

# THE RECORD

Published by the National Tooling and Machining Association



## AUTOMATION & ROBOTICS- IS THE TIME NOW?

### INSIDE THIS ISSUE

Automating Existing Machine Tools – a Viable Way to Develop Production - pp 18-19

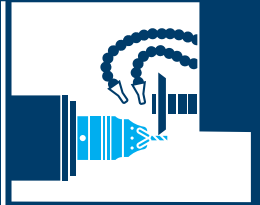
The Expanding Role of Cobots in Manufacturing - p 22

Four Strategies to Make Your Production More Efficient - p 28

*and so much more ...*

Equipped by

**SCHUNK**



**+** from  $\varnothing$  **3 - 20** mm  
flexibly clampable  
Mechanic tool grinding  
toolholder PRISM|O3



**+** Less than **3**  $\mu$   
run-out accuracy  
Tool grinding toolholder with  
hydraulic expansion technology  
T|E|N|D|O|WZS



**+** Up to **80** bar  
Coolant-proof or with  
peripheral cooling  
GZB-S intermediate sleeves



© 2020 SCHUNK GmbH & Co., KG

Superior Clamping and Gripping

Everything for your  
Grinding Machine

The broadest tool grinding toolholder program  
with 14 standard machine interfaces.

**SCHUNK**

[schunk.com/equipped-by](https://schunk.com/equipped-by)

## Table of Contents

President's Update	4
--------------------	---

### IN THE NEWS

New Member Highlights	8
Emerging Leaders Conference	10-11
Essential Resilience: How Small-and Medium-Sized Manufacturers Survived During the COVID-19 Pandemic	12-13
Congratulations to Indiana Chapter of NTMA Board Member Zac Overton!	14
Sirois Tool Announces - Graduate of the Work-Based Learning Program Completes His Apprenticeship	14
In Memoriam: Judith "Judy" Sustar	14
What is a Precision Machinist?	15
Talking With an Emerging Leader: Mark Sippy	16

### FEATURES

Automating Existing Machine Tools – a Viable Way to Develop Production	18
What is the Big Deal With Culture?	20
The Expanding Role of Cobots in Manufacturing	22
Engage 2021 Preview	24-27
Four Strategies to Make Your Production More Efficient	28
Economic Update: 2021 Second Quarter Recap	29

### MEMBER BENEFITS

Summer Strategies: Keeping Demand in Check as Electricity Prices Rise	30
---	----

## THE RECORD

### OPERATIONS & EDITORIAL

Roger Atkins, President  
Doug DeRose, Editor  
John Stevens, Editor

### ADVERTISING INQUIRIES

To advertise in The Record, or for information on publishing your corporate newsletter or sales literature, contact Kelly LaMarca at (216) 264-2837 or via email at [klamarca@ntma.org](mailto:klamarca@ntma.org) for advertising and editorial content.

### DESIGN & LAYOUT

Bluebird Branding  
[www.bluebirdbranding.com](http://www.bluebirdbranding.com)

### NTMA EXECUTIVE COMMITTEE

Alan Ortner, Chairman  
*Sirois Tool Co., Inc. – Berlin, CT*

Gillen Young, Vice Chairman  
*Custom Tool – Cookeville, TN*

Eric Hagopian, Board Member  
*Pilot Precision Products – South Deerfield, MA*

Bonnie Kuhn, Board Member  
*Kuhn Tool & Die Company – Meadville, PA*

Mark Lashinske, Board Member  
*Modern Industries, Inc. – Phoenix, AZ*

Tom Sothard, External Board Member  
Debbie Holton, External Board Member



## Upcoming NTMA National Events



### Emerging Leaders Conference

Wednesday, September 8 – Friday, September 10, 2021  
Phoenix, AZ

THE PRECISION MANUFACTURING CONFERENCE

# ENGAGE 2021

POWERED BY

### Manufacturing Engage™ 2021

Tuesday, October 26 – Friday, October 29, 2021  
Old Alexandria, VA

## 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.

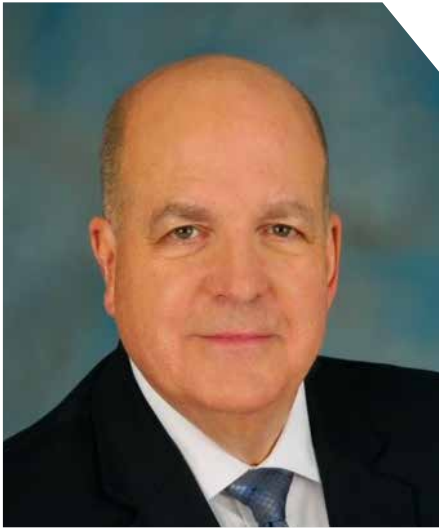
Contact Kelly LaMarca at [klamarca@ntma.org](mailto:klamarca@ntma.org).

### Upcoming Themes for The Record

**September**  
MFG Day 2021

**October**  
Smart Manufacturing

**November**  
Apprenticeships: Developing the Workforce



# PRESIDENT'S UPDATE

**This month we focus on “Automation & Robotics – Is the Time Now?”** as our theme. I am finding this theme no longer a standalone subject matter or focus. As we exit the pandemic, one of the biggest challenges for manufacturing is the need for workers, both skilled and unskilled. Many of us – including myself – reference the recent Deloitte Report, which projects a manufacturing worker shortage of 2.1M by 2030 – only eight short years away.

With worker shortage projections as dire as referenced above, many articles, experts and associations – including NTMA – are working diligently on how to attract, hire, and retain the needed workforce for today, as well as through 2030. Many are focusing on how diversity, equity, and inclusion (DEI) initiatives can help manufacturers fill these empty jobs – stating that manufacturers have more work to do in attracting larger numbers of women and diverse workers into the industry to close the opportunity gap.

Whereas all the different focuses are pieces of the worker shortage puzzle, I think the real question is how our industry defines “worker shortage.” Many define it traditionally as: “not being able to convince persons to fill open positions for employment.” I believe the soon-coming definition will be: “not having enough persons to fill open positions.” I do not mean to split hairs: the facts show we are going to have a true “shortage of workers.” For most manufacturers, our focus has always been on attracting the workforce to come to work at our companies, never challenged with the thought of not having enough potential

employees to fill positions. Many writers and speakers beat around the bush on the subject, but I believe the faster we realize the coming challenge and start addressing that very challenge, the further ahead we will be. There are going to be winners and losers as our workforce pool is outpaced by need. NTMA is working to support our members as we collaborate with industry partners on the subject and bring new and unique strategies to the hiring challenges.

So, one may ask why I spend so much time writing on the “workforce” when our focus is on “automation & robotics”? I believe it is the combination of the two subjects that will assure we, as an industry, are positioned to thrive during the coming challenges. As with the Deloitte Report, where one would be remiss to wait until 2030 to address the worker shortage – one would equally be remiss to wait until 2030 to address the need for automation & robotics.

My message is to start your company's strategy now in how you are going to address both “workforce” and “automation & robotics.” The question should not be “Do we do it?”, but rather: “When do we do it?” The answer is to start NOW, one step at a time. As business conditions continue to improve, it is going to be those companies that PROACTIVELY prepare for the worker shortage via new hiring strategies – and also incorporate automation and robotics into their businesses – that succeed in tackling these challenges.

Automation for your business can be developed in Business Acumen (EBITDA growth), in the Quoting Process (Paperless Parts), in Sales & Marketing

(Factur), in Quality (Core Solutions), and in Operations (all our machine tool and robotics partners). Utilize these partners identified above anywhere it makes sense to assure your company's future, your employee's future, and your customer's future.

Do not wait and be the one picking up the pieces from the changing business environment. Utilize NTMA to be a part of your solution – by assembling business and industry partners, assembling your industry peers, and providing networking, training, and the latest technology opportunities to support your efforts. Regardless of your company's size, services provided, or financial conditions – this advice still applies. It may take more time than others to address the challenges, but the fact remains: the time is now to set your company's direction for the future. Never believe that the challenges of today do not apply to you, or your company, and hinder you from addressing the challenges of tomorrow.

I am fairly sure the custom precision manufacturing companies in 2030 will look and operate differently than they do today. We can do this, and we can do it together. As for NTMA, we will continue to work hard breaking through the barriers of change for our industry, while supporting and allowing you time to make the needed changes in your individual companies.

WE ARE STRONGER TOGETHER!!!



# CAN'T TRUST YOUR CAM?

**VERICUT IS THE ONLY  
WAY TO VERIFY YOUR NC PROGRAMS**

- Eliminate manual prove-outs -
- Be sure machines are collision free -
- Increase machine capacity -

**SAVE TIME • SAVE MONEY  
SAVE YOUR MACHINES**

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

**RIGHT THE FIRST TIME. EVERY TIME.**

Image courtesy of McDowell Machine Tools



# HEIDENHAIN



## TNC 640 – High-End Control for Milling and Turning Operations

The TNC 640 from HEIDENHAIN: for the first time, milling and turning are combined in one TNC. Now users can switch as desired between milling and turning—within the same NC program. Switchover is independent of the machine kinematics. It automatically takes the respective operating mode into account and without any additional action.

HEIDENHAIN CORPORATION, 333 East State Parkway, Schaumburg IL, 60173 847-490-1191 [www.heidenhain.us](http://www.heidenhain.us)

Angle Encoders + Linear Encoders + Contouring Controls + Subsequent Electronics + Length Gauges + Rotary Encoders



## NTMA 6S Excellence Award

### PURPOSE:

To improve the perception of American manufacturing by promoting and recognizing excellence in member shop organization and efficiency.

### HOW IT WORKS:

- NTMA companies apply for the award by submitting a self-assessment based on criteria that demonstrate best-in-class practice in the six S's:
  1. Safety
  2. Sort
  3. Set in Order
  4. Shine
  5. Standardize
  6. Sustain
- Certificates are awarded every year for the first 5 years based on self-assessments submitted. Once the recipients receive 5 certificates, they are also presented with a trophy.

### SPONSORSHIP OPPORTUNITY:

- Conference exposure via introductions, etc.
- Promotional exposure: web, print, blogs, and emails that promote and support the award.

