



## **SME EDUCATION FOUNDATION WELCOMES FOUR NEW MEMBERS TO ITS BOARD OF DIRECTORS**

The SME Education Foundation (SME-EF) recently announced the election of four new members to its Board of Directors.—p14

## **WITHOUT SERVICES, SMALL BUSINESSES FEEL THE PINCH**

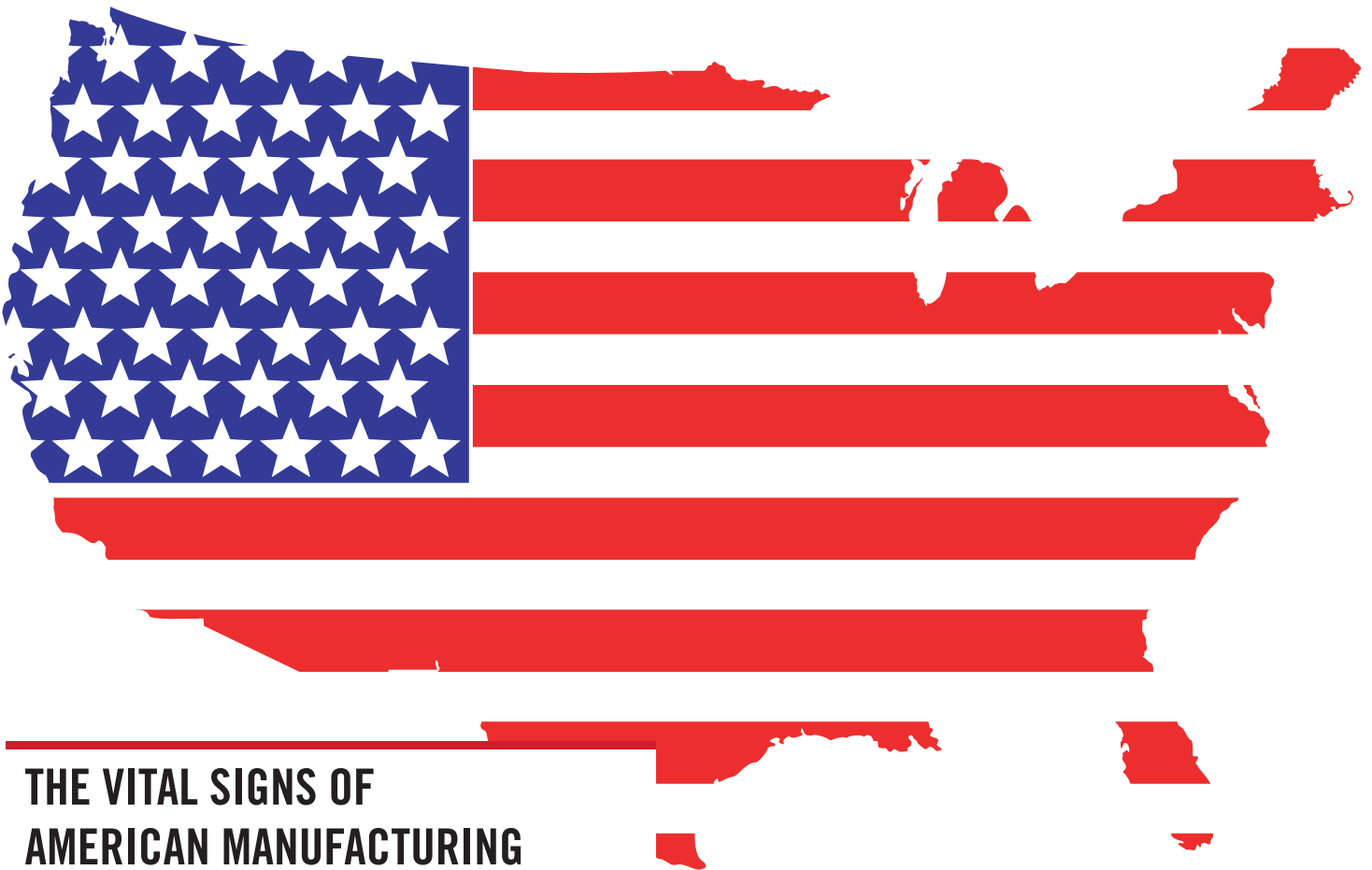
Chris Leh, the owner of a fledgling manufacturing company in Ephrata, Pa., recently landed the kind of deal that growing companies dream about, with a major client whose order volume will triple his annual sales to around \$1.5 million. —p22

## **NASA PREPARING TO LAUNCH 3-D PRINTER INTO SPACE**

NASA is preparing to launch a 3-D printer into space next year, a toaster-sized game changer that greatly reduces the need for astronauts to load up with every tool, spare part or supply they might ever need. —p34

## **AUTO INDUSTRY STEELS ITSELF FOR 'CONFLICT MINERALS' RULE**

After years of education and preparation, the automotive industry has begun to identify whether certain metals from nine African countries exist in the supply chain.—p40



## **THE VITAL SIGNS OF AMERICAN MANUFACTURING**

AMERICAN MANUFACTURING IS IN THE NEWS THESE DAYS. A SUDDEN WAVE OF OPTIMISM ABOUT GROWTH POSSIBILITIES SEEMS TO PERVADE THE MEDIA. —p38

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## CHAIRMAN'S CORNER

ROBERT MOSEY / NTMA CHAIRMAN OF THE BOARD

NTMA's theme for 2013 is "Stewardship of the Manufacturing Industry". Our four main focuses are; Membership Value, Industry Advocacy, Workforce Development, and Governance. As I travel this year and visit many of our chapters, I will be reporting to you all of the great stewardship activities that are occurring across the United States.

At the end of August, the Executive Team met in Monterey, California (my choice) to hold one of our quarterly business/strategic planning meetings. One of the main focuses of this meeting was to finalize the 2014 budget. By the time you read this, the budget will have been passed (hopefully) at the 2013 Fall Conference in Boston. In case you have not heard, we will end 2013 with an organic monetary surplus thanks in large part to the good work of our staff under the leadership of our president, Dave Tilstone.

We must also recognize that our



Monterey Sunset during ET Meeting in August

National Associate members have really started to understand the value of supporting the association monetarily. This influx of non-dues revenue, something that we have strived for years, is helping to grow much needed programs like the NRL, NTMA-U, Chapter Leadership training, and the list goes on and on. These moneys are allowing us to plan even better programs for 2014.



Bob and Joanne Mosey in Tennessee

It's about time!

After two days of meetings, the Executive Team and their spouses spent the weekend sightseeing around Monterey and generally "bonding". A good time was had by all.

Enough fun already! On to Chapter visits. No sooner had we returned from our meeting in Monterey, I was off to visit the Tennessee Chapter. In all of my travels this year, I am always so impressed by the beautiful country that we call America. The hills of Tennessee are no exception. With the all of the trees and farm land being so green, it is quite the contrast to California. Of course, I was there in September. I'm not sure I would feel the same come December or January. There are benefits to living in California.

I arrived in Nashville at dinner time (how convenient) and Lee Vaughn, Vice President of Vaughn Manufacturing and Chapter Treasurer, picked me up at the airport and whisked me off to a wonderful steakhouse in downtown Nashville. We were joined by Mark Vaughn, also of Vaughn Manufacturing, and Past Chapter President. We had a great dinner and shared

what was happening in the chapter and each other's businesses. Off to the hotel and much needed sleep.

The next morning, I was picked up by Tennessee Chapter President, Kinion Dunn. While I did not get to tour Kinnion's company, Dunn & Bybee Tool Company, I did learn a lot about it as we drove to our first shop tour. Not only does he operate a great machine shop and fabrication facility, he also has a product that extracts and filters coolant from engines during maintenance and then returns it to the engine after the repairs are made. I have observed that many of our more successful member companies also have a product. Hmmm. Maybe there's a lesson to learn here.

Our first stop was at Columbia Machine Works where we met company owner, John Langsdon III. Columbia is a long time NTMA member and a 3rd generation company. I am sure that many of you remember John's father by the same name



Mark Vaughn, Bob Mosey, Kinion Dunn TN Chapter President, and Jimmy Langsdon, III

and perhaps his grandfather, John Sr. You may also remember John's brother, Jimmy, who just recently passed away. While John has always been involved in the company, he was more involved in operations. Jimmy's focus was more on the business side and the

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# THE RECORD

## OPERATIONS & EDITORIAL

Dave Tilstone, President  
Emily Lipovan, Managing Director  
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face of the company. Thankfully, the family had done great succession planning and the business continues to succeed and grow under John's leadership. Great Governance! John would like to become more involved in the NTMA both locally and National and we are only too happy to help him with that desire.

Steve Thomason, long time employee and current COO of Columbia, joined us on the shop tour where we were shown the many facets of their operation. While they do many things well, I was most impressed with how they value and treat their customers. Being in the heavy equipment repair business, most jobs are done under

duress. The customer's equipment is down and they are losing money by the minute. Columbia allows nothing to stand in their way working day and night, weekends and holidays, to get their customer's equipment up and running. In my talks to our chapters, I speak of getting value to our customers. Columbia is a perfect example of bringing that value to the table. Great work John!

After a quick lunch with John and Steve, Kinion and I headed towards another long-time NTMA member, Kennedy & Bowden Machine Company. We were met at the door by 4th Generation Owner and Vice President, Pete Kennedy. I'll say it again, 4th Generation! They are celebrating their

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100th year in business! Congratulations!

Kennedy & Bowden designs and builds plastic injection molds along with other custom tooling and equipment. They have a very clean operation and some very unique processes. I share this with you because many of these unique processes came from Pete's father, the infamous Past Chairman of the NTMA, Ray Kennedy! I had the honor of meeting Ray in the office and would have loved to spend a day listening to him tell stories of his experience as Chairman. Sorry Pete but meeting Ray was a highlight for me.

Kinnion tore me away from Ray and we were off to catch up with Lee Vaughn at Vaughn Manufacturing where they design and build large stamping dies. By large, I mean refrigerator size! A very impressive



**Kennedy & Bowden – Celebrating 100 years, Pete Kennedy, Lee Vaughn, Bob Mosey, Dave Kennedy, Ray Kennedy – Past Chairman**

operation.

As I tour our member's shops, I am always on the outlook for age diversity. Some shops have mostly... senior workers (I can say that because I am one). Others, like Vaughn, have recognized the need to get and keep youth in the workforce. They are bringing in young people either from local high schools or kids of current employees and training them to be machinists. There isn't much in the way of training in the area so they are utilizing NTMA-U for this training. It was very exciting to see firsthand what we have worked so hard to develop being used in a real environment. Great Workforce Development!

No rest for the weary, we then headed to the hotel where the chapter dinner meet-



**Kinnion Dunn, Bob Mosey, and Lee Vaughn**

ing was to be held. We had a very intimate dinner with the Board of Directors, chapter Executive Director, Myrla Sproat, and several members and Associate members. After my talk, I always ask for any questions, complaints or suggestions. Usually I get crickets and that's okay. I take that as everything must be going okay. This time was different. Londie Wallin from Master Machine made a suggestion that I will be floating to the Executive Team. She asked if we had ever thought about have panel of experts from our membership that could act as advisors to other members, kind of like S.C.O.R.E. If you are unfamiliar with S.C.O.R.E., it is a non-profit group of retired business owners that advise other business owners on the many facets of owning a business. Great idea Londie! Thanks.

From a chapter perspective, the Tennessee Chapter struggles with many of the same issues as other chapters, membership growth and retention, workforce development, and succession on the board. They are working diligently on all fronts and I predict that under the current leadership, they will be successful. This is an exceptionally good group of Stewards of the Manufacturing Industry.

Next up, the Rocky Mountain Tooling and Machining Association (RMTMA) in Denver Colorado. This visit was to coincide with the chapter's annual Fall Conference. The Beaver Creek venue was changed this year and the event was held at the Omni Interlock resort in Broomfield, CO. It was a bit touch and go with all of the flooding that had occurred up to just a few days before the conference. Fortunately, the weather cooperated and it was absolutely beautiful the entire weekend. This chapter visit was a bit different than most of the others have been, we started with the conference on Friday

and then did shop visits on the following Monday. It actually worked out very well and we weren't rushed on the tours trying to get back to an evening meeting.

The one day conference was well attended with over forty people representing eighteen NTMA member companies, thirteen Associate members, and three prospective members! There was a full schedule of speakers including two standouts. One was Holly Green, a local Vistage speaker, who talked to us about using our brains. I always wondered what was in there. The second was NTMA member Don Tomann from UMC Precision Manufacturing. Don spoke to us about his journey taking UMC from garage startup to a 72,000 square foot shop with \$23M in annual sales. I took copious notes throughout his talk. The other speakers spoke on subjects such as Additive Manufacturing and the economy. We also heard from Danielle Glover of CACI who spoke on how they worked together with the Chapter and the Department of Labor in awarding a \$25 Million grant to nine Colorado Community Colleges to help produce skilled workers for advanced manufacturing! The day concluded with a reception before dinner that included a Frank Sinatra impersonator who JoAnn really liked! Of course dinner was great and the evening concluded with a casino night where we were allowed to lose someone else's money. That's my kind of gambling!

The chapter is mainly focused on Workforce Development, Industry Advocacy and Membership Value efforts. Following is some of what they are working on and their recent accomplishments.

#### **WORKFORCE DEVELOPMENT**

The chapter hosted a Workforce Development event In April 2013 with a panel of speakers including Ken McCreight who spoke on NTMA-U, and others that spoke on robotics, vocational high school, community college, etc. Rob Volkert from Reata Engineering is the Workforce Development point person for the board. He is working directly with their "Educational Members" from the Community Colleges and Chapter Executive Maureen Breitenbach is marketing their workforce development meetings, job fairs, etc. to their members and prospective members.

#### **INDUSTRY ADVOCACY & GOVERNANCE**

The chapter is working with CACI (Colorado Association of Commerce and Industry) and their Manufacturing Initiative group. CACI has been their go-to group for

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legislative issues, manufacturing advocacy and workforce (NIMS). Recently a partnership between them was established to enhance their profile throughout the state. The chapter has joined CACI and sponsors the initiative events.

Mark Welle has worked to promote some state legislative issues for small business and manufacturing through emails to their members.

#### MEMBERSHIP VALUE

New chapter events have brought value to their members. Recently a successful workforce event and a terrific plant tour of Stolle Preferred Machining were held. Stolle really showed how the investment in technology and machines can help grow your business. About 45 members attended that event which netted terrific feedback. The event committee has worked hard to create an agenda for their Fall Conference that was relevant to manufacturing and also business owners and managers. In their summer newsletter, members were reminded of the benefits they receive with NTMA Affinity Partners in an effort to improve member value.

On Monday, after a wonderful weekend spent with Grady and Anne Cope, we headed out to visit Grady's company, Reata Engineering and Machine Works, where we also connected with Chapter President Mark Welle. Since Grady was still a little washed out from his recent trip to Europe, his VP of Operations, Rob Volkert gave us the grand tour. As you may know by now, Reata received the NTMA Technology Award at the Fall Conference for their work with Multi Tasking equipment. What a beautiful shop!



**Reata Leadership Team of Rob Volkert, Grady Cope, Mark Welle and Bob Mosey**

As mentioned earlier, this is one of those companies that have their own product, the Cone Mounter bearing heater. This device allows you to heat and expand a bearing which allows it to drop onto a mating part with ease. Grady is working diligently to

build his company into a first rate business. Congratulations on your award Grady!

Next stop was Mark's company, Wesco Laser Machining. When I think of laser cutting, it is the typical two dimensional flat sheet type lasers. Well WESCO has that too but they are known for their ability to laser machine three dimensional parts with their 5 axis laser machine. Check out the video on their website. Very cool! Mark runs a great company and is working his succession plan daily with his son in law, Bill Fowler, who



**Marke Welle, Bob Mosey, and Bill Folwer**

manages sales for the company amongst other duties. Great Governance Mark!

We met up for lunch with Chapter Vice President, Darrin Cashette before heading over to tour his company, Metalcraft Industries. Metalcraft has insured its long term success by diversifying not only their customer base but also their services. Starting out as primarily a metal forming company, they now provide sheet metal fabrication and machining services. Darrin and his brother, Larry, are third generation owners and are in it for the long haul. Super operation!

Last but not least, our final tour was at Hirsh Precision Products out of Boulder. Company President & CEO, Mike Hirsh and his brothers, Steve and Kent, run this 60 man company. Mike started off by mak-



**Metal Craft Industries Chapter Vice President Darrin Cashette, Bob Mosey and Larry Cashette**

ing me look bad. He had overheard that it was our 34th wedding anniversary at the conference and just had to show me up by giving JoAnn flowers upon our arrival. I got "the look" from JoAnn as she gloated over the flowers. Oh well. Missed opportunity I



**Hirsch Precision Owner Mike Hirsch and Bob Mosey**

guess.

JoAnn and I were both very impressed with Mike's operation (maybe for different reasons). This was one of those super clean shops with all of the latest technology on the shop floor. Computer terminals at every work station kept everyone informed of production schedules and work instructions. The shop had a great work flow. It was obvious that a lot of thought had gone into the flow of work. I see great things in the future for this company under Mike's leadership.

So another month gone by and I am no less impressed with the caliber of our members. Not only do we have some of the best shops in the country, we are all actively being great Stewards of the Manufacturing Industry. Well done everyone!

Next month I will be reporting on the Fall Conference in Boston and chapter visits to the Tri-State and Michana chapters. In the mean time, keep up the good work in your own chapters and communities!

Peace,

ROBERT MOSEY / CHAIRMAN





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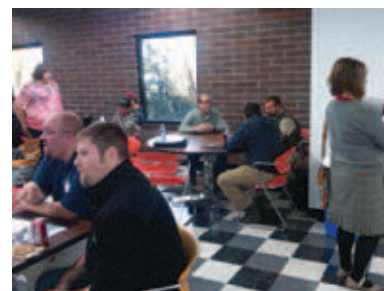
## NEW MEMBER ULTIMATE MACHINE COMPANY PRESENTED WITH NEW MEMBER PLAQUE



L-R: Jerret Johnson, Mike Wentz, Nick Berilla, and Bill Bachman.  
Photo courtesy of David Lippe, Commerce & Industry Magazine.

## AWT (ALLIANCE FOR WORKING TOGETHER) HOSTS EDUCATIONAL FORUM FOR START-UP ROBOTICS PROGRAM

Akron NTMA NRL Commissioner, Jim Bradshaw and Chapter President Steve Schler attended an educational forum for start-up robotics program on October 22 in Mentor, Ohio. The Akron NTMA was looking for assistance in how to start their program and together with NRL Team and the successful program in Mentor, Ohio sponsored by AWT, the forum provided details on



the requirements from team solicitations, volunteer recruitment, fund solicitation and curriculum development. This is a great example of chapters working together with the National Robotics League.

# NTMA EXECUTIVE STAFF AND EXECUTIVE TEAM MEMBER VISIT NORTH TEXAS CHAPTER:



At the end of September, NTMA Executive Staff member, Jeff Walmsley and NTMA Executive Team Secretary, Dave Sattler of Sattler Companies had the opportunity to visit our North Texas Chapter for member meetings and to participate in their annual golf outing. The trip continued the increased efforts of further connecting National and Chapter leadership to leverage resources to grow Chapters and add more value to members.

