
MEET OUR NATIONAL ASSOCIATE MEMBERS: MEMEX, INC.

MEMEX President & CEO David McPhail discusses the importance of emerging leaders, IIoT and what members can gain from their MERLIN communications platform. — p. 20

COMPUTER NUMERICAL CONTROL: CNC FACEOFF

CNC technologies have rapidly advanced. When selecting a CNC, consider faster program processing, easier integration and use, tooling speed and other tips from this 18-point checklist. — p.21

10 MUST DO'S FOR SMALL AND MEDIUM SIZED MANUFACTURERS

These are the 10 common “must do’s” that enable manufacturers to cut costs, operate in a lean and efficient manner, and maintain a commitment to excellence. — p. 23

STRATEGIES TO RETAIN YOUR BEST EMPLOYEES IN 2016

Employers, take note! A new Career Builder survey found that 21 percent of employees plan to leave their jobs in 2016. — p. 27



NETWORK AND BE INSPIRED: 2016 MFG MEETING

SEE PHOTOS AND SUMMARIES FROM THE 2016 MFG MEETING IN PALM DESERT, CALIFORNIA, AS WELL AS AN INSIDE LOOK AT THE CHAPTER LEADERSHIP SUMMIT HELD IN MARCH. — PP14-19

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Contact Tiffany Bryson at tbryson@ntma.com



PRESIDENT'S UPDATE

DAVE TILSTONE / NTMA PRESIDENT

The Internet of Things (IoT) is getting great press coverage with numerous well-known consumer brands offering “intelligent” devices. All sorts of products have the ability connect to the internet and interface with your phone, tablet and computer. From washers and dryers that can determine the wash and dry cycle, to light bulbs and door locks that come on and open your door when you arrive home are now common. It's not only trending in consumer markets, though; If you attended the MFG Meeting, you were fortunate to hear the spectacular key note speakers Mickey McManus and Richard Mason explain that over a trillion devices will be connected in five years. By 2025, Mickey noted that sales of connected devices will amount to \$11.1 trillion. For the consumer, it offers a variety of ways to make life easier and more efficient. You will no longer have to worry about your grocery list including all the things you need; Your refrigerator and pantry will create the list for you, and more than likely these items will be delivered to you before you run out of them.

Intelligent devices with sensors and internet connections in our homes aren't anything new. Nest, best known for their “smart” thermostat that “learns” the temperatures you find comfortable, automatically adjusts your home or office heating and cooling system when occupy the space. Likewise, it helps you save energy costs by adjusting the temperature when you are away. If you chose to monitor and adjust your thermostat while you are away or in another room...no problem, there's an app for that.

The main points of Mickey's speech at the MFG Meeting included the importance of a significant trend that's developing that combines digital manufacturing with machine learning (AI - artificial intelligence). The inclusion of digital manufacturing in precision machining will accelerate as more and more sensors become common place with the equipment you purchase. Most of you have

on-machine gauging but newer equipment has sensors that help predict end of useful life for key components such as spindle bearings. Vibration and acoustic sensors help improve productivity by fine tuning the machining process and improving tool performance. Other sensors can help diagnose machine problems and assist with root cause analysis, etc. As prices of sensors continue to drop, the size of the sensors keep getting smaller and smaller leading to more applications for data gathering. When sensors gather information from the machining process and feed this back to the “intelligent” controller, adjustments can be made on subsequent parts and/or future orders.

MT Connect has been leading the way with assisting manufacturing facilities of all sizes collecting data from machine controls. Gathering the data is no longer the issue per se, however interpreting the information and presenting it in a meaningful way has now become the focus. Two of our National Associates, Memex and MachineMetrics, provide software solutions to help you interpret and present the data as dashboards and/or key performance metrics. The improvements made by monitoring and managing data are startling. As I travel to shops that have implemented these solutions, a ten (10) percentage point improvement in machine up time is often realized. That's a significant boost to your capacity, and when implemented across many machines could postpone the need for additional equipment.

With the advent of sophisticated software and access to broader and faster networks, AI will be leveraged to utilize the immense amounts of data and offer continuous improvements to your machines and therefore your business. One commonly publicized AI application involves machine versus the best chess players in the world. IBM has developed machine intelligence to out-smart the brightest minds of chess by continuously improving the chess game algorithm. Mickey's

speech noted that math will replace mass. Mass, in this case, means human capital that is currently utilized for problem solving and continuous improvement; the more data and the better the algorithms, the better the results from the machine.

As the machine intelligence improves, you can redirect your resources to new processes and products. Just as important, you can do a “post mortem” on the parts you shipped and develop a new and improved process that could increase your bottom line. AI will take simulation to a new level regardless of the CAM software you now use. Computer Aided Process Planning (CAPP) is an ideal application for AI and will dramatically change how parts are processed in your shop. Stay tuned for more on this subject.

With all of the connected devices and sharing of data that experts predict within the next few years, there are risks you need to understand and mitigate as much as possible. As outlined by Mickey and the other keynote speaker, Richard Mason, intelligent and connected devices in consumers' homes and at businesses make us more and more susceptible to hackers and fraudulent behavior. Richard's research indicates that 30 billion devices will be online by 2020. Protecting your data will be paramount, as Mickey noted. No data connection is totally secure, so Richard recommends that the liability resides with you. Looking at your data and identifying unusual occurrences may be an indication that someone has hacked into your system. A simple example, but one that rang true with us at NTMA headquarters, was an attack on our website. Credit card thieves were using our website store to verify the validity of stolen credit cards. We discovered this when we saw an unusually high number of PayPal charges. Each time they attempted to verify a stolen credit card, NTMA was charged a transaction fee by PayPal.

Making sure you think through all the po-

CONTINUED ON NEXT PAGE

THE RECORD

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tential issues with connecting your business to outside sources is going to be one of the most important decisions you will be making. The liability of these choices resides with you. Richard used the term “Security Hygiene” to emphasize the need for businesses to think through their connection strategy and the challenges it presents.

In closing, Richard mentioned that all businesses should have \$5 million of cyber insurance and every company should have a Mobile Device Management (MDM) strategy. As more and more mobile devices are used on the shop floor, securing the data and who has access to it will be top of mind as part of your Security Hygiene.