### SUBMISSION DUE DATE:

Please submit your application by September 1, 2021, to be considered.

For more information, please contact Linda Warner at [lwarner@ntma.org](mailto:lwarner@ntma.org) or 216-264-2824.

Applications and self-assessment documents can be found here:  
<http://www.ntma.org/resources/documents/6S-excellence-program>  
Applications should be sent to [6Saward@ntma.org](mailto:6Saward@ntma.org)



**Blaser.**  
SWISSLUBE

## The life force for your machines.

Do you know that proper use of the correct metalworking fluid has an extraordinary leverage effect on stability, quality, performance and therefore on the costs of your production? Our machining experts can help you turn your metalworking fluid into a key success factor.

Test us. It's worth it.  
[blaser.com/testus](http://blaser.com/testus)



Our Liquid Tool. Your Success.

## New Member Highlights

### ARCH ARUNDEL Boston Chapter



ARCH-Arundel (previously Arundel Machine) is a state-of-the-art precision manufacturing facility located in Arundel, Maine. Founded in 1984, the facility has consistently grown and today employees over 90 people in a 63,000 square foot facility. Our focus is to partner with Primes and Tier 1 customers to enhance manufacturability of their products. With continued investment in Multi-Axis work centers, we're able to reduce costs and improve deliveries as we eliminate unnecessary set-up times. Our key customers are in aerospace, defense and semiconductor.

ARCH Global Precision  
2600 S Telegraph  
Bloomfield Hills, MI 48302  
[www.archglobalprecision.com](http://www.archglobalprecision.com)

### TECHNICAL DIRECTIONS INC. Pittsburgh Chapter



Technical Directions Inc, (TDI), a KRATOS Company, specializes in small, low-cost turbine engines and propulsion accessories in support of expendable air vehicles for the Department of Defense. TDI engines specifically address the growing demand for engines in support of long-range decoys and ground attack missiles in the 30 lbf – 200 lbf thrust class. The propulsion challenge for this class of weapon system is to achieve sufficient performance to accomplish the mission (thrust and fuel consumption), while maintaining a low-cost design configuration and manufacturing strategy to achieve cost objectives. TDI embraces the current state-of-the-art performance level in a simple engine architecture and has focused our “technology” development in a low-cost solution, commensurate with the expendable vehicle concept. Optimization of machining methods is paramount to TDI's quest for continuous cost reduction in this class of engines. TDI engines offers the best balance of cost and performance of any small expendable turbine engine delivered to the U.S. war fighter. The engines is produced entirely in the U.S. with design and testing authority for the TDI engines residing in the Oxford, Michigan Headquarters. Nearly every component of the TDI engines are machined in the Loyalhanna, Pennsylvania facility. The company earned its AS9100D certificate for both locations in June 2021.

Technical Directions Inc.  
3025 Mullins Ct  
Oxford, MI 48371  
[www.tdi-engines.com](http://www.tdi-engines.com)

### CUSTOM TOOLING AND FABRICATION Rocky Mountain Chapter



Custom Tooling and Fabrication (CT&F) is a job machine shop in Loveland, CO, that makes precision parts for a wide variety of industries. Its team of machinists and operators has more than 200 years of combined experience in production engineering, tool and die making, milling, turning, prototyping and more, working with a wide range of materials in the process. They specialize in quick turn-arounds and short lead times. They have been in business for over 24 years and have survived several economic downturns when other shops did not.

Custom Tooling & Fabrication Inc.  
1115 Des Moines Ave.  
Loveland, CO 80537  
[www.ctandf.com](http://www.ctandf.com)

### NEXUS AUTOMATION San Francisco Bay Area Chapter



Founded in the heart of Silicon Valley, Nexus Automation is an ISO-certified high-precision manufacturing supplier. Our CNC machining capabilities accommodate a wide range of applications from machined components to complete assemblies. Our highly trained machinists and cutting-edge equipment offer you a complete path from high-end rapid prototypes – with tight tolerances, excellent dimensional accuracy, superior finishing – to short-run production parts. With our expertise in design and engineering, we clearly understand your design intent and meet your expected specifications. Our focus on customer satisfaction has made us the supplier of choice for clients in medical device, electronics and aerospace markets.

Nexus Automation  
2021 Las Positas Court, Suite 141  
Livermore, CA 94551  
[www.beistelmachining.com](http://www.beistelmachining.com)

### BEISTEL MACHINING, INC. Pittsburgh Chapter



Beistel Machining, Inc. is a full-service CNC Machining and Contract Manufacturing company located in Donora, Pennsylvania, and was founded in 2007. Our precision machining services include 3, 4, and 5 axis milling as well as multi-task turning. Our knowledgeable, ambitious team is determined to ensure we are a reliable partner and takes pride in producing quality components for a wide array of industries. From small quantity orders to high volume automated production, Beistel Machining will be a reliable partner for all your machining needs.

Beistel Machining, Inc.  
23 McKean Ave  
Donora, PA 15033  
[www.beistelmachining.com](http://www.beistelmachining.com)



# NTMA MEMBERS

## Optimize Your Machine Tool Performance, Productivity and Profits with Royal Products!



For over 70 years, Royal Products has been helping manufacturers squeeze every last drop of performance out of their CNC machine tools. Our broad range of tooling, workholding, automation, and mist-control products help reduce setup times, increase throughput, improve part accuracy, and enable unmanned production. Optimize your production today with Royal Products.

### Royal Quick-Grip™ CNC Collet Chucks



- Ten-second collet changes
- Ultra-precision accuracy – 0.0002" TIR or better
- Industry-leading gripping range – 0.062"
- Superior rigidity, gripping torque, and tool clearance

### Royal I.D. Workholding Systems



- Internal gripping offers full machining access to the entire length of the workpiece O.D.
- Parallel expansion for optimum accuracy and gripping torque
- Custom systems available – up to 25" diameter

### Royal Mist Collectors



- Low-cost, highly efficient mist and smoke collectors keep your shop clean and your workers healthy
- Over 150,000 units operating in over 50 countries worldwide
- Exclusive Royal Risk-Free Performance Guarantee

### Royal Rota-Rack™ Parts Accumulator



- Safely collects a large volume of finished parts for hours of unmanned production on bar-fed CNC lathes
- Heavy-duty design handles up to 700 lbs. of parts
- Easy to setup and install – no interface with CNC control is required

For Additional Performance Solutions, visit [www.royalproducts.com](http://www.royalproducts.com)



NTMA

# EMERGING LEADERS CONFERENCE

September 8-10 – Phoenix, AZ



**Pete Honsberger**  
Conference Emcee



**Dave Capkovitz**



**Omar Nashashibi**



**Darrin Schenck**



**Mike Watkins**

## Hotel Information

### Kimpton Palomar Phoenix

1301 Wyandotte St, Phoenix, AZ 85004

Group Rate: \$159+ per night

\*There is a \$10 resort fee per night - guests will receive that back as a \$10 food & drink credit

To make your reservation: Call 1-800-Kimpton and reference NTMA Emerging Leaders or Book Online.

**Room reservations must be made by Tuesday, August 17th.**

## Pricing Details

**NTMA Member: \$395 / Non-NTMA Member: \$495**

**Every conference registration includes the following:**

- All educational sessions and networking breaks
- Welcome Reception on Wednesday
- Breakfast on Thursday and Friday
- Lunch on Thursday
- Plant tour
- Evening activity and dinner on Thursday

## Agenda

### Wednesday, September 8

**Registration: 1:00 PM-3:00 PM**

**General Session 1: 3:00 PM-4:00 PM**

#### *High Performing Teams*

Dave Capkovitz, Principal - EBITDA Growth Systems

Mike Watkins, Principal - EBITDA Growth Systems

Want to know how to create a high-performing team that will maximize customer satisfaction, employee engagement and bottom-line profitability?

**This session will:**

- Describe the characteristics of high-performing teams
- Recognize how to improve individual and group productivity
- Describe the team-building process (Forming, Storming, Norming, Performing)
- Recognize the need to manage the individual differences within the team

**Campfire Chats: 4:00 PM-6:00 PM**

Your chance to sit down in a small group setting and discuss the following topics peer to peer:

- Managing Up
- Change Management
- Conflict Resolution
- Working With a Multigenerational Staff
- Time Management Strategies
- Strategies for Cash Flow

**Welcome Reception: 6:30 PM-7:30 PM**

**Thursday, September 9**

**Breakfast & Registration: 8:00 AM-9:00 AM**

**General Session 2: 9:00 AM-10:00 AM**

***Effectively Analyzing and Communicating Complicated Issues***

Omar Nashashibi, Founding Partner - The Franklin Partnership (*This session may be presented virtually*)

Effectively communicating complicated issues in the workplace, politics, or our personal lives in today's polarized environment is critical, especially when discussing complicated topics. Omar S. Nashashibi, Founding Partner at The Franklin Partnership, NTMA's lobbying firm in Washington, D.C., will present on strategies he and others use to help manufacturers and individuals understand and analyze how an action taken in business or politics may affect your company and industry. Often a lack of accurate information or trusted sources can create challenges in decision-making that could cost jobs or revenue, and even relationships. Mr. Nashashibi will discuss skills learned over his near quarter-century in Washington and how using certain effective tools to analyze and communicate can help your business and employees.

**Leadership Workshop: 10:15 AM-12:00 PM**

***Extraordinary Engagement***

Pete Honsberger, Lead Facilitator - CultureShoc

Reach beyond basic engagement levels by learning how to provide your team with Clarity, Autonomy, Mastery, and Purpose. The difference between Intellectual and Emotional Engagement equates to productivity, retention, morale, and your bottom line. Take part in this collaborative presentation and take away solutions to truly engage your people.

**Lunch: 12:00 PM-1:00 PM**

**General Session 3: 1:00 PM-2:00 PM**

***Navigating Sales Relationships***

Darrin Schenck, VP of Sales - DarrinChatter

In his talk entitled: "Navigating Sales Relationships," Darrin will cover some of his best tips and tricks for getting the most out of yourself and your relationships in sales. Sales is not an easy profession, but it is vital to the company's success, and Darrin will share his thoughts on how to help ensure longer-lasting sales relationships within your industry.