The trip began with Walmsley and Sattler meeting with Chapter President, Todd Ellard of Manda Machine and Terry Click of Applegate EDM. The four met at Applegate EDM, a long-time NTMA member and began with a shop tour in which they learned more about Applegate EDM as well as Manda Machine—Manda now leases some space from Applegate due to the amount of work they do together. After the tour, the four went to dinner and discussed the history of the Chapter, board structure, Chapter initiatives and how we can better support one another.

The following day, Walmsley and Sattler had the pleasure of meeting with several North Texas members thanks to the scheduling efforts of both Todd Ellard and Barron Smith from R.W. Smith Company, Inc. The group began the day meeting at Manda Machine and were joined by Joe O'Dell from Plano Machine. After a tour of Manda Machine and a meet and greet with staff, the group set off for member visits.

First on the list was a visit with John Harrell from Quick Turn Technology.



Jeff Walmsley, NTMA Executive Staff, John Harrell, Owner, Quick Turn Technology, Dave Sattler, President, Sattler Companies, Todd Ellard, Owner, Manda Machine

Harrell, who was well versed on NTMA benefits and had NTMA “propaganda” throughout his company, offered assistance in connecting NTMA with Navarro College to further increase educational initiatives in the area and tie in with NTMA-U. Following visits took place with Steve Ingersoll, Engineering Manager, Bailey Tool & MFG who also gave a wonderful tour and then introduced us for a sit down meeting with company President, John Buttles. The group discussed both local and National events, especially Purchasing Fairs. The other points of discussion, cost-saving benefits and NTMA-U were also the main talking points at the next meeting with Mark Hestily of Air & Earth Instrument Co. The NTMA team informed the members on various ways to save money—

especially through Grainger and APPI Energy. Like many members, they were not aware of Grainger’s increased focus on metalworking commodities. Plus, with Texas being a deregulated state for utilities, the NTMA team was able to discuss the benefits of APPI Energy, a service which both Ellard and O’Dell utilize at their respective companies. Finally, like most member visits, a significant amount of time was spent discussing NTMA-U and our online testing services. All members found this information useful and were interested to hear more about each program.

The trip ended with the North Texas annual golf outing at Indian Creek Golf Club in which Sattler and Walmsley were joined by Eugene Kim from Grainger. Kim flew directly from a Los Angeles Chapter function to the



Terry Click, General Manager Applegate EDM, Dave Sattler, President, Sattler Companies, Todd Ellard, Owner, Manda Machine.



Joe O'Dell, Plano Machine Dave Sattler, President, Sattler Companies, Todd Ellard, Owner, Manda Machine, Jeff Walmsley, NTMA Executive Staff.



Jeff Walmsley, NTMA Executive Staff, Dave Sattler, President, Sattler Companies, John Buttles, President, Bailey Tool & MFG, Steve Ingersoll, Engineering Manager, Bailey Tool & MFG, Todd Ellard, Owner, Manda Machine.



outing—a result of connecting more NTMA Affinity Partners to Chapters. Over 100 players enjoyed a beautiful day of networking and golf. The event concluded with an awards ceremony and numerous raffle items donated by both sponsors and members.

A special thank you to Todd Ellard, Lisa Ellard, Joe O'Dell, Barron Smith, Terry Click, the members who welcomed us into their businesses and all the sponsors of the golf outing who made this trip a success. Thank you for all you do, we sincerely appreciate it.



Mark Hestily, Manager, Air & Earth Instrument Co., Dave Sattler, President, Sattler Companies, Todd Ellard, Owner, Manda Machine.

Todd Ellard and his team enjoying their 1st Place Trophies



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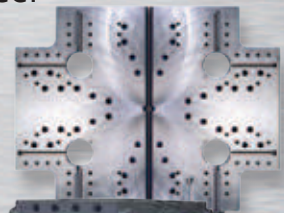
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# America Makes is The National Additive Manufacturing Innovation Institute



## Institute Unveils New Brand to Kick Start a Unified, U.S.-based Additive Manufacturing and 3D Printing Movement

The National Additive Manufacturing Innovation Institute, driven by the National Center for Defense Manufacturing and Machining (NCDMM), proudly announces that it unveiled its rebrand to America Makes to kick start a unified, U.S.-based additive manufacturing and 3D printing movement yesterday to members only at its second Program Management Review (PMR) Meeting held at the DeYor Performing Arts Center in Youngstown. Also present at the meeting to show his support of the new America Makes identity and represent the expanding 3D desktop printing industry and community was Bre Pettis, CEO of MakerBot.

"America Makes is a vehicle for the National Additive Manufacturing Innovation Institute to raise our profile, reach a wider audience to include the hobbyist and the entrepreneur, and ultimately, provide a richer member experience," stated Ralph Resnick, Founding Director of the Institute and NCDMM President and Executive, in his remarks to members. "America Makes sets the stage for us to realize our mission of reinvigorating the U.S. manufacturing industry and jobs market by serving a strong message. America Makes is our call to action. America Makes challenges the perception of manufacturing. America Makes is a far-reaching movement that goes beyond the walls of industry and into the homes of individuals. This is how we will become competitive. This is how we grow our nation's economy and get ahead. This is how we lead. When America Makes, America Works!"

For the Institute, which recently marked its first anniversary of award in August, the timing for a rebranding was not just ideal, but necessary. Leadership had begun to feel that its identity was limited by its five-letter acronym, one that did not fully or aptly convey the intent, the depth, or mission of the

organization.

Yesterday's announcement was the accumulation of months of research and brainstorming among the Institute and its strategic partners to evolve the Institute in representing and unifying the entire additive manufacturing and 3D printing community under America Makes. With

America Makes, the Institute has a name and a concept that are so much more effective in communicating its purpose and ambition.

"With America Makes, the goal of the National Additive Manufacturing Innovation Institute is to broaden our voice to be more indicative and inclusive of all of the innovative people in our country—whether they are hobbyists or entrepreneurs or they work in industry, academia, and government," said Ed Morris, Director. "In creating a movement in America Makes beyond a traditional organizational structure, it further unites us as a community and ensures our collective success in both advancing and accelerating the adoption of additive manufacturing and 3D printing technologies and increasing our nation's global economic competitiveness."

Added Mr. Resnick, "Our mission has not changed; it has just been clarified. We look to embrace innovation from whatever its source as we collectively strive to accelerate the true realization of additive manufacturing through 3D printing. We are growing the inertia from our incredible first year of activities into a long overdue manufacturing movement because again history has proven that 'When America Makes, America Works.'"

Joining Mr. Resnick in making the announcement of unifying the community under the America Makes movement was 3D printing visionary, Bre Pettis, CEO of MakerBot, the global leader in desktop 3D printing.

"It is a great honor to have Bre, the well-

known igniter of the desktop 3D printing prosumer market and 'Maker movement,' in attendance for the announcement of America Makes," said Mr. Resnick.

Bre Pettis has led MakerBot as CEO since the company's beginning in 2009. MakerBot completed a merger in August 2013 with Stratasys, one of the leading players in industrial additive manufacturing in the world, and an American Makes member.

"The importance of encouraging American-made manufacturing is crucial to the economic success of our country," noted Pettis in his talk. "We see 3D printing as a large component of that success, allowing for faster and more productive cycles of innovation and iteration. America Makes is helping U.S.-based companies and entrepreneurs with further understanding and adoption of the tools that are available to them. I'm proud to be part of this pivotal time in U.S.-based manufacturing."

America Makes sets the stage for all working and innovating in additive manufacturing and 3D printing to realize the mission of reinvigorating our nation's manufacturing industry and jobs market by serving a strong message. However, the rebrand is only the first step.

Along with the new look and feel is an upgraded member experience via a new, online digital estate at <http://americamakes.us> that empowers members to collaborate and network with other members; publish and share findings; and search and find answers to tough additive manufacturing questions. Yesterday's debut marked phase one of the official launch. In the coming days and weeks, the digital estate will reflect phase two, which will feature more community and networking functions.



# SME Education Foundation Welcomes Four New Members to its Board of Directors

The SME Education Foundation (SME-EF) recently announced the election of four new members to its Board of Directors.

Joining the Board are Gwen Malone, Jennifer McNelly, Karla Middlebrooks and Roy Sweatman.

"I am excited to welcome our new Board members to the SME Education Foundation (<http://www.smeef.org/>)," said Chief Executive Officer Bart A. Aslin. "They bring us a wealth of expertise in workforce development and leadership training, both in business and government. Their experience will be critical as we increase our efforts to attract women and minorities to pursue careers in the high-tech manufacturing sector."

## **GWEN MALONE**

Gwen Malone is currently a GM Technical Fellow and Senior Manager of Ergonomics in the GM Global Manufacturing Engineering Division. She brings nearly 30 years' experience in various plant and divisional positions within General Motors, and has received several awards for her innovative research and leadership. Gwen has worked to increase the leadership role of women and minorities through her participation in various diversity initiatives and fundraising drives. She is also a frequent guest lecturer at the University of Michigan as well as various inner-city schools and programs.

## **JENNIFER MCNELLY**

Jennifer McNelly brings extensive experience in workforce development, employer engagement and business. She currently serves as the President of The Manufacturing Institute, a nonprofit organization that researches and supports manufacturing excellence, innovation, and talent to deliver solutions to keep U.S. manufacturers globally competitive. Jennifer has held senior positions with the U.S. Department of Labor and has served on several leading industry boards. She was recently named one of the 100 Women Leaders of STEM (Science, Technology, Engineering and Math).

## **KARLA MIDDLEBROOKS**

Also joining the Board is Karla Middlebrooks, a Contributing Partner at Excellence In Action (EIA) a minority-owned consulting firm that specializes in providing leadership-training skills to both individuals and organizations. Before joining EIA, Karla held increasing levels of responsibility and leadership over the course of a 24-year career with Chrysler. As Vice President of Operations Finance, she led 150 employees with a departmental budget of approximately \$10 million. Karla has served on several nonprofit boards and been the recipient of numerous accolades including the 2004 Career Achievement Award from the National Women of Color in Technology and a 2000 Eagle Award from the National Eagle Leadership Institute.

## **ROY SWEATMAN**



Roy Sweatman is the owner of Southern Manufacturing Technologies (SMT), a Tampa-based manufacturer that provides high precision components and assemblies for the aircraft, aerospace and defense industries. SMT has been listed in the INC 500 and won several awards for business excellence. Roy is a member of several boards including the National Institute for Metalworking Skills (NIMS) and the Career Technical Education Foundation Board. He was recently reappointed to serve a second two-year term with the Secretary of Commerce's Manufacturing Council.



## COROCUT QD A NEW DEEP GROOVING AND PARTING OFF SYSTEM

SANDVIK COROMANT INTRODUCES A BRAND NEW PARTING OFF CONCEPT FOR DEEP GROOVES AND LONG OVERHANGS

For volume bar-fed parts manufacturing, producers are continually seeking solutions that offer more efficient material usage to control their overall costs and support increased bar feed capacity. Ensuring process security through a predictable and consistent tool life is also important to ensure reproducible parts quality, particularly for parting off.

With the introduction of CoroCut QD – a range of solutions covering parting and SL blades, adaptors, shank and Swiss tools and a new generation of inserts for parting off – these aspirations can be met. CoroCut QD builds on the well-proven Q-Cut and CoroCut ranges, and expands the options for these processes with a flexible, simple-to-use and easy-to-select tooling range.



## **KEY DESIGN FEATURES**

The focus areas in developing this new concept have been new tool material and a tooling design for greater process stability. The tool attachment is achieved via a smart, yet simple, user-friendly clamping mechanism. The tool tip seat is tilted 20 degrees and incorporates a back stop to withstand high cutting forces. For insert widths 0.078 in. (2 mm) and wider, the insert interface has a rail to increase stability.

In developing CoroCut QD, attention has been paid to the development of new and upgraded parting geometries. When parting off a component, minimized cutting forces and efficient material removal are important. An insert should be as narrow as possible and have a geometry that makes the chip narrower than the groove to provide a parting off operation with good chip control and surface finish. Within the CoroCut QD concept are inserts with five parting geometries and one turning geometry as well as options for "do-it-yourself" grinding and tailor-made options for a broad range of material types. The PVD insert coating offers better adhesion, improved edge-line qualities and better ER tolerance.





## IN MEMORIAM

Karl Wilhelm, the founder of KVI was an immigrant from Rommelshausen, Germany. He learned his trade as Tool & Die Maker starting at the age of 14. In 1956 he boarded the SS Berlin to set sail to America to realize his dreams. After working for many successful manufacturing organizations, he decided to go into business for himself. He founded KVI in December 1976, along with a partner, Vince Spadafora. In February 1978 Karl Wilhelm became the sole owner of the business. KVI operated at 1458 County Line Road, Building "B" in Huntingdon Valley until 1982 when Karl purchased the 1458 County Line property, thereby allowing it to further expand its facilities into neighboring space. In July 2000, his son, Eric took over the business and has undergone several expansions, growing KVI's capabilities from a tool & die company to a full service CNC production machining company. KVI currently provides Tooling, Customer Fixturing, Wire & RAM EDM, CNC Swiss and Multi Axis Milling and Turning services for the Aerospace, Medical, Pharmaceutical, and Micro-Electronics in-



We are sad to announce the passing of KVI's Founder  
Karl Walter Wilhelm - 1937-2013

dustries in a facility totalling over 18,000 sf. Karl was a long time member of the NTMA's Philadelphia Delaware Valley Chapter.

KVI's reputation in the industry is for excellence in Ultra Precision Machining, Tooling & EDM. This stems from Karl's focus on Quality. He has instilled a culture for Excellence that shines due to the competence, pride, and professionalism displayed by KVI's management and employees. KVI is dedicated to continuing its steady growth into the future and to maintaining its quality and on time job performance for which it has become widely known within the industry.



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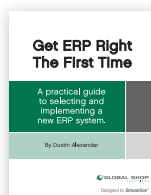
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## METRIC SHAFT COLLARS EXPANDED LINE FEATURES NEW COMPONENTS

An expanded line of metric shaft collars including couplings and mounting components offered in a full range of standard sizes and styles is being introduced by Stafford Manufacturing Corp. of Wilmington, Massachusetts.

Stafford Metric Shaft Components features more than 500 standard parts including set-screw, 1-piece, 2-piece, and hinged collars along with couplings in 1-, 2-, and 3-piece styles, and English-metric adapters. New products include heavy-duty flange mounting collars with wider construction and oversize clamp screws, Staff-Lok™ Shaft Collars that reposition without tools, flange collars, face mount collars, and thermoplastic shaft collars.



Available in 3 mm to 80 mm I.D. sizes, Stafford Metric Shaft Components are offered in aluminum, steel, and stainless steel, plus Teflon®, Delrin®, and other thermoplastics, depending upon style. Custom sizes and optional treatments such as wrench flats, holes, and knurls, can be provided for use in drive systems, conveyors, and processing and packaging equipment.



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# MANUFACTURING ACTIVITY STRONGEST SINCE APRIL 2011

BY VICKI NEEDHAM, THE HILL

Manufacturing picked up pace in September to the highest level in more than two years as the sector continues its rebound since contracting in May.

Factory activity increased to 56.2 last month, up from 55.7 in August the highest level since April 2011 and fourth straight increase in the index, the Institute for Supply Management reported on Tuesday.

The reading has bounced back during the past several months after contracting in May.

Any reading above 50 reflects expansion.

The improvement could be a sign that hiring could pick up. The employment index

rose to 55.4 percent compared with August's reading of 53.3 percent, which is the highest reading of the year.

"This would be good news if true, particularly with manufacturers adding just 20,000 additional workers over the past year and several other reports, including the NAM/IndustryWeek Survey of Manufacturers, indicating only modest growth at best in terms of hiring," said Chad Moutray the chief economist for the National Association of Manufacturers (NAM).

The production index increased by 0.2 percentage point to 62.6 percent. After contracting in May, the index has posted three months of 60-plus readings.

"The larger story is the progress acceleration in activity over the course of the past few months, with relatively strong growth in production and new orders," Moutray said.

Along those lines, the pace of new orders remained healthy despite a slight pullback from 63.2 to 60.5. Stronger sales activity should bode well for future output growth.

The exports index eased from 55.5 to 52.0, suggesting a slight slow down in the growth of sales overseas.

"Overall, manufacturers wrapped up a pretty decent third quarter in terms of output and sales," he said.

Still, amid the shutdown of the federal government,

Moutray warned that continued fiscal stalemates will only hurt the prospect of more robust economic growth.

"Fiscal uncertainty is likely to limit economic growth — at least in the short-term — and we continue to see growth rates for manufacturing that, while better than in the spring, are still not as robust as we might like," he said.

"With that in mind, this manufacturing report suggests movement in the right direction, but policymakers would be wise to move beyond the short-term budget battles and begin debating ways to grow our economy for the long-term."



## HIRING NATIONAL GUARD MEMBERS IS A WIN-WIN OPPORTUNITY

Hiring National Guard members is a win-win for your company, your community and veterans and their families. The nonprofit American Jobs for America's Heroes campaign gives you free, direct access to of highly trained National Guard members who are transitioning to civilian jobs.

"Hiring Guard members is a win for employers because they bring tremendous skills and teamwork values to the workplace — they're very results-oriented and creative in achieving their objectives," said Steve Nowlan, campaign director. "Keeping Guard units strong helps our communities. We all depend on the Guard to help during disasters

and to defend our country," he continued.

Employers also benefit because the National Guard trains in 107 occupational specialties, making the men and women of the National Guard among the most highly qualified employment candidates in America. Guard members are focused on continuous learning and improvement so they excel in advanced job training.

"The men and women in the Guard are trained to take on new challenge, organize their team effectively and get the job done, no matter what kind of problems then encounter. Hard work is no stranger. They know how to think on their feet and find a way to get the job done," said

Todd Young, campaign communication director. "Guard members are committed to continuous evaluation and self-improvement so they naturally fit into high-performance organizations."

Learn about the success Total Quality Logistics, an Ohio-based company, has had in hiring Guard members. <http://www.CenterForAmerica.org/tql.pdf>

In this campaign, your free job postings flow directly to National Guard employment counselors in the states who work one-on-one with Guard candidates to match them to your job requirements. These counselors help you understand how military training and experience translates to

your civilian requirements.

You can watch a five-minute video about the campaign — [www.CenterForAmerica.org/video.html](http://www.CenterForAmerica.org/video.html) -- and then visit the website at [www.CenterForAmerica.org](http://www.CenterForAmerica.org) to register online. A campaign counselor will contact you to set up your posting and answer questions. All services are free. More than 935 employers are already participating.

Questions? Contact: Steve Nowlan, Center for America, 201-513-0379 or [SNowlan@CenterForAmerica.org](mailto:SNowlan@CenterForAmerica.org).



