

THE RECORD

Published by the National Tooling and Machining Association

INSIDE THIS ISSUE

Automated Laser-Ablation Cells Increase Efficiency and Quality in F-35 Lightning II Wing Assembly – pp 20-21

The Incredible Value of Referrals – p 22

and so much more ...



BLASTING INTO THE HEADWINDS 2023

(Long-range Supersonic Fighter, the F-35 - pp 20-21)



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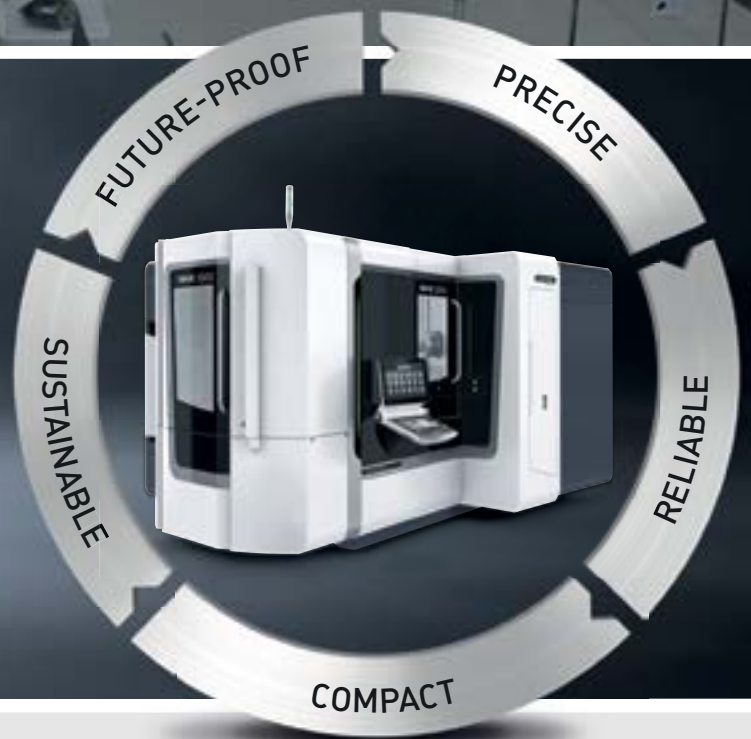
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THE RECORD

OPERATIONS & EDITORIAL

Roger Atkins, President
Doug DeRose, Editor
Rena Montedoro, Editor

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NTMA EXECUTIVE COMMITTEE

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External Board Member - Barry Laughlin
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Upcoming NTMA National Events



Chapter Leadership Summit - January 25-27th - Albuquerque, NM



Emerging Leaders Conference - March 8-10th - Knoxville, TN



MFG 2023 - April 26-28th - Phoenix, AZ



International Tech Tour - May 6-12th - Germany & Switzerland



Engage 2023 - October 18-21st - Indianapolis, IN

What's Your Story?

Send Us Your Story

Each issue of The Record will feature stories from members – and we want to hear from you. Send us stories of success, or those that fit the theme of the month's issue. The submission deadline is the first of the month prior to publication.
Contact Rena Montedoro at rmontedoro@ntma.org

Upcoming Themes for The Record

FEBRUARY

Advocacy...Stay Aware



PRESIDENT'S UPDATE

Let me open this letter by first saying, **Happy New Year to all of our NTMA and our Partners!** Like any new year, we would just like to start with a clean slate and be able to implement our goals and objectives for the year without any self-inflicted headwinds. Always a good wish to have, but seldom are we ever unaffected. As much as I would like for us all to start 2023 with no headwinds, I'm afraid we are stepping right into some part of an unknown headwind called a "recession." Whereas no one can predict the actual start or finish of such an event, nor can they pin point the areas of greatest economic effect, "entrepreneurs" will once again be left to fend for ourselves.

Honestly we are as good as anyone at predicting the effects of such a potential downturn when it comes to manufacturing. It is my personal hope and outlook that your current backlog coupled with your customers' current demand backlog, and improving supply chain issues will offset what potential effect a recession will have on our part of the manufacturing community. That said, I would encourage each of you to do your own due diligence with your supply chains and customers' demand outlook. Based on current chatter both in government and media, there seems to be a strong sense of some type economic downturn for the first half of the year. Keep your eyes open and be alert.

NTMA can help. It's not only our individual successes we strive for, but it is also the combined success with our peers and partners that strengthen our industry. Reality is, your NTMA peers are not your competition, but those who are not connected to a manufacturing community both domestically and internationally that are the true competitors. The fact is, communities work together for the good of all and individuals work together for themselves. Yes, we all work for our own success to a degree, and I do not mean to imply that working with a focus on your own company is wrong, but working as a part of a manufacturing community

does hold all of us to a level of accountability and collaboration not seen by companies with an individual only focus. Accountabilities such as respecting each other's customers and employees; collaboration, such as partnering on jobs, sharing jobs between shops, and sharing opportunities that don't fit your company. These are the unseen benefits of organizations like NTMA and why I am proud to have been associated with NTMA for my entire career.

Like you, at NTMA we are preparing to start the year strong. We know our strength depends on the success and strength you the members have accomplished this past year. NTMA will start the year having positive net growth as an association as seen by the many new members being recognized in the "New Members Highlight" section of the Record. From industry partners, to enhanced conferences, to leadership training, to Int'l Tech Tour, and to our new community communication platform called NTMA Connect, we will work to bring added services to NTMA and more value to you the members. NTMA Connect alone, will allow NTMA members to communicate nationwide with other trusted NTMA members on issues, questions, and insights on an as needed basis. Imagine an immediate phone a friend hot line for manufacturing related issues from trusted peers.

In 2023 membership growth will continue to be our primary focus as this is the greatest way to have increased impact for our industry with both governmental leaders, leaders of OEM Manufacturing Companies (our customers), and leaders of more industry partners. We need your help and support to achieve the numbers we feel required to have the desired impact. Companies join NTMA because people/peers ask them to join. You can either make that personal invitation to potential members and turn it over to your Chapter Executive or you can turn it over to Carrie Marsico or Rich Basalla at the national office to follow-up.

As a reminder, NTMA will only have two conferences in 2023. The first one, we will again join the **MFG Meeting April 26-28 in Phoenix, AZ**. This is an event that brings both the machine tool builders and we the machine tool users together to exchange ideas, thoughts, and dreams about the future of manufacturing. This is our place to have a say and be a part of manufacturing solutions for tomorrow. Our second conference will be **Engage 2023 October 18-21 in Indianapolis, IN**. Again a place to bring your thoughts, ideas, and to network together for solutions with industry peers.

As an association, we will again be covered by our industry governmental advocacy and public relations partners at Franklin Partners and the Policy Resolutions Group. If you have been around NTMA very long, you know that we have one of the best teams in Washington representing us small/medium size manufacturing companies and protecting our best interest in policy and resolution decisions.