**Plant Tour: 2:15 PM-5:00 PM**

**A Night Out at "The Duce": 6:30 PM-9:30 PM**

**The Duce** - Where pretty meets gritty and produce meets prohibition. Join us out on the patio at "The Duce" for a fun night of food, music, lawn games and drinks!



**Friday, September 10**

**Breakfast: 8:00 AM-8:30 AM**

**Moderated Roundtable Discussion: 8:30 AM-10:00 AM**

Do you have a hot-button issue that you want peer feedback on? Do you ever wonder how others handle a problem you are facing? If so, this is your chance to discuss those items and more with your industry peers.

**Networking Break: 10:00 AM-10:15 AM**

**General Session 4: 10:15 AM-11:15 AM**

***Economics of a Shop - How It All Ties Together***

Dave Capkovitz, Principal - EBITDA Growth Systems  
Mike Watkins, Principal - EBITDA Growth Systems

Learn exactly how a machine shop makes money amid the whirlwind – customers, suppliers, employees and investors.

In this segment, we will define steady and profitable growth as the object of "the game." We will review the various players (functions) that exist within a growing profitable business, and how they interact to consistently run positive plays (e.g., Marketing, Sales, Finance, Operations and Management).

**Conference Closing: 11:15 AM-11:30 AM**

# Essential Resilience: How Small-and Medium-Sized Manufacturers Survived and Served Americans During the COVID-19 Pandemic

The COVID-19 pandemic has significantly impacted the American manufacturing sector. Three manufacturing CEOs and members of the NTMA, Kristin Carlson, President of Massachusetts-based Peerless Precision, Inc.; Justin Quinn, President of Colorado-based Focused On Machining; and Kevin Beach, General Manager of Arizona-based R&D Manco, sat down to share their experiences. Their answers have been edited for length and clarity.

## 1. How did the COVID-19 pandemic change your work?

**Kristin Carlson (KC):** Many of our company's clients are in the defense industry, so we did not experience the business slowdown that some manufacturers did. As a result, the biggest changes for us were in safety. For example, we require facemasks on the shop floor and in other congregate settings. We enforce physical distancing including ensuring space between workspaces and, in some cases, installing barriers for an added layer of protection. We have hand sanitizer stations throughout the facility; disinfect surfaces frequently, including machines at the beginning and end of shifts; and bring in professionals for a weekly deep cleaning.

We also deployed our technology to improve safety for others. From April – June of 2020, we used our Markforged Onyx 3D Printer to produce “ear savers” and mask extenders, which we donated to first responders, front-line health care workers and anyone working with the public.

## 2. One thing the pandemic showed us all is the importance of manufacturing to producing the products that keep Americans safe and comfortable. What does it mean to you to be an essential business?

**Kevin Beach (KB):** We take great pride in being an essential business. When everyone was closing down, we stayed open to keep our country safe.

**Justin Quinn (JQ):** We realized that many of our customers are more essential than we even thought. We have many customers in the food and beverage



processing industry that had business increases as more Americans stayed home to stay safe.

**KC:** We were able to stay open as an essential business because we manufacture some components for products considered vital to stopping the spread of COVID-19. For example, we manufacture a component for thermal imaging cameras which were repurposed for elevated body temperature detection. We also make parts used in centrifuges for the deployment of vaccines, including the COVID-19 vaccine. These items are vital in both helping to minimize the spread of the virus and helping to protect all of us from it.

**JQ:** All of our employees are extremely grateful to be working in manufacturing. We've worked hard to meet customers' demands and, as a result, we've been able to implement a 401(k) program and increase health benefits for the shop.

**KC:** This past year has really shown how important it is to have a diverse, robust, US manufacturing sector. When the global supply chain came to a halt, we couldn't just sit around waiting to see when things would go back to “normal” and items from overseas would start shipping again. American manufacturing flexibility and ingenuity stepped up and found ways to

retool in order to produce those essential items that were so hard to find.

## 3. It is in challenging times that people lean on each other and find strength in their networks and communities. How have you found support in your industry trade association, NTMA, during the pandemic?

**JQ:** Early during the pandemic when there weren't many guidelines, the manufacturing community developed many best practices and how to be creative and make safe workplaces. All of those ideas were openly shared with each other.

**KB:** Being able to reach out to other NTMA members to ask for advice was extremely helpful. We're all in this together and need to help when we can.

**JQ:** I witnessed numerous occasions where shops that were very busy turned to shops that weren't so busy to help get work done.

**KC:** The NTMA really stepped up in helping its members during these trying times, particularly providing updates on new policies like the CARES Act and answering questions about PPP loans. That information made members feel supported. The NTMA made it easier for all of us to be “together.”

**MFG**2021+  
**MTFORECAST**  
POWERED BY 

# NAVIGATING TO RECOVERY

**NOVEMBER 2-5, 2021 | DENVER, COLORADO**

For years, The MFG Meeting and MTForecast have celebrated manufacturing technology's legacy and helped attendees navigate future market conditions. This year, The MFG Meeting and MTForecast are available at one great event!

**WHERE LEGACY MEETS  
THE FUTURE OF INDUSTRY**

**REGISTER AT [THEMFGMEETING.COM](https://themfgmeeting.com)**

## Congratulations to Indiana Chapter of NTMA Board Member Zac Overton!

A huge congrats goes out to Indiana Chapter of NTMA Board Member Zac Overton for his earning his masters degree with finance concentration from Harvard University in May.

Zac earned the degree through Harvard University Extension School Master's program. "It was a great fit as it allowed me to do most of the work from home in the evenings, but still had an on-campus aspect each semester as well," he said. "Unfortunately, due to Coronavirus, I was only able to do classes on campus for two semesters, the rest were 100% online as the entire University went remote." Despite the

challenges, he finished classes in December of 2020 and his degree was conferred in February with an official Commencement in May of 2021.

Zac earned two undergraduate degrees from Indiana University -- one in Business Administration and the other in Spanish Language and Literature.

After completing his undergraduate studies, he interned for a year at Major Tool & Machine in various departments to gain the experience of working in a manufacturing environment other than Overton. When he returned to Overton, there was a strategic plan in place to have Zac work in sales and operations to help



prepare him for the role of division president one day. "I thought it was important to go back to school for a master's degree in order to prepare myself for the upcoming management roles," Zac noted.

His hard work definitely seems to have paid off. His GPA upon graduation was 3.92, in the top 5% of his graduating class!

**Congratulations from the entire NTMA team to Zac Overton!**

## Sirois Tool Announces - Graduate of the Work-Based Learning Program Completes His Apprenticeship

NTMA salutes long-time member Sirois Tool as they tout the success of work-based learning programs in our industry – and for the completion of another Apprenticeship through their shop!

**From Sirois Tool:**

One more outstanding Vinal Tech grad has finished his apprentice program at Sirois Tool! We are so proud of the employees who have completed this intensive training program, and today we'd like to tell you about Ian.

Ian started working part-time at Sirois in April of 2018 while he was still in school, as part of the Work-Based Learning Program. He came on board full-time in July of 2019, after graduating with honors from Vinal Tech. In order to complete the training program, Ian had to finish a total of 6,000 hours, which included the 1500 hours of Vinal Tech credit received when he graduated.

On February 1st of this year, Ian completed his apprenticeship, and he is now a Precision Grinding



Machinist! He is the fifth Sirois employee to complete the program.

We congratulate Ian and the entire team at Sirois Tool for their commitment to growing the manufacturing workforce of tomorrow!

## In Memoriam: Judith “Judy” Sustar

Judith “Judy” (Ulepik) Sustar, of Waite Hill, passed away at home on July 18, 2021, her 78th birthday, surrounded by family. Judy is the spouse of Past Chairman (2000), Roger Sustar, owner of Fredon Corporation in Mentor, Ohio.

In 1969, Judy supported Roger in the purchase of a small machine shop called Fredon Corporation which has grown to a successful manufacturing company in Mentor, OH due in no small part to her unending patience and understanding of long hours and the ups and downs of business ownership.

Fredon Corporation has been an NTMA member and Cleveland Chapter member for over 50 years.

NTMA offers its condolences to the Sustar family, Fredon Corporation, and the Cleveland Chapter. In lieu of flowers, contributions may be made to Christ Child Society of The Western Reserve, 9354 Mentor Avenue, Unit 7, Mentor, Ohio 44060 or Villa Angela-St. Joseph High School in c/o The Judy and Roger Sustar Scholarship, Class of 1961, 18491 Lakeshore Blvd., Cleveland, OH 44119. Please offer condolences at [www.brunners.com](http://www.brunners.com)



# What is a Precision Machinist?

By Bill Padnos - Executive Director, AMPED & National Tooling & Machining Foundation

When I first was hired by NTMA – managing the NRL program – Dave Tilstone invited me to attend an NTMA executive committee meeting in Miami. He wanted for me to gain a better perspective on the association, while taking the opportunity to introduce me to the leadership. I had already had some exposure to the world of NTMA through my time managing the NTMA Pittsburgh Chapter's NRL program - but it was helpful to learn about the youth engagement issues and concerns from across the country.

Since I am not a manufacturer by trade, one of my goals at the meeting was to gain insight into what it means to be a Precision Machinist from the national leadership. Every NTMA member that I talked to in Pittsburgh told me that they are looking for individuals with the aptitude to be a machinist - and I believed that the NRL program was capable of producing them. However, I needed the elevator speech, not the complete machinist job description. Through all of my conversations, I came up with:

**“A Precision Machinist is an Engineer who knows how to make things.”**

Society reveres engineers because they are in awe of the technical skills needed to be one. Engineers have skills in problem-solving, computer science, mechanical aptitude, pressure management, teamwork, creativity, structural analysis, communication, attention to detail, educational commitment, data modeling and leadership. Those are also the attributes of a precision machinist - except for the critical skill of the ability to actually make the part.

This is why I have always been puzzled about the stories in academics and larger manufacturing companies, framing great divides between the engineers and machinists. If machinists have an understanding of the complete manufacturing process, why are they the last ones involved in a project? Frequently, machinists point out that engineers are prone to providing incomplete drawings and annotations, or drawings that are physically impossible to realize with the specified equipment.

