

THE RECORD

Published by the National Tooling and Machining Association

INSIDE THIS ISSUE

Why Educating and Advocating
Is a Must for the Future
pp 18-19

Let's Educate About the Amazing
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pp 28-29

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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 editor@ntma.org or call 800.248.6862.

FUTURE THEMES

October 2023: Leadership Growth...Identify, Invest, Develop, and Grow

November 2023: Workforce Development... A Never Ending Focus

December 2023: The Year in Review

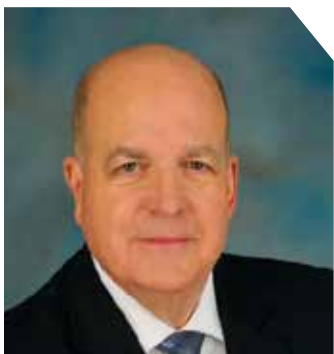


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PRESIDENT'S UPDATE

MFG DAY 2023 - IT'S OUR DAY

It is, once again, that time of the year when we as an industry coalesce around a united message and a united day called **MFG Day 2023**, initiated by our friends at the National Association of Manufacturers. Our industry, which I have now coined the “invisible industry” has a chance to come out of the shadows and highlight our companies, our industry, and US manufacturing. It is a day that is truly being recognized nationally, thus opening the door for us as manufacturers to introduce ourselves to our local communities, our state, and our nation.

You might ask who makes up our local community, our state, and our nation? Each of these is made up of “people” just like you and me. The difference is, most people have never been exposed to manufacturing. They are a part of a silent majority that thinks products just appear on the store shelves, never considering who or what it took to get them there.

We as manufacturers blame them for their ignorance and yet I contend it is not their fault. Our national leaders only recognize “manufacturing”, and the importance of manufacturing, about every four years during an election period. Inwardly, they know the key role US manufacturers make in the health and ongoing viability of our nation's goods and services but do their best not to wake the sleeping giants

(you and me) to make our message and contribution known. As we begin to enter the election cycle for 2024 and after all the mud-throwing amongst the candidates, get ready for manufacturing to come to the forefront of importance until the election at which time it will be put back in the box until the next election.

MFG Day is our opportunity to make what we do, the products we make, and the people who make them, known. More importantly, it is our chance to make the opportunity of a manufacturing career known to people who have no clue it's an option. Is it that they have no interest? **NO**. Is it because they don't care about invention and creativity? **NO**. It is because everyone wants to go to college? **NO**. It is because they **FRANKLY DO NOT KNOW ANYTHING ABOUT MANUFACTURING**.

They have been driving by our companies for years, they have sat next to us manufacturing owners for years at different events, they have been at the bar talking with us, and yet “WE” as an industry have not told our story. The very thing I love about manufacturing folks is that they are a humble people, never bragging or boasting about what they have made, where it might be used, and the impact it might have on people's lives or industry.

Many are satisfied with the self-gratification and self-accomplishment they feel from overcoming the challenges they face in manufacturing the product. Again, whereas those are the very qualities that exemplify our manufacturing nature, it is no longer a nature that fosters, encourages, or inspires the next generation.

Our next-generation workforce wants to know that what they do matters in some way. They want to be able to connect their efforts or their company's efforts to a solution. They want to be a part of a movement that makes a difference of some kind. While we see many movements across our country that are just plain bad and misguided, we never consider that we as manufacturers could start a “manufacturing movement” educating, advocating, and promoting a movement that people can join and truly make a positive difference around the world and in people's everyday lives.

Those of us who are towards the end of our careers, as well as those in the heyday of their careers should use opportunities like MFG Day to **“TELL OUR STORY.”** Tell our story of overcoming the challenges, about the products and projects we built, the new technology that we are utilizing today, and the endless opportunities of our industry. Believe it or not, your

**YOU CAN HELP TODAY, SIMPLY
REFER A MEMBER TO NTMA.**

story matters, your story inspires, and your story can help sustain our industry for the next generation. It is up to us to do our part in "Telling Our Story".

While this year's MFG Day is officially October 6, many companies are extending their activities throughout October and are calling it MFG Month. Doing something for a day or a month matters not, the key thing is to do something.

Unfortunately for some of us, our doing something may be acknowledging MFG Day and doing no more. Rest assured, **NO EFFORTS = NO REWARD**. Do something extra. Yes, spend a little money and make it special for your employees and for guests who may walk through your shop. My first suggestion would be

to turn the responsibility of MFG Day in your company over to an organizer, a promoter, a "life of the party" person within your company, and then get out of the way. Be willing to open your shop and show the world (in your area) what you do and the opportunities in your industry. Invite local politicians, school boards, principals, teachers, parents, and most importantly your employees' families. Let your employees show their families what they do and the potential they might have in the industry. The opportunities are endless and the rewards could equally be endless.

Make **MFG Day 2023** the first of many MFG Days for your company to Educate and Advocate for our industry.

National Tooling and Machining Association (NTMA) is focused on leading a manufacturing movement across our nation. Members, new members, and potential members must come together to move it forward. Do your part, get involved, and get others involved. T

**here is strength in numbers and we are stronger
together in Advancing Manufacturing's Future.**



Roger Atkins, President – NTMA

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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.

ROUND TABLE DISCUSSION WITH BOSTON CHAPTER MEMBERS AND GILLEN YOUNG - CLIMATE OF THE INDUSTRY.