In closing, if you ever wanted to be excited about manufacturing, the time is now. Regardless of the head winds seen or unseen, opportunity for US Manufacturers is here, right now and will only continue. I ask you to engage with NTMA and lean into the opportunities that come your way. I also ask you to respond to the NTMA survey's. These surveys are vital to our association providing information to best support you and your business.

We are here to support you, promote you, and cheer you on as a part of our NTMA Community. Starting in 2023, our new NTMA statement will be "**Advancing Manufacturing's Future.**"

Let's advance it together. Blessings to all for a great 2023.

Roger Atkins, President – NTMA



Emerging Leaders Conference March 8-10th - Knoxville, TN

THE ANNUAL MEETING OF THE NEW JERSEY & EASTERN PENNSYLVANIA CHAPTER OF NTMA INCLUDED SIX PRESIDENTS.



Pictured from left: John Shegda (KMM Group), incoming Chapter President Patrick Cero (Cer-Mac Inc.), Bob Gaum (Gaum Inc), immediate Past President John Lohse (Betar, Inc.) and Ted Toth (Rosenberger NA). Not pictured: Bill Wilke (MidLantic Precision). Photo: Paul Schindel.

HALF A CENTURY OF WORKFORCE DEVELOPMENT AND A NEW VISION FOR 2023

Pittsburgh Chapter NTMA Builds the Regional Workforce

By: Molly West, Pittsburgh Chapter NTMA



In the 1990s, workforce development emerged as a human resources-based approach to economic development—developing people, that would in turn, develop business. It's grown into a widely accepted strategy across industries and regions. The Pittsburgh Chapter NTMA was one of the first to pioneer this approach with tremendous success building interest and skills in people that go on to build successful companies through their knowledge and experience.

"No one does workforce development the way that the Pittsburgh Chapter NTMA does it. We've been developing the southwestern Pennsylvania workforce for nearly 50 years," said Ed Sikora, executive director of the Pittsburgh Chapter.

He points to 1976 as the official origin of the chapter's workforce development initiative. The chapter established a regional apprentice training program for individuals seeking metalworking education with standards focused on world-class tooling and machining. Each year, the Pittsburgh Chapter accepts approximately 50 new apprentices into the four-year training program. Apprentices complete 144 hours of classroom training and 2000 hours of hands-on application at their job sites annually.

Apprenticeships increase employee retention, reduce turnover-rate and lower the cost of recruitment. Since its inception, the Pittsburgh Chapter NTMA has trained more than 3,000 journeymen machinists across three locations. The program boasts a specialized curriculum continuously fine-tuned by a committee of experts and taught by quality instructors with industry experience.

"It's really our people that set our program apart," said Liz Blashock, Apprentice Program coordinator. "We have a dedicated volunteer steering committee that reviews our materials constantly to make sure that we are providing our students with the latest,

most up-to-date information to really hone their skills. And, our instructors are truly top-rate. These are people who work in the industry and know what employers need from their team."

Over the years, the Pittsburgh Chapter provided opportunities for continuing education both for manufacturing professionals and those interested in growing our regional industry. The next big development began with a dedicated group of manufacturers and educators who believed it was time to reach the next generation.

BotsIQ combat robotics program began with a test group of 6 schools in 2005. It was deemed "The Smart Sport." The program was a monumental success, consistently doubling in participation and the chapter hired its first dedicated BotsIQ director. Today, the program has expanded beyond combat robotics and now has a staff of six full-time and one part-time education and manufacturing specialists.

"In a time when manufacturers are challenged to find skilled workers to meet their workforce needs, high-quality education and training programs like BotsIQ are necessary to provide youth with a supportive system to explore manufacturing career opportunities and build in-demand skills," explained Michel Conklin, executive director of BotsIQ.

This philosophy cultivated an entire gamut of youth outreach programs. Close-the-Loop provides high school students with opportunities to learn about the manufacturing industry through individual career plans that connect students with tours, job shadowing, internships and scholarship opportunities. In 2018, BotsIQ launched BotsIQ Academy offering students actual industry courses from Tooling U-SME, Mastercam U, and SolidProfessor to grow their manufacturing knowledge. The Robotic Technician Pre-Apprenticeship is a state-registered program with a formal curriculum that consists of online

instruction and related hands-on projects in the areas of safety, math & measurement, manufacturing, electronics, robotics and career-ready skills. BotsIQ Post-Secondary Internship connects young adult high school graduates with paid, real-world work experience at local manufacturing companies. Finally, the Cobot Challenge, open to students in seventh through ninth grade, presents unique, project-based learning experience that aligns to skills in the advanced manufacturing and robotics industry.

Since its inception, BotsIQ has introduced more than 12,000 young people to manufacturing careers through hands-on activities, tours, summer camps and summer internships. The most exciting news? In post-program interviews, more than 80 percent of participants say they are interested in a future in STEM and manufacturing.

In 2023, the Pittsburgh Chapter NTMA is poised for the next phase of this workforce development evolution: the BotsIQ Training Center. The new facility will be the first of its kind in the region providing a hands-on machining area, combat robotics testing areas as well as classrooms and office space for summer camps, after school programs and training bootcamps. The space will meet the needs of existing programs and offer plenty of space to grow into the next great idea... and there is always a next great idea.

In southwestern Pennsylvania, NTMA members, the chapter board of directors and staff believe passionately that workforce development is central to the success of regional manufacturing. The Pittsburgh Chapter is continually looking for opportunities to expand outreach and build skills because educated and empowered workers make stronger companies. Workforce development is their mission. It's their goal. It's the greatest benefit of membership.



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NEW MEMBER HIGHLIGHTS

ROBBJACK CORPORATION National Associate Member



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RobbJack Corporation has been employee-owned for more than 30 years, which is the average term of service for over 20% of our staff, and the management team has a combined 185 years of experience in the cutting tools industry. Whether your needs are for standard stocked items, or customized tools for your specific application, we are here to help you. We define "service" in our customer's terms, delivering consistently superior quality products, and solving problems quickly and effectively.

3300 Nicolaus Road, Lincoln, CA 95648
(800) 527.8883
www.robjack.com

MF TOOL AND DESIGN, LLC Connecticut Chapter Member



MF Tool and Design is a small two-man team located in New Britain, Connecticut. We specialize in automated assembly machine parts, tool and die work, as well as offering our services as a tool room to companies that lack the workforce to complete some of the low quantity work. We run two brand new HAAS mills and one new HAAS lathe, along with a few automatic surface grinders. I started the shop back when I was 19 after I was given the chance to purchase an older ProtoTrak mill where everything took off from them. At 21, we have been able to grow the company to help meet the expectations of larger companies after 2 years in business.