My favorite quote on this very issue comes from Bob Mosey, who told me he can “turn any engineer into a machinist.” But: why would an engineer want to become a machinist when it does not hold the same value in society? We all know that manufacturing productivity really benefits when more students are graduating from CTE machining programs than engineers graduating from Carnegie Mellon University. Unfortunately, public perception is completely the opposite, which is why manufacturers say it is 36% harder to find talent today than in 2018 — even though the unemployment rate is much higher, per a report. In fact, more than three-quarters of manufacturing executives (77%) surveyed said they expect to have trouble attracting and retaining workers this year and beyond.

“

**A Precision Machinist  
is an Engineer  
who knows how to  
make things.**

Bill Padnos - Executive Director,  
AMPED & National Tooling & Machining Foundation

If a machinist has even more skills than an engineer – who has at least 4 years or more of collegiate studies and fundamental skills development – shouldn't they be given the opportunity and time to learn their craft? The difference is that a machinist combines on-the-job training with classroom work while an engineer is mostly stuck in the classroom (whether physical or online). After 4 years, an engineer has a degree with no idea of what it is really like in manufacturing - and a lot of debt. A machinist, over the same amount of time in a registered apprenticeship program, learned the same skills, earned their journeyman card and college credit (from an articulation agreement), and can be making over \$70,000 a year.

This is why it is important for all of us to promote that “Machinists were created because engineers need heroes too” and that “Engineers Try / Machinists Do.” Often, more time is spent posting and praying that a qualified machinist will just walk into the shop looking for a job; but the potential of that happening decreases by the day.



As the new school year is approaching, it is important for every NTMA member company to better define what it truly means to be a machine shop professional. Our shops are not huge factories with robots taking over jobs from workers. A precision machinist is a valued employee that provides the critical thinking and technical skills that makes a true impact on bottom-line results – as opposed to replacing low-skilled workers with a robot that picks up a part and moves it to a belt. While Deloitte reports that there will be an influx of 2.7 million industrial robots in use worldwide, humans are still needed to produce the vast number of parts in NTMA member companies.

We understand that manufacturers as a whole are experiencing heavy competition for entry-level talent from warehouse and distribution centers that are feeding the e-commerce boom caused by the pandemic. While the short-term benefits of working in an Amazon center are appealing, those careers offer fewer long-term opportunities - those jobs plateau, and will cap out in terms of growth and skills development. That simply does not happen to a professional with foundational fundamental skills like a precision machinist—skills that will be an asset to your company and to the individual as Industry 4.0 takes over. We need to shout this from the rooftops.

MFG Day is coming on Friday, October 1st. Barring any setbacks with COVID-19, schools may have field trips in the Fall; but that does not mean that you should wait for the opportunity to have students in your shop to promote precision machining careers. Connect with your local educators and school administrations to let them know that you want to be partners in engaging students back in the classroom. The NRL and NTMA Pre-Apprenticeship programs are proven, job-driven and cost-effective ways to engage manufacturing's next generation. For more information on how to become a local champion in solving the skills gap, contact Bill Padnos at bpadnos@ntma.org.

# Talking With an Emerging Leader: Mark Sippy



*Mark Sippy is President of Highpoint Tool in Saegertown, PA. He is also Vice President of the NWWPA Chapter of NTMA. Mark sat down with Caitlin Sickles, NTMA's communications consultant, to discuss his career path and what he sees coming next in the high-tech world of manufacturing.*

**NTMA: Walk me through your career trajectory. How did you get started in manufacturing? And how did you make it to your current role?**

**MS:** My family was in manufacturing for many years starting with my grandpa. But, I didn't automatically know I would join the industry. When I was in college and set to graduate, the market wasn't good for jobs in really any industry. I decided to stay in school for one more year and get an MBA. About the time I completed that program, my dad asked me to join him at Sipco Molding Technologies where he needed someone to manage a project. It was a great opportunity, and I thought it would be temporary. At the same time, my family decided to sell Sipco, but I stuck around to learn from the new owner. Then, a position opened at another family business, Highpoint, so, I jumped in. After a few years, the opportunity came up for me to buy out my uncle's half of the company. So, now, my dad and I are co-owners of Highpoint. While my dad has stepped back from many of the day-to-day responsibilities, he's still involved and still my favorite advisor.

**NTMA: You mentioned that you thought your job in manufacturing would be temporary. What do you think changed your mind and inspired you to make it your career?**

**MS:** I've always been a mechanically minded person. I like working on cars. So, once I got into manufacturing, especially working at Highpoint, I saw all of the technology and the things we can do. It's awesome and fun to be a part of.

**NTMA: It's not every day that people describe their work as awesome. What are some of the things you make?**

**MS:** We are good at making complicated parts out of weird materials, things that other companies would shy away from. We make parts for helicopters and components for subsea oil wells. We make parts for back-up generators for nuclear power plants. Working on parts that you absolutely have to get right, that could have significant consequences otherwise, is a challenge, but a good one.

**NTMA: The COVID-19 pandemic changed manufacturing and how the industry operates. Do you see lasting impacts now that we are hopefully moving on?**

**MS:** It pushed all industries to work remotely, to lean on Zoom calls and technology to stay connected and still get the job done. A lot of our customers aren't local so we would normally fly across the country to see them. With the pandemic, we went to Zoom meetings and found that it was as easy as talking to your neighbor.

**NTMA: Do you think that's a good thing?**

**MS:** I think I'll always like to meet face-to-face, but having that technology as an option whenever you need it is beneficial for everyone.

**NTMA: What do you think is next for the manufacturing industry?**

**MS:** Additive manufacturing isn't new, but it still isn't very common. I think additive will keep becoming a more acceptable method for our customers and I think the technology will become more affordable which will enable more manufacturers to do it. So, I think additive will be a big player in the future.

**NTMA: Do you have any recommendations for manufacturers who are trying to recruit young people into the industry?**

**MS:** We have to go back to the high schools and even before high school. We have to educate advisors who sometimes push all the smart kids to go to college, but there are a lot of sharp kids out there who would be better off starting out with a good job than four years of debt and still no job. And we have to engage kids directly. The Bots programs can be good ways to get young people interested in the skills they would need for success in manufacturing.

**NTMA: As a final question, let me ask you about your membership in NTMA. As a next-generation leader for the industry, what value do you find in a trade association like NTMA?**

**MS:** Going to the national events is huge. You can learn a lot from the different speakers, but also from networking with everyone. Everyone has the same business issues and being able to talk through them and hear what other people do to overcome challenges can help you get through your own. And that's really invaluable. Then, at the local chapter level, it's nice to have a tight-knit community. Sure, we may compete sometimes, but we are also, ultimately, on the same team. We have a significant amount of manufacturing in this area going back 100 years. The zipper was first made here. And, our apprenticeship program has spawned many additional shops. We've been known as Tool City, USA because of the number of companies and the work we do here.

**NTMA: Do you have anything else that you want to share with readers?**

**MS:** At this point, I'm just trying to follow in my family's footsteps. My grandpa got into manufacturing and first joined NTMA. My dad and uncle took over the business and remained in NTMA. Now, here I am, running a manufacturing company and still sticking with NTMA.



**REGISTER TODAY!**



# TOP SHOPS EXPO

October 12-14, 2021 - Duke Energy Convention Center - Cincinnati, OH

**Make a plan to make yourself  
a smarter manufacturer.**



## Register Today for the Top Shops Expo – A Smarter Way To Source Your Parts and Solve Your Problems.

The brand-new **Top Shops Expo** connects all members of the manufacturing supply chain – executives, engineers, designers, procurement specialists, and technology suppliers. An extension of the annual Top Shops Benchmarking Survey, the Top Shops Expo will provide education, tips, strategies, and processes that are used by the most successful experts in manufacturing, as well as key networking opportunities and show floor populated by the industry's finest. Simply put: this event is a can't miss show for any professional that's part of the manufacturing supply chain.

- › **Source** Parts
- › **Spec** New Technology
- › **Sell** Your Brand
- › **Solve** Business Problems

This show will put the entire North American supply chain on the show floor—from start to part to finish.

**Make sure you're there in October!**

POWERED BY



PRESENTED BY



**GARDNER**  
Business Media, Inc.

IN PARTNERSHIP WITH



**CONNECT + CONTRACT**

INTERESTED IN EXHIBITING?

Contact Bob Huff  
BHuff@gardnerweb.com  
(513) 527-8858

WANT TO KNOW MORE?

Contact Ellen Durchholz  
EllenD@gardnerweb.com  
(513) 338-2191

**Visit [TopShopsExpo.com](http://TopShopsExpo.com)  
for more details.**

# Automating Existing Machine Tools – a Viable Way to Develop Production

By Heikki Hallila, VP Part Automation – Fastems

There has been a prevailing myth that manufacturers need to purchase brand new machine tools to incorporate into FMSs. That simply is untrue. Automating existing machine tools is possible and common. There are ways to navigate through the necessary technical landscape surrounding machine tool interfacing, table or chuck access, safety and more. Successful shops are defined by their willingness to invest and trust in new technologies. For all but a handful of manufacturers, though, refreshing their collection of machines every few years – or every few decades – is just not feasible. Luckily, one of the most efficient methods of boosting production doesn't require the latest and greatest equipment. The average non-automated machine cuts only approximately 20% of a full day. Put in the context of an entire year, only about 1,752 hours out of the 8,760 total available annual production hours are being used. Automation unlocks that wasted 80%.

## A Rising Trend

In practice, existing machine tool automation, or “EMTA,” can mean automating completely stand-alone machines, machines that are already integrated into an automation system, or a hybrid of the two. In all its forms, EMTA has experienced an increase in demand because automation can boost production capacity tremendously and brings unique opportunities when floor space is limited. In addition to this, the classic production development parameters around machine tool utilization rate, lead times, their reliability, profitability, quality, as well as employee engagement are also very important, and a desire to improve in these often drives EMTA. On top of this, production might be lacking in analytics and KPIs, which are things automation can provide instantaneously. Finally, sometimes the existing automation hardware is malfunctioning, or there is a business risk that needs to be solved. In sum, all the so-called traditional benefits of automation are accessible for EMTA cases, and a desire for them usually drives the investment.

