

# THE RECORD

Published by the National Tooling and Machining Association

## INSIDE THIS ISSUE

Cloud Adoption for ERP  
Is No Longer Optional - pp 18-19

How Blockchain Mitigates  
Supply Chain Risk and  
Automates Tasks - pp 24-25

*and so much more ...*

## SMART MANUFACTURING *TO CONNECT OR NOT TO CONNECT?*

THE PRECISION MANUFACTURING CONFERENCE

# ENGAGE 2021

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October 26-29, 2021 - Old Alexandria, VA

*More information on pp 10 - 11*

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## THE RECORD

### OPERATIONS & EDITORIAL

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

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### NTMA EXECUTIVE COMMITTEE

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*Custom Tool – Cookeville, TN*

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*Pilot Precision Products – South Deerfield, MA*

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*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

THE PRECISION MANUFACTURING CONFERENCE  
**ENGAGE**  
2021 POWERED BY NTMA

**Manufacturing Engage™ 2021**  
Tuesday, October 26 – Friday, October 29, 2021  
Old Alexandria, VA

**STAY**  
**ENGAGED**

**Stay Engaged**  
Tuesday, November 2 – Friday, November 5, 2021  
**All-Virtual Event**



**Chapter Leadership Summit 2022**  
Sunday, January 30 – Tuesday, February 1, 2022  
The Andaz Hotel, Savannah, GA

## 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 Carrie Marsico at [cmarsico@ntma.org](mailto:cmarsico@ntma.org)

### Upcoming Themes for The Record

#### November

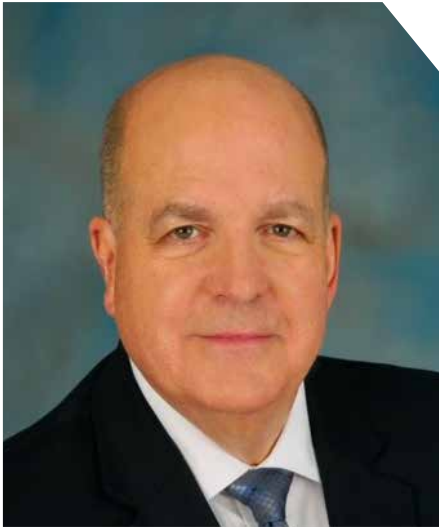
Apprenticeships: Developing the Workforce

#### December

The Year in Review

#### January

NTMA Member Value



# PRESIDENT'S UPDATE

It is hard to believe that this article begins the fourth – and final – quarter of the year 2021. What a year it has been! We are on the final stretch, and we must keep our heads up and stay focused on ending the year strong, ready to start the coming year of 2022. This month's focus is on **Smart Manufacturing**.

As defined by the National Institute of Standards and Technology (NIST), Smart Manufacturing is: systems that are “fully integrated, collaborative manufacturing systems that respond in real-time to meet changing demands and conditions in the factory, in the supply network, and in customer needs.” Bottom line – it is all about technology connectivity, with unprecedented access to and contextualization of data. Think no further than our smartphones on a bigger scale.

Using the above definition from NIST, I am going to turn towards what I think to be “smart” things to do in “manufacturing” – and leave the subject of “smart manufacturing” to the experts and our industry partners.

I recently returned from our NTMA Emerging Leaders Conference in Phoenix, AZ; the attendance was great, and the content was extremely valuable. One of our industry partners, EBITDA Growth Systems (EGS) was a sponsor of the event, and led multiple sessions as well. In one session they led, they presented an EGS equation. The equation being: on a scale of 1-10, rate your “technical skills” and multiply that number by a 1-10 rating of your “business acumen” – and that will give you your “success score.”

As manufacturers, we so often pride ourselves on our technical skills – our capabilities to build some

of the most complex parts used for such critical applications. Conversely, we then seldom pride ourselves on or frankly think of rating our “business acumen.” Their simple formula opened my eyes to see just how much many manufacturers focus on the manufacturing and technology, while letting the business acumen side just exist and follow. It's easy to see – a “10” in technical multiplied by a low number of business acumen (let's say a “2”) only equals a success score of “20.” Whereas, with more focus on the business acumen side, we could raise our success score – “10” technical x “6” business = “60.” That's three times that of our original score.

Does this suggest that the technical side of the business not important? No, rather that it takes a focus on both to result in true sustainable success. Many manufacturers and entrepreneurial owners across America started their companies based on their personal technical abilities to understand, design, manufacture, and build complex parts and assemblies – without much merit given to their business acumen. I believe, in recent years, we are seeing the trend reverse from strength on the technical side to strength on the business acumen side especially in today's acquisition arena. Most acquisitions are being led with expertise in business acumen believing the technical expertise or DNA already exists in the company.

As manufacturing owners and managers, we must resist the temptation to work “in” our businesses and rather stay focused on keeping our head up and working “on” the business. We must be confident that the technical expertise is in our businesses while we fulfill our leadership role. As business conditions

improve, the temptation will only increase to turn inward – especially as we struggle for a needed workforce. It is up to us as leaders to address the talent shortage in our companies, remembering that if we turn inward too much, the challenges just continue. We can no longer afford to get our business acumen degrees from the “School of Hard Knocks” – we must take purposeful actions to assure we can sustain our businesses and industry for the years to come. Keeping your head up and focusing on working “on” your business will always allow you to plan, anticipate, and filter your company's direction and actions through the lens of your company's goals and initiatives.

It is my goal to implement these same initiatives and strategies within the framework of NTMA. As we end 2021 and roar towards 2022, NTMA will filter everything we do through the lens of “growth of the organization” – to assure our sustainment as an association, to assure our sustainment to serve you, our members and potential members, and lastly, to assure our role in the sustainment of the U.S. manufacturing industry.

We look forward to joining you in your journey and hope that you too will join NTMA in our journey of growth. Remembering, **We Are Stronger Together**.

Roger Atkins, President – NTMA



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# 2021 Emerging Leaders Conference Recap

NTMA celebrates another fantastic Emerging Leaders Conference! The 2021 Conference – held at the Kimpton Palomar in Phoenix, AZ this past September – included 46 attendees, representing 28 different companies, with a conference layout designed to allow attendees to fly in for the first day, and to return home in time for the weekend.



This year's conference included informative sessions focused on building high-performing teams, effective communication strategies, team engagement, navigating sales relationships, and shop economics – as well as plenty of fantastic opportunities for attendees to network and connect, including an evening at “The Duce” for food, games, and fun. Attendees were also able to tour two member plants: Modern Industries and Cleveland Electric Laboratories. With an incredible lineup of speakers delivering key information for up-and-coming industry professionals, the 2021 Conference was a success in showing how to begin working on, not in, your business – and how to advance in Manufacturing.



“

I was very impressed with the whole thing. Even better than the online events. The tour of Modern Industries was mind blowing, and I am excited they allowed us to check it out. It gave me a new understanding of machine systems I hadn't known were even possible.

Redd Bradshaw – Paramount Machine

Special Thanks to:

Barbe Bennett, Executive Director of the NTMA Arizona Chapter,

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## Stay Connected To Fellow Members

As the manufacturing industry has continued navigating successfully through recovery, staying connected with your peers and fellow NTMA members has never been more important. To help our members continue to come together to address key concerns and issues – NTMA Member Drop-Ins are back!