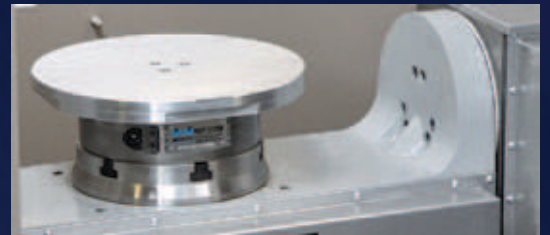




# Manual Pallet Changers

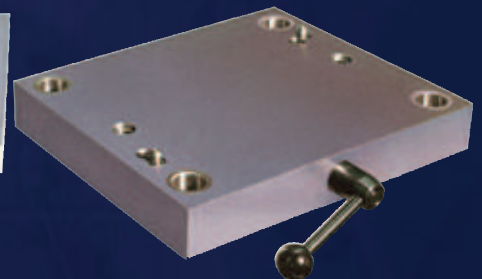
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# MANUFACTURING IS 'COOL': STUDENTS GET A HANDS-ON LOOK AT POLYGON SOLUTIONS

BY TIM ENGSTROM, THE NEWS-PRESS

## POLYGON SOLUTIONS



Twelve-year-old Josh Meredith hopes to become an aerospace engineer, but he learned Tuesday that the same high-tech skills can be applied to jobs that are more down to earth.

Josh was among 22 students who attend classes through the Lee Virtual School who



LEE VIRTUAL SCHOOL

visited Polygon Solutions Inc. south of Fort Myers to get a firsthand look at the careers available in the manufacturing industry.

It's the second year for the Manufacturing Day program organized through Polygon Solutions, which produces broaches used in computer-controlled machining to make holes of various shapes and sizes in parts and equipment.

"This has been very interesting," said Josh, from Lehigh Acres. "I've learned how precise their measurements are and how

important that is."

Peter Bagwell, project engineer for Polygon Solutions, showed the students the machine shop and the quality control center that can measure parts to the ten-thousandth of an inch. Bagwell said the program for students is intended to dispel the notion that manufacturing is dirty, low-tech work and to introduce new opportunities available to them.

"I do it because somebody did it for me," Bagwell said. "I still have the award on my desk that I won in ninth grade from the society of manufacturing engineers."

Bagwell said there are too few skilled workers who choose to work in manufacturing. It's an industry-wide issue that is especially pronounced in Southwest Florida where the industry isn't a major focus.

"Coming from Detroit, where there is a machine shop on every corner, I kind of took that for granted," Bagwell said.

Elijah Lefkowitz, a science and business teacher for the Lee Virtual School, said the school regularly looks for opportunities to

teach the students, who take the classes online, about career options.

"Kids need to see all types of careers," Lefkowitz said. "With manufacturing, people sometimes shy away from it because they don't think of it as a 'cool' field, but there are good jobs there with cool things happening."

To help get the students excited, Bagwell scheduled a first-ever test of company equipment that allows it to etch "Made in the USA" in its hardened steel parts. The equipment passed the test. The company also organized a contest asking the students to design a fastener to be used in a wet or slippery environment. The winners will earn Best Buy gift cards.

"I didn't know things like this were even here," junior Linda Vazquez said.

Josh was impressed by what he learned but he is sticking to his goals.

"That's been my dream for a while now," he said.



## FACING ANY FOREIGN COMPETITION THESE DAYS?

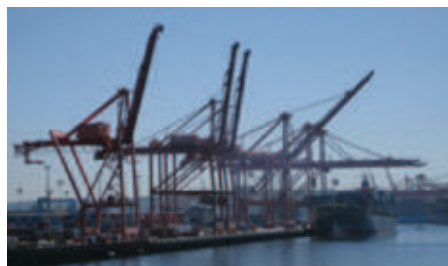


Many manufacturers are up against more import competition than ever before. Most know what to do to fight back, but only a few have also secured assistance and funding from the Trade Adjustment Assistance for Firms program to speed up implementation.

YOUR company could qualify, too, or others in your NTMA chapter. Some chapters have found it helpful to have a representative come speak at a chapter meeting.

The Trade Adjustment Assistance for Firms (TAAF) program offers a business assessment to benchmark and

prioritize a manufacturer's needs, and then up to \$75,000 matching funds for projects that improve competitiveness. Read about one NTMA firm's success story on our blog: <http://www.gltaac.org/market-research-manufacturer-export>



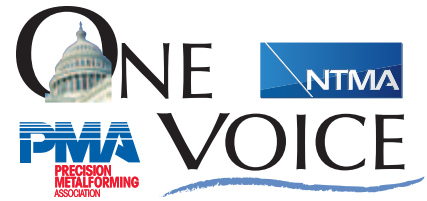
Set up a time for a TAAF representative to visit your chapter by identifying your state's Trade Adjustment Assistance Center on this website: [www.taacenters.org](http://www.taacenters.org). For Ohio, Michigan and Indiana, please contact Ruth Ann Church, Project Manager of Sales & Marketing at Tel: 734-998-6596, email: [rchurch@umich.edu](mailto:rchurch@umich.edu). More general program information available at [www.gltaac.org](http://www.gltaac.org).



# U.S. MANUFACTURING IN POSITION TO REGAIN MILLIONS OF JOBS BY 2020

BY KRISTOPHER SETTLE

MANUFACTURING BUSINESS TECHNOLOGY



U.S. manufacturing underwent a very successful July, based on the Institute for Supply Management's monthly factory index. The ISM index sprung to 55.4 in July – up from an average of 50.2 from April to June this year, and far exceeding industry expectations (any score over 50 denotes growth). Lower domestic energy prices, along with economic uncertainty in other key global manufacturing regions like China and Europe have played a pivotal role in influencing long term manufacturing growth for America.

## COMPETITIVE ADVANTAGES

As Your Energy Blog wrote about back in June, U.S. manufacturers have established multiple competitive advantages in the global market. John F. Floyd of the Gadsden Times cites lower manufacturing costs in comparison to many notable countries as a strong indication of a manufacturing resurgence. "High wages, very restrictive labor contracts and more expensive energy costs for Europeans have all accounted for [manufacturing cost] disparity," Floyd notes. The end result are costs 7 percent lower in the U.S. compared to England, 18 percent lower costs than Germany, 17 percent lower than France, 19 percent lower than Italy, along with 13 percent lower than Japan, and 3 percent lower than Canada.

A similar report was released in April by Alixpartners, illustrating that the U.S. has caught up to Mexico in terms of manufacturing "attractiveness," based on a survey with

executives in the industry. In the same report, Alixpartners stated the U.S. will be on par with the manufacturing costs of their largest industrial competitor, China, by the end of 2015. While some industries will remain more viable overseas for many years, there's a definite transition occurring in favor of the U.S.

## FIVE MILLION JOBS RETURNING?

A report released in August by the Boston Consulting Group (BCG) reflects the analysis of both Alixpartners and the Gadsden Times. As the BCG report explains, one of the largest factors in determining manufacturing costs is the price of energy within a country or region. With the development of natural gas and oil drilling in the last several years, American energy prices have remained very low compared to other parts of the world. In Japan, the natural gas price is currently around three times the cost in the U.S., and the average price remains 60-70 percent lower in America than the rest of the world.

Based on market trends analyzed in the report, much of the drastic job losses from "outsourcing" production to China over the last fifteen years will reverse in the near future — resulting in a lot of manufacturing jobs being 'reshored' back to the States. Based on BCG's estimation, the U.S. is on the verge of regaining 2.5 million to 5 million jobs back by 2020. An influx of those positions in the workforce would drastically decrease the national unemployment rate, approximately by 2 or 3 percentage points and it would also lessen

the trade gap with China. Aside from China, the output from a larger American workforce would also generate an additional \$70 billion to \$115 billion in annual exports from products currently being made in Western Europe and Japan.

The BCG report also referenced several notable companies that have already made the shift back to the U.S. Honda is ramping up production at its Indiana and Ohio plants. Michelin of France will invest \$750 million to create a new factory and expand its current one in South Carolina to manufacture large tires used for construction equipment. Toyota Motors announced they would begin to export Camry sedans assembled in the U.S. to South Korea, and hinted the same for Russia and China. In fact, the president of Toyota Motor North America was quoted in a press report from August saying, "This is just the beginning of a new era of North America being a source of supply to many other parts of the world."

Although no prosperity is guaranteed for the years ahead, the market seems to indicate that we're on the verge of a strong boom period when it comes to job creation for the manufacturing industry. While it's not irrational to hear such news and be a little skeptical, especially after losing 5 million manufacturing jobs since 2000, more months like July 2013 will silence even the harshest critics.



## WELDING END PREP TOOL: DESIGNED FOR HIGHLY REPETITIVE MILLING

A portable welding end prep tool that features air-operated clamping which reduces cycle times for highly repetitive end prep milling in fabrication shops is available from ESCO Tool of Holliston, Massachusetts.

The MILLHOG® Mongoose Air Clamp™ Welding End Prep Tool is equipped with an air-operated clamp that attaches to a tube or pipe I.D. and releases from it by simply flipping a toggle switch. Ideally suited for highly repetitive end preps, the pneumatic clamping system



reduces operator fatigue and increases throughput by up to 600%, claims the firm.

Featuring a self-centering draw rod that rigidly mounts into the tube or pipe I.D., the MILLHOG® Mongoose Air Clamp™ Welding End Prep Tool employs clamp ribs that retract off the mandrel automatically after milling to reduce friction. Designed for tubes and pipe from 5/8" I.D. to 3" O.D., this tool can bevel, face, and bore simultaneously and remove membrane.







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CLEVELAND, OHIO

MAY 16-17

Lou Higgins Center at Baldwin Wallace College

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

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

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[legendaryrobotics@gmail.com](mailto:legendaryrobotics@gmail.com)

## Rules Update

Over the summer, the NRL rules committee will be reviewing and updating our technical regulations and competition rules, and we want to make sure we address the concerns of everyone in the league. To that end, if you have a rules change request please email Maureen Carruthers at

[mcarruthers@ntma.org](mailto:mcarruthers@ntma.org) and let her know which rule(s) you'd like us to consider changing, and your rationale for the change.



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# Without Services, Small Businesses Feel the Pinch



A space stood empty at Chris Leh's manufacturing company in Ephrata, Pa., where a machining center was to be installed.

Chris Leh, the owner of a fledgling manufacturing company in Ephrata, Pa., recently landed the kind of deal that growing companies dream about, with a major client whose order volume will triple his annual sales to around \$1.5 million.

Because the new business requires a significant expansion of his production capabilities, Mr. Leh, 46, began hunting for additional employees and lining up financing to buy new equipment for his precision machine components company, TL Technologies. Last week, he was poised to close on a \$1.5 million loan backed by the Small Business Administration.

Then the government shut down. Mr. Leh's lender, Susquehanna Bank in Lititz, Pa., says it is prepared to cut a check — but cannot do it until the S.B.A. and other government agencies reopen and process some final paperwork.

"We just missed the window, and now we've come to a complete standstill," Mr. Leh said. "I have to go back to my customer and tell him I'm dead in the water and can't fulfill his needs, and I can't give him an answer when I can. It's put me in the most horrible position as a business owner that you can be in."

The Small Business Administration says it backs an average of \$96 million in small-business lending each day. Having that financing stream frozen sets off a chain reaction of economic pain, said Anthony R. Wilkinson, who heads the National Association of Government Guaranteed Lenders, a trade group. "There are restaurants that aren't being opened and contracts that aren't being fulfilled," he said. "As this drags on into Week 2, people are getting pretty worried."

The toll may not be conspicuous yet in the broader economy, but at the local level, the ripples are spreading. At many banks, direct small business lending is stalled too, because much of the Internal Revenue Service is closed, preventing lenders from checking tax information provided by applicants. Business owners are also grap-

pling with the absence of other crucial government services, like E-Verify, the on-line system companies use to confirm the eligibility of prospective employees to work in the United States.

The uncertainty all of this causes is the most maddening part, said Chris Mittelstaedt, 44, owner of the FruitGuys, a produce-delivery company in South San Francisco, Calif. Mr. Mittelstaedt spent part of last week fielding phone calls from customers of his company's school distribution program, which is financed by federal grants.



A Kitamura machine that was to have gone to Chris Leh's company was still at JBM Technologies in Ivyland, Pa.

Temporary funds came through at the end of the week, but he is frustrated by the confusion he and his customers face. "If businesses are uncertain, they don't spend," he said. "That's really bothersome for us and any growing company."

Mr. Leh, the manufacturer in Pennsylvania, is quick to trace out the ripple effects of his delayed financing. His prospective new client, of course, is kept waiting. So far, Mr. Leh said, the client is being patient and waiting along with him for the shutdown to be resolved. In addition, Mr. Leh has extended offers to two prospective employees, but he will not be able to bring them on until the loan actually closes.

Also waiting, he said, are "the guys that I'm buying the machines from, the guys who move the machines, the electricians that come in and wire things up, the insur-

ance company I'm dealing with — all of those people aren't getting paid right now."

Last week, he intended to turn over a check for \$57,000 to JBM Technologies, a machine-tool distributor based in nearby Ivyland that works with manufacturing companies throughout the mid-Atlantic region. The check, a down payment on the first machine Mr. Leh needs, would have gone to John Watkins, the owner of the 20-person company. Instead, the machine — a \$300,000 Kitamura machining center about the size of a small room — is sitting idle on Mr. Watkins's shop floor.

Mr. Watkins planned to have his staff begin work several days ago customizing Mr. Leh's Kitamura. When the loan was delayed, Mr. Watkins scrambled to redeploy his employees. "We got busy at the right time with another project," he said. "Without that, it would have been really bad."

What irritates Mr. Watkins most about the standoff in Washington is that he sees it as a self-inflicted wound on an economy that was finally beginning to rebound. One of his clients is in negotiations with a Swedish financier about backing the transfer of a major manufacturing line from China to the United States. "We're on the brink of getting people to invest, and then this," Mr. Watkins said. "What does this look like? Who wants to invest in a country that goes through this?"

The impact of the shutdown on some small businesses is obvious and direct. For example, Dee Ann Smith, 56, the owner of Discover Yosemite, a company that runs day tours through Yosemite National Park, estimates that she is losing \$3,500 in ticket sales every day the park remains closed. The hourly employees who lead tours are not being paid, while the salaries for Ms. Smith's office staff are eating into the cash reserve she had set aside to offset the slow winter season.

The tour company has also stopped buying fuel for its buses from a local gas station, and packed lunches for its hikers

from a nearby deli. “That’s 20 to 40 sales a day they’re missing out on,” she said.

For other businesses, the impact of the shutdown is more nuanced. In Lansdowne, Pa., Ari Miller, 37, is trying to build a food company, 1732 Meats. His creations — including jalapeño, black peppercorn and “garlic insanity” bacon — have done well at local farmers’ markets, and he wants to begin wholesale production for retailers.

But Mr. Miller needs certifications from the United States Agriculture Department for every step of his expansion. While the agency’s meat inspectors are deemed essential and remain on the job, its packaging inspectors are not. Mr. Miller had a FedEx envelope stuffed with proposed bacon labels ready to send off for approval Oct. 1 — the day the government shut down. Until those labels are approved, he cannot begin commercial operations.

“We have an investor, we have hard costs — we’re paying rent on our production kitchen even if we’re not using it — but we don’t have any way to generate revenue,” Mr. Miller said. The farmers’ market season ends this month, leaving him with no sales channel until he can get into stores.

He had hoped to ramp up in time for the holidays, but now he is watching that

window start to close. Fifteen business days is the standard turnaround time for packaging approval, he said, but others in the industry have warned him that the Agriculture Department will be inundated when it finally reopens. “We’ve heard that you essentially have to add two to three days for every day they’re closed because of the backlog,” he said.

For many, that is the biggest concern

**“I HAVE TO GO BACK TO MY CUSTOMER AND TELL HIM I’M DEAD IN THE WATER AND CAN’T FULFILL HIS NEEDS, AND I CAN’T GIVE HIM AN ANSWER WHEN I CAN. IT’S PUT ME IN THE MOST HORRIBLE POSITION AS A BUSINESS OWNER THAT YOU CAN BE IN.”**

**CHRIS LEH,**

**OWNER OF A FLEDGLING MANUFACTURING COMPANY**

— that even after the government finally restarts, it could take weeks for the gears to unjam. Lynn Ozer, the president of Small Business Administration and government-guaranteed lending at Susquehanna Bank, has five clients, including Mr. Leh, waiting to close on loans. Many can be fast-tracked once the S.B.A. reopens, but for those that require special handling, she worries how long it will take the agency to dig out.

She is also braced for her loan business

to dry up, especially with the Treasury Department expected to hit its debt ceiling around Oct. 17. The last time Congress had this kind of standoff, in August 2011, business confidence took a dive — and with it, Ms. Ozer said, went her clients’ willingness to borrow money to hire and expand.

Mr. Leh said he was monitoring the debt-ceiling fight in despair. “The thing that’s literally scaring me to death is this reckless behavior,” he said. “They’re going to drive the interest rates up. I’m on a 6 percent variable loan — if it goes up two points, that’s a huge impact for a business my size. And there’s nothing you can do. You just watch the madness continue.”

Ms. Ozer said she heard dozens of times each day from business owners with similar concerns, and it infuriated her.

“Just as small entrepreneurs are willing to take some risks again, the government goes and begins to behave like irresponsible children,” she said. “They make decisions that adversely affect the economy, when it’s so fragile to begin with.

“The real tea party threw tea into the Boston harbor. These people are throwing businesses and people’s salaries.”



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# OPINION: THE 'CLEAN' TRUTH ABOUT MANUFACTURING IN THE U.S.

BY RYAN COSTELLA, THE HUFFINGTON POST

The future is bright for manufacturing and there is no shortage of opportunity for innovation and growth right here in the United States. To do that sustainably, however, we must confront an issue that many businesses are now facing – the Skills Gap.

Despite high unemployment, businesses are struggling to find skilled employees. Compounding the problem, millions of Baby Boomers are preparing to leave the workforce, and we haven't even begun to account for growth.

Will it be possible to fill this gap? If we are struggling to find skilled people today, where will we find them in the future, as the problem magnifies? How do we fix this problem? There is a lot of talk about STEM education as the solution. Many people wonder, "What the heck is STEM?" They are then told it means, "Science, Technology, Engineering, and Math." But that's not really a sufficient explanation.

Frankly, STEM starts with the basics that all people should master in a rudimentary education. The ability to read, write, do math, and think critically are all key pillars, complimented by the ability to show up on time, communicate effectively, and work in teams. People with these skills can be developed and trained to pursue a menagerie of career paths.

Without those foundational skills, the future is bleak.

Click Bond is the global leader in the design and manufacture of adhesive-bonded fasteners and whether we're talking about an entry level accountant, assembly technician, a quality inspector, a top design engineer or the people who package and ship our product across the globe, all aspects of our operation require these foundational skill sets on a daily basis. Unfortunately, even with record unemployment numbers, it remains challenging to find people who can demonstrate these basic, fundamental skills.

Some allege that this gap isn't real and that's it's just an acute problem: manufacturers are just too picky. Others say manufacturers don't pay enough or contend that manufacturing just represents dirty, low-level jobs.

On the notion that we are too selective – the ability to read, write, do math, problem-solve, show up on time, communicate effectively and work in teams isn't some outrageous litmus test for employment; it's the minimum threshold to have a chance at a future on any career path.