## Why Automate

The most obvious benefit in automating machining is the inherent difference in labor requirements. With fewer and fewer skilled workers available in the manufacturing industry today, it becomes critical not to bog down the tradesmen that are accessible with work that can be done unmanned. Not only does this ease the strain that a reduced staff puts on a shop floor, but it also reduces the opportunity for human error, enhances part repeatability and quality, and sets manufacturers up for lights-out machining. Any manufacturer experiencing a narrowing profit margin or a loss of workforce should seriously consider automation.

## Automation Options

Automation can be divided into two categories: digital and physical. Digital automation encompasses automated production planning and resource management, like Fastems Manufacturing Management software (MMS), a software that automatically optimizes workflow by organizing labor and materials according to past data. Digital automation maximizes spindle uptime, minimizes scheduling blunders, and provides a current and informed plan for raw materials, tools, and machines. Physical automation solutions are hardware setups that can manipulate materials and tools. Pallet systems are designed to move pallets to workstations according to optimized production plans, saving time and labor. Robots can manage the movement of tools for deburring, washing, measuring, and marking.

Integrating New Automation with Existing Equipment  
Installing automation systems is less about adding new tools so much as honing existing tools. The advantage here is that manufacturers won't have to buy new machines, especially when budget or floor space is a limiting factor. To integrate seamlessly, though, companies should take an intelligent approach to project management, interface selection, interface development, and making physical changes to current machines. Failing to make a successful



integration could result in manufacturing planning software that offers inaccurate data, robots that mishandle their loads, or simply a general decrease in throughput.

**Project Management:** Any installment begins with project management. In this phase, the manufacturing company conducts a pre-study to map the potential opportunity, feasibility, and probable return on investment of integration. Deliberate automation, chosen wisely, can supplement processes like 4- and 5-axis milling, turning and mill-turning, grinding, finishing, measuring, and cutting tool management. If the pre-study's results are favorable and the decision to move forward is made, the manufacturer, automation provider, and machine dealer or builder must come together to distribute responsibilities among themselves. These responsibilities may include testing the automation interface, collecting the machine tool data, and more. Once a project team is selected, with representatives from each of the three entities, it should set a schedule for installation, considering any issues that may arise and delay progress.

**Interface Selection:** After the initial project management, the machine provider and automation provider should collaborate to develop the interfacing



component. Initial conversations must cover the quantity, age, software, and type of machines to be automated. Integration is most straightforward when machines are less than 5 years old, but older machines can easily be incorporated once their control systems are upgraded to a true CNC 32-bit operating system. Standalone machines, machines in existing automation systems, and hybrids of the two can all be updated with new automation.

**The providers must also determine the level of interfacing that would be most beneficial:**

No interface, a standard interface, or an advanced interface. With no interface, automated production planning and resource management is simply added with automation software, like ERP. A standard interface will enable the reading of machine status and the physical movement of hardware like pallets. This adds production KPI monitoring and allows lights-out manufacturing. The most involved

interface, an advanced interface, adds back-and-forth communication between software and cutting tools for optimized machining and maximum automation.

**Interface Development: Occurs in six phases:**

1. *Collection of machine data to document the brand and model, as well as existing electrical and software connections.*
2. *Pre-study of the hardware, software, and safety features if the collection of machine tool data is not comprehensive enough.*
3. *Clarification of machine tool readiness for interfacing, determined from the machine tool data and pre-study.*
4. *Interface definition to confirm exactly which automation solutions are missing from the current setup and what the interface will provide.*
5. *Effective interface development is characterized by thorough data collection and intensive interface testing.*

**Making Physical Changes to Machines:** The final step of the installation process is to make any physical changes to the machine that are required, which are always handled by the machine provider. The exact modifications necessary will be determined by factors like whether the machine is currently interfacing with an automatic pallet changer. All changes should be made to meet or exceed required safety levels and to increase connectivity.

If the integration is completed seamlessly, results will be almost instantaneous. A successful shop will be rewarded with improved lead times and part quality, decreased labor and machine investment, and enhanced profitability overall.





## What is the Big Deal With Culture?

By Michael Watkins, MBA/JD, EBITDA Growth Systems

“**Culture eats strategy for breakfast**” is a phrase originated by Peter Drucker and made famous by Mark Fields, President at Ford. But if culture is such a big deal, it would help if someone were to define it for the masses.

We define culture as “the experience that your customers have with your company’s value proposition.” In other words, if you want to know what kind of culture your company has, survey your customers. You could also survey all your suppliers and outside processing partners. If they say that your people are harsh, angry, aggressive, dismissive, and generally unfriendly, the odds are pretty good that your culture may be described in the same way. It means that your workforce is disengaged.

If your customers, suppliers, and outside processing partners say that your people are warm, happy, cooperative, and collaborative, then the odds are that you have a pretty good culture. It means that your workforce is engaged. Note that employee engagement does not mean employee happiness. Someone might be happy at work, but that does not necessarily mean they are working hard, productively on behalf of the organization. Note that employee engagement also does not mean employee satisfaction. Many companies have “employee satisfaction” surveys and executives talk about “employee satisfaction,” but the bar is set too low. A satisfied employee might show up for her daily 9-to-5 without complaint. But that same

“satisfied” employee might not go the extra effort on her own.

An engaged employee is an employee who has an emotional commitment to the organization and its goals. This emotional commitment means engaged employees actually care about their work and their company. They do not work just for a paycheck, or just for the next promotion, but work on behalf of the organization’s goals. This is huge. If your organizational culture is typified by engaged employees, then your culture acts as an exponent – a multiplier. In this environment, decisions are made at the lowest possible levels and everyone on the team is “their brother’s keeper.”

Imagine how frictionless the environment would be when the organizational culture is typified by engaged employees. Everyone is freed up to be the best that they can be, and your customers and suppliers want more of what they are experiencing from your company.

### What is the big deal with culture?

The answer – profits. There is a reason why Fortune 100 companies invest so heavily in engaging their employees. Companies with a thriving, engaged culture achieve over 4x higher revenue growth, and a 21% increase in profitability.

If you are wondering how that could be, consider three data points:

- **Productivity** – *An employee who feels engaged and inspired is 125% more productive than the satisfied staffer. (Bain & Company) Companies with the highest levels of engagement are 21% more productive than those with low levels of engagement. (Gallup)*
- **Retention** – *Highly engaged business units experience 59% less employee turnover. The link between employee engagement and retention is well established. Employees who are highly engaged are 87% less likely to leave an employer.*
- **Absenteeism** – *Engaged employees show up to work and do more of it. The Gallup organization found a 41% reduction in absenteeism among engaged employees, and a 17% increase in productivity.*

In our next upcoming “Minding Your Business,” we will unpack why it is that, far and away, the number one correlation to an engaged employee is a good manager. Good managers create engaged employees that are invested in your vision and committed to turning it into a reality. They create employees who work productively and with purpose.

**That is what the big deal is with culture!**

**EBITDA**  
GROWTH SYSTEMS

8760

Fastems

Fastems



BEYOND A PALLET POOL

**FPC** **PLUG-AND-PLAY**

**CNC AUTOMATION**

HIGHER MC UTILIZATION · FAST PAYBACK · EXPANDS TO 3 MACHINES



Is this for me? Check [fastems.com/fpc](https://fastems.com/fpc)

# The Expanding Role of Cobots in Manufacturing

By Gail McGrew — Project Writer, AMT

Collaborative robots — or cobots — have been used in manufacturing for about two decades. Cobots are specifically designed to interact with humans in a shared workspace and therefore minimize the risk of accidents or injuries. They are equipped with sensors to avoid collisions and ensure passive compliance in the event of unplanned contact. Cobots are relatively lightweight compared to industrial robots and are usually portable.

“Robotics and automation have become foundational to the evolution of the manufacturing industry, and now cobots have emerged as the newest area of innovation and productivity,” said Stephen LaMarca, technology analyst, AMT. “Although cobots are not as fast or powerful as traditional industrial robots, as they are force limited to 15 Newtons, their much greater level of safety offsets limitations in force and speed.”

Advances in sensors, artificial intelligence (AI), machine vision, and light detection and ranging (LiDAR), among other technologies, are making cobots easier to program, less expensive to deploy, and increasingly flexible in the types of tasks they can safely perform. According to the International Federation of Robotics, cobots are the fastest-growing segment of the industrial robotics sector and growing at a rate four times faster than that of traditional industrial robots. Analyst firm Emergen Research predicts that cobot sales will climb to \$9.3 billion by 2027, up from \$0.7 billion in 2019.

“Cobots are also ideal for smaller manufacturers given their much lower price point and how much easier they are to program and use, reducing or eliminating the need for engineering staff and lost productivity due to downtime. In the near future,



we see continued advances in edge computing as being important in equipping cobots with even greater flexibility and easier implementation,” added LaMarca.

There are three main categories of safety assurance in cobot systems: speed limits, force feedback, and external sensing. ISO/TS 15066, first introduced in 2006, ensures that all machines classified as cobots require at least one safety feature, such as a safety-rated monitored stop, hand guiding, speed and separation monitoring, or power and force limiting. ISO/TS 15066, published in 2016, specifically addresses the new field of safety requirements for cobots in much more detail. Under TS 15066, the force and speed monitoring of the cobot is set based on application data, human contact area, and workspace hazards. Cobots are often allowed to operate at higher speeds when no persons are in the collaborative workspace or hazard zone.

Unlike industrial robots, cobots are relatively easy to program, even by workers with no knowledge of programming. Most use hand guiding — also called teaching by demonstration — in which the cobot learns while being guided through the sequence of movements needed to perform a task. The price of cobots, starting at about \$25,000 and decreasing every year, makes them increasingly accessible for small- to mid-sized manufacturers.