NTMA is hosting monthly “Member Drop-Ins” – unique opportunities for our members to meet and discuss complex problems, and to brainstorm ideas and solutions alongside fellow NTMA Members. These Drop-Ins, using Go-To-Webinar, have been fantastic ways to keep our members connected – and for each session, we will be joined by proven industry experts

bringing important knowledge, key information, and perspectives that are important for our member shops to learn about.

Our November Drop-In focuses on Apprenticeships. As the conversation around the value of apprenticeship training is increasing across the country, take this opportunity to learn about how, through detailed instruction from NTMA-U, companies are closing the skills gap and ensuring that they can foster a pipeline of talented workers for the future.



Upcoming Member Drop-Ins are scheduled on the following dates:

- Tuesday, October 12 – 2:00 PM EST;
- Tuesday, November 9 – 2:00 PM EST

Please check your email and our social feeds for future invites, or contact NTMA's Member & Chapter Relations Manger Carrie Marsico at [cmarsico@ntma.org](mailto:cmarsico@ntma.org) or (216) 264-2835

We hope to see you on the next Drop-In!

# New Member Highlights

**FLUID EQUIPMENT DEVELOPMENT COMPANY**  
**Western Lake Erie Chapter**



Fluid Equipment Development Company, LLC or FEDCO is a global industry leader in the design and manufacture of innovative fluid machinery solutions. Founded in 1997, we developed the next level energy recovery turbochargers and centrifugal high-pressure feed pumps to lower the cost of seawater reverse osmosis (SWRO) desalination. Today, we are an independent, privately held company focused on innovation, quality and cost-effective solutions with a large portfolio of intellectual property. FEDCO is headquartered in Monroe, Michigan USA with sales and service offices located in Dubai, UAE and Singapore. We have developed and continuously refine an integrated manufacturing operation complete with full testing and quality control capabilities meeting the highest safety and environmental standards. Customers know us as a trusted partner with customer service that exceeds their expectations.

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 734-241-3935  
[www.fedco-usa.com](http://www.fedco-usa.com)

**SPEEDGRIP CHUCK COMPANY**  
**Michiana Chapter**



Speedgrip Chuck Company Delivers Premier Standard and Engineered Workholding for Manufacturers Speedgrip Chuck Company workholding products deliver the highest levels of quality and productivity for customers in every industry where metal cutting is a part of the manufacturing process. Our highly qualified and solution oriented sales and engineering staff designs products which hold tight tolerances, produce high-quality parts and deliver efficiency to the manufacturing floor. All Speedgrip products are produced in our 43,000 square foot facility in Elkhart, Indiana USA. We take pride in offering responsive delivery schedules and a high rate of on-time delivery. Speedgrip's commitment to quality and customer service is unmatched.

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 574-294-1506  
[www.speedgrip.com](http://www.speedgrip.com)

**HILL MFG. INC.**  
**North Texas Chapter**



Hill Mfg Inc. is a job shop headquartered in Roanoke, Texas and has been providing exceptional manufacturing services for a wide variety of industries since opening in 2015. Hill Mfg Inc. helps their clients to meet their technology objectives by providing technical resources to meet their short and long term requirements related to laser cutting, CNC milling, forming, MIG welding, TIG welding, roll forming, wire EDM, and saw cutting. Its team of highly trained machinists and operators has more than 30 years of experience and is specialized in meeting our customer's diverse needs.

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 Roanoke TX, 76262  
 214-897-7004  
[www.hillmfgtx.com](http://www.hillmfgtx.com)

**LEATHERNECK PRECISION MACHINE**  
**Rocky Mountain Chapter**



Leatherneck Precision Machine is a Service Disabled Veteran Owned Small Business in Englewood, Colorado that specializes in small quantity prototypes for the aerospace and defense sectors. We are AS9100D, ISO 9001 and ITAR certified. Currently we occupy a 3500 sq. ft. building with 3 CNC machines all with 4th axis, FARO Gage with Verisurf, and will add more equipment as we continue to grow. One of our goals as a company is to create employment opportunities for all Veterans and train them to become machinists or inspectors. Semper Fidelis.

1555 West Thomas Ave,  
 Englewood, CO 80110  
 303-955-7541  
[www.leatherneckprecision.com](http://www.leatherneckprecision.com)

**THE UNIQUELY ABLED PROJECT™**  
**Education Institution Member**



The Uniquely Abled Project, founded in 2016, has proven that manufacturers' need for a skilled workforce and the 60-90% unemployment rate among the 60 million Americans classified as "disabled" are problems that can be solutions for each other. This is accomplished by matching individuals with a diagnosis, each having a compensating extraordinary unique ability, to career jobs in demand.

4804 Laurel Canyon Blvd., Suite 804  
 Valley Village, CA 91607  
[www.UniquelyAbledProject.org](http://www.UniquelyAbledProject.org)



**DIGITAL MACHINING SYSTEMS**  
Southern At-Large Region



Digital Machining Systems is a production machine shop that combines the industry's most technologically-advanced computerized machining equipment with a highly experienced engineering and manufacturing staff. Founded in 1991 in Lafayette, Louisiana, our team of "Digits" has evolved into expert part manufacturers. Complementing our extensive CNC machining expertise, we have the business systems, high-tech equipment, facilities, education, and customer service to offer the best manufacturing services you will find anywhere. Our CNC machining and manufacturing services include 3-, 4-, and 5-axis milling, 3-, and 4-axis turning, multi-function "live-tooling" turning and milling (up to 11-axis), "one-and-done" machining, inspection, testing, assembly, blanket orders, and procurement and inventory management.

929 Ridge Road  
Duson, LA 70529-4318  
337-984-6013  
[www.digitalmachining.com](http://www.digitalmachining.com)

**CLEAN MACHINE**  
Northern Utah Chapter



Clean Machine was founded in 1993 as a precision component parts manufacturer serving the Medical, Semiconductor, Aerospace, Defense, Drilling/Mining/Energy and Analytical Chemistry sectors. We orchestrate the right people, processes and technology available to consistently provide a premium work product complete, on-time, every time. Clean Machine has 24-hour staffing, two automated work pallet delivery systems, up to 5-axis machining, along with many other machine shop services. We have attained and maintained the latest international quality accreditations of ISO9001:2015 and the aerospace and defense industry specific AS9100D. We currently serve a broad range of customers and end-uses in North America and Europe from our West Jordan, Utah facility.

9706 S. Prosperity Road  
West Jordan, UT 84081  
[www.cleanmach.com](http://www.cleanmach.com)

## NTMA Welcomes Its Newest National Associate Member: Hexagon

Hexagon's Manufacturing Intelligence division provides solutions that utilize data from design and engineering, production and metrology to make manufacturing smarter. Hexagon The company works with customers to improve productivity by embedding quality throughout the product lifecycle.

Manufacturers can take control of quality at all key stages of research, design and development with Hexagon's unparalleled portfolio of digital manufacturing technologies spanning CAE solutions for design and engineering, CAD/CAM and complementary software for production applications, metrology hardware and software solutions, data management and analytics tools. Hexagon empowers technology users every step of the way with deep and actionable insight into product quality, ensuring that quality drives productivity.

Together, Hexagon software solutions create a digital thread throughout the manufacturing process, enabling the entire factory to take a holistic view of quality and work together with speed and confidence to achieve the desired outcome. Hexagon's hardware solutions use metrology to bring real-world physical attributes to the digital thread in order to improve the accuracy of operations.

