerman, Jr. (Delta Gear Company)



Ed Hinders (CBIZ) and Nick Berilla (Hartwig, Inc.) present membership plaque to Ken Unnerstall and Chad Skornia (U.S. Integrity Machine)



STEP AWARD HONOREE STACEY BIBIK



In February, the Manufacturing Institute awarded 160 honorees with the Women in Manufacturing STEP (Science, Technology, Engineering and Production) Awards. STEP Awards honor women who have demonstrated excellence and leadership in their careers, from all levels of the manufacturing industry. Among those recognized were four women from NTMA member companies: Shannon Sweatman (Southern Manufacturing Technologies), Kimberly Arrigoni (Haberman Machine) and Tanya DiSalvo (Criterion Tool & Die), who were featured in the February issue of *The Record*. The fourth NTMA honoree is Stacey Bibik, Government Sales at Stacy Machine and Tooling in Broomfield, CO. We applaud all those who were so honored; NTMA is a better organization having them as members.

Stacey noted in the awards program that

“my role model is my Dad because he sees opportunities, takes risks, works smart and owns his choices. He is never a victim; he is always an advocate of life-long learning. Determination and perseverance are non-negotiable prerequisites for anything that anyone engages in, regardless of who or where they are.”

Stacey has taken a highly targeted, focused approach to growing small business manufacturing by fostering new accounts that match the company’s core capabilities and guiding owners through certification and financial processes, such as ISO, custom ERP systems and capital management. She offers a unique human resource background with the skills to help the business streamline hiring, reduce risk and decrease turnover. Stacey continually focuses on the long-term, developing business plans that rely on measuring results which lead to ongoing success. Her passion and commitment to the manufacturing industry round out her technical and leadership skills to make her exceptional in her role.

Stacey brings a host of personal and professional experiences to her work at

Stacy Machine and Tooling, including experience she had through her father’s career and the management of several personal businesses. She is adamant about using her talents to benefit others, as evidenced by her participation in career fairs, workforce development panels and her promotion of National Manufacturing Day in her local community. She also works with local S.T.E.M educators at the high school and community college level to collaborate and improve visibility of careers in manufacturing. She continues to hone her skills using a National Manufacturing Institute scholarship to earn her MBA. Stacey has also started a local chapter of Women in Manufacturing, and has worked with local seniors offering pro bono financial planning. She hopes to one day open a private technical school that can prepare high school graduates, returning veterans and unemployed workers for entry level positions in manufacturing.



FORCE CONTROL INDUSTRIES “TRAVELLING ROADSHOW” PROVIDES HANDS-ON DEMONSTRATIONS TO WESTERN U.S. & CANADIAN METALWORKING & INDUSTRIAL FACILITIES

Force Control Industries, Inc., the manufacturer of Oil Shear Clutches and Brakes, brings their traveling Roadshow to the western part of the United States and Canada from April through August 2014. With a route that includes Northern California, Oregon, Washington, British Columbia, Alberta, Manitoba, Montana, Idaho, Wyoming and Colorado, the Roadshow demonstrates to engineering, maintenance and plant management teams how Oil Shear technology can increase production while significantly reducing costs. This unique vehicle has an onboard generator and air compressor so it needs no connection to utilities - just room in the parking lot or other property.

The Roadshow trailer provides first-hand opportunities to learn what Oil Shear Technology is and how it differs from traditional dry braking technology. The trailer allows visitors to:

- See actual product working - including



clutch brakes indexing at 200 cycles per minute.

- View product cut-a-ways to better understand the technology and how it works.
- Discuss actual applications (including conveyors, cranes and other equipment subject to constant start/stop cycles) with Force

Control professionals.

- Learn why customers worldwide say “Force Control clutches and brakes are the most reliable available.”

- Hear how customers are saving money with the “No Maintenance - No Adjustment - Ever” MagnaShear motor brakes.

To learn more specifics about the Roadshow itinerary or to schedule a stop, customers are asked to contact their local Force Control Representative or

Distributor, or to contact Force Control Industries directly at 800-829-3244. Or send an email to info@forcecontrol.com with “Roadshow” in the subject line.



DID YOU KNOW...

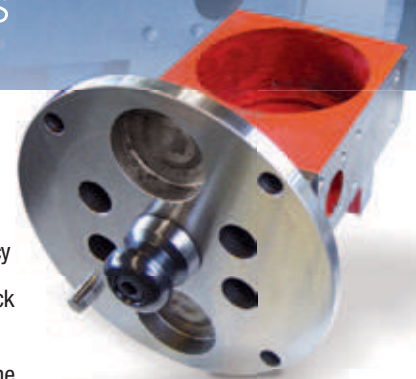
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May 6th - 8th, 2014—BIG Kaiser will be delivering technical presentations and serving up a hearty and robust breakfast before the doors open next door at DMG MORI's annual Innovation Days event. Register @ bigkaiser.com/rsvp.

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FACT OR FICTION?

OKUMA OFFERS 100s OF LATHE OPTIONS

FACT



Most people know about Okuma's strength in lathes, and rightfully so. What many don't know is how many we offer. For starters, we have 24 lathe series and 61 models, from the affordable 2-axis GENOS L200 for big value in a small footprint, to the MULTUS B750, a large multifunction machine that handles live tooling. Once you choose the model, you have hundreds of options to choose from. With so many lathes, Okuma has one that's just right for you. [See more at Okuma.com/cnc-machine-tool-lineup](http://Okuma.com/cnc-machine-tool-lineup)

One fact that never changes is the Okuma Difference. Distributors, Partners in THINC, and Okuma worldwide deliver depth of service, strength of technology and control, and a breadth of product that you'll find nowhere else on the planet.



Arizona CNC Equipment
www.arizonacnc.com

EMEC Machine Tools, Inc.
www.emecmt.com

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U.S. DEPARTMENT OF DEFENSE AWARDS \$70 MILLION GRANT FOR THE DIGITAL MANUFACTURING AND DESIGN INNOVATION INSTITUTE

INSTITUTE PARTNERS WITH UI LABS TO SUPPORT THE DMDI INSTITUTE



President Obama announced that a multi-partner team led by UI LABS has been selected to receive a \$70 million award from the U.S. Department of Defense (DoD) for the Digital Manufacturing and Design Innovation (DMDI) Institute. Jennifer McNelly, president of The Manufacturing Institute, will serve on the board of the DMDI as an advocate for the integration of workforce and education activities.

The Digital Manufacturing and Design Innovation Institute will be the nation's flagship research institute for Digital Manufacturing - a world-class, first-of-its-kind manufacturing hub with the capabilities, innovation and collaboration necessary to transform American manufacturing. The Digital Lab will be housed in Chicago with a network of manufacturing partner and research sites across the U.S., bringing

together additional 500+ supporting companies and organizations.



THE MANUFACTURING INSTITUTE'S ROLE IN DMDI

The Manufacturing Institute will engage manufacturers and community colleges related to the education and workforce development activities of DMDI. The Institute will also identify schools interested in piloting digital manufacturing and design innovation principles in their manufacturing education programs, as well as represent the Skills Certifications System to support the development of standards and certifications in digital manufacturing.

Through its initiatives, The Manufacturing Institute will also expose students and veterans to the importance

and application of digital manufacturing through Dream It. Do It. and Get Skills to Work.

LIGHTWEIGHT AND MODERN METALS INNOVATION INSTITUTE

President Obama also announced a new manufacturing innovation institute in Detroit. With leadership from EWI, The Ohio State University, and the University of Michigan, the new institute will advance lightweight and modern metal manufacturing technologies. The institute will ensure that the U.S. is the world leader in the application of innovative lightweight metal production and component/subsystem manufacturing technologies.



DMG MORI

DMG MORI USA HOSTS SYMPOSIUM TO TEACH EMPLOYERS TO HIRE AND RETAIN VETS

DMG MORI USA hosted The Association for Manufacturing Excellence "AME Values Veterans" Symposium on March 14th at its U.S. headquarters in Hoffman Estates, IL. The one-day event offered training, coaching and advocacy for organizations that pledged to hire and retain veterans, transitioning guardsmen and reservists.

The program taught manufacturing industry best practices for meeting current and future hiring needs through the employment of veterans.

"Our goal is to drive down veteran unemployment while improving business performance through improved workforce productivity," says Doug Pierce, Chief Learning Officer at DMG MORI Academy. "The leadership, teamwork and global

technological skills veterans possess make them a huge asset to any employer, but their attention and respect for procedures make them uniquely qualified to work in a modern manufacturing environment."

Presentations centered on how to hire and retain veterans, exposing truths and myths surrounding employing them, and expert panel Q&A.

SPEAKER LINEUP INCLUDED:

- Joe Barto
Founder & President TMG, Inc.
- Warren Young
Chairman, ACME Industries
- Randy Harland
Executive VP, DMG MORI USA
- Doug Pierce
Chief Learning Officer, DMG MORI Academy

- Nancy Wajler
Executive Director of Education and Training, Association for Manufacturing Excellence
- John Caman Jr., Operations Team Leader, StandFast, Inc.

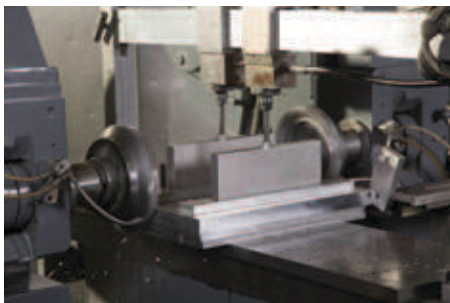


TCI's Three Generations

Supporting Their Customers With Exactly What They Want!

TCI Precision Metals, Los Angeles, CA has been built and managed by Burt, John and Ben Belzer for three generations, supplying "Machine Ready Blanks" to machine shops and OEMs all over the United States. The company strategically saves their customers a lot of money by basically eliminating as many as the first five operations of their job travelers. TCI Precision Metals is a company that has proven experience, certified quality and dependable service, providing specialty cut and ground-to-size metals and supply chain innovation since 1956.

Years ago, after the Great Depression, Burt Belzer had the good fortune to land a job as the youngest person to work at the Belle City Malleable Iron Company in Racine, WI. Burt worked to provide traceability for the origin of every part made in the plant and grew to love metallurgy. When Burt's Army stint was over he went back to school to obtain a business degree. After graduating and marrying his sweetheart, Gerry, they made a decision to strike out for California where eventually his cousin offered him a job at Pioneer Tool & Engineering as an office manager where he learned the business of melting metal and making cast aluminum tooling plate. Burt later became a salesman for the company, was given a territory around the LA airport and called on job shops that supported the aircraft industry.



In this operation five Machine-Ready Blanks are being duplex milled at the same time. Efficiently producing Blanks in volume is key to providing good customer value.

Early on, Burt teamed up with his friend, Ken Fritch, a tool engineer at Pioneer. They decided they would become an industrial distributor of jig and fixture hardware, calling themselves Tool Components, Inc., while also using their experience from the aluminum cast plate business they came from. During this time, they created the E-Z LOK Threaded Insert, which is still very much in demand today, sold through national distribution channels. They would also begin to provide their customers with precision sawed aluminum sheet and plate, giving customers exactly what they needed, with no waste – saving them time and money.

During the 60s and 70s, TCI began to understand that precision sawing wasn't as "precision" as it needed to be. Always looking to provide what their customers asked for, they increased their services to include Duplex Milling and Blanchard and Double-Disc Grinding.

Today the Belzer's business continues its evolution in a 105,000 sf building. They remain firmly committed to their mission statement, understanding what their customers want and need and then do their very best to provide it.

John Belzer, the company's president, was raised in the business and held the family work ethic very close to his heart. The education John obtained has helped him grow a very lean and progressive business. He began his career in the business while still in high school, working on the shop floor in many areas of the manufacturing facility. After graduating from Colorado College in 1973 with a B.A. in Economics he went to work in the family business and has been president of the company since 1988.

One of TCI Precision Metals' core values is "to be a Quality Corporate Citizen" which includes "... actively supporting our industry." John was chairman of the NTMA (National Tooling and Machining Association) in



2002 and has led the national Budget and Finance Team for the last nine years. He also served six years as a trustee for the LA/NTMA Training Centers of Southern California. An industry advocate, Mr. Belzer also currently serves as a board member of the National Institute for Metalworking Skills (NIMS). TCI Precision Metals has been a member of NTMA since 1976.

TCI'S SECRET TO SUCCESS

John said, "We are all about adding value to the customer. We look for every opportunity to save our customers time on their work. Most everyone understands material. Not many understand the Machine-Ready Blank and the



Examples of TCI Machine-Ready Blanks; each one is +/- .005" dimensionally and as close as .0002" flat, square, and parallel.

value of taking those first 5 to 7 steps of purchasing, outside processing, and prep work out of the equation for the customer and decreasing their throughput time to allow for more capacity on

their equipment,” John said.