Gillen Young visited with members of the Boston Chapter at President's Kevin O'Donnell at, OD Tool & Cutter, Inc in Mansfield, MA on Friday May 19th, 2023. Gillen spoke about the lasting effects of COVID driven economy; learning to move forward up and out of that mode into a more stable economy. All agreed that workforce development, training, and recruitment of the next generation worker continue to present challenges to our members.

The idea to start rotating open houses so that members could come together, share ideas and solutions for the betterment of the industry has initiated. This idea along with participation at the national conferences is a great way to network. Gillen is planning another visit to the region and we look forward to hosting him again in the fall.



Kevin O'Donnell O-D Tool & Cutter Inc., Chapter President. Richard Milieka of Machine Inc. Paul Diamond of North Easton Machine Inc. Scott Fallovollita of United Tool & Machine Corp.

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THE AKRON NTMA CHAPTER METAL CRAFT TOUR

The Akron NTMA Chapter came together for a tour of one of our long-standing members of nearly 60 years, Metalcraft Solutions in Akron, Ohio! Currently, Metalcraft Solutions is a third-generation shop owned by six sisters. Two of the sisters, Pamela Thielo and Mary Fulton hosted us for the evening. With nearly 30 people in attendance, the Metalcraft team took their guests on a tour of their facility and treated their guests to great food, wine, and a selection of bourbon and craft beer.

Metalcraft is a precision engineering and manufacturing facility that specializes in high quality, close tolerance metal, and machinable plastic parts. The tour included their operations in DMLS 3D Metal Printing, 3 and 5 Axis CNC Machining, Swiss Turning, Wire EDM, Laser Cutting, Metal Forming, Laser Marking, in-house Heat Treating and Tumbling.



THE CTMA ANNUAL GOLF OUTING

A rainout on July 14th forced the 30th annual CTMA Golf Outing to reschedule. Mother Nature made it up to the group of 186 golfers and sponsors on August 14th with spectacular weather conditions that saw everyone enjoying a fabulous day on the links. Special thanks to our sponsors for their continued support.



GLOBAL TECH LEADER DELL HAS JOINED NTMA AS A NATIONAL ASSOCIATE MEMBER

Global tech leader Dell, maker of laptops, workstations, monitors, servers, storage solutions and more, has joined NTMA as a National Associate Member. Dell offers NTMA members best in class technology solutions and healthy discounts on their vast range of technology products.

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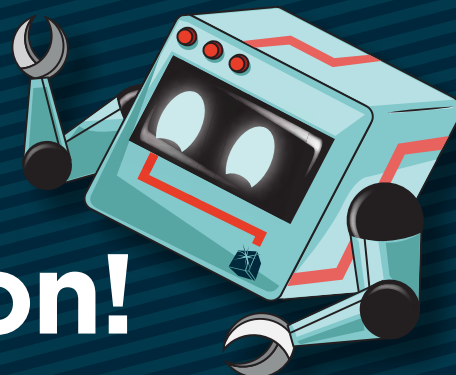
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ANCHOR DANLY AND MANUFACTURING DAY'S RETURN

By: Janette Emerson, HR Director - Anchor Danly

Anchor Danly proudly took part in Manufacturing Day's return in Windsor-Essex, ON Canada after a three-year pause due to COVID restrictions. Manufacturing Day creates awareness about job prospects in skilled trades and provides students an opportunity to get hands-on experience and learn about careers in manufacturing. We invited students from two local high schools and Women's Enterprise Skills Training (WEST) to take a tour.

Anchor Danly is a leading North American manufacturer and distributor of high-quality die sets, components, steel plates, and metal fabrications used in the production of tools, dies, and molds for metal-working and plastics injection molding, machine bases, mining and construction equipment, and general fabrications. We have four plants, three in Canada (Windsor, ON; Cambridge, ON; and Montreal, QC) and one in the United States (Ithaca, MI) to service our customers.

Each year all plants participate in Manufacturing Day and we have already begun preparations for October 6, 2023. Everyone has heard of the skilled trades shortage, and we want to be part of the solution by educating students as early as grade 7, their parents, and educators, in addition to inviting local organizations to embrace diversity and inclusion of all future generations getting ready to enter the workforce. It is important to dispel the myths of factories being old, dirty, and unsafe or places that are only designed for low-skilled workers. The fact is that manufacturing companies are safe, clean, modern technologically driven environments that provide opportunities for rewarding careers.

We offer jobs from entry-level general labor, to semi-skilled labor like blanchard grinding and plasma cutting, up to more skilled positions in assembly, welding, fitting, machining, maintenance, shipping, trucking, and quality on the shop floor. We also offer salaried positions in customer service, estimating, engineering, IT, purchasing, finance, HR, supervision, and management. It is exciting to see the students' eyes sparkle as they see what we are making and

understand how it is used in the real world. There are many great projects we get to work on that positively impact thousands of customers. With full-on safety gear, students take turns welding to experience it firsthand, then they rotate to four other stations to learn about estimating/engineering, IT, plasma cutting, and machining. Education can also be more affordable in pursuing a skilled trades apprenticeship plus there are now many government grants in both Canada and the US supporting the push for skilled trades awareness and employer and employee needs. At Anchor Danly, we offer free courses for employees through the NTMA (paid for by Anchor Danly) and/or invite employees to enroll in other apprenticeship programs or local college programs, like engineering



technologist trainings, to support professional development and growth. We promote from within to fill job openings and offer the tools and resources to be successful. For example, Paul Brisebois, started as a grinder on the shop floor. Over the years, he worked his way up and today he is President at Anchor Danly. In return, employees and the company are rewarded with financial incentives. Employees have more job security, higher wages, are more engaged, and get diverse career opportunities.