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Based in Statesville, N.C., Keselowski Advanced Manufacturing (KAM) is a vertically integrated manufacturing company offering complete integration at every step of the production process. KAM develops custom and serialized production solutions for the space, aerospace, defense, power generation, and maritime industries with a focus in turbomachinery, hypersonic engine parts, casting and brazing replacements, and heat transfer components. Leveraging an integrated project team model, KAM offers large format metal additive manufacturing, 7- axis CNC machining, CT/X-ray scanning, final assembly, full metrology, and on-site metallurgy laboratory services.

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LIFT Education Institution Member



As a public-private partnership, LIFT brings together government, industry, and academia to accelerate advanced manufacturing by connection between materials, processes, systems, and talent across the U.S. manufacturing base. That national ecosystem includes large OEMs, the top academic and research institutions across the country all the way to small and medium-sized manufacturers and start up organizations, each working in concert to position the United States as the global leader in advanced manufacturing.

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WERMKE SPRING MANUFACTURING St. Louis Chapter Member

Since 1953, Wermke Spring Manufacturing has been producing custom springs for the tool and machine industry. Manufacturing to customer specifications, we produce multiple kinds of springs using a variety of material types and sizes. Our team has over 100 years of spring-making experience and relies on tried-and-true spring-making techniques as well as the latest technology and equipment including CNC spring coiling machines. Wermke Spring is ISO 9001-2015 certified. Precision, reliability, workmanship, and on time delivery are the cornerstones of our business and our top priority is to provide high-quality products that exceed our customers' expectations.

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BEDFORD MACHINE & TOOL, INC. Indiana Chapter

Bedford Machine & Tool Inc was founded in 1987 by Doug Conrad and his partner Larry Parsons. They are based in Bedford, Indiana in our 96,000 square foot building. Bedford Machine & Tool is equipped with 35 ton cranes and can handle large parts up to 10ft x 25ft. They also design and build automated equipment such as leak testers, trim presses, robot grippers, assembly stations, etc. Capabilities include repair and rebuild dies for automotive die cast companies. They have 35 years of experience and knowledge in solving manufacturing challenges.

2103 John Williams Blvd., Bedford, IN 47421
(812) 275-1948
www.bedfordmachine.com



HIGH PEAK MACHINE Northern Utah Chapter Member

HP Machine was founded in 2021 in Centerville Utah, and began by supplying high quality machined parts, components, and complex assemblies. HP machine is ISO 9001:2015 certified shop, and offers high quality CNC machining for prototype parts to high-volume production runs. We take pride in customer satisfaction and on time delivery. Current capabilities include CNC mills, CNC turning with live tooling, CAD/CAM, and inspection. We are continually growing our capabilities. With our skills and resources, we have a solution to meet our customer's needs.

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LANTMA THANKED AND HONORED PAST PRESIDENT

LANTMA thanked and honored past President, Tim LeFevre, at the Holiday Party held on December 12. In addition, the board celebrated Micheline Varum coming in as the new president and thanked LANTMA members for their contributions over the past year.



Micheline Varum presented award to outgoing President, Tim LeFevre.



LANTMA recognized board members (left to right): Danielle Skinner, Hiba Nabri, Mike Rim, Jamie Ausec, Stephen Goodman, Rick Bergkamp, Keith Garrison, Micheline Varum, and Hernan Ricaurte.



Thank you Paperless Parts and Trepanning Specialties for your sponsorship!



Holiday Fun at Bistango!

O-D TOOL AND CUTTER, INC. OF MANSFIELD WINS THE 2022 “MAKING IT IN MASSACHUSETTS” MANUFACTURING AWARD

The Mansfield Legislative Delegation is honored to announce that O-D Tool and Cutter, Inc. located in the town of Mansfield is a 2022 recipient of the “Making it in Massachusetts” Manufacturing Award presented by the Massachusetts Legislative Manufacturing Caucus.

The Mansfield Legislative Delegation had the pleasure of nominating O-D Tool and Cutter, Inc. for this award in recognition of their outstanding leadership skills in the manufacturing industry. President Kevin O'Donnell, Vice President Patrick O'Donnell and Eileen Molinario, Sales & Production, from the company were presented with this award at the 7th Annual Manufacturing Awards Ceremony on Friday, September 16th at Polar Park in Worcester, MA. The ceremony was accompanied by the “Massachusetts Manufacturing Mash-Up,” a conference hosted by The Center for Advanced Manufacturing (CAM), along with MassMEP, MassRobotics, Forge, WPI and MassHire Boards to kick-off October's manufacturing month.

“It is a great honor to recognize the company and their dedicated workers as a 2022 recipient of the “Making it in Massachusetts” Manufacturing Award, said Senator Feeney. O-D Tool and Cutter, Inc. is a family run business which has been manufacturing and providing high quality cutting tools and services to its customers for over 60 years. Their expertise in manufacturing, designing, sharpening and altering tools has cemented them as a trusted manufacturing partner in the Commonwealth, and I am so proud to have them in the Bristol & Norfolk District,” added Senator Feeney. O-D Tool and Cutter Inc. was founded by Elizabeth and John O'Donnell in 1959 and is now continued by their children. They are a full-service CNC Tool grinding facility utilizing 2 full shifts. Their wide range of capabilities enables companies to use them as their source for designing and manufacturing tools and sharpening and altering standard tools. In addition, O-D Tool and Cutter Inc. distribute some of the best tooling available in the market today.

“The O'Donnell family and our team are humbled and honored to receive such an award. We appreciate all

the Massachusetts delegation who spent the time to visit our company in November of 2021 to see a very unique state of the art grinding facility which we are very proud of for 63 years. We appreciate you all recognizing O-D Tool & Cutter Inc.,” said Kevin M. O'Donnell, President of O-D Tool and Cutter Inc.

“I am proud of the work this Family Owned Business does in Mansfield and their outreach to our Vocational Schools to teach, train and hire young people to ensure their continued success, both the Employee and Employer. Congratulations!!”, said Representative Jay Barrows (R-Mansfield).

“For over 60 years O-D Tool & Cutter has been a valuable member of the Mansfield Community and a leader in the Massachusetts Manufacturing Industry. This family owned business, exemplifies everything that the “Making it in America” Manufacturing Award was designed to celebrate and I am pleased to see

them getting the recognition they deserve,” said Representative Ted Phillips (D-Sharon).

“Kevin O'Donnell and his team at OD-Tool always go above and beyond to give back to our community. The O'Donnell family's success is the epitome of achieving the American dream. Kevin has been a mentor to me since we served on the School Committee together, where he inspired me with his spirit of community involvement, generosity, and leadership,” said Representative Adam Scanlon (D-North Attleboro).

Formed in August 2014, the Manufacturing Caucus includes more than 60 legislators from around the Commonwealth. Lawmakers focus on training for manufacturing employees, encouraging innovation by helping start-ups access resources, and expanding apprenticeship opportunities in key manufacturing sectors. The Caucus is chaired by Representative Jeffrey N. Roy and Senator Eric P. Lesser.