“If you have a router or job traveler in your shop it can have 10 to 20 or more operations. We can take as many operations off that job traveler as the customer needs by providing the material with our buying power, cutting, duplex milling, grinding and/or turning the material to a “perfect” blank two sides at a time and stacking as many as five to 10 parts at a time thus basically doing 10 to 20 cuts at a time. We also double-disc grind parts and we can group them as well saving the customer so much time that their internal capacities can increase as much as 25% with Precision Machine-Ready Blanks that are flat, square and parallel.



TCI's double disk grinding operation removes surface material from both sides equally, relieving material stress and providing close tolerance thickness.

“Each is cleaned, deburred and typically vacuum packaged. These blanks are ready to go straight to the CNC machining center to do the really critical work.”

“I view this as the next generation raw material,” John continued. “Companies that employ Lean Manufacturing concepts such as Value Stream Mapping will eventually see the tremendous val-



Each individual Machine-Ready Blank is deburred, cleaned and shrink wrapped before being placed in a master shipper. Each job follows rigorous quality control in accordance with TCI Precision Metals' ISO9001:2008 and AS9100C certifications.

ue of buying and starting on operation 70 instead of operation 10 – they'll skip right to the operation of the manufacturing processes they specialize in. We actually provide the same thing we did 57 years ago with much closer accuracy and a whole lot faster.”

TCI Precision Metals is an ISO 9001:2008 and AS9100C certified company and their prestigious quality system brings processes to the heart of everything the company does. The processes at TCI are meticulously monitored by their ERP system and everything runs through the facility with extremely detailed documentation. This allows the TCI Customer Service Team to monitor customers' parts in real-time and move the schedules if necessary to meet customers' always-changing demands. This didn't happen overnight. Ben Belzer, Vice President of TCI, was responsible for implementing Epicor Vantage, the ERP software that manages virtually every process that the company does, including accounting, shop floor work flow, to the quoting and time study of every precision blank that goes through the shop. Ben graduated from the University of Illinois in 2004 with a degree Economics and Information Systems and one of his first tasks when he came to work for the company full time was to lead a team to search for, select and implement the system best suited for TCI. Ben and his team chose Epicor. He said, “I looked at about 6 different software companies' products and Epicor was the closest fit to the way we run our company and the data we want to track and grow our business. It was the best fit for us.”

Ben basically had to learn every single department and process of the company from engineering to accounting so he could fashion the new high powered ERP software to run the company effectively. This system was up and running smoothly within 90 days of selection and has helped TCI reach world-class status as a valued partner of some of the best machine shops in the U.S. In 2007, Ben took on the management of inside sales, later taking on engineering and production as well.

Ben took the quality system as his next big challenge and basically re-wrote all the processes and changed many to suit the way the company does business. “The quality manual was 98

pages”, Ben said. “Now it's down to 30 pages with an additional 30 separate procedures to ensure our processes are repeatable. The goal is to have a fully accessible quality manual where the company team can place comments in the system to promote process improvement. We are very process oriented so that we don't do things twice and we document what we do so that the process always runs smooth and is performed in the same way.”

Ben continued, “I recognize that to be a leader in our industry, we must stay on the cutting edge of technology, both from the manufacturing and information points of view. My goal is to have all work instructions and the schedule completely paperless to allow management to focus less on the tactical and more on the strategic goals. We're 80% there, and hope to have full automation of information within two years.”

Today representing the third generation of Belzers, Ben is working in tandem with his father John as a strategic partner to continue building the business.

HERE'S WHAT SOME CUSTOMERS SAY ABOUT TCI:

“I've been working with TCI for about 5 years now and they always give me high tolerance blanks on time. If have a tight schedule they will always work with me to meet my requirements. They are like a partner to our business. I highly recommend using TCI for precision blanks.”

Owner of an aerospace machine shop in Phoenix, AZ

“TCI Precision Metals has added capacity to my shop. I literally skip the first 6 operations of our job traveler and I miss all the headaches too. Working with TCI saves me money and when I need them to pull me out of a bind on precision blanks they work with me to meet my schedule. I highly recommend TCI.”

Buyer with a medical and commercial job shop near Seattle, WA

For more information on reducing material prep time, producing more parts, faster, reducing bottlenecks, and reducing and eliminating scrap, contact TCI:

310-323-5613, or visit:
<http://tciprecision.com>



NTMA-U Achieves Certification with the Federal Bureau of Apprenticeship and Training, U.S. Department of Labor

NTMA Vice President Ken McCreight has announced that as of early 2014, NTMA-U is a Certified National Program with the Federal Bureau of Apprenticeship and Training (Department of Labor). "I'm proud of everyone who has supported NTMA-U from initial concept to this point and then beyond. A lot of hard work has gone into NTMA-U and we are now seeing its impact in the training of today's and tomorrow's manufacturing professionals," Ken commented. "Learning that was formally based in a traditional classroom environment is now delivered with the convenience of On-Line Training that is credentialed training, written by our members, for our members."

NTMA-U is an innovative program of on-line education that bridges the gap between traditional degree programs and skills-based certification curricula. Through agreements with participating colleges, students can take courses online and earn credits toward an associate's degree and gain knowledge to

complete their NIMS written exam, all the while building valuable industry-specific knowledge.

NTMA-U is NIMS outcome-based tracked and is the quickest, as well as most convenient way to gain the knowledge required to achieve success in the written NIMS exams.

The program began in fall 2011 in beta form, with a limited number of students enrolled. The program is expanding rapidly and is projected to reach a virtual student body as large as 200. NTMA-U students include current NTMA member employees, prospective employees and students participating in NTMA's National Robotics League (NRL) who seek to build upon their formative NRL experience.



The curriculum is customized and tailored to the needs of NTMA members, with textbooks and online training guidelines that have been developed by association members specifically for this program.

For more information on NTMA-U, go to www.ntma.org/initiatives/education/ or contact Ken at kmcCreight@ntma.org.



BOSTON CENTERLESS EXPANDS WITH NEW DISTRIBUTION FACILITY IN MINNESOTA

DISTRIBUTION CENTER LOCATED IN THE HEART OF MINNEAPOLIS NEAR THE UNIVERSITY OF MINNESOTA IS NOW UP AND RUNNING

Boston Centerless announced the opening of a distribution facility in Minneapolis to better service customers in the greater Midwest. Delivery time to customers in the central U.S. will be reduced by as much as four days. It will stock a variety of sizes and grades of AccuRod.0002TM precision ground bar product and Carpenter's Project 70+® PDB® stainless steel. These materials are used for CNC Swiss screw machining applications.

Both products offer the benefits of precision ground bar without the wait of custom grinding. Materials are machine ready and available for immediate shipment. In addition, the warehouse will stock nominal

sizes of 17-4 and 17-4 PH900 stainless along with Ti 6AL4V ELI titanium and a variety of other medical grade alloys. With the competitive landscape of manufacturing, companies need to receive material as quickly as possible.

"This new distribution center is an integral part of our continued growth," commented Boston Centerless CEO Steven Tamasi. "By opening facilities closer to our customers, we will be in a position to decrease lead-times and serve our customers more efficiently."

A second distribution facility is located in New England in addition to the corporate headquarters in Woburn, MA, which

stocks a large array of metals and plastics. Boston Centerless offers Vendor Managed Inventory programs and partners with the highest quality specialty metals producers in the industry.

Boston Centerless supplies customers worldwide with precision ground bar materials for close tolerance machining applications. The company also provides grinding services for customer-supplied material and components, and manufactures a line of ultra-precise gages. For more information visit www.bostoncenterless.com.



WELCOME TO NTMA'S NEWEST CHAPTER: NEW MEXICO!



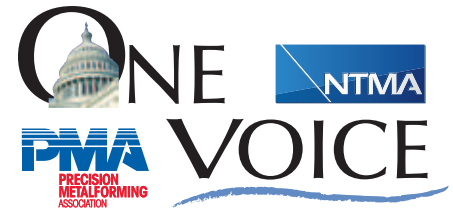
It's official — the New Mexico Chapter has been approved as an NTMA Chapter. Congratulations to the New Mexico team, led by Mark Bogue, president and Ivan Wade Clay, vice president.

A-1 Machine, Inc.
Advanced Machining Sheet Metal & Design LLC
Backerworks Manufacturing, LLC
Bogue Machine Company, Inc.
Butterman Tool
Clay-Groomer Machine Shop
Continental Machining Company, Inc.
Cosmodyne Manufacturing, Inc.
Dream Weaver Designs, LLC
Enchanted Machine Works LLC
Excel Manufacturing

Insight Lighting
Jaguar Precision Machine
Manufacturing Technologies Inc.
Model Products Inc.
Precision Grinding Inc.
Taycar Enterprises, Inc.
Thompson Machine
The Tool & Die Group, Inc.
Waterjet Cutting Inc.



NEW WASHINGTON INITIATIVES HELP FRAME 2014'S POLICY DISCUSSION



Washington may not be viewed as a model of efficiency anytime soon, but the wheels of policymaking continue to turn. In this last month, a tax reform proposal was floated in Congress that will serve as a marker for future debate on the issue, the President came out with a budget document that starts a conversation with Congress about priority objectives for the coming year, and NTMA-U received a well-earned thumbs-up after a lengthy and thorough vetting from the federal government.

To start with, the tax proposal authored by House Ways and Means Committee Chairman Dave Camp puts forth a blueprint for comprehensive overhaul that seeks to add clarity and create a more stable framework to the U.S. tax code over the long term. While the package is likely to evolve and inspire competing

proposals, it offers a hopeful signal that the U.S. Congress recognizes the need for tax reform that would provide an end to the uncertainty that has long presented unneeded complications for companies that are trying to plan for the future. Underscoring the importance of this issue, a recent member survey showed that 74% of One Voice member companies currently have job openings and are looking to expand their businesses, yet many are holding back on investing in new equipment due to the uncertainty surrounding expired tax provisions — something that a tax overhaul initiative would finally address.

On another front, the Obama administration released its 2015 budget proposal, which contained a significant amount of money to address the skilled workforce issue by funding education,

research, manufacturing and job training. The administration's budget will not become law as is, but much like the Camp tax proposal, serves to lay down markers for future discussions on how much attention should be paid to addressing the skilled workforce issue.

Finally, one last item of news coming out of Washington is not a proposal or a marker, but will stand by itself as is: the U.S. Department of Labor's Office of Apprenticeship formally certified NTMA-U as meeting its National Guideline Apprenticeship Standards. Receiving certification as a Federal Training Program marks a major achievement for the NTMA Education Team's dedication to NTMA-U — a college credit based Modular Workforce Development initiative designed to help workers advance their skills and

careers while better serving the industry's needs. Great job!

Manufacturers can make a difference in Washington, but only if they participate in the process. NTMA members can give unlimited corporate or individual contributions to the NTMA Government Affairs Administrative Fund which supports the work done by The Franklin Partnership and Policy Resolution Group at Bracewell & Giuliani, LLP. Additionally, NTMA members can make limited personal donations to the Committee for a Strong Economy (CFASE) PAC, which supports pro-manufacturing Congressional candidates.



BOSTON CHAPTER ASSOCIATE MEMBER, RP ABRASIVES, ANNOUNCES ROHS 2 CERTIFICATION FOR STAINLESS STEEL PASSIVATION



RP Abrasives, a leading metal finishing company specializing in passivation, is proud to announce compliance with the European Union's newly adopted Directive 2011/65/EC, also known as RoHS 2. The Restriction of Hazardous Substances Directive requires that manufactured products sold to and distributed within the EU are certified as free of six hazardous materials—lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls and polybrominated diphenyl ether.

Joe Shean, RP Abrasives' president, said "As more and more American companies are being impacted by the new requirements that apply to medical devices and to monitoring and control instruments for the first time, we are very happy to be able to offer certification to our customers that our passivation process is both RoHS and RoHS 2 compliant."

In accordance with the directive, each process involved in the manufacturing of products within the following eleven categories must be tested and certified according to RoHS and RoHS 2 requirements:

- Large Household Appliances
- Small Household Appliances
- IT & Telecommunications Equipment
- Consumer Equipment
- Lighting Equipment—Including Light Bulbs
- Electronic and Electrical Tools
- Toys, Leisure and Sports Equipment
- Medical Devices
- Monitoring and Control Instruments
- Automatic Dispensers
- Semiconductor Devices

Passivation removes free iron from stainless steel, thus increasing the steel's rust resistance and rendering it "passive." RP Abrasives uses a citric acid bath in conjunc-

tion with a proprietary process that guarantees RoHS and RoHS 2 compliance, while also meeting required ASTM A-967 and AMS 2700 industry standards.

"This means that our customers can sell portions of their production to Europe without setting aside special inventory and resorting to special procedures," Shean said. RP Abrasives' meticulous quality assurance department provides full documentation and testing results on all passivated parts, ensuring that American and European manufacturers in need of the process can avoid the risk of products being recalled or hung up in customs due to non-compliance.

Further information regarding the impact of RoHS 2 on manufacturers and subcontracted processes can be found at <http://rpabrasives.com/rohs-2-compliance.html>



Southwest Regional Conference

AUGUST 1-3, 2014

"SAVE THE DATE" to join us for our 2nd Annual Regional Conference.

We'll be headin' on over to Dallas for some Texas-sized networking and breakout sessions to assist you in growing your business.