Manufacturing Day is here to stay as many employers join together to drive awareness and teach future generations about these exciting opportunities. Join us on October 6, 2023 to see what career lies ahead for you.



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Event Schedule

Wednesday, October 18th

- 12:00PM-5:00PM** Registration
- 3:00PM-4:30PM** Trustees Roundtable
- 5:00PM-6:00PM** Happy Hour
- 6:00PM-8:30PM** Cornhole Tournament

Thursday, October 19th

- 7:30AM-5:00PM** Registration
- 7:30AM-8:00AM** Breakfast
- 8:00AM-5:00PM** Exhibit Tables
- 8:00AM-9:30AM** Conference Kickoff & Awards
- 9:30AM-9:50AM** Networking Break
- 9:50AM-10:50AM** Opening Keynote - Sam Goodwin
- 10:50AM-11:10AM** Networking Break
- 11:10AM-12:00PM** General Session 1 -
How Changing the Status Quo in
Recruiting can Work for You
- 12:00PM-1:30PM** Open Lunch & NTFM Meeting
- 1:30PM-2:30PM** Topic Specific Roundtables
- 2:30PM-2:50PM** Networking Break
- 2:50PM-3:50PM** General Session 2 -
Drive Focus, Empower Culture
and Grow the Bottom Line
- 4:00PM-5:30PM** Board of Trustees Meeting
- 5:30PM-6:30PM** EL Cohort Reception
- 6:30PM** Free Night to Explore Indianapolis

Friday, October 20th

- 7:30AM-5:00PM** Registration
- 7:30AM-8:00AM** Breakfast
- 8:00AM-5:00PM** Exhibit Tables
- 8:00AM-9:00AM** General Session - 3 Global Economic Outlook
- 9:00AM-12:00PM** Plant Tours - Major Tool & Machine
- 12:30PM-1:45PM** Luncheon & General Session - 4
Engaging Washington: Manufacturers Take Center Stage
- 2:00PM-3:15PM** Roundtables
- 3:15PM-3:35PM** Networking Break
- 3:35PM-5:00PM** Community Outreach Activity (Onsite)
- 5:00PM-6:00PM** PAC Cocktail Reception
- 7:00PM-10:00PM** Evening Event: Dallara Car Factory, 80s Theme

Saturday, October 21st

- 8:00AM-11:00AM** Registration
- 8:00AM-11:00AM** Exhibit Tables
- 8:00AM-8:30AM** Breakfast
- 8:30AM-9:30AM** General Session - 5
OSHA on the March: Regulating your Workplace
- 9:30AM-10:30AM** General Session - 6
Securing the Machine: Cybersecurity for the Shop
- 10:30AM-11:00AM** Networking Break
- 11:10AM-12:00PM** Closing Keynote -
From Physical to Virtual: Enhancing Tooling and Machining
Processes and Training with Extended Reality and Digital Twins



Why Educating and Advocating is a Must for the Future of Engineering and Manufacturing

By: Meaghan Ziemba, Industrial Technical Writer and Podcast Host

I've had a lot of conversations over the last few years about the challenges we face as a sector around workforce development, the skills gap, and diversity. To address these challenges head-on, there's an urgent need for concerted efforts in educating and advocating for skilled trades, manufacturing, and engineering career pathways.

By fostering interest, providing accessible education, and promoting the myriad benefits of these fields, we can effectively close the skills gap, secure our economic future, strengthen our national security, and empower a new generation of skilled professionals.

So, where do we begin? Understanding that's a pretty loaded question involving a lot of opinions and ideas, my answer is simple: **Us. We start with us.**

The Skills Gap Dilemma

I've heard different opinions surrounding the skills gap and what actually to call it. Some call it a training gap, others an awareness gap. Whatever you want to call it, the truth of the matter is the United States faces a paradoxical situation: high unemployment rates alongside unfilled job positions.

The skills gap exacerbates this issue, with a significant mismatch between the skills job seekers possess and the skills demanded by employers. Manufacturing and engineering are no exception; these industries are at the heart of innovation and progress but suffer from a shortage of adequately trained professionals to drive them forward.

To top that off, baby boomers are set to retire, and the industry, as a whole, needs to do a better job documenting their expertise to pass down to younger generations. We're also not doing the best job advocating for ourselves and educating communities about the abundant possibilities for thriving careers.

Igniting Interest through Storytelling

At the core of addressing the labor shortage is the need to spark interest among the youth in pursuing careers in the trades, engineering, and manufacturing. We need to alter the perceptions of these fields by addressing traditional stereotypes that often paint them as monotonous and uninteresting, failing to capture the dynamic and creative nature of the work involved.

To counter these misconceptions and get communities excited about the opportunities for innovation, problem-solving, and creativity, we have to share our personal stories to inspire the younger generations. We need to open our doors and invite them into our facilities so they can see first-hand how the everyday products they use are created and produced.

We need to highlight the role engineers, manufacturers, and skilled trade workers have in shaping the world around us – from designing cutting-edge electronics and developing sustainable energy solutions to programming robotics.

We also need to continuously place ourselves in front of our state and federal representatives so they can join us in advocating for STEM programs and educational opportunities that require funding and resources to be successful.

Benefits Beyond the Surface

Advocating for this sector goes way beyond addressing the immediate skills gap – it also involves highlighting the long-term benefits for individuals and society as a whole. Career paths in the trades, engineering, and manufacturing offer competitive salaries, job security, and a ton of opportunities for growth, but it is hard work. We have to be transparent with those interested in joining this sector that it takes hard work to progress forward.

