

NTMA INTERNATIONAL TECHNOLOGY TOUR 2015 - SWITZERLAND

National Associate Members GF Machining Solutions, Blaser Swisslube and BIG Kaiser Precision Tooling will host a 6-day tour for NTMA members to manufacturing facilities in Switzerland. — p10

NTMA RECOGNIZES 25 YEAR PARTNERSHIP WITH GF MACHINING SOLUTIONS LLC

Fall Conference General Assembly is a time to recognize achievements and milestones. Among those celebrated in New Orleans this year was the 25th anniversary of the partnership between NTMA and GF Machining Solutions. — p11

THE NTMA TECHNOLOGY TEAM

Guided by team leader Mike Hirsh (Hirsh Precision Products, Boulder, CO), the Tech Team (also known as Manufacturing Technology Team) is actually a sub-team under the Workforce Development Team. — p22

STATE GRANTS MASSACHUSETTS HELP TO TRAIN WORKERS IN ADVANCED MANUFACTURING

Members of Massachusetts Governor Deval Patrick's cabinet were in Amherst Monday morning to announce the awarding of grants to western Massachusetts organizations that help people find jobs. — p24

**CFO
ROUNDTABLE**

NTMA

**HUMAN RESOURCES
ROUNDTABLE**

NTMA

**PLANT MANAGERS
ROUNDTABLE**

NTMA

**SALES & MARKETING
WORKSHOP**

NTMA

2015 TECHNICAL SEMINARS

SEMINAR SCHEDULES AND INFORMATION. — p15-18

2015 Technical Seminars

NTMA 2015 Events

January 17-18, 2015

NTMA Strategic Planning Meeting and
NTMA Team Leaders Meeting
Miami, FL

January 28, 2015

Plant Managers Roundtable
Cincinnati, OH

February 11, 2015

Sales & Marketing Workshop
Rio Rancho, New Mexico

March 4-7, 2015

MFG Meeting
Orlando World Marriott Resort
Orlando, FL

March 25, 2015

Human Resources Roundtable
Phoenix, AZ

April 5-10, 2015

International Technology Tour
Switzerland

April 20-22, 2015

NTMA/PMA Legislative Conference
Washington, D.C.

April 29, 2015

CFO Roundtable
Philadelphia, PA

May 15-16, 2015

National Robotics League
National Competition
Emerging Leaders Conference
Cleveland, OH

May 27, 2015

Plant Managers Roundtable
California

June 11-12, 2015

Chapter Leadership Summit
Cleveland, OH

June 24, 2015

CFO Roundtable
Cleveland, OH

July 29, 2015

Sales & Marketing Workshop
Indianapolis, IN

2015

January							February							March						
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11	12	13	14	15	16	17	15	16	17	18	19	20	21	15	16	17	18	19	20	21
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25	26	27	28	29	30	31	29	30						27	28	29	30	31		

August 26, 2015

Sales & Marketing Workshop
Hartford, CT

September, 2015 (Date to be determined)

CFO Roundtable
California

October 5-10, 2015

EMO Milano 2015
Milan, Italy

October 20, 2015

Plant Managers Roundtable
St. Louis, MO

October 21-24, 2015

NTMA Fall Conference
St. Louis, MO

November, 2015 (Dates to be determined)

NTMA Contract Manufacturing
Purchasing Fair
Houston, TX

Human Resources Roundtable
Boston, M

CFO Roundtable
Kansas City, MO

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TAX EXTENDERS PASSED BEFORE CONGRESS WRAPS UP FOR THE YEAR

Just before dissolving the 113th Congress, the Senate voted to approve legislation to extend dozens of tax credits and deductions for 2014 that Congress had previously allowed to expire on December 31, 2013. Passage of this "tax extenders" legislation was a key priority for One Voice members, who actively lobbied their Senators during the past few weeks to take action on the bill.

The package extends a host of tax provisions for 2014 at their same level as 2013, including the R&D Tax Credit, Bonus Depreciation, and Section 179 Equipment Expensing. All provisions will be retroactive to January 1, 2014. The Senate's action followed on the bill passed by the House of Representatives roughly two weeks earlier, a situation that put manufacturers and other industries on hold until the Senate made its final decision to vote.

The Tax Extenders bill, as the package is known, was among the final acts of the 113th Congress, which observers from all sides of the political spectrum have almost unanimously declared to be one of the least productive in history. Acting to extend the tax provisions was critical for manufacturers. If lawmakers had allowed the provisions to expire, each One Voice manufacturing member would have potentially faced hundreds of thousands of dollars in additional tax liabilities for 2014 that would be due early next year. The victory for 2014 is short-lived, however, as the provisions will expire yet again in just a few weeks, necessitating further effort in 2015 to at a minimum secure the extensions for the next tax year – and hopefully well beyond.

To that end, the One Voice Washington team is already working with allies on Capitol Hill to get behind comprehensive tax reform that would provide needed stability for the manufacturers and small businesses that make decisions well in advance and need time to invest in equipment and people. One Voice is calling on lawmakers to make permanent and to enhance key provisions such as R&D, Bonus Depreciation, and Section 179, all of which encourage manufacturing investments in America. With a Republican Congress coming into force next year, there will be renewed focus on meaningful tax reform – and One Voice will be pushing for lasting improvements to the tax code for manufacturers.

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.





PRESIDENT'S UPDATE

DAVE TILSTONE / NTMA PRESIDENT

As we begin 2015, you'll see that I am assuming a more visible role in the association, complementing what you hear from the Chairmen of the Executive Team. Ted will wrap up his year with the "Chairman Corners" through March.

Herb Homeyer, 2015 Chairman-elect has announced his theme, "Authentic Leadership." Herb will share details of his theme in bi-monthly articles in *The Record*, in highlights of his visits to Chapters throughout the year, and at the MFG Meeting in Orlando.

For me, 2015 means that I'll be playing a bigger and more important role as the "face of the industry and our association." Herb and I will be sharing Chapter visits this year; however, I plan to spend more time as the industry advocate in Washington, D.C., be the primary interface with the press to make sure our industry is recognized and heard throughout the U.S., yet continue to visit members so that members' voices are heard.

In this edition of *The Record*, I'll be providing a brief recap of 2014 and also outline some exciting initiatives planned for 2015.

2014 HIGHLIGHTS

Great strides were made throughout 2014 with governance, funding for future growth, introduction of new regional programs, one of the "best ever" Fall Conferences, record number of students in both NTMA-U and at the NRL national competition last May. The new board structure

was formalized and approved by Trustees at the Fall Conference; a new simplified dues structure was developed by NTMA members with staff support and was approved in late August; no dues increase was needed for 2015 as a result of stronger operating performance as well as better budget and financial management; and a funding plan with an investment policy were developed and implemented that provides for emergency funding and investments for our future!

Another 2014 highlight included regional CFO Roundtables and Purchasing Fairs. These programs were developed from members' requests for more regional programs. The resulting Purchasing Fairs (held in both Pittsburgh and Chicago) and CFO Roundtables (in Cleveland and St. Louis) were well-received. January will launch Plant Managers Roundtable – check out a special section in this issue of *The Record* detailing all regional events planned for 2015 (in addition to our National events). That way you can mark your calendars and save the dates.

As you'll read later in my letter, the first half of 2014 did not meet growth forecasts economists predicted. Some attribute this to the harsh winter weather in January and February; others blame the government for marketplace uncertainty, new tax laws that impacted small- to medium-sized businesses, new regulations imposed on businesses, etc. All or some of these factors also had an impact on NTMA members and

membership. Some smaller member companies claimed financial stress on their businesses for resigning. We lost some of our largest and most prosperous members to acquisitions by private equity firms. Regardless of the reasons, it was decided in June to revamp the NTMA membership and Chapter support organization and strategy.

YOUR NEW NTMA ORGANIZATION

For 2015, we are implementing a new plan to provide local member and Chapter support through a decentralized membership and Chapter services model. We have segmented the U.S. into four regional territories that will be supported by NTMA Membership and Chapter Support professionals. As you've already read in earlier announcements, Kelly Kasner and Rich Basalla have accepted positions as Membership and Chapter Services Executives for the Midwest and North Central regions respectively. As they transition into their new assignments we move forward to fill these same positions for the Western and Eastern regions. This team will be our frontline to members and to the chapters to help you derive even more value from the NTMA. They will also support best practices with our chapters and become more involved with the mainstream of activities. Local representation equates to helping you get more value from your membership and includes introducing new programs as well as helping your businesses with existing programs. Benchmarking, cost savings programs, advocacy, edu-

cation and interactions with the world's technology leaders are just of the few ways NTMA can help you improve your business results.

We intend to continue promoting membership throughout the U.S. and increase membership at our existing chapters; we will expand into new geographic territories, too. Specifically, we want to add new chapters to our family in key areas of the southeast where aerospace, medical, automotive and general engineering are flourishing. We have also added national support for our Chapters by having Kelly LaMarca support our Chapter Executive Team, the Star Chapter Program and programming for the upcoming Chapter Leadership Summit in June.

We are also in the midst of reorganizing the headquarters staff functions. The intent is to provide better support services for our members while making the organization as efficient and cost effective as possible. Doug DeRose and I have taken on additional responsibilities, therefore eliminated the Managing Director's position. Doug remains our CFO and all the related activities of this position. In addition, he'll manage the NRL Director and events staff and he'll oversee headquarters operations. I have assumed the sales management role and will be more engaged as the "face of the organization" as noted earlier. The key positions we are filling include the Membership and Business Development Director,

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THE RECORD

OPERATIONS & EDITORIAL

Dave Tilstone, President

Sally Safranski, Executive Editor

NTMA EXECUTIVE TEAM

Theodore O. Toth, Jr., Chairman

Rosenberger-Toth – Pennsauken, NJ

Herb Homeyer, Vice Chairman

Homeyer Precision Manufacturing – St. Louis, MO

Matt Wardle, Interim Treasurer

J D Machine – Ogden, UT

Ken Seilkop, Secretary

Seilkop Industries – Cincinnati, OH

Robert Mosey, Past Chairman of the Board

Mosey's 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

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ssafranski@ntma.org for editorial content.

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the Western and Eastern Membership and Chapter Services Executives, as well as the NRL Director. The quality and number of candidates has been very encouraging with screening completed and interviews in process. We are using Top Grading for the interviewing process as a best practice. By the time you read this, many of these positions will be filled. A new organization chart will be included in the 2015 Membership Directory that you'll be receiving shortly that details the new organization.

2015 MEMBER ACTIVITIES AND CONFERENCES

Members' feedback tells us the 2014 Fall Conference in New Orleans was "one of the very best NTMA has ever offered." Lots of new content: specifically Technology Day; Trustees and Chapter Leaders roundtables; members' best practices and case studies replacing guest

speakers; the addition of market segment roundtables for oil and gas, fluid power, medical and aerospace; and several new business and technology tracts – all of this in a compact, three-day schedule. All of this in addition to our usual popular Industry Roundtables, team meetings and updates from our One Voice Advocacy, the NRL and NTMA-U. The 2015 Fall Conference will be hosted by Herb and Lisa Homeyer in their hometown of St. Louis. The plans are to have Homeyer Precision Mfg. be one of the venues for a very exciting yet relaxing evening of camaraderie, friendship and tours of one of the association's leading companies. Plans are in the works for another great evening event and will feature two half days of technology along with many of the

CONTINUED ON – P6

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new additions featured during the 2014 Fall Conference.