If you didn't attend the MFG Meeting, you missed out on one of the best confer-

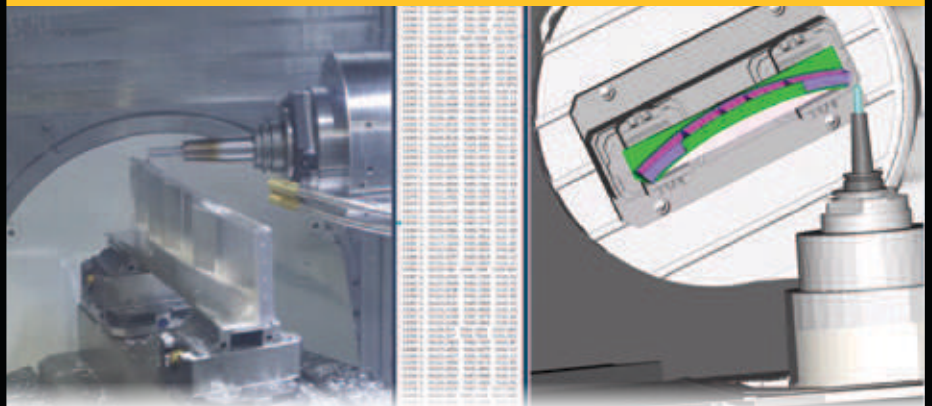
ences focused on key trends and technology that will impact you and your business. One of the most important reasons to attend NTMA national conferences is FoMO (Fear of Missing Out) but one of the critical success factors to your business is anticipating how technology will affect your business. Please plan on attending the Fall Conference, October 12th through the 15th in Charlotte, North Carolina!

DAVE TILSTONE / NTMA PRESIDENT

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CHAIRMAN'S CORNER

HERB HOMEYER / NTMA CHAIRMAN OF THE BOARD

I cannot believe it is April already. What a fantastic end to 2015 and start of 2016. We ended a great 2015 with the NTMA Fall Conference where members had the opportunity to share ideas, discuss current issues and plan for the future. The technology presentations, knowledge bars and key note speaker enabled our members to take back the latest technology innovations and ways to maximize leadership within their companies. And now we've started 2016 with a successful Chapter Leadership Summit and MFG Conference.

Chapter Leadership Summit, held February 29 through March 1, fostered a learning and team building experience for all. The Chapter Leadership Summit survey rated speakers and content at an all-time high. Team t-shirt designing and 1980's NTMA style team scavenger hunt at the Hard Rock resulted in nearly 100 percent participation. Thank you to Torree Pederson, Kelly LaMarca, Kristen Hrusch and the NTMA staff for making this a fun event.

The MFG location and speakers were

the best rated yet. Palm Desert Marriott Resort offered the perfect weather, easy access to conference events and the perfect setting to enjoy some down time. The lineup of speakers held information for everybody, from topics like building trust between current and future leaders; encouraging leaders to think outside the box and reach beyond their comfort zone to see new opportunities; researching the trends and connect the disconnects; and dispelling the fallacy that people can perform best under pressure. All of these sessions gave the audience much to think about. Members left the economist Alan Beaulier with hope that manufacturing will continue to improve. More sobering yet necessary were the eight strategies for increasing cyber security. The most talked about session was the dynamic speaker Titan Gilroy with his personal story going from a prisoner to a student of the NTMA training center, then on to owning his own manufacturing company and having his own TV show. Mel Robbins left the audience empowered with tips on how they could reach

their full potential and become the leaders they want to be. A special thank you to Paul Bonin in leading the charge for the PAC fundraising; PAC earned record funds for the 2016 election cycle. Dave Tillstone shaving off his mustache brought in \$10,000—thank you, Dave. Many kudos go to the staff and all the attendees.

Finally, I would like to thank the staff and all who participated by filling out the Strategic Planning survey and being part of the focus groups. From the survey, three words continued to pop up: Networking, Advocacy, and Learning. These have become the focus of the new five year strategic plan to steer the association toward the future.

HERB HOMEYER / NTMA CHAIRMAN



BUSINESS CONDITIONS REPORT: WHAT'S TRENDING IN THE INDUSTRY?

Business Conditions Report: What's Trending in the Industry?

This NTMA Business Conditions Report covering the second half of 2015 is now available. This report also provides a projection for the first half of 2016 as well as geographical and industry segment "snapshots" of business trends and conditions within the industry.

This Report, based on information from 126 NTMA member companies, indicates that overall business conditions

during the 6-month period ending December 31, 2015 were Very Good to Excellent for only 16% of respondents. Current business conditions were considered Good by 38% of respondents. Looking ahead, 40% are projecting that the next six months will bring a moderate-to-substantial increase in business conditions.

Average work week per employee slipped to 42.6 hours. Future work on the books increased from 14 weeks to 15 weeks. And, Average Sales per

Employee came in at \$127,316 – only slightly less than reported in June.

There was a slight shift in top business priorities, with Finding New Customers moving ahead of Finding Skilled Employees:

- #1: Increase Sales
- #2: Increase Productivity
- #3: Finding New Customers
- #4: Finding Skilled Employees
- #5: Cost Reductions
- #6: Leadership Staffing

A special thanks to the 126 NTMA member com-

panies that participated in the December 2015 NTMA Business Conditions Report. We appreciate your support of this important benchmarking survey and encourage non-participating members to join the next survey in June. The full report is available to members only and can be downloaded from our website at www.ntma.org. After logging in, click on Resources>Reports>Business Conditions Report.



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LORI ALBRIGHT, STELLAR PRECISION COMPONENTS

TELL US ABOUT YOUR COMPANY:

Stellar Precision Components is an Aerospace and Defense contract manufacturing company. We support Aerospace in both production and R&D and are currently producing components for the Boeing CCTCap Crew Transport Capsule and the United Launch Alliance Atlas V Rocket. On the Defense side, we produce hardware to support the Hellfire, 9X Sidewinder and Stinger Missile systems (along with many other programs). I am the current Owner/President. In addition to oversight of the entire enterprise, my specific roles are Customer Relations and Business Development.

WHAT BROUGHT YOU INTO THE MANUFACTURING INDUSTRY?

Definitely being in the family business. It's always been interesting to me to see how things are made. Stellar was founded in 1978 by my father Mike Vucish, Senior. At the time, we were a machine shop that primarily serviced other shops in a subcontracting role. I first came to work for him right out of high school and was responsible for office duties. I benefited, having been mentored by him and other people he worked with in the past to learn the business from the ground up.

WHAT MOST INTERESTS YOU ABOUT THE INDUSTRY?

One of the positions I held here for quite awhile was Procurement, which allowed me to really learn about many parts of the industry. I found metals to be a fascinating subject. We work with so many different grades and conditions; to know how these behave during different processes and applications is really intriguing. The Aerospace industry in general is amazing. I have such admiration for innovative people, and it's exciting to bring their ideas to fruition. To see how these parts are being used is something I love to share with our employees as well. It gives everyone a sense of purpose and pride in what we do.

WHAT HAS YOUR EXPERIENCE IN THE INDUSTRY BEEN, AND HAS YOUR GENDER PLAYED A ROLE?

Generally, my experience in the industry has been positive. My customers know that I've been here for 38 years and that I'm not just a figurehead in the company. When you are second generation, I think there is some degree of uncertainty with employees and customers that wonder if you are now in charge simply because you are the child of the owner. It was somewhat of a challenge early on, but once you demonstrate that you know what you're doing, the doubters are satisfied that you have earned the position.

Occasionally when I am in a more social business setting accompanied by one of my male managers, when meeting people for the first time,

I'm thought to be his wife. It's still a bit of a surprise to some when I identify myself as the Owner/President of the company. I mostly laugh about it but it shows that there are still many assumptions made about a female in this industry.

