

THE RECORD

Published by the National Tooling and Machining Association

INSIDE THIS ISSUE

How to Spot a Machinist - p 12

You're Never Too Small
for Cybersecurity - pp 18-19

RANSOMWARE - What it Can
Cost You - p 20

and so much more...



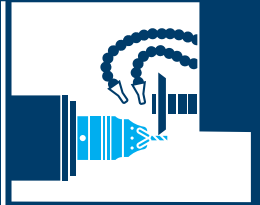
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THE RECORD

OPERATIONS & EDITORIAL

Roger Atkins, President
Doug DeRose, Editor

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Upcoming NTMA National Events



NTMA Spring Conference

NTMA Connect - All Virtual Conference

Monday, March 29 – Tuesday, March 30, 2021



NTMA Summer Conference

NTMA Connect - All Virtual Conference

Monday, June 14 - Wednesday, June 16, 2021



Emerging Leaders Conference

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



Manufacturing Engage™ 2021

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

DATES AND LOCATIONS ARE SUBJECT TO CHANGE

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 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.

Upcoming Record Themes

April

Employee Safety

May

Reshoring: Continuing the Momentum

June

Midyear Analysis



PRESIDENT'S UPDATE

As crazy as it seems, we find ourselves finishing up the first quarter of the year. Whereas it seemed 2020 would never go away, 2021 seems to be flying by – in part, as we work diligently to recover from the disruptions and the corresponding changes caused by last year. We, both as companies and as a country, were weakened by the effects of the pandemic in many ways. As manufacturers, most of us look at the challenges strictly from the perspective of incoming orders, the loss of or need for skilled workers, PPP loans, requirements for capital, or, frankly, just trying to pay our bills.

While all these challenges are true and real, and require our undivided attention, one of the hidden effects of the pandemic many of us fail to focus on is the growing attack on our internal IT infrastructures. These IT infrastructures provide vital financial information for running our companies and ever important engineering, programming, machine monitoring, and online connectivity with our customers. For my entire career, we, the small-to-medium manufacturers have flown under the radar of such interest or attacks.

It disappoints me to say that no longer seems to be the case; we are now on the radar screen and are actively being targeted and preyed upon by nefarious persons from around the world, who work to hold you hostage and want to cripple you until you pay the ransom. What we used to watch as an entertaining scenario in movies has turned into a nightmare in

reality for some companies - while others lay in-waiting to be attacked.

I hate to be the bearer of such news, but I speak from personal experience - that with my previous company being hacked. With unknown and undetected manipulation of my system, they were able to redirect monies and payments from clients, making it look like normal daily operations to both me and my customers.

By chance alone, it was detected, and my IT folks were able to disable the changes. Thinking I was in the clear, the hackers found even more clever ways to manipulate my system, but this time with no tracks. Only by the grace of God, I happened to be looking at my computer when they actually moved something off my screen and then redirected it to themselves. To sit and watch your mouse and your files being moved without your control was one of the most violating feelings of my life. The eventual solution was to delete everything off my computer and then rebuild it again from my backups, while changing every password I had. The good news is it worked, and I was able to resume my work; but the question is - when is the next attempt?

Being prepared before it happens is the key. One of my greatest fears today for our industry and our members is the risk of an attack to our companies' IT infrastructures. As our industry focuses on Industry 4.0 and the connectivity of our processes, it only heightens our exposure, all the while trying to be more

efficient and productive. I know we have an NTMA member whose systems have been hacked and held for ransom.

NTMA has two industry partners who can help support us in this area: The first is Safehold Insurance, who provides cybersecurity protection coverage in addition to the aviation coverage they provide for our industry. Second is Core Business Solutions, who provides expertise on becoming certified to the new CMMC requirements by the DOD and cybersecurity consulting. Certification requirements like CMMC will most likely soon be implemented across other industries who have concern for their supply base. In a recent webinar I heard that the FBI stated: "Industry has under-invested in IT security and data is the new oil."

Being a part of NTMA allows you to learn about these critical challenges, interact with fellow members, and have access to industry partners who can provide potential solutions. This is a subject matter that you must not overlook or discount simply because you are a small-to-medium size business - we are all in the crosshairs.

Let us fight the fight together and remember, **"WE ARE STRONGER TOGETHER."**

Roger Atkins, President - NTMA



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Do you know a driven, resourceful, and innovative student in the United States looking to explore a post-secondary educational pathway to a successful career in manufacturing?

If yes, the National Tooling & Machining Foundation Scholarship awards scholarships up to \$2500 to graduating high school seniors, undergraduates and graduate students pursuing two-year, four-year or advanced degrees in manufacturing or engineering.

Manufacture their future and encourage them apply for an NTMF scholarship by April 1, 2021. Information about the scholarship program, along with the link to the online application form, is available at www.ntma.org/initiative/foundation. A recommendation by an NTMA Member in good standing is required for each student applicant.

For more information or questions, contact Bill Padnos at bpadnos@ntma.org.



How NTMA Members Stay Connected During Unprecedented Times

Many NTMA members are looking for ways to stay connected during these uncertain times. While we are not able to gather together in person, we can still connect virtually. To address this issue, in May 2020, NTMA started hosting a bi-weekly "Member Drop-In" virtual meeting. This is a unique opportunity to check in with your fellow NTMA members, discuss complex problems, and get ideas or solutions from your peers.

This virtual roundtable has been very beneficial to the members who have attended and we encourage you to take advantage of this quick, easy, and free networking opportunity.

“

The Drop-Ins have been very informational for me and have helped me keep in touch with membership... I think it is has really helped me get to know and interact with different members across the country. I see many old friends there as well as making some new ones. The NTMA remains a very important organization for Blaser and we will remain committed to participation in events.