Conference will be held at the Dallas Fort Worth Airport Marriott

Presented by the North Texas, Arizona, San Diego, Rocky Mountain, and Northern Utah Chapters of the NTMA.

Registration information coming soon!



Sales strategist
Marc Wayshak

NEVER DROP YOUR PRICES AGAIN! HOW TO STOP SELLING ON PRICE

I was recently at Lord & Taylor with a close friend of mine when she held up two pairs of high-heeled shoes. Both pairs were black, appeared similar and looked pretty to me. “What do you think each pair of shoes costs?” she asked.

“Well, this is a nice place, so I’m guessing that they both cost about \$150,” I replied.

She smiled at me as if she were watching a puppy hopelessly barking at the moon. “Actually this pair,” she said, holding up the shoes in her left hand, “costs \$110.”

“I was close!” I said defensively.

But then she continued. “Now this pair,” she said, holding up the shoes in her right hand, “costs \$650.”

“What?!?!? But they look so similar!” I exclaimed in surprise.

Upon further reflection, I began to see the parallels that women’s shoes have with selling on price versus value: Products or services that are fundamentally the same can sell for drastically different prices. It all depends on the way they’re sold.

Let me introduce you to two salespeople: Don and Liz. Both have been selling bathroom accessories for 20 years. However, they each sell in a completely different way.

Don is all about price. He’ll walk into a prospect’s office and say, “I see that you’re working with Grohe, and I can show you how you can save 50% by working with me instead...”

Liz, on the other hand, is all about selling on value. She’ll walk into a prospect’s office and begin a conversation by saying, “I really appreciate your inviting me in today. I want to tell you up front that if you are looking for the lowest prices, I’m not your gal. My goal is to help my clients create a bathroom that ‘wows’ visitors. Does it make sense for us to continue talking?”

Both approaches lead to sales, but the difference in the average transaction size and profitability is night and day. Liz wins, and she wins big.

If you’re determined to sell on price like Don, then you should stop reading this now. However, if you’re open to selling on value like Liz, then stay with me...

Here are four ways to stop selling on price:

1. STOP BEING A VENDOR

Don is a vendor to his customers, while Liz is a strategic partner to her clients. Get away from just being another vendor offering the best price. Instead, focus on how you can help provide massive value to your clients. The prospects that just want the best price are not who you want to work with. At least 60% of prospects want something more than just the best price. Target those folks.

2. BE DISTINCT

Both of the shoes my friend showed me appeared to be similar, but one had a very distinct brand, while the other was essentially no-named. You don’t need advertising to be distinct — your approach to selling can be what makes you stand out. While Don’s approach was pretty cheesy and predictable, Liz was bold and totally distinct from what the prospect typically experiences. Immediately, the prospect is intrigued to understand more about why Liz isn’t the cheapest. Everyone knows that they get what they pay for, so let them experience the best.

3. CREATE VALUE IN YOUR CONVERSATION

Every qualified prospect has challenges that you can solve. For example, in the case of Liz, her qualified prospect might be a developer that has used cheap bathroom accessories in the past only to find that they frequently break and need to be replaced after only a year. By learning about the prospect’s

experience and how much that cost him in lost revenues, Liz is creating tremendous value for her products — before she ever even shows him her product line.

4. PILE IT ON

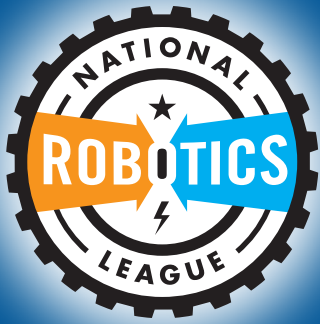
Good prospects are willing to pay more when they believe they are getting tremendous value. That means that, in order to create that value, you must think in terms of selling solutions and packages. For example, Liz not only sells bathroom accessories, but she also offers custom design and assistance with actually installing the accessories in order to ensure that they last for many years. This perceived added value allows her to charge a higher price than Don could ever imagine charging. How can you add additional products or services to your offering to increase the perceived value of your product or service?

Selling on price is never the only option for a company. By following these four steps and thinking creatively about how to increase your value in the eyes of the client, your sale size will increase dramatically.

ABOUT THE AUTHOR

Marc Wayshak [<http://www.marcwayshak.com/>] is a sales strategist who created the Game Plan Selling System. He is the author of two books on sales and leadership including his latest book, *Game Plan Selling* [<http://amzn.to/15MdhA9>] and a regular online contributor to *Entrepreneur Magazine* and the *Huffington Post Business* section. Get his free eBook on 25 Tips to Crush Your Sales Goal at <http://gameplanselling.com/>. (Twitter: @MarcWayshak)





2014 NRL COMPETITION

CLEVELAND, OHIO

MAY 16-17

Lou Higgins Center at Baldwin Wallace University

THE PREMIER NATIONAL ROBOTICS COMBAT LEAGUE

LOU HIGGINS CENTER

136 E. BAGLEY RD.
BEREA, OH 44017
(440) 826-2285



The newly renovated Lou Higgins Center is the centerpiece of the BW athletic facilities. The 170,000 square-foot complex houses the Ursprung Gymnasium, Harrison Dillard Track, Natatorium, updated workout spaces, a state-of-the-art athletic training facility, classroom space, and offices for coaches and faculty

Mark your calendars, and plan to join us in Cleveland, May 16-17 for the 2014 NRL National Competition. The event will be held in the Lou Higgins Center at Baldwin Wallace University, a venue that offers easy airport access, free parking and plenty of space for up to 100 teams, 500+ spectators, two arenas, as well as exhibit space for sponsors to interact with students and spectators.

The move to Cleveland also means the teams from many of our most active regions will spend considerably less time on the bus, and everyone can expect to pay less than \$100 per room for overnight accommodations.

Stay tuned for more information about this event. We have some cool things planned for you and can hardly wait to see you there!

Check it Out

Servo Combat Zone is looking for articles by combat robot builders like you! Stories about recent events, favorite parts or tools, as well as build tips are welcome. Remember, if you are a high school or college rising senior, there's nothing better than a few published articles on your resume to rise out of the slush heap!

E-mail Kevin Barry, the Servo Combat Zone editor for more information @ legendaryrobotics@gmail.com



Buy a Piece of the Action

Are you passionate about the next generation of manufacturing? STEM? Changing the perception of the manufacturing industry? Do you want to see your company's logo prominently displayed in all NRL communication?

If so, support the National Robotics League and be a part of the youth movement of manufacturing! Contact Tiffany Bryson to discuss ways you can support this amazing program at tbryson@ntma.org.

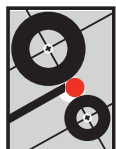
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Aerotek
Akron NTMA Chapter
Cleveland NTMA Chapter

These companies gave \$500 or more to help make the 2014 Competition a reality.

Want to join them?

Email Tiffany Bryson at tbryson@ntma.org for help finding the perfect package for your company.



Boston Centerless
Precise in everything we do.

SPONSOR SPOTLIGHT

Boston Centerless provides solutions to our customers that enhance their manufacturing processes. We supply AccuRod® precision ground bar materials, specializing in close tolerances and offer GrindAll grinding services on customer supplied material and components.

Boston Centerless takes pride in sharing resources and giving back to the community and is an active member in manufacturing industry associations and organizations. Our involvement supports the manufacturing industry through training and education, both locally and nationally.

THE NATIONAL
ROBOTICS LEAGUE
IS POWERED BY:



NATIONAL TOOLING AND
MACHINING FOUNDATION



Building America's technology leaders, one robot at a time.

GONRL.ORG

2014 SPONSORSHIP OPPORTUNITIES

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MEDIA SPONSOR



10K

ARENA SPONSOR



7.5K



COMPETITION AWARDS



5K

PREMIER SPONSOR

ROBO-LOUNGE SPONSOR



5K



REGISTRATION SPONSOR



3.5K

PREMIER PIT SPONSOR



3.5K



SUPPORTING PARTNER

MERIT AWARDS



3K



1.5K



SHIPPING



2.5K

PROMOTIONAL PARTNER

INTERACTIVE MANUFACTURING
GALLERY EXHIBIT TABLE

1.5K

TEAM
SPONSOR

1K

NRL COMPETITION
T-SHIRT SUPPORTER

5H

PROGRAM ADVERTISER
OPPORTUNITIES

PLATINUM (Full Page) - 1K
GOLD (Half Page) - 5H
SILVER (Quarter Page) - 2.5H

“Buy a piece of the action and share your story”

Don't see a sponsorship that meets your needs? Let's have a conversation and develop a customized package that fits your company's vision of support.

HELP BUILD THE FUTURE OF MANUFACTURING!

For Sponsorship inquiries and discussions, contact: Tiffany Bryson 216.264.2847 • tbryson@ntma.org

Get me to the Pit on Time!

Going to Nationals is the highlight of the school year for many NRL robot builders. Unfortunately, the expense of traveling means that some great competitors never get a chance.

You can help us fix that.

Choose a gift from the options below and e-mail Maureen Carruthers at mcarruthers@ntma.org with your selection.



Robot Transport
\$25

Robot combat requires a lot of “stuff” and none of it flies free. This gift pays baggage fees.



Feed Me!
\$50

You can bet these students work up an appetite. This gift pays for one student’s meals at Nationals.



Beauty Rest
\$100

Students may be able to sleep anywhere, but they shouldn’t have to. This gift covers the cost of one hotel room.



Planes, Trains & School vans
\$500

No matter how you get there, traveling is expensive. This gift covers airfare for 1 student, or gas for a whole team.



My Hero
\$1000

Want to make a big impression? This gift covers all the expenses for one competitor.



Fairy Godmother
\$5000

Ready to make many wishes come true? This gift covers all the expenses for a whole team to attend the National Competition.

ENGAGE ⚡ INSPIRE ⚡ EMPOWER

SUPPORT THE FUTURE OF OUR INDUSTRY—VOLUNTEER AT NRL NATIONALS!

You are invited to be part of the team that makes the 2014 NRL National Competition possible.

Our 2014 competition will be held at the Lou Higgins Center on the campus of Baldwin Wallace University in Cleveland, OH May 16-17, 2014, and we need a strong group of volunteers to help make the event a great experience for our competitors.

Starting with set-up on Thursday, May 15, all the way through tear-down on Saturday, May 17th this competition is a volunteer run event—so if you have some time—even as little as 2-4 hours please let us know.

E-mail Maureen Carruthers at mcarruthers@ntma.org for details.

GE TURNS TO 3D PRINTERS FOR PLANE PARTS

General Electric, on the hunt for ways to build more than 85,000 fuel nozzles for its new Leap jet engines, is making a big investment in 3D printing. Usually the nozzles are assembled from 20 different parts. Also known as additive manufacturing, 3D printing can create the units in one metal piece, through a successive layering of materials. The process is more efficient and can be used to create designs that can't be made using traditional techniques, GE says. The finished product is stronger and lighter than those made on the assembly line and can withstand the extreme temperatures (up to 2,400F) inside an engine. There's just one problem: Today's industrial 3D printers don't have enough capacity to handle GE's production needs, which require faster, higher-quality output at a lower cost.

Each Leap engine will contain 19 metal 3D-printed fuel nozzles. The part is lighter and more durable than traditional parts. "With today's technology, it would take too many machines," as many as 60 to 70, to efficiently make the nozzles, says Greg Morris, business development leader for additive manufacturing at GE Aviation. Morris joined the aerospace company last year, as part of GE's acquisition of his 3D company, Morris Technologies. "We can start ramping up with the current generation of technology, but within two to three years we're going to have to be onto the next generation to meet our cost targets," he says. So GE is waiting for development of new printers with three to four times the capacity.



Metal 3D-printed jet fuel nozzles.
Photo Courtesy GE Aviation

As part of a \$3.5 billion investment in its aerospace supply chain, GE says it will spend tens of millions of dollars to invest in new technology and, over the next five years, triple the size of its 70-person 3D-printing staff and expand its factory floor fourfold. (The 85,000 nozzles are for engine orders that will enter full production in late 2015.)

The company's embrace of 3D printing throws the weight of the world's largest jet-engine maker behind a process invented in the 1980s to fabricate scale models. As the technology has advanced, 3D printing has evolved. Today, Boeing

uses the process to make plastic air-conditioning ducts for its 787 Dreamliner jet, and Nike has a football cleat made on 3D printers. "[GE's] investment changes everything, and it's also unprecedented," says Terry Wohlers, president of 3D printing consulting company Wohlers Associates. The company's annual report tracking 3D technology estimates that the industry is poised to almost triple, to about \$6 billion in sales, by 2017.

Sales of 3D printers and related services rose 29 percent in 2012, to \$2.2 billion, according to Wohlers. They're on track to keep rising as GE, Siemens, and Rolls-Royce among others invest in industrial-grade systems capable of producing metal parts. Demand from the aerospace industry alone is driving huge growth, Credit Suisse Group said in a Sept. 17 note. That's creating opportunities for companies such as 3D Systems, the largest maker of 3D printers in the U.S. GE is testing equipment from the Rock Hill, SC based company, as well as from Concept Laser.