Left to right, State Rep Ted Phillips, State Rep Adam Scanlon, VP Patrick O'Donnell, VP Eileen Molinario, President Kevin O'Donnell, State Rep Jeffrey Roy



Left to right, State Rep Adam Scanlon, President Kevin O'Donnell, VP Eileen Molinario, VP Patrick O'Donnell.



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DATANOMIX AND VALLEN PARTNER TO BRING REAL-TIME FACTORY ANALYTICS TO INDUSTRIAL MANUFACTURERS

Vallen adds Datanomix production monitoring software to its Metalworking Solutions Business portfolio

Datanomix, maker of the industry's only Automated Production Intelligence™ software platform, announced a partnership with Vallen to offer the Datanomix software solution to its wide range of manufacturing customers. Datanomix is well known for its No Operator Input™ approach to production monitoring. The partnership enables Vallen to offer the Datanomix solution to industrial customers seeking improvements as part of Industry 4.0 and industrial automation initiatives.

"We are excited to welcome Vallen into the Datanomix Partners Program," said John Joseph, CEO of Datanomix. "It's clear that selling new technology to manufacturing customers requires a deep and successful history of selling value-added solutions. Vallen is a respected brand in the industrial market. They can now have conversations about adding a new layer of value by introducing our LIVE production intelligence software to the portfolio of solutions."

As part of the reseller program, Datanomix will train Vallen's Metalworking customer-facing team on selling, installing, and supporting its customers, with comprehensive information on the Datanomix platform and its benefits for precision manufacturers.

"Several machine monitoring companies are selling basic utilization services to manufacturers today. We carefully evaluated the contenders and selected Datanomix for its true real-time job insights and ability to translate job performance to business impact. This aligns with Vallen's mission of creating value for our customers," said Chuck Delph, CEO of Vallen.

"The information presented by Datanomix accelerates time to information, shortens corrective action cycles, and directly impacts decision-making at exactly the right time. As Vallen focuses on innovation and our leadership position in metalworking solutions, we are truly excited to be offering Datanomix to our customers."

The Datanomix solution automates the collection and analysis of manufacturing data and delivers deep insights into production performance, both in real-time and over time. Designed for growth-oriented precision manufacturers, the Datanomix platform delivers industry-leading innovation of manufacturing productivity with No Operator Input™ without burdening the end user with cumbersome analysis or data crunching.

About Datanomix

Datanomix delivers Automated Production Intelligence for discrete manufacturers with No Operator Input™ required. Its core product set includes its flagship Production Monitoring system, along with Digital GEMBA Boards, and Condition Monitoring systems. Based in New Hampshire, Datanomix exists to provide manufacturers with out-of-the-box reports and workflows that align with the way manufacturing people already work without the need for manual data crunching or workflow disruption.

Learn more at www.datanomix.io.



About Vallen

Vallen is an industry leader in delivering flexible supply chain solutions and services along with a comprehensive range of maintenance, repair, operating, production, safety and electrical products to meet the growing supply needs of customers in facilities across North America and Europe. For more information, visit www.vallen.com.



ROCKY MOUNTAIN CELEBRATIONS

By: Kaity Van Amersfort, C&R Management, President

RMTMA members and industry friends celebrated the holidays at Viewhouse Restaurant in Denver welcoming our new members, congratulating our 2023 board of directors, and also thanking a few long-time board members for their service.



2023 Incoming Board



Recognizing Scott White for His Many Years and Dedication as He Steps Down From the Board But Still Remains Active in the Chapter.



Recognizing Justin Quinn as Immediate Past President.



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DATA. DIGITAL. DONE.

Experts from the IMTS Job Shops Workshop at IMTS 2022 reconvened for part two: Taking the Traditional Job Shop Digital to talk tipping points and first steps for transforming to a digital job shop on IMTS+ at [IMTS.com/Plus](https://www.imts.com/plus). Moderated by Gary Vasilash, Editor-at-Large, Gardner Business Media, the panel included: Aneesa Muthana, President, CEO, Co-owner, Pioneer Service Inc.; Scott Volk, Vice President, COO, MetalQuest; Jennifer Herron, CEO, Founder, Action Engineering; and Peter Doyle, President, CEO, Hirsh Precision Products Inc.

“Whether you think you need to go digital or not, you do.”

TIPPING POINTS

Staying competitive is what motivates most job shops to go digital. That was certainly the case for Pioneer Service Inc., a precision machining shop in Illinois. “Our digital transformation was essential to our survival after outsourcing decimated our business,” explains President and CEO Aneesa Muthana. Scott Volk, the vice president and COO of MetalQuest, a precision machine shop with locations in Nebraska and Idaho, struggled to find qualified people to fill open positions. His shop went digital to provide necessary support to limited staff. “We started in 2002 with a new ERP [Enterprise Resource Planning] system, so that I could better manage and use materials,” Volk says. “Then we added machine monitoring. Now, we are using robotics, freeing staff to perform more value-added tasks.”

At Hirsh Precision Products Inc., the digital revolution started in the 1990s with training efforts and progressed through tracking run times and set ups. Under the leadership of President and CEO Peter Doyle, Hirsh is now starting to use digital innovations to address ongoing supply chain challenges.

NOT THE DATA POLICE

Changing minds is the first step to going digital for every job shop. Implementing digital manufacturing is primarily a cultural transition, according to Jennifer Herron, CEO and founder of Action Engineering, a firm that coaches manufacturers through digital transformations. She notes that the transition is 25% technological and 75% cultural. Buying digital technologies is the easy part. Shop owners must convince staff to adopt the technology.

NEXT STEPS

Start small and start now. That was the consensus among the job shop panelists. Transforming your traditional shop to a digital shop is not an all-or-nothing proposition.

Look at one area where you know you can improve performance and incorporate data collection. That can be as simple as adding a tablet to a machine



IMTS Job Shops Workshop: Taking the Traditional Shop Digital (left to right): Aneesa Muthana, President, CEO, Co-owner, Pioneer Service Inc., Scott Volk, Vice President, COO, MetalQuest, Jennifer Herron, CEO, Founder, ACTION ENGINEERING, Peter Doyle, President, CEO, Hirsh Precision Products Inc., Gary Vasilash, Editor-at-Large, Gardner Business Media

“Transparency is key,” notes Muthana. “It is all about your intent. Be clear that you are gathering data not to punish employees but to help them enhance their performance.”

She further noted that when digitization is approached with openness, staff are often excited to adopt new technologies. In many cases, digital tools can even help with recruitment by showing younger prospective employees that manufacturing is modern, not dirty and antiquated.

to track run times. From there, you can think about automating monotonous tasks and increasing communication between machines.

“There is no excuse not to go digital. It is imperative,” Volk says. “Whether you think you need to go digital or not, you do.”