Drew Borders
Business Development Manager, Global Markets
Blaser Swisslube Inc.



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

April 13, 2pm EST; April 27, 2pm EST

Please check your email for future invites, or contact NTMA's Member & Chapter Relations Manager, Kelly LaMarca, at kلامarca@ntma.org or (216) 264-2837.

We hope to see you on the next call!

New Member Highlights



Dependable Tube Bending has been satisfying customers for 15 years. Their state-of-the-art facilities are located in Cumming, Georgia. They are American owned and committed to providing excellence for commercial manufacturing, the aerospace industry, and businesses of all sizes. Dependable Tube Bending takes pride in their dedicated team, modern production methods, and rigorous quality controls. We aim for total customer satisfaction. Their technicians provide for a wide range of industries – from the precise sophistication of the tech industry to the durability required for construction and transportation. Whether it's just a few parts or a large-scale production run, Dependable Tube Bending maintains the same high standards regardless of project type or scale. Their Quality Management System meets military specifications, and they are accredited to ISO 9001:2015 (Certificate #US3529).

Dependable Tube Bending, LLC
www.dependabletubebending.com



Prudent American Technologies, Inc. (formerly Molding Solutions and Chiptec) is a full service contract manufacturer specializing in precision machining (Alabama) and injection molded products (Kentucky). They are a USA-based ISO, ITAR, and AS Aerospace certified operation whose services include in-house design engineering, product development, design for manufacturing (DFM), BOM management, and cost effective tooling and component-part prototyping. Prudent offers complete turn-key assembly, packaging and order fulfillment services. They serve the following end markets: Aerospace, Automotive, Electronics, Food & Beverage, Medical/Life Sciences, Defense & Military, Firearms, Oil Field and Energy.

Prudent American Technologies, Inc.
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www.prudentamerican.com

Kristin Carlson Honored in *BusinessWest* Difference Makers Class of 2021

Kristin Carlson – President of Peerless Precision, Inc., Trustee of the Western Massachusetts NTMA Chapter, and AMPED Board Member – was recently honored by *BusinessWest* as a Difference Maker for the Class of 2021.

The hard work of Kristin in impacting local manufacturing has not gone unnoticed by her peers and colleagues. Kristin told *BusinessWest*:



For more than a dozen years now, *BusinessWest* has been recognizing the work of individuals, groups, businesses, and institutions through a program called Difference Makers. Since the inception of this initiative, one of the goals in selecting our honorees has been to show the many ways one can, in fact, make a difference within their community.

- BusinessWest



I want to make sure that kids, and adults who are looking for another career option, are aware of what we do in Western Mass. and they know about the viability of a career in manufacturing and what it has to offer.

- Kristin Carlson

In a field where complaints about these issues have been going on for decades involving generations of shop owners and managers, she has distinguished



herself by going beyond complaining. Well beyond. In fact, in many ways, she has become the face of manufacturing in Western Mass. — a much different face than has ever been associated with this sector locally.

NTMA congratulates Kristin Carlson on this honor and we are excited to continue to see more of her continued efforts towards helping to build the future of manufacturing!

You can read the entire article from *BusinessWest* at: <https://businesswest.com/blog/kristin-carlson-president-peerless-precision/>

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In Memoriam: Gerald Chattman



Last month, NTMA's Chief Legal Counsel, Gerald Chattman, passed away on February 13th. Jerry's work in the area of governance with NTMA was key to reorganizing and updating both the association and the foundation's bylaws. Jerry also helped NTMA create more consistent legal agreements throughout the organization. In addition, Jerry took the time to serve as a mentor to NTMA staff.

A lifelong Clevelander, Jerry was an originating partner at Buckingham, Doolittle & Burroughs' Cleveland

office, and was regularly recognized for his work in law, both in northeast Ohio and across the nation. He is survived by wife Winnie, and children Elise and Gregory.

Please join NTMA in sending our sincere condolences to everyone in the Chattman family. If you wish, memorial contributions can be made in Jerry's memory to Bellefiare JCB, or the Western Reserve Area Agency on Aging Foundation.

Boulevard Machine Moves to New Westfield HQ



NTMA member Boulevard Machine & Gear, a precision machining facility, announces it has moved its headquarters to a new, larger space in Westfield, MA to accommodate steady business growth over the last decade.

Boulevard Machine will leverage its new facility to provide additional capacity for its customers while providing new internal operational efficiencies. The new facility also will provide Boulevard with improved, state-of-the-art production space to facilitate internal and external collaboration and communication, while providing the company with further room for growth with its ongoing investment in equipment.

"We are extremely proud to move into our new building in Westfield. The larger, modern facility will allow us to continue delivering highly innovative products and quality service to our customers and provide an improved work environment to our employees," says Susan Kasa, President of Boulevard Machine.

The newly constructed factory will accommodate leading-edge manufacturing technologies, lean equipment layout, and automated workflow, resulting in increased efficiency, and better overall customer experience.

The new address for Boulevard is:
326 Lockhouse Road, Westfield, MA 01085.
Phone: 413.788.6466

About Boulevard Machine:
Boulevard Machine, founded in 1954, was acquired by Susan Kasa in 2006. It is a certified woman-owned business that provides precision machined components for the aerospace, defense, space, and medical markets. An ideal single source solution for close tolerance machining and finishing.

For more information visit: www.boulevardmachine.com



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How to Spot a Machinist

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

If I asked you to describe the personality traits or characteristics that comprise a great football player, you might reply with answers like: “drive”, “aggressiveness”, or “determination”. If I asked you to describe the same for a chef, you might say “creativity”, “flexibility”, or “stamina.”