"We have an excellent relationship with GE at the highest levels, and we've been collaborating with them for several years now on a variety of additive manufacturing applications," says 3D Systems Chief Executive Officer Avi Reichental.

The stock price of 3D Systems has more than doubled this year through mid-November, while that of another major 3D printing player, Stratasys, has jumped 59 percent, beating the 27 percent advance for the Standard & Poor's 400 MidCap Index, to which they both belong.

Expanding 3D printing will give GE clout with device manufacturers, an opportunity to guide the growth of the industry. "There doesn't exist a supply chain out there right now for this kind of work," Morris says. "GE has to be involved in developing it."

The bottom line: GE is making a game-changing investment in 3D printing, helping to bring the technology to more assembly lines.



DON'T KEEP YOUR IMTS BOOTH AND EVENTS A SECRET!

SPECIAL AUGUST ISSUE CENTER SPREAD

TELL OUR 1,500 MEMBERS WHERE YOU WILL BE AT IMTS!



LET YOUR CUSTOMERS KNOW WHAT EXCITING EVENTS OR FEATURES YOU WILL BE PRESENTING IN CHICAGO IN OUR SPECIAL AUGUST ISSUE CENTER SPREAD.

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- Basic Listing: Your Logo and where your booth will be located - \$200
- Enhanced Listing: Your Logo + verbiage (Up to 50 words) to spotlight your company or event you are having at IMTS - \$325

FEATURED HIGHLIGHTS

- Basic & Enhanced listings by Building
- Must Attend Events at IMTS
- "Shout out Section" - A listing of NTMA members who will be attending IMTS

GRADE GC3330 LEADS THE WAY FOR CAST IRON MILLING

SANDVIK COROMANT TOOK CAST IRON MILLING TO A NEW LEVEL

Cast iron milling is the next machining area covered by the new grades with Inveio™ from Sandvik Coromant. Having already introduced the game-changing grade GC4325 for steel turning, the innovative cutting tools supplier now introduces GC3330, a wear-resistant first choice grade for cast iron milling.

With predictable performance becoming increasingly important in many machining processes, GC3330 is meeting the needs of today's manufacturing. The consistent performance of GC3330 creates opportunities for manu-

facturers to increase machine utilization as well as removing a lot of metal in a short time without compromising tool life. Minimizing machining interruptions also enables secure unmanned machining.

INVEIO – THE INNOVATION BEHIND

GC3330 is equipped with Inveio, the latest innovation in material science. The groundbreaking technology



uses uni-directional crystal orientation. While the crystal orientation in conventional inserts' CVD alumina coating normally is random, GC3330 has controlled crystals lined up towards the top surface. This is the secret behind the endurance, predictability and long tool life of GC3330.

APPLICATION AREA

The new insert grade GC3330 is the first choice for both dry and wet cast iron milling, from roughing to finishing. Covering a broad application area, Sandvik Coromant's new grade can be used in any cast iron milling operation for both grey and nodular cast iron materials. GC3330 is available for a variety of milling cutters for face-, shoulder-, profile-, high feed-, and parting and grooving milling.



SAVE THE DATE

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Chicago Innovation Days 2014

MAY 6-9

Discover the power of innovation first-hand with live demonstrations of CELOS, four U.S. premieres and over 35 advanced machines. Our 42,000 square-foot exhibition space is home to our biggest open house event in the U.S.

Join us as we preview IMTS with the latest in software, automation, additive manufacturing and more.

Registration opens March 12. Learn more at dmgmori.com.

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Meeting the Next Generation of Manufacturing Leadership

The annual Manufacturing Challenge contest is an SME-sponsored intercollegiate manufacturing competition in which each team comes up with a manufacturing project to design and build while documenting the manufacturing processes. This year's entries were displayed and evaluated on February 27th AeroDef Manufacturing Exposition in Long Beach, CA and feted in a ceremony the same day.



Schools include California State University Los Angeles, California State University Northridge, Cal Poly Pomona, Chico State University, San Jose State University, Mount San Antonio College, Pierce College and NTMA training centers in Santa Fe Springs and Ontario.

In the 30 years that SME has been hosting the Manufacturing Challenge competition, they have met many student competitors that have gone on to engineering, manufacturing and leadership positions in top companies in the country.

The NTMA Training Centers - Ontario Campus took 2nd place with their project, "Safe-T-Key", a safety cut off switch activated by the chuck key.

The team consisted of NTMA instructor Grant Bickham and students Jeffrey Harris, Kurt Preisendanz III, Abisai Rivera

and Vincent Arreola. Joseph Orta, who could not make it to the competition, helped make the project. Congratulations Team!



POSITION YOUR COMPANY FOR DATA-DRIVEN RESULTS AT [MC]²

At the [MC]² – MTConnect: Connecting Manufacturing Conference, you will learn valuable skills in data-driven manufacturing and stay up to date on the latest industry trends. Position your company for success and network with your peers at this must-attend conference, April 8-10, at the Caribe Royale Orlando.

The best advice frequently comes from those who have already overcome the challenges you face. As part of the agenda, you are encouraged to participate in the End User Forum:

- Understand the benefits of applying the MTConnect standard

- Voice an opinion on what type of data is needed to manage a business
- Learn how others use data in their shops
- Suggest improvements to the MTConnect standard

You'll hear from these engaging keynote speakers:

PETER LUCAS, PH.D.

Founding Principal, MAYA Design, will describe the upcoming challenge of a world with a trillion microprocessors and describe the goal of a true "Ecology of Information Devices."

DEAN L. BARTLES, PH.D.

Executive Director, Digital Manufacturing & Design Innovation Institute, UI LABS, will give a keynote on the DMDI, a new public-private partnership that will be a first-of-its-kind digital hub with the capability to transform American manufacturing.

Don't miss this opportunity to advance your knowledge of data-driven manufacturing! Book your hotel and register today!
www.mtconnectconference.org



**“ WE ESTIMATE WE’VE SEEN
A 40 TO 60 PERCENT REDUCTION IN
CYCLE TIMES ON ALL JOBS MOVED
TO THE MAKINO CELL.”**

**“ THE MACHINE’S RAPID ACCELERATION/
DECELERATION RATES AND 0.9-SECOND
TOOL CHANGES HAVE REDUCED PART
CYCLE TIMES BY 50 PERCENT.”**

**“ WITH THE MAKINO MACHINING
CELL, WE REPLACED FIVE MACHINES
WITH TWO, WHILE DOUBLING
PRODUCTION CAPACITY AND IMPROVING
QUALITY AND FLEXIBILITY.”**

When you talk to people who make what matters, the bottom line on what matters most to them is just that—the bottom line.

See why, for so many manufacturers, Makino and productivity are two words for the same thing. Read their stories. Watch their videos and cutting demos at [Makino.com/productivity](https://www.makino.com/productivity).





Special Report: Advanced Technologies Driving U.S. Manufacturing Renaissance

The U.S. manufacturing sector is in the midst of a technology renaissance that has the potential to bring manufacturing work back to North America for years, according to Manufacturing Engineering's annual trends report released with its March magazine issue. The boom can be sustained if the nation continues to invest in developing advanced manufacturing technologies and a highly skilled workforce.

Manufacturing Engineering is a leading source for news and in-depth technical information about advanced manufacturing in North America, serving an audience of more than 100,000 manufacturing professionals who subscribe to its monthly magazine, iTunes App, e-newsletters and other publications.

In "2014: Manufacturing's New Momentum," available at sme.org/2014mfgtrends, Manufacturing Engineering writes about four key trends that are driving a fundamental change in the U.S. manufacturing landscape:

• Innovation in advanced manufacturing technology: An array of new, software-enabled

manufacturing machines and tools are improving productivity and leveling the playing field when it comes to competing for work globally.

• A revolution in energy production: The growth of unconventional extraction of oil and natural gas has led to a boom in demand for manufacturing parts to extract, store and transport energy. It has also lowered industrial energy costs, a fundamental operating cost for manufacturers.

• Growth in post-recession demand: Organic growth in post-recession demand for key durable goods such as light vehicles and commercial airplanes, many of which are being redesigned for improved fuel economy and are made domestically is driving retooling of machine shops nationwide for new materials, processes and other new technologies.

• Investments in clean energy technology: The nation's investments in wind and solar technologies, as well as regulations for more fuel-efficient vehicles, are spurring manufacturing growth and investments in new ways of making things.

"The business case for manufacturing

goods overseas has been turned on its head in recent years," said Sarah A. Webster, editor in chief of Manufacturing Engineering. "Thanks primarily to lower energy costs and innovative new manufacturing technologies, the U.S. manufacturing sector should grow for the foreseeable future, provided the United States can meet the challenge of developing the skilled workforce needed to manage the advanced manufacturing factories of the future."

According to the latest job figures, the U.S. economy has added 622,000 manufacturing jobs since early 2010, including more than 80,000 over the past four months. There has been some debate about the scope of the skilled workforce shortage, with some estimates that as much as 5 percent of the nation's 12 million manufacturing jobs remain unfilled. Manufacturing Engineering finds that manufacturers continue to report widespread difficulty in finding qualified workers, a problem that is amplified as manufacturing equipment and tools continue to grow in complexity.



CTS RELEASES ENHANCED 2014 MANUFACTURING SOFTWARE SELECTION KIT

FREE KIT HELPS COMPANIES EVALUATE MANUFACTURING SOFTWARE SOLUTIONS



CTS, the leader in independent research since 1990 for mid-market ERP systems for the manufacturing industry, has released an enhanced 2014 edition of its Manufacturing Software Selection Kit.

The Kit, which can be downloaded at ctsguides.com/manufacturing, provides manufacturers with the information and tools they need to qualify and choose the most capable systems for their size and manufacturing mode. Manufacturers from simple job shops as well as companies in the aerospace and defense, chemical, electronics, and food and beverage industries can benefit from the Kit.

THIS YEAR'S KIT INCLUDES:

- Reviews of 30 manufacturing software options
- A Fast Facts Comparison Chart that compares vendor technology, pricing, support costs, training options and other important information
- A Needs Assessment Tool that identifies the critical functions for more than 32 applications
- Software Demo Scorecard template to rate and compare vendor demos
- Manufacturing Software ROI Calculator to calculate your return

on investment for acquiring new software

•The Manufacturing Software Implementation Planner, an easy to use template to build timetables and assign tasks to manage the software implementation

The 2014 Kit also includes a Buyer's Guide on issues to consider when looking for software and a CEO's Primer to Changing Software. Registrants for the Kit will also have the opportunity to talk with CTS Founder and President, Sheldon Needle, on which vendors make sense for their shortlist. "Our goal at CTS is to empower businesses to make the best software selection decision possible considering both cost and capability. This year's 2014 Manufacturing Software Selection Kit meets – and exceeds – this goal," explains Needle.

This web site is supported by manufacturing vendors so that the Kit and consult can be a free unbiased service. CTS has no financial interest in what software a company purchases.

To access this free Kit, visit www.ctsguides.com/manufacturing.



OKUMA ANNOUNCES NEW MULTUS U SERIES MULTITASKING CNC LATHES

“INTELLIGENT MULTITASKING MACHINES” PROVIDE A COMPLETE PACKAGE SOLUTION

Okuma announces its new MULTUS U Series general purpose multitasking CNC lathes, which are designed to reduce setup time, improve accuracy and keep non-cutting time to a minimum. The series includes two machine sizes: the MULTUS U3000 and the MULTUS



U4000. The MULTUS U Series lathes are equipped with a comprehensive package of Okuma's Intelligent Technologies (Thermo-Friendly Concept, Collision Avoidance System and Machining Navi) and a variety of efficiency features which make them “Intelligent Multitasking Machines.”

“INTELLIGENT MULTITASKING MACHINES” PROVIDE A COMPLETE PACKAGE

Built with Okuma's renowned heavy-duty construction, the MULTUS U series CNC lathes provide a robust platform for long-term rigidity and accuracy. They are excellent for machining process-intensive parts – such as those in Aerospace, Oil/Energy, Medical and Construction – and provide a complete multitasking solution:

• FLEXIBLE CNC MACHINING FROM ALL DIRECTIONS

A highly rigid traveling column allows for powerful cutting along the entire Y-axis

• EXTENDED SPECS FOR A VARIETY OF APPLICATIONS

17 diverse variations in specs –including multiple bed lengths, optional sub-spindle (W-Axis) and optional lower turret – provide a specific solution that matches application requirements

• MAXIMUM MILLING OR TURNING PERFORMANCE

For highly-efficient cutting of difficult-to-machine materials and a wide variety of CNC machining applications

• THERMO-FRIENDLY CONCEPT

Provides long, stable machining accuracy with thermo-static design and thermal deformation control technology

• SHORTER SETUP TIME AND PREVENTION OF COLLISIONS

The OSP-P300S control reduces keyboard operations by 50% and maximizes uptime with its Collision Avoidance System

• MACHINING NAVI (OPTIONAL)

Maximizes tool performance by choosing the optimal speed(s) at which the machine can avoid chatter

• OPERATOR-FRIENDLY DESIGN

Easy tool loading from the machine front, improved spindle access for faster setup times, and smooth chip discharge for better chip flow

For more information visit www.okuma.com/multus-u-series.