As for the argument that our pay is too low – in 2011, the average manufacturing worker in the United States earned \$77,060 annually, including pay and

benefits. The average worker in all industries earned \$60,168. Additionally, manufacturing has the highest multiplier effect of any economic sector (\$1.48 for every \$1 spent).

With respect to our factories being dirty and our jobs being low level – people are constantly impressed with how clean and high tech manufacturing operations are in the 21st century. We sit at the forefront of environmental, safety, technology, security and quality standards. We can't compete globally otherwise.

Beyond these misperceptions, the reality is, the greatest asset we have is our people. This explains why the vast majority of manufacturers fund robust training and education programs in partnership with our local high schools, community colleges and universities.

In Nevada we are engaging with leaders in higher education – especially our community colleges – to ensure that their investments in facilities and curriculum are worthwhile. Last year, we helped deploy a training program that, in just 16 weeks, takes people from the unemployment lines to full time jobs as machine operators. Well over 90% of the graduates achieved full time employment with benefits!

We also partner with workforce

development leaders to ensure that training dollars are aligned with the current and future needs of the marketplace. When these needs are aligned with nationally portable, industry-driven credentials, everyone wins. The training provider gains absolute clarity on the quality of instruction necessary for a successful program, and the student earns a viable credential that proves mastery of a skill.

Further, through proactive engagement with our community and by opening the doors of our factories to students, teachers, parents and the broader community, we are dispelling antiquated stereotypes and, once again, getting people excited about "Made in the USA".

The parts we make at Click Bond help make our fighter jets safer and ensure that millions of people can travel safely around the world without incident. Our colleagues are developing exciting technology and products that are achieving remarkable breakthroughs in medicine, renewable energy, IT, transportation, logistics and so much more. The reality is: manufacturing makes America strong. And all of us must work together to keep it that way.



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Micro-Hole Drilling Service is approved by General Electric for laser cutting/drilling & airflow per P17TF2, P1TF78, P1TF10, ANSI-Z136.1, S-422 and E50TF217 and is AS9100 certified, NADCAP approved for laser cutting/drilling and has achieved Merit Supplier Status.



# THE COMING RISE OF WOMEN IN MANUFACTURING

BY NATALIE SCHILLING , FORBES

What do you think of when you consider a 10-year-old tech company? Progressive? Egalitarian? Now, how about a 125-year-old manufacturing company? Old-school? Male-dominated? You wouldn't be alone.

Manufacturing in the US grew by 517,000 jobs from January 2010 to February 2013 according to a report from the National Women's Law Center. But, since January 2010, women lost more manufacturing roles than they gained. In fact, women's share of the manufacturing sector is currently just over 27 percent – the lowest level since 1971. This means that while women represent nearly half of the total U.S. labor force, they only constitute approximately a quarter of the U.S. manufacturing workforce. How is this possible when women's rights in the workplace have come so far over the same time period?

Outdated and often wrong perceptions of manufacturing have impacted women's desires to join the ranks of manufacturers. A study from Deloitte and the Manufacturing Institute cited the perception of a male-favored culture as a key driver of women's underrepresentation in the industry. There is a sense that historical gender bias excludes women from core managerial roles, such as production supervisors and operations managers, which are key to climbing the industry ladder. Compounding the issue, many people think of manufacturing jobs as dirty, unskilled, back-breaking labor. That's not the case anymore.

For the past 10 years, I've worked in one of the oldest manufacturing companies still in business. I also am a woman, and have been working toward increasing the number of women like me who work in the "traditional" manufacturing industry. That hasn't always been easy. I've heard many women say that manufacturing is too labor-intensive, it won't give them flexibility to manage their responsibilities at home, or that there is no future in the industry. Not only are these perceptions wrong, by keeping women out of the workforce, they are hurting our country's future competitiveness.

## WHY? IT'S SIMPLE

1. Women in Manufacturing is Good for Business. Approximately 600,000 manufacturing jobs are unfilled right now because companies can't find qualified workers to fill them. Women are critical to filling this gap.

Since 2004, a series of studies by Catalyst – a leading nonprofit organization dedicated to expanding opportunities for women in business – found that companies that achieve diversity in their management and on their corporate boards attain better financial results, on average, than other companies.

Catalyst points to many other studies that support these findings as well, including research at the Columbia Business School and the University of Maryland, which found that a higher proportion of women in senior management, not including the CEO, was associated with better firm performance, especially at organizations involved with innovation. McKinsey analysis of large U.S. and Canadian companies found that companies operating in complex environments generated significant returns, amounting to a "robust" 6 percent overall return over a three-year period, when they had a high proportion of women officers, compared to companies with low representation of women officers.

2. It's Individual Opportunity. Yesterday's Rosie the Riveter is today's Stephanie the Stereolithographer, and more. The vast majority of manufacturing roles created during the past few years aren't the low-paying, monotonous jobs out of a Dickens novel. These are high-tech, six-figure-paying jobs where women excel. The Deloitte and Manufacturing Institute report reported that over 75 percent of women surveyed agreed that a manufacturing career is interesting and rewarding, emphasizing compensation and opportunities for challenging assignments as the top reasons to stay in the industry.

3. It's Part of Chipping Away at the Glass Ceiling. It's past time to shed the old stereotypes of what kind of person works in manufacturing. Janne Sigurdsson runs Alcoa AA +0.75%'s smelter in Iceland, which is our lowest-cost and most efficient facility globally. Through clear efforts to increase women at that remote facility, one-third of managers are women. Overall, 22% of the workers are women, and we're striving for 50%. This kind of success happens because more women in manufacturing attract more women to manufacturing. This is why we need more women



in manufacturing today — to show women the huge opportunities in this sector to pave the way for more women in the future, and to ensure the continued success of our manufacturing industry.

## PERHAPS AN EVEN BETTER QUESTION, IS HOW DO WE ACHIEVE THIS?

The good news is that we can make this happen, and the real leadership opportunities are with the manufacturers themselves. We all know that talent development efforts such as increasing STEM education for women is important, but increasing the presence of women in manufacturing is a "push-pull" effort – with the "pull" responsibility lying with the employers themselves. We cannot build supply without first creating a robust demand.

First, we must reframe perceptions of traditional American manufacturing as unprogressive and male-dominated, to high-tech and high-paying, in which both men and women can and do thrive. Next, we need to make sure that manufacturing companies are workplaces organized to support women's success. Corporate leadership must set aggressive goals to proactively create a diverse employee base.

Part of creating a conducive workplace is cultural. We as manufacturers need to demonstrate that we are responsive to the unique work-life challenges that women – especially women who are or who plan to become mothers – face. We may need to allow flexible work schedules or allow women to manage the speed of their careers depending on their responsibilities outside of work. We also need more men to lead the way toward a more diverse and inclusive manufacturing force. While many male leaders embrace diversity, a recent study on White Men Leading Through Diversity and Inclusion showed that most white male leaders aren't aware of how far they still need to go when it comes to leading through diversity and inclusion.



# Congratulations on Making MFG DAY 2013 a Success!



## MANUFACTURING DAY 2013 SAW:

- Over 800 manufacturers host events
- Thousands of students and other visitors get a glimpse of manufacturing in their neighborhoods
- Dozens of community leaders declare their support for MFG DAY and for manufacturers



Collectively, we showed the country that manufacturing is an exciting field with a bright future!

We've included photos of some of the highlights but encourage you to check out the MFG DAY Facebook page for more or check out our YouTube playlist of some of our favorite videos from this year.

And if you haven't already, please share photos of your event and press clippings through social media with the hashtag #mfgday13. The rest of the MFG DAY community wants to celebrate your success!

Sincerely,

The MFG DAY Team



## MANUFACTURING DAY GIVES ENGINEERING STUDENTS AN UP-CLOSE LOOK AT INDUSTRIES

BY PAULETTE LASH RITCHIE , THE TAMPA BAY TIMES

Local high school engineering students recently received an up-close look at some of the places they might work one day, and learned some valuable lessons.

The Hernando and Pasco county commissions proclaimed Oct. 4 as Manufacturing Day, and to mark the occasion Pasco-Hernando Community College, under the direction of Margie Burnham, the college's Florida trade grant project manager, part-

nered with local manufacturers to welcome engineering students from Nature Coast Technical and River Ridge high schools.

Hernando students visited Accuform Signs, Alumi-Guard, Emery Thompson, AME, Time Wise Mobile Outreach Skills Training and Intrepid Machines.

At Alumi-Guard students began their tour by viewing a video that introduced them to manufacturing workforce needs

and workforce advantages. Then plant manager John Halcomb led the students into the plant, where aluminum gates are assembled, painted, welded and boxed.

This impressed sophomore William Henriquez, 15.

"This is pretty cool," he said.

The students saw a demonstration of an aluminum stick being dipped into a high-pH cleaner, coming out noticeably lighter in col-



or. If it were to be painted, it would be rinsed and sealed to hold the paint.

The students were shown bags of the powder paint the company uses — brown, black, yellow and white. It is baked onto the aluminum.

The tour continued with a look at the accessories packing area, where things such as post caps and scrolling are packaged with their hardware.

Halcomb explained why the company participated in Manufacturing Day:

“Chip (Howison, chief operations officer) and myself believe that these kids are our future. I’ve spent my life in manufacturing. I love it.”

After a walk through the welding area, Holcomb took time to caution the students that getting a job often means needing to stay out of trouble. He said his company requires prospective employees to take drug tests and that he will not hire anyone with a criminal record.

Freshman Chandler Hatcher, 14, was impressed with the aluminum gate plant.

“I like Alumi-Guard,” he said. “How they made all their fencing, machines; the welding was really cool. ... I want to go to college and be an engineer.”

The next stop for the group of students

was the Time Wise Mobile Outreach Skills Training vehicle. They were met by Larry Meadows, who helped establish the company, which has five semitrailers and two recreational vehicles in 14 states.

The students entered and were each seated at computers, which can be programmed to instruct students in various skills. A manufacturer in need of skilled employees, such as welders, can contract with Time Wise, which will then advertise for and screen prospective employees. Then they will intensively train them for two weeks in the necessary skills.

“If you can manufacture it,” Meadows said, “we can devise a curriculum around it.”

The last stop on the tour was Intrepid Machine. They were met by president Tim Tabor.

“A lot of the products we make we have to measure,” Tabor said, emphasizing the importance of mathematics. “It’s very important in manufacturing. Everything we make has to be checked.”

Tabor was joined by company representative Kim Robbins, who explained how important the company’s products are.

“We make the parachute release buckles for the United States Air Force pilots,” she said. “The lives of our military depend on us.”

The company produces precision parts

for aerospace, aircraft, satellite, microwave and defense systems.

Freshman Adrianna Moore, 14, appreciated being able to “see what the different companies made and how they work.” She hopes to go to Brevard College in North Carolina to learn how to make prosthetics. She explained that when she was a little girl, when her dog chewed the legs off her dolls, she would fashion clay legs to replace them.

Sophomore Kyle McInerney, 16, said he has been interested in manufacturing for a long time and was impressed with Alumi-Guard’s welding. And he appreciated seeing the quality of production in both plants.

“I like that a lot of the parts are made for the military. Also it provides jobs for a lot of Americans,” he said.

Kyle plans to earn a doctorate in mechanical engineering for the automotive industry.

“The harder you work, the more you succeed,” he said.

He also took to heart what he heard on Manufacturing Day.

“When (Tim Tabor) said to keep your math up, that’s what I already knew,” he said, “I like all subjects, but math I push the hardest.”



## NWPA NTMA MEMBER COMPANIES OPENED THEIR DOORS IN CELEBRATION OF MANUFACTURING DAY

Northwestern Pennsylvania (NWPA) NTMA celebrated Manufacturing Day on October 4 by offering busing funds for school groups to tour businesses in the region. Many thanks to NWPA NTMA Member Companies: C&J Industries, Tech Molded Plastics, NuTec, Peters’



**MFG Day Tour: Crawford Tech Center at Pennsylvania Tool & Gages in Meadville**

Heat Treating, Kuhn Tool & Die Co., JBM Technologies, PA Tool & Gages, Highpoint Tool & Machine, Bra-Vor, plus local training provider, Precision Manufacturing Institute, for opening their doors for student tours on October 4 and throughout the month. There were eight groups totaling over 145 students from schools in Erie and Crawford County touring on Manufacturing Day. There are plans for five additional school groups to tour later this month. NWPA NTMA appreciates our member’s support of not only hosting the tours, but also in making funds available to offset busing expenses for the participating schools through the success of our chapter’s events.

### MANUFACTURING DAY EVE

Exact On-line, a National Association Member of the NTMA, hosted a social gathering to Celebrate Manufacturing



**Exact online; Brief Introduction of Steve Leavitt, Exact Online**

on October 3. Live jazz music, delicious food and drink at a beautiful venue at the Iroquois Club, Conneaut Lake, set the perfect atmosphere for networking among over 40 members. It was a great launch to MFG Day activities!



# NATIONAL ASSOCIATION OF MANUFACTURERS COMMENTS ON THE 2014 NATIONAL TRADE ESTIMATE REPORT ON FOREIGN TRADE BARRIERS

BY LINDA M. DEMPSEY



Trade barriers are on the rise around the world, costing jobs, growth and economic opportunity. According to one recent study, governments have introduced nearly 700 new protectionist measures since 2008. Nearly all of those measures remain in force. As explained further below, manufacturers in the United States face not only traditional trade and investment restrictions, but also the serious and growing challenges of forced localization, intellectual property theft, and export bans. In all these areas, G20 countries are leading offenders.

To address and eliminate these barriers, the United States must leverage all available tools. It must secure ambitious, high-standard commitments in ongoing trade agreement negotiations – particularly in areas like intellectual property, cross-border data flows and investment. It must forge global coalitions in forums like the G20 and APEC and aggressively pursue dispute settlement cases, where appropriate. It must sharpen existing tools and consider common sense updates to preference program eligibility criteria.

## 1. IMPORT POLICIES

Many countries continue to impose excessively high tariffs on imports of manufactured goods. Argentina, Brazil and India all maintain average applied tariffs that are at least three times higher than equivalent U.S. rates, according to data compiled by the WTO. Indian tariffs can range as high as 75 percent for automobiles and motorcycles and 300 percent for textiles. Brazil raised tariffs on some 100 products in October 2012. Expanding and bringing additional countries into the WTO Information Technology Agreement would deliver significant benefits.

High tariffs are often just one of many import barriers manufacturers face in overseas markets. For example, Argentina maintains a wide array of protectionist measures designed to boost local production, protect domestic industry and address balance of payments concerns. These measures appear to violate Argentina's obligations under the General Agreement on Tariffs and Trade (GATT) and the WTO Agreements

on Customs Valuation, Import Licensing Procedures, Technical Barriers to Trade and Trade Related Investment Measures.

To benefit a few local companies, Argentina bans the importation of many processed foods, including ketchup, tomato sauces, fruit and vegetable juices, chocolates, olive oil, canned corn, potato chips, bacon and biscuits. Through an arbitrary and non-transparent reference pricing regime, it delays and adds significantly to the cost of importing competitive products with invoice prices less than the "reference values" for those products determined by government authorities.

For those products that are permitted to enter Argentine commerce, importers must seek advance approval, both from the national tax agency and, separately, from the Secretary for Domestic Commerce. In addition, as many as 4,000 products are subject to non-automatic import licensing procedures entering the country, including electronics, certain fabrics, foodstuffs, paper products and bicycles and bicycle parts. These licenses generally are not granted within the 60-day period required by the WTO.

In Brazil, importers not only face high duties, but also a series of cascading taxes and additional fees that can increase the cost of imported goods to end consumers by as much as 60 percent or more. Even where imported goods do not compete directly with domestic products, these cascading taxes and fees can weaken aggregate demand and limit access to technology and equipment by Brazilian consumers. They can needlessly add to the complexity and challenge of doing business.

Colombia has long required importers of certain trucks either to demonstrate that one truck was scrapped for each imported truck or to pay a corresponding fee. Earlier this year, the Colombian government abruptly amended its "scrappage" regime and eliminated the fee option without notice to importers or the WTO. This move has harmed overseas manufacturers who supply more than 90 percent of Colombia's truck market. It appears to violate provisions of the GATT

and the WTO Agreement on Technical Barriers to Trade.

## 2. INVESTMENT BARRIERS

Overseas investment is critical to expanding U.S. exports and sales to foreign markets. In 2010 (the last year for which data are available), businesses with foreign investments accounted for less than a quarter of U.S. private sector output, but generated about 45 percent of total U.S. goods exports. The vast majority of sales by overseas subsidiaries of U.S. companies, which equaled about \$3.7 trillion that same year, were destined for other foreign markets.

While the United States has a very open investment climate, other countries restrict the ability of U.S. firms to invest through a variety of laws and regulations. These restrictions undermine the ability of manufacturers in the United States to access overseas markets and grow their businesses. Some countries, such as China, prohibit foreign investment in some sectors and limit participation in others to a certain equity percentage. Manufacturers are seeking an end to these barriers through the U.S.-China Bilateral Investment Treaty negotiations.

Other countries with which the United States is negotiating investment commitments also maintain substantial barriers that need to be eliminated to address competitive imbalances. For example, Canada and Australia maintain non-national security-based investment screening mechanisms. Malaysia prevents overseas individuals and firms from acquiring more than a 70 percent stake in local businesses. Mexico and Vietnam limit foreign investment in many sectors.

India maintains substantial barriers to investments, including performance requirements that limit investment based on requirements for local production or sourcing. Other countries, such as Ecuador and Venezuela, have taken measures against foreign investors in ways that undermine their investment climates. Additional countries where manufacturers are interested in seeking reductions in investment restrictions include Brazil, Equatorial Guinea, Ghana, Indonesia, Nigeria, the Philippines and

Russia.

### 3. FORCED LOCALIZATION BARRIERS

Forced localization barriers, including measures designed to protect, favor or stimulate domestic industries, services providers and/or intellectual property at the expense of goods, services and/or intellectual property from other countries, are proliferating in key emerging markets. These barriers appear to violate fundamental national treatment provisions of the GATT and various WTO Agreements. Some are already the subject of ongoing WTO dispute settlement cases.

Forced localization poses a serious and growing threat to manufacturing and jobs in the United States, blocking trade in strategic and innovation-intensive sectors and undermining hard-won technology and productivity gains that have made our nation one of the most competitive producers in the world. A recent analysis by the Peterson Institute for International Economics estimated that the reduction in world trade caused by just one type of forced localization barrier, local content requirements, amounts to \$93 billion annually.

India's growing array of forced localization barriers poses a particularly serious unfair competitive challenge to manufacturers in the United States. These barriers add to the cost and complexity of exporting to one of the most protectionist countries in the world and are contributing to a widening merchandise trade deficit that already stands at more than \$18 billion. India is the third largest economy in the world, according to the World Bank, but scores last among G20 countries on the Bank's Ease of Doing Business index.

Guided by a manufacturing policy issued in late 2011, India is systematically forcing the local production of everything from information technology and clean energy equipment to medicines and medical devices. Over the last two years, it has announced a Preferential Market Access (PMA) policy that would require certain computers and electronics sold in India to be produced there. It has classified some telecommunications products "security sensitive" for the purpose of requiring domestic production.