Now, what about a machinist? If I asked you to describe their personality traits, would you be able to do so quickly, or would it take a few moments of hard thinking? Maybe you share many of the same qualities as a skilled machinist and just don't know it.

Across the country, we all notice a common issue: schools are failing to introduce mechanical and technical courses to students with the same personality traits as successful machinists. If these traits are recognized early on in their school career, teachers could help students pursue an education leading towards professions within the mechanical or technical industry. The skills gap would be non-existent if schools had systems in place to push more like-minded, mechanically-inclined students to take technical classes.

So the big question is, what personality traits and characteristics tend to make successful machinists?

PRECISION

When it comes to accuracy, machinists live and die by fractions of centimeters and inches. In order for machinists to produce complex medical devices, automotive components, aeronautical parts, and countless other pieces, precision is vital. People who are detail-oriented and strive for perfection generally succeed as machinists. Firm attention is required in order to handle expensive, complex machinery and produce cutting-edge parts to exact specification.

ANALYTICAL

When someone has an analytical personality, they are able to collect information quickly and efficiently, and then analyze that information in order to make a

decision. With curiosity as a driving force, analytical thinkers love to explore the root causes of processes and understand the ways in which systems interact. For machinists, having analytical personality traits is essential, because they are able to use those traits to find creative solutions to complex problems. Which leads us to...

CREATIVE PROBLEM SOLVING

In the world of machining, problems are experienced almost daily. Perhaps you must operate a machine that wasn't set up or programmed correctly, or maybe you need to make an adjustment to just the right degree in order to produce a certain part. No matter the scenario, creative problem solving is a must. This involves analyzing and determining the actual problem, and then brainstorming solutions and developing an action plan to tackle the problem. Since creative problem solving can often be an arduous, frustrating process, a great deal of patience is also needed.

PATIENCE

As mentioned above concerning creative problem solving, patience is an absolute necessity for machinists. When it comes to creating an intricate piece, solving a design problem, or developing a complex schematic - persistence and tolerance are needed. Any experienced machinist will tell you that the best lessons are often learned through mistakes and trial and error, which can undoubtedly be frustrating at first. By having patience and focus (along with a good sense of humor), many machinists are able to accomplish their goals and create the correct pieces and parts.

PRIDE

In order to be a successful machinist, you must take care and pride in your work. By having prideful traits, you strive to do the best possible job you can, and you feel a sense of pleasure when you complete a job accurately. Pride also allows you to fully embrace your role as a machinist and constantly strive to better your processes, skills, and overall craftsmanship.



Now that we have identified the most important traits that machinists possess, it is important for you to communicate to your local school administration and educators - they need to be your partners in finding students that have these qualities.

Students who show an affinity for technical subjects like math and science usually possess the above skills. These students are also independent thinkers, often solving problems without the help of other students or teachers. They are also proficient in quickly analyzing problems and providing unique solutions. Many of these students also prefer to work by themselves—finding the solutions they need without the weight of a large group to slow them down.

You need to implore them to encourage students with these traits to try shop classes, design programs, and other technical courses. By encouraging a student to experiment with less promoted courses, they may be able to discover their passions and find their dream career within manufacturing. If increased attention is given to mechanically-inclined students, we may be able to see a rise in skilled machinists in the years to come.

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NTMA is Proud to Welcome Constellium as its Newest National Associate Member

Constellium is a global leader in the development and manufacturing of high value-added aluminum products and solutions, with a focus on designing and manufacturing advanced alloys and engineered solutions for a range of applications, such as cars, beverage cans, airplanes, and more.

One of Constellium's main facilities in the US is located in Ravenswood, West Virginia. As part of the aerospace and transportation business unit, the Ravenswood plant produces plate, sheet, and coil

products for aerospace, defense, transportation, marine, and other industrial markets. Built in 1957, the plant is the largest employer in Jackson County, West Virginia and one of the top 50 businesses in West Virginia, with over 1,100 employees.

Today, it is one of the world's largest rolled products facilities, offering customers the most powerful plate stretcher in the world, as well as one of the largest cold rolling mills.



We are extremely happy to add Constellium to NTMA's constantly growing network!

Learn more about Constellium at:

<http://www.constellium.com/> – and learn more about the Ravenswood facility at: <https://www.constellium.com/ravenswood-west-virginia-us-aluminium-manufacturing-plant-constellium>

WB Industries Staying on Top of Trends to Meet Customers' Expectations



NTMA St. Louis Chapter member WB Industries was recently profiled in *FF Journal*, touting their success in using new trends, technology, and internal methodology to better serve their customer base. In speaking with *FF Journal*, WB Industries President Gary Bertolucci noted:

"Customers' expectations continue to evolve. If you're going to keep up with demand, you need to stay on top of the latest trends in the industry. As a fabricator, we must continue to build our expertise through

education, stay on the lookout for exceptional talent in terms of personnel, and upgrade our equipment as needed."

WB Industries is also well aware of the role cybersecurity plays in their industry.

"For fabricators, it's not enough just to focus on the moment; they must keep looking ahead to the next generation of requirements to ensure they stay competitive. Bertolucci says that a looming

certification WB Industries is watching for is the Cybersecurity Maturity Model Certification (CMMC) for contractors of the Department of Defense, which, according to the Office of the Under Secretary of Defense for Acquisition and Sustainment, will "review and combine various cybersecurity standards and best practices and map these controls and processes across several maturity levels that range from basic cyber hygiene to advanced."

"Knowing this certification requirement was on the horizon, we've been taking the proper steps to ensure that we have all our boxes checked," says Bertolucci. "We take cybersecurity very seriously, and we'll be ready to have our operations reviewed and measured when the time comes."