HYDRAULIC WORKHOLDING DEVICES ADD RELIABILITY, CLAMP DOWN ON WASTE

AUTOMATICALLY PRECISE PRESSURE, MORE RELIABLE CLAMPING, AND ADAPTABILITY TO MANY WORKPIECE SHAPES MAKE HYDRAULIC VISES INDISPENSABLE TO MANY MACHINE SHOPS.

Whether for machining cumbersome workpieces, or machining operations that require precision finishing in a production environment or machining center, hydraulic vises and similar workholding systems offer a highly flexible and stable fixturing solution that can speed up work cycles and also cut down on waste.

In many situations today the machine shop can simply not afford to apply traditional mechanical vises and other clamping devices to hold workpieces in place. These include instances where it would very difficult to manually mount and apply the necessary consistent-and-even clamping pressure workpieces, thereby risking movement or vibrations that could render workpieces into scrap.

“In the past, one machine shop was having some difficulties machining welded beams that were perfectly straight – using a mechanical vise setup,” says Larry Johnson,

president of Special Machined Components (Mason, OH). “Due to the size of the workpieces, mechanical vises were tough to load and control. I understand that they had to scrap quite a few of the beams during the first two or three months of production, perhaps 50 of them. However, at our shop, thanks to our hydraulic workholding system, I don't think we've had to scrap 10 workpieces over a 12-year period, certainly a huge improvement over the mechanical vises.”

That took place back in 2001, when Special Machined Components began machining beams for heavy-duty vertical lifting systems. The lifting systems - which normally use four or six of these beams, are used to raise heavy vehicles such as trucks, buses and fire trucks overhead for maintenance purposes. Naturally, consistently precise machine finishing was required for every beam, which needed to support from approximately 15,000 lbs. to 40,000 lbs. each, providing a

total lifting capacity of 160,000 lbs.

The hydraulic workholding system that Johnson's company installed in 2001 was a six-vise stacked ProHold model manufactured by Planet Products (Cincinnati, OH) that is used by some job shops for welding and riveting as well as machining operations.

One of the problems of using a mechanical vise for large or heavy workpieces, such as those that are machined by Special Machined Components, is that it is difficult to set up the machine for consistent clamping. For example, if a powerful 300-lb. operator is working the first shift, then a much smaller man takes over on the next shift, there is likely to be a difference in the clamping power between the two shifts.

Also, over-clamping, or clamping a vise too hard, can create workpiece distortions, which results in wasted material and production time.

CONTINUED ON – P33



Those who are using hydraulic vises are quite often applying them to production runs, where the consistency of clamping grip and ease and quickness of operation are most important. You simply set the pressure and it holds each production workpiece the same way.

Those who are using hydraulic vises are quite often applying them to production runs, where the consistency of clamping grip and ease and quickness of operation are most important. You simple

set the pressure, and it holds each production workpiece the same way.

“Our hydraulic vises have a pre-set, automatic clamping and release mechanism,” says Larry Johnson. “You just open or close the valve on it and the jaws open and close. Because we’ve got six vises on our system, we have one valve for controlling the front three vises, and another valve to control the back three vises. You just have to flip a valve and that opens and closes it. It’s really easy to operate.”

The powered opening allows a 400 lb. part to rest on the vise and always open. This typically would not happen with a spring return vise.

Johnson says the mechanical workpiece vise would be much more difficult to operate adequately for his application.

“Doing this kind of work would be a really tough job if you were using mechanical workholding fixtures,” he explains. “These beams we are machining weigh about 400 lbs. each. To use a mechanical vise you’d have to use a hammer to go around and make sure they’re tight enough. With the hydraulic vises, we’ve got much better control, and no concerns about operator errors. Using the ProHold hydraulic I’ve never had a problem with workpieces coming lose. The hydraulic system is the only way to do it. It’s more expensive, but pays for itself.”

ProHold is one of the more established brands of hydraulic workholding systems, and was acquired by Planet Products in recent years. Planet, known best for its live tools and “speeder” tool heads, purchased ProHold because the line accommodates individual setups, machining centers and automated centers, and also because ProHold workholding systems offer some distinct features.

For example, the vises have a longer hydraulic stroke, which can facilitate quicker loading plus ability to clamp wide range of parts with same tooling. The long hydraulic stroke allows several different sized parts to be processed with the same top jaws, significantly reducing set ups time and effort.

“That definitely makes a difference in our application,” says Johnson. “Our workpieces – the beams - weigh about 400 lbs. and the vises open up wide enough that you can load them quickly and easily.”

He adds that automatically closing the vises simultaneously saves time and efforts. Each set of jaws moves independently and can clamp different sized parts at the same time with uniform clamping pressure.

The hydraulic vises that I have will accommodate all three different sizes of the beams we machine,” Johnson says. “So, if you are running the same types of parts like we are, the hydraulic vises are an easy setup. It’s just a matter of changing the jaws on them and you’re ready to go again.”

Also, the full hydraulic control allows synchronized operation of multiple vise and even automated or remote control, eliminating operator variation and ergonomic issues.

For more information, contact Planet Products Corporation, 4200 Malsbary Road, Cincinnati, OH 45242; Phone: 513-984-5544; Fax: 513-984-5580; Email: info@planet-products.com; or visit www.planet-products.com



QTE ACQUIRES MULTIPLE MASTERCAM RESELLERS, EXPANDING INTO NEW TERRITORIES

QTE Manufacturing Solutions recently announced further expansion



with the acquisition of Mastercam business from two resellers: Redbird, Inc. (Kansas/Oklahoma) and Eastech, Inc. (Tennessee). Redbird and Eastech clients as well as companies in Arkansas now have access to QTE’s comprehensive solutions to their product manufacturing and inspection challenges. As the number one worldwide customer retention leader for Mastercam software, QTE’s goal has been to continuously improve the productivity and throughput of their manufacturing customers. In addition to offering Mastercam products and related value added services such as training and support, QTE has been the number one reseller of Verisurf inspection software.

“QTE has demonstrated leadership, growth and proven customer satisfaction in the channel since they began with Mastercam in the 1980s. They continue to do so today by providing true single-source support for the entire Mastercam product portfolio and in creating additional value for their customers. We are certain QTE will provide a high level of support to clients from both Redbird and Eastech,” said Doug Nemeth, Corporate Sales Manager, North America

and Europe, CNC Software (Mastercam).



“The team at QTE has been serving manufacturing and engineering clients for the past 28 years in Missouri, Southern Illinois and Kansas. The

additional products and services QTE has to offer will allow new clients to see immediate benefits and be successful for years to come. Our goal is to always provide the highest levels of customer service and support. We welcome the new members to our QTE family of customers and will work to ensure their success,” said QTE President Jeff Quinn.





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EXCELLENCE AWARDS: TECHNOLOGY & 6S: TWO NTMA GEMS

BY REID LELAND PE, PRESIDENT OF LEANWERKS AND CURRENT LEADER FOR THE NTMA TECHNOLOGY TEAM



Abundance abounds for NTMA members. Through its multiple member value programs, from discounted insurance to trade missions to market intelligence, NTMA members make more, spend less and grow. And, through a "world of abundance" lens, NTMA members share and collaborate at a level that, to the outsider, may seem counterproductive in this highly competitive industry. Two NTMA excellence recognition programs, Technology and 6S, epitomize how abundance thinking in the NTMA puts its members in a position to shoot for the stars - and reach them.

6S EXCELLENCE AWARD

In 2007, a group of NTMA shop apprentices toured Switzerland as guests of the Swiss Embassy. Upon return, they commented on the cleanliness and orderliness of the Swiss facilities relative to U.S. shops. Based on this feedback, the NTMA Education and Technology Teams committed to improve the perception of American manufacturing by promoting and recognizing excellence in member shop organization and efficiency. The 6S Excellence Award was created.

NTMA companies apply for the award by submitting a self-assessment based on criteria that demonstrate best in class practice in the six S's:

1. Sort
2. Set in Order
3. Shine
4. Standardize
5. Sustain
6. Safety

THE FIRST NTMA 6S EXCELLENCE AWARDS WERE PRESENTED IN 2009 TO:

- Hobson & Motzer (Durham, CT)
- Toth Technologies (Pennsauken, NJ)
- Pointe Precision (Plover, WI)
- Overton Industries (Mooresville, IN)

SUBSEQUENT WINNERS INCLUDE HOMEYER PRECISION MANUFACTURING (MARTHASVILLE, MO)

The precision contract manufacturing industry is highly fragmented and dominated by small, privately held, and often financially leveraged shops. With much on the line, the future often hangs in the balance with every proposal. While these shops do compete against each other, they face fiercer and less objectively measured competition

from their customers, who often have internal capacity to manufacture the same parts. To the extent that our industry can demonstrate competence, inspire confidence, and improve the results of our OEM customers, we generate more opportunities for all. And, for every failure of a job shop colleague, our prospective customers raise the bar higher for the rest of us. The 6S Excellence Award provides a roadmap to improve shop performance, create positive business results, and create happier customers, which in turn contributes to an upward spiral for our entire industry.

TECHNOLOGY EXCELLENCE AWARD

To further strengthen the precision contract manufacturing industry, the NTMA Technology Team developed the Technology Excellence Award. Members who demonstrate advanced application of a technology or business practice that results in improved business performance are eligible to be nominated for this award. Winners are selected by the Technology Team and asked to give a brief description of their awarded technology or practice at the NTMA Fall Conference.



NTMA members participate in Technology discussion at MFG meeting in Arizona

AWARD RECIPIENTS TO DATE INCLUDE:

- Reata Engineering and Machine (Denver, CO) for Application of Multi-Tasking Technology
- JD Machine (Ogden, UT) for Progressive Management Practices

This is where abundance thinking is put to the test. Asking shops to share technologies and business practices that help them improve their results may seem like asking the Denver Broncos for their playbook. Some shops have responded as such, and

so have declined to receive the award.

To be clear, trade secrets and competitive advantages are not expected to be divulged. Listen to what Matt Wardle, President of JD Machine, had to say about sharing his best practice at last year's fall conference:

"Sharing best business practices between shops is different from sharing trade secrets. When I have a chance to help other shops understand their costs, how to train their people, or avoid risk, then the whole industry is better for it. I'd much rather compete against a good shop that has systems and metrics in place and will be around for the 'long-haul.' I think it's better for the customers as well to have a stable supply base with good quality and competitive pricing. I also think it is best to work together on developing a strong labor pool. Shops collaborating on workforce development is much more productive than going at it on our own. Sharing training programs, apprenticeships, and working closely with local training partners are all key to solving the never ending challenge of keeping the pipeline filled with skilled machinists..."

At the 2013 NTMA Fall Conference, the Technology Excellence Award recipient's presentations were packed. It was the best of what NTMA has to offer when it comes to sharing. Imagine hearing about a management

practice that generated 25% compound annual growth rate for nearly a decade or the application of multi-tasking technology that increased revenue per employee by 35% in two years, not from a salesman or consultant, but from the owners of the companies who did it. The people who attended were inspired and went home with actionable take-aways. And, our entire industry was elevated!



COLORADO TO BE ONE OF 7 HUBS OF NATIONAL DIGITAL MANUFACTURING INSTITUTE

BY ED SEALOVER, DENVER BUSINESS JOURNAL

Colorado will be one of seven hubs for a national digital manufacturing institute — an opportunity to continue its efforts to grow its advanced-manufacturing sector, with some major financial help from the federal government.

President Barack Obama is expected to announce the seven locations and further details about the project on Tuesday, but Ken Lund, executive director of the Colorado Office of Economic Development and International Trade, confirmed late Monday afternoon that this state will be one of them.

With the announcement will come a federal grant of about \$10 million to match the \$10 million pledged already to the project by OEDIT and several universities in Colorado, he said.

“For Colorado to be at the forefront and to be able to build our hubs to help local businesses compete is really at the heart of our effort to be home to this,” Lund said. “It will allow us to be able to retrain our workforce to be able to compete in the future.”

Digital manufacturing is a rapidly evolving subset of the industry. It involves using computer tools such as simulations and 3D visualization to drive production.

Several Colorado companies already employ the practice, including Woodward Inc. in Fort Collins and Bal Seal Engineering Inc. in Colorado Springs, but the placement of three training “nodes” in the state will let more companies learn how to employ the technology, Lund said.

UI Labs of Chicago will be awarded the main \$70 million grant from the U.S. Department of Defense to fund the Digital Lab for Manufacturing project. That will be matched with \$250 million in contributions from industry, academia and private sources to sustain the full nationwide network.

The Colorado Economic Development Commission pledged \$1 million a year over the next five years to the project in the first-ever series of advanced-industries grants that it issued in late 2013. That \$5 million will



Ken Lund, Executive Director of the Colorado Office of Economic Development and International Trade

be matched with another \$5 million from the University of Colorado and the Colorado School of Mines and then will be matched again by the federal money, Lund said.

Officials in the educational consortium that will run the nodes have not selected the three specific locations of the training centers in this state, but Lund said they will look for place in the heart of growing manufacturing communities.