ST. LOUIS CHAPTER'S ANNUAL MEETING IS A HOME RUN!

By: Sally Safranski

This year, the St. Louis Chapter proved that in a baseball town like St. Louis, the only place to host a really fun Annual Meeting is Busch Stadium, home of the St. Louis Cardinals. Not only at the stadium - the meeting was in the Cardinals' Clubhouse (the locker room) with a very special VIP guest, Cardinals mascot Fredbird!

Other VIPs included NTMA Chairman-elect Gillen Young, who led the oath of office for the 2022-23 Board of Directors. Also recognized were NTMA Honor Award recipient Pat Walsh (Ehrhardt); guest speaker Mike Shereck; and several members who received NTMA recognition including anniversary recognition plaques, NTMA Safety and 6S Honor Awards. We celebrated workforce development initiatives including \$14,500 in 2022 Scholarships and recognized the 2022 BotsKC champions' coach from Fort Zumwalt West High School. The Chapter's

new tradition was also a hit – celebrating Chapter “Notables” an opportunity for members to share highlights of the last year: company and school anniversaries, awards, mergers and acquisitions, etc. The St. Louis Chapter welcomed 11 new member companies and associate members that have joined the Chapter in the last year and also a guest whose company joined NTMA the following week.

Chapter Executive Sally Safranski celebrated her birthday with Fredbird leading the group in singing Happy Birthday. Many thanks to the meeting sponsors, Grainger and Federated Insurance. One lucky winner took home a Cardinals uniformed Build-A-Bear, which was raffled off to those who made a donation to the Cardinals Cares Holiday Gift Drive – over \$1600 was donated by St. Louis members. The only big question left at the end of the meeting was: how does the St. Louis Chapter top this next year?



Bill and Debbie Bachman with Annual Meeting VIP guest, STL Cardinals' mascot Fredbird.



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CHAPTER
LEADERSHIP
SUMMIT

Chapter Leadership Summit - January 25-27th - Albuquerque, NM

An exclusive event for NTMA Chapter Leadership, CLS is all about maximizing NTMA membership at the local level. Learn ways to engage your chapter and build your regional coalition for stronger companies and a stronger industry. Don't miss this opportunity to connect with your fellow NTMA Chapter leaders!



EMERGING
LEADERS

Emerging Leaders Conference - March 8-10th - Knoxville, TN

To ensure the future success of our businesses and our industry, we have to build the future today. NTMA gathers the best and brightest up-and-coming industry leaders to network, share knowledge, and brainstorm about tomorrow's manufacturing industry.



APRIL 26-28, 2023 • PHOENIX, ARIZONA



AMT

MFG 2023 - April 26-28th - Phoenix, AZ

NTMA partners with the Association for Manufacturing Technology (AMT) for this interactive 3-day discussion of the technological advances, innovative strategies and real-life case studies. It's the perfect platform for manufacturers to gain and share industry knowledge.



TECHNOLOGY
TOUR 2023

International Tech Tour - May 6-12th - Germany & Switzerland

Take this opportunity to learn and observe global best practices that can be applied in your own company. We've scheduled strategic stops and tours to highlight some of Europe's most successful manufacturing companies.



Engage 2023 - October 18-21st - Indianapolis, IN

NTMA's signature event is not to be missed! Engage 2023, The Precision Manufacturing Conference, pulls together everything great about NTMA into three days packed with networking, advocacy, and learning. You'll enjoy nationally acclaimed speakers, roundtable discussions, social events, and breakout sessions designed to educate and inspire. Join us as we build on NTMA's long legacy of providing precision manufacturers and industry leaders with the invaluable experience of gathering together to network, learn and advocate for the advancement and future of the industry.

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ONE VOICE: FEDERAL GOVERNMENT ADVOCACY PROGRAM

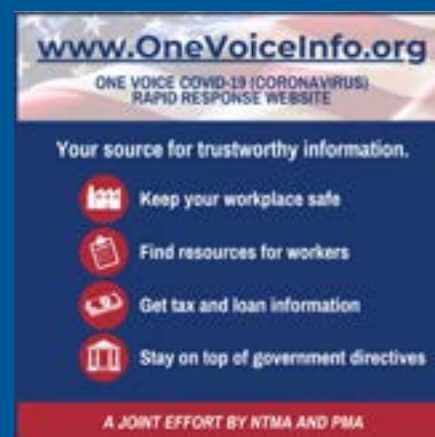
As US manufacturing continues to navigate the unique challenges and changes brought on by the last year – and a change in administrations – it remains important to have a partner in advocacy. NTMA helps provide this support by working closely with the team at One Voice: the combined federal government advocacy program representing small-and medium-sized business manufacturing in the US.

With regulations, policy, and shop safety all constantly evolving, One Voice has a wealth of fantastic resources, developed to help keep your shop informed and prepared for whatever comes next. In addition to ongoing COVID-19 response information – in line with any and all changes that our industry may need to know – the team at One Voice also

provides informative policy webinars, news releases, educational materials, video recaps, and much more. Don't forget about the Talking With One Voice podcast – every episode, the One Voice advocacy team breaks down how the latest news from Washington impacts manufacturing businesses across the country.

It's yet another way your shop can get quick, concise information on everything from tax development to loans and even workforce development issues. You can send in your key questions to be answered by emailing onevoice@policyres.com. We hope you continue to utilize this key partner in One Voice – one that ensures that millions of manufacturers across the country have their voices heard.

Please visit www.metalworkingadvocate.org for more information.



NORTH TEXAS NTMA BOARD MEMBERS CELEBRATED THE RETIREMENT OF LONG TIME BOARD MEMBER, PAT MCCURLEY.

Pat served on the board for several years heading up committees and also helping to bring in new members.



Pictured left to right: Pat McCurley, Todd Ellard, Bill Walter, Chris Flemming, Allen Werner, Scott Paulk, and Frank Burch

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AUTOMATED LASER-ABLATION CELLS INCREASE EFFICIENCY AND QUALITY IN F-35 LIGHTNING II WING ASSEMBLY

In December of 2020 Fastems announced an agreement for the delivery of two automated structure laser ablation (Auto-SLC) robot cells to Lockheed Martin's Fort Worth, Texas factory. The cells are used in the F-35 Lightning II wing assembly line. The delivery was completed in early 2022.

To summarize, three key results of the project include:

- Ablation time reduced to half
- Quality controlled ablation process means less disbonds
- Overall process stability and quality increased
- What are Auto-SLC cells and why are they suitable for this application?

F-35 fighter jet wings are comprised of a metallic understructure with carbon-fiber panels, making them lightweight and extremely difficult for radar technologies to detect. The outer panels are fastened to the wing structure using bolts and bonded nutplates. To

ensure the wing assembly meets performance requirements, the bonding interface between the nutplate and the structure must be completely clean from any surface treatments, topcoats, dust, or other contaminants.