Moreover, the work done in this sector contributes directly to our economic growth, infrastructure development, technological innovation, and national security.

Careers in the trades, engineering, and manufacturing are interdisciplinary, which means professionals in these industries have the chance to make a meaningful impact on a global scale. It is important for us to emphasize these benefits and the rewards that come with them so we can attract a more diverse pool of talent and create a workforce that reflects the richness of our society.

Accommodating Various Learning Styles

Another thing we need to reconsider to close the skills gap is education. Not everyone learns the same. Not everyone is good at math and science. Not everyone wants to go to college.

We must ensure that quality education in the trades, engineering, and manufacturing is accessible to everyone. This includes not only academic pathways but also vocational and technical training. By offering a diverse range of learning opportunities, we can accommodate various learning styles and cater to a broader pool of talents.

Furthermore, collaborations between educational institutions, manufacturing and engineering organizations, and industries are pivotal. These partnerships not only provide students with real-world

experiences, hands-on training, and exposure to the latest technologies, but they also help teachers get exposure to new advancements and improve their skill sets so they can be confident advocates for the sector. Apprenticeships, internships, and co-op programs create a seamless transition from the classroom to the workplace, equipping participants with practical skills employers highly value.

However, funding and resources are needed for any of this to be possible. And, as my dear friend Andrew Crowe points out “Genius is equally distributed. Opportunity is not.” We need to do a better job of bringing awareness about these opportunities to underrepresented communities and providing them with sufficient resources, so they have the same chance as other communities to be successful.

Representation Matters

We all are well aware of what this sector has looked like over the years, so I don't need to rehash why promoting diversity and inclusion within manufacturing, the trades, and engineering is crucial.

However, we will not overcome this barrier if we don't actively encourage underrepresented groups to pursue careers in this sector. This is going to involve targeted outreach, mentorship programs, and initiatives that challenge stereotypes and biases.

It will also involve all of us stepping outside of our comfort zones and having crucial conversations around representation. I've spoken to a lot of leaders who have said they don't care what an individual looks like or how they identify; as long as they come to work, are willing to learn, and do their job, they are happy to have them. All is well and said, but if a person cannot see themselves in a specific environment, more likely than not, they will avoid it altogether.

I spoke to two young women at a tradeshow who just started an internship with an automation company. I asked them a few questions about why they chose that particular company, and they said at their high school career fair, it was one of the few tables with a woman present. When they approached the table, and spoke to the woman, they loved what they heard and applied for the internship.

Representation matters, and younger generations will continue to ignore this sector if they do not see themselves within it.

Closing Thoughts and Key Takeaways

The labor shortage in the United States is a complex challenge that demands a multifaceted solution. Educating and advocating for the trades, manufacturing, and engineering career pathways is a pivotal step toward addressing this issue, but it's going to take all of us to work together and ignite that interest.

I encourage anyone reading this article to ask what steps you can take personally to be more proactive within your communities to promote STEM and career pathways in manufacturing and engineering. I also encourage you to be a mentor for the youth in your community and help encourage students to try new things and work with their hands.

Start a robotics team or organize a facility tour. Sponsor transportation to a local trade show. Teach a class. Donate components. Get in front of your local state and federal representative and challenge them to get more involved.

Partner with other companies or organizations and create a community event for manufacturing day or engineering week. Volunteer your time. Stop talking about it and be about it. It's amazing how the smallest bit of help can turn into the biggest of movements.



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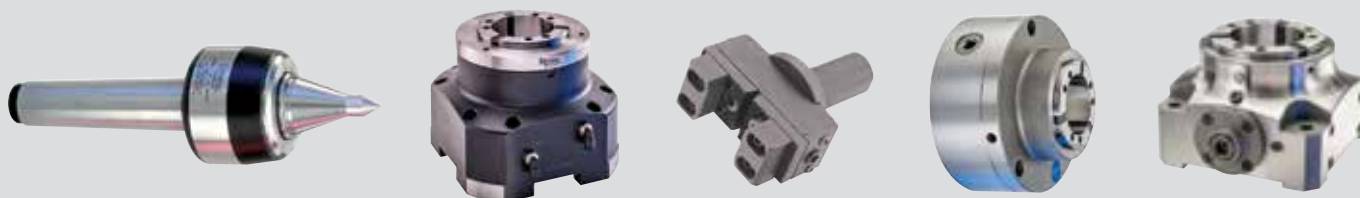
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Manufacturing Pivots to the United States as Imports from China Plummet

By: Harry Moser, Founder - Reshoring Initiative

US imports from China have been declining steadily since August 2022. In the first five months of 2023, the US went from being China's largest export destination to its third largest, despite the US economy being one of the world's strongest.

China's mounting challenges include the impact of prolonged COVID restrictions, inflation, high youth unemployment, and US companies reshoring in an effort to de-risk supply chains amid geopolitical tensions and uncertainty. A recent Kiplinger

for the first time in 25 years, companies no longer see China as a priority for investment (60% in 2022 compared to 45% in 2023). Analysts expect the decline to continue. Manufacturing is pivoting to the United States.

Extreme rates of imports — “automatic reshoring”

Currently, most reshoring involves “automatic reshoring.” The term “automatic reshoring” refers to cases in which new US investments are able to

- The incentives associated with the infrastructure and IRA bills are highly attractive.
- The risks associated with geopolitical tensions are minimized with US production.

Cumulatively, only about 20% of reshoring cases report “country from.” Considering the other 80% of cases reporting “country from,” we believe the true percentage of products from China/Asia to be much higher than what is reported.