You can read more on this story of NTMA member success at:

https://www.ffjournal.net/item/16267-in-the-know.html?fbclid=IwAR3Q2x05YMaekdG2HnVsBM_H6hBmMj_kNDPXBdTN0auSshQLKgp5M52NMxA



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Manufacturing America's Future

Get The Most Out of Your Chapter

Manufacturing's impact in local communities is **immeasurable** – and NTMA's chapters are able to make just as big of an impact at the local level for our members.

Each chapter offers activities and programming that are unique to the needs of the local area served. By engaging with your local chapter, you can establish relationships with peers and colleagues in your industry, enhance your business development opportunities through networking, and promote the growth of your company's greatest asset – your employees. This can include access to local grants, regional advocacy and governance assistance, and chances to engage with your potential future workforce.

With 27 chapters across the United States, there are innumerable ways to engage with your local manufacturing community!



Have a bright spot from your chapter you would like to share?

Send them to Kelly LaMarca at: klamarca@ntma.org

Find your Chapter:

www.ntma.org/resources/chapter-resources/chapter-directory/

The photos seen here are from the 2021 NTMA Pittsburgh Chapter Apprentice Competition. These competitors are apprentices who are currently enrolled in PA State Registered Machinist Apprenticeships. This day-long event consisted of three scored portions: a knowledge exam and two hands-on timed projects for manual lathe and mill.



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You're Never Too Small for Cybersecurity

By Jason Fordu, Calyx.

Today's cybersecurity threats are real, and you don't have to look far to see the big headlines. What you rarely hear about are the small companies that are compromised. I think this creates a false sense of security for all of us. It's out of sight and out of mind. Unfortunately, small companies are faced with the exact same problems and threats as the big guys. Everyone is a target. Attacks range from very simple approaches to ones that are highly sophisticated, well-coordinated and well-timed all in an effort to steal information, disrupt your business, or separate you from your hard earned dollars.

Here are some of the sobering statistics*:

58%

of cyber-attacks **target small businesses** with less than 250 employees

60%

of those small businesses targeted are **out of business in six months**

424%

increase in small business **cyber breaches last year**

So what can you do?

1. **Validate the threats and risks to your company – get your head in the game.**
2. **Realize there's no easy fix – this requires a multilevel approach and everyone to pitch in (see guide.)**
3. **Don't wait for tomorrow – get started on developing your plans today.**

Once you've decided to act and you have a plan, the biggest challenge you'll likely face is end user adoption and compliance. Basically, getting your employees to do what you ask.

Generally speaking, employees perceive anything that can potentially slow them down in one of two ways: Either the change to workflow or process becomes an excuse why the job cannot get done the same way, or they'll find it as a reason for them to circumvent the process and technology you have worked hard to put in place. Neither is a good reason for allowing your company to be exposed. So be prepared for some pushback.

A good way to tackle this is to explain to them why the changes are important for your organization and how you need their help. It also helps to include an acceptable use of technology policy, with employee signoff in their HR folder as a great way to document the organization's expectations of them. Then there's training. We suggest the wash, rinse, and repeat method.

Developing a great cybersecurity strategy doesn't need to break the bank, but it is going to take some time and effort to implement and adopt.

A great way to get started quickly is to realize there is a lot of help out there and you don't need to recreate the wheel. An easy start is to ask other business leaders or partners of yours who you know and trust to share their plans with you. There are also lots of cybersecurity-focused firms out there to get you in good shape and the cost is generally a small fraction compared to the cost of a breach or ransomware event.

There is an old proverb that says, "the best time to plant a tree was twenty years ago, the second best time is today." Additionally, General Patton is quoted as saying, "a violently executed plan today is better than a well thought out plan two weeks from now." The moral of these two quotes? Don't put this off again – today is the day to start planting your trees.

**<https://www.forbes.com/sites/ivywalker/2019/01/31/cybercriminals-have-your-business-their-crosshairs-and-your-employees-are-in-cahoots-with-them/?sh=5382dd1b1953>*



Common Cyber Threats

Adware

Hides on your device and serves up advertisements to you, or monitors your online behavior so it can target you with specific ads

Emotet

A type of malware aimed at stealing financial data, originally a Trojan to exploit banks but it has now evolved to become a threat to all users

Malware

This is a general term for any type of software with malicious intent: most online threats constitute some form of malware

Software Exploits

Cybercriminals take advantage of software vulnerabilities, hidden within the code of the OS or application, to gain illicit access to your systems

SQL Injection

Used by malicious cyber criminals to exploit vulnerabilities in web applications to gain access to data

Backdoor

Any method to get around normal security measures to gain access to systems & data; may be authorized or unauthorized access

Hacking

Refers to activities conducted by individuals that seek to compromise digital devices such as computers, phones, tablets, networks, and servers for their own personal gain

Phishing

A malicious attempt to trick you into sharing passwords, credit or bank information, or other sensitive information by posing as someone else or as a trusted institution

SPAM

Unwanted and unsolicited digital communication generally sent out in bulk by malicious senders

Trojan

Software that claims to do one function but actually does another nefariously; hidden in downloads, attachments, videos, or programs

Cryptojacking

Hides on your device and steals your system resources to mine online currencies such as Bitcoin

Keylogger

A piece of malicious software installed on your device that secretly records your keystrokes, and may also be able to capture what you are viewing onscreen

Ransomware

This is malware that locks the user out of their device and/or files; and then the perpetrator demands an anonymous online payment to restore access

Spoofing

When someone pretends to be someone else to gain your confidence, access systems, steal information, steal money

Virus

A piece of code which is capable of copying itself and typically has a detrimental effect, such as corrupting the system or destroying data – often depends on a host application to replicate

DDoS Attacks

Hackers maliciously overwhelm a website or service with requests or false web traffic from numerous devices

Malvertising

Online ads that distribute malicious malware, little or no user interaction is required for installation

Scam Call

What SPAM is to email, robocalls are to your phone. Unwanted, annoying, & automated. Can be used to steal your information

Spyware

A form of malware that hides on your device, monitors your activity, and then steals sensitive information

Worm

A piece of code very similar to a virus, which is also capable of replicating itself for detrimental effect, but worms operate more or less independently of other files to spread

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RANSOMWARE

What it Can Cost You

By Brett Barker, Rice Insurance

You walk into your office one morning, log on to your computer and the chilling, bolded, red wording reads across your screen, *“Pay \$50,000 in Bitcoin, or everything will be wiped out.”*

Surprise! You’ve been hit with a ransomware attack.