To better understand the scope, each wing frame of a F-35 has around 1500 holes that require ablation. The Auto-SLC uses a laser to ablate the surface around the holes where nutplates are bonded, removing any surface impurities which may taint the bonding surface. The system incorporates a dust-removal system that takes care of any evaporated impurities during the ablation process. The cells also feature an automated ionized water-flushing system for cleaning the wing of any potential debris prior to the ablation process.

Ablation of the bonding surface is very important as it eliminates disbonds of the nutplate during the wing assembly process. Any disbonds during the manufacturing

process require wing disassembly, nutplate retrieval, and reassembly of the wing. This can add up to a costly delay of several days.

Prior to installing the cells, the ablation process was performed manually using a handheld unit. This legacy system was cumbersome, limiting the number of holes that could be ablated. Automation of the process has allowed for a smaller unit, therefore increasing the number of holes that can be ablated and reducing the overall time of the hole prep processes. More ablated holes also mean reduced disbonds and further time savings downstream. The Auto-SLC uses machine vision aided positioning for accuracy and smart quality control. Automation of the system cuts the ablation processing time in half.

KEY TECHNOLOGIES

Auto-SLC cells benefit from digital twins, which means that the real-life manufacturing cells have digital representative 3D-models

that enable programming and testing in a safe environment and without production disturbance. When it comes to robot programming, the digital twin is not simply a nice feature, but rather an absolute must: teaching the exact location of thousands of holes is impossible to handle manually. Programming in the digital environment is also critical for flexibility, allowing for automatic and instantaneous updates to be saved and tracked throughout the process.

Thanks to machine vision solutions from the Finnish supplier Roima, the ablation process can position itself with a tolerance of +/- 0.01 mm. This is achieved by fine adjusting the laser beam with the help of the machine vision. The combination of robot accuracy and machine vision adjustments is critical to ensuring the system meets its technical requirements while operating within its environmental and budget constraints.

The internal structure of the wing is very narrow and labyrinth-like, creating a challenge for the system to ensure reach its target number of holes while avoiding contact with the part. In the most difficult areas, the laser head is only millimeters away from the wing body. To achieve maximum accessibility, several hundred hours were spent on the 3D-simulation to design the laser end-effector's positions and to determine the robot's movements. The laser equipped end-effector used in Auto-SLC's is truly unique in this sense.

PROJECT OUTCOMES

Featuring so many novel technologies, the project has given Fastems much more experience in laser, machine vision, and advanced robotics. Also, the integration capabilities of the company have risen thanks to the satisfactory cooperation with Roima and Ionix who designed the laser ablation end-effector.

"Partnership with Roima and Ionix was one of the key elements in successful developing of this project. Combining Fastems' leading aerospace automation experience with both partners' competence on their fields is what enabled us to deliver a cutting-edge application to a world-class customer," says Mika Laitinen, Fastems' Sales Director of Robotic solutions.

Fastems and Lockheed Martin share many years of history. The story of the Auto-SLC cells began in AeroDef 2017 where Jeff Langevin, Assembly Automation Lead – Manufacturing Technology at Lockheed Martin Texas Fort Worth met with Risto Niemi, Fastems' Solution Sales Director. At the conference, the use of laser in F-35 production was brought up and the discussion went on to the possibilities of automating its use.

"Jeff and his team had a clear vision and defined needs as well as deep understanding what technical points should be physically tested before the actual go-live in production. Based on their list of expectations, Fastems could easily start the conceptualization work," said Niemi and concludes, "This level of project is only possible when both parties know each other's expectations and capabilities."

Naturally, Fastems hopes that this Auto-SLC delivery is not the last of its kind. Both parties see more applications of the technology throughout the factory and beyond. After all,

the F-35 fighter has a total of more than 30,000 holes, which could be automatically cleaned with this type of equipment.

What comes to the results so far, Mr. Langevin explains: "Fastems has been an excellent teammate in helping us achieve our affordability goals in F-35 production. Their attention to detail in engineering of the Auto-SLC's laser ablation components and the seamless integration of the system into our wing production line has been critical at reducing span time, on time."

Final acceptance completed in March 2022
The final site acceptance was completed in March of 2022. As the cells were integrated into an existing and constantly working production line, the installation project required an extra amount of cooperation and planning. Fastems' project Manager Aleksi Mäkäräinen concludes, "This project is an excellent example of what can happen when top-notch tech companies cooperate for innovative solutions."



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Automation of the process has increased the number of holes that can be ablated and reduced the overall time of the hole prep processes.



Production speed, state of the art technology, and affordability characterize F-35 manufacturing operations.

www.fastems.com



The Incredible Value of Referrals

By: Bill Padnos, Executive Director - NTMA Foundation

More and more, we are hearing from our members about making the wrong hire and it's an incredibly common feeling for all employers right now. According to a survey of more than 2,500 millennial and Gen Z jobseekers conducted by an online career platform, The Muse, some 72% of jobseekers say they've started a new job and felt a sense of surprise or regret that the role or company was very different from what they were led to believe.

These new-job regrets are disruptive for workers and employers alike. Roughly 20% of jobseekers say they would quit within a month if their new job isn't what they expected, and another 41% would give a new job just two to six months before quitting. This is why employee referrals are so important for small to medium-size machine shops. After all, employees want to work with people they trust and are qualified to do the job.

Zippia conducted extensive research on this topic and the numbers really tell the story;

- Referrals are 4x more likely to be offered a job than website applicants.
- 45% of referral hires stay longer than four years, compared to only 25% of job board hires.
- The cost-per-hire of employee referrals is \$1,000 less on average than other hiring sources; employers save an average of 13 days when hiring a referral.
- 88% of employers rate employee referral programs as the best source of applicants.
- Referral employees are 25% more profitable.
- 70% of businesses agree that referrals have the best culture fit for their company.

The stat that stood out the most for me is about culture. Workplace culture is more than just a buzzword, as it can mean the difference when it comes to shop profitability and efficiency.

With that in mind, most employers find it much easier for referrals to match their company's culture. Referrals tend to be familiar with the career they're going into, or at least know some of their future co-workers. This makes it easy for them to fit into the company's culture.

Now, you need to ask yourself one question, "Are you receiving referrals from your employees?" If your workers don't recommend for others to apply for jobs at your shop, you can bet that they are searching actively or casually for a new job. Your employees know that you have open skilled positions. Then, why are they not invested in contributing to the long-term success of your shop and helping you in your recruitment efforts?

This is why you need to ensure that employee engagement is a part of your business strategy for 2023. When employees feel engaged, they care about the company and they do their best work to achieve the company's goals. Then, they will want their family, friends and others to come work with them.

The same goes with your local educators. Commit this year to be more engaged in your community and seek out how you can support the professionals teaching the next generation. After parents, a student looks toward their teachers for help in directing their post-secondary pathway. Do you have any relationships with the educators in your community, so you could be considered an employer of choice?