The digital thread ties together a connected ecosystem for manufacturing and, with the addition of domain expertise and intelligence, enables continuous learning to improve product quality. By placing quality at the heart of the process, Hexagon is developing Autonomous Connected Ecosystems for manufacturing – more typically referred to as Smart Factories. Using Hexagon technologies, users can rethink quality in their departments and collaborate



with colleagues onsite or around the world to design and engineer, produce and measure quality – and ensure the highest level of quality is delivered to their customers.

**Looking for more information?**

NTMA members can visit the Hexagon website at: [www.hexagonmi.com](http://www.hexagonmi.com)  
Nick Zentil – Director of North American Sales  
Hexagon's Manufacturing Intelligence Division  
T: 805-586-8314 M: 805-490-5855  
E: [nicholas.zentil@hexagon.com](mailto:nicholas.zentil@hexagon.com)



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.

*"We have been a member for 26 years...networking with other members has been beneficial. [Engage] is very informative and presents keynote speakers and valuable information to our business and chapter."*

*- Kevin O'Donnell, O-D Tool - NTMA Boston Chapter*

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)

## PRICING

### Standard Rates:

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

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)



## AGENDA

### Tuesday, October 26th

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

### Wednesday, October 27th

- 7:15AM-8:15AM** NTMF 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 and Lunch  
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]

## NTMA Member AccuRounds Wins Top Shop Award



AccuRounds has been named one of four Honors Program winners in association with Modern Machine Shop's annual Top Shops benchmarking survey.

Modern Machine Shop offers this annual survey to enable its audience — owners and managers of U.S. computer numerical control (CNC) machine shops — to compare their operations' performance and practices against industry leaders. The survey is divided into four primary sections: machining technology, shopfloor practices, business strategies and human resources. An Honors Program winner is chosen for each of these categories, and AccuRounds was named 2021 Honors Program winner for Human Resources.

"Each year, Honors Program winners are vetted and selected by me from a top-tier benchmarking group established from answers to select survey questions," said Matt Danford, Modern Machine Shop's senior

editor. "AccuRounds doesn't just claim to put its people first. For this turned-parts specialist, the proof is in the profits."

"We are honored and humbled to be recognized as a U.S. Top Shop. Highlighting our human resource practices is extremely gratifying. Our Core Values – Gratitude, Excellence, Team First, Initiative, Trust – define our culture, and the AccuRounds team lives them every day," said Michael Tamasi, CEO. "We are grateful to our team for all their hard work and our customers and suppliers for trusting us to do the job right!"

AccuRounds will also be presenting at the Top Shops Expo, happening October 12-14 in Cincinnati, OH. The program dives into the Top Shops data to identify key success drivers for job shops and offers insight from shop owners and Top Shops Honorees on how they have improved as a shop and grown their business.

**About AccuRounds:**

AccuRounds, founded in 1976, is an advanced manufacturer that machines and assembles precision turned components serving many industries including medical, aerospace, defense, oil and gas and semiconductor. Capabilities include CNC Swiss screw machining, CNC turning and CNC milling. For more information, visit [www.accurounds.com](http://www.accurounds.com).

**About Modern Machine Shop:**

Modern Machine Shop is the leading media brand in North America devoted to CNC machining. To report on the ways CNC machining technology is advancing and succeeding, our staff writers travel the world exploring the ways job shops, contract shops and captive operations use machining equipment, processes and strategies to become more effective and efficient. MMS combines unprecedented editorial access to manufacturing facilities with decades of experience to provide content that is both insightful and impactful.

## NTMA Western Massachusetts Chapter Raises Record-Breaking Money for Education

The NTMA Western Massachusetts Chapter raised a record-breaking \$5,600 for the Larry Maier Memorial Education Fund at its 14th Annual Mainline Drive Pig Roast. Reaching students in grades 5-8 and their parents early is key, the trade group says. The industry needs to show them the benefits of a career in advanced manufacturing.

"Our Annual Mainline Drive Pig Roast is one of the best-attended events that the WMNTMA holds every year! Bringing in business owners, educators, legislators, friends and family of manufacturing to get together, network, have fun and raise money for The Larry Maier Memorial Education Fund which is used to support and promote training and careers in manufacturing for students down to the 5th grade in the Lower Pioneer Valley," said Kristin Carlson, president of Peerless Precision and Maier's daughter.

Every year, Kristin makes a toast to her late father for his leadership and dedication to the WMNTMA, local vocational education and the manufacturing industry.



November 2-5, 2021

# STAY ENGAGED

Keep your key employees involved and join us the week after Manufacturing Engage for our **'Stay Engaged'** virtual event - coming November 2-5, 2021!

Our **Stay Engaged** content will take place via the GoToTraining platform - each day will include three hours of content, with each day focused on a different area of your shop. The first hour will be a recording of the Opening/Closing Keynote or a General Session from the conference, followed by interactive sessions for the remaining two hours.

**Each day will cover one of the following areas:**

- *Technology*
- *Sales & Marketing*
- *Workforce/HR Development*
- *Finance*

By registering for the in-person conference, you will have full access, company-wide, to participate in the **Stay Engaged** event.

When registering, please add any additional attendees you'd like to participate in the virtual event.

**Not able to join us in-person, but still want access to some of our great content?**

You will be able to register yourself and anyone else in your company for just the **Stay Engaged** - virtual event. Registration for the virtual component is only \$495 - please ensure that **"Stay Engaged"** is marked as Registration Type.

THE PRECISION MANUFACTURING CONFERENCE

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Register at: [www.manufacturingengage.com](http://www.manufacturingengage.com)

# Fastems Delves Into the Compelling Link Between Automation and Improving Sustainable Manufacturing

Through calculating its carbon handprint and footprint, NTMA National Associate Member, Fastems, has taken its first steps towards understanding how automation enables more sustainable production development and how to reduce the company's own environmental impact. In addition to these calculations, Fastems has mapped out how the three pillars of sustainability, namely the environment, the economy and the society can be supported through intelligent automation solutions.

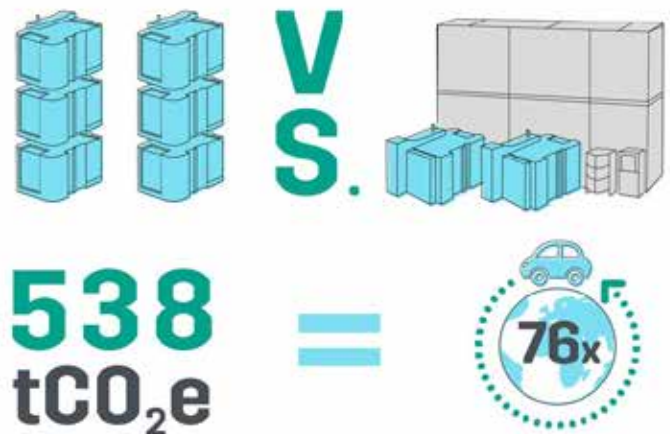
Together with industry-leading sustainability agency Gaia Consulting, Fastems has modeled the mechanism that measures how much tCO<sub>2</sub>e is saved through investing in an average Fastems flexible

The figures represent the typical milling machine sizes integrated by Fastems and the typical emissions caused by their production, netted against the emissions caused by the production of the automation solution. Moreover, an estimate of 34 tCO<sub>2</sub>e is also being saved every year in heating (or cooling) costs because of saved floorspace.