Of the “country from” FDI and reshoring cases reported, Q1 2023 data shows that most jobs are returning from (in rank order) Germany, China, Korea, and Japan. Chinese FDI was quite aggressive a few years ago but has declined.

Business Outlook

A recent German American Business Outlook survey of 200+ respondents found that 72% of German companies plan to increase investment in the US in 2023. Of the companies that already have US subsidiaries, 93% cited market size and customer demand for the location decision. Proximity to clients (71%) and market stability (44%) were cited as reasons to invest.

U.S. Import Content — “country from”

Mexico accounts for a substantial share of the US manufacturing import market. US imports of Mexican manufactured goods grew 26% since the spring of 2020, from \$320 billion to \$402 billion. US imports from Mexico have a clear advantage over imports from China, since 40% of the content in Mexican imports is produced in the United States. Imports from China contain only 4% of US content.

Reshoring Success

Reshoring Initiative reporting illustrates the upward trajectory of the reshoring trend. If the current rate continues, new job announcements will reach over 400,000 by year-end.

Figure 1: China's Share in U.S. Imports
(% share by product – 2023 data includes Jan.-Apr. only)

Products	Furniture and toys	Textile and apparel	Mechanical and electrical machinery
2015	60.73%	38.61%	40.55%
2016	60.00%	36.80%	39.01%
2017	61.38%	36.57%	41.93%
2018	61.67%	36.58%	42.24%
2019	54.73%	32.81%	36.26%
2020	51.75%	28.20%	32.99%
2021	53.26%	27.76%	32.11%
2022	50.45%	24.73%	30.28%
2023	43.35%	20.89%	25.95%

Source: U.S. International Trade Commission, U.S. Department of Commerce

forecast said, “China's economy relies heavily on manufacturing and exports, but inflation and COVID restrictions have affected the status quo.” Trade data suggests acceleration of supply chain reshoring is the source of a 10-month consecutive drop-off of Chinese exports to the US. Data from the US International Trade Commission (USITC) indicates the decline of imports from China to the US has been considerable when compared to rising imports from other countries like Mexico.

The fall-off has led to a contraction of China's import share across major products. Figure 1 shows that,

produce products in categories where we have an excess dependency on imports, for example, cases where companies are closing supply chain gaps in electric vehicle (EV) batteries, semiconductor chips, rare earths, and so on.

Reshoring and Foreign Direct Investment (FDI) by “Country From”

Localization is driving large cases of FDI in the US primarily because of three drivers:

- The US remains the biggest market in the world with a healthy economy and stable business climate relative to other countries.



Are you thinking about reshoring or convincing your customers to reshore? For help, contact Harry Moser: (847) 867-1144; harry.moser@reshorennow.org.



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By: Kaci Roach, Executive Director - HHW

Find Out, Get In, Move Up, Give Back

Women are under-represented in many in-demand, well-paying technical careers. This is the result of a complex combination of challenges. The Cornell HR Review found that lack of awareness and lack of support were two contributing factors inhibiting women's participation in predominantly male careers. At the same time, companies across numerous industries are struggling to fill key technical roles. The Manufacturing Institute, for example, estimates there could be as many as 2.4 million unfilled manufacturing jobs between 2018 and 2028 that will exact a steep cost on the industry. Similar gaps exist in occupational fields including skilled construction trades, information technology, and utility workers.

Given that women are under-represented in these fields, improved gender diversity is viewed by many businesses as an operational imperative. Closing the disparity between the percentage of women in the workforce and the percentage of women who pursue technical roles could make a significant impact on closing this workforce gap – and would provide enhanced financial stability to thousands of women and families. Drawing on evidence of what works, institutions need support to identify and adopt cost-effective, industry-engaged, and community-based approaches that blend education and advocacy to help more women enter and advance in high demand careers where they are currently underrepresented. HHW Ohio, a nonprofit organization dedicated to accelerating women's success in high-demand/high-wage occupations and industries has found their "Find Out, Get In, Move Up, Give Back" model has demonstrated its effectiveness in encouraging adult women to pursue high demand careers in technical fields through multiple evaluations. This

article will explore this approach- highlighting how to bring together advocacy and education to create an ecosystem of partners that support community and business interests.

Find Out, Get In, Move Up, Give Back provides a longitudinal organizing framework for creating an ecosystem that engages and supports untapped talent pools that blends education and advocacy. This framework helps to delineate partner contributions, helping each to understand where they can make the biggest contribution. When implemented properly, this approach becomes self-sustained, creating momentum that helps to move the needle on key outcomes such as women's

participation in high wage/high-demand industries and occupations, the number of women in a region earning a family sustaining wage, and the number of women who are able to advance within manufacturing pathways. Each phase of the framework is necessary- many programs focus on one or two pieces and aren't able to have the sustained success needed to make the systemic changes needed to truly enable women to enter into and succeed in male-dominated fields. Each step within the Find Out, Get In, Move Up, Give Back framework is interconnected. While each represents a different phase of a woman's career journey in a non-traditional occupation or industry, they build on each other and when implemented correctly become a circular, self-sustained process.



Find Out

In the Find Out phase, girls and women are introduced to careers and pathways that they might not have considered or have had the opportunity to find out about. Here Role Model Speakers are critical advocates for women, showing the next generation that success is possible. Role Model Speakers are volunteers working in targeted industries and occupations who inspire and inform others within their community by sharing their story. Role Model Speakers increase the visibility of women in a wide variety of roles and industries, especially those in which women are under-represented. Their stories help girls and women understand the opportunities, challenges, and strategies to enter and succeed in fields they may otherwise not consider. Role Model Speakers may also serve as formal or informal mentors for the girls and women they are connected with, helping build the network of mutual support which is critical to helping women get in and stay in nontraditional fields. Additionally, serving as a Role Model Speaker is a form of leadership development. Role Model Speakers are provided with coaching and training on how to connect with different audiences, are able to hone their leadership skills through engagements, and are recognized as community advocates and industry leaders.