HOW HAVE YOU SEEN THE INDUSTRY EVOLVE SINCE BEING A PART OF IT?

Stellar is an AS9100/ISO 9001 certified company which imposes a great deal of emphasis on the quality aspect of the manufacturing process. Though quality was always a critical component of what we deliver, the third party accreditation has streamlined the process for our customers.

The advent of additive manufacturing has made a significant impact in recent years, and traditional manufacturing technology continues to improve. Machine tools have so much capability now that enables us to do more with less. Inspection techniques and equipment are affected, too. We are currently implementing a laser scanning device that will allow us to perform a laser scan on a part, take about 7 million data points, match the requirements to a solid model file, and report the dimensional characteristics in seconds.

HOW DO YOU HOPE TO SEE THE INDUSTRY EVOLVE IN THE NEXT DECADE?

During the early days of the company, we could select apprentices from a large pool from local high schools and technology centers. I'd love to see young people once again involved in a skilled trade. As technology and education ad-

vances, it will be interesting to see the impact on Aerospace and Defense. Developing a skilled workforce is the critical to the sustainability of our industry.

I have a son and nephew in the company and it's my hope that the manufacturing sector will continue to strengthen as they manage the company in the next generation.

WHAT ADVICE DO YOU HAVE FOR EMERGING LEADERS AND FEMALE STUDENTS INTERESTED IN MANUFACTURING AND STEM CAREERS?

I am involved in Manufacturing Day activities in our local community college (WCCC - ATC). This program focuses on reaching young women in the area high schools to let them know about jobs in the Manufacturing Sector. These are not limited to Aerospace and Defense, but in manufacturing of all types. Most of these young women aren't aware that these careers exist. I'm not sure I would have if my father hadn't been an entrepreneur. Many local women in manufacturing support this effort and take the time to describe our experiences, let them know that careers exist in these fields and to encourage them to investigate the opportunities. We invite them to visit our companies and to contact us with their questions about how they can best prepare for a job in our industries.

WHAT NEW TRENDS DO YOU SEE IN THE INDUSTRY?

Thoughts return to additive manufacturing (3D printing) and improvements in the traditional manufacturing

technologies. Stellar replaces equipment frequently to stay competitive. We also send our people to events such as the IMTS Tool Show to learn about new developments in tooling and work holding. We encourage our people to continue education and reimburse their tuition to keep our workforce knowledgeable.

HOW DOES YOUR COMPANY SUPPORT INDUSTRY INITIATIVES?

We are very involved with the local technology center and have employees there now that are learning new or honing/refreshing their skills. We have sponsored apprentices through the NTMA program and I'm proud to say that in recent years, our apprentices have taken first or second place in the skills competition every single time we have been a part of it. That accomplishment speaks to the commitment of the entire workforce. Passing along that knowledge

is the best education for these individuals.

We are always looking for the best people with the drive to learn and contribute. We encourage candidates of all backgrounds to explore careers in manufacturing and would be honored to have them choose Stellar as their workplace.

ARE YOU INVOLVED IN GROUPS OR ASSOCIATIONS FOR WOMEN IN MANUFACTURING?

I am a member of the Woman President's Organization, a national nonprofit formed to improve business conditions for women entrepreneurs, and to promote the acceptance and advancement of women entrepreneurs in all industries. I participate in Women Leaders in Aerospace - a group dedicated to furthering the communication and networking abilities for women in leadership roles with past or present

aerospace or defense experience. I am also active with a small peer group of CEOs of manufacturers, some of which are women, to share best practices and facilitate problem solving discussions.

WHAT BROUGHT YOUR COMPANY TO THE NTMA AND HOW ARE YOU ACTIVE WITHIN THE ASSOCIATION?

We have long participation in the apprenticeship program and education that the NTMA offers. I am sure that is how we came to membership many years ago. Currently we continue to support that program to develop Journeyman Machinists. We are also involved in the BOTS IQ program, with a seat on the board, volunteering at the annual events, sponsoring and partnering with local high schools to develop their robot and support their teams.

FINAL THOUGHTS:

I'd just like to share my admiration and respect for wom-

en like Linda Hudson, the first female CEO in Aerospace (BAE); Marilyn Hewson, the first female CEO of Lockheed Martin; Eileen Drake, the female President and CEO of Aerojet/Rocketdyne. I work with many women in our customer base that are also very talented. All are incredible examples of women in the Aerospace industry and true pioneers and role models for young women interested in STEM.



If you would like to be featured in our NTMA Women in Manufacturing series, contact Nikki Hunt at nhunt@ntma.org for more information.



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NTMA MEMBER COMPANIES COLLABORATE FOR TECHNOLOGY ADVANCEMENT



In their 26 years, Homeyer Precision Manufacturing has taken on some of the most demanding industries and jobs. Perhaps the most precise yet is among today's production lineup at the 63,000 sq. ft., Marthasville, MO shop – bi-polar, aluminum-based forceps used by neurosurgeons performing brain surgeries.

It goes without saying, the forceps must meet exacting standards and the machining setup had to maintain consistent precision through production runs in the thousands.

As the product gained popularity, demand from the customer grew and so did the strain on Homeyer's production. The setup at the time required increased monitoring at roughly part 1,800. Because of runout, the end mill would lose its integrity, producing junk parts in the range of 2,200-2,400, requiring frequent tool changes by the operator and hampering productivity.

This wasn't sustainable. The customer's previous manufacturing process couldn't keep up with demand, driving them to switch to Homeyer in the first place, and the shop wasn't about to fall victim to a similar move.

One of Homeyer's guiding principles is to take advantage of the latest and greatest technology, but the idea for improving this process came to them in a rather unconventional way.



This Mega New Baby Chuck will soon be reunited with some of its siblings once Homeyer folds in more BIG KAISER tooling after they proved out what they promised

Herb Homeyer, who founded the shop in 1990, is Chairman of the NTMA, which afforded him the opportunity to go on the organization's European Tech Tour in February of 2015. Two of the stops in Switzerland were tooling manufacturer BIG KAISER and coolant producer Blaser Swisslube. The twin visits got Homeyer thinking about a combination of new tooling and a different coolant solution could improve productivity.

When he returned home to Missouri, Homeyer in-



BIG KAISER's New Baby Collets are each inspected twice for accuracy and then stamped "AA", certifying a guaranteed 1-micron runout at the collet nose

vited Blaser Swisslube and BIG KAISER USA's VP of Sales and Engineering, Jack Burley, to his shop to specifically discuss the medical cell that produced the forceps. After examining the setups, Burley immediately thought of his BIG Daishowa product line and the new Mega New Baby Collet Chuck.