For Fastems, these figures are part of a larger picture: "We're building a more sustainable future with and within manufacturing. To do so, we're helping manufacturers to work smarter when it comes to materials, energy, and people. We want to enable manufacturers to do what they do best, but by using less," says Nyman.

Regarding Fastems' direct emissions and those from purchased energy (GHG Protocol Scopes 1–2), the biggest share comes from consuming electricity and heat, which make up for nearly two-thirds of the company's carbon footprint. Now that scopes one and two have been calculated, Fastems' next step is measuring its indirect emissions (GHG Protocol Scope 3) beginning with business travel, and to set goals in 2021 to reduce its carbon impact.

"Despite business travel makes only a part of our indirect emission, it's one of the most substantial ones and once calculated during the fall of 2021, we'll know much more about our environmental impact as a whole and be able to set goals to reduce



manufacturing system (FMS). This measurement is called the carbon handprint. According to these calculations, one can save up to 538 tCO<sub>2</sub>e through the investment, which equals to making 76 car trips around the globe.

Fastems CEO Mikko Nyman explains, "The effect is possible because automation can triple the utilization rate of machine tools. A typical non-automated machine tool cuts chips around 2,000 hours per year whereas an automated one can reach 6,000 – or even over 8,000 – yearly production hours. This means that instead of purchasing six non-automated machine tools, manufacturers can purchase two automated ones to achieve the same production capacity."

All this is possible because automation and digitalization enable greater resource efficiency, more timely production, less waste and improved quality. At the same time, work becomes more meaningful and safer for the operators involved. Automation helps to make manufacturing competitive anywhere in the world; benefiting from strong manufacturing is a cornerstone for economic success in any nation, ensuring the well-being of people.

In addition to calculating its carbon handprint, Fastems has also calculated its carbon footprint, meaning the CO<sub>2</sub>-equivalent of emissions associated with the company's own operations. This is an important step because once the numbers are known, they can be improved.

it," says Nyman and concludes: "The carbon hand- and footprint calculations, understanding the three pillars of sustainability and what they mean to us, as well as setting goals for the future are what allow us to build a more climate-friendly Fastems and manufacturing industry."

For more information about Fastems & Sustainability, see [www.fastems.com/sustainability](http://www.fastems.com/sustainability).



For more information about carbon hand- and footprint calculations, contact Marketing Director Mikko Tuomaala at +358 50 441 4236 or [mikko.tuomaala@fastems.com](mailto:mikko.tuomaala@fastems.com)

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# Trust in Your Workforce

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

I recently had the opportunity to watch an entire Chicago Bears game without any other commitments. This is a rare occasion for me since I live in Pittsburgh and the Bears are not on national TV as much as they used to be.

As a fan, you have a lot of faith in your team. Even though the odds makers and talking heads all predicted that Aaron Donald would spend the entire game sacking Andy Dalton, you still have hope that things will turn out better. (Unfortunately, Bears head coach Matt Nagy perhaps didn't have the same hope that I had in this team – the Rams did roll over Chicago.)

Much like with football, having faith in your team is a critical factor in bottom-line results. Ask yourself right now - **Do have trust in your current workforce?**

Good things come when leaders trust their employees, and vice-versa. Building a culture of trust and reliability is dependent on both employees and managers having the data they need to make good decisions and deliver great results. With Smart Manufacturing on the rise, shops are seeking to revolutionize the way they operate. This means that shop owners will need the innovation and critical thinking of an engaged workforce to make it a reality. Employees are working in operations every day, and they're hopefully filled to the brim with ideas for innovation and reinventing both daily business processes and operating work streams.

Prioritizing a people-centric work environment – one that promotes the opportunity for all to collaborate to innovate – will have a positive effect on your shop's digital transformation. Are you providing your employees the space to develop those ideas on their own, and are you willing to take risks while encouraging employees to do the same? When organizations create an atmosphere where people

“  
Much like with football, having faith in your team is a critical factor in bottom-line results.”

**BILL PADNOS**

love to work, it's a game-changer: work life is more fulfilling for employees, management feels more connected with their teams, and the bottom line naturally benefits from an engaged and more productive workforce.

Smart Manufacturing requires the involvement and integration of numerous stakeholders. In addition to manufacturing leaders, smart manufacturers must engage with employees in all departments as a means to ensure all members of the Smart Manufacturing team are working closely together towards a common goal. Complete integration of the advanced manufacturing ecosystem will indeed revolutionize your machine shop at all levels and across all value streams. No longer will “siloeed” departments be able to get by without communicating with colleagues on other teams within the plant. Full integrations of systems and machinery also means full integration of departments, staff, and work plans.

Smart Manufacturing is also a great tool for recruitment and youth engagement. Those working, those seeking work, and members of the public in general should, at every opportunity, be made aware of the opportunities and innovation created by Smart Manufacturing. In many respects, the manufacturing sector currently struggles to shift public perception in regard to the benefits of a career in manufacturing. Taking hold of a movement of youth education programs related to STEM like the National Robotics Leagues and sharing the news about the innovations in manufacturing can play a key role in supporting the recruitment and retention of a strong pool of workers in the Smart Manufacturing sector.

In addition, it is important for you to immediately begin to lead and collaborate with career and technical education providers to ensure what is being taught in the classroom translates to the skills necessary to operate in smart manufacturing shops. Many CTE educators in secondary and post-secondary institutions face resource, capacity and expertise limitations that will only further widen the skills gap. You must play an integral role in supporting the development of their educational and training programs along with helping them to identify and secure the software and machinery and resources required to best prepare workers for employment within Smart Manufacturing shop. Harnessing the expertise and resources of both educators and manufacturing leaders is key to addressing the skills gap.

Imagine the possibilities when every day your employees came to work excited to do better today than they did yesterday and how your company would prosper if your employees were dedicated to supporting your company mission and each other in attaining it. I understand that this is the “feel good” stuff, but having a smart workforce is the key to benefiting from a smart shop floor. Certainly, no one can jump straight into a full-scale Smart Manufacturing solution and expect their whole team to fall in step instantly. Have trust in your team, NTMA, and local education partners to ensure that your current and future workforce is fully equipped to make advanced manufacturing more efficient, sustainable and innovative. And show the same passion in that trust and faith that you would for your favorite football team.





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On-Prem ERP's have had a good run but are quickly becoming obsolete when considering the benefits of cloud ERP. With the technology available at the time, and the scope they were meant to manage, on-prem systems were sufficient in the past. But today the demands of the industry are higher than ever before, driving the shift to cloud ERP.

# CLOUD ADOPTION FOR ERP IS NO LONGER OPTIONAL

By Paul Van Metre, Co-Founder, ProShop ERP

The benefits to Cloud-based shop management software are so overwhelmingly positive, and traditional on-prem vendors are moving their solutions to the Cloud. The move to the Cloud is in every shop's future, sooner or later. The most advanced companies have moved already or will move soon, reaping the benefits, and leaving competitors to survive on out-of-date systems.

## ON-PREM SYSTEMS HAVE MANY INHERENT DISADVANTAGES INCLUDING:

- **Expensive Setup** - Servers need to be purchased and configured. Upfront software licenses are expensive to buy. Maintenance is needed to provide support, and major upgrades often require additional fees as well as lots of IT cost.
- **Increased Operational Costs** - The ongoing IT demands are very high and require full-time staff or third-party consultants. Servers need constant maintenance and upgrades requiring considerable expense and downtime, which shops can't afford. The computers that employees use to access the system must be constantly updated. Security patches are constantly needed and often go undone, leaving the company vulnerable to hacks.
- **Limited Access** - On-prem systems require users to be in the shop or connected to a VPN to access the data. This limited access is a barrier to communication, having the latest information, and making data-driven decisions.
- **Limited Scope** - Many systems are limited in what they manage, often being accounting-based, with no functionality to manage the most important parts of a manufacturing company—shop-floor operations and quality.