The MFG Meeting will be the first major event for 2015, scheduled for March 4-7 at the Orlando World Center Marriott Resort, with record attendance anticipated. AMT, PMA and NTMA will again join forces and resources to bring the very best speakers on key topics that affect you and your business. Topics include the very latest in additive manufacturing technologies and its applications, with a panel of experts to answer questions you have. Five other general assemblies feature power-speakers – leading industry CEOs and thought-leaders addressing The Future of Innovation; Manufacturing Industry Transformation: How the Internet of Things is Redefining How Products are Created, Operated and Serviced; Learning the Secrets of the 1%ers – these are among the highlight topics. I'd suggest you check out the full schedule on the conference web site to get the full scope (www.mfgmeeting.com). In addition, there will be the NTMA-only day on Wednesday that will include a General Assembly with awards, a Trustees and Chapter Leadership roundtable, along with team meetings and roundtables. See MFG Meeting details and full schedule, including registration instructions later in this issue of The Record (also available at www.mfgmeeting.com). It's not too early to get your hotel reservations in place, perhaps look into airfare now, too!

In support of our Teams, we will continue with our Team Leaders meeting and orientation being held this month in Miami and immediately follow that with the Strategic Planning meeting held on January 17th. The Teams will review their progress to date, set the stage for 2015 and revisit their mission statements. The Strategic Planning sessions are being held to solicit ideas from NTMA members on the future of the NTMA and identify "big ideas" so that a long-term roadmap can be prepared for the organiza-

tion's future. Following four years of strategic planning and implementation coupled with a foundation of growth and solid financial performance, the Executive Team is soliciting members for their ideas regarding the future of the NTMA. Three to five key strategic initiatives will be identified during the strategic planning sessions with our members. The Executive Team and staff will then put plans and metrics in place to more fully develop the plans throughout the year, culminating in a long-range plan for your association.

A first-ever Emerging Team Leaders meeting will be held concurrent with the 2015 NRL Competition in May. Our industry's current and future leaders are coming together to share best practices, learn new management concepts and discuss the challenges of our industry.

The Manufacturing Technology Team plans to continue their joint meeting with AMT's technology committee and also invites all NTMA members to join a Swiss Tour in April and an October visit to EMO. The Swiss Tour is the first in a series of planned annual events outside the U.S., planned this year for April 5-12 with BIG Kaiser, GF Machining Solutions and Blaser Swisslube hosting visits to their facilities and to some of their customers. They have graciously offered to cover all hotel room costs, most meals and ground transportation. More details are in this issue of The Record and registration information will follow in E-Trends. Please note that space is limited to 25 members, so it's first come, first served. Later this year (October 5-10) is EMO, one of the largest industrial trade shows in the world, to be held in Milan, Italy. Hotel rooms have been reserved; plans include guided Tech Tours of key technology booths, as we did for EMO 2013. There is also a Tech Day planned at or close to the exhibition hosted by ISTMA. More details will follow later this year in the The Record and E-Trends.

The June 2015 Chapter Leadership Summit will continue as the meeting focused on Chapter Executives and Chapter Leaders. New for this year will be separate tracts for newer Chapter leaders as well as tracts for those who are more experienced in their roles. Best practices, especially in the area of new member recruitment will be one of the Summit highlights. This will be paired with the Executive Team meeting in Cleveland.

NTMA-U introduced modules during the 2014 Fall Semester. Based upon interest and demand, this format will continue. Modules are a great way to introduce new training skills on specific subjects to employees as well as to provide targeted training to those employees needing a refresher course or update. Enrollment is expected to continually increase in 2015 as new courses are introduced throughout the year. With the lack of available skilled labor, our industry continues to struggle filling key positions. The Ed Team is also looking to offer additional training outside of the apprenticeship curriculum to enhance the portfolio of course offerings that support of our members. Stay tuned for more information on these additions.

The NRL has grown over the past two years beyond anyone's expectations, with a record number of students participating in the national competition and additional teams being added as our chapters launch new programs. The 2015 national competition is scheduled for May 15-16 in Cleveland. Being one of the conduits to have young adults enter our industry, the NRL will continue to be a focus in 2015.

2015 OUTLOOK

Regardless of the source of your information, the economic outlook for manufacturing in this country is very bullish. Economist, politicians, business leaders and NTMA members are expecting modest but sustainable growth this year. Why? Cost of producing goods in the U.S. has continued

to beat the competition through productivity gains, low energy prices, a weak dollar, low interest rates, consumer demand and adoption of new technologies. In fact, some are concerned that the capacity of U.S. manufacturing in some sectors could hold back growth. Having visited many of the machine tool builders and our members, I see those involved with aerospace are struggling to meet the demands of their customers. Boeing is releasing large orders to meet commercial aircraft demand and Airbus has just begun to source products from the U.S. Automotive sales of light duty vehicles continues to impress the analysts with sales of 18 million vehicles by 2017. Information presented by Harbour Consulting estimates that this production level of new vehicles coupled with the introduction of 120 new car platforms will create a \$2-2.5 billion shortfall in die and mold capacity in the U.S. by 2017. Kim Korth, IRN Inc., a well-recognized expert and analyst of the U.S. auto industry estimates that the forecasted sales of light duty vehicles for 2014 will reach 16.8 million units. The results of a survey done by IRN regarding the automotive supply chain was surprising. When automotive suppliers were asked if the annual North American production volume increases beyond 17 million units within the next 12 months, do they have sufficient capacity to support a sustained increase in demand? Overall, 42.4% said no. What does this infer other than the obvious capacity issue? Current members who serve the auto industry should be getting ready to expand capacity and, given the tight demand, price increases may finally be a topic of discussion.

With all of this encouraging news, NTMA members should, in general be optimistic about their businesses in 2015. The soft spot is oil and gas. While the U.S. currently enjoys record low oil prices – good for manufacturing and for consumers – this is not good news

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for our members who depend on the energy sector for business. BP announced a restructuring ahead of further declines in oil prices and projects that if oil continues to hover between \$60-65/barrel, sub sea drilling, the oil sands in Canada and new exploration is expected to dramatically slow down. A recent article in USA Today noted that oil futures are indicating that oil prices will remain at their current levels or decline throughout 2015. As many of you know, this could all change since this sector is highly contingent upon a stable global geo-political environment. Regarding fracking, the drilling may have stabilized, but the "consumable" equipment such as mud pumps, etc. are expected to be in strong demand, driven not by oil pricing, but rather by demand for natural gas. With regard to transporting petroleum products, the demand for rail cars has created a 50,000 unit backlog. So although oil exploration may not be declining, the news about the oil and gas sector for NTMA members isn't as bad as perhaps the press would lead you to believe.

With the first half of 2014 being soft for most members, the second half of the year showed solid growth for the industrial sector. The official growth of 4.4% for the last six months of 2014 helped set the stage for 2015 even though exports declined to Europe. The ISM's (Institute for Supply Management) published PMI (purchasing managers index) confirmed solid growth. This is expected to continue into 2015 with an estimated 2.9-3% growth in real GDP. The caveats for the 2015 U.S. growth forecast include stability between Russia and the Ukraine, Europe coming out of a mild recession in 2015 and no further declines with the Chinese recovery. Regarding capital spending and interest rates, Oxford Economics presented at the AMT Global Forecasting and Marketing Conference in October that the Federal Reserve will delay increasing interest rates to prevent the strengthening dollar from impacting exports. So if you are planning to purchase capital equipment, financing should be an attractive option.

In closing, I would like to personally thank you for your membership, volunteerism and support for our industry. As a member driven organization, we will continue to solicit your input and strive to fulfill our commitment to help make your business more prosperous and profitable.

DAVE TILSTONE /
NTMA PRESIDENT



Dave Tilstone



WELCOMES NEW MEMBERS

ACI SERVICES, INC.
Kansas City Chapter
Mr. Chad Brahler
1931-A SW Hwy 40
Blue Springs, MO 64015

BLUE SUN MANUFACTURING
Northern Utah Chapter
Mr. Kyle Ellis
1569 W. 2650 S #4
Ogden, UT 84401

BRENDELL MANUFACTURING
Northern Utah Chapter
Mr. Bryant Davis
580 N. 400 W.
North Salt Lake, UT 84054

**BLUE PHOTON TECHNOLOGY AND
WORKHOLDING SYSTEMS LLC**
General Member
Mr. Dan Billings
116 W. Colby Street, Suite B1
Whitehall, MI 49461

CIMCOOL FLUID TECHNOLOGY
National Associate Member
Mr. Troy Ballard
3000 Disney Street
Cincinnati, OH 45209

FIVES MACHINING SYSTEMS, INC.
National Associate Member
Mr. Mark Logan
2200 Litton Lane
Hebron, KY 41048

GROSS MACHINE, INC.
Philadelphia Delaware Valley Chapter
Mr. Bruce R. Gross
1760 Costner Drive
Warrington, PA 18976

PRECISION DYNAMICS LLC
San Francisco Bay Area Chapter
Mr. Saifa Phommarnine
121 Industrial Road, Ste. 14
Belmont, CA 94002

RIO GRANDE WELDING & FABRICATION
New Mexico Chapter
Mr. Jeremy Williams
10001 Southern Avenue SE, Ste. F
Albuquerque, NM 87123-5209

SETPOINT SYSTEMS, INC.
Northern Utah Chapter
Mr. Mark Coy
2835 Commerce Way
Ogden, UT 84401

VANGUARD TECHNOLOGY CORPORATION
New Mexico Chapter
Ms. Tanda Headrick
2926 Girard Blvd., NE
Albuquerque, NM 87107-1935

NTMA WELCOMES TWO NEW NATIONAL ASSOCIATE MEMBERS

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Agenda

Monday, April 20, 2015

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

Tuesday, April 21, 2015

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

Wednesday, April 22, 2015

8:00a.m. – 9:30a.m. – Breakfast, Issues Presentation
10:00a.m. – 4:00p.m. – Capitol Hill Visits



Additional information about registration is coming soon. For more information, visit www.metalworkingadvocate.org or contact onevoice@metalworkingadvocate.org or call 202-393-8250.

NTMA

PLANT MANAGERS
ROUNDTABLE

SAVE
THE
DATE

NTMA PLANT MANAGERS ROUNDTABLE

WEDNESDAY JANUARY 28, 2015

Hosted by Makino

7680 INNOVATION WAY
MASON, OHIO 45040
(JUST NORTH OF CINCINNATI)

8:00AM - 4:30PM



Continental Breakfast and Lunch included

Plant Tour followed by Welcome Reception
& Dinner on Tuesday January 27th

Join other Plant Managers from NTMA member companies and discuss the Machining of Aerospace Alloys, Robotics, Metrics and MTConnect.

NTMA International Technology Tour 2015 - Switzerland

APRIL 5-10, 2015

NTMA

+GF+

Blaser.
SWISSLUBE

BIG KAISER®
PRECISION TOOLING INC.

National Associate Members GF Machining Solutions, Blaser Swisslube and BIG Kaiser Precision Tooling will host a 6-day tour for NTMA members to manufacturing facilities in Switzerland.



