



ROBOTICS AND AUTOMATION:

What does it mean to the future of efficiency, your workforce and your company?

Inside this issue

EMERGING LEADERS CONFERENCE: Tomorrow's leaders are ready for the future of manufacturing. Here's what they're saying.. - pp.8-9

THE NRL COMPETITION:
See how the NTMA is using robots to build our workforce. - pp.14-15

FROM TRADITION TO INNOVATION: Questions about automation? One member shares his company's successful journey. - p.23

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- Choosing Segments
- Fitting Into the “Crowd” of Others
- How to Enter a Market – What That Means
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- Meeting Market Requirements and Needs
- Price, Value and Wants in Each Sector
- Wearing the Camouflage of the Segment



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- Construction/Agriculture
- Die & Mold
- Fluid Power
- International Opportunity
- Medical Devices and Equipment



WHO YOU’LL HEAR FROM

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- Francois Gau
- GE
- Hamill Manufacturing
- Kennametal
- Makino
- Mastercam
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LOOK FOR THIS SYMBOL THROUGHOUT THE ISSUE FOR STORIES
 RELATED TO THIS MONTH'S FEATURED TOPIC.



2017 NATIONAL EVENTS AND TECHNICAL SEMINARS

May 19-21

National Robotics League Competition
 California, PA

June 7-9

Sales & Marketing Conference
 Pittsburgh, PA

June 14

Workforce Development Roundtable
 Chicago, IL

August 23

Emerging Leaders Roundtable: Financial
 Management for Non-Financial Managers
 St. Louis, MO

August 24

How To Be A Top Shop Seminar
 St. Louis, MO

September 5-7

MMS Top Shops Conference
 Indianapolis, IN

September 13

Financial Managers' Roundtable
 Philadelphia, PA

September 17-22

EMO, Hannover, Germany

September 26-27

PMA Sales & Marketing Summit
 Milwaukee, WI

September 28

PMA Sourcing Solutions
 Milwaukee, WI

October 24-27

Fall Conference
 San Antonio, TX

November 9

Plant Managers' Roundtable
 Detroit, MI





PRESIDENT'S UPDATE

DAVE TILSTONE / NTMA PRESIDENT



Please enjoy this special issue of the Record that highlights all the good news and momentum with the National Robotics League (NRL) and our workforce development activities as well as what robotics and automation mean to our industry.

Attracting young people to our industry is job number one for the NRL. With additional programs being implemented by our chapters and competitions attracting record numbers of students, there is no doubt that the NRL and its leadership is a resounding success. To help fuel the growth, sponsorships from Grainger, Dassault Systèmes SolidWorks Corp, Craftsman, BIG KAISER and support from the NTMA Executive Committee (granting \$100,000 from the Special Projects Fund) have been key milestones this year. It's robotics that is driving young people to our industry and it's robotics that will mean better jobs in our industry.

Regional competitions are currently underway. Some of the competitions are featured in this edition thanks in large part to the endless hours and support from volunteers like you. To help promote

and educate the students on safety, the Safety Module from NTMA-U is offered to every student free of charge. Enjoy the pictures and articles on the NRL and a big thank you to everyone who makes these events possible. The NRL National Competition begins on May 19th with an anticipated record number of students and volunteers. If you'd like to volunteer the event, please contact Bill Padnos bpadnos@ntma.org or 412.258.6629. The competition is free and open to the public. We hope you'll attend.



In other big news, with support provided by Stacey Schroeder, director of workforce development, the NTMF granted \$85,000 for chapter portals. The grant money will be used to fund 50 percent (\$2,500) of the annual NTMA-U portal cost for any and every chapter, whether it is a new subscrip-

tion or a renewal. The program began in late March and will be funding portals through March 31, 2018 and potentially into 2019 if the program is successful. Additionally, funds were earmarked for the Workforce Development Conference in Chicago on June 14. You'll find more information on the conference on page 7.

Stacey has been working very closely with NIMS and the Department of Labor (DOL) contract to help companies and schools register and become

sanctioned apprenticeship programs with the DOL. You no longer need to register your existing program with the DOL to be a recognized and sanctioned apprenticeship program. Now, you can do it through a sponsorship program provided by the NTMA. If you don't have an apprenticeship program, but would like to train your employees, first check with your chapter to see if they have an NTMA-U portal.

If they don't, you can easily and quickly register your employees through our national portal by contacting Stacey. The NTMA-U apprenticeship training is already sanctioned in all 50 states, so registering your NTMA-U apprenticeship program is even easier than before.

CONTINUED NEXT PAGE

THE RECORD

OPERATIONS & EDITORIAL

Dave Tilstone, President
Molly West, Editor

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WHY REGISTER YOUR APPRENTICESHIP PROGRAM?

It is important for you and your employees. It is a valuable recruiting tool, a platform for your workforce development training as well as way for you to recognize and retain key employees. For more information on registering your apprenticeship program, please contact Stacey at sschroeder@ntma.org.

Robotics and automation are the future of manufacturing, which means now more than ever, it's important to train our people for the high-tech jobs of tomorrow. Automation and workforce development must go hand-in-hand to assure the success of your company and

the industry as we forge ahead. I hope you'll utilize the resources available to you and let the NTMA be your partner as we move toward Industry 4.0.