Get In

In the Get In phase, women are prepared to take the next step in their career journey, whether it is entering into the workforce, enrolling into education or training, or becoming an apprentice- all while accessing the supportive services they need to thrive. Industry, Community-based, and Education/Training partners should work together to support women. An example of this which is being employed throughout the state of Ohio is WISE Pathways- an evidence-based program that has proven effective at helping women get into

their career pathway. WISE Pathways is a 40-hour career exploration and readiness course designed by HHW Ohio and honed as an industry resource.

In WISE Pathways, participants receive an in-depth overview of high wage, in- demand careers in their region, with a particular focus on those where women remain significantly underrepresented. The course covers the realities of the featured careers, what to expect and how to advocate for themselves in the hiring process. Additionally, women are connected with education and training providers who are able to help them reach their career goals. A suite of career development and supportive services tailored to meet the specific needs of women and families complements the course, often delivered by community partners. Depending on the delivering host, certifications such as the Tooling U SME's Certified Manufacturing Associate (CMfgA) credential have been embedded.

The delivery of WISE Pathways and similar initiatives, such as WorkAdvance and FlexFactor, heavily rely on partnerships between education and community-based partners with organizations providing complementary services such as training, career connections, and supportive services.

Move Up

In the Move Up phase, the focus is on helping women not only remain within their careers in nontraditional occupations and industries, but to advance. This is done through ensuring women have an ongoing network of support, mentoring and encouraging industry to offer company cultures which are supportive of all workers, including women. Here community-based partners work with industry partners to identify and implement best practices

for supporting women that improve recruitment and retention. Throughout the state of Ohio, through initiatives such as the Good Jobs Challenge organized by the Ohio Manufacturers Association, community-partners can provide industry partners with coaching on how to make their environment more friendly for women. Best practices include providing pathways for advancement to supervisory roles, working with education and training providers to offer low or no-cost upskilling opportunities, or the formation of employee resource groups which can build a sense of belonging and provide a voice to underrepresented talent. Coaching is provided in a variety of methods including the development and deployment of toolkits, webinars, learning communities, or on a one-on-one basis.

Give Back

Finally, in the Give Back phase, women who have benefited from a supportive ecosystem are encouraged to become Role Model Speakers- helping to recruit and support the next generation of the women in the workforce. This practice also helps to ensure that there are Role Model Speakers with diverse perspectives and experiences, who can advocate for more women and educate others on their experience. Additionally, broadening the base also helps to grow and sustain the ecosystem, creating a larger impact and sustaining the initiatives.

Through an intentional and longitudinal approach, ecosystem partners can blend education and advocacy efforts to reach untapped pools of talent within their communities. This supports the economic mobility and stability of community members and ensures that local businesses and industries have access to the next generation of skilled and talented workers.

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We're All In This Together

By: Art Santana, operations manager at Paramount Machine in Salt Lake city, Utah

The pandemic really put a damper on the way we function today; our industry is not exempt. Besides the human aspect that has touched every one of us, the consequences are that many shops are struggling to stay afloat because of a broken supply chain that has affected materials, tooling, deadlines, shipping, the delivery of consumer goods in general, and the availability of skilled workers.

What are we going to do about it? When a situation doesn't typically go our way or when we are either powerless or too lazy to do anything about it, we resort to complaining. Complaining is not the answer. It solves nothing. **It makes us unhappy and turns everyone off. So, if there are no more machinists, can we start training new ones?** Let us look at what is out there and how we can affect the situation in a positive way and really do something about it!

I serve on advisory boards and visit schools. The main comment I hear is that the industry is not doing enough. Machine shops are not regularly reaching out to the schools. My vision, as I serve on the NUNTMA board is to create a network of like minded shops, schools, machine and tooling vendors and suppliers that have a stake in the game. If we all start investing time and expertise and collaborate to train, teach, expose, and incentivize the younger generation to see machining as a great career, good things will happen.

But it is an uphill battle. Trying to get the state tech colleges to teach the same curriculum or at least be on the same page is like wanting lube oil to mix in the coolant tank without issues. Government financial support and unrealistic expectations are not on par with what is needed to produce machinists. School districts invest funds in archaic technologies because they do not know better. It is challenging indeed.



What if we went to instructors, deans of manufacturing, CTE heads and government reps and voiced our concerns and offered our advice and help? Could we attend classes and job and STEM fairs and make presentations on what a machine shop looks like today? Gone are the days of the oily, greasy, noisy, unsafe machine shop. How many people really know that? I strongly believe that today's shop is nothing like your grandpa's shop. It is up to all of us to promote it! So, reach out to the nearest school and offer the CTE groups help. Present and offer shop tours. You never know what or who will come out of these efforts. Of all the people I have met and voiced my concerns to and offered to help, I have yet to meet one that doesn't welcome the help. Also, great relationships are created, and doors begin to open when shops work hand in hand with educators.

Do you have an apprenticeship program where you are willing to train and pay young prospects without expecting immediate results? Do you have enough toys (robots, automation, 3D printing, CMMs, CAD/CAM, solid modeling, vision systems, and such) to entice the Nintendo generation to come and give machining a try, just because it is COOL? If not, then maybe it is time to start investing in the next generation of machinists.