## A few additional facts about cobots:

- Cobot applications need not feature collaboration, nor does safety need to be a factor. While cobots are engineered to work safely alongside people, collaboration with humans does not always figure into their value.
- Cobots are not ideal for lifting heavy items, doing work in very dirty or hazardous environments, or performing tasks that require the accuracy of industrial robots, such as high-volume mass production.
- Cobots are a great fit for a variety of applications, including machine tending, metrology, assembly, screwdriving, visual inspection, packaging, and palletizing.
- Cobots are currently designed for payloads less than 75 pounds and they are not as fast as traditional industrial robots.



*Gail McGrew is a project writer at AMT. She has more than 25 years of experience in B2B writing and content development for corporate communications, media relations, and marketing in the technology, manufacturing, financial, life sciences, and many other industries. She contributes to AMT News, AMT's white paper series, IMTS Spark, AMT press releases, and more.*



# AEROSPACE TO THE CORE

## HARVI™ ULTRA 8X

Ti6Al-4V structural aerospace component machining with consistent tool life of one hour or more. Helical milling innovation with 8 cutting edges per insert, removing 20 cubic inches of material per minute. HARVI™ Ultra 8X is aerospace to the core.

October 26-29, 2021 - Old Alexandria, VA

# CONNECT WITH YOUR INDUSTRY PEERS **IN PERSON**

THE PRECISION MANUFACTURING CONFERENCE

# ENGAGE™ 2021

POWERED BY 

**Engage 2021** will 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.

*"Engage is an amazing opportunity to learn tools and techniques for improving my business. I am able to glean many ideas from the speakers and through networking that I can come back and implement."*

*- Matt Wardle, President - JD Machine*

We hope you'll join us for a true, in person event, for exciting ways to **Engage** with the nation's largest network of Precision Manufacturers.

[www.manufacturingengage.org](http://www.manufacturingengage.org)

## HOTEL INFORMATION



### **The Westin Alexandria Old Town**

400 Courthouse Square  
Alexandria, VA 22314

Negotiated Group Rate: \$215 per night  
Hotel Cutoff Date is Wednesday, September 29th.

#### **To make a reservation:**

Call (703) 253-8600 and reference Engage 2021.

\*Rooms are based on availability or until the block is full

**For more information contact Kristen Hrusch: [khrusch@ntma.org](mailto:khrusch@ntma.org)**

**For sponsorship opportunities contact Kelly LaMarca: [klamarca@ntma.org](mailto:klamarca@ntma.org)**



## Pricing

### Early Bird Rates:

- Member: \$1,195
- First-Time Attendee/EL Rising Recipient from 2020 & 2021: \$995
- Spouses: \$795
- Non-Member: \$1,395

### Standard Rates:

- Member: \$1,395
- Spouses: \$895
- Non-Member: \$1,795

### Early Bird Deadline is Wednesday, September 29th

Registration will include company-wide access to our virtual **"STAY ENGAGED"** event and content - available the week after Engage 2021. Our **"STAY ENGAGED"** content will consist of 3 hours per day, with each day focused on one of the following areas: Technology, Workforce/HR Development, Finance and Sales & Marketing.

### To register, visit:

[www.manufacturingengage.org](http://www.manufacturingengage.org)

### For more information, please contact:

**KRISTEN HRUSCH - 216.264.2845**

**KHRUSCH@NTMA.ORG**

## OUR SPONSORS

**DMG MORI**

**BIG KAISER**

**LOKUMA**

**HEIDENHAIN**

**PILOT**  
Precision Products

**Safehold**  
SPECIAL RISK

paperless**PARTS**

**GRAINGER**

**KENNAMETAL**

## OUR PARTNERS

**GARDNER**  
Business Media, Inc.

THE ASSOCIATION FOR  
**MANUFACTURING TECHNOLOGY**

## Opening Keynote

Wednesday, October 27th

**9:45AM-10:45AM**

Digital Twins in Manufacturing: Driving Manufacturing 4.0

*Dr. Michael Grieves – Chief Scientist of Advanced Manufacturing at the Florida Institute of Technology in Melbourne*



**Dr. Michael Grieves**

Dr. Michael Grieves will describe the Digital Twin as an early 21st-century concept that has evolved in scale and scope to impact all of today's manufacturing organizations. Dr. Grieves will discuss the characteristics that enable the Digital Twin to drive smart manufacturing or, as it is commonly called, Manufacturing 4.0. As important as the present state, Dr. Grieves will share his vision of the impact Digital Twins will have on the manufacturing floor of the near future.

*Dr. Michael Grieves is an internationally renowned expert in Product Lifecycle Management (PLM) and originated the concept of the Digital Twin. His focus is on virtual product development, engineering, systems engineering and complex systems, manufacturing, especially additive manufacturing, and operational sustainment. Dr. Grieves has written the seminal books on PLM and seminal chapters on Digital Twins, "Digital Twin: Mitigating Unpredictable, Undesirable Emergent Behavior in Complex Systems" and "Virtually Intelligent Product Systems: Digital and Physical Twins" He has consulted and/or done research at some of the top global organizations, including NASA, Boeing, Newport News Shipbuilding, and General Motors. Dr. Grieves is currently at the Florida Institute of Technology in Melbourne as Chief Scientist of Advanced Manufacturing. He is also Executive Director of the Digital Twin Institute, bringing over four decades of extensive executive and deep technical experience in both global and entrepreneurial technology and manufacturing companies.*

## Closing Keynote

Friday, October 29th

**11:00am-12:00pm**

Investing Beyond Technology: Creating an Innovative and Inspired Workplace

*Brad Halsey – CEO and Founder, Building Momentum & Athena Response*



**Brad Halsey**

From disaster zones and battlefields to the boardroom, it's the people — not just the technologies — that solve hard problems. Too often people turn too much to tech as a mainstay of innovation when, in fact, people with diverse backgrounds, empowered voices, and in supportive cultures can solve crucial problems through innovation. Developing an inspired and creative environment will serve companies just as well, if not better, during tumultuous times rather than only investing in technology.

*Brad is the CEO and Founder of Building Momentum and the co-Founder of ATHENA (then known as TechGarden). He is a US Navy veteran and has years of experience supporting soldiers in the field as a contractor for the US ARMY Rapid Equipping Force. Brad loves to throw himself into a project that solves problems and leaves a lasting impact. Brad is passionate about solving humanity's hardest and most urgent problems. Sometimes this means dropping into war zones and disaster areas to rapidly develop solutions to dynamic problems. Other times this means teaching problem-solving and tech skills to people facing these environments and scenarios. He started Building Momentum and AthenaResponse.org to make global change. He measures success with a single metric – positive human impact.*

## Event Schedule

### Tuesday, October 26th

- 2:00PM-6:00PM** Regieption
- 3:30PM-5:00PM** AMPED Board Meeting\*
- 8:00PM** Cornhole Tournament & NRL Fundraiser

### Wednesday, October 27th

- 7:15AM-8:15AM** NTFM Meeting & Breakfast\*
- 8:00AM-5:00PM** Registration
- 8:00AM-5:00PM** Exhibit Tables
- 8:00AM-8:30AM** Breakfast
- 8:30AM-9:30AM** Conference Kickoff  
Membership Recognition & Awards
- 9:30AM-9:45AM** Networking Break
- 9:45AM-10:45AM** Opening Keynote:  
Digital Twins in Manufacturing: Driving Manufacturing 4.0
- 10:45AM-11:00AM** Networking Break
- 11:00AM-12:00PM** Breakout Sessions
  - Actionable Sales and Marketing Efforts to Build your Digital Foundation
  - The Dark Factory – Benefits, Challenges and Implementation Strategies
  - Leadership Workshop – Gratitude Strategies to Boost your Leadership and Lift your Life
- 12:00PM-1:30PM** Open Lunch
- 12:00PM-1:30PM** First Timer Meet & Greet\*  
Hosted by: DMG MORI
- 1:30PM-2:30PM** General Session 1  
Top Shops - What Drives High Performance in Machine Shops
- 2:30PM-2:45PM** Networking Break
- 2:45PM-3:45PM** General Session 2  
Winning the War for Talent
- 3:45PM-5:00PM** Community Outreach Program
- 5:00PM-6:00PM** EL Rising Reception\*
- 6:00PM** Free Night to Explore Old Alexandria

\*Asterisk designates meetings for Team Members only or functions that are by invite only.

### Thursday, October 28th

- 7:30AM-9:00AM** Board of Trustees Meeting & Breakfast
- 8:00AM-5:00PM** Registration
- 8:00AM-5:00PM** Exhibit Tables
- 8:30AM-9:00AM** Breakfast
- 9:00AM-12:00PM** Offsite Activities
  - Walking Tour of Old Alexandria
  - Washington Monuments Tour - Boat Cruise on the Potomac River
  - National Inventors Hall of Fame and Museum
  - Innovation Workshop at Building Momentum
- 12:30PM-2:00PM** Luncheon & NTMA Update
- 2:00PM-3:15PM** General Session 3  
The Washington Agenda for Manufacturing in America
- 3:15PM-3:30PM** Networking Break
- 3:30PM-5:00PM** Roundtables
  - Precision Machining
  - Tools, Dies and Molds
  - Aerospace
  - Medical
- 5:00PM-6:00PM** Cocktail Hour - PAC Fundraiser
- 7:00PM-10:00PM** Evening Event at Pinstripes & GAAF Fundraiser

### Friday, October 29th

- 8:00AM-11:00AM** Registration
- 8:00AM-11:00AM** Exhibit Tables
- 8:00AM-8:30AM** Breakfast
- 8:30AM-9:30AM** General Session 4  
How Businesses Can Use Data to Confidently Move Forward in Unprecedented Times
- 9:30AM-9:45AM** Networking Break
- 9:45AM-10:45AM** General Session 5  
The Impact of Dominating Trends in Manufacturing in Your Shop
- 10:45AM-11:00AM** Networking Break
- 11:00AM-12:00PM** Closing Keynote  
Investing Beyond Technology: Creating an Innovative and Inspired Workplace
- 12:00PM** Conference Wrap Up
- 1:30PM-4:00PM** Optional Activity - Plant Tour(s)

# Four Strategies to Make Your Production More Efficient

By Debra Schug, CNC Communications Strategist for FANUC America

Now that production is ramping up, it's a great time to critically look at your processes and see how you can improve. There are four key strategies manufacturers can use to boost their efficiency.