To benefit domestic generic drug companies that rely on the United States market for as much as 60 percent of their global sales, India has denied, revoked or compulsory licensed well over a dozen innovative cancer, diabetes and glaucoma medicines. A number of these medicines were dispensed free of charge or at significantly reduced prices. India bans imports of remanufac-

tured medical devices, but permits the sale of devices remanufactured domestically.

In the energy sector, India requires solar energy developers to use solar modules and cells manufactured domestically. India currently is considering forced localization rules for power generation that would require developers of so-called "ultra mega power projects" to source from a few local companies. The United States has rightly challenged India's solar energy local content requirements in the WTO. It should consider similar action if India moves ahead with similar rules for power projects.

To address the threat of India's discriminatory forced localization policies on manufacturing and jobs in the United States, the NAM and 16 other leading business associations representing nearly every sector of the U.S. economy have united to form the Alliance for Fair Trade with India (AFTI) (<http://aftindia.org>). AFTI is working with Congress, the Administration and partners around the world to end India's unfair policies and to ensure they are not repeated in the future.

Russia maintains forced localization barriers in the medicines and telecommunications sectors. It discriminates against U.S. medicines exporters in favor of domestic producers through a national reimbursement system that gives Russian companies a 15 percent price preference and allows only domestic companies to request annual adjustment of registered prices. The government reserves certain telecommunications opportunities only for equipment made in Russia by majority-owned Russian firms.

China continues to discriminate against imports of automotive, steel, telecommunications and other products through investment restrictions, subsidies and de facto local sourcing and technology transfer requirements. Many other emerging markets are watching and learning from these discriminatory barriers, including Indonesia and South Africa. If allowed to stand, NAM members are concerned that they may well spread quickly to other sectors and countries.

After eliminating forced localization barriers in the ICT sector in the early 1990s, Brazil is considering a significant step backward. The Brazilian Congress currently is debating a local data storage requirement that would require all data relating to Brazilian operations of both domestic and international companies, as well as Brazilian citizens, to be stored in Brazil. Such a requirement would impose steep costs and

other challenges on data storage providers and the many manufacturers who rely on them.

Many other countries already restrict cross-border data flows. China, India and Malaysia maintain data residency laws that force businesses to store data they collect in those markets on local servers. China also is considering draft rules that would require Internet-based mapping applications and services to locate data servers there. Indonesia has also put in place rules to require the use of local data centers and servers. To comply with tax laws, companies operating in New Zealand must store business records in local data centers.

Several countries require local testing to approve telecommunications products for import and marketing. Rather than allow testing by any lab certified by an independent certification body, regardless of location, these countries mandate testing by designated local facilities. Such trade barriers impose additional time and expense for manufacturers. Countries with local testing requirements include Brazil, China, Korea, Russia and Taiwan. Mexico is considering such requirements.

### 4. LACK OF INTELLECTUAL PROPERTY PROTECTION AND ENFORCEMENT

Manufacturers of agricultural chemicals, auto parts, consumer goods, machinery, medicines, software and a wide array of other products continue to face the persistent threat of counterfeiting and piracy in and from China, Russia and other emerging markets. Fakes increasingly are marketed via online auction sites based in China and distributed worldwide. They are manufactured in and transit through foreign trade zones. They continue to cause serious economic damage and present significant health and safety risks for consumers.

In these countries and elsewhere, lax enforcement and the absence of deterrent penalties encourages and enables counterfeiting and piracy. NAM members are concerned that administrative fines for intellectual property infringement in China are too low and used too infrequently. High value and volume thresholds must be met to initiate criminal prosecution and civil damages are often inadequate. As a result, counterfeiters and pirates have come to see fines merely as a cost of doing business.

To help meet this challenge and stop unfair competition from the use of stolen intellectual property, the NAM has joined more than a dozen other business associations and

CONTINUED ON — P31



# Hannover Messe 2014

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Leading Trade Fair for Environmental Technology Following its successful launch, the Leading Trade Fair for Environmental Technology is being further expanded. Themes such as sustainable production,

techniques for safeguarding air and water quality and the recycling industry attract a lot of interest from visitors and the media.

Green technologies, developed by industry for industry, form the core of the exhibition.

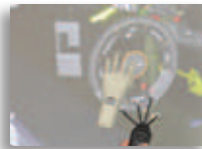


### INDUSTRIAL AUTOMATION

The international profile of the event and the broad spectrum of topics and trends covered by Industrial Automation offers exhibitors new opportunities to tap into global markets and thus helps secure your

business success.

In 2014 Industrial Automation will again take up the themes that interest trade visitors from various sectors: the networking of automation and IT, process automation, energy and materials efficiency, robotics and systems integration, as well as smart systems offering solutions in assembly and handling.



### DIGITAL FACTORY

Leading Trade Fair for Integrated Processes and IT Solutions.

From the very start the integration of all processes in the industrial value chain has been the core topic of Digital Factory, the Leading Trade Fair for Integrated Processes and IT Solutions.

This focus was reflected by the HANNOVER MESSE slogan in 2013 – Integrated Industry. Embedded software is the most important driver of innovative products, while IT solutions such as those showcased at Digital Factory are the key tools for developing and manufacturing these products.



### INDUSTRIAL SUPPLY

Boasting highly specialized expertise and adaptability, industrial suppliers play an important role in their customers' ongoing drive for innovation.

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### RESEARCH & TECHNOLOGY

Leading Trade Fair for R&D and Technology Transfer. Industry worldwide faces enormous challenges.

In order to deal with complex issues such as the continuing integration of industrial processes, the transition to renewable energy, the efficient use of resources, sustainability, mobility, lightweight construction and the development of alternative resources and new materials, industry needs science. At the same time, R&D professionals need effective partners in industry and government in order to market their innovations successfully.

some 275 manufacturers across the country to form the National Alliance for Jobs and Innovation (NAJI) (<http://naji.org>). By addressing the unfair cost advantage that results when foreign manufacturers use pirated software and other stolen intellectual property, NAJI hopes to increase awareness and ensure a level playing field for businesses in the United States.

Despite recent progress in addressing China's indigenous innovation strategy in bilateral forums, NAM members continue to face unwarranted requests from government entities for certain technology, intellectual property or confidential information in connection with importation, and approval of investments, licenses and permits. For example, China is requiring importers of certain chemical formulations to supply proprietary information, including the name and percentage of each specific monomer, as a condition of customs clearance.

Protection of undisclosed test and other data remains a serious problem in Russia and India. Neither country effectively protects against unfair commercial use of undisclosed test and other data generated to obtain marketing approval for pharmaceutical and agrochemical products. Lack of effective trade secrets protection and enforcement is a growing challenge in many markets. Strong trade secrets commitments must be a top priority in Trans-Pacific Partnership and Transatlantic Trade and Investment Partnership negotiations.

Australia has enacted legislation and regulations prohibiting the use of trademarks on tobacco products or "anywhere on the retail packaging of tobacco products". This measure harms the use of all types of trademarks and appears to violate Australia's commitments under multiple articles of the WTO Agreement on Trade Related Aspects of Intellectual Property Rights. NAM members are concerned that the destruction of trademark rights in the tobacco context will have ramifications globally across other industries, including food and beverages.

#### 5. EXPORT RESTRICTIONS

Many countries seek to restrict or limit the export of strategic natural resources necessary for the production of a wide range of manufactured goods. These restrictions are severing longstanding supply chains and driving up costs, with serious competitive implications for businesses in the United States and around the world. To give their own domestic industries an unfair commercial advantage, China, Indonesia, India, Russia and other countries have imposed damaging quantitative restrictions or taxes on certain minerals and ores.

China has imposed export restrictions on both raw materials and rare earths. Both have been the subject of WTO challenges brought by the United States and other countries. After clear findings by the WTO Appellate Body that China's export taxes and quotas on raw materials violated core international trade rules, China announced

that it had eliminated these measures. But China's export duties, quotas, export price requirements and licensing regime for rare earths continue to pose similar problems, which a WTO panel currently is reviewing.

Indonesia implemented an export ban on unprocessed mineral ores in May 2012, with the goal of driving investment and growing in domestic refining capacity. While companies with business licenses to build smelters were exempted temporarily (but taxed 20 percent on their exports), the ban will apply to all exports by January 2014. There are some indications that the government may be moving to relax the ban, which the United States should urge be done as soon as possible.

India maintains trade distorting export taxes on a variety of iron ore products. It has increased those taxes in recent years, harming manufacturers in the United States. Russia maintains export duties on a wide range of products, including scrap metals, hydrocarbons and agricultural products.

Other countries, including Argentina, Brazil, Indonesia and Malaysia, charge differential export taxes on value-added agricultural products and other goods. These taxes can act as an export subsidy for value-added products and create competitive advantages for local downstream processors of the taxed product, limiting U.S. exports and sales.



October has been proclaimed Manufacturing Month in Wisconsin. Manufacturing is a nearly \$50 billion a year contributor to the state's economy and employs more than 450,000 workers.

As part of Manufacturing Month, many area manufacturing facilities are opened their doors to students from local schools. Keith Wise, Community Relations and Training Manager, of Stoughton Trailers in Stoughton invited McFarland High School students in for a tour. MHS Technology & Engineering teachers Travis Ray and Kevin Sukow along with Cindy Brady, School to Career Coordinator, took a group of 50 students to visit the facility.

Students were given a tour of the com-

pany and were able to follow the progression of steps and processes needed to move from flat steel to fully equipped, ready to haul semi-trailers. Tour guides included vice presidents, welding specialists, and production managers.

Students were impressed by the level of automation and usage of robotics.

"I was surprised at the number of female welders I saw," Arleta Zember said.

"It was really great of Stoughton Trailers to open up their manufacturing facility to our students so that they can see what manufacturing is in a real-world setting," Sukow said. "The event exposed the students to the various careers within manufacturing, from operators to engineers, quality control to production management. It was also nice to show students how some of the skills they

learn in school, such as welding, are used in production, and why the skills are important to understand regardless of what their career tracks may be. I can't thank Stoughton Trailers enough for the experience they provided to our students."

At the conclusion of the tour, participants were invited to take part in an Education Fair, where they had the opportunity to speak with members of the Manufacturing, Engineering, Human Resources, Maintenance, Safety, Sales, Purchasing, Quality Control and Welding departments, as well as being able to take an up close look at the products manufactured by the company.



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# AFFORDABLE CARE ACT

BY LISA D NELSON

The goal of the ACA was to insure more Americans thereby making health-care more affordable. They also wanted to make coverage more secure so that anyone could purchase a plan and a carrier could not terminate coverage for use of the plan. Furthermore, they wanted to improve the quality by monitoring the outcomes. They also believed that by insuring more people they could deliver more care at lower price.

100 years ago Henry Ford attempted to make the Model T Ford more affordable by implementing an assembly line. With the implementation of an assembly one he was able to drive the cost of a car down from 850 to 260 per vehicle. He also continued to make a profit, and you could have the car in any color as long as you liked black.

It is 100 years later and the federal government is attempting to use a method that was once and has always been successful in the manufacturing industry. What made Henry Fords model successful is that every vehicle was the same and with the implementation of an assembly line they increased the speed at which they could produce a vehicle.

This model can not work with people for many reasons. First and foremost each person is an individual and no two people are alike. When a doctor treats a patient he must asses each individual factor into his healthcare recommendations, oftentimes a medication or treatment that will work for one person will not have the same effect on someone else. For example a patient that has a heart surgery may be given a few days to recover and do well because they have few complications. However, another per-

son that may suffer from diabetes or have other complications may take several more days to recover. If we monitor and grade doctors on their outcomes we must be observant of the differences in each case.

Unlike manufacturing the same number of doctors can not be expected to treat additional patients or limit the time they spend with each patient. Again each patient being different a doctor must asses their needs on an individual basis. There has been an overwhelming amount of additional paperwork that medical offices are now processing, this creates additional staffing needs and additional time constraints on the doctors ability to focus on their patients. It is a national fact that many of the older doctors in our country will retire to avoid the new regulations and additional monitoring and paperwork.

In 2008 our nations biggest concern was that we had 40-50 million Americans that were uninsured. Some could not afford coverage, some were to sick to purchase it and others choose not to buy it due to personal reasons. If on January 1 2014 we will have insured the entire nation our next concern will be how do we deliver 40% more care. In addition to many doctors retiring there has been a drop in enrollment in most medical schools across the nation. How can we have fewer doctors caring for more people. We can not simply institute an assembly line.

The concept of preventive care is a great idea and in due time it may help to bring costs down with early detection of various diseases. However, this will take time and it rely's on the people to actually go to the

doctor.

The one factor that always jumps out at me as a mother, consumer and insurance agent is that by insuring more people we can ultimately lower the cost. Or as the ACA put it we will give more people more care at a lower price. The reason more care at a lower price is impossible is because no one ever noticed that we live in an aging society. The average American is over 40. And it is a fact that as people age the amount of medical care they need increases.

In summary I wish that we could treat society like an assembly line and monitor each person as they roll off of the line and bring costs down as they increase the speed of treatment. But no two people are alike. We can give everyone coverage and disburse the costs among society as a whole, and we can make sure no one loses their plan if they are sick. We can ask people to have their preventive care done, but it may never happen. We can impose additional regulations on Doctors and make them more accountable for outcomes. But remember Doctors are people treating people and a doctors personal standards always hope for the best outcome. A doctor provides the best possible care because that is their goal. As far as cost reduction with more care in an aging population, where there will soon be fewer doctors, this is a mathematical impossibility. The only result of this reform will be higher costs, fewer doctors and ultimately less care. In a word RATIONING.



## XACT WIRE EDM CORPORATION LAUNCHES NEW WEBSITE.

XactWire EDM Corporation, one of the largest wire EDM facilities in the United States, with 50 EDM's and two locations, has recently revised its website [www.xactedm.com](http://www.xactedm.com). The new website offers a contemporary design with much improved navigation. The site is a great resource to use to learn about the wire EDM process. Improvements include updated video and photo gallery sections as well as a simple



to use file transfer section for RFQ's. The video on "How Wire EDM Works" is extremely popular.

Established in 1984, Xact Wire EDM

Corporation combines people and technology to provide precision wire EDM services to its customers in the aerospace, medical, defense, energy, packaging, tool, die & machining industries. For more information visit our web site.

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



# NASA PREPARING TO LAUNCH 3-D PRINTER INTO SPACE

BY MARTHA MENDOZA

NASA is preparing to launch a 3-D printer into space next year, a toaster-sized game changer that greatly reduces the need for astronauts to load up with every tool, spare part or supply they might ever need.

The printers would serve as a flying factory of infinite designs, creating objects by extruding layer upon layer of plastic from long strands coiled around large spools. Doctors use them to make replacement joints and artists use them to build exquisite jewelry.

In NASA labs, engineers are 3-D printing small satellites that could shoot out of the Space Station and transmit data to earth, as well as replacement parts and rocket pieces that can survive extreme temperatures.

"Any time we realize we can 3-D print something in space, it's like Christmas," said inventor Andrew Filo, who is consulting with NASA on the project. "You can get rid of concepts like rationing, scarce or irreplaceable."

The spools of plastic could eventually replace racks of extra instruments and hard-



Aaron Kemmer, CEO and co-founder of Made in Space, looks through some items made with the company's 3D printer which will eventually be used in space on Monday, Sept. 16, 2013, in Mountain View, Calif. One of the biggest obstacles to space exploration is that you need to bring everything with you: tools, equipment, spare parts, satellites. NASA is working with a Silicon Valley company to make specialized 3D printers that would allow astronauts to produce the things they need on-demand when they're in space, allowing them to travel farther from the Earth. (AP Photo/Marcio Jose Sanchez)

ware, although the upcoming mission is just a demonstration printing job.

"If you want to be adaptable, you have to be able to design and manufacture on the fly, and that's where 3-D printing in space comes in," said Dave Kormsmeier, director of engineering at NASA's Ames Research Center at Moffett Field, about 35 miles south of San Francisco.

For the first 3-D printer in space test slated for fall 2014, NASA had more than a dozen machines to choose from, ranging from \$300 desktop models to \$500,000 warehouse builders.

All of them, however, were built for use on Earth, and space travel presented challenges, from the loads and vibrations of launch to the stresses of working in orbit, including microgravity, differing air pressures, limited power and variable temperatures.

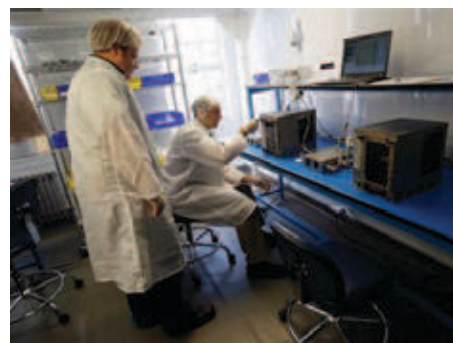
As a result, NASA hired Silicon Valley startup Made In Space to build something entirely new.

"Imagine an astronaut needing to make a life-or-death repair on the International Space Station," said Aaron Kemmer, CEO of Made in Space. "Rather than hoping that the necessary parts and tools are on the station already, what if the parts could be 3-D printed when they needed them?"

When staffing his start up in 2010, Kemmer and his partners warned engineers there would be ups and downs - nauseating ones. In more than a dozen flights in NASA's "vomit comet" reduced-gravity aircraft, Made In Space scientists tested printer after printer.

Last week at their headquarters on NASA's campus, Made In Space engineers in lab coats and hair nets tinkered with a sealed 3-D printer in a dust free cleanroom, preparing the models for further pre-launch tests.

As proof of its utility, the team revisited the notorious 1970 moon-bound Apollo 13 breakdown, when astronauts were forced to jerry-rig a lifesaving carbon dioxide filter holder with a plastic bag, a manual cover



Project manager Matthew Napoli, left, and director of research and development Michael Snyder test a 3D printer which will eventually be used in space on Monday, Sept. 16, 2013, at Made in Space in Mountain View, Calif. One of the biggest obstacles to space exploration is that you need to bring everything with you: tools, equipment, spare parts, satellites. NASA is working with a Silicon Valley company to make specialized 3D printers that would allow astronauts to produce the things they need on-demand when they're in space, allowing them to travel farther from the Earth. (AP Photo/Marcio Jose Sanchez)

and duct tape. A 3-D printer could have solved the problem in minutes.

"Safety has been one of our biggest concerns," said strategic officer Michael Chen. Sparks, breakages and electric surges can have grave consequences in the space station. "But when we get it right, we believe these are the only way to manifest living in space," he said.

Space-bound printers will also, eventually, need to capture gasses emitted from the extruded plastics, be able to print their own parts for self-repairs and have some abilities to recycle printed products into new ones.



Tools and parts made by a 3D printer are displayed at Made in Space on Monday, Sept. 16, 2013, in Mountain View, Calif. One of the biggest obstacles to space exploration is that you need to bring everything with you: tools, equipment, spare parts, satellites. NASA is working with a Silicon Valley company to make specialized 3D printers that would allow astronauts to produce the things they need on-demand when they're in space, allowing them to travel farther from the Earth. (AP Photo/Marcio Jose Sanchez)



Scott Crump, who helped develop 3-D printing technology in 1988 by making a toy frog for his daughter with a glue gun in his kitchen, said he never conceived how pivotal it could be for space travel. But he said that until metal becomes commonly used in 3-D printers, the applications will be limited.