If you do not already have a written plan in place for this exact situation, there is only one reasonable reaction...panic. Do you pay it? Can you pay it? Is it legal to pay it? What if you pay it and they still destroy everything? Is the threat even real?

On average, 2,244 individuals/business owners have these exact thoughts every single day and the initial payment is just the beginning of the problems (Cukier, 2007). With ransomware being the #1 cyber claim businesses encounter, and the costs associated with these attacks, there is a reason a lot of insurance carriers are dropping out of the cyber market entirely.

To start, before you decide whether to make the payment or not, you will most likely bring in a forensic specialist to assess the threat. They may be familiar with this particular strain of ransomware and often they will advise that making payment is the best form of action. Certain services can even negotiate the ransom demand down. Whatever the decision is, these incident-response services can cost upward of \$400/hour and the clock is ticking.

If the payment is made, your problems have just begun as the recovery process is lengthy. On average, it takes businesses 1 week to get their critical systems fully up and running again. It can take up to 2 weeks

Fatal Error



Pay \$50,000 in Bitcoin or everything will be wiped out

OK

for non-critical systems. During this time, you are paying your IT team or another professional service to determine the scope of attack and make sure your systems are completely clear of the virus. You will also need to perform a root cause analysis to determine how this took place and how to prevent a similar situation from happening in the future. Between man hours and network downtime, the business interruption costs start compounding. Sure, your production line has been running, but how long could your company last without access to your computer systems? How would this impact productivity and your ability to meet deadlines?

If you made the payment, there is still a chance that your data was destroyed. Today, most firms store their critical information with a third party cloud service provider; however, the time to recover that data is costly. If sensitive information was stolen and released to the dark web, the burden falls on the business to notify individuals and clients about the incident. Additionally, there are often cases where the actual company hardware is permanently damaged and needs to be replaced. Even with the proper cybersecurity platforms and recovery plans, you are going to end up writing a check.

Lastly, cyber attacks like these can damage your reputation. If you lose sensitive information, or even the contact details of your clients, your ability to protect those details may come into question. If you missed an order because of the downtime, a customer might decide that they want to take their business elsewhere. For large operations, these ransomware attacks are publicized and that can take a toll on a company's public image.

Even with the best cybersecurity and incident response protocols, there is only so much a business can do to avoid the number one cause for these claims – human error. Every day, someone, somewhere is moving through their 345th email and clicks on something that they shouldn't. That is why, today, a cyber policy is critical to any risk mitigation plan.

A lot of theoretical repercussions were brought up and that is because each of these outcomes can be covered by the right cyber insurance policy. The ransom payment, the forensic specialists, the business interruption costs, the notification costs, the hardware replacement, and the reputational harm are all pieces to the best cyber forms on the market right now.

Ransomware is just one of the threats hackers are deploying on the public today, however, the costs of ransomware payments alone is expected to reach \$20 billion by the end of 2021 (Morgan, 2019). Now, more than ever, it is important to ensure that your business is not the one paying the cost.

Cukier, M. (2007, February 9). Study: Hackers attack every 39 seconds. Retrieved February 09, 2021, from <https://eng.umd.edu/news/story/study-hackers-attack-every-39-seconds>

Morgan, S. (Ed.). (2019, October 21). Global ransomware damage costs predicted to reach \$20 billion (USD) by 2021. Retrieved February 09, 2021, from <https://cybersecurityventures.com/global-ransomware-damage-costs-predicted-to-reach-20-billion-usd-by-2021/>



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FANUC

How 5-Axis Machining Can Help Machine Shops get More Business in 2021

Advanced machining can help boost the quality and efficiency of producing complex parts

The current challenges facing the traditional job shop are immense for 2021. Whether the shop is a small owner-operator with just a few employees or a supplier of multi-million dollar contracts employing hundreds of people, the focus is on doing more with less and getting the competitive edge.

This increased competition is driving the need for higher efficiency. To reduce time on setup or changing operations, shops will need to increase their machining capabilities as well as improve the efficiency of their production processes. Analysts predict this will cause businesses to think differently about how they are operating. Perhaps, they have been performing multiple setups on 3-axis machine tools, but now see the inefficiencies and the operational time wasted. This is why more shops are investing in 5-axis machines, which reduce the number of operations and setup time, especially when used with optimized programs.

The Business Case for 5-Axis Capabilities

Many job shops often need help justifying the move to 5-axis. A single 5-axis machine with the latest CNC technology can typically do the same work with significantly shorter manufacturing times than multiple 3-axis machines.

The freedom of motion allows entire parts to be cut without manually re-fixturing the parts resulting in significant reduction in overall part manufacturing time. The freedom of motion also allows greater part complexity, making it possible to bid on higher profit work. Due to shorter tools and better tool orientations for the required cut, higher feed rates are often possible, further reducing cycle times and part quality. Overall accuracy is improved as well due to the advanced algorithms and the reduced likelihood of manual error. The latest CNC

technology from trusted providers will be able to deliver the advanced CNC functionality, expertise, and tools to help shops start taking advantage of this more efficient machining process.