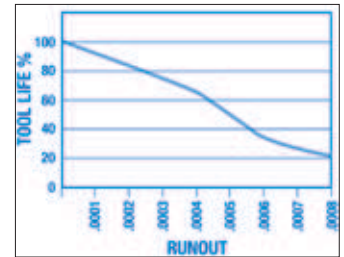
What he found was the setup on the Okuma Space Center MB-5000H HMC was sound, and a Blaser coolant solution now tailored to Homeyer's needs. Burley was confident the holder's BIG-PLUS® dual contact system and AA-grade New Baby Collet with guaranteed <3-micron TIR at 4xD would improve performance

of the 1/8" solid carbide two-flute end mill used to machine most of the forceps' critical features, and would boost productivity, economic efficiency and machining quality.

They ran a few tests with the new setup and the results were dramatic. The new holder and coolant solution improved tool life by 300%, allowing production to go unmonitored or interrupted for a much longer period of time. Instead of having to keep an eye on the job at part 1,800, there was now no deterioration in finish until beyond 7,000 parts.

"Not only do the tools last longer, but the end product is even better," Tim Wetzel, general manager at Homeyer, says. "The holder is highly precise and accurate. The gains we've achieved will ensure this product stays manufactured at Homeyer, no matter how much demand grows or how quickly."

Wetzel and the team have been so pleased with the tooling change that they've made the decision to use more of it in other operations. "We'll be changing more tooling to BIG KAISER, starting with the highest usage tools first," he says.



Polls have shown that .0005" is considered by most as acceptable runout. However, as the chart shows, that will generally only get you 50% tool life – a very expensive compromise in order to save a few dollars upfront by purchasing a mid- to low-grade tool holder that will actually cost you thousands of dollars in the long run

In keeping with its motto—"Processes simplified. Problems solved. Precision achieved."—the downstream effects will have the shop running a lot differently once the plan starts coming to life.

"We feel once all the tooling is replaced we will be able to substantially increase our feed rates," Wetzel says. "But, in order to maximize the potential, we need to improve our fixture and workholding. Once that's done, we expect about a 30% gain in efficiency across the board."



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OCEC BENCHMARKING STUDY

BENCHMARKING ASSESSES WHAT IS MOST IMPORTANT

If your company wants to increase profitability and continue to grow in today's competitive environment, you have to realize that sometimes even your best instincts may not be enough (and without an industry benchmark, they're only instincts). It is essential that you take the time to analyze your industry's best practices and build them into your company's business plans.

As your company sets its performance goals, you must set them within practical and workable achievement levels. Obviously, impractical and unachievable goals won't be met, and in fact might as well not be set in the first place. But, how do you know if your goals are practical and achievable? By comparing your performance to reputable industry performance targets.

The NTMA Operating Costs and Executive Compensation (OCEC) is a benchmarking process of comparing the costs of what one precision machining shop does against what another shop does. The result is a business case for making changes in order to improve profitability.

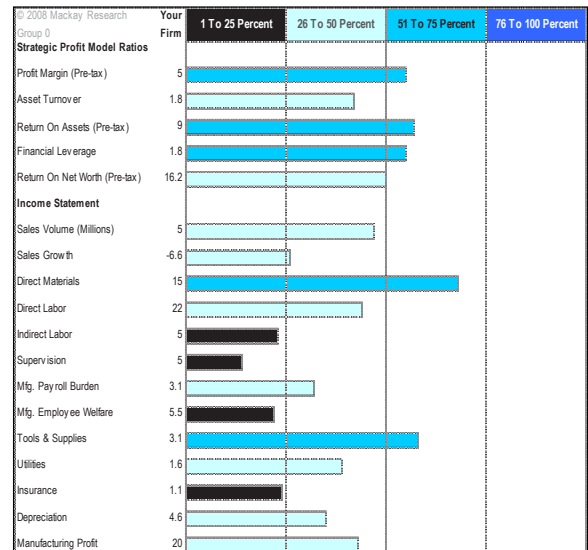
Each OCEC participant receives an in-

dividual company Financial Performance Report (FPR) analyzing your company. This report compares your financial performance to industry benchmarks, to others in the same line of business category; Tools & Dies, Molds, General Precision Machining, Aerospace Machining, Special Machines, Production Operations, and Sheet Metal Fabrication.

One of the first pages in the individual Financial Performance Report is this Scorecard graph. This page of the individual report gives you a quick, visual view of strengths and weakness and ratios to dig deeper into in the rest of the report.

In order to protect your confidential data, Mackay Research Group sends this report directly to you.


The OCEC study provides you with the tools you need to identify industry financial performance benchmarks, to identify the best practice performance based on the top twenty-



five percent of the companies in the industry, and to identify your company's strengths and weaknesses versus those industry benchmarks.

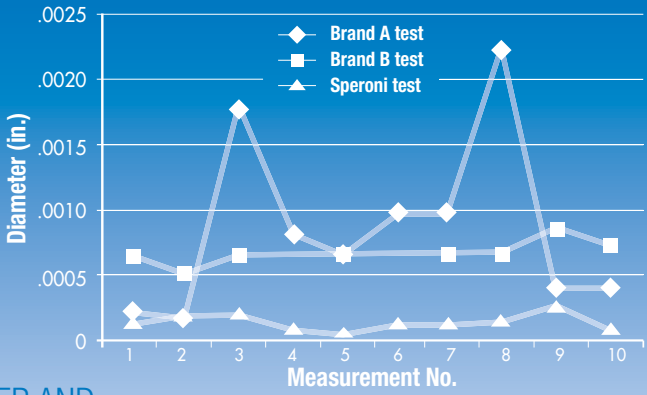
To ensure a comprehensive report, NTMA needs your participation. Be sure to send in your OCEC response by May 1st. **It's free to you through NTMA!**





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CHAPTER LEADERSHIP SUMMIT 2016

This year's Chapter Leadership Summit rocked harder than ever at the Hard Rock Hotel in Palm Springs, CA, February 28th through March 1st. Chapter leaders from across the country gathered to share ideas and participate in valuable informational sessions, such as the Traction Workshop and Star Chapter Guidelines. CultureShoc CEO Ron Kaminski also led a discussion on Building a High Performance Board, where he discussed the keys and value to be gained by transforming an effective board into a high performance board. Many NTMA Affinity Partners – including Grainger, APPI, Staples, and Heartland – were also present to discuss how members can increase their cost savings.

The Summit wasn't all work; attendees were able to network while joining forces to create team t-shirts and compete in a scavenger hunt throughout the Hard Rock, followed by dinner where the wigs and bandanas were out in full force for our 80's-themed costume contest. Congratulations to the winning team and "best dressed" award recipients, and thank you to all attendees for making the 2016 Chapter Leadership Summit so successful!



THE MFG MEETING

THE MFG MEETING: NETWORK AND BE INSPIRED

Nearly 150 NTMA members and spouses came together to network and be inspired at the 6th annual MFG Meeting held in Palm Desert, California, March 1st through the 5th. Hosted in conjunction with AMT, this year's event focused on understanding the changes shaping the future of manufacturing with topics and speakers covering everything from the digital factory and cyber security to economic and global outlooks. For more details on the speakers and presentations, visit www.themfgmeeting.com.