Skills USA and the National Robotics League are two other areas where we can make a difference. They are no longer viewed as the junior Olympics of machining. In my involvement with young people competing the last few years, I see a lot of potential for future machinists. So, check out these programs and support them. Seeing the awe on their faces when they create CNC code or move models around or make chips fly on a CNC, well, that is priceless.

Whenever you find yourself repeating the same complaint about labor shortage, STOP! And start getting involved. Build bridges, reach out, promote machining, hire young potential, invest in technology and people, teach, serve, and help those instructors who are trying to develop new machinists. We are in this together! Do Something about it! Your next machinist may be as close as your nearest school.



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Let's Educate the Market About ALL the Amazing Opportunities in Manufacturing!

By: Ed Marsh - Growth & Strategy Consultant

Why Focus Just on the Gadgets?

The growth and success of Manufacturing Day is a testament to the power of collaboration between government, industry, and trade associations. The National Institute of Standards and Technology (NIST) estimated that there would be more than 3,000 events in 2022, engaging “more than 325,000 students, parents, and community members.”

These events are designed to dispel myths of dirty and dangerous environments and to highlight many of the exciting new opportunities that manufacturing offers. Robotic and technology displays attract and excite students, parents, and the community alike.

There's much more to manufacturing than the machines and gee-whiz technology. Those may get folks in the door, like a trade show booth display, but we have a bigger story to share.

A Broad Range of Great Paying Jobs

STEM students find a natural fit in many manufacturing technology roles, and there's a home for others, too. Profitable advanced manufacturing companies create stable, well-paying jobs across functions. Purchasing, HR, finance, and shipping departments have roles with particular manufacturing skill requirements that differentiate them from retail and service industry roles.

“Because the purpose of business is to create a customer, the business enterprise has two—and only two—basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs.”

- Peter Drucker

Let's promote those stories, too. Procurement specialists manage complex supply chains, vendor agreements, and incoming product quality. HR positions demand generational savvy, emotional intelligence (EQ), and networking skills, in addition to offering and possessing knowledge of innovative benefit structures and cultural responsibility to keep employees happy. Finance skills include managing international transactions and complex inventory requirements. Shipping is more than an afterthought, but rather a critical and complex logistics role charged with ensuring continuity for customer operations.

And then there are marketing and sales roles that may not be adequately celebrated even internally despite being vital to the success of a modern manufacturing business.

Nothing Happens Until Someone Sells Something!

Peter Drucker famously wrote “Because the purpose of business is to create a customer, the business enterprise has two – and only two – basic functions: marketing and innovation. Marketing and innovation produce results; all the rest are costs.”

Maybe Drucker exaggerated, but within many manufacturing companies, there exists a similar bias that Manufacturing Day was originally conceived to combat. Just as many in society used to see manufacturing as dirty, dangerous, and undesirable, many within manufacturing see marketing and sales as necessary evils; or at least as secondary to the primary job of “bending steel.”

These jobs are critical. And that's an important story we should share internally and externally, and Manufacturing Day provides a great platform for doing so.

Helping Other Companies Thrive

Marketing and sales in advanced manufacturing are about more than cold calls, quotes, and product specs. Great organizations use their market-facing functions to help educate prospective customers and partners on ways in which they can improve their business.

They help buyers identify and quantify problems and opportunities which they may have overlooked or discounted. And then they help to implement solutions that will help buyers' businesses grow and thrive. That is an honorable pursuit, and it's central to the goal of strengthening manufacturing in general.

Some companies may miss this opportunity, merely replying to inquiries from buyers who have often improperly diagnosed their own problems, and relegating sales to a clerical function. However, companies with a culture of helping customers solve problems usually embrace sales excellence and invest in training and coaching around important competencies like consultative selling and value creation.

The Appeal of Sales and Marketing in Manufacturing

The fact that sales and marketing are key to helping secure all the other jobs in a manufacturing company through consistent profitable growth is itself a reason for embracing and investing in those functions and promoting those opportunities to community members at Manufacturing Day events.

But why might top marketing and sales talent from fast-moving and sexy industries like SaaS consider careers in manufacturing themselves? For the same

reasons that students and families find value in stable and challenging career opportunities on the production side. Manufacturing makes America strong. It strengthens communities and families and builds resilience. That's a worthy goal for sales and marketing professionals as well.

Additionally, compared to other popular industries, manufacturing offers a comfortable environment with comparable earnings potential, often in communities with lower cost of living. Sales reps in technology and SaaS operate in an environment of relentless pressure to meet unreasonable investor-set targets – daily, weekly, monthly, quarterly, and annually. And they often must achieve those goals by selling solutions that are chasing a problem to companies struggling with bloated software budgets. Marketers are under massive pressure to constantly generate huge numbers of “marketing qualified leads” from audiences that are completely overwhelmed with technology.

Both groups may welcome the reasonable pace and realistic expectations of manufacturing firms – and value the opportunity to share best practices and lessons learned in the crucible of technology – as they work on tangible products that make a measurable difference for businesses.

Let's use Manufacturing Day as an opportunity to celebrate the full range of career opportunities that manufacturing creates – including in marketing and sales!



Ed Marsh
Growth & Strategy Consultant

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GET READY FOR IMTS 2024!

By Peter Eelman, CXO at AMT – The Association For Manufacturing Technology, which owns and operates IMTS.



Mazak and Okuma welcome visitors to the Metal Removal Sector at IMTS.