Redefining 5-Axis Machining

CNC manufacturers and part programmers typically refer to 5-axis machining' only as a tool path that requires all five axes to interpolate together to create a contour. The functions critical for successful 5-axis machining are just as critical for any CAD/CAM generated toolpath on any machine with at least one rotary or orientation axis. For optimal machining, FANUC recommends using this same suite of CNC functionality and related programming techniques for any machine with at least 1 rotary (i.e. 3+2, 4, 3+1, and "full 5" axis processes).

Here Are a Few Key Features to Optimize 5-Axis Machining

Optimal 5-Axis Tool Paths

For 5-axis simultaneous contouring, a quality CAD/CAM system is critical. The CAM system determines the required tool path and approximates it with a sequence of points. The post translates those points to a specific machine and CNC application. FANUC has tools and example programs to help set up posts for optimal functionality.

Simplified 5-Axis Programming

Advanced functions like FANUC's Workpiece Setting Error Compensation (G54.4) and Tool Center Point (G43.4/G43.5) allows the elimination of complex

math from post processors and make part programs that are machine independent. By "programming parts, not machines," the same part can be run on multiple machines, even those with mechanical difference.

Advanced Algorithms

FANUC's AI Contour Control (G5.1 Q1) and Smooth Tolerance Control (G5.1 Q3) enable advanced real-time spline look ahead algorithms that interpret the sequence of CAM approximated points as a smooth spline. This results in producing a more accurate part with better surface finish in a shorter cycle time.

Process Specific Profiles

FANUC's Easy Setting Function (G8.1 Px) allows the programmer to define process specific dynamic profiles for the tool path so the machine can use an optimal performance profile for roughing, general, or finish processes. This can result in reduced cycle times and better cutting performance.

Probing for Accuracy

Probing is critical for 5-axis contouring in order to automatically calibrate the kinematic for accuracy as well as precisely locate the part and set the part coordinate system. FANUC has many probing routines for automatic kinematic calibration and part location available in Manual Guide i and iHMI.

Learn more about FANUC's 5-axis machining capabilities here: <https://www.fanucamerica.com/solutions/applications/5-axis-cnc-machining>



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For more information, please contact Linda Warner at lwarner@ntma.org or 216-264-2824.

Applications and self-assessment documents can be found here: <https://ntma.org/ntma-awards>

Applications should be sent to 6Saward@ntma.org

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.



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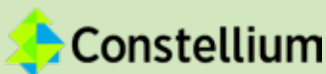
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For more event information,
please contact

Kristen Hrusch: khrusch@ntma.org

Sponsorship opportunities are available! For more information, please contact Kelly LaMarca - klamarca@ntma.org

Our Sponsors



Opening Keynote: 10:30 AM-11:30 AM

The Way I See It

Doug Woods - President, Association of Manufacturing Technology

Is it possible that, in spite of the many challenges that we have faced in the past year, there has never been a better time to be in Manufacturing? Join Doug Woods, President of AMT - The Association for Manufacturing Technology, as he takes a deep dive into the state of our industry and what he believes can drive growth and success for manufacturing professionals in 2021 and beyond. Be it advancements in shop tech, changes to supply chains, new innovations to help shops work smarter, and disruptions to industry norms, both local and national, see what's shaping manufacturing - plus, hear what Doug thinks could be on the horizon in the coming years for the industry as a whole.



General Session 1: 3:30 PM-4:30 PM

Congress, the White House, and Manufacturing

As President Biden's first 100 days in office come to a close, the NTMA lobbying and strategic communications firms in Washington, D.C., The Franklin Partnership and Policy Resolution Group, will provide you the latest information straight from the nation's capital. Talk of tax increases, debate over tariffs, and a flurry of regulatory activity has forced manufacturers to focus on Washington more than ever, especially as the government imposes new COVID-19 requirements. This presentation by your team in Washington will prepare your business for the policy changes to come and opportunities ahead for bipartisan agreement in areas such as workforce recruitment and training.



John Guzik
Partner - The Franklin Partnership



Caitlin Sickles
Director, Government Affairs
Policy Resolution Group Bracewell, LLP



Omar Nashashibi
Partner, The Franklin Partnership



Paul Nathanson
Senior Principal
Policy Resolution Group at Bracewell, LLP

General Session 2:

10:00 AM-11:00 AM

Innovate or Evaporate

*John Nottingham - Co-President,
Nottingham Spirk*



The past year has proven that manufacturing, more than ever, remains resilient - and adaptable. In this session, led by John Nottingham, Co-President of Nottingham Spark, you'll learn how to integrate innovative processes through Factory 4.0 and market-focused technologies, and why shops must think outside the box to build their business. Nottingham Spirk is an established leader in disruptive innovation, partnering with companies to create thriving new business innovations that propel economic growth. They have served as a beacon of innovation for organizations pursuing uncharted territory to accelerate growth and improve life experiences.

Closing Keynote:

3:40 PM-4:30 PM

***Smart Manufacturing and
Your Company in 2021***

*Paul Wellener - Vice Chairman,
US Industrial Products &
Construction Leader,
Deloitte, LLP*



To remain competitive, today's manufacturers must leverage Industry 4.0 technologies across their business operations. But many manufacturers are still trying to develop their smart manufacturing vision and fully implement specific initiatives. While there are various compelling use cases for digital technologies across the factory floor, without an organized approach, investments could fail to deliver results. Deloitte will share the findings in its 2019 and 2020 studies on smart manufacturing, including the top use cases for smart factory initiatives and how smart manufacturing ecosystems can allow for greater capacity and flexibility in adapting to Industry 4.0.