The MFG Meeting brings together the complete manufacturing chain for a unique conference experience packed with informational sessions, team meetings and joint celebrations. From the awards ceremony and team meetings and updates to the Manufacturing for Miles 5k and 1920's Speakeasy themed dinner, MFG offered a little something for everyone. Here are just a few highlights caught on camera!



NETWORK AND BE ACTIVE

MANUFACTURING FOR MILES 5K



GOLF OUTING



SPEAKEASY WELCOME RECEPTION



RECEPTION AND GALA DINNER



NTMA AWARDS AND RECOGNITION AT GENERAL ASSEMBLY

WILLIAM E. HARDMAN AWARD FOR EXCELLENCE IN TRAINING



Michael Pasciuto
(Custom Group, Inc., Woburn, MA)

L.A. SOMMER MEMORIAL AWARD



Grady Cope
(Reata Engineering and Machine Works, Inc.,
Englewood, CO)

NTMA HONOR AWARD



Egon R. Jaeggin
(Numerical Precision, Inc., Wheeling, IL)

TEAM LEADERS RECOGNIZED FOR THEIR SERVICE



Paul Sapra (Membership Value Team, 2010-2015)
Mike Retzer (Industry Advocacy Team, 2015)

30 YEARS OF NTMA MEMBERSHIP Michael Doyle (Doyle Manufacturing, Holland, OH)



Grainger generously sponsored the General Assembly, represented here by Kristen Chapic.



Wofram Manufacturing Presented with NTMA's
Category 1 and Category 2 Tech Awards Sponsored
by AMT

Wofram Manufacturing owner Nathan Byman was selected as the recipient of the National Tooling & Machining Association's Category 1 and Category 2 Technology Award. The Category 1 award is given to a company that displays and exemplifies Advanced Technology Development and/or Integration. This can be defined as advanced manufacturing technologies that are strategically targeted or developed in order to achieve improved results in core fundamentals such as market development, throughput, scrap and/or safety. The Category 2 award is given to a company that displays and exemplifies "Leader-Associate Partnerships for World Class Performances." The company that receives this award has leaders and employees who have found new ways of defining their roles and function as a partnership to meet company objectives and goals.

Wofram's mission is to develop and integrate manufacturing technologies to create robust processes that make manufacturing safe, reliable and competitive. These tools are not

just individual pieces of technology or lean concepts; they are part of a complete system that enables confident closed loop machining with little dependence on the skill level of machinists. These tools empower the team to monitor and adjust their own performance, management to easily observe and act on bottlenecks, and US manufacturers to realistically compete with low cost competitors on a process-by-process basis. Wofram is confident in their tools, processes and partners, and uses them successfully every day in their own manufacturing facility.

Byman formed Wofram to be a place that friends, family and like-minded individuals would want to work and feel appreciated and rewarded. The company has a strong commitment to developing the community and is very active in local high schools, colleges, and operational excellence organizations.

NTMA would like to recognize and express our appreciation to AMT for their generous sponsorship of these two awards.

NETWORK AND BE EXCITED



Meet Our National Associate Member:



with President & CEO David McPhail



WHO IS MEMEX, INC?

“From our inception in 1992, MEMEX has a long and established history in the machine tool industry. From some of the earliest memory replacement products in the 1990s to the first CNCWeb connections in 2000, to helping develop MTConnect going back to 2008, we’ve been at the forefront of manufacturing technology leadership. Our senior management team alone has more than 50 years of experience in our industry.

Since 2013 MEMEX has garnered industry accolades and market recognition from some of the largest players in both machine tool manufacturing and networking for our MERLIN IIoT communications platform. We’re proud to say that earlier this year we made a plant-wide MERLIN sale to NTMA’s Chairman of the Board Herb Homeyer for Homeyer Precision Manufacturing Co.”

WHEN DID MEMEX BECOME AN NTMA NATIONAL ASSOCIATE MEMBER?

“We decided to make this commitment in 2015.”

WHAT DREW MEMEX TO BECOME AN NTMA NATIONAL ASSOCIATE?

“Precision custom manufacturing is the core market for MERLIN, and very important business partners of ours including Mazak and Okuma are big players in NTMA. As a company we always try to punch above our weight, and a National Associate Membership in NTMA is a key way to underline our industry leadership.”

WHAT PRODUCTS/SERVICES CAN MEMEX OFFER SPECIFICALLY TO NTMA MEMBERS?

“Our flagship product is the MERLIN communications platform. MERLIN is an IIoT shop-floor-to-top-floor communications platform that provides manufacturing analytics in real-time.

Specifically, MERLIN delivers a 10%-50% average productivity increase, earns 20%+ profit improvement based on just a 10% increase in Overall Equipment Effectiveness (OEE), achieves payback in four months or less with an Internal Rate of Return, or IRR, greater than 300% and connects to any machine old or new, utilizing MTConnect, other protocols or MERLIN hardware adapters. Our motto is “no machine left behind.”

We also have a respected line of DNC network products and CNC memory upgrade products – some of which go back to our earliest roots in the 90s. The industry still needs them, and so we keep selling them. We’re the only source in the world for several of our memory products.”

WHAT INDUSTRY INITIATIVES DOES MEMEX SUPPORT?

“Emerging leaders are where we can make our biggest contribution to NTMA, as those tend to be MEMEX’s best customers. Manufacturing companies craving competitive advantage are actively seeking ways to implement machine-to-machine connectivity on their shop floors. They refer to this movement as the Industrial Internet of Things, or IIoT. By 2030, Accenture estimates that capital investments in IIoT and the productivity gains that should follow could add US\$6.1 trillion to the United States’ cumulative GDP. That’s a huge number, and IIoT represents no less than the next Industrial Revolution. With MERLIN, IIoT isn’t a theoretical construct. It’s real, and is taking shape here and now in globally competitive manufacturing companies like Homeyer Precision Manufacturing Co., Mazak, Magellan Aerospace, and Milwaukee Tool.”

WHERE CAN NTMA MEMBERS MEET MEMEX IN 2016?

“We’re lead sponsors on NTMA’s 6-day Japan manufacturing tour in April and I’m looking forward to meeting Japanese manufacturers who can deploy MERLIN on their plant floors.

We’re also offering our thought leadership services to several NTMA events this year. Before joining us in 2014, our CTO Dave Edstrom served as President and Chairman of the Board of the MTConnect Institute, where he was instrumental in the creation of the MTConnect manufacturing communications standard. He and I will be attending the MFG Meeting in Palm Desert March 2-5 hosted by AMT and NTMA.

And of course we’re supporters along with NTMA of IMTS. We’ll be at the IMTS Chicago mega-show in September with an exciting array of new MERLIN product offerings. We just announced our fourth consecutive quarter of growth that’s up over 100% of the previous year’s revenues, and with participation in NTMA,

2016 is shaping up to be an incredible year for MEMEX.”

WHAT NEW IDEAS IS MEMEX SHARING WITH NTMA MEMBERS THIS YEAR?