"The good news is that you don't have to have this huge amount of inventory in space, but the bad news is now you need materials, in this case filament, and a lot of power," he said.

NASA and other international space agencies are pressing forward with 3-D printing. Mastering space manufacturing, along with finding and producing water and food on the moon or other planets, could lead to living on space.

Last month, the space agency awarded Bothell, Wash.-based Tethers Unlimited \$500,000 toward a project to use 3-D printing and robots to build massive antennas and solar power generators in space by 2020. It replaces the expensive and cumbersome process of building foldable parts on Earth and assembling them in orbit.

For Made In Space's debut, when it's shuttled up to the space station aboard a spaceflight cargo resupply mission, the initial prints will be tests - different small shapes to be studied for strength and accuracy. They're also discussing with NASA about what the first real piece that they should print will be.

Whatever it is, it will be a historic and symbolic item sure to end up in a museum someday.

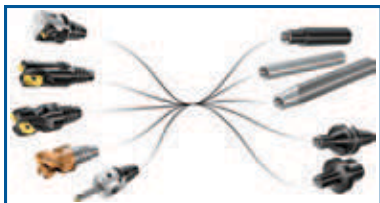
"It's not something we're discussing publicly right now," said CEO Kemmer. Then, Jason Dunn, the chief technology officer, beckoned, dropping his voice as he grinned.

"We're going to build a Death Star," he joked softly, referring to the giant space station in the "Star Wars" movies that could blow up planets. "Then it's all going to be over."



## HINGED SHAFT COLLARS SIMPLIFY ASSEMBLY IN REMOTE LOCATIONS

October 1st marked the expansion of Sandvik Coromant's exchangeable-head (EH) system to include a wide assortment of solid carbide heads, indexable milling cutters, boring heads, integrated machine adaptors and different shanks.



The exchangeable head coupling is based on a self-centering screw thread for secure mounting and maximum strength and security. The coupling has a physical stop which makes it easy to feel when the head is correctly tightened and helps to not overstress the clamping. The conical portion is shaped to provide best run-out. Pre-loaded taper and flange contacts provide an optimized modular connection with extreme rigidity and strength.

These new extensions meet the requirements for long reach in large machining centres in the diameter range of 0.394–1.26 inch (10–32 mm) for milling and 0.039–1.42 inch (1–36 mm) for boring.

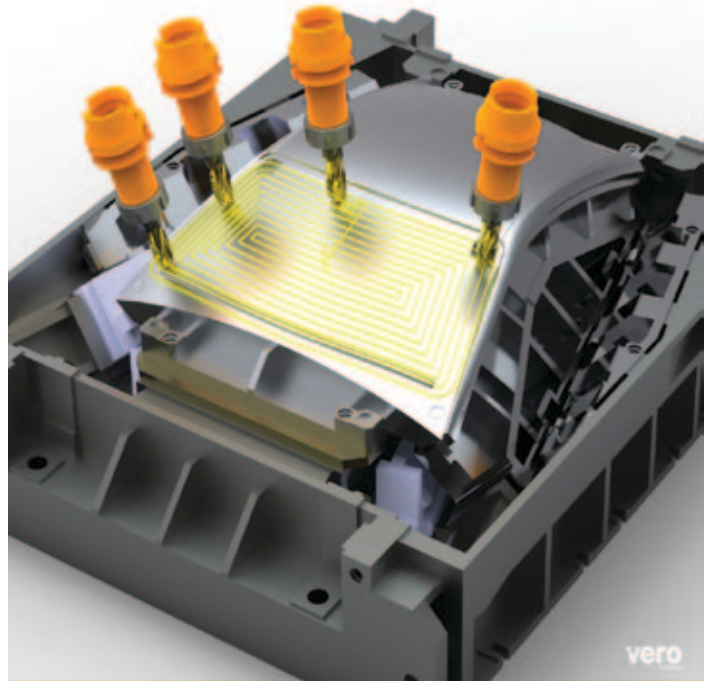


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# PUMPS 2000 AMERICA INTRODUCES DUAL-DIAPHRAGM, HIGH-VOLUME, 3" BALL VALVE PUMP THAT SETS THE INDUSTRY STANDARD FOR FLOW RATE



Pumps 2000 America is now offering the latest technology in diaphragm pumps by introducing the 3" HV High-Volume Ball Valve Pump. This air-operated, dual-diaphragm pump has a flow rate of 417 gpm -- significantly greater volume at every point on the curve than competing models are capable of handling. Although the outer chamber and ports are 3 inches, this pump uses a 4-inch patented air motor which contains the best features of the Pumps 2000 line, utilizing new technology for increased efficiency. The 3" HV

High-Volume Ball Valve Pump is ideal for the most demanding applications in many industries, including mine & tunneling, chemical manufacturing, construction, food processing, general manufacturing, marine, oil & gas production, pollution control, pulp & paper manufacturing, railroad, sanitation, and

water & wastewater treatment.

"The 3" HV Ball Valve Pump will out-perform and outlast all others due to



a number a number of patented design features," says Lou Beatty, director of sales and marketing. "Several patented

features make it possible for Pumps 2000 to offer market-leading low life cycle cost while delivering outstanding performance in the harshest environments as these pumps are designed specifically to handle abrasive, solid-laden and corrosive fluids." Key features and benefits include:

- Patented long-life diaphragm and self-cleaning valve
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# NAMII WELCOMES NEW MEMBERS

NAMII GAINS ONE UPGRADED MEMBER, TWO FULL AND FIVE SUPPORTING MEMBERS

NAMII, the National Additive Manufacturing Innovation Institute, driven by the National Center for Defense Manufacturing and Machining (NCDMM), proudly recognizes an existing membership upgrade and welcomes seven new members:

## LEAD MEMBER

### • WOHLERS ASSOCIATES, INC.

Wohlers Associates, involved with NAMII from day one as an original proposal member, upgraded its NAMII membership from Full to Lead. Led by Terry Wohlers, a renowned industry expert, Wohlers Associates is an independent consulting firm, providing technical and strategic advice on the new development and trends in rapid product development, additive manufacturing, and 3D printing.

## FULL MEMBERS

### • ILLINOIS TOOL WORKS (ITW)

ITW is a Fortune 150 company and one of the world's leading diversified manufacturers of specialized industrial equipment, consumables, and related service businesses.

### • TOBYHANNA ARMY DEPOT

Tobyhanna is the largest, full-service electronics maintenance facility in the Department of Defense (DoD), providing total logistics support, including sustainment, design, manufacturer, repair and overhaul of hundreds of electronic systems.

## SUPPORTING MEMBERS

### • 3M

3M is the innovation company that



never stops inventing. 3M's culture of creative collaboration inspires a never-ending stream of powerful technologies that make life better by capturing the spark of new ideas and transforming them into thousands of ingenious products.

### • DEFORMATION CONTROL TECHNOLOGY, INC.

Deformation Control Technology, founded in 1982 by Dr. B. Lynn Ferguson, is a metallurgical process engineering consulting and software company, specializing in process engineering design and thermal/stress analyses for metal parts and components.

### • RHINESTAHL CORPORATION

Rhinestahl, a privately owned company, is a supplier of aerospace tooling and high-tech machining expertise, manufacturing tools for repair and inspection of gas turbine engines, aircraft ground-support tools, and inspection borescopes.

### • SCIACKY, INC.

Sciaky, a subsidiary of Phillips Service Industries (PSI), is an additive manufacturing pioneer that provides a wide range of innovative welding products and contract welding services to manufacturers in the aerospace, defense, automotive, and health care industries.

### • USA SCIENCE & ENGINEERING FESTIVAL

As the country's only national festival and the world's largest STEM outreach

event, the USA Science & Engineering Festival works to increase public awareness about the importance of science and to encourage youth to pursue careers in science and engineering.

"All of us at NAMII gratefully acknowledge Wohlers Associates for its steadfast support of NAMII from the very beginning," said NAMII Director and NCDMM Vice President Ed Morris. "We are thrilled to be collaborating with Terry and his team in an expanded capacity as a Lead member.

"Additionally, NAMII is also proud to welcome seven, new members, Illinois Tool Works, Tobyhanna Army Depot, 3M, Deformation Control Technology, Rhinestahl, Sciaky, and the USA Science & Engineering Festival, into our diverse ranks of organizations committed to advancing additive manufacturing technologies," continued Mr. Morris. "We look forward to working and collaborating with these new members."

As public-private partnership with member organizations from industry, academia, government, and workforce development resources, NAMII offers three levels of membership-Lead, Full, and Supporting. Each membership tier features invaluable benefits.

For more information on NAMII's membership tiers or on how to become a member, visit the NAMII web site at [www.namii.org](http://www.namii.org).



# LAWYER DISAGREES WITH OSHA ASSESSMENT OF SVEP

The SVEP took effect in 2010. It targets "recalcitrant employers who demonstrate indifference to the health and safety of their employees through willful repeated or failure-to-abate violations relating to significant hazards."

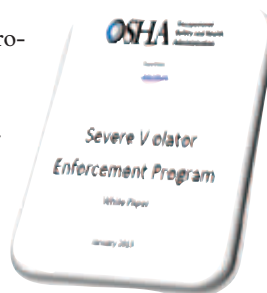
Employers are placed in the special enforcement program if they meet criteria including:

- Any egregious violation
- One or more willful or repeat violations or failure-to-abate notices associated with a fatality or overnight hospitalization of three or more employees
- Two or more willful or repeat violations or failure-to-abate notices in connection with a special emphasis hazard

- Three or more willful or repeat violations or failure-to-abate notices related to process safety management

The SVEP replaced OSHA's Enhanced Enforcement Program (EEP), which was criticized because the agency failed to conduct follow-up inspections.

Attorney Eric J. Conn questions OSHA's positive assessment of the first 18 months of SVEP. After scrutinizing program data, Conn, who heads the OSHA practice group of Epstein Becker & Green P.C., found several "glaring problems with how the SVEP is being administered."







# The Vital Signs Of American Manufacturing

BY MIKE COLLINS, AUTHOR, SAVING AMERICAN MANUFACTURING

American Manufacturing is in the news these days. A sudden wave of optimism about growth possibilities seems to pervade the media. There has been a lot of happy talk in 2013 about the future of manufacturing with titles like:

- Manufacturing is a surprising bright spot in U.S. economy - New York times
- Comeback: Why the future of Industry is in America - The Atlantic
- For the first time in decades the future of American Manufacturing looks promising - Forbes
- Why a resurgence in US manufacturing may be the next big bet - PWC.COM

In fact the Boston Consulting Group is projecting that “the United States is in a strong position by around 2015 to eventually add 2 million to 3 million jobs and an estimated \$100 billion in annual output in a range of industries.”

But, short term improvements in jobs or sales are like a sick person getting some medicine from the doctor and feeling better the next day. A very thorough examination of all of the vital signs might show that the patient actually has a debilitating disease that will eventually render the patient bedridden over time. A real assessment of American Manufacturing also requires a longer term examination of manufacturing vital signs.

## THE 9 MANUFACTURING VITAL SIGNS

### 1. MANUFACTURING JOBS

The Chart below shows that manufacturing reached a peak of about 17.2 million workers in 2000. As of 2009 manufacturing employment was 11.4 million workers. Around 5.8 million jobs were lost during the decade and so far we have gained back a little over a 500,000 jobs in the recovery. Most of the loss in manufacturing jobs coincided with the acceptance of China into the WTO, an increase in offshoring, and the huge increase in imports from China.

Now just about everybody says that manufacturing jobs are important and we need to create more of them. President Obama has pledged to create 1 million new manufacturing jobs in his second term by the year 2015, and he had a blue chip commission headed by the Chairman of G.E. Jeffrey Immelt to

do it. Starting at September 2013 we have only added 26,000 manufacturing jobs and are 974,000 jobs away from realizing the goal.[1]

### 2. MANUFACTURING CREATES SECONDARY JOBS

Manufacturing stimulates employment in other sectors at a greater pace than other industries. On the average, each new manufacturing job creates about 2.9 other jobs in the economy. This “multiplier effect” is what makes new manufacturing jobs so important, but it is a meaningless statistic if manufacturing doesn’t create a lot more jobs.

### 3. MANUFACTURING LOCATIONS

From 2000 through 2011 America lost more than 58,000 manufacturing locations. This number has gone down every year since the high of 354,498 in year 2000. So in terms of new start-up companies manufacturing is still declining.

### 4. MANUFACTURERS PERFORM THE LARGEST SHARE OF R & D

Innovation and R and D have been a traditional strength of the U.S. for decades. In fact innovation and new technologies are the key to making American Manufacturing competitive in the future and manufacturing R&D is vital because it is 70% of all business R&D.

As Table 2 shows that investment in R&D (both public and private) has been pretty stable for 30 years and averages about 2.5% of GDP.

Contrary to recent articles that argue that American R&D is in serious decline the overall numbers are pretty stable. However there are some disturbing trends. The government’s contribution to R&D is important because it has

traditionally done the basic research that leads to applied R&D and spillovers for new products. Many of the basic research projects have been in physics, materials, and the physical sciences which lead to many new products. But almost half of the basic research is now devoted to health sciences not the physical sciences.

A second concern is that about 20% of the industry R&D is being done over seas according to the National Science Foundation[2] The industries doing most of the offshore R&D are important industries like motor vehicles, textiles and apparel, electrical equipment, chemicals, computers, semi conductors, and pharmaceuticals. One of the reasons for off-shoring R&D is that researchers are much cheaper and more plentiful.

Table 1:  
**Growth Over Time**

Year	Employment*	Establishments**	% of GDP
2000	17,182,000	354,498	14.2%
2001	16,712,000	352,619	13.1%
2002	14,912,000	344,341	12.7%
2003	14,300,000	339,083	12.3%
2004	14,268,000	338,080	12.5%
2005	14,194,000	333,460	12.4%
2006	14,014,000	331,366	12.3%
2007	13,746,000	330,350	12.1%
2008	12,851,000	326,216	11.4%
2009	11,460,000	308,934	11.0%
2010	11,590,000	299,982	11.7%
2011	11,797,000	295,643	11.9%
2012	11,983,000		

\* Bureau of Labor Statistics \*\* CENSUS - County Business Patterns

Table 2:  
**R & D Expenditures by performing Sector and sources of funds**

Year	Total	Industry	Federal Gov	Other
2000	267,298	188,136	66,417	14,745
2001	277,366	188,440	72,836	16,090
2002	276,022	180,711	77,710	17,601
2003	268,324	186,174	83,618	18,777
2004	299,201	191,376	88,766	19,059
2005	322,104	207,826	93,817	20,610
2006	347,048	227,254	98,638	21,756
2007	372,535	246,927	101,772	23,180
2008	397,829	267,847	103,709	26,073
2009	403,803	282,390	110,963	10,747
2010	406,708	278,977	108,377	18,754
2011	414,035	283,784	115,783	14,468

Source: U.S. Census Bureau Table 2



Even though our R&D budget is fairly stable and is 2.5% of GDP other countries are spending more in terms of R&D to GDP. The U.S. now ranks eighth in terms of R&D to GDP. Countries like Switzerland, Korea, Japan, Finland, Sweden, Iceland and Israel are spending from 2.78 to 4.4% of their GDP to compete in our globalized world.

4. Trade Deficit – The trade Deficit continues to increase. In 2012 we exported \$2,210,585 and imported \$2,745,240 for a deficit of \$534,656. I think there is no greater threat to manufacturing growth and jobs than an increasing trade deficit.

Warren Buffet says, “The U.S. trade deficit is a bigger threat to the U.S. economy than either the federal deficit or consumer debt, and could lead to political turmoil.” But the irony is that the trade deficit problem is hardly discussed in Washington D.C as if it is an accepted form of financing that must be financed by American taxpayers.

#### 5. MANUFACTURING GENERATES EXPORTS:

Figure 2 below shows that manufacturing contributed an average of 70 percent of American export shipments every year since 2000. But, exports are not growing fast enough to offset the trade deficit. In fact we are beginning to lose our place as exporter to the world.” U.S. exports have fallen from 13.5 percent of world exports in 2001 to 11 percent in 2002. If increasing the ratio of exports to imports is the only way we can reduce our trade deficit, then manufacturing exports are not only vital they are the solution to the trade deficit problem.

The goal of the Obama administration is to double exports during his second term. That would mean increasing our exports from 2,210,000,000 to 4,420,000,000 by 2016.

#### 6. ADVANCED TECHNOLOGY PRODUCTS

This is a very important part of manufacturing because America has always been the leader in developing new technologies. Robots, semiconductors, personal computers, the internet and a host of other technologies were invented in America. But we are fast losing our position as the world’s leading innovator and technology inventor. In year 2000 America had a \$30 billion surplus in technology products and within 10 years we had a \$56 billion deficit. A big part of this change has been caused by off shoring both manufacturing and R&D.

#### 7. RESHORING VS OFFSHORING

Re-shoring or getting companies to bring back manufacturing from foreign countries is in the news these days. It is a positive step and a noble cause. But American companies are still off-shoring their products and product lines to overseas competitors. I am an absolute supporter of the re-shoring idea and people like Harry Mosier who led the charge on this initiative. But so far I cannot find any evidence that re-shoring is creating more American jobs than are being off-shored.

#### 8. TRAINING AND EDUCATION

We are losing many high skilled employees to retirement in

both blue collar and the white-collar ranks. America, particularly The Fortune 500 manufacturers, needs to invest at least 3% of sales into the training and education needed to replace retiring workers. Because so many of the retiring workers are multi-skilled craftsmen with more than 30 years of experience the training programs need to be like the multi-skilled apprentice/journeyman programs. But except for a few midsize manufacturers there is no evidence that the big companies are going to invest in the training needed much less 3% of sales.

There are 2 reasons that the large manufacturers are not addressing the skilled worker issue. First they do not want to invest in longer term training that requires hundreds and sometimes thousands of hours of training. Second, if the employees could gain the skills required they don’t want to pay what the skills are worth. No matter how important training and educating new employees is said to be it is simply not happening.

#### 9. MANUFACTURING IS KEY TO OUR NATIONAL DEFENSE

Many industries, like Aerospace, High Technology, Software, and others build the products that allow America to have the world’s most powerful arsenal. Basic industries like the Chemical, Petroleum, Mining, and Electronics industries are part of our strategic and defensive reserves. Maintaining these industries and the suppliers and skilled workers in them is also a matter of national security.

But, our free market economy has exported the manufacturing of many defense components and materials to lower cost producers which has seriously eroded the supply chain that made them. A report from a retired Brigadier General John Adams found that “U.S. National Security and the health of the nation’s defense industrial base are in jeopardy because of an over reliance on foreign suppliers for defense materials.”[3] The report specifically mentions:

- The dependence on one Chinese supplier for the solid rocket propellant butanetriol used in our Hellfire missiles.
- The U.S. imports 91% of the rare earth element Lanthanum which is used in night vision systems for U.S. fighters.
- The manufacture of lithium ion batteries has moved off shore to foreign suppliers.
- High tech magnets were originally developed in the U.S. and are used in missiles, fighters, and tanks. China now produces 75% of the NdFeB magnets used in our military systems.