Swiss Tour Schedule

5-April	Monday	Departing flights from the US
6-April	Tuesday	Next Day Arrivals to Zurich Relax Welcome Dinner
7-April	Wednesday	Visit GF Machining Solutions, Nidau, Switzerland
8-April	Thursday	Visit BLASER Swisslube, Hasle-Rüegsau, Switzerland
9-April	Friday	Visit BIG KAISER Precision Tooling, Rümlang, Switzerland
** One or more end-user manufacturing facilities to be added to final itinerary **		
10-April	Saturday	Enjoy a tour of downtown Zurich Sightseeing Shopping
11-April	Sunday	Departures to US



REGISTRATION AND PRICING INFO:

Administration Fee: \$650

** Payment deadline: March 1, 2015

For Registration Contact:

Brittany Belko
bbelko@ntma.org

DRIVE EFFICIENCY, QUALITY AND PROCESS OPTIMIZATION IN YOUR OWN BUSINESS BY VISITING FACTORIES OUTSIDE THE U.S.

Facility Tours

- Attendees will see complementary product offerings and the full process of technology development and manufacturing at each location.

- In addition to the three member facilities, a minimum of one end-user tour will be arranged, a total of 4 to 5 sites in 6 days.

The Hosting Companies will provide

- Complimentary ground transportation in Switzerland
- Hotel stays
- Sightseeing activities
- Most meals

Guests will be responsible for airfare to and from Zurich, Switzerland.

Maximum capacity is 25.

NTMA Recognizes 25 Year Partnership with GF Machining Solutions LLC



Fall Conference General Assembly is a time to recognize achievements and milestones. Among those celebrated in New Orleans this year was the 25th anniversary of the partnership between NTMA and GF Machining Solutions. Gisbert Ledvon, Director of Business Development accepted the certificate this year.

GF Machining Solutions was a visionary in terms of identifying and building the potential relationship between machine tool companies and NTMA members. In his role representing the company, then known as Charmilles and later AgieCharmilles, Harry Moser (now leading the Reshoring Initiative) noted that he looked around and saw that all the machine guys were going to meetings of associations for machine manufacturers. Harry thought he'd rather go where the customers are – so became active with NTMA. He noted that from that point, “we were the model for the others – we set the standard of how associate members could be involved with their customers’ association.”

This early pioneer National Associate Member has long been involved in and supportive of training. For years the company provided the grand prize to the National Apprentice Contest winner’s employer, awarding machines and/or deep discounts on machines. Harry took apprentice winners and owners to Switzerland to see the Swiss apprenticeship model, which is regarded globally as a gold standard.

Moser noted that through their membership the company significantly expanded their market share within the NTMA membership. Through their accessibility and support, they demonstrated credibility. “Members got to know me – they knew me and knew they could reach me if needed. They would see me twice a year at their meetings. Members felt more comfortable doing business with us because they had a relationship with us.”

“GF has continued to be a generous supporter of the NTMA” said Tiffany Bryson, NTMA National Account Manager. Gisbert illustrates great dedica-



Ted Toth and Gisbert Ledvon at the GF Machining Solutions booth at Fall Conference recognizing 25 years’ membership.

tion to our members with his willingness to offer his time, resources and expertise. We look forward to a continued strong relationship with our friends at GF Machining Solutions.”

Serving moldmakers and manufacturers of precision components, GF Machining Solutions is the North American leading

supplier of AgieCharmilles wire cut, die-sinking and hole-drilling EDM machines; Mikron 3- and 5-axis high-speed and high-performance milling machines; 3D laser texturing solutions; System 3R clamping and palletization systems; automation solutions; and spare and consumable parts.

GF Machining Solutions’ UPTIME+ service and support program further leverages the competitive advantages of the company’s advanced product portfolio through applications expertise, comprehensive training, technical assistance, preventative maintenance, world-class warranty coverage as well as parts and consumables.

Originating in Switzerland in 1861, GF Machining Solutions is part of the Swiss Georg Fischer Group, which has 50 locations worldwide. While Lincolnshire, Illinois is home to the company’s U.S. headquarters, manufacturers can benefit from four application centers located nationwide in Lincolnshire, Illinois; Holliston, Massachusetts; Irvine, California; and Charlotte, North Carolina.

GF Machining Solutions
560 Bond Street
Lincolnshire, IL 60069
(847) 913-5300
www.gfms.com/us



NEW NTMA DUES STRUCTURE

In June of 2014, the Executive Team created a Dues Structure Action Team to review the general member dues structure. It was determined that the current structure was too cumbersome and needed to be simplified. The action team which was made up of NTMA members, along with the NTMA staff, revised the structure, reducing the number of general dues categories from over 100 to 18. The result of the action team reduced dues for almost

75% of the general membership, while keeping them the same, or increasing them for the remaining members. There was no across the board dues increase for 2015. The simplified dues structure was voted on by the Board of Trustees in August and was approved by a unanimous vote. The new dues structure will take effect with the 2015 dues billing cycle which is scheduled to start this month.



MY AEROSPACE MISSION.



MY OKUMA.



MY PRODUCTIVITY.
MY RELIABILITY.
MY COST EFFICIENCY.

Okuma—Mission Plan For The Aerospace Industry

For 30+ years Okuma has been the go-to machine for cutting aerospace parts. It doesn't take a rocket scientist to see why. Okuma delivers productivity gains and consistent reliability while reducing the cost of ownership and the cost of manufacturing and that cost efficiency helps win contracts. Okuma machines also incorporate the open architecture of the THINC®-OSP control that streamlines processes and enhances productivity. My Okuma means My Aerospace Mission.

My Okuma: Maximizing Productivity. Powering Business. Sharing Innovation.

VISIT WWW.OKUMA.COM/AEROSPACE-MACHINING TO LEARN
MORE ABOUT OKUMA'S IMPACT IN THE AEROSPACE INDUSTRY



Arizona CNC Equipment
www.arizonacnc.com

EMEC Machine Tools, Inc.
www.emecmt.com

Gosiger
www.gosiger.com

Hartwig, Inc
www.hartwiginc.com

Hegman Machinery
www.hegmanmachinery.com

HEMAQ
www.hemaq.com

Morris Group, Inc.
www.morrisgroupinc.com

Thomas Skinner & Son, Ltd.
www.thomasskinner.com

IT'S OFFICIAL. THE R&D TAX CREDIT IS BACK IN PLAY FOR 2014

R&D Tax Credit Webinar



Wednesday, January 21st, 2015: 1:00 p.m. - 2:00 p.m. EST

JOIN THE WEBINAR AND LEARN WHAT MANY NTMA MEMBERS ALREADY KNOW: CONTRACT MANUFACTURERS/JOB SHOPS ARE DOING R&D AND ARE REDUCING THEIR TAX LIABILITIES THROUGH THE USE OF R&D TAX CREDIT

With tax season underway, please join Scott Schmidt, Principal of NTMA national associate member company Black Line Group, for an in-depth look at the now-extended 2014 tax credit. Learn about the new significant rule change the IRS made in 2014 that could potentially make the R&D Tax Credit more attractive and easier to claim for many more small and mid-size companies.

Special guest Omar Nashashibi, partner at The Franklin Partnership, LLP, also will provide an update on the latest developments in Washington, D.C. related to tax reform, including making the R&D tax credit permanent.

Many of the day-to-day activities taking place in the job shop/contract manufacturing environment DO qualify

for the R&D tax credit! For companies that have yet to take advantage of the R&D tax credit, this potentially can mean the creation of immediate and substantial amounts of cash—typically into the tens of thousands of dollars each year! In addition, companies can reduce future tax liabilities and improve cash flow.

DOES YOUR COMPANY:

- Manufacture new and/or improved products, including making parts for larger OEM customers?
- Develop new and/or improved production/manufacturing processes?
- Develop prototypes and models, including computer-generated models?
- Design tools, jigs, molds and dies?
- Conduct testing of new concepts and technology?

- Attempt using new materials?
- Add new and/or modify existing equipment?
- Implement automation and/or technology into the manufacturing process?

To learn more about the R&D Tax Credit, your company's potential opportunity and the specialized services offered by Black Line Group, register for this no-cost webinar.

REGISTER TODAY:

<https://attendee.gototraining.com/r/460531908053440769> or refer to Webinar details (www.ntma.org) for a link to registration.



Royal Quick Grip™ CNC Collet Chucks set a new standard featuring superior design, incredible accuracy, and easy, 10-second collet changes.



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 - Total system accuracy guaranteed to 0.0004" TIR or better
- ✓ **Exclusive Bolt & Go™ Mounting Advantage**
 - Out-of-the-box near perfect face/taper fit with machine spindle-nose
 - No jack screws to hassle with
 - Significantly reduces chuck changeover time
- ✓ **Widest Gripping Range**
 - Full 0.062" grip range – 50% greater than the competition
 - Parallel clamping collet segments remain in contact with the workpiece over their entire length for maximum holding power and accuracy
 - Compensates for oversized or undersized bar stock
- ✓ **Most Compact Chucks in the Industry**
 - Ultra-compact lengths maximize z-axis capacity
 - Super slim nose diameters provide outstanding tool clearance

OKUMA AMERICA'S "MAKE THE LEAP" TECHNOLOGY SHOWCASE HIGHLIGHTS ADVANCED CNC MANUFACTURING TECHNOLOGIES

OKUMA AMERICA'S "MAKE THE LEAP" TECHNOLOGY SHOWCASE
HIGHLIGHTS ADVANCED CNC MANUFACTURING TECHNOLOGIES



Okuma inTHINC facility

Okuma America Corporation, a world-leader in CNC machine tool manufacturing, hosted more than 500 customers, partners and distributors at its 2014 Technology Showcase event on December 9-10, 2014 in Charlotte N.C. This two-day event featured a wide array of learning opportunities for attendees featuring hands-on demonstrations, App Store and machine demos, a facility tour highlighting titanium machining at the new Aerospace Center for Excellence, and a behind-the-scenes look at Okuma's electrical and mechanical repair operations. Among those in attendance from NTMA were President, Dave Tilstone and Chairman-Elect, Herb Homeyer.

The theme of this year's event, "Make the Leap," included demonstrations of simple technology upgrades that enable users to quickly jump ahead of their competition and

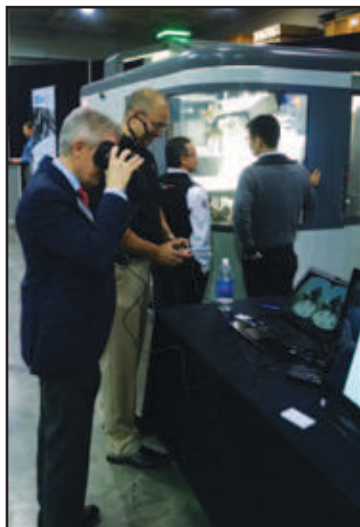


President and COO, Jim King and NTMA Vice Chairman, Herb Homeyer

enhance the productivity of their CNC machines and operators, thus improving overall profitability. For each technology shown, a side-by-side demonstration of basic vs. advanced machine functionalities and the benefits that can be gained by leaping into higher technology were featured.