On-Prem ERPs are often paper-based and don't have comprehensive MES (Manufacturing Execution Systems), so data is only updated as often as a paper traveler is scanned to log parts or track time.

In addition, many functions relating to QMS (Quality Management Systems), work instructions, inspection records, and much more are kept outside the system as well, so many different systems need to be consulted to get a true picture of what's happening with a work order. This duplication of data in many unrelated systems is very time-consuming, error-prone, and expensive. This type of arrangement is also typically rampant with tribal knowledge without systems truly designed to capture that knowledge in a meaningful way. When a job is done, all the paper may be scanned or filed (hopefully not misfiled) into filing cabinets. Despite all the weaknesses in these systems, this is the status quo for many shops today.

## The New Efficient Reality With Cloud ERP

For those who have taken the leap to a natively Cloud-based and fully integrated shop management system, (sometimes referred to as a DME or Digital Manufacturing Ecosystem), the inefficiencies of on-prem systems are a thing of the past. The software is current and up-to-date, and all company information is available from the browser including all project-related files, engineering data, inventory, real-time job status, quality measurements, work instructions, calibration records, QMS documents, and much more.

### THE BENEFITS OF CLOUD ERP INCLUDE:

- **Lower Operational Cost** - There are no servers to maintain. No software to install on user computers. The software is always up-to-date, always backed up, and never requires a costly and complicated upgrade. IT costs and staff can be drastically reduced.
- **Ease of Access** - You can access the system and your information from any browser at any time. From the shop floor, to your home, or poolside while you're on vacation, Cloud ERP is always available. Being able to retrieve or add data to the system at any time provides higher operational performance, better decision-making and peace of mind.
- **Increased Security** - With some cloud providers offering Two Factor Authentication, encryption, and GovCloud level hosting, Cloud providers do all the testing, patches, backups and updates, so your data is as secure as possible at all times.
- **Increased ERP Performance** - As your Cloud provider can always right-size the server hardware as you grow, and keep it current with the latest server technologies, your ERP can function at peak performance without you having to worry about it.
- **One System** - With an integrated ERP/MES/QMS system, there is only one place to look for all data. No more spreadsheets, separate databases, or other software housing disconnected data.

When all those benefits are combined, the positive impact on overall company performance is dramatic. Some Cloud systems are designed to be paperless, and eliminating paper from the shop floor has numerous cost-saving aspects. There is only one source of truth with no separate spreadsheets, paper forms, separate databases, filing cabinets, and tribal knowledge. The best decisions can be made at all times because everyone has access to the latest current information. Lost or out-of-date travelers are a thing of the past as well because all employees only see the latest version of all information.

When company personnel are provided with all the pertinent information at their fingertips to do their jobs most efficiently, improvements of total shop efficiency/throughput on the order of 25% with less staff and the same number of machines are not uncommon.

In the past, the decision between on-prem and Cloud was less clear. Today, the advantages of Cloud systems far outweigh the advantages of on-prem systems. The industry is quickly moving to the Cloud and the most progressive and high-performing shops have adopted cloud systems. It may be time for your team to consider the future of your ERP system and how a Cloud system can help keep your company competitive, efficient, and profitable.

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# NTMA Survey: The Biggest Frustrations With New & Younger Buyers

By Madilyn Movsesian – Marketing, Felber PR & Marketing

## 93%

Of members claimed their buyers would rather have communication through email versus phone

## 53%

Of members said they rarely receive RFQs that do not fit the products or services they provide

## 22%

Of members said that when they receive RFQ's, the important items missing that requires additional communication is missing all of the time

## 64%

Of members said that their purchasing agent indicates they researched their company website or Google ranking 0-25% of the time

Felber Public Relations & Marketing, an NTMA business partner, recently conducted a survey where we asked NTMA members questions regarding their biggest frustrations with new/younger buyers.

For each question and resulting response, we list multiple marketing suggestions to impact solutions. The marketing and sales techniques indicate ways you can improve prospect and customer relations, further decide if your prospect is interested, and solidify your position in the market. Our research survey revealed members' top concerns. Members were asked the questions below. Results follow each question.

**1. What is the preferred method of communication 'of the buyer' with your company?** 93% of members claimed their buyers would rather have communication through email versus phone

The result here aligns with the younger generation preferring technology over speaking in person. They do not want to be tied into a phone conversation, but rather prefer "control" over the channels of communication they use. When was the last time you heard your phone ring? Consider adding additional channels of communication – such as website chat, text, Frequently Asked Questions (FAQ) webpages, social media and responsive email.

Another tactic to getting your prospect on the phone is to give them access to your calendar and the ability to book a short conversation. Given this control, the buyer can decide to book time with you – all the while they may still be playing phone tag with your competitor. Since manufacturers will be limited on showing their expertise with these channels, consider developing case studies, demonstrative articles, technical papers and eBooks to more accurately portray your expertise. Technical and sales staff can reference articles and content via chats and emails. This tactic not only improves your reputation, but also provides sales staff with further behavior tactics.

**For example:** If you send three linked topic articles to your prospect, and you receive data they opened and read these articles, you know that this particular prospect may be more engaged. Imagine how impressed a prospect will be if following your interaction, three articles arrive in their inbox addressing the very concern they discussed?

**2. How often does the purchasing agent indicate they researched your company website or Google ranking?** 64% of members said that their purchasing agent indicates they researched their company website or Google ranking 0-25% of the time

Searching for and researching suppliers will continue to skew more toward the internet. Whether via Google searches, trade media articles or industry directories, your number one job is to be easily visible when your prospect is searching for the solutions you offer.

Conduct an audit of your website and seek professional assistance in determining how optimized your website is for search. Much like with communication channels, having current and relevant content about your services, expertise and solutions will consistently help you rise to the top of Google and other search engines. A critical key action to consider that impacts lead conversion is having a website that makes it VERY easy to capture leads. Consider forms, chats and call-to-action (CTA) buttons that encourage the website visitor to contact you.

**3. When receiving RFQ's, how often are important items missing that require additional communication?** 22% of members said that when they receive RFQ's, the important items missing that requires additional communication is missing all of the time

Tracking down buyers, especially ones that will not answer a phone or respond to email, can make trying to complete RFQ's in a timely manner very frustrating. When items are missing or confusing, your ability to accurately estimate a project declines – and incomplete or unfilled RFQ's take your company out of the running. Consider providing a checklist to prompt the buyer with all the items you need to complete their request - preferably as an online form that is sent directly to estimating. Make sure your internal systems notify the correct people and encourage immediate response.

Other tactics to improve response are the prior mentioned FAQ's, as well as the ability to communicate in the buyer's preferred method (chat, text, or email). Also, consider online calculators: they are great at asking questions and helping you record leads in your sales database – and can help separate serious leads from tire kickers.

**4. How common is it to receive RFQs or inquiries that do not fit with the products and services you provide?** 53% of members said they rarely receive RFQs that do not fit the products or services they provide.