NTMA has the resources to help support your efforts to be more engaged with your employees and those in the community that are building talent pipelines. Make the commitment this year that you will invest your time to ensure that your company keeps your employees from looking elsewhere and help them to become your biggest advocate.

45%

OF REFERRAL HIRES STAY LONGER
THAN FOUR YEARS

70%

OF BUSINESSES AGREE THAT REFERRALS
HAVE THE BEST CULTURAL FIT

25%

REFERRAL EMPLOYEES ARE 25%
MORE PROFITABLE

13

DAYS SAVED IN HIRING PROCESS
WHEN HIRING A REFERRAL

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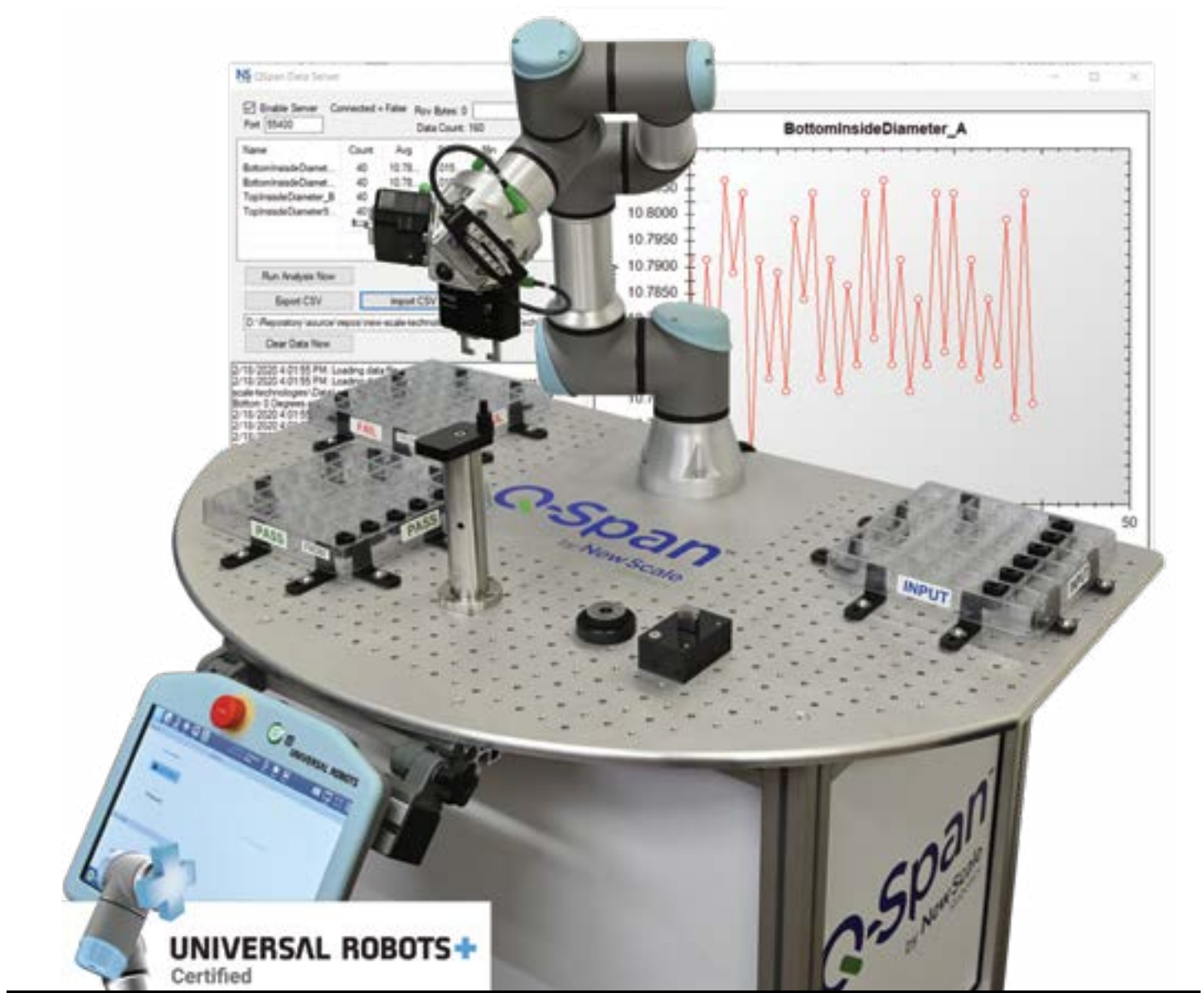
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HELPING MACHINE SHOPS IMPROVE QUALITY, PRODUCTIVITY, AND EMPLOYEE RETENTION

By: Stefan Friedrich



Collaborative robots are flexible and easy to teach new processes, putting automation in the hands of machinists, inspectors and other production staff; you do not need to be a software engineer to use these robots and with a 2-day training class, most people can program the robot to run new programs and deploy them for new production processes.

What an amazing year it was! We made the most of our ability to travel and meet manufacturing teams around the country. Whether touring their machine shops to help them identify automation opportunities, demonstrating our automated gauging systems at trade shows, or participating in the development of new advanced manufacturing workforce training centers – it was great to be out learning about our customers' needs and introducing them to new possibilities.

Through the year, our NTMA membership has helped us to stay connected, share ideas, network, and collaborate with some of the leading machine shops in the U.S.

Extending what we learned in 2022, we see some key trends extending into the new year:

- Emphasis on quality
- “Now Hiring” – Improving productivity to address manufacturing labor shortages
- Adopting technology to aid in employee retention and job satisfaction

These trends all benefit from introducing collaborative robots (cobots) for automated inspection - both in the QC area, and in-line with or adjacent to the machining centers on the production floor. Let's take a closer look.

Emphasis On Quality

Sometimes this originates with the customer. For example, shops machining parts for medical applications are often required to do 100% inspection.

Sometimes it originates with management. We have met executives keen to reduce the impact of inflation by reducing their costs, and one way is to prevent waste by monitoring machines and adjusting offsets in real time to prevent the production of bad parts.

Many leading machine shops emphasize quality to avoid a “race to the bottom” when competing solely on price.

Finally, for almost all machine shop teams we talk to, an emphasis on quality is a natural result of pride in their work. In 2023, we see more machine shops taking what they have learned about deploying automation in production and extending that knowledge into

new areas of the company. For example, a shop using collaborative robots for machine tending is well positioned to use the same brand of cobots to automate inspection tasks in the quality control department.

The Q-Span Automated Gauging System is often the ideal first step in this journey. Using a collaborative robot from Universal Robots, the system is easy to “roll in” to position on the shop floor, near a machining center, and perform 100% inspection of parts as they come off the mill or lathe. Drift in a key measurement, such as an outer diameter, can immediately flag the operator to check the machine and adjust tool offsets, preventing bad parts from being made, and avoiding costly scrap or rework.