## Add Automation

Automation can increase production and efficiency no matter the type or complexity of the manufactured products. With the current challenges of finding skilled labor, many job shops are taking advantage of adding more robotics to execute repetitive tasks previously manually performed. Advanced automation offers a competitive edge and greater profit margins to shops of all sizes.

FANUC's robots and software make it easy to connect the equipment and improve throughput as well as overall equipment effectiveness through Quick and Simple Startup of Robotization (QSSR). FANUC's QSSR is a complete package that simplifies the connection of a FANUC robot to a FANUC-controlled machine tool. Plus, FANUC just made robotic programming easier with the new QSSR G-code feature, which allows FANUC CNCs to control connected FANUC robots providing machine tending or other assistance.

The new QSSR G-code feature allows operators and machine tool builders to program robots easily through the FANUC CNC in ISO standard G-code format. Those unfamiliar with robotic programming language will no longer require additional training or specialists because the programming can be performed through the G-code. Reliance on a separate teach pendant for the robot is also greatly reduced with the capability of robotic programming and operation through the CNC user interface.

FANUC's QSSR not only makes connecting a FANUC robot through a high-speed Ethernet cable to a machine tool easy, but also simplifies the setup, programming and operation. The QSSR G-code feature is available on FANUC CNC Series Oi-F, Oi-F Plus, 30i-B and 30i-B Plus.

## Use the Latest and Greatest Machining Practices and Technology

Many manufacturers leave performance on the table due to outdated processes and programming. Are you getting the most out of your machining? Now's the time to look at the advantages of new CNC technology. Because new controls have greater processing speed and can implement advanced algorithms, they can do a lot more for your operations. Moreover, the interfaces have become simpler and more intuitive, so they are easier to use than ever before.

For instance, to help programmers and shops get the best machine tool performance, FANUC introduced Fast Cycle Time Technology – a suite of functions designed to improve productivity. Fast Cycle Time Technology is, in short, interpolation planning, specifically designed for rapid positioning moves. To explain in another way, picture cars racing on a track. One car can perform better by its driver adjusting when and where she brakes and accelerates, such as accelerating out of a corner, or in other words, picking the fastest line. Fast Cycle Time Technology is those inputs informing the braking and accelerating decisions.

Fast Cycle Time aims at getting improvements out of low-hanging fruit, such as in positioning for spot drilling, drilling and tapping. Parts that require many of these types of operations will see a significant reduction in cycle time. Additionally, because only non-cutting moves are affected, surface quality is untouched.

## Digitize Your Process

New digital tools are breathing innovation and life into increasingly more areas of manufacturing, including the application of digital twins in the machining industry. Digital twins provide virtualization of the machine, control and manufacturing process. Digitalizing traditional manufacturing processes have the potential to make operations more efficient by proving out production processes in the virtual world. That means less waste, more efficiency and a more equipped workforce.

To see this technology in action, look for FANUC America's new visual twin demo at the upcoming tradeshow this fall. A visual twin is a next-generation, high-resolution version of a digital twin, which is an exact software replica of a real CNC machine tool with a virtualized CNC. It connects to



the controls and uses real physics to produce the authentic look, behavior and sounds of the actual machine tool cutting parts.

In the new visual twin demo, we are virtualizing the cutting of a robot head on a Toyoda FH630SX-i 5-axis machine tool designed for complex machining. This part requires more than 40 different processes and takes more than 16 hours to cut in the real world. We collaborated with Toyoda to use the actual machine's solid models and kinematics to produce the visual twin. We partnered with ModuleWorks to create the graphics and Mastercam to provide the CAM software.

The whole process can be set-up and proven out in the virtual world to improve the part and product quality. The twin enables the G-code program to be tested and the process simulated, showing a more realistic feel of the cutting. This is virtual commissioning, where new designs and concepts undergo evaluation BEFORE production, not after.

## Upgrade Your Shop with a CNC Retrofit

Do you have legacy equipment? Running older machinery can have hidden costs, such as taking the time to source and find older replacement controls leading to significantly longer total downtime and production losses. However, scrapping old equipment and starting new, might be too expensive, especially when factoring in tooling, fixturing, rigging and foundation. Plus, new machines may require more training for staff. A CNC retrofit, with new FANUC CNCs, industrial PCs, servos and cabling, can speed up processing and reduce cycle time by as much as 50%.

**For more information on any of these strategies, contact FANUC America today and get a free automation evaluation.**

# FANUC

# Economic Update: 2021 Second Quarter Recap

By Anna Rathbun - Chief Investment Officer, CBIZ

It would seem that reopening an economy should be as simple as artificially shutting it down. But over a year later, recovering from the artificial shutdown is proving to be difficult. The virus still propagating across the globe is applying continued pressure on the supply chain disruption. Incentive structures and shifting perceptions of risk influence consumption and labor choices for Americans. Throughout the second quarter, we saw markets revise some expectations.

Highlights:

- Even as consumer price and producer price indices registered sizable gains, the 10-year benchmark yield continued to fall throughout the quarter.
- Equity markets also expressed changing expectations despite the positive returns for the quarter for the major indices.
- In the fixed income markets, the U.S. Treasury yield curve flattened throughout the quarter. Indices with longer duration profiles performed well and corporate spreads continued to tighten.
- Developing nations have lagged developed countries in the vaccination scorecard, but despite the challenges exporting countries benefited from the reopening of the U.S. and European economies and elevated commodities prices.
- Personal spending followed the pattern of reliable wages, which means that the extra checks from the government did not spur additional activity that is sustainable to stimulate the economy in a meaningful way.
- Our recovery is not taking off like a rocket because our economy is a complex system of individual incentives, willingness to pay, and



- personal risk assessment all chained together.
- The picture of financial markets is one of healing, but we may need to adjust expectations.

*Anna Rathbun serves as the chief investment officer for CBIZ Investment Advisory Services.*

## EXPERIENCE THE ECONOMY OF QUALITY

Invest in world-class BIG KAISER Boring Tools to eliminate scrap, reduce cycle time and bore perfect holes every time.

### BIG KAISER APP

LEARN MORE AT: [bigkaiser.com/bkapp](http://bigkaiser.com/bkapp)



# BIG KAISER



Tool Holders | Boring Tools | Cutting Tools | Workholding | Tool Measuring | [bigkaiser.com](http://bigkaiser.com)

## Summer Strategies: Keeping Demand in Check as Electricity Prices Rise

The sweet joys of summertime are upon us, which brings in tow all of your favorite summer staples from pool days to backyard BBQs. While warm weather is a welcome reprieve from winter for much of the country, the pendulum swing of extreme cold in the height of winter to extreme heat in the height of summer can yield similar results when it comes to the energy markets and your energy bills.

### What to expect and what to do to prepare?

#### Let's take a look: Summer Outlook

NOAA predicts that much of the United States will experience higher-than-normal temperatures this summer. With a hot (and in some areas notably dry) summer on the horizon, it's also worth noting the 4 regions facing potential summer energy shortages. In late spring, the North American Electric Reliability Corp (NERC) released their 2021 Summer Reliability Assessment, which warned of the regions that are at risk of energy shortfalls. California, Texas, New England, and parts of the Midwest were identified. California was tagged as the "greatest concern," with the report warning that California will need 11 GW of late-afternoon energy transfers to meet system demand (as compared to 1GW needed on a normal day). Of course, above-average temperatures suggest increased demand, which goes hand and hand with increased electricity prices. For customers on index energy contracts that are not locked in for fixed pricing, this could be a harbinger of market volatility.

### Demand, Defined

As you'll often hear our team mention, weather is a primary driver of energy demand, and is chiefly responsible for summer's status as a peak demand season. Factors that drive energy demand typically create an upward pressure on prices. If summer proves hot, it is likely that we will see energy prices increase accordingly. For example, a hot summer, driving demand, could have a negative impact on certain areas of the country, such as Southern California and Texas, where there are rising concerns about their ability to meet demand this summer, should we experience (as is predicted) above-average

temperatures. Just this week, ERCOT, the Texas grid operator, asked Texans to reduce their electricity usage in response to high demand and many unplanned generation plant outages, causing near-term pricing to spike upward.

### What You Can Do

Usage can be reduced by dimming lighting, adjusting thermostat settings, shutting down equipment, using onsite power generators, or scheduling operations during nighttime hours. Additionally, we have a number of services available in the APPI Energy Intelligence Suite that are designed to help businesses utilize data-driven solutions to reduce and manage energy expenses. Services such as demand response, renewable energy procurement, and utility management systems are ideal for businesses that seek efficient solutions to summer's peak demand conditions.

It's also worth making note of peak alerts as they come your way either from your dedicated APPI consultant, media outlets, or your supplier so that you can make smart, timely decisions on curtailing your energy usage.

Finally, consider enrolling in a demand response program. Demand response is a financially rewarding energy solution that reduces your organization's energy usage during periods of high stress to the electric grid. By participating in demand response, clients benefit from both the compensation they receive



from the programs and a reduction in capacity tags they receive for lowering their demand during peak hours. For large electricity consumers, particularly where electricity usage is consistent, it could be as simple as not running or curtailing energy usage during certain times of the day during peak events. In addition to realizing the savings associated with your energy curtailment, you'll also receive payment for doing so, allowing you to maximize earnings while minimizing operational disruption.

### Key Takeaway

While weather plays a fundamental role in energy demand, it is far from the sole contributor nor is it entirely predictable. When examining energy procurement strategies during the summer months, we typically find that it is best to start early, especially if there's a contract expiring in July or August, when demand could be at its highest. By examining pricing early, even for a contract that expires 18-24 months in the future, it maximizes the time that we have to monitor the market and identify an ideal price point.

Waiting until a contract expires to examine renewal pricing could subject a business to the upward pricing pressures present during the peak demand season. To continue the conversation as it pertains to NTMA, schedule a no-cost, no-obligation complimentary assessment with our team. Reach out to us online via chat, by email at [info@appienergy.com](mailto:info@appienergy.com) or by phone at (800) 520-6685.