The demonstrations were relevant to a wide variety of industries, including aerospace, automotive, construction/farming (heavy equipment), die/mold, firearms/munitions, medical, oil/energy and general job shops.

Members of Partners in THINC demonstrated how peripheral equipment such as tooling, gaging, workholding and automation can be integrated with



Left: NTMA President, Dave Tilstone checks out the virtual reality headset, Oculus Rif. Right: NTMA National Associate Member, Abbott Workholding

Okuma technology to improve productivity. "MAKE THE LEAP" CNC MACHINE DEMONSTRATIONS

Each side-by-side demonstration gave attendees tips on how they can use advanced CNC machine technology to create a competitive advantage in their marketplace. Examples included:

- 2-axis vs. 4-axis Lathes – side-by-side cutting demonstration of Okuma's LB EX-II and LU EX lathes show how a 4-axis CNC lathe can easily combine operations to reduce cutting time, improve quality, enhance flexibility and increase throughput
- VMC vs. HMC – how a horizontal machining center increases overall throughput, improves quality and reduces labor, WIP and floor space, all without significantly increasing capital budget
- The Okuma App Store – Machine tool apps can significantly impact the effectiveness and efficiency of machine tools – yes, there IS an app for that!

Attendees were able to see more than 20 CNC machines cutting parts, many of which debuted at IMTS 2014. Machines on display included:

- MA-12500H horizontal machining center – debuted at IMTS 2014
- MU-10000H 5-axis horizontal machining center – Okuma's largest 5-axis machine
- MULTUS U Series – Okuma's newest multitasking CNC machines
- Okuma's "Affordable Excellence" products – GENOS CNC lathes and machining centers, LB3000 EX-II and MB-5000H machining centers – functionality at an affordable price

Guests also enjoyed a special dinner at the NASCAR Hall of Fame in Charlotte where they competed in a driving simulator and in a pit crew challenge and were given the opportunity to explore the history of the sport of NASCAR.





MANUFACTURING AMERICA'S FUTURE

NTMA

CFO
ROUNDTABLE

NTMA

HUMAN RESOURCES
ROUNDTABLE

NTMA

PLANT MANAGERS
ROUNDTABLE

NTMA

SALES & MARKETING
WORKSHOP

Technical Seminars may vary throughout the year, depending on trending topics, speakers, regional focus and attendee's feedback. The descriptions that follow are general guidelines, from which each seminar will develop. Watch The Record, E-trends and the NTMA website for a drill-down on the specifics of each Roundtable or Workshop as the dates approach for more details on each one.

2015 TECHNICAL Seminars

2015 Technical Seminars

January 28, 2015

Plant Managers Roundtable, Cincinnati, OH

February 11, 2015

Sales & Marketing Workshop, New Mexico

March 25, 2015

Human Resources Roundtable, Phoenix, AZ

April 29, 2015

CFO Roundtable, Philadelphia, PA

May 27, 2015

Plant Managers Roundtable, California

June 24, 2015

CFO Roundtable, Cleveland, OH

July 29, 2015

Sales & Marketing Workshop, Indianapolis, IN

August 26, 2015

Sales & Marketing Workshop, Hartford, CT

September (dates to be determined)

CFO Roundtable, California

October 20, 2015

Plant Managers Roundtable, St. Louis, MO


November (dates to be determined)

CFO Roundtable, Kansas City, MO

Human Resources Roundtable, Boston, MA

The lead sponsor for NTMA's original technical seminar for 2015 is CBIZ. Join with other NTMA member financial managers and professional experts to discuss current financial issues that impact manufacturing. Topics will vary by event, but will include leveraging working capital, cost control strategies, an update of the current tax landscape, health care reform, risk management and financial benchmarking. Continuing education credits are available.



<u>Date</u>	<u>Location</u>	<u>Lead Sponsor</u>
April 29, 2015	Philadelphia, PA	
June 24, 2015	Cleveland, OH	
September 2015	California	
November 2015	Kansas City, MO	

Registration Rates		
<u>Early Bird - Member</u>	<u>Regular - Member</u>	<u>Non-Member</u>
\$400	\$475	\$525

Meet with NTMA member HR Professionals to discuss some of the industry's hot topics in Human Resources through this new NTMA technical seminar. The HR Roundtable topics will vary by event and will include Top-Grading your employees, Employment Law Case Studies, OCEC Reporting, Benefits to attract and retain workers, and Employee Relations.




<u>Date</u>	<u>Location</u>	<u>Sponsor</u>
March 25, 2015	Phoenix, AZ	Sponsorship Available
November 2015	Boston, MA	Sponsorship Available

Registration Rates		
<u>Early Bird - Member</u>	<u>Regular - Member</u>	<u>Non-Member</u>
\$400	\$475	\$525

Network with plant managers from NTMA member companies and discuss new techniques and the many ways to improve production at your facility. Each roundtable will start with plant tour at a member company the day before the educational sessions. The educational sessions will vary by event and will allow you to learn about new technologies, manufacturing metrics, lean manufacturing and the importance of additive manufacturing.



<u>Date</u>	<u>Location</u>	<u>Sponsor</u>
January 28, 2015	Cincinnati, OH	
May 27, 2015	California	Sponsorship Available
October 20, 2015	St. Louis, MO	Sponsorship Available

Registration Rates		
<u>Early Bird - Member</u>	<u>Regular - Member</u>	<u>Non-Member</u>
\$425	\$500	\$550

Connect with NTMA sales and marketing professionals and industry experts to learn how to boost your business and increase leads. Topics will vary by event with sessions that include a best practices presentation, a buyer panel with industry experts and a sales workshop that will drill down into each attendee's sales techniques and processes, you won't want to miss this opportunity.



<u>Date</u>	<u>Location</u>	<u>Sponsor</u>
February 11, 2015	New Mexico	Sponsorship Available
July 29, 2015	Indianapolis, IN	Sponsorship Available
August 26, 2015	Hartford, CT	Sponsorship Available

Registration Rates		
<u>Early Bird - Member</u>	<u>Regular - Member</u>	<u>Non-Member</u>
\$500	\$575	\$625

NTMA TECHNICAL SEMINARS REGISTRATION FORM

Name: _____

Title: _____

Company Name: _____

Address: _____

Email Address: _____

Phone Number: _____

Method of Payment: _____

CC#: _____ Expiration Date: _____

REGISTRATION & FEES PER PERSON:

(Please select the Seminar you are registering for)

CFO ROUNDTABLE

☐ April 29, 2015
Philadelphia, PA

☐ June 24, 2015
Cleveland, OH

☐ September 2015
California

☐ November 2015
Kansas City, MO

☐ Will attend networking reception and dinner the previous day

☐ Early Bird - Member
\$400

☐ Regular - Member
\$475

☐ Non-Member
\$525

HUMAN RESOURCES ROUNDTABLE

☐ March 25, 2015
Phoenix, AZ

☐ November 2015
Boston, MA

☐ Will attend networking reception and dinner the previous day

☐ Early Bird - Member
\$400

☐ Regular - Member
\$475

☐ Non-Member
\$525

PLANT MANAGERS ROUNDTABLE

☐ January 28, 2015
Cincinnati, OH

☐ May 27, 2015
California

☐ October 20, 2015
St. Louis, MO

☐ Will attend optional plant tour the previous day

☐ Will attend networking reception and dinner the previous day

☐ Early Bird - Member
\$425

☐ Regular - Member
\$500

☐ Non-Member
\$550

SALES & MARKETING WORKSHOP

☐ February 11, 2015
New Mexico

☐ July 29, 2015
Indianapolis, IN

☐ August 26, 2015
Hartford, CT

☐ Will attend networking reception and dinner the previous day

☐ Early Bird - Member
\$500

☐ Regular - Member
\$575

☐ Non-Member
\$625

\$ _____ TOTAL AMOUNT DUE

PLEASE SUBMIT VIA EMAIL, FAX, MAIL OR IF ANY QUESTIONS, CONTACT:

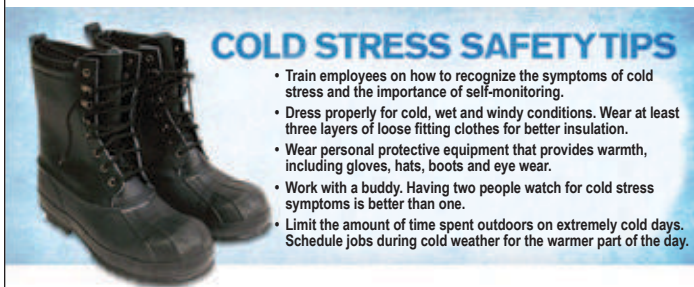
NTMA
Attn: Kristen Hrusch
Brittany Belko
1357 Rockside Road
Cleveland, OH 44134

Kristen Hrusch – khrusch@ntma.org
Phone: 216-264-2845
Fax: 216-264-2840

Brittany Belko – bbelko@ntma.org
Phone: 216-264-2848
Fax: 216-264-2840



Winter storms are an expected seasonal event in many areas of the country, but a more intense winter storm can still immobilize an entire region. Regions not typically impacted can be subjected to freezing temperatures and ice storms—leading to power outages, road closures, damaged buildings and surge challenges. Grainger has the supplies and resources you need to help you prepare, respond and recover should winter storms or freezing temperatures occur. Check out our products and resources at www.grainger.com/coldstress to help ensure you have everything you need to help keep your employees safe and business running this winter.



- Train employees on how to recognize the symptoms of cold stress and the importance of self-monitoring.
- Dress properly for cold, wet and windy conditions. Wear at least three layers of loose fitting clothes for better insulation.
- Wear personal protective equipment that provides warmth, including gloves, hats, boots and eye wear.
- Work with a buddy. Having two people watch for cold stress symptoms is better than one.
- Limit the amount of time spent outdoors on extremely cold days. Schedule jobs during cold weather for the warmer part of the day.



- Dress in layers to maintain proper body warmth and check for frostbite on yourself and others.
- Winterize your facility and other buildings that may need to be used as shelters and fleet vehicles. Storms can hit suddenly, be prepared to take shelter wherever you are.
- Insulate pipes and know how to shut off water valves in case pipes freeze and burst.
- Prepare for potential isolation or sheltering-in-place by storing essential supplies sufficient to support your employees for several days. If you already stock emergency supplies, make sure to add rock salt, snow shovels and blankets.

To learn more about the Winter Preparedness program and other programs contact your Grainger Representative or Register/log-in to www.grainger.com for more details.

TOP SHOPS MODERN MACHINE SHOP'S SURVEY NOW ONLINE

PARTICIPATE IN MODERN MACHINE SHOP MAGAZINE'S FIFTH-ANNUAL TOP SHOPS SURVEY TO SEE HOW YOUR SHOP STACKS UP AGAINST INDUSTRY LEADERS.

BY DEREK KORN, SENIOR EDITOR—MODERN MACHINE SHOP MAGAZINE

Modern Machine Shop's "Top Shops" benchmarking survey aims to identify optimal shopfloor practices and performance levels as well as operational and business metrics that define world-class competitiveness in discrete parts manufacturing. The online survey (survey.mmsonline.com/topshops) is currently live and will remain open through February 28. The survey enables you to distinguish areas where your shop excels, and, perhaps more importantly, areas where you should focus your improvement efforts. You'll also have the chance to be profiled in their magazine if your shop is chosen as an Honors Program winner for 2015.