DAVE TILSTONE / NTMA PRESIDENT



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SAVE THE DATE 06.14.17 Chicago, IL



WORKFORCE DEVELOPMENT ROUNDTABLE

Chicago, IL

Wednesday, June 14th, 2017

- Managing the Talent Pipeline: A Supply Chain Approach
Keynote Speaker: Jason Tyszko, Executive Director, US Chamber of Commerce Foundation
- Secrets for On-boarding Success
- Is Training All That Important? You Bet Your Future It Is!
- Community Involvement and Other Collaborative Partnerships
- Skills Training for a Modern Manufacturing Workforce
- Organizational Culture

Topics subject to change.

REGISTRATION

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Early Bird \$300 (Deadline 5/24/17)	\$375	\$500

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THE 2017 CONFERENCE PROVES THE SKY IS

Focused on the future, some of the brightest, young minds in manufacturing converged on the city of Denver, Colorado for the third annual NTMA Emerging Leaders Conference last month. The two-and-a-half day event was bursting with opportunity for the next generation of manufacturing leaders to network, connect and learn about what it will take to lead the industry and their companies in this high-tech and fast-paced era.

Representing 14 different states, these emerging leaders attended sessions to hone their people skills and refine their management styles. Each day opened with Pete Honsberger from CultureShoc and his networking energizers. Attendees enjoyed sessions like The Art of Networking, Leveraging the Power of Technology to Support Leadership and Being a Strategic Leader which explored leadership models, leadership assessment, engaging leadership development, and strategic development plans for leaders.

This year's Network Coaching Campfire Chats were also a big hit with attendees. These small group discussions addressed topics such as social media, personal branding, extreme ownership, finding and utilizing mentors and industry trade groups. While the campfires were

simulated, the snacks were authentic.

CliftonLarsonAllen worked with the emerging leaders to increase their comfort levels with financial information for decision making, while CultureShoc walked attendees through building and maintaining their "dream team" based on experience and situations.

Tecomet (previously Mountainside Medical), a leading provider of high-precision products and services for the medical device, aerospace and defense markets opened its doors and invited our emerging leaders to tour their facility. After this impressive tour, attendees had the opportunity to network and relax in our host city with the Denver in Lights networking tour sponsored by CliftonLarsonAllen.

A special thank you goes out to those companies who made the Emerging Leaders Conference possible this year. Sponsors included Paulo, GF, Okuma, CliftonLarsonAllen and the Rocky Mountain NTMA Chapter.



THE LIMIT FOR NTMA'S EMERGING LEADERS



FIRST TOP SHOP SEMINAR A SUCCESS IN CLEVELAND

It was a packed room in Cleveland, Ohio at the Jergens facility for our first ever Top Shop Seminar April 6. In partnership with Modern Machine Shop and Gardner Business Media, the NTMA hosted the event to bring benchmarking best practices to our membership. The day included educational presentations, a roundtable discussion, networking lunch, as well as a networking reception and a plant tour of Jergens. Attendees from as far as New York and Missouri attended to hear from a great panel of speakers on topics like:

- **WHAT MAKES A TOP SHOP**

Steve Kline - Director of marketing intelligence, Gardner Business Media

- **TOP SHOPS' PRACTICES**

Derek Korn - executive editor, Modern Machine Shop

- **FINANCIAL MANAGEMENT – HOW TO MAXIMIZE PROFITS**

Bill Ganger, CBIZ

- **HUMAN RESOURCES BEST PRACTICES – NEWEST TRENDS AND UTILIZING TECHNOLOGY**

Tom Ault – director of technical training, ERC

- **SHOP FLOOR MANAGEMENT BEST PRACTICES**

David McPhail – CEO & president, MEMEX

- **MACHINING TECHNOLOGY – TOTAL COST OF OWNERSHIP**

Dave Ward – product marketing manager, Makino

The event was made possible through the support of our sponsors: Makino, MEMEX, Paulo and CBIZ. A special thank you to Makino, MEMEX, CBIZ, ERC and MMS/Gardner for providing the speakers for this event.

The How to Be a Top Shop Seminar series is new for 2016, with events also offered in Los Angeles and St. Louis.



Derek Korn, Executive Editor for Modern Machine Shop, addresses a captive audience



Attendees enjoy the closing networking reception



CONNECTICUT CHAPTER NTMA MEMBERS VISIT CCAT

BY DEE BABKIRK, CONNECTICUT CHAPTER NTMA



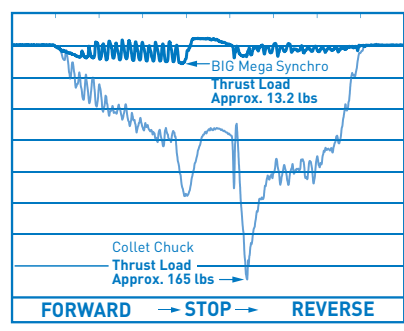
Tuesday, April 10, Connecticut Center for Advanced Technology (CCAT) hosted the Connecticut Chapter membership at their Advanced Manufacturing Center in East Hartford, Connecticut. The membership was exposed to the latest technology that CCAT has been working on, specifically additive manufacturing using their DMG Mori LaserTec 65 3D Hybrid Machine, inspection and Reverse Engineering using structured light scanning and their latest project: the Zimmermann FZ 37 5-axis composite machining center. CCAT has been working with many organizations to improve manufacturing capabilities. This helps to keep our membership competitive in the current time. CCAT has a host of funding opportunities available for manufacturing companies including NTMA members in Connecticut and nearby states to keep manufacturing competitive in New England.



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PITTSBURGH CHAPTER NTMA HOSTS APPRENTICE COMPETITION



It's all about precision at the NTMA/MSC Apprentice Training Competition. On March 3, the Pittsburgh Chapter NTMA hosted their annual competition at New Century Careers Training Innovation Center in Pittsburgh, Pennsylvania.