Modern  
Machine  
Shop



TOP  
SHOPS



## ARE YOU A TOP SHOP?

**The 2021 Top Shops Survey is Now Open.**  
Don't miss your chance to benchmark your business  
and find out how you stack up.

All participants receive a free listing on the Top Shops  
Sourcing platform and a custom report detailing your  
shop's strengths and opportunities



**"We ended up winning about a five  
year contract just solely through  
the exposure we received from the  
Top Shops program."**

Matt Wardle, President, JD Machine

**Take the Survey**

**[survey.mmsonline.com/topshops](https://survey.mmsonline.com/topshops)**

## Introducing a NEW, simplified benefits offering for a lower administrative cost



### Health • Dental • Vision • Life Insurance

Because the NTMA is an affiliate member of the National Association of Manufacturers (NAM), NTMA members now have access to NAM Health Care: a new benefits offering that simplifies the health care experience for both you and your employees through a convenient, easy-to-use web-based platform. NAM Health Care allows smaller member companies to band together to take advantage of the enrollment efficiencies, administrative cost savings and product flexibility previously only available to larger manufacturing companies. Advantages include:

- **Access to more competitive product bundles.**
- **Fully ACA-compliant.**
- **Quicker and easier-to-use online enrollment process.**
- **Simple and convenient ongoing benefits management and administration.**
- **Reduced administrative costs.**

**Learn more at <https://ntma.namhealthcare.com/> or 855-463-8856.**

It's easy to get a quote and we're here to help if you have any questions.

NAM Health Care is fully ACA-compliant, administered by Mercer and sponsored by the National Association of Manufacturers (NAM), of which the NTMA is an affiliate member. Plans are not available to member employers in all states.



Program Administered by Mercer Health & Benefits Administration LLC  
 AR Insurance License #100102691 | CA Insurance License #0G39709  
 In CA d/b/a Mercer Health & Benefits Insurance Services LLC



# METALWORKING SERVICES

**Grainger's portfolio of services can help you create a safer, more efficient and more competitive business.** Let us help you get the most out of your machining, welding, cutting, grinding and fabrication operations.

**Our services provide documented value by helping you:**

- Optimize product selection and application
- Improve work cell efficiency
- Maximize machine tool output
- Minimize waste and rework

**LEARN MORE AT  
[GRAINGER.COM/METALWORKING](https://www.grainger.com/metalworking)**

**CONTACT YOUR GRAINGER REP  
TO GET STARTED!**



## TOOL RECONDITIONING SERVICE

Help extend the life of your tools with an innovative process that uses customized software to consolidate grinding operations and pass the savings on to you.

## CUSTOM BAND SAW BLADES

A fast, easy and effective solution to get precisely the blade you need for your specific sawing application. Online tools help you designate every aspect of your blade so you can keep your operation on the cutting edge.

## MACHINE GUARDING SERVICE

A complete machine guarding solution that includes machine audits and assessments, the engineering and design of machine protections, start-to-finish installation service and integrated training on all new equipment and procedures.

## LOCKOUT/TAGOUT SERVICES

Grainger's lockout/tagout solutions help you maintain powered equipment safely. Products, services and third-party safety network resources include lockout program assessments, visual lockout procedure services, equipment-specific procedure development, on-site training and more.

## INVENTORY MANAGEMENT SOLUTIONS

Manage items like critical inserts and everyday small tooling in cabinets that can provide controlled access at point-of-use locations. Offers high-density storage, reduced consumption/waste and provides greater control of your inventory management.

# NTMA Member Marketplace

Advertise Exclusively With the Nation's Largest Precision Machining Network!

**ADVERTISING SPACE IS STILL AVAILABLE!**

**ANOPLATE**

**Tim Stone**  
VP of Business Development

**ANOPLATE CORPORATION** - an ISO 9001/14001 Registered Firm

459 Pulaski Street  
Syracuse, NY 13204-1134

Phone: 315-471-6143 x134  
Email: [tstone@anoplate.com](mailto:tstone@anoplate.com)

For more information: [www.anoplate.com](http://www.anoplate.com)

Office Fax: 315-471-7132

Cell: 315-679-6265

**O-D TOOL & CUTTER, INC.**



CNC GRINDING

**KEVIN M. O'DONNELL**

PRESIDENT

ISO 9001 CERTIFIED

*Family Owned Since 1959*

[KEVIN@ODTOOL.COM](mailto:KEVIN@ODTOOL.COM)  
PH: 508.339.7507  
FAX: 508.339.5667  
CELL: 508.341.5576

PO Box 372  
150 GILBERT STREET  
MANFIELD, MA 02048  
[WWW.ODTOOL.COM](http://WWW.ODTOOL.COM)

**PILOT**  
Precision Products

## Save with our CNC Broaching Kits

With a CNC Broaching Kit:

- Broach a range of keyway slots in your CNC cycle
- Never miss quoting a broaching job and completing it in-house
- Improve your cycle time by adding our live tool slotter

View our CNC catalog to get your kit today:

[catalog.pilotprecision.com/CNC-Broaching-Kit](http://catalog.pilotprecision.com/CNC-Broaching-Kit)

Save up to  
**20%**  
off of list pricing with  
our CNC Broaching Kits



SAVE TIME



IMPROVE EFFICIENCY



SAVE MONEY

**PilotPrecision.com**



**APS**  
TOOLING CONCIERGE  
by Pilot Precision Products

As your Tooling Concierge, we use our expertise to understand your complex machining applications and recommend the right tooling. At Pilot, we also leverage our technical knowledge and business relationships to connect you to the world's most respected brands of broaching tools, reamers, micro endmills & drills, and more.

15 Merrigan Way • South Deerfield, MA 01373 • T: 413-350-5200 • [PilotPrecision.com](http://PilotPrecision.com)

# NTMA Member Marketplace

Advertise Exclusively With the Nation's Largest Precision Machining Network!

**ADVERTISING SPACE IS STILL AVAILABLE!**



**GREGORY A. KASZEI**  
President

14459 Foltz Parkway  
Strongsville, Ohio 44149  
Email: CARDINALMACHINE@aol.com

Phone: (440)238-7050  
Fax: (440)238-7051

**YOUR AD HERE!**

Interested? Contact Kelly LaMarca for more information - [klamarca@ntma.org](mailto:klamarca@ntma.org)

Thread Rolling  
Knurling  
Centerless & Cylindrical Grinding  
Precision Machining



141 Prestige Park Rd.  
East Hartford, CT 06108 USA

860.289.8209  
[www.horstengineering.com](http://www.horstengineering.com)  
[www.threadrolling.com](http://www.threadrolling.com)



Wire EDM Corporation

**Michael Raasch**  
Business Development

N8 W22399 Johnson Dr.  
Waukesha, WI 53186  
(262) 549-9005 • 1-800-798-XACT (9228) • Cell Phone (262) 993-2366  
Fax (262) 549-9115  
Direct (262) 408-2479

web site - [www.xactedm.com](http://www.xactedm.com) • email - [mraasch@xactedm.com](mailto:mraasch@xactedm.com)

**YOUR AD HERE!**

Interested? Contact Kelly LaMarca for more information - [klamarca@ntma.org](mailto:klamarca@ntma.org)



**INDUSTRIAL GRINDING INC**

*Specialists In Precision Grinding  
Ceramics - Flame Spray - Plasma Coatings  
Spindle Repair - Large O.D.-I.D. Surface Grinding  
AS9100D ISO 9001:2015*

2306 Ontario Avenue, Dayton, Ohio 45414  
PH 937-277-6579 FAX 937-277-4536

[www.industrialgrinding.com](http://www.industrialgrinding.com) + [sales@industrialgrinding.com](mailto:sales@industrialgrinding.com)

QUALITY > INTEGRITY > ON TIME DELIVERY



**PRECISION PROFILES**

PRECISION MACHINING SINCE 1994

**CORE CAPABILITIES**

- > Turbine Component Manufacturing
- > Precision grinding (up to 136" in length)
- > Multi-Axis Milling, Machining, & Turning
- > Saw Cutting (straight, angle, radius, angle + radius)
- > Wire EDM

**\* EFFICIENT RESPONSE TIMES**

WE REGULARLY STOCK STAINLESS STEEL ALLOYS SUCH AS:  
**403, 405, 410, 415, & 422**

ITAR REGISTERED

US/CA JCP CERTIFIED  
(CAGE CODE Available Upon Request)

SAM REGISTERED

ISO 9001:2015 REGISTERED

SMALL BUSINESS  
(<25 Employees)



**CENTERLESS GRINDING  
& THREAD ROLLING**

**Normand J. Goulet III**  
Vice President  
Manufacturing Engineer

25 Rosenthal Street ■ East Hartford, CT 06108  
phone: (860) 289-2987 ■ fax: (860) 289-3142  
web: [www.unitedcgtr.com](http://www.unitedcgtr.com) ■ email: [njgoulet@unitedcgtr.com](mailto:njgoulet@unitedcgtr.com)

45727 STATE HIGHWAY 27, TITUSVILLE, PA 16354 > 814-827-9887 > [precisionprofilesllc.com](http://precisionprofilesllc.com)



NATIONAL TOOLING AND MACHINING ASSOCIATION

1357 Rockside Rd.  
Cleveland, OH 44134

## Manufacturing America's Future

my DMG MORI and NET service

# DIGITAL SERVICE PROCESSES FOR FAST SUPPORT AND MORE TRANSPARENCY

STREAM  
REMOTE  
SUPPORT

**DMG MORI**  
CUSTOMER PORTAL

YOUR DOCUMENTS

YOUR SERVICE REQUESTS

### NET service

- + Reduce machine downtime on a remote basis
- + Multi-user conference allows cross-departmental collaboration
- + Transparency ensured by logging all service activities



### YOUR ONLINE SERVICE MANAGER

- + More service: faster response times
- + More knowledge: documents available digitally
- + More availability: direct line to service experts
- + **my DMG MORI APP**: Mobile access to the free customer portal - via iOS and Android App

US.myDMGMORI.com

**DMG MORI**