We predict increasing use of Q-Span Systems integrated with machining centers, such as automatically adjusting offsets based on the measured data, without operator intervention.

“Now Hiring” – Improving Productivity to Address Manufacturing Labor Shortages

Every shop we visit has a “now hiring” or “help wanted” sign out front; we see no end to manufacturing staffing shortages any time soon. One solution is to automate time-consuming, repetitive tasks. It is difficult for employees to increase the pace of manual inspection tasks, like manual gauging, without increasing the risk of errors. Deploying automation for this monotonous task increases the pace and reduces errors, at the same time. Automation addresses worker shortages in two ways. First, automating time-consuming tasks improves productivity and throughput of existing staff. Second, it is easier for machine shops to attract and retain workers from a smaller pool of potential employees when they can offer more interesting work.

Adopting Technology to Aid Employee Retention and Satisfaction

Manufacturing workers are excited by the opportunity to use the latest technology for advanced manufacturing. With collaborative robots, this technology is within reach of even

small- and mid-sized machine shops.

Automated gauging frees employees from the monotony of repetitive measurement tasks. It gives them freedom to move to areas of need throughout the workplace, providing much-valued variety for the employees and giving the management more flexibility.

What's next for New Scale Robotics

For New Scale Robotics, 2023 will bring continued expansion of the types of gauge measurements and processes that machine shops can automate using a Q-Span System. A Q-Span System currently makes measurements using a robotic calipers or by loading, unloading, and collecting data from LVDT probes, bore gauges, height gauges and more.

We are working with customers who are integrating thread gauges, air gauges and 2D profilers into their Q-Span Systems. We are excited to be working with leading machine shops and other NTMA members to identify even more ways they can automate manual inspection to improve quality, productivity, and employee satisfaction in 2023.

About New Scale Robotics

New Scale Robotics helps manufacturers automate manual gauging. Our Q-Span® Workstations combine measurements from a wide variety of gauges with robotic part handling and automated data logging. They improve efficiency, capacity, and real-time reporting of quality departments. Based on flexible and teachable collaborative robots, Q-Span Workstations are do-it-yourself (DIY) automation kits that fit into existing workflows. They help quality teams reduce errors, increase throughput, and better utilize skilled labor in small-batch, high-mix manufacturing. Easy to deploy without specialized training, they deliver return on investment (ROI) in less than ten months.

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JEFF JACKSON

Business Development Manager

Moseys



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IT IS TIME TO MAKE HAY...

By: Michael Watkins, MBA/JD, EBITDA Growth Systems

“Make hay while the sun shines” is an old saying that’s considered a proverb. A proverb is an old, usually short saying that communicates good advice or something true. If you “make hay while the sun shines”, it means that you take advantage of the chance to do something while conditions are good.

For Machine Shops in the United States, the conditions are going to be good in 2023. Consider the following industries:

SPACE

Space launch services are services for launching rockets that deliver a satellite into the earth’s orbit or explore the universe. The global space launch services market is projected to grow from \$14.21 billion in 2022 to \$31.90 billion by 2029, at a CAGR of 12.25% in the forecast period.

MEDICAL

The global surgical robots market size was valued at \$3.6 billion in 2021 and is expected to expand at a CAGR of 19.3% from 2022 to 2030. The growing prevalence of bone degenerative diseases and the rising number of hip and knee replacement surgeries due to the increasing cases of arthritis and osteoporosis are the major factors anticipated to fuel the market growth.

SEMI-CONDUCTOR

A multitude of applications, such as artificial intelligence (AI), AR/VR, Internet of Things (IoT), autonomous vehicles, electric vehicles, high-performance computing (HPC), aerospace, satellite communications, 5G/6G, smart cities, health tech, etc, all depend on advancements in semiconductor technologies to enable their innovations

The global semiconductor market is projected to grow from \$573.44 billion in 2022 to \$ 1,380.79 billion by 2029, at a CAGR of 12.2% in forecast period, 2022-2029

US MILITARY COMPLEX

The House Appropriations Committee fiscal year 2023 Defense for 2023 provides total funding of \$761.681 billion, an increase of \$33.207 billion above 2022.

The reason for such a large budget? For the first time, The Heritage Foundation’s Index of U.S. Military Strength finds that as currently postured, the U.S. military is rated “weak” and at significant risk of not being able to meet the demands of a single major regional conflict while attending to various presence and engagement activities.

The military has seen a general erosion of capacity, capability, and readiness, but readiness and capacity issues across the force, particularly in the Air Force and Navy, have become so significant that the military’s ability to fulfill its primary mission is in jeopardy. Worsening the challenges for the force further are inflation and budget cuts, which account for a total loss of \$59 billion in funding between 2018 and 2023 and are compounded by the limited assistance American allies can contribute to our shared security interests.

Meanwhile, America’s key adversaries—China, Russia, Iran, and North Korea—are advancing their military capabilities and intimidating U.S. partners. This can be seen by Russia’s unprovoked invasion of Ukraine and China and North Korea’s continued intimidation of neighboring countries such as Taiwan, Japan, and South Korea.

Obviously not all of our NTMA shops are operating in these industries. But we are seeing similar growth projections in other industries such as oil & gas, transportation, and power. The likelihood is pretty high that our members will find themselves in at least one of them. The heavy growth transpiring across several industries has us witnessing a US manufacturing renaissance.

The renaissance is being prompted by supply-chain disruptions that led businesses to reconsider the

wisdom of outsourcing manufacturing to far-flung parts of the world. China’s increasing global belligerence and disastrous zero-COVID policy are also giving many business leaders second thoughts about conducting operations in China. So, what does “making hay” look like for Machine Shops in 2023? It means making double digit profits! And, in our estimation there are three keys for ensuring that level of success:

1. PURSUE THE RIGHT INDUSTRIES

(e.g., the industries that we have highlighted above)

2. LEVERAGE TECHNOLOGY

(e.g., magazine-style bar feeders, in-process probing systems, COBOTS to load and unload parts, a conveyor to move raw materials in and machined parts out, etc.)

3. VALUE YOUR EMPLOYEES

NTMA shops can address skill gaps by using several different approaches. They can look outside the organization, hiring new staff with the right skills. They can build skills internally, retraining their existing workforces to prepare people for new roles. Or they can take a hybrid approach, including use of a skilled contract workforce to fulfill short-term needs while developing the necessary skills internally.

My favorite quote is one by Victor Hugo, a French poet and novelist who is credited with the phrase, “Nothing is more powerful than an idea whose time has come.” Much of his work had to do with minds being open to ideas. I would like to close by asking NTMA members to be optimistic and to be open to the idea that 2023 really does represent a huge opportunity for us. Optimism is a force multiplier and we have a choice as to whether we see a half-empty glass



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