This competition tests hands-on performance in setting up and operating machine tools, including a manual or CNC milled part and a manual or CNC turned part produced to specifications. (CNC machines are Haas machines. The mill is a mini-mill and the lathe is a SL-10.) A third component is a written examination to assess content knowledge. A point system based on knowledge, skill and efficiency will determine the winner. Participation is open to ALL trainees of the Pittsburgh Chapter NTMA Apprenticeship program. Year 1 and Year 2 trainees must have earned at least five credentials to qualify.

The winner will be announced at the Pittsburgh Chapter NTMA Apprentice Graduation on June 14. The winner receives recognition, a trophy and a Gerstner toolbox.



Congratulations to all of the apprentices who competed in this year's NTMA/MSC Apprentice Competition.

Pictured left to right are:

Stan Caroline, Penn State Tool & Die; Bryan Whelan, Hamill Manufacturing; Gary Giannini, Penn State Tool & Die; Cary Dean, Josh Sanner, Charlie Lentz and Chase Cramer – all of Hamill Manufacturing.



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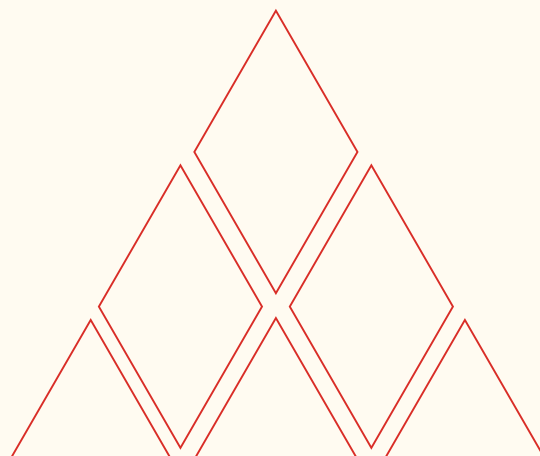
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PHILADELPHIA DELAWARE VALLEY CHAPTER JOINS EFFORTS FOR MANUFACTURING ADVOCACY SERIES

BY SUSAN CLORAN, M&S CENTERLESS GRINDING, INC.



The Manufacturing Advocacy Series, which is a joint effort of the NTMA Philadelphia Delaware Valley Chapter and regional Manufacturing Alliances, held its third regional event on April 6. This program was created to provide pertinent information for our regional manufacturers to help make educated decisions, and to provide a time to network with each other. April's event focused on financing and the economic outlook for manufacturing in 2017 from a national and regional perspective.

The subject of financing was handled by a panel of various financial executives. They explored lending, interest rates, creative financing as well as other financially related topics. The consensus of the expert panel: talk with your financial institutions openly and often. Different types of financing were also discussed, including traditional banks, boutique banks that arrange lending from private equity and other funds and lenders dealing in

the nonregulated market.

The Director of The Center for Labor Markets and Policy at Drexel University, Dr. Paul Harrington, stepped the audience through national economic data and broke it into useable information. According to Harrington, even though manufacturers are continually investing in technology that will displace workers to a certain extent, there will continue to be a gap in qualified candidates. New employees must be trained to work in today's advanced manufacturing roles. There is a lag to bring these employees up to speed, and the perception of manufacturing needs to be updated to attract prospective employees. Moving forward, more educational partners need to focus on the skills needed for manufacturers – otherwise we are looking at the prospect of leaving deals on the table due to having an insufficient workforce. This most likely is not news to most, and fortunately, organizations such as the NTMA realize this need and are actively involved in student

programs that introduce manufacturing concepts.

The discussion took a turn to the local level when Kreischer Miller, a local accounting firm, reviewed their regional manufacturing survey. The skills gap concern was echoed in the results of this survey, overall there was an increased level of optimism, up six percent from last year. Concern was raised however when 30 percent of respondents stated that they have no IT Security methods utilized. Sixty-seven percent of respondents used key performance indicators on a regular basis with on-time delivery rate having the greatest emphasis. In general, local manufacturers will be keeping an eye on Washington, D. C. for policy reforms that may impact them. More information on this survey can be found at <http://www.kmco.com/industries/manufacturing/greater-philadelphia-manufacturing-survey/>

Over 100 attendees agreed that this NTMA sponsored event provided them with valuable information that they will use. Previous events covered apprenticeships, and R&D Tax Credit information. The next Manufacturing Advocacy Series will be held in September.



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ENGAGING MANUFACTURING'S NEXT GENERATION AGAINST THE MYTHS OF AUTOMATION

BY BILL PADNOS, NRL DIRECTOR OF
YOUTH ENGAGEMENT



In spring of 2013, HERB (the Home Exploring Robot Butler) created by Carnegie Mellon University's Robotics Institute split an Oreo cookie in half and then wiped the cream off. The robotics community marveled on how delicately HERB handled the task and celebrated this programming achievement.

My reaction: I thought it was cool, but I also asked the innocent question, "Where did the robot parts come from? Were they machined by Pittsburgh area shops, or was HERB put together from parts manufactured from across the world?" Of course, no one has answered that question.

In Pittsburgh, when I tell people that I manage the National Robotics League, the first question is "Are you affiliated with Carnegie Mellon University?" My answer is, "No, the NRL is a manufacturing workforce development program of the NTMA." In addition, I point out that our program is focused on students learning how to design and build bots while CMU is more interested in the programming aspect of robotics. However, with the rise of automation, should the focus of the NRL program change to 0s and 1s and sensors instead of machining and welding?