These 9 vital signs are simply indicators of the health of manufacturing. The next article will explain what they all mean for American Manufacturing in the future and what we may have to do to grow the manufacturing sector.

[1] Alliance for American Manufacturing Jobs Tracker, Sept 6 2013, Scapozzala

[2] Business R&D and Innovation Survey, National Science Foundation , 2008

[3] Remaking American Security: Supply Chain Vulnerabilities and National Security Risks Across the U.S. Defense Industrial Base; Guardian Six Consulting, Brigadier General John Adams, published by Alliance for American Manufacturing, May 8, 2013



Figure 2:  
Trade in Goods and Services  
(in millions of dollars)

Year	Total Exports	Manufacturing Exports	% of Total Exports	Total Imports	Manufacturing Imports	% of Total Imports	Trade Deficit
2000	1,012,782	704,781	70%	1,080,519	753,887	70%	-77,037
2001	1,087,725	731,189	72%	1,276,537	870,065	68%	-188,812
2002	983,008	687,239	71%	1,383,440	954,044	69%	-396,432
2003	1,023,937	720,816	71%	1,314,482	905,545	69%	-291,545
2004	1,103,734	771,666	70%	1,385,422	964,087	70%	-281,688
2005	1,268,257	871,680	69%	1,585,171	1,072,174	68%	-313,914
2006	1,440,792	1,009,406	70%	1,671,388	1,172,288	70%	-231,596
2007	1,492,859	1,043,605	70%	1,889,255	1,311,505	69%	-396,406
2008	1,840,532	1,301,529	71%	2,031,033	1,442,634	71%	-190,497
2009	1,536,167	1,080,475	71%	1,911,844	1,383,657	72%	-375,677
2010	1,844,468	1,308,795	71%	2,142,847	1,508,179	70%	-298,379
2011	2,112,825	1,495,853	71%	2,489,663	1,748,836	70%	-376,838
2012	2,210,585	1,541,239	70%	2,745,240	1,934,656	70%	-534,656

Source: U.S. Census Bureau, Foreign Trade District

# Auto industry steels itself for 'conflict minerals' rule

BY DUSTIN WALSH, CRAIN'S DETROIT BUSINESS

After years of education and preparation, the automotive industry has begun to identify whether certain metals from nine African countries exist in the supply chain.

Section 1502 of the federal Dodd-Frank Wall Street Reform and Consumer Protection Act, finalized in August 2012, requires public companies to disclose whether they use "conflict minerals" – tin, tungsten, tantalum and gold – from the Democratic Republic of Congo and eight other African countries that are said to fund violence.

Although the intent of the rule is to limit the funding of armed conflicts in the Congo region by no longer sourcing from militant-controlled mines, executing it requires a new level of understanding the supply chain, experts say.

All companies registered with the U.S. Securities and Exchange Commission are required to establish reporting processes by May 31, and it has been a struggle, said Aaron Sikora, automotive partner at PricewaterhouseCoopers LLP in Detroit.

"Whether the metals in the supply chain are coming from the conflicted region of the world is still a big unknown at this point," Sikora said. "The information that is available coming from the mine and where the minerals are originating from is still unreliable, and it's created a lot of challenges."

Then there is cost. The SEC predicts roughly 6,000 registered companies are affected by the rules, but that will trickle down to tens of thousands more private companies that may or may not use minerals from Africa.

The initial cost of compliance for U.S. companies is estimated at \$3 billion to \$4 billion, with ongoing compliance costing between \$206 million and \$609 million, according to the SEC. But the National Association of Manufacturers says the

costs will be much higher – \$9 billion to \$16 billion.

## THE COMPLIANCE COSTS HAVE DRAWN THE IRE OF SEVERAL ORGANIZATIONS.

The U.S. Chamber of Commerce, NAM and the Business Roundtable filed a lawsuit against the SEC claiming the ruling was too costly and violated the companies' First Amendment rights of free speech. However, a federal court judge ruled in favor of the SEC in July.

Several law firms and industry action groups

h a v e

much too strenuous and costly."

However, the auto industry is pushing forward with establishing reporting processes ahead of the deadline and is finding ways to proceed despite the difficult and expensive task, experts say.

"Progress is slower than people had hoped for and is proving more difficult than anticipated, but the industry is making an effort," said Sam Fogelman, risk consulting partner at KPMG LLP in Detroit.

A large issue is the prevalence of the minerals, conflict or not, in the industry, Sikora said.

"It was surprising how many parts contain these minerals," Sikora said.

"They are in things most people wouldn't expect, and this is really causing a need for the supply chain to get into the data and reach out to suppliers."

Tin, tungsten, tantalum and gold, or 3TGs, are found in many automotive products, including fuel tanks, seat cushions, batteries, brake pads, radiators, sealants, glass and electronics, according a study by the Southfield-based Automotive Industry Action Group.

This year, AIAG launched a Web-based data management tool, iPoint Conflict Minerals Platform, to help companies gather, assess and report information about their supply chain.

The support group is offering the tool for \$720 annually to its members and is training up to 30 auto industry representatives a month on the program, said Tanya Bolden, AIAG manager of corporate responsibility program development.

"Companies are beginning to establish their internal process, and we're seeing this issue and procedures maturing," Bolden said. "We have such a complex supply chain and just trying to reach the various levels of that chain is difficult without a process like iPoint."



s e n t letters to the SEC asking for more time to adhere to the ruling, including a Sept. 11 letter from Atlanta-based Troutman Sanders LLP.

The Detroit Regional Chamber, in a draft of a letter obtained by Crain's, may ask the Michigan Legislature to issue a resolution to appeal the rule.

The letter says, "Michigan's auto-related manufacturing companies, and the Detroit Regional Chamber, believe that these new reporting requirements are

Ford Motor Co. uses iPoint and is distributing the reporting template to its supply base, Kristina Adamski, manufacturing and purchasing communications manager, wrote in an emailed statement to Crain's.

"The mandated reporting and collection process has been a significant challenge for our supply partners since, in order to be successful, we require the support and cooperation of suppliers throughout our value chain," Adamski wrote in the email. "Since the SEC legislation is very complex and requires a fair amount of education and cooperation throughout the value chain, Ford has been working hard to educate our suppliers about the legislation and create a streamlined cross-industry process for data collection."

Fogelman said many in the industry are using the efforts to comply with the rule as a framework for increased sustainability efforts.

"I urge companies not to treat these programs as silos; think about all of your compliance efforts in the context of sustainability," Fogelman said. "This is an opportunity to understand and optimize your supply chain across the board."

Gerrit Reepmeyer, director of energy and utilities for Dearborn-based Severstal North America, said the steelmaker views the challenge to differentiate itself.

"We believe focusing on this effort will give us a commercial edge in the industry," Reepmeyer said. "That's why we've taken steps in recent months as a proactive tool in the way we do sourcing."

In May, Severstal submitted a 46-question survey to its more than 2,500 suppliers on not only conflict minerals but also working conditions, safety compliance and other human rights issues.

Reepmeyer said the company is focused on ensuring that suppliers abide by international labor laws, environmental and safety standards as well as business ethics.

"We want to make sure we only engage with customers and suppliers with integrity," he said.

Severstal completed its assessment of conflict minerals within its supply base in May. Reepmeyer said the company identified two suppliers that may have sourced from the Congo region, but after further investigation, Severstal ruled them to be conflict-free.

"In the future, this whole issue of sustainability will become broader and broader," he said. "This is why we took a proactive approach, to meet any new criteria coming up. We only see this as the beginning of sustainability" regulations.



## MANUFACTURING RETURNS TO THE US BUT THE JOBS DON'T

MORE MANUFACTURING COMING BACK TO THE U.S.

BY NELSON SCHWARTZ, THE NEW YORK TIMES

A study by the Boston Consulting Group documents what many manufacturers have quietly discovered in recent years — bringing production back to the United States from overseas carries some advantages.

More than half of executives at manufacturing companies with sales of more than \$1 billion plan to return some production to the United States from China or are considering it, according to the report. That's up from 37 percent in February 2012.

And the number of respondents in the process of moving back also rose, with 21 percent engaged in returning work to the United States, or "reshoring," compared with 10 percent in 2012.

The study, conducted last month, elicited responses from more than 200 decision makers at companies across a broad range of industries. Virtually all of the companies manufacture in the United States and overseas and make products for consumption both in the United States and abroad.

One surprise is that energy costs — often mentioned by supporters of the natural-gas extraction process known as "fracking" as an argument for increased energy exploration to foster creation of manufacturing jobs — actually was the factor least cited by executives.

Instead, the leading advantages include competitive labor rates, proximity to customers, product quality, skilled labor and transportation costs.

While the survey is good news, the broader economic problem is that even as manufacturing returns to American shores, the old jobs associated with the sector are not coming back. As an article by Stephanie Clifford showed last week, renewed production of textiles in South Carolina factories features plenty of machines but few workers on the factory floor.

That phenomenon — more production with fewer workers — is something that often goes unmentioned when advocates like President Obama speak of a manufacturing renaissance that will produce middle-class jobs.

Indeed, while the sector is no longer hemorrhaging jobs as it did over the past decade, recent gains have been very modest. So far this year, the manufacturing sector has shown a net gain of only 2,000 jobs — even as unemployment has come down and overall private payrolls have increased by more than 1.3 million.



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# HOW TO REDUCE THE BIGGEST EXPENSE OF YOUR LIFE: TAXES

FINANCIAL ENGINEER DISCUSSES WAYS TO TROUBLESHOOT UNNECESSARY FINANCIAL BURDENS



Taxes account for the most expensive burden you'll experience in your lifetime, says engineer-turned-independent financial planning coach Rao K. Garuda.

In addition to federal, state, city and death taxes, there are 59 other varieties. Relatively few taxes, however, account for the bulk of the burden on citizens, says Garuda, whose clients include retirees, people planning for retirement, physicians, business owners and other professionals.

He thinks his fellow Americans deserve a shot at keeping more of their money.

"When I came to the United States, I had less than \$10 in my pocket, but I had an excellent education as an engineer. When I married a physician, I realized how expensive it is to make a good living here," says Garuda, ([www.aca-incorp.com](http://www.aca-incorp.com)), who quickly applied his analytical engineering mind to understanding the complicated tax system.

"Since this country has given me

so much, I wanted to repay my fellow Americans with strategies for keeping more of their own money."

Garuda identifies some of the most expensive and common tax hurdles affecting Americans and offers advice on troubleshooting our tax system.

#### • PROBLEM:

The IRA tax: great on the front end, terrible down the road.

#### SOLUTION:

An IRA is tax-deferred, which means it will accumulate value over time. But when you withdraw from it, you will be heavily penalized with high taxes. That's why you should convert this asset to a Roth IRA, which allows your money to grow tax-free. Since the money put in was already taxed you don't have to pay any taxes when you take it out, and, overall, you'll save a significant amount of money.

#### • PROBLEM:

Too many people don't take advantage of creating tax-free income via insurance products.

#### SOLUTION:

From a financial perspective, retirees and professional planners run into a significant issue: seniors, blessed with good health,

who outlive their money. But with certain insurance products, retirees can create tax-free income while covering the later years of retirement – and protect their wealth if they become severely ill. There are certain insurance products tied to the stock market that can help people accumulate assets in the long run. Many of these products offer a tremendous upside for potential without the downside of increased risk.

#### • PROBLEM:

Missed opportunities – people who don't take advantage of free money in a 401k.

#### SOLUTION:

Perhaps the company you work for is, like many others, bureaucratic to the point of being impractical. Your employer may not have done the best job communicating details about benefits such as matching 401k contributions, or you may not have taken the time to learn them. Now's the time; this is free money! If your employer is offering a 50 percent match on your first 6 percent of contributions to the 401k, you should be contributing at least 6 percent. Educate yourself on your company's plan so you can take full advantage.



## 13 TRELLEBORG EMPLOYEES EARN NIMS CNC TURNING LEVEL 1!

The Jane Addams Resource Corporation (JARC) and Trelleborg Sealing Solutions are proud to announce that thirteen (13) Trelleborg employees have passed the NIMS CNC Turning Level 1 exam! This accomplishment is a testament to Trelleborg's commitment to advancing the skills of their employees and the effectiveness of JARC's customized, on-site training programs.

#### THE JARC / TRELLEBORG PARTNERSHIP

Trelleborg is a Swedish multinational manufacturer of sealants, gaskets, and bushings with 24,000 employees around the world and 6,000 here in the U.S. After purchasing a new facility in Streamwood, IL in 2007, Trelleborg struggled to find CNC Machinists to operate the new CNC machines they had invested in. Committed to retaining their existing workforce,



Trelleborg turned to JARC to design and execute customized incumbent worker training classes ranging from math and print reading to CNC Machining and CAD/CAM.

#### SECTORAL APPROACH TO WORKFORCE DEVELOPMENT

This project culminated in the development of the CNC Machinist Apprenticeship Program in 2011. The apprenticeship pro-

gram combines three essential elements: training classes, demonstration of hands-on competencies and relevant industry credentials. Because of the rigorous standards and industry-wide credibility, JARC made the National Institute of Metalworking Skills (NIMS) the primary industry credential in the Trelleborg

#### APPRENTICESHIP PROGRAM.

JARC Graduates Attaining Third NIMS Credential In addition to on-site training, Trelleborg has also hired 15 graduates from JARC's Careers in Manufacturing Program. Two of those graduates earned an additional NIMS credential by passing CNC Turning Level 1 at Trelleborg!



# SHORTAGE OF TOOL SHOPS COULD STALL U.S. INDUSTRY'S UPTURN

## Expert forecasts quality problems, higher prices

BY: LINDSAY CHAPPELL

REPRINTED FROM AUTOMOTIVE NEWS, 10/07/2013

In the little corner of the car business where skilled machinists repair broken dies through the wee hours of the night and perfect the tools that will turn out smooth body panels, an alarm bell is ringing.

The American tool and die industry is shrinking. But having adequate tooling support is crucial for the recovering industry to keep production and sales strong.

Over the past eight years, one-fifth of North America's tool and die shops have disappeared, according to data from the U.S. Bureau of Labor Statistics. And the sector focused on automotive needs may have declined by as much as a third, according to another estimate.

Yet new-car sales are surging. Automakers are expanding model variations and adding 3.5 million units of annual North American vehicle manufacturing capacity, according to a Morgan Stanley study. All of that creates new pressure on the smaller pool of shops.

Some industry watchers now wonder if the nation's diminished automotive tool and die infrastructure is a choke point that will disrupt the car business.

"I honestly don't see a solution to this," says Scot Sharland, executive director of the Automotive Industry Action Group, a problem-solving agency created by automakers and Tier 1 suppliers. "It's just a matter of time before the repercussions start to show up."

### REPERCUSSIONS?

"Quality problems," Sharland grimly forecasts. "Supplier crashes. Higher prices. Production interruptions. Launch delays.

"This is a perfect storm coming together," he says. "Auto plants are running three shifts and weekends now. What do you think's going to happen when a die breaks on a second shift on a Saturday and there's not a shop available to come to the rescue?"

"And it's worse in Mexico than it is here," Sharland adds. "Automakers are expanding in Mexico - and there's virtually no tool and die industry there."

### SKILLED-WORKER SHORTAGE

For the past year, to shore up tool and die capacity here, Sharland has been on



**Scot Sharland promotes public-private partnerships to steer more young people into tool and die careers.**

a shuttle diplomacy mission to find solutions, talking to state officials, tooling companies, educators and automotive companies. He has been promoting the idea in several states of a public-private partnership to steer more young people into tool and die careers. Shop operators say recruiting and training new tradespeople is one of their biggest challenges now.

This bottleneck didn't catch anyone by surprise. Various efforts have been under way for two decades to foster the industry - but those efforts are going nowhere.

Just last month, the state of Michigan suspended its Tool & Die Recovery Zone program, which it has been running for a decade to bolster the local industry.

The program provided aggressive tax abatements. The state encouraged competing tool shops to band together into groups to cooperate in marketing and operations - all intended to shore up the companies and help them survive.

But in an audit of the program this year, the state concluded there was no clear indication that the effort has helped. At its peak, 340 shops were participating. As it begins to phase the program out, the state estimates there are now 300 shops still participating.

Their Michigan locations are actually part of the industry's growing problem.

### CLUSTERED AROUND DETROIT

The auto industry's geography has been changing radically for the past 30 years, but the tool and die sector's has not.

In an era of industry globalization, when automakers are growing by leaps and bounds in places like Tennessee, Mississippi and Mexico, when Japanese, German and Korean automakers and suppliers are flourishing in North America, the tool and die industry remains stub-

bornly concentrated in Detroit and Southern Ontario.

Though their numbers are down, hundreds of shops operate in and around Detroit. Many of them are small family-owned businesses with deep local roots.

And in short, many shop operators simply don't want to move to unfamiliar places - nor risk the family business investing in expansions there.

"As things heat back up, there might not be enough tool and die shops to go around," says Gary Kimmen, president of



**Top Craft Tool President Gary Kimmen at the company's Clinton Township, Mich., shop.**

the family-owned Top Craft Tool, a 25-employee shop in Clinton Township, Mich., that his father started in 1968. "They talk about opening shops down South, but it's just too risky.

"After the recession of the past four or five years, nobody wants to stick their neck out. When the bottom falls out on a business plan, it's the little guys who get crushed. When you're owed half a million dollars and can't get paid, it can kill you."

### AUTOMAKER PRESSURE

Yet automakers are now turning up the pressure. Nissan Motor Co., in particular, is beginning to ask many suppliers to its big assembly plants in Smyrna, Tenn., and Canton, Miss., to locate as close as possible to the plants.

Nissan is focusing its attention on Tier 1 suppliers, including plastics makers and metal stampers. But those suppliers are actually where an increasing amount of tool and die business comes from these days.

Dan Bednarzyk is looking warily at the



transportation costs, lost time and operating stress of relying on die shops hundreds of miles away. As Nissan's recently named vice president of total delivered cost, Bednarzyk is leading a mission to investigate, and possibly eliminate, costs and risks across Nissan's supply chain. Shipping tooling work back and forth to Detroit is something he wants to address.

"When you've got the tooling and you've got to make a change on the fly, it's costly and risky," Bednarzyk says. "Every time you put your tools on a truck, you pray that the truck gets there and gets back without turning over."

This disconnect - the strong desires of manufacturers going unmet by Detroit tooling companies that strongly desire new business - has frustrated automakers in the South for years, says Jay Baron, CEO of the Center for Automotive Research in Ann Arbor, Mich.

"I began trying to bring together Michigan's tool and die industry with the international automakers 20 years ago," Baron says. "I didn't have much luck."

#### A NEW EFFORT

Last month, responding to the new sense of urgency, Baron and CAR began trying again. Baron traveled to Atlanta to meet with representatives of automotive trade associations in six states - Alabama, Kentucky, Louisiana, Mississippi, South Carolina and Tennessee - about fostering tool and die investment in the South.