“Inspiring the Extraordinary” is the theme for IMTS 2024 – The International Manufacturing Technology Show, taking place Sept. 9–14 at McCormick Place in Chicago, Illinois. Plans are underway for the world’s premier industry event, and people are thrilled about new technologies enabling manufacturers to be more innovative, productive, and profitable. The industry has witnessed remarkable advancements empowering manufacturers to think differently and create unprecedented solutions.

“One year out from IMTS 2024 is a good time to assess efficiency, set new goals, conduct technology research, and plan equipment acquisition,” says Kevin Wigington, chairman of the AMT Show Committee and general manager for Select Production Technologies, a provider of CNC machine tools for high-volume production of complex parts. As examples of manufacturing efficiency, Wigington cites turning centers that combine multiple operations (e.g., milling, hobbing, and grinding) in one machine, pallet conveyors, and systems that use a sub-spindle or multiple axes to machine parts in a single setup to reduce cycle time and minimize geometric and shape defects.

“Complement your machine with any technology that can boost unattended run-time,” adds Markus Stolmar, president and CEO of United Grinding North America. “For example, combination machining

centers, tool measuring machines, and grinders now feature integrated tool changers, metrology equipment, and the ability to laser scan a tool or part to generate a 3D model.” Stolmar notes that machine manufacturers are offering compact, more affordable machines so that job shops can move work in-house. “IMTS showcases the full spectrum of cutting-edge technologies that lead to business growth,” he says. As part of moving work in-house, such as by adding a smaller machining or turning center, companies need to research cutting tools that match their needs, which often require a broader application range. For example, Kennametal’s KCP25C, a new steel turning grade, is designed to machine steels and PH stainless steels.

“The new grade, depending on application, has been used in both P10 and P40 turning applications,” says Scott Etling, vice president of global product management at Kennametal. “New MV and FV geometries also provide customers with the flexibility to take light to heavy depths of cuts. The new geometries are engineered to lower cutting forces for smaller machines in addition to offering excellent chip control when needed.”

Melanie Lang, co-founder and CEO of Formalloy Technologies, believes the trend of adding AM equipment to move work in-house is growing. “The last few years opened our eyes to the instabilities



in our supply chain,” says Lang, whose company provides directed energy deposition (DED) AM systems. “We can’t take delivery times for granted. Fortunately, we can apply technology to solve those problems.” As examples, consider large-scale metal additive technologies to replace forgings, castings, and tooling, which typically come from overseas and with long lead times. Other applications include out-of-date parts (notably for defense systems) or remote locations (e.g., military bases).

“When you deploy additive, typically you can do most work on a single setup on a single machine without stocking a lot of extra parts,” adds Glynn Fletcher, president of EOS North America, the leading provider of laser powder bed fusion technology. “You can have a small installation very close to where you need it.”

“The manufacturing and warehousing sectors remain optimistic, prompting company leaders to look at the big picture,” says Doug Burnside, vice president for Yaskawa Motoman. “From reshoring initiatives and workspace optimization to production capacity and workforce shortages, multiple issues are often at play when companies are looking to invest in automation technology.” Some of those technologies include robots that combine artificial intelligence deep-learning software with 3D cameras to create human-like vision and achieve pick rates of 1,200 to 1,700 per hour for a wide range of objects. Extremely fast and intelligent robots help companies meet order fulfillment demands, a trend driven by e-commerce sales, which grew to \$272.6 billion in the first quarter of 2023, according to the U.S. Census Bureau.

“Capital expense items have longer purchase cycles, so start evaluating solutions before the need becomes critical,” concludes Wigington.

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WHY JUST ONE MONTH?



By: Molly West, Pittsburgh Chapter NTMA

It's almost time for MFG Month. What started as one big day in October to celebrate American manufacturing has evolved into a full month of events and activities to increase awareness and shift perceptions or misconceptions about the industry. For those of us who "live" manufacturing, the abundant opportunities come as no surprise; however, the month provides an immense platform to showcase our industry to the broader public.

In southwestern Pennsylvania, we're looking ahead to the next generation. Tapping into the strength of its youth program BotsIQ, the Pittsburgh Chapter NTMA uses MFG Month as one more opportunity to educate the manufacturers of tomorrow. We'll be connecting area students with immersive experiences when they step inside local manufacturing facilities.

Our team has organized tours, mini job shadowing opportunities, and demonstrations that showcase area manufacturers. Students will be visiting NTMA members as well as some of our workforce development partners. NTMA members opening their doors to students this season include:

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- *Ace Wire Spring & Form*
- *General Carbide*
- *Hamill Manufacturing*
- *Kiski Precision Industries*
- *Kurt J. Lesker*
- *L&S Machine Company*
- *MetPlas*
- *Oberg Industries*
- *Penn State Tool & Die*
- *Superbolt*

Additionally, the BotsIQ team has been working in conjunction with Intermediate Unit 1 (IU1) to host a MFG Day event in counties the IU1 serves: Washington, Fayette, and Greene.

The event introduces middle school students to careers in manufacturing with engaging, hands-on activities presented by industry partners. This is just another way the Pittsburgh Chapter NTMA connects companies with students face-to-face.

Of course, many of our industry leaders are planning corporate events during the month of October inviting the public into their shops and facilities, as well. The Pittsburgh Chapter encourages members to share their events so that we may assist in promotion.

While October offers a great chance to skyline manufacturing, the Pittsburgh Chapter remains committed to year-round promotion of not only the great things happening in our member shops, but also the terrific opportunities that lie ahead for the next generation of makers and builders in southwestern Pennsylvania.





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