In May 2015, Laura Putre wrote an article for Industry Week called, "Is the Great Robot Job Takeover a Myth?" Her conclusion was simple – "Robots are increasing productivity, but not at the cost of manufacturing jobs." In her article, she interviewed two Brookings Institution scholars that told her that "A dystopia populated by robots doing the work of humans may make for great cinema, but in real life, human manufacturing labor hasn't been replaced in a robot coup. While a separate study, the Robots at Work study, from London's Center for Economic Research did note that there is evidence that robots hurt manufacturing employment—however, it mostly affects low-skilled workers, not middle-skilled labor. The Brookings Institution scholars concluded that, "maybe the workers have been better trained, or are more adept at working with robotics to drive automation."

What does this mean? Automation allows for you to do more

with less, as long as you have a well-trained and adaptable workforce. Robert Gordon, an economist at Northwestern University, believes that "the steam engine, electricity and even indoor plumbing have brought more profound changes to our lives and labor practices than digitization, computers and robots."

At the Haas Factory Outlet in Pittsburgh, I watched a robotic arm operate a CNC machine. The arm opened the machine door, placed the piece of metal inside, shut the door and then pressed the start button. When the part was finished, the robotic arm opened the door, took the part out and then repeated the process of loading a new piece of metal. It was really cool to see the robot operate the CNC machine, but that arm did not design the part, select the material, program the CNC machine or inspect the part. The arm just replaced the step of loading and unloading the machine.

We are not able to stop the robots from coming. In fact, automation will help

NTMA member companies be more efficient. It is up to us to remind students, teacher and parents that robots are not manufacturing job *terminators*. Instead, robotics are manufacturing job *transformers*. As we engaged manufacturing's next generation, we need to be aware the perception is that



automation is taking away jobs. Parents ask, “Why should my son or daughter train to be a machinist when in ten year that job will be obsolete because robots are taking those jobs away?”

Perception is everything. The outside world believe that robot are stealing manufacturing jobs. In reality, *robots are not stealing them, they’re improving them.* This needs to be the message that we share within the manufacturing community and beyond. With greater automation, efficiency, safety and productivity, US manufacturing will be able to continue showcasing the power of our innovation and ingenuity.

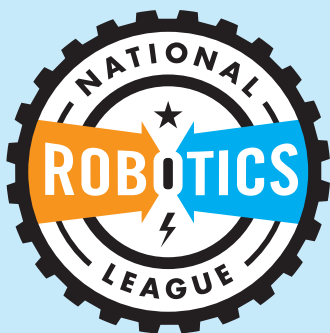
NTMA members need to be advocates in their communities for promoting careers in manufacturing. Allow for your precision machinists to be your ambassadors. Allow them the opportunity to become NRL industry advisors and volunteer at NRL competitions. Allow them to share what technical and critical thinking skills that they need and have acquired by working as a machinist. Allow them to become your recruiting tools through their efforts to engage and connect with your future workforce. Let them be the ones saying that manufacturing is meaningful work and a good paying job.

Let’s utilize the NRL together in busting the myth that greater manufacturing automation means fewer jobs. Remember: myths only exist because people perpetuate them and the individuals that know the truth do nothing to stop them.



WE ARE BUILDING AMERICA’S TECHNOLOGY LEADERS, ONE ROBOT AT A TIME.

Join us for the
NRL NATIONAL COMPETITION



OPEN TO THE PUBLIC AND FREE TO ATTEND!

FOR MORE INFORMATION, PLEASE VISIT THE NRL’S WEBSITE: GONRL.ORG

May 19th & 20th, 2017

FRIDAY, MAY 19TH:

Safety Inspections, Team Interviews, Documentation Judging, Kick-Off Party, Opening Ceremony, First Round and NRL – Craftsman Rumble.

SATURDAY, MAY 20TH:

Competition and Awards Ceremony.

CALIFORNIA UNIVERSITY OF PENNSYLVANIA

Convocation Center, 250 University Blvd, California, PA

This year’s competition includes teams from Arizona to Boston with more than 60 teams including 500 student participants.



ROBOTICS PROGRAMS ARE WORKING IN CHAPTERS ACROSS THE COUNTRY

NORTHERN UTAH'S RAGE IN THE CAGE

MADISEN DAHL, NORTHERN UTAH CHAPTER NTMA



The Northern Utah Chapter of the National Tooling and Machining Association (NNTMA) hosted our third "Rage in the Cage" National Robotics Competition on March 14, 2017 at the Ogden-Weber Tech College. Thirteen teams from across the state of Utah competed. Dixie Applied Technology College won first place!

The competition has been an essential component of our Workforce Development Initiative. Our Workforce Development Committee has combined the efforts of Manufacturing Day, SkillsUSA Competition, the Machine

Utah Program and our NRL Competition. Without these programs, we will have no workforce tomorrow. This issue has brought our chapter members together to develop such meaningful programs and events.

Our community has been very receptive to it, with our teams and audience doubling every year. We had over 150 people attend this year, building the excitement for the teams and industry! No event will bring together educators, industry and the upcoming workforce like the NRL will.



NORTHWESTERN PA'S ROBOBOTS

BRIAN DEANE, NW PA NTMA ROBOBOTS COORDINATOR



The NW PA Chapter has exposed over 2000 students to manufacturing technology through the RoboBOTS combat robot program. With 40 teams and approximately 200 students competing each of the program's 10 years, it's easily the most impactful workforce pipeline development tool the chapter has deployed. First-hand testimonials from students and local chapter companies offer evidence that students' participation in the robot building competition has exposed and recruited them to manufacturing oriented education and career paths they hadn't previously considered.