While over 50% of you indicate you do not receive inquiries for products and services you do not provide, there still might be confusion with younger buyers. One of our best practices is to have estimators and sales personnel create lists of common questions or inquiries that do not fit. Then, we create articles that address common misconceptions. By regularly educating your prospective buyer on everything from the equipment you use to the materials you work in, you can reduce RFQ's that might waste your limited estimators' time.

**5. Are there any other issues with younger/newer buyers you would like to see addressed?**

*“Understanding of lead time and what goes into the manufacturing process.”*

Of course, no one knows your manufacturing process better than you. Consider creating videos that show your facility and infographics and articles that describe, in detail, the steps needed to complete your process. While we are not suggesting you show proprietary processes, this is an opportunity to educate. Another way is to invite prospects and customers to your facility for a private tour. Understanding how products are made and the steps involved further educates your buyer. While speaking to a printer about deadlines and processes, he quipped: “You can rush people, but you cannot rush chemicals” – referring to drying time before items can be cut and packaged. A touch of education goes a long way.

*“Knowing the market, products, and how to conduct business in an intelligent way. They have no concept of the issues, problems or culture of the suppliers.”*

To educate buyers about the market and culture of an industry, consider developing “thought leader” articles from your experts. Take them inside your philosophy and culture. A technical article from an industry veteran goes a long way with new buyers; they are hungry to learn and would appreciate learning from the best. Webinars, speaking at industry events, and engaging in open houses are three great ways to share your knowledge.

*“A better understanding of the value we bring to the table and what is required to meet the requirements of their parts.”*

Buyers really want the same thing as you: a quality product, delivered on time, and at a reasonable price. Provide content that makes them feel comfortable with their decision to award your company its business. This could be hosting tours, or even informing them of your certifications, quality policies and training procedures. If you have achieved ISO ratings or industry seals, promote them on your website and in articles – explaining why those certifications matter.

Develop eBooks and white papers that further demonstrate your expertise. These items are also great “content offers” to attract and convert new buyers to your prospective database. Prospects will often fill out a form if they believe the content in your eBook will help them.

*“Being able to accurately communicate in person and build relationships in person, not through technology.”*

As mentioned above, there are many ways to improve your communications with prospective buyers. In addition to the items listed, consider adding public speaking as a skill set. Host a Toastmasters chapter or regularly create skill sessions on communications. Whether you are hosting a webinar, speaking in person at a conference or hosting a factory tour, being comfortable speaking in person and live is a great skill. When engaging with industry reporters and editors, it is the subject matter experts that get featured and routinely asked for the opinions in articles.

**Is your organization having similar frustrations with buyers?** Contact Rob Felber for more solutions on how to solve these problems. [RobFelber@FelberPR.com](mailto:RobFelber@FelberPR.com), (330) 963-3664 or book a free consultation today.

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# 10 Ways Smart Scheduling Boosts Your Manufacturing

By Adam Grabowski, Director of Marketing at Global Shop Solutions

Scheduling jobs is one of the most important tasks in a manufacturing enterprise. Given the amount of variability involved in scheduling a busy shop floor, it's also one of the most complex and demanding. Loading new jobs into the schedule, or moving around existing ones, involves a staggering array of variables. From work orders, raw material availability and due dates to employee skill sets, work center capacity, jobs in progress and more, every detail must be accounted for to achieve accurate, timely scheduling. Performing this gargantuan task manually can take hours or even days to properly align the flow of work on the shop floor. It can also result in costly mistakes that impact productivity, profitability, and the customer relationships you count on.

With ERP (enterprise resource planning) scheduling is a different story. Designed to simplify and automate the process of scheduling work orders in a busy shop floor environment, ERP can process all the scheduling variables in a matter of seconds. It then uses highly sophisticated algorithms to automatically design the most efficient schedule to meet customer due dates. All you do is enter the data and the software does the scheduling for you.

**Here are 10 ways it helps accomplish the result every manufacturer wants – on-time delivery every time.**

## 1. Know the status of jobs in real time.

One of the biggest advantages of ERP scheduling is the ability to track jobs in real time. With a few keystrokes, you can easily see the current status of any job, including where it's been, where it is now, and where it's going next. You can also see whether it's on schedule or lagging behind. Having access to this data helps identify bottlenecks while jobs are in progress to ensure they get completed on time.

## 2. Know your true capacity for machines, work centers and personnel.

When you can't determine the true capacity of resources and people, you can only guess. With ERP scheduling, planners get a real-time overview of all work centers and available labor hours, allowing

them to balance loads across resources by instantly identifying which ones have excess load or capacity.

## 3. Easily move or reroute jobs for better forecasting.

When rerouting jobs, the inability to see how the changes will impact other jobs makes it difficult to adjust your schedule on the fly. It can also lead to accepting customer due dates hoping (rather than knowing) you can make them. ERP scheduling makes rerouting jobs simple with short- and long-term “what if” scenario planning.

## 4. Identify production bottlenecks in real-time.

Manual scheduling creates bottlenecks when multiple jobs get stacked on top of each other due to limited capacity. ERP reduces and, in many cases, eliminates these bottlenecks by automatically scheduling the right job on the right machine at the right time. It also identifies when and where the workflow will be light or heavy, allowing planners to adjust labor hours and move people around to balance the workloads.

## 5. Instantly see how new or “hot” jobs will affect other jobs.

How many times have you pulled an ongoing job out of a machine to respond to a more urgent order, knowing you will lose money on the job? Many companies try to solve this problem by hiring more schedulers, which only adds to the complexity of the scheduling process. With ERP, you can insert a hot job and instantly see how it will impact current and future jobs on the schedule.

## 6. Accept customer due date requirements based on factual data.

With manual scheduling, setting due dates often relies on guesswork. ERP tracks what you're making, how you're making it, how many you're making, and work in progress at any given moment. It uses this data to determine exactly when each job will be finished so you can confidently tell customers when they will receive their parts.

## 7. Salespeople will have confidence when promising due dates.

From a sales perspective, one of the real strengths of ERP scheduling is the ability to turn a “no” into a “yes



we can” when customers request difficult due dates. It does this by providing complete visibility of data on every job — from work order number to completion due date — in a variety of formats.

## 8. Production managers have more time to manage.

With manual scheduling, production managers often spend inordinate amounts of time trying to fix the schedule. ERP allows them to do the job they were hired to do – respond to and manage events on the shop floor that require their knowledge, expertise and judgment.

## 9. Lower production costs.

The ability to schedule quickly and accurately lays the foundation for a host of shop floor benefits, including lowering the cost of setup, production, shipping, and more. For example, when customers order the same part with different due dates, ERP reduces setup time by scheduling multiple jobs of the same part to run concurrently rather than days or weeks apart.

## 10. Sleep better at night.

The uncertainty that comes with manual scheduling creates tremendous stress. ERP software takes the stress out of scheduling by simplifying and automating the entire process.

ERP software enables companies to achieve faster cycle times, better on-time delivery rates, reduced administrative overhead, lower labor and materials costs, improved productivity, and more. Companies can manage the numbers in real-time (instead of at the end of the month), leading to timely, informed decisions that enhance the future success of the business. More than just a production management tool, ERP acts as an ongoing process improvement platform that empowers the entire organization to become leaner, more efficient and more profitable.