“We’re pushing hard on IIoT productivity that will keep wealth and jobs at home. For manufacturing companies that have OEE today, over 90% say it’s done through writing down measurements on a clipboard, then inputting those results into excel, then reporting those results on a monthly basis. But most plant managers realize this manual process, which can run through several hands, is prone to inaccuracies that cause OEE to be misstated by 50% or more and the data is not timely or actionable.

Prior to installing MERLIN, MEMEX customers have admitted that while they were running their plants 24x7, they could only produce data on 20 out of 24 hours with the clipboard-and-spreadsheet method.

Real-time data collection delivers truly objective data, allowing all employees the opportunity to stop loss before it becomes unrecoverable. As a manager, imagine being able to know minute by minute or hour by hour if you will meet your daily requirements. And not just know that, but have the ability to change the course of the day based on real-time, accurate, actionable data.

IIoT software that employs the MTConnect manufacturing communications standard capture data as it occurs from each machine and operator and provides an accurate picture of the health of any given process. If the software is called MERLIN it also offers the ability to connect machines and related assets of any make or origin and report on Overall Equipment Effectiveness (OEE). Then, lean becomes a culture of accuracy and accountability based on real time data.”

WHAT HAS MEMEX LEARNED FROM NTMA MEMBERS?

“Brian Papke, the President of Mazak, is on the record stating that based on his company’s experience, “the implementation of MTConnect is one of the simplest and fastest ways to improve productivity and increase machine utilization.” He added, ‘Mazak’s MTConnect implementation

CONTINUED ON NEXT PAGE

CNC technologies have rapidly advanced. When selecting a CNC, consider faster program processing, easier integration and use, customization capabilities, and tooling speed. Also look at CAM integration, volumetric error compensation, CNC/IT integration, motion system connectivity, simpler integration, setup, use, maintenance, and human-machine interface standardization. Prior to selecting your next CNC machine, see the following checklist based on information from CNC manufacturers.

CNC FACEOFF: 18-POINT CHECKLIST

1. WHAT'S YOUR INDUSTRY?

Are there specific needs for your application? High-production markets, such as aerospace, automotive, and medical, may

CONTINUED FROM PREVIOUS PAGE

provided the highest ROI for any capital investment because of the significant increase in utilization of equipment for a very moderate expenditure."

MTConnect is a secret sauce in implementing IIoT on the factory floor, and manufacturing leaders around the world are taking MTConnect very seriously. MTConnect has become the de-facto standard for discrete manufacturing. The reason is simple: It is far and away the most elegant, yet simple protocol that encompasses a common dictionary of terms and is supported by the thought leaders in manufacturing.

That said, there's more awareness-building work to do given that about 90% of North American shop floors still aren't taking advantage of MTConnect.

ONE LAST THING...

"My marketing guys say I'm not supposed to say this until the formal launch, but I'd encourage readers to watch our website, www.MEMEXOEE.com, over the next couple of months. We're going to be offering a very compelling freemium product to get our industry over what I see as largely a cultural barrier to real-time IIoT networking and data collection. The technology is there and it works. So we're going to make it stone simple for enlightened plant managers and engineers to show their bosses IIoT software is an implement-now/benefit-now/profit-now solution."



have different needs from others, such as wood, marble, glass, presses, grinding, cutting, or forming.

2. WHAT TYPES OF MACHINES WILL YOU USE?

Dedicated turning and milling machines may have different needs than complex 5-axis, multi-spindle, and extended bed gantry machining centers. Needs may differ for prismatic part production, mold and die work, lathes, and other areas in the machine tool industry.

3. WHAT KIND OF FACILITY ARE YOU IN?

Contract manufacturer needs may differ from those of a small job shop, for instance.

4. ARE THE CONTROLS GOING ONTO A RETROFIT OR A NEW DESIGN?

Should machine tools be constructed the same way with the same kinds of controls as they have been for decades?

5. ARE YOU LOOKING FOR JUST A CNC OR ALSO AN AMPLIFIER, MOTORS, I/O MODULES, AND OPERATOR PANEL?

6. WILL YOU USE ANY EXISTING G CODE PROGRAMMING, NEWER PLAIN-LANGUAGE PROGRAMMING OPTIONS, OR A COMBINATION?

7. DOES CNC OPERATING SYSTEM DESIGN MATTER TO YOU?

Do you want to run one or two operating systems (Microsoft Windows and a real-time operating system) on the same platform?

8. HOW MANY AXES NEED TO BE CONTROLLED?

Five-axes (and greater) machining, for complex workpieces, require high-end CNC capabilities (often for aerospace and automotive manufacturing). Note that number of axes controlled can differ from spindles controlled, and from simultaneously controlled axes.

9. DO YOU NEED TRANSFORMATION ORIENTATION FOR HIGHER SPEEDS AND USING PROGRAMS ON DIFFERENT MACHINES?

Related functions allow tool center point programming, so part programs can be processed independently of the tool length and the machine tool kinematics. Part programs also can increase speed by reducing part program size compared to a traditional point-to-point method. It also allows the same part program to run on different machine tool kinematics. Compression can help generate smooth transitions at block boundaries to ensure optimum cycle time and increase accuracy.

10. DO YOU NEED TO INTEGRATE WITH COMPUTER-

AIDED MANUFACTURING (CAM) AND COMPUTER-AIDED DESIGN (CAD) SOFTWARE?

CNC integration with CAD/CAM systems speeds time to completion and can decrease downtime between jobs.

11. WILL YOU USE SIMULATION FOR DESIGN AND FEED THE RESULTS INTO THE CONTROL PROGRAMMING?

12. WILL YOUR MACHINE TOOLS REQUIRE CUSTOMIZATION?

Open architectures may more easily support customization for flexible support across many machine configurations.

13. HOW ACCURATE DO YOU NEED TO BE?

What are your tolerances for error or deviation from specifications? Techniques such as CNC volumetric error compensation (as opposed to individual axis compensation) allow higher accuracy, favored for tight tolerances in aerospace, for example.

14. DOES INFORMATION NEED TO FLOW INTO THE IT ENVIRONMENT?

Connecting CNC with IT systems enables users to evaluate overall equipment effectiveness (OEE), exchange data with an enterprise resource planning (ERP) system, schedule preventive maintenance, monitor systems remotely, and perform other functions, helping large end users to optimize factories and facilities.

15. DOES CNC NEED TO INTEGRATE WITH OTHER MOTION SYSTEMS?

Integrating CNC with other drives and motors may ease information flow through a facility and provide a better overall view into processes and workflow.

16. DOES CNC NEED TO INTEGRATE TOOL AND PROCESS MONITORING, MEASURING AND CALIBRATION, AND OTHER SYSTEMS?

17. WILL YOU INTEGRATE CNC WITH SAFETY AUTOMATION?

18. WHAT LEVEL OF CNC KNOWLEDGE EXISTS AMONG ENGINEERING DESIGN, ENGINEERING OPERATIONS, OPERATORS, AND MAINTENANCE PERSONNEL?

Inquire about simple language commands for setup and programming, maintenance-free controls, and if wearable components are needed. Ask if human-machine interfaces (HMIs) are integrated across CNC offerings, if they are scalable, and if ease-of-use features can decrease the need for training.