The chapter and participants have also realized many other

spin-off benefits of the program. Students frequently cite the collaboration and problem solving skills they've gained in meeting the build deadlines and of course bot triage during the competition. They've learned some machining and fabrication skills along the way. The Chapter's alliance with local educators has strengthened exponentially with teachers and students visiting local manufacturers for career exploration. Additionally, chapter members make frequent presentations to parents, students and education professionals about our industry opportunities.



PITTSBURGH BOTS IQ

PHYLLIS MILLER, HAMILL MANUFACTURING, BOTS IQ EXECUTIVE TEAM CHAIR



On May 13, 2006, a dedicated group of volunteers hosted the very first BotsIQ competition at the Westmoreland Mall just outside of Pittsburgh, Pennsylvania. The idea was sparked by a dedicated group of volunteers from the precision manufacturing industry, workforce development organizations, local high schools, colleges and career and technology centers. There were an estimated 30 students in seven teams from five schools, and all told, everyone thought it was a big success. There was no way that we could have predicted the unprecedented growth we'd see over the next decade. Each year, the number of teams doubled. As school participation grew, so did our volunteer base and our following. Now, 11 years later, we hosted two preliminary qualifying competitions before our final rounds on April 28 and 29 at the California University of Pennsylvania.

While it is great to see the event grow to such proportions, the real impact is on the next generation of our manufacturing workforce. Last year alone, our message reached more than 1,200 students: manufacturing is a viable, profitable and engaging career option. We also had friends, parents and supporters in attendance to witness that the skill and expertise involved in designing and building 15-pound robots can translate into a potential career. This year, we had 62 schools and nearly 90 teams involved in the competition, and behind each school an industry sponsor—connecting with their future workforce.

BotsIQ has been a tremendous way for Pittsburgh Chapter NTMA members to connect with our community and build the future of our industry here in the city and surrounding areas.



BOTSKC

TORREE PEDERSON, KANSAS CITY CHAPTER NTMA



After our first competition with five teams (four from the same school), the response from the community, industry and other schools who wanted to participate was unbelievable. We received a front page article in the KC Star newspaper, a prime time news story and several radio ads across the city. The FUN tie to STEM and real world jobs seemed to resonate with everyone who heard about the event.

Our members are getting requests for internships, jobs and tours of their companies weekly as a result of this program. Schools, parents and students are being exposed to an industry they are interested in knowing more about. Making the connection between a career that is clean, high-skill, high-pay and long term is the by-product of BotsKC.



GRAINGER SUPPLIES: IT PAYS TO BE AN NTMA MEMBER

BY MATT GILMORE, NTMA BUSINESS DEVELOPMENT

Grainger and NTMA are partners in making the United States tool and die and precision manufacturing industries strong.

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Grainger does more than provide deep discounts on products and free shipping to NTMA member companies. They invest in the precision manufacturing industry through an annual rebate to NTMA that provides financial support to innovative NTMA programs. That rebate provides critical financial support to the OneVoice legislative effort and funds two key workforce development and education initiatives: the National Robotics

League (NRL) and NTMA- U.

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For more information, contact Matt Gilmore at mgilmore@ntma.org or 216-264-2858.



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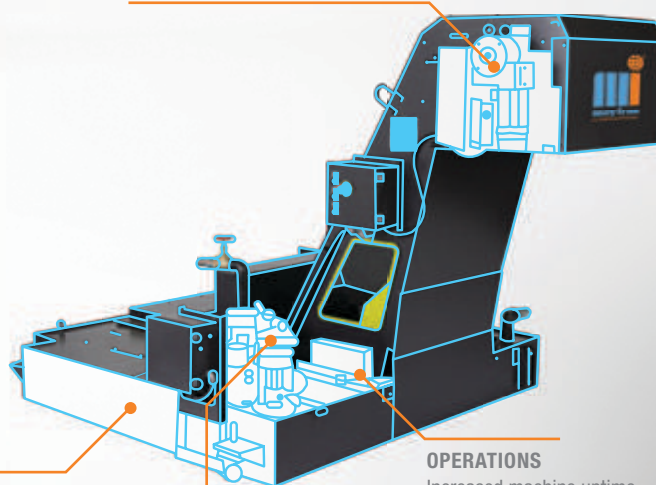
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Hello NTMA members!

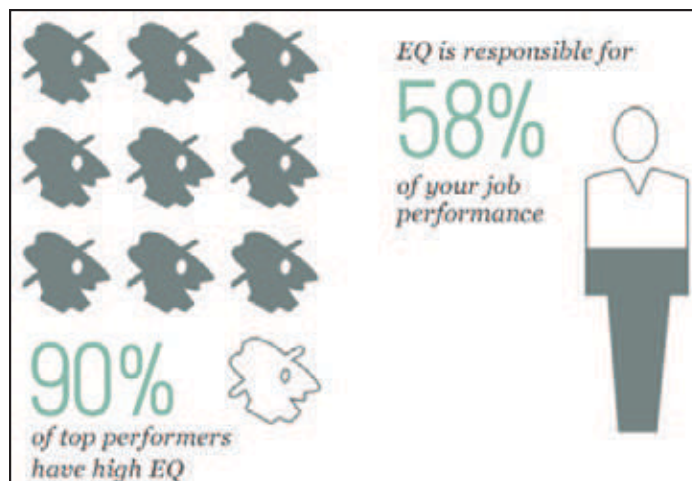
I am very excited to get to know you and your businesses, especially in terms of your workforce development needs. My career started on the shop floor as a manufacturing engineer for Owens Corning, and I have held a number of leadership and technical positions in several private and public manufacturing companies since then.