The survey is divided into four primary sections: machining equipment, shopfloor practices, business strategies and human resources. The survey does not ask for specific financial figures such as gross sales or net income. Instead, it asks you to supply financial measures as percentages, including net income per gross sales and annual sales growth rate. The thought is that this will

encourage greater participation from shops that aren't inclined (or allowed) to provide specific financial data. Nonetheless, all survey responses will remain confidential.

The survey can be completed online or by printing and filling out the questionnaire, and then faxing or mailing it to the magazine. In fact, it's suggested that you first print the survey before entering your information online so you can see all the questions that you will be prompted to answer. The PDF file of the survey can be downloaded from the survey website.

After the survey closes, the magazine will generate and provide a series of free data reports only to those who participated. These reports will separate the survey data into categories including type of machining business (job shop, contract shop or captive operation), number of employees and number of parts produced. In addition, an Executive Summary will be provided that compares responses between the Top Shops benchmarking group and the rest of the survey participants. This benchmark-

ing group represents the top 20 percent of machine shops determined by totaling the points assigned to select business- and technology-related questions. These reports not only serve as a baseline "report card" of sorts, but also provide hard data that will eliminate the need to rely on gut feelings as a method of identifying and prioritizing improvement efforts.

The second element of Top Shops is an Honors Program that highlights successful participating companies in each of the survey's four aforementioned sections, identified by responses to select questions and follow-up interviews by Derek Korn, Modern Machine Senior Editor. Those shops will be profiled in an upcoming issue of Modern Machine Shop and online. If you'd like to be considered for the Honors Program, provide as much detail as possible in the survey to give your company its best shot at winning the award.





NTMA-U HELPS CREATE A WIN-WIN!

CLASSES START JANUARY 16. ENROLL NOW!

The National Tooling and Machining Association is rolling out several new and revised workforce development programs to prepare member company employees for a wide range of skillsets required in today's manufacturing environment.

"We're excited about these new opportunities for our students," said Ken McCreight, Vice President of the NTMA. "The new and redesigned workforce development programs serve needs identified by our member companies. Students will be better prepared as employees with higher skills within their employer's workforce – this is a win-win for

both members and students."

Existing programs that underwent changes to align with the most current industry trends and standards include Machine Trades Technology – now Precision Machining Technology; Basic Math; Blueprint Technology and Advanced Die-making. There are 17 modules to select from; each module is a stand-alone course that requires between 30-45 hours to complete.

As part of NTMA-U initiatives focused on member needs and finely honed by the NTMA Education Team, NTMA has added new concentrations in these disciplines to its

existing Workforce Development programs.

NTMA-U workforce development courses provide employees training required to be successful, with the first two years of typical manufacturing courses focused on the basics of manufacturing and the final year focused on advanced manufacturing principals. The end result is Federal Bureau of Apprenticeship and Training – DOL – Journeyman's certification.



SERIES 1

NTMA-U 1100-1: BASIC BLUEPRINT (38 CONTACT HOURS)

This course teaches the proper terminology, symbols, and guidelines associated with reading and sketching blueprints, and how these are applied in a manufacturing environment. It focuses on reading as well as interpreting blueprints through the different views of an object, including dimensioning techniques, tolerancing, fraction to decimal conversion, drafting lines using geometric equations, line types, orthographic views, isometric views, offset sections, auxiliary sections, symbols, and broken sections.

NTMA-U 1120-1: BASIC MATH (42 CONTACT HOURS)

This course introduces math skills and concepts that are necessary in shop activities, including use of fractions, fraction to decimal conversion, and calculating angles.

NTMA-U 1200-1: PRECISION MACHINING TECHNOLOGY (45 CONTACT HOURS)

This course has a strong focus on safety in the machine shop. It introduces the metallurgy of steel and iron and the fundamentals of metal cutting operations to produce manufacturing parts. It includes the operation of machinery, terminology, safety, measurement, layouts, print reading, machine set-ups, hand tools, quality measurement devices (e.g., rules, calipers, micrometers) and cutting tools. It highlights the use of typical equipment found in conventional machine shops.

SERIES 2

NTMA-U 1100-2: INTERMEDIATE BLUEPRINT (38 CONTACT HOURS)

This course is designed to increase your efficiencies in blueprint reading. The course emphasizes the relationship of blueprint drawings and how they apply to manufacturing parts including lines, views, dimensioning and machining processes. It includes fraction to decimal conversion, drafting lines using geometric equations, line types, orthographic views, isometric views, offset sections, auxiliary sections, symbols and broken sections.

NTMA-U 1120-2: APPLIED MATHEMATICS (42 CONTACT HOURS)

This course is designed to increase your efficiencies in math skills and concepts that are necessary in shop activities. Emphasis on the relationship of math required for manufacturing of parts as viewed on blueprint drawings and how the concepts apply to manufacturing parts and machining processes.

NTMA-U 1200-2: PRECISION MACHINING TECHNOLOGY 2 (45 CONTACT HOURS)

This course offers continued emphasis on shop safety and quality measurement devices. It focuses on the metal removal processes on typical equipment found in the machine shop, with emphasis on the drill press, engine lathe, milling machine and surface grinder. It covers the use of workholding devices, as well as how to properly support and locate workpieces. It also reviews the applications of the Coordinate measuring machine (CMM), the optical comparator and the electro-discharge machine (EDM).

SERIES 3

NTMA-U 1500-3: INTERMEDIATE BLUEPRINT READING WITH BASIC ESSENTIALS FOR GDT (38 CONTACT HOURS)

This course introduces the symbols and concepts of geometric dimensioning and tolerancing as they relate to engineering drawings.

NTMA-U 2300: 3CNC - IMMERSIVE TO LEARN (38 CONTACT HOURS)

This course introduces the tools and technology involved in computer numeric control (CNC) machining. It explains the principles of the Cartesian Coordinate System and how they apply to CNC. It also reviews the use of various metal cutting tools as they relate to CNC programming. This course will cover the process planning involved in creating CNC programs, including safety precautions, proper machine set up and operational skills, creating programs and controlling part sizes with wear offsets.

NTMA-U 2500-3: INTERMEDIATE APPLIED MATH (42 CONTACT HOURS)

This course is the 3rd in a series, and is designed to increase your efficiencies in math skills and concepts that are necessary in shop activities. It explains how to properly use the Pythagorean theory and explains the use of trigonometric functions and their applications. It focuses on solving right triangle trigonometry problems, and also relates these trig functions to the use of sine bars and gage blocks for use in setting up angles to be machined.

SERIES 4

NTMA-U 2720-4: METALLURGY (38 CONTACT HOURS)

This course introduces the nature and properties of materials. It presents a history of metals-providing background on the origins of various metals and provides an explanation of physical characteristics of metals. Students will study the chemical reactions and thermodynamics related to the production of steel as well as the key processes of iron making from the raw materials through to the final product. It stresses how metals are alloyed and formed to achieve desired mechanical properties-including comparisons between various forming processes including casting, forging, extrusion, and rolling.

NTMA-U 2800-4: ADVANCED MATH (38 CONTACT HOURS)

This course is the 4th in a series, and is designed to increase your efficiencies in math skills and concepts that are necessary in shop activities. It includes more complex applications, such as the use of the law of sines and the law of cosines.

NTMA-U 2900-4: QUALITY CONTROL / SPC / INSPECTION (38 CONTACT HOURS)

This course introduces the area of quality control of mechanical parts in the industry. You will learn the skills necessary to properly inspect parts by using the skills you have obtained through blueprint reading of geometric dimensioning and tolerancing, as well as inspection tools and equipment. You will learn why these skills are necessary in the industry and how to properly apply them on the job. This course familiarizes students with the applications of statistics in process and quality control function. Upon completion, the student will be able to verify part dimensions, location and orientation of finished products and parts.

SERIES 5

NTMA-U 2420-5: MANUFACTURING TECHNOLOGY (38 CONTACT HOURS)

This course focuses on the machining of various metals. It will review the variations of speeds and feed rates for different types of material, as well as the use of various cutting tools.

NTMA-U 2500-5: GD&T (38 CONTACT HOURS)

This course focuses on how to interpret and apply the concepts of geometric dimensioning and tolerancing to engineering drawings. Topics covered include fundamentals of symbols, terms used in application, positional tolerance applications, data frame and conversion tables.

SERIES 6

NTMA-U 1300-6: DIEMAKING (38 CONTACT HOURS)

This course provides specialized instruction in die construction, processes and types related to automated manufacturing technology. This is an introduction to the basic types and construction of metal stamping dies. Topics include types of stamping dies and how they process sheet metal, standard die components, concepts of die clearances, die making terminology and materials used in stamping die construction.

NTMA-U 2410-6: MOLDMAKING (38 CONTACT HOURS)

This course covers the principles of injection molding, including the molding press and how it works, the basics of an injection mold and mold components. It explains the heating of cooling of molds and the runners, gates, venting and hot runner systems. It also describes the various methods of producing cavities, cores and various mold components.

NTMA-U 2420-6: JIG AND FIXTURE (38 CONTACT HOURS)

This course covers the necessary information for the designs of jigs, fixtures, and dies. It includes the use and application of bushings, locating devices, and work holding devices used in jigs, fixtures, and dies.

NTMA-U 2800-6: ADVANCED MATH (38 CONTACT HOURS)

This course, the 6th in a series, covers applied mathematics that are required to solve for unknown surfaces found on advanced blueprints.

NTMA-U 3300-6: ADVANCED DIEMAKING (38 CONTACT HOURS)

This course provides instruction in die to press relationships, automatic feeds, inverted dies, compound dies and progressive dies using the blank through process. Topics also include progressive dies using the chopoff principle, progressive dies using the parting principle and secondary operations such as: Dies to notch, Trim, Shave, Side-action Dies to pierce, Semi pierce, Shear form, etc. The content finishes with instruction in Drawing Operations, Redraw Dies, Combination Dies and Computation Procedures.

NTMA-U 2800-5: ADVANCED APPLIED MATH (38 CONTACT HOURS)

This course, the 5th in a series, covers applied mathematics that are required to solve for unknown surfaces found on advanced blueprints



THE NATIONAL GUARD CAN HELP YOU HIRE GREAT EMPLOYEES

BY STEVE NOWLAN, AMERICAN JOBS FOR AMERICA'S HEROES

State National Guard commands place very high priority on helping employers hire Guard members and they are getting better at delivering on this. As an employer, you can easily draw on this help both through the American Jobs for America's Heroes campaign and directly with the National Guard in your state.

Many people are surprised at how effective state Guard employment teams are in working with employers and how productive it can be to develop relationships with them.

HOW CAN YOUR COMPANY BENEFIT?

You can tap the resources of the state National Guard employment teams at no cost wherever your jobs are located by submitting your job postings through the American Jobs for America's Heroes (AJAH) campaign. Your postings are provided by our alliance team at CASY directly to the Guard employment counselors – and employment counselors in other military branches – in the state where your job is located. All services are free. Register online in five minutes: <http://www.CenterForAmerica.org/register.html>

AJAH will also help you develop a direct working relationship with the National Guard employment team in your state. You're welcome to contact Steve Nowlan, AJAH director, at 201-513-0379 or snowlan@CenterForAmerica.org. Guard employment teams will be interested in learning about your company and your jobs, and can tell you about the job training programs they are developing with community colleges and other local employers.