AGENDA

March 29, 2021

Introduction and Welcome
10:00 AM-10:30 AM



Opening Keynote: 10:30 AM-11:30 AM
The Way I See It with Doug Woods

Networking Break 11:30 AM-11:40 AM

Breakout Sessions 11:40 AM-12:30 PM

Breakout Session 1:
Does Your Company Have a Workforce Culture?

*Chris Kaiser - Executive Advisor,
BIG KAISER Precision Tooling*



Workforce development is not a linear path, but a circular and continuous one that looks different for every company. What is certain is that it needs to be a sustained effort supported by management and staff alike. Join this session with Chris Kaiser, found of BIG KAISER Precision Tooling, for his insights on the importance of action and commitment to youth and employee engagement. Over the past 30 years, Chris has grown his company into a global supplier of premium tooling, while also actively engaging with schools, community groups, local government, and trade associations to grow our next generation workforce.

Breakout Session 2:
OSHA Regulations, COVID Impact and Safety Trends in Manufacturing

*Wes Maertz - Technical Safety
Consultant, Grainger*



This session will address three main topics: OSHA regulatory update, COVID impact on the metalworking industry, and safety trends in the machining and tool industry. An examination of current OSHA rule regulations will be explored with emphasis placed on the latest status of a federal Emergency Temporary Standard (ETS) for COVID-19 as well as OSHA's Site-Specific Targeting (SST) inspection program. The effect of the pandemic on the metalworking industry will be explored, including changes that have been made to metalworking operations and what the future may look like. Finally, safety trend insights will be provided that will help target injury prevention efforts.

Breakout Session 3:
How to Win Business Virtually
*Gabe Draper - Chief Prospecting
Officer/Cofounder Factor*



This seminar will show you tactics, technology, processes, and strategies that will enable you to identify potential customers and manage outreach, pipeline development, quoting, and account management to help you continue to grow your business.

Breakout Session 4:
Overview of the Intelligent Machine Tool
*Dr. Scott Smith - Group Leader for Intelligent
Machine Tools at Oak Ridge National Laboratory*



This presentation will highlight recent research and development activities of the Intelligent Machine Tool Group at Oak Ridge National Laboratory. The group focuses on creating, developing, and deploying all kinds of technologies related to the design, construction, programming, monitoring, and use of machine tools. The group improves performance of existing machine tools, designs and builds new machine tools, and expands the application space for hybrid machines. Research in machine tools pushes the boundaries in machine dynamics, machine and process design, control, precision, and hybrid manufacturing.

Lunch & Bonus Presentations 12:30 PM-2:00 PM

Industry Roundtables 2:00 PM-3:30 PM

Connect peer to peer and discuss what's happening in your shop. These roundtables allow for open dialogue to learn best practices, get answers to your most pressing questions or needs, and share your pain points. Our Industry Roundtables will provide you with takeaways and proven solutions that you can take back and apply in your shop immediately. The newly reformatted roundtables remain a highlight of our conference and provide the opportunity to connect with more great shops throughout the country.

Networking Break: 3:30 PM-3:40 PM

General Session 1: 3:40 PM-4:30 PM
Congress, the White House, and Manufacturing

Daily Peer to Peer Debrief: 4:30 PM-5:00 PM

Stick around in NTMA Connect and spend some time with your peers as you reflect on all of the information you absorbed throughout the day.

This extra time will allow for:

- Connecting Conversation
- Meaningful Discussions
- Bonus Time to Meet With our Speakers

March 30, 2021

General Session 2: 10:00 AM-11:00 AM
Innovate or Evaporate

Networking Break 11:00 AM-11:10 AM

Breakout Sessions 11:10 AM-12:00PM

Breakout Session 1:
A Marketing Opportunity - How to Thrive on the Other Side of Crisis & Recession
James Soto - Founder & CEO, Industrial



NTMA brings James back to his custom manufacturing roots to share his point of view that content creators must make their way of doing business obsolete before generational, technology, market forces, or the competition does. This must-see session will dive into the winning and losing moves manufacturers and industrial suppliers make as leaders, marketers, and sellers that determine if they will thrive, hold serve, or get left in the dust during times of crisis and recession. You will take away the winning and losing playbooks manufacturers have used for decades and the marketing and sales actions you can take right now to thrive on the other side of these challenging times.

Breakout Session 2:
The Benefits of Investing in Your Manufacturing Workforce
Adam Beckerman - CPA, Partner-in-Charge, Manufacturing & Distribution Apria



Your aging workforce can tell you firsthand how technology is changing faster than ever. Automation, robotics, the IoT and other new technological advancements require skills that all of your employees will need to learn in order to be implemented to improve the bottom-line success of your shop. This session will provide the strategic benefits of developing a cohesive workforce, where multiple generations are encouraged to learn from each other, and how that will create a more effective team that's in tune with the future of the industry. In addition, you will learn about the government grants and tax breaks that are available to entice and help you pay for training all of your workers.

Breakout Session 3:
Leveraging Data to Improve Shop Floor Efficiency Levels
Jim Kosmala - Vice President of Engineering & Technology, Okuma America Corporation



Every shop owner knows that shop efficiency levels have a direct correlation to shop revenue levels. Measuring true efficiency can, however, be a challenging task for virtually any shop manager. The good news is that equipment utilization levels no longer have to be a mystery, thanks to modern data collection and visualization tools. Turn data into knowledge that can ultimately lead to process improvements on your shop floor.

Breakout Session 4:
The R&D Tax Credit & Manufacturing
Tyler Noesser - Technical Director, alliantgroup



As the U.S. economy begins to reopen, manufacturers and business owners are looking for ways to accelerate recovery. There are government incentives available to you because of the services you provide here in the U.S. Join Tyler Noesser, Technical Director from alliantgroup for an informative session on the latest updates to powerful tax credits and incentives for job shops, fabricators, and manufacturers. Tyler will walk you through the Research and Development (R&D) Tax Credit and why it applies to you, the latest changes to the tax code from the IRS, and how you can qualify for these critical credits and incentives.