I am a huge cheerleader for manufacturing, and I can't wait to partner with you to deliver effective solutions to help you attract, develop and retain the right talent in all areas of your business. This includes creating good job descriptions, interviewing skills, hiring, performance management, coaching, competency development and technical and functional skill development.

While it might seem that manufacturing isn't the place for somewhat ambiguous topics like communication skills, emotional intelligence and conflict resolution, I

UNDERSTANDING EMOTIONAL INTELLIGENCE AND WHAT IT MEANS TO YOUR WORKFORCE

BY STACEY SCHROEDER, NTMA, DIRECTOR OF WORKFORCE DEVELOPMENT



and modify their approach to build and maintain good relationships. They know when and how to express emotions, as well as how to control them.

According to research, the majority of a person's financial success is due to their skills in "human engineering" (personality, and ability to com-

think with some reflection it becomes clear that the root of many problems is human resource related - and that working with these soft skills helps provide a foundation of growth, knowledge and better understanding for you and your team.

My goal is to provide practical information that is distilled from a broad network of sources, companies and experiences, and is immediately useful to you. For this month, let's talk about emotional intelligence, and why it makes sense to include it in your evaluation of potential employees and in your development of current employees.

Emotional intelligence was coined in 1995 by Daniel Goleman, and the concept is here to stay. Some of the hallmarks of high emotional intelligence (EQ) are characteristics like self-control, perseverance,

ability to manage stress and productive responses to constructive criticism. An emotionally intelligent person manages their own emotions, as well as their impact on others. They also read other's cues accurately,

communicate, negotiate and lead). Only a fraction is due to technical knowledge. People prefer to do business with a person they trust and enjoy the company of - even if there is another person that could provide better quality, service or cost. Do these facts resonate? Do you know anyone that exhibits those traits at your company or in your network? Are those the kinds of people that you prefer to reach out to with difficult situations, for advice, or to take the lead of a team or a project?

In later articles, we will get into more details on how to hire for emotional intelligence, and how to coach existing employees to demonstrate it at higher levels, more consistently. These strategies will help you grow a workforce that can handle the daily challenges and stresses of manufacturing in a productive way.

IF YOU ARE INTERESTED IN SOME FURTHER READING, CHECK OUT THE FOLLOWING LINKS:

Emotional Intelligence - Without the Touchy-Feely Stuff - <http://ow.ly/iT4y30bkmoz>.

Intelligence is Overrated - What You Really Need to Succeed - <http://ow.ly/KLFY30bkmza>.

Please email me your feedback, and your thoughts on future workforce development topics at sschroeder@ntma.org.



NORTHWOOD INDUSTRIES CELEBRATES 25 YEARS WITH THE NTMA

From a garage shop behind the family home, to a state of the art precision manufacturing company

BY HOLLY ELLERBUSH, WESTERN LAKE ERIE CHAPTER



Northwood Industries in Perrysburg, Ohio was established in 1968 in a garage built behind the family home by Jim Miller. Marrying into a family with many decades rooted in the machining trade, Jim started his shop as a source to supplement his engineer's salary and keep him working close to his home and family. As the shop began to take on work, Jim developed a passion to help engineers develop their ideas into working prototypes in a short amount of time.

As the company grew, they left the family garage in Northwood, Ohio and moved to a converted steel warehouse in Toledo. In 1986, Jim's son, Kurt Miller, joined his father in running the family business. With the addition of some key customers and the help from hard working, eager and young talent, the company once again outgrew their space. In 1999, the family built a new facility and moved the business to their current location in Perrysburg, Ohio. The small contract job shop quickly turned into a state of the art precision manufacturing company. The company evolved into a pre-

cision component manufacturing company specializing in the design and production of accurately machined component parts, mechanical assemblies, and machining services. With the implementation of the newest technology and the dedication of conscientious craftsmen, the company expanded in 2013 adding 12,000 square feet, doubling the size of the facility.

Kurt Miller thinks much of the company's success is due to having a great staff. Kurt is proud of the team of highly skilled machinists, talented engineers and customer service personnel at Northwood. Many of the tradesmen are trained at the Western Lake Erie Chapter's Precision Machining Apprenticeship Program. Northwood

Industries started sending apprentices their very first year as members and have graduated over fifteen apprentices through the four-year program.

It was initially the apprenticeship program offered by the chapter that influenced Northwood's decision to join the NTMA. However, it didn't take long for Jim and Kurt to see many of the benefits offered by the NTMA. Meeting other people in the industry with outside perspectives has been one of the biggest benefits of the association.

If you ask Kurt what the key to the success and longevity is for Northwood Industries, his response is, "We constantly try to improve in helping our custom-

ers solve problems with a team of hardworking skilled trades people and provide excellent customer service." With core values, such as perseverance, honesty, communication and hard work, it's easy to see how they've come this far.



5 COMPETITIVE STRATEGIES EVERY MACHINING BUSINESS NEEDS TO WIN

A SERIES ON STRATEGY FOR MACHINING BUSINESSES

BY DAN BAGLEY, NTMA STRATEGIST

PART 4 – EXPAND WHAT YOU DO TO OTHER END-USE MARKETS OR “SEGMENTS”

More customers like those I already successfully serve - in very simple terms, that's a market segment. How does thinking about and acting upon market segments propel a business forward? Why do marketers get so wrapped up in segmenting customers and what is the appeal of segments?