Companies can go there to access the technology and infrastructure from the main center in Chicago and train their workers how to use it, he said.

While digital manufacturing is employed by a limited number of companies now, Lund said he believes it will become a primary tool of all advanced manufacturing businesses in the future.

Becoming an early hub for such work will help Colorado to attract both private businesses and the workforce that will be drawn to such technology, he said.

“This industry’s transforming, whether we like it or not ... This is really significant for retaining and growing jobs in Colorado,” Lund added. “I’m not surprised [about the award], because I think Colorado has a really strong research and development backbone that I don’t think the rest of the country knows a lot about but is starting to learn about.”



YARDE METALS CONSOLIDATES WITH TRIDENT METALS’ MANSFIELD, MASSACHUSETTS LOCATION

Yarde Metals, Inc., a metals service center headquartered in Connecticut announces it has assumed the operations and commercial activity of the Mansfield, Massachusetts location of Trident Metals.

“Trident has an excellent reputation in the market and we are very excited to have the opportunity to continue supporting the business they’ve worked so hard to develop,” stated Matt Smith, President and COO of Yarde Metals.

Yarde is in the process of a complete renovation of the facility on Forbes Boulevard in Mansfield. It plans for this location to be another full service branch location complete with a sales office, inventory and processing. The project is expected to be completed in early March and the branch will be fully operational later that month.

“The Massachusetts and Rhode Island markets have always been very important to Yarde. With this consolidation I’m confident we can provide even better service to customers in the region,” Mr. Smith commented.



MANUFACTURING AMERICA’S FUTURE



EH&E ANNOUNCES SERVICES TO HELP MANUFACTURERS AUTOMATE THEIR EHS PROGRAMS WITH MICROSOFT SHAREPOINT

EH&E (www.eheinc.com), a leading provider of environmental and engineering consulting services, has announced its EHS Automation Consulting services to help manufacturers achieve greater compliance, time and cost savings by automating their environmental health and safety (EHS) programs with Microsoft® SharePoint®.

“EHS programs, despite their critical role in manufacturing, are often managed outside a company’s information technology network. Many EHS programs, although requiring data input from many sources, and often from a variety of locations, are managed using Word documents and Excel spreadsheets. This is costly, time-consuming, and grossly inefficient,” said Bob Foster, Director of Automation Services.

“For many manufacturers, the solution can be found in their existing Microsoft SharePoint platform — the ubiquitous web-based information management

platform that’s already in use for communications between people and departments throughout their company,” Foster said.

EH&E’s EHS Automation Consulting services team works with manufacturers to develop SharePoint-based applications that automate the process of collecting, analyzing, processing and displaying information across the organization. EH&E is a leader in EHS consulting, providing EHS program development, compliance, and oversight services across a wide range of industries for 25 years.

EH&E works closely with EHS managers to seamlessly automate their current EHS processes using the SharePoint platform. For users, there’s virtually no change in workflow as they continue to access familiar Microsoft solutions. Data entry is streamlined across locations and devices — from desktop to mobile devices to electronic forms.

The greatest benefits of the

system are reaped from the use of SharePoint functionality to auto-administrate work processes to vastly improve operational efficiency. Such automation can include managing multi-step workflows that can eliminate many administrative hours — including automatically initiating processes such as reviewing data for significant patterns, sending documents and forms to responsible parties for review, and ensuring that reports are properly completed in the required time.

Specific applications can range from the management and reporting of accidents and incidents, to safety inspections, chemical inventories, and training records.

“Tracking the due dates and the completion of various EHS tasks is a huge administrative burden in itself, and frequently consumes much of the manager’s time — to the extent that beneficial program initiatives often lay dormant as efforts are focused on maintaining basic

compliance,” noted Foster.

By leveraging the SharePoint platform, EH&E provides manufacturers with a single software solution to address and integrate various program information and task requirements to produce a single program dashboard — for centralized reporting and analysis.

For more information about utilizing Microsoft SharePoint applications for managing environmental health and safety programs, download the free whitepaper, “Microsoft SharePoint: A Powerful Solution for Environmental Health and Safety Programs,” at http://www.eheinc.com/sharepoint_ehs_wp.htm

For more information about EH&E’s EHS Automation Consulting service, contact EH&E by phone at 1-800-825-5343 or visit the website at http://www.eheinc.com/ehe_web_solutions.htm.



US MANUFACTURERS TOUR KAISER SWITZERLAND, COMPARE INTERNATIONAL NOTES



BIG Kaiser hosted a group of U.S. manufacturers on a visit to the KAISER headquarters in Zurich, Switzerland in February. The third annual event paired educational presentations, tours of the assembly and machining areas, and traditional Swiss hospitality.

“The challenges of manufacturing are universal,” Dennis Rosene, owner, Rosene

Machine (Firth, NE), said. “Visiting factories outside the U.S. can help us find new ways to solve the same challenges we face at home.”

Operations from product and fixture design to rough and finish machining and assembly are done on two levels of the original KAISER factory. A flexible production process supports lot sizes from one to 1,000, but

typical lots are 10 to 150 pieces. At KAISER, high quality products come with a long operating life. Visitors on the tour were shown a 30-year-old tool body that had just been returned by a manufacturer for repair work.

A universal take-away for the



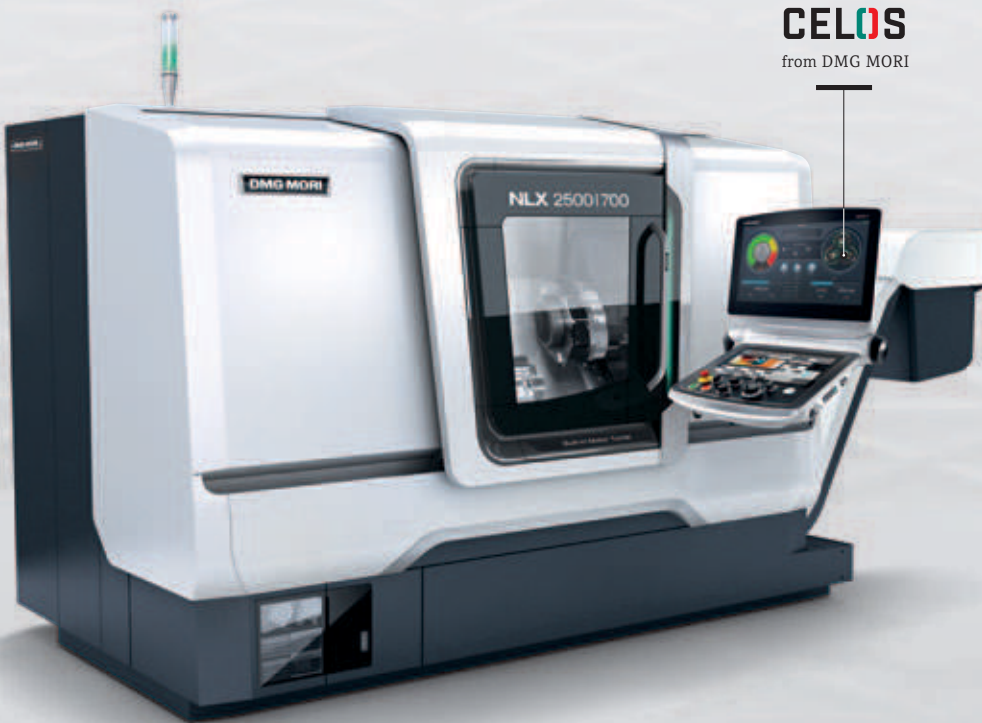
David Stucki, Marketing Manager at KAISER Switzerland, discusses new KAISER products with United States guests at the recent open house.

American visitors was the Swiss model of efficiency. “In this part of our country, close to Zurich, the operating costs, cost of land,

CONTINUED ON — P39

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and demand for talent are all very high,” Peter Elmer, CEO, KAISER, explained. “We must always drive efficiency, quality and process optimization to be successful here.”

“We were really impressed with how much production could be done in a relatively small space,” Ronda Peterson, CEO, Peterson Machining (Boulder, CO) said. “That gave us some ideas for our own shop.”

The visitors were given a brief overview of the global organization. Many were surprised to learn that 25 percent of the BIG Kaiser products they use are actually licensed for manufacturing in Tennessee.

“Many of our tools are designed to the CAT specification common only in the US. With a portfolio of over 30,000 items, it’s important we have domestic production and inventory for our customers,” Jack Burley, VP, BIG Kaiser explained. Meanwhile, products like digital boring heads, micro tools, tool presetters and HSK shanks are produced at the facilities in Europe. In 2003, KAISER entered into a global sales and marketing partnership with BIG Daishowa of Japan, thus changing the name of the U.S. operations to BIG Kaiser, and expanding the product line globally.

One highlight of the tour was the selection of new boring head technology. Released in 2012, this line of high-precision digital boring heads designed and manufactured at the Swiss facility. A small sensor and digital display are built into each tool body, allowing quick and precise adjustment of the tool carrier. The patented design saves time and enables critical boring adjustments down to $\text{\O}0.0005$ ”.

Machining tests demonstrated the benefits of proper tool selection and tool balancing. Cycle time, chip management and part finish can all be notably improved even on machines that are not particularly robust.

COROCUT QD: SECURE AND EFFICIENT PARTING OFF WITH PLUG AND PLAY COOLANT

On March 3rd, CoroCut QD – the reliable system from Sandvik Coromant for deep grooves and parting off with long overhangs – expands the offer of inserts and durable tools with over and under coolant. The system is supported with plug and play adaptors for easy handling and efficient coolant supply.

For bar feed manufacturers, process security in terms of good chip control and long reliable tool life is the key to an efficient production. To meet these needs CoroCut QD combines strong tools and inserts with rigid clamping and efficient coolant supply.

CHIP CONTROL AND EASY COOLANT CONNECTION

An important aspect for long tool life and few machine stoppages is good chip control. This is achieved by combining over and under coolant on all tools which keeps the temperature down at the cutting edge for less tool wear and a more stable performance, while at the same time providing for efficient chip evacuation.



While there is no single brand strategy for machines, the commitment to process optimization is clear in the number of combined mill/turn operations on the shop floor. “We look for a minimum 20 to 30 percent increase in throughput for any new capital investment,” Elmer said. The company also runs one 12-hour shift per day and targets 30 percent of machining time to be completed during unmanned hours.

High interest in KAISER’s apprenticeship program reflected the common challenge of finding skilled machinists. Each year, a few select students are accepted into KAISER’s four-year program. The apprenticeship combines continuing education in the classroom and on various CNC machine platforms and controls. Over four years, students master fundamental skills and move on to real-world challenges like fixture design or process improvement. Approximately 90 percent of the machinists at KAISER graduated from an apprenticeship, and many continued studies to become master craftsmen. This level of talent, paired with efficient and flexible processes and high quality machines, is the core competency of KAISER.

BIG Kaiser Precision Tooling Inc. (Hoffman Estates, IL) is a leader in high precision tooling systems and solutions. With brands including BIG Daishowa, KAISER, Speroni, Unilock and Sphinx, BIG Kaiser’s line is focused on extreme accuracy and repeatability. BIG Kaiser’s mission is to support North American manufacturers with products that are designed and manufactured to a superior standard. Guaranteed.

For more information, contact BIG Kaiser, Hoffman Estates, IL at 847-228-7660, e-mail bigkaiser@bigkaiser.com or visit www.bigkaiser.com.



Add to the support plug and play adaptors for easy coolant connection and a rigid, yet user-friendly clamping mechanism for easy insert changes, and you get CoroCut QD. This system not only ensures process security, but also easy handling for real machining efficiency.

DURABLE TOOLS

At the cutting edge, the cutting forces are high. To withstand this temperature, the tool material has high fatigue resistance and the tool tip seat features a backstop so the insert stays in its position preventing the seat from wearing down when the insert is indexed. Also the inserts themselves are developed with good coating adhesion and high edge-line security, for long tool life in every parting off operation.

The system was first introduced in October 2013, and builds on the well proven Q-Cut and CoroCut ranges, expanding the options for these processes.



PROGRAM AIMS TO BRIDGE GAP IN MANUFACTURING JOBS

BY MIKE SALINERO, THE TAMPA TRIBUNE

The massive migration of manufacturing jobs out of the United States is often blamed for stagnating wages and the U.S. economy's slow recovery from the Great Recession.

That thinking, although not entirely false, has led to another problem for American manufacturers: the so-called "skills gap."

Manufacturing industries here are rebounding, led by computerized, highly technical workplaces, but many employers say they can't find enough skilled workers to fill their job openings.

"There is a tremendous skills gap," said Roy Sweatman, president of Southern Manufacturing Technologies in Tampa. "Kids have been pointed toward college, and everybody thinks manufacturing doesn't exist in the U.S. anymore."

The Hillsborough County (FL) government is ready to spend \$1 million over two years to help address the problem. The county, working with education agencies and local manufacturers, plans to create an apprenticeship program that officials hope will spur some parents and students to rethink their career plans.

The payoff will be skilled employees for existing high-paying industries and a highly skilled workforce that can attract even more manufacturing here.