### ABOUT THE AUTHOR

*Adam Grabowski is the Director of Marketing at NTMA National Associate Member Global Shop Solutions. He is responsible for translating the company's business objectives into a successful brand, marketing, and communication strategies to drive awareness, revenue, and loyalty. Visit: [www.globalshopsolutions.com](http://www.globalshopsolutions.com) for more information.*

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# How Blockchain Mitigates Supply Chain Risk and Automates Tasks

By Dennis Delgado, CPO, SyncFab



What is Smart Manufacturing and how can my business move towards it? This is a question I hear often, and unfortunately, there is no straightforward answer. The reality is Smart Manufacturing involves many new technologies married together to help optimize manufacturing processes and find cost-saving opportunities. It's a large undertaking, but blockchain is a good place to start.

Blockchain is the skeletal understructure that secures and optimizes sensitive supply chain information between manufacturing facilities. Blockchain expedites and streamlines business processes in supply chain management. The way blockchain data is stored and transferred between businesses, simplifies the procurement and precision parts selling process. Blockchain's distributed ledger technology creates immutable records of all data transactions, making it safe and easy for management teams to transfer and review data.

#### **Immediate Blockchain technology benefits to Supply Chains:**

- *Cuts procurement costs and production*
- *Offers real-time traceability of production*
- *Can automate RFQ and PO processes*
- *Alleviates risk through "Know Your Customer" member verification*
- *Speeds up payments and incentivize new business with cryptocurrency such as the MFG Token*

Many manufacturers are unable to attain essential parts and raw materials for manufacturing. Subsequently, finished projects are being shipped much later than expected. The pandemic crisis has exposed cracks in the current supply chain infrastructure and has disrupted entire industries. To ensure accurate and swift transportation of parts in a time of crisis, a redesign of an antiquated system is needed.

Identifying the right manufacturer, with available capacity, that can create the correct precision parts can be a slow manual process of data filtering and phone calls. This process can be instantaneously done through blockchain's smart contract technology.

Smart Contracts remove human error and reduce costs by automatically identifying which suppliers in the blockchain network have the technical expertise, nearby location, compatible machinery, and available capacity needed for a given job.

In the past year, many businesses have not been able to maintain profitability due to the COVID-19 pandemic and it is hard to predict how long this will last. Therefore, every dollar saved by switching operations over to a blockchain network will help facilities maintain their current staffing and operations. Additionally, the blockchain network will save time for both businesses and manufacturers and help deliver essential finished products to consumers. Blockchain technologies, such as Smart Contracts and Distributed Ledgers, provide automated tasks and secure data storage giving teams improved exception handling.

#### **Blockchain technologies can enable:**

- *Automate recurring custom part quote requests*
- *Delegate Purchasers and Parts Manufacturers to begin working immediately on order fulfillment*
- *Instantly review qualifications and equipment without background and credit checks*
- *Compare, review, and approve qualified CNC machine shops and precision parts suppliers*

Users of the blockchain-enabled supply chain can view real-time information regarding their parts fabrication, production, and delivery. Each individual precision part is given an ID code and can be tracked on the network. Orders are backed by virtual verification protocols which can confirm the authenticity and build trust between buyers and sellers. A permanent record is created for each order. Orders are dynamic with the option to alter individual components in real-time. Supply chain efficiencies are improved with automated RFQ management, platform notification of quotes, and smart contract approvals for payment.

Suppliers benefit greatly from cryptocurrency accelerated smart contract payments using tokens such as the MFG Token. Cryptocurrency reduces payment cycles from net-weeks to same-day it takes

to confirm quality inspection and delivery of goods. In addition, machine shops quoting RFQs can be rewarded, with cryptocurrency, incentivizing prompt response times. New DeFi (Decentralized Finance) blockchain applications will allow buyers, sellers, lenders, and borrowers to interact directly with one another, removing traditional bank fees and long transaction processes.

Companies that have already implemented blockchain into their smart manufacturing supply chain initiatives have fared much better over the past year. Companies better understand their supply chain organization and avoid last-minute stress since possible disruption is recorded by the blockchain network for better exception handling. At-risk components are known by the system which allows procurement to be assigned to different sites to attain limited supply items.

Implementing a new management system can be seen as expensive and work-intensive. However, fusing the supply chain with blockchain technologies is unavoidable if firms want to stay ahead of the next crisis. SyncFab's supply chain platform is built with blockchain technology and has the ability to streamline the way buyers and suppliers procure, manage, and securely track precision parts production. We believe suppliers should be afforded the flexibility to redirect workflow to maintain supply chains without disruption.

These blockchain-based features are invaluable to this generation of industry 4.0 supply chains. Learn more about SyncFab can help your Smart Manufacturing initiatives and become a SyncFab supplier partner on our website:

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# The Digital Twin Takes Hold in the Industry

By Benjamin Moses, Director of Technology, AMT

The digital twin is often thought of as a nebulous concept that some big company will use in buzzword bingo. Regardless, the underlying technologies to support the concept of a digital twin have matured and are ready for implementation. Companies and industries have identified areas to harvest value from this technology and can reap real-world benefits. In short, the digital twin is a real thing.

The digital twin is the summation of the digital model and the real-world instance. Combining these two creates a digital representation that can be used for various scenarios. The International Organization for Standardization defines the digital twin as “manufacturing” fit for purpose digital representation of an observable manufacturing element with a means to enable convergence between the element and its digital representation at an appropriate rate of synchronization.” The synchronization in the digital twin’s current state can be seen in three areas: simulation and prediction, as-manufactured, and as-used.

Deloitte discusses the various technologies that can converge to allow the twin to be an achievable technology: “Simulation, new sources of data, interoperability, visualization, instrumentation, and platform.” While a 3D model has been around for a long time, it has always been disconnected from the real world. Overlaying the actual conditions of the part



is the first step of the digital twin. The next step is harvesting value from this synergy.

## Putting the digital twin to work

There are several areas that will benefit from this technology. Within an organization, the areas that will directly benefit from this are product design, process optimization, quality management, supply chain management, predictive maintenance, cross-discipline collaboration, and analyzing the customer experience. According to technology consultant and advisor Daniel Araya, “Going forward, digital twin technology is emerging as one of the key software tools in revolutionizing product development.” Driving change to the furthest point upstream in the value stream will allow for better manufacturing capability and a more robust end product.

The construction industry has begun to accept the value of the digital twin. AIthority discusses the value

of the twin in construction: “A digital twin will help project managers visualize how a building works in real-time and helps them to increase performance. For planning and construction of future buildings, data obtained from Digital Twin can be used. The model prediction will monitor the approach and determine, starting with the current building situation, on the basis of forwarding simulation. Managers then can evaluate multiple action paths and measure their possibilities and the resulting cost functions in order to make the right option for the next steps.”

## Collaboration

Not only does the twin allow for a deeper understanding of the predicted and real world, but it increases the value of collaboration. According to Deloitte, “Digital twin technology is at the heart of Bridgestone’s transformational journey. The company has used digital twin simulations augmented by sensor data as an R&D tool for



several years to improve tire life and performance, but that's just the beginning. Jerome Boulet, digital strategy director, and Hans Dorfi, director of digital engineering, together with their teams, are developing sophisticated digital twins to eventually deliver insights across Bridgestone's entire value chain, with the goal of enhancing profitability, sustaining competitive advantage, reducing time-to-market, and delivering leading-edge tire-as-a-service offerings." Manufacturing has long suffered from design being "thrown over the fence." Increasing collaboration through systems and processes will drive more efficient processes that will drive the bottom line.