Now if you are like me, being lumped into a stereo-typed group by politicians, hair product companies or golf club firms isn't very appealing. But as we all know, dealing with prospects and customers one at a time is the most expensive way to cultivate new business. We need to spend our precious one-to-one time on customers who are close to saying yes, or have already said yes to working us. Segmentation by marketers is the idea that some customers are alike in enough ways that they can be treated as a group. This means that they can be recruited using similar prospects, methods, messages and venues. Segmentation is a way of selling to groups by designing a sales message, package, experience and approach that will matter. Just ask Jane Goodall who studied apes in Tanzania. “Apes!?” you say. Yes, there are important lessons from Jane.

Jane Goodall studied apes for more than 50 years. She went “native” in their



environment. To be very clear, she didn't become an ape, but she learned to smell like the apes, to respect their space and priorities and to be low to the ground, so she was never of predator-size. After some time, she could walk with the subjects she wanted to get to know... and she connected deeply with them. For decades, she

recorded ground-breaking insights. This is all part of ethology – the study of behavior. So you don't have to be a pilot to be in the Helicopter Association International, nor a radiologist to join the American Academy of Orthopedic Surgeons. But if you never join, you'll never know what your customers are really talking about, where they are going and what work is available for you.



If you want to grow, your first efforts should be to look for new customers who share similarities to those who already like and value you. Then, step into their world. It is

important when going native that you move around within your chosen audience—not just operate as an outlier. Goodall realized nothing in the apes' world lit up, clanked or smelled of smoke. She didn't pretend to be one of them, but she did make efforts to fit-in in the community in an effort to get closer and closer.

A good friend approached me knowing about my involvement in several trade associations. “Why,” he asked, “would you visit with people in lab coats and construction helmets? They don't buy machined parts,” he opined. On a trip to his town a few months later, we had dinner and it became clearer to him. He said, “I make parts for medical imaging, I think.” He explained that these were profitable parts, that he and his team learned how to hold flatness and finish, and got their masking all squared away with their paint house. They weren't close to the assembly or use of the parts, but had asked enough to figure out where the parts went. “We would love more of this work. Where do we get it?” was his question. I told him about ConExpo, Helicopter International, PittConn, and WEF, and at first his head was tilted at me. A few weeks after this he called to say that he set an appointment with his existing customer who subsequently took him under his wing and showed him around the imaging conference where they met.

At MDM West a few weeks ago, a machine shop sponsored the lanyards and more for an audience of 20,000 medi-

cal equipment engineers and executives. Nestled next to stint makers and catheters, this production firm of swiss machinists and milling experts of 404 stainless centered a booth among the PhDs. Standing stock still, people came to the watering hole they created with their booth, in the center hall. This was no ordinary parts-to-print company. They have become medical. They've learned the medical industry, beyond competencies and FDA requirements, by putting medical professionals on their board and attending medical conferences alongside white coats. They have built trust that they belong there, and the business has grown to more than 400 people. That's a good example of segmentation.

Another example of working in a segment: Approximately 200 U.S. companies, some of whom are NTMA members, attend the European Airshow in a U.S. pavilion each year whether in Farnborough or Le Bourget. There are 2-3 million parts on a typical Boeing aircraft and these companies make milled aluminum parts, subassemblies, titanium components and many more items to meet Boeings needs. While these companies may only be making a part, they understand the importance of the whole. They know standards. They know how many years a platform has been in flight. They are knowledgeable about the programs. They use this information as references to earn the right to fly on next generation projects. Each year, they earn new contacts further up and broader across the supply chain. They are passionate about the programs, patient to pursue the tiers of supply and equally dedicated to precision parts. They are also getting high margins for the extreme work they do.

Segmentation thinking is about how to sell more of what you do to the same customers. You already have credibility, but segmentation thinking is about how to grow using what you know, instead of waiting on the next make to print part...

Have a strategy question you'd like addressed? Email dbagley@ntma.org, and we'll cover them along the way.



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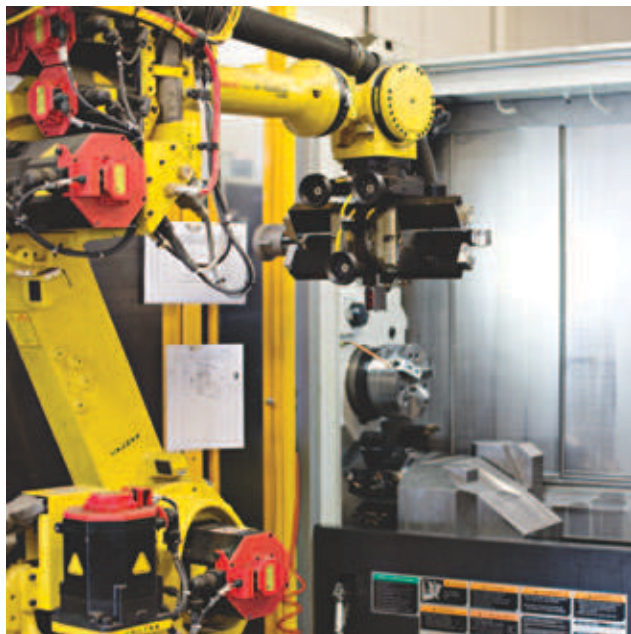
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THE JOURNEY TO AUTOMATION



When Moseys Production Machinists opened its doors 42 years ago, robotics and automation were a thing of sci-fi. Multiple shifts of workers using traditional tool-cutting machines were the order of the day for U.S. production machining companies. Moseys specialized in cellular machining—moving machines into cells around a worker who could then operate more efficiently. Today, the owner of Moseys Production Machinists, Bob Mosey, says they still focus on cellular manufacturing, but it looks a lot different. Now, machines are manned all day, but at night, they also run continuously, autonomously pushing out parts for their customers in the medical laboratory, medical device, aerospace and gas industries.