THE NTMA TECHNOLOGY TEAM



Some NTMA leadership happens at the Team level, as member volunteers drive many of the projects and events that happen each year. Throughout 2015 The Record will feature overviews of the various NTMA Teams.

Guided by team leader Mike Hirsh (Hirsh Precision Products, Boulder, CO), the Tech Team (also known as Manufacturing Technology Team) is actually a sub-team under the Workforce Development Team.

PURPOSE:

To deliver value to NTMA members in the areas of manufacturing technologies and best practices (manufacturing science).

MISSION:

To provide accurate and timely information on current and emerging technology that can improve productivity, competitiveness, quality and profitability of our members.

The Technology Team has already been hard at work following their successful and well-attended segment at the 2014 Fall Conference (Technology Day). Meeting by conference call in December, they reviewed sponsor and member feedback from the 2014 Fall Conference, proposing a few changes to the 2015 Fall Conference. According to the surveys and responses, "Technology Day" was a huge success, but many members felt the full day was too much to absorb. The team has proposed two half-days going forward. They have also identified a number of hot industry topics for the next conference – including process development practices for successful lights-out manufacturing, probing,

MT Connect, on-machine inspection, automation and, of course additive/subtractive manufacturing. They also discussed the feasibility of making this content available in a pre-conference and/or webinar format – so that it is accessible to shop personnel who don't normally attend the annual conferences. Keep your eyes on The Record for specific details pertaining to companies and topics that are on tap for the 2015 Fall Conference.

The hottest and most-exciting topic for the Technology Team is the NTMA Technology Award. The NTMA recently partnered with AMT (The Association for Manufacturing Technology) to increase the awareness of, and to promote, best industry practices. To that end, AMT has underwritten the "NTMA Technology Award," which will be presented at the 2015 and 2016 MFG Meetings in the amount of \$5000 per year for two years. The Tech Team is focusing on two award categories – Technology (advanced development/integration or lead time reduction thru flow, safety and organization) and Business/Cultural (Leader/Associate partnerships or goal/visual management system deployment that has yielded world class performance).

The Technology Team will be leaning on the Executive Team and Associate Members to nominate companies for an NTMA

Technology Award. They envision each award recipient sharing something about their technology during the combined General Assembly (without giving away proprietary information). If you'd like to nominate someone to receive the NTMA Technology Award contact Mike Hirsh.

TECHNOLOGY TEAM MEMBERS:

Mike Hirsh, Team Leader
Reid Leland
Ken Kuhn
Roy Sweatman
Jack Burley
Bonnie Kuhn
William Vojnovic
Gisbert Ledvon
Jared Veteto
Jonathan Veteto
Rick Ware
Gillen Young
Keven Ahaus
Ted Toth (ET Liaison)
Matt Wardle (ET Liaison)

TECHNOLOGY TEAM STAFF LIAISONS:

Dave Tilstone
Kelly LaMarca
Tiffany Bryson



SHOP FINDS FIXTURING SOLUTION FOR FLEXING PARTS

PRECISION GRINDING AND MANUFACTURING USES AN ATYPICAL MEANS TO FIXTURE THIN PARTS THAT ARE PRONE TO FLEXING WHEN CONVENTIONAL WORKHOLDING CLAMPS ARE USED: ADHESIVE CURED BY UV LIGHT

REPRINTED WITH PERMISSION FROM DEREK KORN, SENIOR EDITOR, MODERN MACHINE SHOP

Sometimes, the trickiest aspect of developing an effective machining process is figuring out how best to fixture the part. This can be especially challenging for castings and other workpieces that are relatively thin, because those parts are prone to flexing when conventional mechanical clamps (and even vacuum chucks in some cases) are used. Operators must take care not to distort such parts while tightening clamps, otherwise the parts will spring back to their natural state

once the clamps are removed after machining. Vibration can also be an issue for parts like these if they aren't rigidly fixtured, meaning a quality surface finish might be tough to achieve and cutting parameters might have to be dialed back, extending cycle times. Finding a way to effectively fixture complex, contoured parts can be just as difficult.

Ray Bray says (NTMA Member) Precision Grinding and Manufacturing (PGM) fought these problems in the past. Mr. Bray is a

project engineer for the Rochester, New York, contract shop that specializes in complex, short-run, often repeating work for industries including aerospace, automotive, medical, military, optics, photonics and telecommunications. He says PGM has employed a variety of unconventional methods to more effectively secure relatively thin workpieces for machining over the years, going so far as to use clay, lead and sandbags to supplement

CONTINUED NEXT PAGE

conventional mechanical clamps in an effort to minimize vibration.

You won't find those types of workholding workarounds being applied there today. Instead, the shop uses an advanced, albeit atypical technology that is particularly effective for fixturing flexible parts. In short, this technology uses adhesive to temporarily bond a workpiece to numerous cylindrical grippers installed in a fixture plate. Once the adhesive is cured via ultraviolet (UV) light, the workpiece is securely held at a known datum location in an undistorted, free-state condition. After machining, the adhesive bonds between the grippers and workpiece are easily broken and any excess adhesive is removed from the completed part via a quick, steam-cleaning wash.

Mr. Bray says that while this workholding technique isn't appropriate for every job that runs through the shop, it has opened opportunities to win work that, in the past, PGM might not have considered bidding on due to the inherent fixturing challenges. It has also enabled PGM to improve existing fixtures the shop uses for jobs that regularly repeat.

FLEX-FREE FIXTURING

William Hockenberger established PGM in 1967. The shop is now led by his son Mike, who is president and CEO. Business has been good over the years, and PGM has recently completed a 20,000-square-foot facility addition, bringing total floor space to 68,000 square feet.

PGM has a wealth of CNC equipment, including machining centers, turning centers and grinding machines. Milling represents the bulk of the work performed there today, for which the shop uses VMCs with four- and five-axis capability as well as HMCs with pallet pools.

William Hockenberger's son Todd, PGM's corporate vice president, explains that because a good portion of that milling work involves thin and complex workpieces, the shop has continuously looked for more effective ways to secure those types of parts for machining. A few years ago, PGM learned about photo-activated adhesive workholding (PAAW) technology that was developed at Penn State University, which looked to be well-suited for such troublesome parts.

PAAW technology was invented by Professor Edward De Meter, who was awarded two patents covering it. In 2012, Professor De Meter and others formed Blue Photon Technology and Workholding Systems LLC (Whitehall, Michigan) to market the technology to industry end users.

The PAAW workholding technology is effective not only for parts that are prone to flexing when conventional mechanical clamps are used, but also for contoured parts and parts that don't have convenient locations to accommodate clamps. Its primary components include a 200-watt UV light source with a light guide, a specially developed workholding adhesive and grippers that act as lenses through which the UV light

PAAW system. With the fixture plate installed on the machine's rotary table, operator Alan Jedik dabs the top of each pin with a bit of adhesive. He then installs the casting onto the fixture, which rests on the three hard datum points, and inserts the UV light source's light guide into each of the three grippers located at those datum points. It typically takes 30 seconds for the UV light to cure the adhesive on each gripper. Mr. Jedik rotates the fixture for easier access to the remaining six grippers and cures the adhesive at each of those points. The part program can begin once the table is rotated back to its proper position.

After machining is completed, a T-handle wrench is used to back off each gripper, twisting the element and shearing the adhesive

bond with the workpiece. The workpiece can then be taken off the fixture and a subsequent cleaning operation using a portable steam cleaning device is used to remove any cured adhesive that remains on the workpiece. Adhesive must also be scraped off of the tip of each gripper using a metal scale or straightedge before a subsequent workpiece can be fixtured for machining.

The gaps between the workpiece and grippers (thus, the thickness of the adhesive) can range from 0.010 to 0.125 inch depending on the flatness of the part. The uncured adhesive,

which is non-toxic, is sufficiently viscous that it won't run off grippers regardless of orientation. Axial holding force depends on gripper size and can range from 250 to 800 pounds when using Blue Photon's BlueGrip S1 adhesive.

Grippers are made from hardened, corrosion-resistant stainless steel and have a black oxide finish. For repeat jobs, PGM will commonly leave the fixtures intact with the grippers still installed and store them for later use. Otherwise, the grippers can be removed and installed in other fixtures created for new jobs. The latter is most often the case for PGM, because new work continuously flows through the shop.

ANOTHER EXAMPLE

PGM has found that the PAAW system can be used in conjunction with conventional clamps, too, as evidenced with the part shown above for the printing industry. The shop had



The PAAW system being used at Precision Grinding and Manufacturing.

passes to cure the adhesive and bond the part to the fixture.

Mr. Bray says the fixture design process using the PAAW system is similar to other more conventional fixtures. In many cases, the shop will create a fixture plate with three hard datum points for a part to rest upon so its location is known in space. (Temporary pins can be used to ensure that the part is installed correctly on the fixture plate.) PAAW grippers are positioned at various locations, and oftentimes a gripper is used at each hard datum point. The number of grippers used largely depends on the size of the part and its geometry. The threaded grippers install in the top of the fixture plate and require a through-hole to enable the UV light to pass up and through the gripper to cure the adhesive.

The photos numbered one through four to the left demonstrate the process for fixturing and removing a magnesium casting that PGM machines on a four-axis VMC using the

CONTINUED ON — P25

MASSACHUSETTS GRANTS TO TRAIN WORKERS IN ADVANCED MANUFACTURING

REPRINTED WITH PERMISSION OF TAMARA SACHARCZYK AND WWLP-22NEWS (AMHERST, MA)

Members of Massachusetts Governor Deval Patrick's cabinet were in Amherst Monday morning to announce the awarding of grants to western Massachusetts organizations that help people find jobs.

Manufacturing jobs are in high demand, but many people don't have the skills that are required for the job. To change that, that state government is investing in manufacturing training programs right here in western Massachusetts. The grants were announced at UMass Amherst Monday during the Advanced Manufacturing Collaborative's Pioneer Valley Summit. The event highlighted just how valuable manufacturing skills are in the Commonwealth.

Secretary of Labor and Workforce Development Rachel Kaprielian said the grants will have many benefits. "To help small businesses, manufacturing businesses, to contend with more talent and more training."

Steve Grande, the president of the Meridian Industrial Group, said that the need for this kind of job training will be even greater as time goes by. "The projections are over the next six to ten years that there will be about 600,000 manufacturing vacancies in the U.S., 100,000 here in Massachusetts."

According to a CNNMoney report, the starting salary for new hires averages \$40,000 per year, and in less than two years, can jump to \$65,000 annually.

Here's a breakdown of where the grant money will go:

• HAMPDEN REGIONAL EMPLOYMENT BOARD - \$219,960

To conduct the Advanced Manufacturing Training Program, in partnership with the Western Massachusetts Chapter of the National Tooling and Machining Association. Hampden Regional Employment Board will

contract with local community colleges, part-time instructors from two vocational technical high schools and an advanced manufacturing company to train unemployed or underemployed adults of Hampden County.