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10 MUST DO'S FOR SMALL AND MEDIUM SIZED MANUFACTURERS

BY ADAM GRABOWSKI, DIRECTOR OF MARKETING, GLOBAL SHOP SOLUTIONS



The world has never seen a more competitive and accessible marketplace. Manufacturing companies must operate as lean as possible to maintain profitability and a healthy bottom line. My nearly three years at Global Shop Solutions has put the magnificence of the manufacturing industry front and center in my life. Everything around us, at some point in time, was touched by a human hand – it is truly amazing to think about. I feel fortunate that my role provides the unique opportunity to spend time with owners, presidents, and key personnel at many of our thousands of customers across the 25+ countries and 20+ industries Global Shop Solutions serves. I spend the majority of this precious time simply listening to what makes their businesses lean, efficient, and successful.

What have I learned?

Whether the company is a large project fabricator such as Arc Designs, an industrial manufacturer such as Miller Welding & Machine Company, a tool manufacturer such as Fullerton Tool, or a leading production/job shop like H&R Manufacturing and Supply, I have found 10 common “must do’s” that enable manufacturers to cut costs, operate in a lean and efficient manner, and maintain a commitment to excellence:

1. LOWER LABOR COSTS.

To compete against global competition, especially for North American or European manufacturers, labor costs must be kept to an absolute minimum. This doesn’t mean less people; it means less wasteful minutes. Speed up setup times, measure your employees, and reduce indirect labor and red time. This is accomplished by leveraging real-time data on the shop floor with touch screen graphical user interfaces (GUIs), bar coded work orders, and mobile devices. Know what your employees are doing as they are doing it.

2. CUT CYCLE TIME.

Competing means having a short cycle time and compressing the time between the sequences in your manufacturing. Some companies have been able to cut cycle time by up to 50% by automating processes and leveraging flex schedules with their manufacturing software. And since every company runs their business a little differently, automation requires a software package that can be customized through a software development kit like Global Shop Solutions GAB SDK.

3. AUTOMATE SCHEDULING AND ON-TIME DELIVERY.

Manufacturing companies that turn the corner on efficiency mostly say the same thing, “We used to spend too much time on scheduling.” Lean manufacturers do it automatically, as it saves time and frees up your human capital to spend more time calling customers, creating new ideas, and proactively managing the business. And since every manufacturer has different processes, machines, and philosophies, the increased efficiency from automating your scheduling requires customization.

4. AUTOMATED PURCHASING.

The most successful manufacturers I speak with rely on automated purchasing so they know when to buy parts and in what quantity. The guessing game disappears, and the manufacturer can spend most of their time improving price and delivery, decreasing inventory, and reducing obsolescence. Automation requires customization. Do I sound like a broken mp3 file yet?

5. QUICK AND ACCURATE QUOTING.

The more jobs you can quote and the more accurate those quotes become, the more jobs you win. It’s that simple. If you are an efficient manufacturer, winning jobs means profit and margin. The successful and efficient manufacturers I speak with take all the guessing out of the quoting process by using an automated system for pricing and quoting anything they are manufacturing. Again, since every business is different the automation of your quoting requires customization of your manufacturing software.

6. ONE INTEGRATED SYSTEM.

Lean manufacturers manage the entire manufacturing process with a single integrated system that handles all aspects of their business from quote to cash. Data is entered into the system or captured by the system one time and one time only. The information then becomes available, or is pushed to anyone in the company at any time, based on system security and permissions. The integrated system approach puts all employees on the same page at the same time with the same information. As one customer put it, “You don’t order cable, Internet, and phone from three different companies when you can find one trusted partner that can do it all – and do it better.”

7. SPREADSHEET REDUCTION.

It’s a little known secret that most manufacturers want to be tree huggers. Paper on the shop

floor is slow. The more paper and spreadsheets on the shop floor the more hunting, pecking, and lost time. Lean manufacturers reduce paper and spreadsheets. The integrated system notifies employees which job to run next, or the employees view real-time dispatch lists on the shop floor, leveraging a product like TrueView™. No more asking supervisors for directions or hunting down paperwork. All the information regarding the next job is available at the touch of a button, click of a mouse, or glance at a screen. Every manufacturer is different, and the greater the degree of automation and paperless(ness), the more customization you need from your business software.

8. ACCURATE INVENTORY.

Inventory often represents a “black hole” for cash flow. The most efficient manufacturers protect cash flow by knowing their inventory. Moreover, they integrate their inventory with all the other processes so they can manage it in a highly efficient and effective manner. This requires a single integrated system (re: point 6).

9. DELIGHT CUSTOMERS.

Repeat orders happen when customers are serviced truthfully, quickly and accurately. When customers call or email to inquire about the status of an order, the last thing they want to hear is, “I will have to check on that.” Lean manufacturers use a single integrated system and mobile CRM application to put all the information at the employee’s fingertips so they can instantly answer customer inquiries and resolve problems.

10. CONSTANTLY MEASURE YOUR BUSINESS HEALTH.

A fever is typically an indicator that your body is fighting an infection. If noticed early enough, you can limit the spread of infection and the impact to your day-to-day life. The healthy manufacturing customers I speak with all require the same awareness in their business. Each of them relies on Key Performance Indicator (KPI) dashboards to get in front of money-making opportunities and money-draining challenges before they happen. Measuring your business health through KPIs enables decision makers to:

- Practice evidence-based management
- Predict future actions and results
- Eliminate management by fire
- Encourage changes in thinking and actions

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WHY AREN'T WE PERFORMING AS WELL AS WE SHOULD?

BY MICHAEL CANTY, SYNERGY RESOURCES



This is a question often asked by manufacturing organizations that know they have improvement potential but don't necessarily know how to go about maximizing it. Manufacturers can minimize costs and increase operational stability by focusing on the primary areas that influence performance: production, inventory, supply chain management and those dreaded (but real) overhead costs associated with general and administrative activities.

Rising manufacturing production costs continue to have a negative impact on profits in business today. Prices for raw materials, water and transportation costs have seen increases causing gross margins to decline, inventory values to increase and unwanted constraints to cash flows. And although energy costs have declined, market volatility is still a real reason for concern in the industry. Meanwhile, health care costs are skyrocketing, adding to the cost of employee salaries and other paid benefits businesses. All of these factors combined are leading to declines in net profit for many organizations.

So how do manufacturers combat these problems which can soften demand for their products and continuously put pressure on margins? The simple answer scares many businesses in today's manufacturing sector. It's change! But not just any change, it's the right change.

By looking at new ways to improve manufacturing resource productivity and by improving business process efficiencies on the production floor and in the "business office", companies are seeing dramatic improvements in their gross profit, cash flow and net profit. In addition, workers are shown to be more enthusiastic, engaged and positive when they are allowed to participate in continuous improvement programs that leverage all the benefits of Lean, Six Sigma, and TOC (Theory of Constraints).

SO WHY ISN'T EVERYONE DOING THIS TODAY?