Baron says the automakers and parts

suppliers in those states are desperate to bring tooling and mold work closer to their operations, hundreds of miles from its concentration in Detroit and Windsor. But he is quick to emphasize that he is not trying to relocate businesses from Detroit - which is an emotional issue in Michigan, where the auto manufacturing economy has been eroding for years.

"What we want to do is encourage the creation of branch offices in the South," he clarifies.

But even that is easier said than done, he admits.

"It will cost maybe \$10 million to open a new tool shop," he says. "For a small company to risk that much, they want some assurance that the business is there. And nobody in those states is going to assure them of anything."

Baron says the various state associations have asked him to survey automakers representing 11 vehicle assembly plants in the region - including Nissan, Toyota, Mercedes-Benz and Hyundai - to devise some sort of cooperative plan to recruit and maintain tool and die shops.

But even that tack has challenges.

#### CHALLENGES IN THE SOUTH

An automaker in Tennessee - Volkswagen in Chattanooga, for example - might not be keen to stand in line at a newly created tooling shop behind a competitor like Toyota's assembly plant in Tupelo, Miss.

It has been tried.

A decade ago, in hopes of building a book of business in the South, tooling and machinery maker Wright-K Technology of Saginaw, Mich., opened a branch operation near Huntsville, Ala. But that branch later closed.

Integrity Tool & Mold in Windsor, Ontario, is having better luck with a branch shop it opened in 2007 in Pulaski, Tenn., just south of big auto plants owned by General Motors and Nissan Motor Co. Integrity is expanding that plant, says Scott Allen, vice president of Integrity Tennessee, investing \$6.3 million on new tooling equipment and adding 45 people to its current roster of about 50 employees.

"The challenge in doing this is that the auto industry in the South is very spread out - Tennessee, Georgia, Alabama," Allen says. "It's not like it is in Detroit, where your customers are just a short drive away."

The second challenge, Allen says, is the absence of skilled workers for tool and die work.

"It really takes years and years of training and experience to be able to do this work," he says. "The guy in Detroit who has the skill level doesn't want to move his family to a little town in the South."

"So we will need to hire people with good attitudes and train them to do the work. And that's going to take a lot of time."



## VIDEO CONFERENCING CAN BE EASY AND AFFORDABLE WITH PRAGMATIC CONFERENCING



Face-to-face interaction is often a key ingredient for effective meetings and decision making. Now, using Video Conferencing and Unified Communications, it's possible for companies to achieve lifelike communication without traveling.

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cumbersome and expensive, and often required a dedicated IT resource to be on-hand. Now, with Blue Jeans cloud-video service offered through Pragmatic Conferencing, you can easily host or join



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Interested in learning more? Contact our Solutions Engineer Peter Bean at 1-877-628-8501 or [peter.bean@thinkpragmatic.com](mailto:peter.bean@thinkpragmatic.com).



# MIRA COSTA COLLEGE WINS \$2.75 MILLION DOL GRANT

The Department of Labor has awarded MiraCosta College a \$2.75-million federal grant to start a Technology Career Institute (TCI) aimed at filling a growing demand for qualified machinists and industrial technicians in North County.

The federal grant will help the college develop a comprehensive training facility that will prepare participants – including returning military veterans and the unemployed – for high-skilled, high-paying employment in the manufacturing and technology industries.

According to the project abstract, the college “will work with industry to create an accelerated training approach that quickly trains qualified workers, increases student retention rates and connects participants with jobs much more quickly than a traditional training program. Within 12 weeks, TCI participants will have a credential that will help them find a job and move up a career ladder in their chosen field.”

Targeted industries include high-tech manufacturing, maritime technology, and biotech manufacturing. The new Institute will be able to enroll up to 695 participants over the four year period of the grant.

The Technology Career Institute will expand MiraCosta College’s machinist certificate program and create industry-recognized electronics engineering technician and robotics/automation certificate programs.

The Machinist Technology Program began in March this year and was designed for people seeking fast-paced, high-level training aimed at meeting the growing need for machine operators and programmers in the region.

In a press release released by the California Community College’s

Chancellors Office, Van Ton-Quinlivan, vice chancellor of the California Community Colleges Workforce and Economic Development division stated that, “I’m pleased that our community colleges have earned even more grant money this year because that means the federal government sees the value in our workforce training programs and so too do our partners in industry. The

funds will go to developing critical training programs that will quickly qualify our students to get good-paying jobs in high-demand fields such as health care information technology, aerospace technology and advanced manufacturing.”

The college was approached more than two years ago by the National Tooling and Machining Association, the local career center and representatives of the North County manufacturing industry who said there was a strong demand for, but shortage of, qualified machinists. Today’s employees need to have

ever increasing skills in math, blueprint reading, machine operations, and state-of-the-art precision equipment.

Starting salaries for properly trained toolmakers and precision machinists is \$14 to \$18 per hour.

Collaborating with MiraCosta College in the Technology Career Institute endeavor are the North County Small Business Development Center, Maritime Alliance, San Diego North Economic Development Council, Veterans 360, and North County Coastal Career Center.



## MCAFEE TOOL & DIE, INC. ADDS NEW WIRE EDM MACHINE

McAfee Tool & Die, Inc. announces its newest addition to its growing family of wire EDM machines, a Mitsubishi FA30V submerged wire EDM machine. It is capable of providing the power for high-speed, high-accuracy machining of large work pieces (Z675mm [26.5"] max guide clearance under the head) with network interface and fully utilized 3D CAD data.

McAfee Tool & Die, Inc. specializes in stamping and building progressive, transfer, single-hit operation dies, mold details and precision small hole diameters. Design engineers are prepared to handle your toughest programs, should you require die details, large die sections, or specialty/one-of-a-kind machine parts. We build and support the tooling and production needs of many major North American manufacturers. Trained staff has the capabilities to approach your program from concept and prototyping, through final design, to permanent tooling.



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# GLOBAL MANUFACTURING SEEN MOVING BACK TO DEVELOPED WORLD

BY KATRINA BISHOP, CNBC

The wage gap between developed and emerging economies is set to shrink significantly, according to new research, and could lead to a major shift in where companies base their manufacturing operations.

PricewaterhouseCoopers' (PwC) Global Wage report, published on recently, found that all emerging economies are expected to show significant convergence in wage levels relative to the U.S. and U.K. by 2030. The shift looks to be most marked in China, India, Mexico and the Philippines.

India's current average monthly wage, for example, is around 25 times smaller than that of the U.S., but PwC estimates that by 2030 it is likely to be just 7.5 times smaller. Similarly, average wages in the U.S. are now 7.5 times greater than in Mexico, but by 2030 are projected to be just 3.8 times more.

Higher labor productivity growth in these emerging economies will drive this boost to wages, PwC said, along with a long-term appreciation of local currencies. This contrasts with the developed world, where real wages tend to rise more slowly than productivity.

"The direction of change is clear," said John Hawksworth, PwC's chief economist. "The large wage advantages enjoyed today by many emerging economies will shrink as their productivity levels catch up with those in advanced economies and their real exchange rates rise as a consequence."

This shrinking wage gap will have "major implications" for global business, the report claimed, as labor costs rise in countries previously deemed low-cost production havens.

## GROWING TREND

There is already a growing trend of global businesses moving

at least some of their manufacturing operations home, with companies including Apple, Caterpillar and General Electric all announcing plans to shift production back to the U.S. from overseas over the last year.

It comes amid increasing pressure, from both workers-rights groups and consumers, to provide at least some domestic jobs. There is also widespread concern about the labor conditions of workers in foreign factories, highlighted by a deadly fire at a garment production facility in Bangladesh earlier this year.

According to PwC, countries such as China, Poland and Mexico will be seen as less attractive places to base manufacturing facilities as a result of the change in relative wages, but could become more important as consumer markets.

Whereas those countries with wages that remain relatively low compared to China – such as India and the Philippines – are likely to become more appealing production locations.

However, the report stressed that India would only benefit from the shift if it improved its infrastructure and cut its red tape.

PwC partner Michael Rendell added that it was crucial for businesses to prepare themselves for this shift in the wage landscape.

"Companies planning for this today will find themselves with significant advantages, particularly in terms of people costs," he said.

"It's inevitable that the manufacturing and services industries in countries will transform as the cost base evolves, and also that there will be winners and losers. Governments, regulators and business communities need to be ready for that shift."



# "WITH THE NIMS CERTIFICATION THEY CAN BE HIRED BY OUR INDUSTRY PARTNERS."

-TOM STEINBACH, ADVANCED MANUFACTURING ENGINEERING INSTRUCTOR, WHEELING HIGH SCHOOL

Manufacturing News recently featured Wheeling High School's Manufacturing Engineering program, where students earn two NIMS national machining credentials while working towards their diplomas. In the past two years more than thirty students have earned our Measurement, Materials & Safety and Job Planning, Benchwork & Layout credentials, both of which all under the Machining Level I category that is designed to certify individuals in entry-level machinist skills.

The two national credentials issued at Wheeling High School are among the most popular NIMS certifications being earned by secondary students across the United States. Both credentials certify essential on-the-job skills that employers are demanding from machine operators, programmers, and engineers. Possession of NIMS Machining Level I credentials provides hiring managers with

proof of a new employee's competency and, ultimately, of the value that he or she will bring to the company.

In 2012 alone NIMS issued nearly 5,000 of these two credentials, but the large number should not undercut the rigorous challenges that each certification prescribes. The Measurement, Materials and Safety credential requires successful completion of a sixty question theory exam that covers topics such as quality control, process adjustment, general maintenance, industrial safety, and environmental protection. Taking the difficulty to the next level, the Job Planning, Benchwork and Layout credential includes not just a theory exam, but successful completion of a practical, hands-on requirement. For this additional performance element the student makes a benchwork part and a layout part by using mildsteel and hand tools.



## NIMS AT WESTEC 2013

We had a wonderful experience exhibiting at Bridging the Skills Gap Pavilion inside WESTEC 2013 in Los Angeles, where students tested their machining knowledge and skills on our new Machining Skills Challenge game.



Students from Technical Employment Training in San Bernardino, CA, a NIMS Accredited school. They passed our skills challenge and won free lunch!





## NTMA-U THE SMART WAY TO TRAIN YOUR WORKFORCE. CLASSES BEGIN WEEKLY !!

U.S. manufacturing employers have been saying it for years “We have a skills Gap, and no-one is listening”. Frustrated by the over 600,000 job openings each year that precision machine shops can’t fill with qualified workers who even have basic skills, U.S. manufacturers are well aware of severe issues in areas of manufacturing training, literacy, and other problem-solving techniques. The continued stream of reports that support these findings should be a wake-up call to not only to our K-12 school system, but to expand our definition of what we mean by education during and after high school in the U.S. and the process by which that training is delivered. NTMA-U is the answer to your training needs.

The concept of graduating with a four year degree in the U.S. is so resolutely ingrained in our culture that most parents have trouble envisioning anything less than the college experience for their children. NTMA-U graduates receive 21 college credits upon completion of 600 hours of training. We are all aware that Americans send their children off to college because there is nowhere else to put them after high school, since our government has stopped funding most manufacturing programs in high schools, and trade schools across the U.S. the college campus has become a convenient, socially accepted dumping ground that is a warehouse for ill prepared students, who do not fit within a college system. NTMA-U fills that gap with On-Line training that is workforce skillset compliant and college based.

By adhering to the concept that education after high school is

only found at a four-year college campus, most families exclude a large portion of the Americans who once shared in our nation’s economic successes by choosing a career pathway in manufacturing.

The time has come for Americans to once again identify what constitutes an education after high school, and begin to include more on-the-job training and apprenticeships, this can be achieved by enrolling your unskilled employee into NTMA-U. When America identifies our definition of higher education by means of apprenticeship, with a renewed interest in middle class jobs, that do not require a bachelor’s degree, the United States will once again take their rightful place in world economics by re-establishing ourselves as a manufacturing force that can fill the skills gap that we are faced with today.

Since most manufacturing companies cannot find skilled labor they are taking it upon themselves to educate their own workers through NTMA-U, bypassing the higher education system completely, and entering workforce development programs through our traditional four year apprenticeship training program.

Traditional Apprenticeships in all European countries is known as “The other four year degree” The United States should embrace this concept once again as the skill-sets of U.S. workers is quickly falling further and further behind.



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# OKUMA AMERICA HOSTS TECHNOLOGY SHOWCASE, DECEMBER 10-12



OKUMA AMERICA CORPORATION'S ANNUAL TECHNOLOGY SHOWCASE EVENT EDUCATES ATTENDEES ON THE LATEST TECHNOLOGY FROM OKUMA AND MEMBERS OF PARTNERS IN THINC.

Okuma America Corporation, a world-leader in CNC machine tools, holds the 2013 Technology Showcase event on December 10-12, 2013 in Charlotte N.C. The event gives attendees the opportunity to witness the latest technology via hands-on demonstrations, and allows them to learn how this new technology can be applied to their specific manufacturing challenges.

The demonstrations are relevant to attendees from a wide variety of industries, with cutting demonstrations using composite material, Inconel, titanium and carbon fiber, on a variety of machines including the LB-3000 EX, MULTUS B750, MB-4000H, PALLETACE (flexible manufacturing system), and the VTR-160A double column turning center.

Members of Partners in THINC will demonstrate how peripheral equipment such as tooling, gaging, workholding, automation, and CNC control software can be integrated with Okuma technology to improve productivity. This three-day event features a wide array of learning opportunities, allowing each attendee to customize the experience.

#### FEATURED AREAS INCLUDE:

- Proprietary Okuma technologies including Collision Avoidance System, Thermal Active Stabilizer, Machining-Navi, Super-NURBS, Turn-Cut and 5-Axis Auto Tuning System

- Drawing-to-part demonstrations show the process of taking a concept from design to a shippable part, for a variety of applications utilizing technology from Partners in THINC

- Lights-out manufacturing using an automation cell on a low-cost, high-accuracy CNC lathe

- Hard turning Rc60+ on an LB-3000EX lathe, to save time and money

- Gear cutting on a 2-axis lathe with milling function and on a multi-function lathe

- Various automation cells ranging from barfeeding a lathe, to robot loading/unloading, to a full flexible manufacturing system (FMS) with three integrated horizontal machining centers

- More than 10 educational demonstrators each day on a variety of topics such as Caron Engineering Adaptive Software (TMAC), Renishaw Equator, Real Time Connectivity, Machining-Navi, and Turn-Cut, PALLETACE (FMS)

In addition to the multitude of machines and cutting demonstra-

tions, and in honor of the 50th anniversary of the OSP control, the revolutionary Okuma THINC®-OSP-P300 control is available for hands-on trials. Featuring applications including the Collision Avoidance System, One-Touch IGF, 3D Virtual Monitor, Caron Engineering's TMAC and dataZen's Mira, the user-friendly, self-directed displays make it easy for users to "Try It". All attendees that complete a Try It demonstration will be entered to win an iPad.

2013 Technology Showcase attendees can participate in facility tours of Okuma Headquarters offered multiple times a day. The tours will give attendees a behind-the-scenes look at how Okuma America responds to and supports customers in North, Central and South

America. The tour will include stops in the following areas:

#### • BOARD REPAIR

Exchange program where spindle and axis drive units, operation panels, external power supplies and OSP control boards are repaired, often in less than 24 hours.

#### • MECHANICAL EXCHANGE

Spindles, cam boxes, VAC motors among others are repaired here. More than 325 units are ready to ship and more than \$1.4 million in replacement parts inventory are housed.

#### • ELECTRICAL ASSEMBLY

Where more than 190 options kits are produced each month.

#### • OPTIONS INSTALLATION

Installation of options on Okuma CNC machines. Common installations include auto-doors, parts catchers, robot loaders, barfeeder interfaces, and 4th axis interfaces. More than 30 machine options are installed each month.

#### • METROLOGY LAB

Supports ISO 9001: 2008 testing and record keeping requirements. Equipment used for inspection and testing of roundness, cylindricity, concentricity, surface finish, part profile, and hardness is housed here.

#### • SHOWROOM

Okuma machine tools are on display with the latest equipment, options, and software.

For more information on the demonstrations and technology on display, or to register for this event, visit [www.okuma.com/events/2013TechShow](http://www.okuma.com/events/2013TechShow).

The poster for the Okuma Technology Showcase 2013 features a blue header with the event title. Below the header, it says "WITNESS THE FUTURE FIRST-HAND" in large, bold letters. Underneath this, there are four small images representing different industries: Medical, Aerospace, Oil/Energy, and Automotive. To the right of these images, there is a list of benefits: "ATTEND fascinating Demo-nars", "BOOST record productivity", "HONE razor precision", "BRIDGE the skills gap", "WITNESS breakthrough technologies", and "POWER UP profitability". At the bottom, there is a registration link: "REGISTER AT [www.okuma.com/events/2013AmvCafe](http://www.okuma.com/events/2013AmvCafe)". The Okuma logo is at the bottom right.



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## CALENDAR OF EVENTS

### TEAM LEADER MEETING

January 16, 2014  
Tampa, FL

### CHAPTER LEADERSHIP SUMMIT

January 16-17, 2014  
Tampa, FL

### MFG MEETING

March 5-8, 2014  
Phoenix, AZ

### MFG MEETING

March 5-8, 2014  
Phoenix, AZ

### HANNOVER MESSE TRADE SHOW

April 7-11, 2014  
Hannover, Germany

### NTMA/PMA ONE VOICE LEGISLATIVE CONFERENCE

May 6-7, 2014  
Washington, DC

### NATIONAL ROBOTICS LEAGUE COMPETITION

May 16-17, 2014  
Cleveland, OH

### NTMA PURCHASING FAIR

TBA

### NTMA FALL CONFERENCE

October 22-25, 2014  
New Orleans, LA



## INTERLEAF FLAP DISCS REMOVE WELDS & CREATE SATIN FINISH

A line of interleaf flap discs that utilize two separate abrasive materials to remove small welds and create a grained-in satin finish in one operation are available from Rex-Cut Abrasives of Fall River, Massachusetts.

Rex-Cut® FUSION™ Flap Discs consist of a premium coated abrasive layer and

a non-woven surface conditioning layer that are combined into one disc which can remove light welds and produce a grained-in finish on stainless steel. Eliminating the need for multiple grinding op-



erations, they save operator time, run smoothly, and create a uniform satin finish in one step.

Providing controlled material removal, Rex-Cut® FUSION™ Flap Discs constantly reveal fresh abrasives as they work and typically last up to six times longer than traditional surface conditioning discs, claims the firm. Suitable for flat or contoured surfaces, they are available in 4-1/2" and 5" dia. sizes and come in coarse, medium, and fine grits.





# THE RECORD

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## 2014 NRL COMPETITION

CLEVELAND, OHIO

MAY 16-17

Lou Higgins Center at Baldwin Wallace College

### THE PREMIER NATIONAL ROBOTICS COMBAT LEAGUE

#### LOU HIGGINS CENTER

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



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

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

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

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

**“ Wishing all of our members and partners in Manufacturing,  
A Happy Thanksgiving”**

**The Executive Team, Board of Trustees and Staff of the NTMA**