• FRANKLIN/HAMPSHIRE REGIONAL EMPLOYMENT BOARD - \$276,705

To continue collaboration with employers from across the region, as well as community partners such as Greenfield Community College (GCC), the two area vocational-technical schools, and two adult education sites, to enable the regional employment board and GCC to offer three additional cycles of entry-level precision-machine training over the next two years in Franklin County. This will expand it from 220 hours to 300 hours, and add skill-building in the areas of blueprint reading, metrology, grinding, and lean manufacturing.

"THE NUMBER ONE ISSUE THROUGHOUT THE U.S. FOR OUR MEMBERS IS THE LACK OF AVAILABLE SKILLED LABOR. AS STEVE SO ACCURATELY NOTED, THIS IS AN UNFORTUNATE TREND WE EXPECT TO CONTINUE AS MANUFACTURING EXPANDS THROUGHOUT AMERICA. NTMA HAS SUPPORTED OUR MEMBERS THROUGH OUR ONLINE APPRENTICESHIP PROGRAM, NTMA-U THAT HAS BEEN EXTREMELY WELL RECEIVED. IN OUR EFFORTS WITH TRYING TO ATTRACT YOUNG ADULTS INTO OUR INDUSTRY AND HELP CHANGE THE IMAGE OF MANUFACTURING, OUR NATIONAL ROBOTICS LEAGUE (NRL) HAS EXPANDED BEYOND EXPECTATIONS DUE TO LOCAL SUPPORT BY OUR CHAPTERS AND MEMBERS AS WELL AS THE FINANCIAL SUPPORT FROM OUR FOUNDATION (NTMF), DONATIONS FROM FUNDRAISERS AND KEY SPONSORS WHO CONTINUE TO CONTRIBUTE PRODUCTS AND SERVICES."

Dave Tilstone, President NTMA



WESTERN MASSACHUSETTS CHAPTER

Steve Grande, president of The Meridian Industrial Group (Holyoke, MA) has noted that it is projected that "over the next six to ten years...there will be about 600,000 manufacturing vacancies in the U.S." adding that 100,000 of these will be in his home state of Massachusetts.

As president of the Western Massachusetts Chapter, Steve leads an NTMA Chapter and its Board that "gets" the impact that their chapter can have in assisting its members meet challenges. High on the list of members' challenges, is of course, workforce development – so the Chapter works directly with their metropolitan employment board. In fact, Steve notes, they are fortunate to have the president and CEO of the regional employment board as a member of the chapter's board of directors.

By being actively engaged in the process, the board identifies the specific needs of local members as well as state funding opportunities, then continues to be engaged to help identify and implement appropriate equipment and training that addresses members' immediate needs. The Chapter has earned the credibility among funders through this relationship to ensure that state grant funding is spent well.

OMAX® CORPORATION MEETS DEMAND FOR LARGE-SCALE PRODUCTION WITH ADDITIONS TO ITS NEXT GENERATION MAXIEM® LINE

OMAX Corporation continues to set new standards in abrasive waterjet cutting technology with the expansion of its line of MAXIEM JetMachining® Centers. The company introduced three larger sizes of its next generation MAXIEM to meet the needs

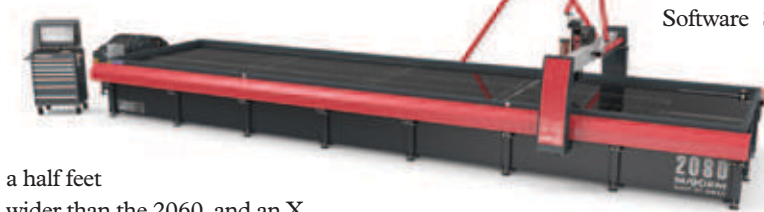
of shops, OEMs, metal service centers, and fabricators for large-scale production.

The first five models in the next generation MAXIEM JetMachining Center product line were introduced in April 2014 to meet customer demands for cost-efficient,

yet high-performance waterjet cutting technology with more productivity enhancing features. The lineup now comprises eight models including the new 2060, 2080, and 3060 JetMachining Centers.

SEE OMAX NEXT PAGE

The 2060 and 2080 models are ideal for a wide range of modern large format machining of parts up to 6' 7" wide by 20' 6" long and 27' 2" long, respectively. The 3060 JetMachining Center boasts a wider work envelope ideal for machining of a wide range of materials and thicknesses, from metals and composites to glass and plastics. This machine features a Y cutting travel of 10' 2", more than three and



a half feet wider than the 2060, and an X cutting travel of 20' 6".

The complete MAXIEM lineup continues the tradition of easy-to-use, reliable and efficient abrasive waterjet machines designed and built in the United States. These JetMachining Centers also feature OMAX's industry leading Intelli-TRAX® linear drive system that utilizes brushless servo motors,

integrated servo drives and high precision linear encoders that provide constant and continuous feedback on the actual position of the cutting head. In addition to increased part cutting accuracy, the advanced drive system delivers much faster and smoother motion.

The all-in-one Windows® 8 controllers on the MAXIEM machines come pre-loaded with the powerful OMAX Intelli-MAX® Software Suite. The Intelli-MAX Software Suite makes it easy to generate complex geometries and produce quality parts from

virtually any type of material.

For more information on the complete line of next generation MAXIEM brand abrasive waterjet machines and accessories, please visit www.omax.com.



fixtured this long, relatively skinny part using only mechanical clamps on a tombstone for op. 10 and op. 20 work on one of its pallet-pool HMCs. However, it was challenging and time-consuming for operators to mechanically secure either end of the part without causing it to twist about its longitudinal axis.

Rather than completely revamping the original fixture, Mr. Bray retained the mechanical clamping elements for the middle section of the part, but added two PAAW grippers to either end of the fixture. Operators clamp the middle section of the part as they always have, but use the PAAW system to secure the ends of the part so these ends remain in a free state and there's no chance of causing the part to twist. After op. 10 work, the part is flipped and refixtured, and an op. 20 milling operation removes whatever cured adhesive remains from the op. 10 fixturing. Therefore, it's only necessary to steam clean adhesive left behind from the op. 20 fixturing in this case.

GAINING POPULARITY

Thus far, PGM has used the PAAW system for a couple dozen jobs in materials including aluminum, magnesium and stainless steel. (Blue Photon says the PAAW system can also be used with composites and ceramics.) The shop currently has three portable UV light source units that can easily be transported to machines throughout the shop.

The system will be used to a greater extent for production as well as toolroom work and CMM part inspection as PGM gains more experience with it and experiments with BlueGrip adhesives. Todd Hockenberger says it sometimes serves as a selling point for customers that are either having problems with other part vendors or readily recognize how tough their new design will be to fixture. The shop has a good chance at winning those types of jobs once the customers understand how the system can be applied to their applications. In addition, it can help shorten product design cycles because fixture design is no longer the challenge it once was when mechanical clamps seemingly were the only option. This is big, Mr. Hockenberger says, because PGM tries to get involved as early as possible in each customer's new product design cycle to offer design for manufacturability (DFM) advice to minimize production time and cost, and get the product to the market faster.

For more information about Precision Grinding and Manufacturing go to www.pgmcorp.com.



Testing Tips & Tricks

WINTER 2014-15

• REGISTER FIRST—ALWAYS

Students/trainees **MUST** be registered as candidates **BEFORE** submitting performance affidavits or attempting to take any online theory test.

• WHO'S IN?

Sponsors may log in and click **View Candidates** to see which students/trainees have previously registered.

• PERFORM & NOTIFY

99% of NIMS credentials require a performance project. When that is finished, **send in affidavits AT LEAST 24 hours before testing**. *Early affidavits = smooth testing!*

• MMS FAST LANE

The *Measurement, Materials, and Safety* credential does not require a performance project. The online theory test is automatically available after the student/trainee has registered as a candidate. Simply have your candidate log in and click **purchase test**.

• PROCTOR UP!

Proctors are required for **ALL** online theory tests and **MUST** be registered with NIMS prior to testing. *TIP... register multiple proctors so you have back ups!*

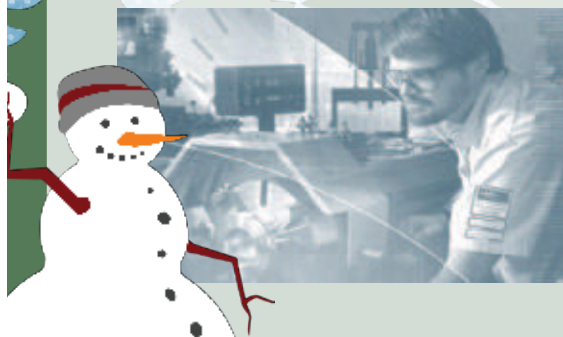


Helpful Resources

- Download the **Complete Guide to NIMS Credentialing** for step-by-step how-to's for registering and testing with NIMS.
- Reminders for usernames and passwords can be generated 24/7 using the buttons located below the log-in box on the NIMS testing website.
- Download or print performance projects, inspection sheets, affidavits, and study guides by visiting the Resources page. (requires login)
- Credentialing costs:

Candidate Registration	\$40
<i>Registration is good for life</i>	
Online Theory Tests:*	
Level I	\$35
Level II Tests	\$50
Level III Tests	\$50
- Help is on the way! Contact support staff or assistance:
Email: support@nims-skills.org
Phone: (703) 352-4971
Hours: M-F 9am-5pm EST

**Accredited programs receive a 20% discount*



**"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).





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

GONRL.ORG

2015 SPONSORSHIP OPPORTUNITIES

TITLE SPONSOR \$15,000

Sponsorship Includes:

- “Sponsored by” tag line included in every public mention (tv, social media, press releases, etc) of competition
- Opportunity to be quoted in NRL Competition press releases
- Provide welcome remarks during opening ceremony
- Logo and recognition as a Title Sponsor on the NRL website
- Logo and recognition as a Title Sponsor in the NRL Program Guide
- (1) Full Color ad in the NRL Program Guide
- (1) Post event article to promo your philanthropic support in the NTMA RECORD
- Recognition in the NTMA RECORD as a Title Sponsor
- Logo and recognition on official NRL T-shirts as Title Sponsor
- Social Media recognition on Facebook, Twitter and LinkedIn
- Free Exhibit table to be positioned in the Manufacturing Gallery

NOTE: Additional Branding opportunities of floor clings and other materials are available at the request and expense of the sponsor.

**YOUR
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EXCLUSIVE MEDIA SPONSOR \$10,000

Sponsorship Includes:

- Sponsor recognition on final cut of promotional video and LiveStream channel
- Logo and recognition as an Exclusive Sponsor on the NRL website
- Logo and recognition as an Exclusive Sponsor in the NRL Program Guide
- (1) Full Color ad in the NRL Program Guide
- Recognition in the NTMA RECORD as an Exclusive Sponsor
- Logo and recognition on official NRL T-shirts as an Exclusive Sponsor
- Social Media recognition on Facebook, Twitter and LinkedIn
- Free Exhibit table to be positioned in the Manufacturing Gallery

**YOUR
LOGO
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EXCLUSIVE SOCIAL EVENT SPONSOR \$7,000

Sponsorship Includes:

- Provide welcome remarks during social event
- Company logo and branding included in theme of social event decorations
- Logo and recognition as an Exclusive Sponsor on the NRL website
- Logo and recognition as an Exclusive Sponsor in the NRL Program Guide
- (1) Full Color ad in the NRL Program Guide
- Logo Included on Photo Booth photos taken at social event.
- Logo and recognition on official NRL T-shirts as an Exclusive Sponsor
- Social Media recognition on Facebook, Twitter and LinkedIn
- Free Exhibit table to be positioned in the Manufacturing Gallery

**YOUR
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HERE!**

NOTE: Additional Branding opportunities of floor clings and other materials are available at the request and expense of the sponsor.