Though details won't emerge until next month, early plans call for some of the money to be spent on scholarships to defray the cost of on-the-job training in a partnership with local manufacturers.

County commissioners also want to create a media campaign to draw students or adults looking for new skills into the program.

"We want to send a message out that manufacturing jobs are viable career options," said

Commissioner Sandy Murman, who has been involved in planning for such a program with educators. "The second part of that would be public-private partnerships with manufacturing to sponsor internships."

Hillsborough County has close to 1,000 manufacturers, with more than 22,000 employees earning an average salary of \$935 a week. But a survey of 89 manufacturers employing 12,000 workers in Hillsborough and Pinellas counties showed 2,100 unfilled jobs as of April 2013.

IN ESTABLISHING THE APPRENTICESHIP PROGRAM, COUNTY LEADERS FACE A NUMBER OF CHALLENGES.

For one, they want to have multiple opportunities for young people and adults to learn the skills they need to get a manufacturing job. To do that they have to incorporate existing vocational-technical programs in county public schools, at Hillsborough Community College and the University of South Florida.

"There's not been a good connectivity between private-sector manufacturers and the groups doing the job training," said Ron Barton, who heads up the county government's economic development efforts.

County Commissioner Al Higginbotham became aware of the skills gap years ago when he sat on the board of the Tampa Hillsborough Economic Development Corp.

Higginbotham paid his own way to travel to Charlotte, NC, to see that city's mature apprenticeship program.

Like Charlotte, Hillsborough needs to form a consortium of manufacturers and training agencies. "We're going to pool our funds to train students," Higginbotham said.

There's no need to start a new agency whose start-up costs,

Higginbotham fears, would consume most of the county's \$1 million contribution to the project.

Training programs already exist in public schools, the community college and the university.

Crafting a structure will be the job of Ed Peachey, president of CareerSource of Tampa Bay, the state workforce development organization for Hillsborough and Pinellas counties.

THAT LEADS TO THE SECOND CHALLENGE:

Getting manufacturers to buy into the program. The value of apprenticeship is that students can learn in real workplace conditions. But the programs can be costly to a manufacturer because the student is not at full productivity during the learning process.

And skilled workers at the industry are not as productive if they have to spend time training the apprentices.

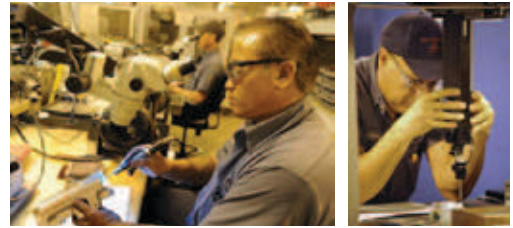
Peachey said he will work on recruiting manufacturers for the apprentice program during the next two months.

"None of this is going to work without the manufacturers being on board and lending us their expertise," Peachey said.

But perhaps the biggest hurdle, one identified by both industrialists and training agencies, is changing the image of manufacturing in the minds of students and parents.

Today's manufacturing workers are not dressed in greasy overalls, performing mindless, repetitive tasks. More likely, they are operating computerized equipment that requires knowledge of math and science.

"People don't really understand high-tech manufacturing.



Left: Soung Morkhantha uses a deburring device at Southern Manufacturing Technologies in Tampa. Right: Anthony Porter works on a coordinate measuring device at Southern Manufacturing Technologies in Tampa. Hillsborough is spending \$1 million on an apprentice academy.

They think it's all assembly lines and 'Laverne and Shirley,'" said Hillsborough Community College spokeswoman Ashley Carl, referring to the 1970s television comedy about two female factory hands.

A good example of manufacturing's new face is Roy Sweatman's Southern Manufacturing Technologies in northwest Hillsborough County. Parts fashioned there regulate fuel in jets such as the Boeing 737 and 787.

When NASA's Curiosity Mars rover settled down on the Red Planet, four jets with valves made by Southern Manufacturing cushioned the landing.

"Some of that money needs to be spent in a way to get people to know about manufacturing: the high-paying jobs we have that don't require a college education and don't require a lot of debt," Sweatman said.

It will be up to Peachey's workforce development group to not only mold the apprenticeship structure but to brand and sell it to parents, students, veterans and older people who need new job skills.

He and Barton, the county's economic development chief, are to report back to county commissioners with a plan in April.



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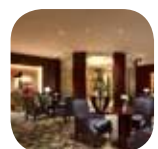
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Your competitors have a seat at the table, will you...

SME CONTRIBUTES WORKFORCE AND EDUCATION EXPERTISE IN SUPPORT OF NEW DIGITAL LAB FOR MANUFACTURING

In support of President Obama's National Network for Manufacturing Innovation (NNMI), the U.S. Department of Defense has awarded a grant to UI Labs in Chicago to create the Digital Lab for Manufacturing. This lab will be part of a consortium to develop and demonstrate digital manufacturing technologies and deploy and commercialize these technologies across key manufacturing industries. SME plans to play a significant part in workforce development for the new Digital Lab.

SME is one of the manufacturing industry's trusted sources of knowledge and information and has been an

active supporter for the NNMI institutes. SME will offer its experience in the area of training, building competency, and overall workforce development to the Digital Lab to ensure today and tomorrow's workers possess the knowledge and skills needed to truly adopt and utilize the power of digital manufacturing.

"SME is proud to be a partner in the Digital Lab and to contribute to the development of a skilled workforce ready to work in a digital environment," said Debbie Holton, SME managing director of industry strategy and events. "The ability of industry, government and researchers to collaborate—

especially providing advanced manufacturing capabilities to small-and medium-sized manufacturers—will accelerate the invention, design and manufacture of new technologies and processes."

"Equipping the future workforce is an essential part of the Digital Lab and SME plans to offer support through our long history in developing industry-driven competencies, certification and curriculum," Holton said.

SME will have one member of its staff dedicated to working on the Digital Lab initiative.

Additionally, Dean Bartles, SME vice president and a member of the SME College of

Fellows, has been selected to be the executive director of Digital Lab. Currently vice president at General Dynamics, Bartles has elected to take an early retirement to assume this newly created position at UI Labs.

"The opportunity to join such a strong team at UI Labs and be part of the manufacturing renaissance that President Obama has launched through the establishment of the NNMI is the opportunity of a lifetime," Bartles said.



CPA MEMBERS MEET WITH 100 CONGRESSIONAL OFFICES: OPPOSITION TO GLOBAL GOVERNANCE DEALS INCREASES



CPA members and supporters from California to New England and from Washington State to Florida spread out across Capitol Hill this week to meet with over 100 congressional offices for CPA's 2014 Legislative Fly In.

"Our members reported a major improvement this year in congressional willingness to reconsider bad trade policy," said Michael Stumo, CEO of the Coalition for a Prosperous America. "We were effective in countering the relentless efforts by the wealthy special interest groups who work hard to offshore our industries, our jobs and our sovereignty. The Administration's efforts to push outdated, economy-killing concepts of trade policy has been stonewalled by the left and the right in Congress. Now they are in disarray."

CPA members delivered the message

that balanced trade needs to be at the forefront of our national strategy. "It has become impossible to defend the current neo-liberal trade policy which ignores balance of trade," continued Stumo. "We will start pushing that concept harder this year as we work with Congressional allies."

Congressional offices showed a heightened sensitivity to preserving states' rights, American sovereignty and legislative branch authority over trade. "Congress is increasingly loathe to transfer its authority over trade and domestic policy to the executive branch and give up its right to full transparency and amendments," said Stumo. "Trade negotiators have steadfastly refused to pursue balanced trade, a fix for currency manipulation and multiple other changes to fix the mistakes of the past."

CPA members also delivered a petition

signed by over 80 liberty groups across the country objecting to Fast Track and the Trans-Pacific Partnership on constitutional grounds. "Tea Party and other liberty organizations have learned how American sovereignty is at risk as we transfer domestic authority to international governance systems and tribunals," continued Stumo. "They are not fooled by phony free trade claims as a rationale to permanently give up our sovereignty."

CPA will continue to forge a new consensus on trade and economic policy that balances trade, creates jobs, grows our economy and protects American sovereignty.



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EQUIPMENT LEASING AND FINANCE ASSOCIATION'S SURVEY OF ECONOMIC ACTIVITY: MONTHLY LEASING AND FINANCE INDEX

JANUARY NEW BUSINESS VOLUME UP 2 PERCENT YEAR-OVER-YEAR, DOWN 44 PERCENT MONTH-TO-MONTH



The Equipment Leasing and Finance Association's (ELFA) Monthly Leasing and Finance Index (MLFI-25), which reports economic activity from 25 companies representing a cross section of the \$827 billion equipment finance sector, showed their overall new business volume for January was \$6 billion, up 2 percent from new business volume in January 2013. Volume was down 44 percent from December, following the typical end-of-quarter, end-of-year spike in new business activity.

Receivables over 30 days were at 1.8 percent in January, down slightly from 1.9 percent in December. Delinquencies were unchanged from the same period in 2013. Charge-offs were unchanged from the previous two months at the all-time low of 0.3 percent.

Credit approvals totaled 76.9 percent in January, a decrease from 78.3 percent the previous month. Fifty-four percent of participating organizations reported submitting more transactions for approval during January, a decrease from 57 percent December.

Finally, total headcount for equipment finance companies was up 0.7 percent year over year.

Separately, the Equipment Leasing & Finance Foundation's Monthly Confidence Index (MCI-EFI) for February is 63.3, the second highest index in two years and off slightly from last month's two-year index high of 64.9.



ELFA President and CEO William G. Sutton, CAE, said: "At the start of the new year, equipment finance activity picked up where it left off for most of 2013. New business volume shows modest, incremental growth while credit losses continue at historic lows. With fiscal pressures in Washington subsiding, at least for the time being, and most major U.S. economic indicators showing positive signs, we are hopeful that these factors will

help promote a favorable climate for continued investment by U.S. businesses in capital equipment in 2014 and beyond."



Martha Ahlers, VP/COO, United Leasing, Inc., said, "The Monthly Confidence Index results for the last two reported periods provide continued optimism for the year ahead. Beginning 2014 with a 63.3 MCI, the 2nd highest mark in the last 24 months, is also extremely promising and serves as evidence of stability and positive velocity within our industry. In the Monthly Leasing and Finance Index, origination volumes year-over-year are also up, while maintaining historically low delinquency and charge-offs; an indication of continued health. The combination of these positive indicators creates a huge amount of excitement for potential growth."

ABOUT THE ELFA'S MLFI-25

The MLFI-25 is the only index that reflects capex, or the volume of commercial equipment financed in the U.S. The MLFI-25 is released globally at 8 a.m. Eastern time from Washington, D.C., each month on the day before the U.S. Department of Commerce releases the durable goods report. The MLFI-25 is a financial indicator that complements the durable goods report and other economic indexes, including the Institute for Supply Management Index, which reports economic activity in the manufacturing sector. Together with the MLFI-25 these reports provide a complete view of the status of productive assets in the U.S. economy: equipment produced, acquired and financed.

The MLFI-25 is a time series that reflects two years of business activity for the 25 companies currently participating in the survey. The latest MLFI-25, including methodology and participants is available below and also at <http://www.elfaonline.org/Research/MLFI/>

MLFI-25 METHODOLOGY

The ELFA produces the MLFI-25 survey to help member organizations achieve competitive advantage by providing them

with leading-edge research and benchmarking information to support strategic business decision making.

The MLFI-25 is a barometer of the trends in U.S. capital equipment investment. Five components are included in the survey: new business volume (originations), aging of receivables, charge-offs, credit approval ratios (approved vs. submitted) and headcount for the equipment finance business.

The MLFI-25 measures monthly commercial equipment lease and loan activity as reported by participating ELFA member equipment finance companies representing a cross section of the equipment finance sector, including small ticket, middle-market, large ticket, bank, captive and independent leasing and finance companies. Based on hard survey data, the responses mirror the economic activity of the broader equipment finance sector and current business conditions nationally.

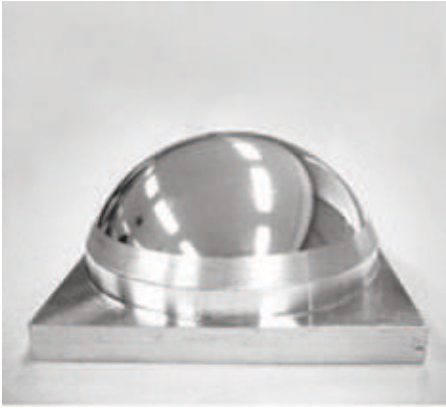


SPEEDY, ACCURATE CNC MACHINING FOR CURVED SURFACES: NEW SUPER-NURBS WHITE PAPER FROM OKUMA AMERICA



For those involved with CNC machining on curved surfaces, producing a smooth finish is critical. A new white paper from Okuma America Corporation details the company's Super-NURBS programming functionality that meets high-accuracy finish requirements while speeding up cycle times. The result is drastically reduced hand-finishing time to achieve

CONTINUED ON - P45



high-quality parts quickly.