Lunch & Bonus Presentations: 12:00 PM-2:00 PM

Roundtables - Role Specific: 2:00 PM-3:30 PM

These roundtables are focused on a specific topic/role within a company - moderated by an expert facilitator for each of those areas. This is a great opportunity to engage individuals from your business who would not normally attend industry conferences! Roundtable focuses will include:

- Sales and Marketing
- Technology
- Emerging Leaders
- Human Resources
- Workforce Development

Networking Break: 3:30 PM-3:40 PM

Closing Keynote: 3:40 PM-4:40 PM
Smart Manufacturing and Your Company in 2021

Networking Break: 4:30 PM-4:40 PM

Daily Peer to Peer Debrief: 4:40 PM-5:15 PM
Stick around in NTMA Connect and spend some time with your peers as you reflect on all of the information you absorbed throughout the day.

This extra time will allow for:

- Connecting Conversation
- Meaningful Discussions
- Bonus Time to Meet With our Speakers

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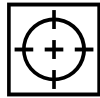
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Emerging Leaders Rising - 2021 Class Nominations

We are now taking nominations from managers and supervisors of talented manufacturing professionals who show leadership promise for the future of the manufacturing industry to be selected for the EL Rising 2021 class. Up to 15 individuals will be selected to join the EL Rising 2021 class, offering them an opportunity to connect with one another, gain valuable recognition, and develop their skills and knowledge throughout the year.

The selected individuals will be recognized in the July issue of *The Record*, with their photo, professional information, and their accomplishments.

The EL Rising 2021 class will be invited to attend **Engage 2021** at a special rate and will be recognized on stage during the awards ceremony. They will also be invited to attend the 2021 Emerging Leaders Conference, where they can continue to grow and learn in this great profession.

Nominations for the EL Rising 2021 class are open to all regular members, including our National Associates. **The process to nominate is simple:** Email Kristen Hrusch (khrusch@ntma.org) with the following information by **Friday, May 14, 2021**.

- *Name of nominee*
- *Company name*
- *Contact information for nominee*
- *Achievements and contributions*
- *Any additional information that is pertinent*

The group will be notified by the first week in June, in order to obtain more details for the July issue of *The Record*.

Please do not delay - nominate your outstanding Emerging Leaders today!

NTMA Business Conditions Report Now Available

The latest NTMA Business Conditions Report, dated December 31, 2020, is now available! This report covers the second half of 2020, including projections for the first half of 2021 and a geographical “snapshot” of business trends and conditions in the special tooling and machining industry.

We offer the Business Conditions Report twice each year to help you understand where your best opportunities may be, and what you may expect to face in your business. The report contains survey

results gathered from contract manufacturing companies—your peers—broken down by industry segment and geographic region, with comments and insight into current and expected business conditions. Information was gathered from 122 NTMA member companies - up from 111 from the prior report in June 2020.

Results indicate that overall business conditions during the 6-month period ending December 31, 2020 were “Good to Excellent” for 55% of respondents, up

from the previous report of 39% ending June 2020. Looking ahead, 58% are projecting that the next six months will bring a “Moderate-to-Substantial Increase” in business conditions, up from 46% ending June 2020. Of all the companies participating, 83% are actively soliciting new customers.

We appreciate our members' support of this benchmarking survey. **You can access the December 2020 Business Conditions Report at: <https://ntma.org/resources/reports/business-conditions/>**



Cybersecurity Certification for Machine Shops That Work With the Department of Defense



Cybersecurity Maturity Model Certification is the new cybersecurity requirement for contractors already required to comply with NIST SP 800-171, per DFARS 252.204-7012. The DoD is now holding contractors accountable, instituting an assessment and reporting system to verify compliance before new contracts can be awarded. While the new requirement is for information to be provided prior to contract award, in addition, the DoD encourages affected contractors to begin their self-assessments immediately. The best way to ensure that your company remains viable with its DoD contracts is to work toward CMMC Certification. To learn the details about what is required to achieve certification, view the CMMC guide.

About Core Business Solutions, Inc.

We are ISO and Cybersecurity consultants. Our dedicated, expert consultants set us apart. Core Business Solutions offers customized, simplified consulting services for small businesses seeking CMMC, ISO 9001, and related standards. American-owned and operated, we are committed to strengthening and improving America's small businesses.

Core provides consulting, documentation, training, and auditing support for customers who are already certified as well. We created and continually update our CORE Compliance Platform which is used for

implementation and maintenance of ISO, AS, and CMMC standards.

As an NTMA member, you receive added value from Core. **You receive a 5% discount for consulting programs** and also have access to online training for your QMS for many popular standards for machine shops such as AS9100 ISO 9001, ISO 13485, CMMC, and more. We offer a 2-for-1 price for all NTMA members for online training.

For more information visit www.thecoresolution.com or email info@thecoresolution.com.

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Helping Fill the Skills Gap



NTMA Mechanical Aptitude Test

A powerful tool to help you identify and hire the right people for the role.

NTMA's Mechanical Aptitude Test was developed in consultation with industry experts to assess the understanding of basic mechanical principles, along with the applications of those principles to everyday shop situations. The test is a great tool to assess applicants who may have limited experience, but have the capacity to pick up on-the-job training and learn the position quickly!

Test Sections include Mechanical and Spatial Relations, Mechanical Reasoning, Applied Mathematics and Theoretical Reasoning

For more information, visit <https://ntma.org/programs/workforce-development/mechanical-aptitude-test>.

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