### Improving Workflows

The twin in manufacturing can be implemented in several areas, including engineering, customization, production, and operations. According to Georg Kube,

SAP, "Digital twins are now being used to manage the performance, effectiveness, and quality of a manufacturer's fixed assets such as manufacturing machines, lines, and plants. When advanced visualization, IoT, and analytics are applied to these assets, manufacturers can take a more strategic and holistic approach to asset management." The twin can be used to provide more context to data from operations. Turning raw data into contextualized information will drive data-driven decision-making across the organization.

The key to any new technology is the support from management to drive change within the organization. After that, the underlying technologies to harvest the as-manufactured or as-used conditions are readily available. ArcherGrey discusses the key elements in achieving this technology in an organization: "Senior-level management sponsorship streamlines

and bolsters the adoption of the digital twin. With a strong, supported start, your business will be able to reap the benefits of digital twins far faster. ... With a comprehensive data and IT strategy, your teams will find it easier to collect and use data to create effective digital twins that help you achieve your business objectives. ... Simulations empower your business to validate product enhancements quickly, helping minimize waste in time and material."

In the end, the digital twin is a concept that that will improve and enhance your products. While this is a constant and continuous stream of data, the end-user is harvesting the value of these improvements.



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



# Winning the War of Talent

By Michael Watkins, MBA/JD, EBITDA Growth Systems

There is a truth regarding talent that is so significant that it is lost on many. Part one of the truth is this – “no single company can hope to address the lack of skilled machinists in America.” And while it is important and useful for individual companies to come alongside trade organizations and federal, state and local governmental agencies in their efforts to address the challenge on a macro level, there will not be a short-term solution to the problem. Part two of the truth is this – “the only thing that a single company can do in their effort to address the lack of skilled machinists in America is to make certain that they don’t lose their current talent.”

Many organizations treat their employees like they’re a dime a dozen. These companies think that even their best workers can easily be replaced, particularly in today’s tricky economy where there’s no shortage of folks looking for work. They are wrong of course. There is a tremendous shortage of Machinist talent looking for work.

Great shops understand the importance of keeping their employees for a long time. In doing so, they don’t have to regularly spend the time and money necessary to replace employees – which could devastate their bottom lines.

## The three main reasons why employee retention is of critical importance are:

1. *It is extremely expensive to lose an employee – lose of knowledge.*
2. *It is extremely expensive to lose an employee – lose of productivity.*
3. *It is extremely expensive to lose an employee – opportunity cost.*

It is the result of these costs that the largest part of an owner’s brain should be focused on their people. What follows is a list of highly effective ways to boost employee retention. The majority of them require money, but when it can cost as much as \$80K to replace a \$20/hour resource, that money would be much better spent on all of your existing employees.

## The following are 10 ways to boost employee retention:

1. *Train your managers*
2. *Onboarding and orientation*
3. *Employee compensation*
4. *Communication and feedback*
5. *Annual performance reviews*
6. *Employee training and development*
7. *Recognition and rewards systems*
8. *Work-life balance*
9. *Flexible working arrangements*
10. *Fostering teamwork*

With payroll representing more than 70% percent of a Machine shop’s costs, the owner must closely monitor the success of their employees, the biggest expense of their business, to understand where their business is today and where it can go.

Successful owners consider employees an asset to the business and realize that a low employee turnover rate is a crucial factor in their efforts to achieve their targeted profit margins. In other words, “winning the war of talent” is much less about finding more employees and much more about retaining the talent that you already have.

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A large, complex aerospace component is shown in a cutaway view, revealing its internal structure. The component is made of a highly reflective, metallic material, likely Ti6Al-4V. It features a central cylindrical section with a transparent, spherical cap. The top and bottom sections are flared and have several circular openings. The component is set against a dark background with a faint image of an airplane flying in the sky. The title "AEROSPACE TO THE CORE" is written in large, bold, yellow letters across the center of the image.

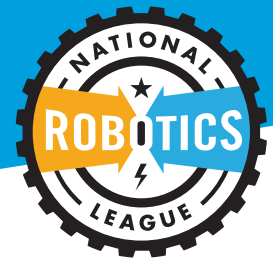
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The Manufacturing Skills Gap is an existential threat to our nation. It is estimated that 2.1 million jobs will go unfilled by 2030 – costing the U.S. economy \$1 billion. The ongoing challenges in attracting entry-level and skilled workers in the right geographic markets are often made more difficult by misconceptions about manufacturing work, especially amongst younger generations.

The National Robotics League is the only job-driven, project-based STEM learning experience that provides the opportunity for students to acquire the technical and critical thinking skills that you need in your future workforce. The NRL engages manufacturing's next generation in **FULL CONTACT INNOVATION** – while affording our industry the ability to build a much-needed future talent pipeline. Just as the NRL is a win-win opportunity for educators and industry, supporting our 50/50 Raffle is also a mutually beneficial proposition for both you and our program. By purchasing a raffle ticket, you will have

the chance to be the lucky winner of fifty percent of the net proceeds – while the remainder supports our efforts to close the skills gap that is impacting all of manufacturing. **Raffle tickets are just \$100 each** – and the more tickets you purchase, the greater your odds of winning! Help us to seed the future of the industry in your community by engaging our youth with a much-needed project-based learning initiative – and one that provides you with the ability to manufacture your future workforce!

### Why Support the NRL?

The NRL was created by NTMA to not only provide the next generation of our industry with a hands-on learning experience, but to directly address the ongoing industry-wide issues with talent acquisition.

- According to surveyed U.S. manufacturers, finding the right talent is now 36% harder than it was in 2018, even though the unemployment rate has nearly doubled since.

- The top two consequences cited by manufacturers of not being able to fill jobs were the inability to increase revenue growth (82%) and maintain production levels to satisfy demand (81%).
- Seventy-seven percent say they will have ongoing difficulties in attracting and retaining workers in 2021 and beyond.
- The study points to the top reasons these positions tend to go unfilled, with new entrants having different expectations for jobs and careers topping the list (38%), followed by lack of attraction or interest in the industry (36%) and retirement of baby boomers (34%).
- According to Deloitte's analysis, 8 in 10 job titles with the highest number of job postings in 2019 and 2020 were for entry and mid-level positions, generally requiring only a post-secondary certificate or high-school diploma.



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# What to Watch For: Navigating the Economic Recovery

- The Delta variant impact on the economic recovery will continue to be closely watched. Weaker consumer confidence survey results suggests the additional restrictions due to the increased COVID-19 levels have created more headwinds for the recovery. The weakness is not just in the U.S. either. The CITI global economic surprise index recently turned negative and hasn't been this low since June of 2020.
- The September meeting of the Fed may deliver additional insights into when they expect to begin the reduction of monthly bond purchases that today total \$120 billion of securities per month. The tapering of this support for the economy should be viewed by investors as a positive step by the Fed and a sign the economy is in good shape.
- Investors should be focused on activities in Washington. Congress returns from recess and will likely continue to move forward on approving the \$3.5 trillion infrastructure bill, yet it is still not fully clear how Congress will raise taxes to pay for the bill. This lack of clarity creates uncertainty.
- The debt ceiling for the U.S., which was suspended in July of 2019 until July of 2021, will need to be addressed soon by Congress



before “emergency measures” instituted by the Treasury are exhausted. A partisan fight on the issue and failure to act could impact markets as we have seen in previous years.

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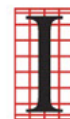
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