Moseys Production Machinists employees 33 people and oper-

ates out of a 32,000 square-foot facility in Anaheim, California. The Moseys automation story began in 2003. Moseys' customers were interested in becoming lean. They were asking for smaller quantities of parts, delivered every couple of weeks. Moseys was happy to accommodate, and would hold the customers' inventory and supply it as needed. In theory, the customers had the appearance of a lean organization, but it wasn't a "true lean." Inventory was simply being held off site. In an effort to truly create a lean environment for their

own company and for their customers, Moseys bought their first FMS machine.

The machine allowed Moseys to set up a part once, and never have to set up that part a second time. It incorporates two 4-axis machining centers, each with 240 tools. They are connected to a pallet pull with 32 pallets. Each pallet has a tombstone and fixturing to hold multiple parts. With this new machine,

parts could be pulled in and runs of any size could be completed on demand. The best part? Moseys could now run five pieces for the same price per piece as a 100-piece run.

This was a huge leap for efficiency, but it did come with its own set of challenges.

"When we put in our first machine, people were concerned," said Mosey. Initially, the automation process took some adjustment for his staff. Mosey explained it wasn't about replacing people, but increasing capacity. "We are not replacing people with robots, we're adding

robots to improve what we do."

While Mosey says that automation did present some initial workforce challenges, those employees that embraced technology learned that their job descriptions changed, but their success continued.

Another challenge with increased automation: managing the chips. "Chip management is now a big deal. It's all about tweaking the programs and processes to allow the equipment to run. There are a lot of little things that you don't think about in the beginning," said Mosey.

Moseys has continued to increase shop floor automation. They now have two FMS cells (consisting of 4 CNC horizontal mills). Employees load and unload these fixtures during the day, while the machines continue to run all through the night. Four years ago, Mosey added another machine known as a One and Done—in essence, two lathes and a 5-axis milling machining turn automated work center. Instead of multiple operations, this single machine can complete parts. A Fanuc robot in front of the machine loads and unloads the machine. While lathes are still manned machines, the goal is to automate those as well.

Ultimately, Moseys' automation has been a great success for the company, but Mosey is the first to point out that it is not for everyone. He encourages anyone considering automation to really think it through and to consider their business model, customer mix and how they will utilize their equipment. Another tip: consider your source. The support offered by the distributor or machine company can make all the difference in a successful automation process.

"Automation has helped us lower costs and help make us more lean. We've increased capacity. It has created a mind-set where people are looking at how we do things," said Mosey. "Using expertise to set up and improve process."

According to Mosey, More than craftsmen and engineers, Moseys is comprised of strategists, problem solvers and solutions providers. Automation has been the next step toward the company mission of continuously-improved manufacturing services.

That mind-set is likely to see Mosey through the next 42 years.



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The new R-30iB Plus robot controller features a new iPendant with an enhanced screen resolution and processing capability. The user interface, iHMI, has an icon-based screen which provides a familiar and easy-to-use experience with intuitive guides for setup and programming. It also includes tutorials from the main home page which has a design common to FANUC CNCs, enabling easier use of robots. With the help of the pro-



gramming guide, even first-time robot users can create a program for a simple handling task and execute it in just 30 minutes. Easier usage also facilitates system setup and maintenance to improve efficiency.

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CLAIRTON BOTSIQ TEAMS VISIT & TOUR ACE WIRE SPRING & FORM

BY JOHN HIGGINS, MARKETING MANAGER,
ACE WIRE SPRING & FORM CO., INC.



Ace Wire Spring & Form Co., Inc. has been a proud sponsor of the Clairton High School BotsIQ teams for more than five years. Recently, members from the Clairton BotsIQ teams visited Ace Wire Spring to show off their robots for the BotsIQ competition, and to take a tour of the Ace shop to see manufacturing up close and in person.

When the Clairton BotsIQ team members arrived, they explained what the robots were made out of, how they functioned and the reasoning behind their designs. The students keep a detailed notebook, cataloging all design drawings and robot information for every step of the process.

After the students completed their presentations, the Ace staff gave them a tour of the machine shop. The students got to see different springs and wire forms being made, and all the work that goes into creating them. Craftsmen in the shop demonstrated the programming of the machines, design work for the project and running of the machine itself-- all important stages of the process to create the customer's end

product.

After the tour, back in the office, the students learned about the many opportunities in manufacturing. Ace Wire Spring believes in supporting the local community and sharing with students the career opportunities in manufacturing. By sponsoring the Clairton BotsIQ teams, Ace Wire Spring is helping with a program that provides an exciting, hands-on experience for a potential future workforce that will be needed by the manufacturing industry.

If you have any questions please contact John Higgins at 412-458-4830 or email jhiggins@acewirespring.com. Please visit our web site at www.acewirespring.com

Editor's Note: Pittsburgh's BotsIQ Finals were held April 27-29 at California University of Pennsylvania. The National Robotics League (NRL) Competition is set for May 19 and 20, 2017. For more information about competitions and the NRL, see our story on pages 14-15.





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