The term “NURBS” is an acronym for Non-Uniform Rational Basis Spline, a mathematical way to regenerate free-

form curves and shapes. Super-NURBS is Okuma’s proprietary technology for achieving NURBS functionality within a CNC machining environment. Titled “Super-NURBS Cuts Curved Surfaces With High-Accuracy and Speedy Cycle Times – Completing Parts on the Machine” the white paper examines topics such as:

- How Super-NURBS eliminates redundancies and allows for a faster and smoother tool path
- Why Super-NURBS delivers the fastest speeds and highest quality finishes in the industry
- How Super-NURBS’ faster control loops speed allows for more ultra-high

feed rates to be used

- Why there’s no need for a look-ahead – Super-NURBS is inherently fast without it
- How to deliver parts “out the door” faster, with better finish quality and accuracy

Super-NURBS enables controlled high speed and high-quality CNC machining. Completing parts on the machine – this is possible with Super-NURBS. Okuma’s Super-NURBS white paper is available for complimentary download at <http://www.okuma.com/super-nurbs>.



UNIQUE THREAD FORM TAPS FOR HIGH VOLUME CNC PRODUCTION

A VIBRATION, TEMPERATURE RESISTANT THREAD FORM IS OPTIMIZED FOR HIGH-SPEED, CNC MACHINING WITH SIGNIFICANTLY LONGER TOOL LIFE.

BY DEL WILLIAMS

“These machine taps have been improved for CNC machining in regards to the tool’s geometry, surface coatings, flute angles as well as shapes, nose size and other key factors. This not only enables high speed production but also significantly extends the tool’s life.”

Jeff Jungmann, a Spirallock Engineering Manager



Machinists can now add a locking feature to tapped holes by utilizing specialized Spirallock taps optimized for extended tool life in high volume CNC operations. These taps, the next generation of a popular tool set redesigned to meet the needs of high speed production shops, are based on a unique thread form that resolves the thread loosening and joint integrity problems common to standard fasteners.

For more than 35 years, the Spirallock thread form has been used in extreme fastening applications where joint failure or loosening is not an option: from the main engines of NASA’s Space Shuttle, the Saturn Cassini orbiter and Titan Huygens probe to deep sea oil rigs, military and aerospace vehicles, as well as medical implants, artificial limbs, and heart pumps.

The Spirallock thread form solves thread loosening and joint integrity issues by changing the physics of how the threads interact. In traditional 60-degree threads, the gap between the upper edges of the male and female threads can lead to vibration-caused thread loosening. Stress concentration and fatigue at the first few engaged threads is also a problem, particularly with softer metals. The unique profile of Spirallock threads closes the gap that causes loosening, improving the in-

tegrity and reliability of threaded joints.

FASTER PRODUCTION

Thread form tapping has traditionally been a relatively slow machining operation, due to its limited visibility and necessary precision. Not content to let tapping technology become stale, Stanley Engineered Fastening, owner of the Spirallock brand and global provider of innovative fastening and assembly technologies, has reimagined tapping with the thread form for higher performance and increased off-the-shelf availability.

“Compared to other machining operations, thread form tapping has been relatively slow,” says Jeff Jungmann, a Spirallock engineering manager. “The entire cut has to be made in one pass with little to no visibility, so most machinists are very conservative about their speeds.”

Shortly after it acquired the company, Stanley Engineered Fastening decided to re-boot the Spirallock product line to enable high-speed, CNC production and extend tool life. They also streamlined the number of tap choices so they are now immediately available in stock.

“These machine taps have been improved for CNC machining in regards to the tool’s geometry, surface coatings, flute angles as well as shapes, nose size and other key factors,” says Jungmann. “This not only enables high speed production but also significantly

extends the tool’s life.”

The new thread form taps include four styles: Multi-Purpose, T-10 Straight Flute, Cold Forming, and High Performance, of which all but the Cold Forming include a physical vapor deposition (PVD) coating for a harder, more lubricious, wear-resistant surface than typical taps finished with nitride or a bright finish.

To enable machine tapping with the thread form and prolong wear life, tap blanks include a neck behind the threads on most sizes. The neck allows more room for coolant to get into the hole being tapped, and more room for chips to get cleared away from outside a blind hole. This decreases heat buildup and further increases wear life.

The PVD coatings enable tapping up to 50 percent faster than previous nitride or bright finished taps, and helps the tap to cut smoothly in deeper holes where there is little coolant or lubrication. For faster tapping in difficult materials, such as nickel alloys and super alloys, the High Performance taps add a dual layer PVD coating, using a super low-friction topcoat over a hard, heat-resistant base layer.

To reduce complexity and enable in-stock availability, the four tap styles are offered in plug chamfer for through holes or a bottom chamfer for bottom holes. Minor changes to

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NTMA National Staff



ADVERTISING AND SPONSORSHIP OPPORTUNITIES

Tiffany Bryson(216) 264-2847
tbryson@ntma.org

MEMBERSHIP AND CUSTOMER SERVICE

Jeff Walmsley(216) 264-2858
jwalmsley@ntma.org

Michelle Marquard(216) 264-2857
(Manufacturing Membership)
mmarquard@ntma.org

Rich Basalla(216) 264-2855
(Manufacturing Membership)
rbasalla@ntma.org

Tiffany Bryson(216) 264-2847
(National Associate Membership)
tbryson@ntma.org

ADVICE AND ASSISTANCE, FINANCIAL BENCHMARKING, GLOBAL MARKETING, MEMBERSHIP RECRUITMENT

Rich Basalla(216) 264-2856
(Customer Service)
rbasalla@ntma.org

Michelle Marquard(216) 264-2857
(Customer Service)
mmarquard@ntma.org

AFFINITY & DISCOUNT PROGRAMS

Jeff Walmsley(216) 264-2858
jwalmsley@ntma.org

CHAPTER DEVELOPMENT SERVICES

Emily Lipovan(216) 264-2835
elipovan@ntma.org

Kelly Kasner(574) 220-9111
kkasner@ntma.org

NTMA INSURANCE PROGRAM

Jim Grossmann(314) 409-3799
jgrosman@ntma.org

MEETINGS, CONVENTIONS AND TRADE SHOWS

Kristen Hrusch(216) 264-2845
khrusch@ntma.org

Brittany Belko(216) 264-2848
bbelko@ntma.org

MARKETING COMMUNICATIONS

Emily Lipovan(216) 264-2835
elipovan@ntma.org

NTMF

Emily Lipovan(216) 264-2835
elipovan@ntma.org

PUBLICATIONS (THE RECORD AND E-TRENDS)

Emily Lipovan(216) 264-2835
elipovan@ntma.org

Sally Safranski(314) 378-1293
ssafranski@ntma.org

STRATEGIC ADVISOR

Dan Bagley(412) 554-7199
rdbagley@ntma.org

SALES

Dave Tilstone(216) 264-2830
dtilstone@ntma.org

Emily Lipovan(216) 264-2835
elipovan@ntma.org

Jeff Walmsley(216) 264-2858
jwalmsley@ntma.org

Jim Grossmann(314) 409-3799
(Sales)
jgrosman@ntma.org

Michelle Marquard(216) 264-2857
(Manufacturing Membership/
Customer Service)
mmarquard@ntma.org

Rich Basalla(216) 264-2856
(Manufacturing Membership/
Customer Service)
rbasalla@ntma.org

Tiffany Bryson(216) 264-2847
(National Associate Membership)
tbryson@ntma.org

TEXTBOOKS

Rich Basalla(216) 264-2855
rbasalla@ntma.org

NATIONAL ROBOTICS LEAGUE

Maureen Carruthers(504) 250-2427
mcarruthers@ntma.org

WORKFORCE DEVELOPMENT, EDUCATION (NTMA U), TESTING, SKILLED LABOR TRAINING

Ken McCreight(216) 264-2834
kmccreight@ntma.org

Rich Basalla(216) 264-2856
rbasalla@ntma.org

EXECUTIVE TEAM, CHAIRMAN VISITS

Kelly LaMarca(216) 264-2837
klamarca@ntma.org

NTMA OPERATIONS

Dave Tilstone(216) 264-2830
dtilstone@ntma.org

Emily Lipovan(216) 264-2835
elipovan@ntma.org

INTERNATIONAL BUSINESS

Dave Tilstone(216) 264-2830
dtilstone@ntma.org

Emily Lipovan(216) 264-2835
elipovan@ntma.org

GOVERNMENTAL AFFAIRS

Kristen Hrusch(216) 264-2845
khrusch@ntma.org

THE FRANKLIN PARTNERSHIP, LLC

(202) 393-8250
500 New Jersey Avenue, NW, Suite 400
Washington, DC 20001

John Guzik

jpguzik@franklinpartnership.com

Omar Nashashibi

omar@franklinpartnership.com

Paul Nathanson

Bracewell/Giuliani

Paul.Nathanson@bglip.com

DID YOU KNOW?

GUIDE TO MEMBER SERVICES

THE NTMA OPERATING COSTS AND EXECUTIVE COMPENSATION (OCEC) SURVEY BENCHMARKS PERFORMANCE

The OCEC is a profitability or Cost Of Doing Business study of NTMA members designed to obtain, understand and analyze “best practices” for precision custom tooling and machining manufacturers. More importantly, the OCEC survey is designed to help NTMA members improve their own financial performance.

The American manufacturing sector is on the rise. A manufacturing rebirth in the U.S. comes after decades of news reports about factory closures and manufacturing job outsourcing.

If your costs are too high, however, your shop will have trouble competing in this manufacturing rebirth. One of the best ways to avoid this risk is to know the standard costs encountered by other custom precision job shops—in your chapter, in your industry segment (Tools & Dies, Molds, General Precision Machining, Aerospace Machining & Fabrication, Special Machines, Production Operations) and at similar size companies.

Many owners of closely held businesses believe that they are so closely involved with all facets of their operation that there is no need to participate in an industry benchmarking study. However, if your company wants and to increase profitability and continue to grow in today’s competitive environment, you have to realize that sometimes even your best instincts may not be enough. Without an industry benchmark, they are only instincts. It is essential that you take the time to analyze industry best practices and build them into your company’s business plans.

From past OCEC results, we know that a “High Profit” group in the industry earns 3-4 times more profit than the typical company. The High Profit group is the top ¼ of all NTMA members that participate in the OCEC. If 1 in 4 companies in the industry can achieve those results, it is a reasonable, attainable goal for the other ¾ of the companies in the industry. Wouldn’t it be huge to earn 3-4 times more profit?

HOW THE OCEC WORKS

The OCEC survey was sent to each NTMA member company in late February. Because that company returns the survey directly to Mackay Research Group, no one from NTMA or its staff has access to specific company data. Participant data is aggregated in a manner that prevents identification of any individual company.

ONE SURVEY: TWO REPORTS

1. OPERATING COSTS REPORT

This report is a financial analysis of the custom tooling and machining industry. It can help you improve your financial results by establishing “typical” financial performance targets and by analyzing how “high-profit” companies in the industry achieve their success.

2. EXECUTIVE COMPENSATION REPORT

Closely-held corporations are often the target of IRS “reasonable” compensation challenges. The Executive Compensation Report examines issues relating to reasonable compensation by analyzing the range of pay, including base salary, bonus, benefits and perks, that executives earn in the precision custom tooling & machining industry.

WHAT’S IN IT FOR YOU?

INDIVIDUAL COMPANY REPORT

Each survey participant receives an individual Financial Performance Report analyzing your company. This report compares your financial performance to industry standards. In order to protect your confidential data, Mackay Research Group sends this report directly to you. And it’s free to you through NTMA!

Manufacturing matters! To ensure a comprehensive report, NTMA needs your participation. Be sure to send in your OCEC response by May 1st.



CALENDAR OF EVENTS

HANNOVER MESSE TRADE SHOW

April 7–11, 2014

Hannover, Germany

NTMA/PMA ONE VOICE LEGISLATIVE CONFERENCE

May 6-7, 2014

Washington, DC

NATIONAL ROBOTICS LEAGUE COMPETITION

May 16-17, 2014

Cleveland, OH

NTMA PURCHASING FAIR

June 3-4, 2014

Chicago, IL

NTMA FALL CONFERENCE

October 22-25, 2014

New Orleans, LA

SPIRALOCK - CONTINUED

flute shape have also improved tap usability across a broader range of materials for each style. For instance, hook, rake, and spiral point angles are tailored to specific purposes corresponding to each tap style.

Every geometry change was made with the goal of increasing tool life. Since the point diameter at the front of all tap styles is now larger, the taps start cutting material sooner and spread the load more evenly over all the cutting edges, improving wear life.

“By improving the quality of the tapping tool, machinists can now have the confidence they are making the proper cut without having to be as conservative in their speeds,” says Jungmann. “This allows them to use the Spiralock thread form while running at higher production speeds, reducing cycle time.”

For detailed test data, including comparative graphic loading characteristics or photoelastic analysis/load vector comparison animation, visit Spiralock at www.spiralock.com; email slinfo@spiralock.com or call (800) 521-2688.

For information on Stanley Engineered Fastening, visit www.StanleyEngineeredFastening.com.





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