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

EXCLUSIVE ARENA SPONSOR \$6,000 (2 AVAILABLE)

Sponsorship Includes:

- Introduction of last (4) matches with company recognition
- Logo and recognition as an Exclusive Sponsor on the NRL website
- Logo and recognition as an Exclusive Sponsor in the NRL Program Guide
- (1) Full Color ad in the NRL Program Guide
- Logo prominently displayed around Arena with branded banners
- Logo and recognition on official NRL T-shirts as an Exclusive Sponsor
- Branded Banners prominently displayed throughout competition area (*at expense of sponsor*)
- Arena naming rights for competition
- Social Media recognition on Facebook, Twitter and LinkedIn
- Free Exhibit table to be positioned in the Manufacturing Gallery

NOTE: Additional Branding opportunities of floor clings and other materials are available at the request and expense of the sponsor.



**YOUR
LOGO
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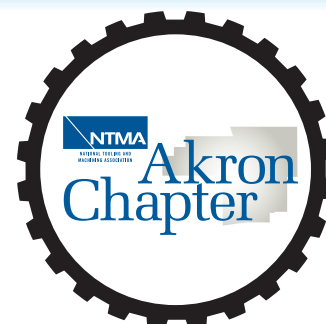
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PREMIER COMPETITION AWARDS SPONSOR \$5,000

Sponsorship Includes:

- Award presenter for 1-3rd place winners and company recognition as award presenter
- Logo and recognition on NRL Website
- Logo and recognition in NRL Program Guide
- Option to have logo on 1-3rd place trophies
- Social Media recognition on Facebook, Twitter and LinkedIn

NOTE: Additional branding opportunities and other material are available at the request and expense of the sponsor.



PREMIER ROBO-LOUNGE SPONSOR \$5,000 (2 AVAILABLE)

Sponsorship Includes:

- Logo and recognition as a Premier Sponsor on the NRL website
- Logo and recognition as a Premier Sponsor in the NRL Program Guide
- (1) Full Color ad in the NRL Program Guide
- Logo prominently displayed above Robo-Lounge area
- Branded floor and table clings
- Recognition in the NTMA RECORD as a Premier Sponsor
- Logo and recognition on official NRL T-shirts as a Premier Sponsor
- Social Media recognition on Facebook, Twitter and LinkedIn

NOTE: Additional Branding opportunities and other materials are available at the request and expense of the sponsor.



**YOUR
LOGO
HERE!**



**YOUR
LOGO
HERE!**

PREMIER PIT SPONSOR \$3,500 (2 AVAILABLE)

Sponsorship Includes:

- Logo and recognition on the NRL website
- Logo and recognition in the NRL Program Guide
- Logo and recognition above Pit Area
- One (1) ½ page, 4-color ad in the NRL Program Guide
- Recognition in real-time during competition; live and via social media
- Logo and recognition on official NRL T-shirts as a Premier Sponsor
- Logo prominently displayed on Safety Inspection Station (test cages)
- Logo prominently displayed on each pit table, branded floor clings
- Social Media recognition on Facebook, Twitter and LinkedIn



NOTE: Additional Branding opportunities of floor clings and other materials are available at the request and expense of the sponsor.

PREMIER REGISTRATION SPONSOR \$3,500

Sponsorship Includes:

- Logo and recognition on the NRL website
- Logo and recognition in NRL Program Guide
- One (1) 1/2 page, 4-color ad in the NRL Program Guide
- Logo prominently displayed on event badge
- Logo prominently displayed at and around registration area
- Logo prominently displayed on registration folder (option to include business card)
- Logo and recognition on official NRL T-shirts as a Premier Sponsor
- Opportunity to meet and greet the teams at registration
- Opportunity for company branded give-away or material
- Social Media recognition on Facebook, Twitter and LinkedIn

NOTE: Additional branding opportunities and other material are available at the request and expense of the sponsor.



MERIT AWARDS SPONSOR \$3,000

Sponsorship Includes:

- Opportunity for announcement of 5 awards post event
- Logo and recognition on NRL Website
- Logo and recognition in NRL Program Guide
- One (1) 1/2 page, 4-color ad in the NRL Program Guide

NOTE: Additional branding opportunities and other material are available at the request and expense of the sponsor.



SHIPPING SPONSOR \$2,500

Sponsorship Includes:

- Logo and recognition on the NRL website
- (1) ½ page Ad in NRL Program Guide
- Social Media recognition on Facebook, Twitter and LinkedIn



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

INTERACTIVE MANUFACTURING GALLERY EXHIBIT TABLE \$1,500 (ASK FOR AVAILABILITY)

"BUY A PIECE OF THE ACTION AND SHARE YOUR STORY"

Sponsorship Includes:

- Logo and recognition as an Exhibitor on the NRL website
- Logo and recognition as an Exclusive Sponsor in the NRL Program Guide
- Prominently displayed logo banner above exhibit table
- 6 ft table provided
- Exhibit table to be positioned in the Manufacturing Gallery in high traffic/action area
- Opportunity to tell your company's manufacturing story to the next generation
- Social Media recognition on Facebook, Twitter and LinkedIn

BLEACHER SPONSOR \$1,500 (6 AVAILABLE)

Sponsorship Includes:

- Logo and recognition on the NRL website
- Logo and recognition in the NRL Program Guide
- Prominently displayed LARGE logo banner
- Logo seat clings
- Bleachers located in high traffic/action area



NRL COMPETITION T-SHIRT SUPPORTER \$500

Sponsorship Includes:

- Logo prominently displayed on back of T-Shirts to show your support of this educational initiative
- Logo and recognition in the NRL Program Guide

SUPPORTING PARTNERS OPPORTUNITIES:

Platinum- \$1,000

- (1) Full Page Ad in the NRL Program Guide
- Logo and recognition on the NRL Website

Gold-\$500

- (1) ½ Page Ad in the NRL Program Guide

Silver-\$250

- (1) ¼ Page Ad in the NRL Program Guide

Stainless Steel - \$125

- (1) Business Card Ad in the NRL Program Guide

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.

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

SIX WAYS TO LOWER ENERGY COSTS IN 2015

TO HELP MEMBERS OF THE NATIONAL TOOLING AND MACHINING ASSOCIATION START 2015 ON THE RIGHT TRACK, WE ASKED ENDORSED CONSULTING FIRM APPI ENERGY FOR SIX WAYS THAT MANUFACTURERS CAN REDUCE ENERGY COSTS.



LIGHTING

A lighting retrofit is an easy, fast and permanent way to reduce electricity costs and consumption. Replace outdated incandescent light bulbs with light-emitting diodes (LEDs) or compact florescent light bulbs. Install occupancy sensors so lights will only operate when motion is detected. Payback periods typically range from 12 to 36 months, depending on the size of the facility, local electricity costs, and the new lighting installed. Importantly, the reduction in electricity consumption results in immediate and ongoing lower costs.

HEATING/COOLING

Many local electric utilities will provide financial incentives to manufacturers for upgrading HVAC systems. Additionally, adjusting the temperature in your facility by only a few degrees can significantly lower energy costs.

DEMAND RESPONSE

Demand response programs provide

opportunities for manufacturers to receive payments for voluntarily reducing electricity usage during peak demand times. This also benefits the grid system and the environment. Consumer demand on the grid is often highest during extreme weather, such as winter storms when demand for heating increases. Manufacturers can reduce consumption by dimming lighting, adjusting thermostats, shutting down equipment, scheduling operations for off-peak hours or using an onsite generator.

ENERGY DATA TRACKING

Consider using an online energy monitoring system. Web-based energy management systems track and report energy costs and consumption, and help manufacturers increase efficiencies, reduce consumption and cut costs. Benchmarking tools provide measurements of efficiency projects. Locations can be compared to similar facilities to identify ways to cut costs.

ENERGY SALES TAX EXEMPTION

Manufacturers may qualify for energy sales tax-exempt status, both retroactively and going forward. Contact NTMA National Associate Member APPI Energy, to determine if your operation is energy sales tax exempt.

FIXED PRICE

Energy consumers are encouraged to mitigate risk exposure to volatile energy prices by using a fixed-price supply contract as soon as possible, to cover supply through at least March 2015. Customers unwilling to commit to a one-to-three year supply contract should at least consider locking in a short-term, four-to-five month supply solution. Achieving budget certainty now for this winter's gas and electricity costs is a prudent business decision. For more information, contact APPI Energy at 800-520-6685 or info@appienergy.com.



OKUMA AMERICA DEBUTS STANDARD 19" CNC CONTROL DISPLAY MONITOR ON INTELLIGENT MULTITASKING MACHINES

THE AMPLE DISPLAY SCREEN PROVIDES GREATER VISIBILITY AND FEATURES A SECONDARY DISPLAY MODE.

A large, 19" user-friendly display monitor is now standard on Okuma's MULTUS U3000/U4000 and the MU-6300V multitasking machines.

The sizable screen features a true color (32 bit) digital flat panel (1280x1024 60Hz), Intel® HD Graphics and operators can choose between full screen mode or expansion mode, which allows for greater visibility of THINC®-OSP CNC controls and data. The vertically-arranged function keys on the monitor can also be displayed or hidden by simply touching the screen.

In full screen mode operators see information that is customarily displayed on a smaller screen.

Expansion mode gives operators increased flexibility with more information at their fin-

gertips and allows operators to see a conventional 15" screen display plus extra viewing space for apps, widgets and windows applications. Operators have the ability to position the additional viewing space to the left or right side of the conventional 15" screen information allowing them to view the easy operation run screen and available apps all on one display.

For more information on Okuma's THINC-OSP CNC control and full line of multitasking machine tools please visit <http://www.okuma.com/americas>.

ABOUT OKUMA AMERICA CORPORATION

Okuma America Corporation is the U.S.-based sales and service affiliate of Okuma Corporation, a world leader in CNC (computer numeric control) machine tools, founded in 1898 in Nagoya, Japan. The company is the

industry's only single-source provider, with the CNC machine, drive, motors, encoders, spindle and CNC control all manufactured by Okuma. Okuma's innovative and reliable technology, paired with comprehensive, localized service protection, allows users to run continuously with confidence – maximizing profitability. Along with its industry-leading distribution network (largest in the Americas), and Partners in THINC, Okuma facilitates quality, productivity and efficiency, empowering the customer and enabling competitive advantage in today's demanding manufacturing environment. For more information, visit www.okuma.com or follow us on Facebook or Twitter @OkumaAmerica.





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Former Executive, Tesla Motors, Apple, Gap, Inc.

KEYNOTE: The Future of Innovation



JAY ROGERS
Co-Founder & CEO, Local Motors

KEYNOTE: Welcome to the 3rd Industrial Revolution - Local Motors & the 3D-Printed Car

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