1. Fear of change – Sometimes it takes a leap of faith...
2. Failure to set clear goals and objectives before you start – Proper measuring motivates good people...
3. Internalizing the program start-up responsibility – It is always harder to do it yourself...

"WE CREDIT SYNERGY AS ONE OF THE KEYS TO KEEPING US IN BUSINESS DURING THE DOWN TURN. IT ENABLED US TO HAVE TIGHT CONTROL OF OUR COSTS AND INVENTORY. I WOULDN'T HAVE WANTED TO FACE IT WITHOUT SYNERGY."

Jacky Beshar VP - GROOV-PIN

FEAR OF CHANGE:

Dr. Deming spoke often about the role fear plays in damaging a company's effort to improve. If there is a culture of fear then it is likely the workers will be hesitant to try something different and therefore nothing will improve. However, evidence repeatedly shows that those businesses that do the best with their improvement efforts have a workforce that has been empowered to make changes and through positive experiences, learned to embrace it.

In these cultures, managers also become progressive enablers for the employees, rather than "traditional" managers that may not entrust their employees with improvement goals and responsibility. In these environments a manager's leadership skills and business knowledge becomes an even greater asset shared throughout the company. It's a win-win for everyone that successfully breaks the mold that fear creates.

Clear Goals & Objectives: What gets measured gets done! If only it was as easy as it sounds, but the truth is that without setting clear goals and objectives we could be measuring the wrong things. And without establishing the priority for achieving them, your organization will be wasting considerable time and energy working in an uncoordinated effort toward the wrong end point. With a clear list of goals and a prioritized list of objectives in hand, your team can begin developing the plans to achieve those objectives that will kick-off programs that drive real continuous improvement.

This simple, but important decree will ensure that;

- People and teams are working on the right activities
- The effectiveness of each change can be easily measured
- Employees are aligned and the conflict or confusion created by the "wrong" metrics is avoided

INTERNALIZING THE PROGRAM START UP:

Change is not simple, and becomes far

more difficult when it involves a change in company culture. Skilled and knowledgeable facilitators can effectively help cross-departmental core teams develop more efficient processes while bringing visibility to an improved work environment.

"IN A TIME WHERE MANUFACTURING COMPANIES IN AMERICA ARE STRUGGLING TO SURVIVE, SYNERGY RESOURCES STRATEGIC BUSINESS PLANNING PROGRAM HAS PROVIDED OUR COMPANY WITH A ROADMAP TO ACHIEVE WORLD-CLASS PERFORMANCE. THIS PROGRAM HAS RE-ENERGIZED OUR EMPLOYEES AND OUR MANAGEMENT TEAM AND FOCUSED OUR COMPANY ON GROWTH AND EFFICIENCY THROUGH OPERATIONAL EXCELLENCE. THROUGH THE EXECUTION OF THIS PROGRAM WE NOW UNDERSTAND THE OPPORTUNITIES WE HAVE FOR IMPROVEMENT AND WE ARE EXCITED ABOUT OUR FUTURE AND THE PROSPECT OF CONTINUING OUR PARTNERSHIP WITH SYNERGY'S STRATEGIC BUSINESS SERVICES TEAM"

Richard Meisenheimer

President & Second Generation Owner

Spectrum Associates

History and experience have proven that once people see how their own lives will be easier and more fulfilling they will rapidly become excited about change. But it is also recognized that the highest level of success achieved in continuous improvement efforts are found in those situations whereby companies understand the challenge and bring in professional facilitators to get a jump-start on moving the program forward.

Simply stated, all continuous improvement projects stand a better chance for success when:

- Fear to change is replaced by targeted improvements
- Objectives are clear and goals are defined, priorities are established and responsibilities are communicated
- Improvements are approached with the aid of a skilled facilitator, knowledgeable in the various improvement techniques of Lean, Six Sigma, and TOC.

When these factors are soundly in place, it is then and only then that the benefits of change are understood and the improvements gained are effectively sustained.



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WHEN YOU MAKE WHAT MATTERS



STRATEGIES TO RETAIN YOUR BEST EMPLOYEES IN 2016



Employers, take note! A new Career Builder survey found that 21 percent of employees plan to leave their jobs in 2016. That figure represents a five percent increase from January, 2015. Among younger workers – those between the ages of 18 and 34 – the increase is even more dramatic. Three out of ten employees in that age group plan to leave their jobs this year, up from 23 percent last year.

If you think it's no big deal, think again. Studies show that employee turnover can cost companies as much as 30 to 50 percent of the employees' annual salary. That doesn't even take into account the toll that frequent resignations take on staff morale and productivity.

"Just because a person is satisfied with their job doesn't necessarily mean they aren't looking for new work," says Rosemary Haefner, chief human resources officer at CareerBuilder. "Because of this, it's critical to keep up with your employees' needs and continue to challenge them with work they feel is meaningful."

How is this done? Aerotek put together some suggestions that can help you to maintain your strongest talent in 2016:

1. KNOW WHAT MATTERS TO YOUR STAFF

Career Builder asked survey respondents what they valued in their jobs. They found that jobseekers are most concerned with job stability (65 percent), affordable benefits (59 percent), location (56 percent), a good boss (51 percent) and a good work culture (46 percent). Respondents said that these factors were even more important than salary.

Yet, employers won't know if their employees are satisfied in these areas without asking them. One way to find out is by giving employees anonymous, confidential surveys that specifically inquire about their job satisfaction. Another idea is to meet with top talent to gage their level of engagement and to find out whether they have suggestions or concerns that might help them or the team function better and be happier.

2. CONSIDER THE PERKS THAT PAY OFF

Respondents to the Career Builder poll favored the following perks most:

- Half-day Fridays: 38 percent
- On-site fitness center: 23 percent
- Daily catered lunches: 22 percent
- Massages: 18 percent
- Being able to wear jeans: 16 percent

Perhaps not all of these perks are realistic for your company, but why not consider offering what you can? Depending on the nature of your business, maybe you could allow staff to wear

jeans once a week. It may seem unimportant, but these small perks and your willingness to consider their requests can mean a great deal to your staff.

3. PRIORITIZE INTERNAL HIRING

Global Recruiting Trends 2016, a report by LinkedIn Talent Solutions uncovered a weakness in the retention strategies of many organizations.

"Employee retention is top of mind among talent acquisition leaders. However, internal hiring (which helps address employee retention) is significantly lower on the priority scale," the report found. "Furthermore, less than one-third says that internal hiring is central to their strategy. Those who are concerned about retention will prioritize internal recruiting ... Not only should talent leaders formalize the internal recruiting process, but recruiters should maintain relationships with candidates post-hire and keep them in their long-term pipeline."

4. FORM RELATIONSHIPS WITH YOUR EMPLOYEES

While professional boundaries are important, showing employees you care about them, the development of their careers and their families goes a long way toward retaining top performers. If at all possible, have an open door policy. Don't be afraid to ask team members about their children's sporting events or school plays. Take time to sit down with employees to ask about their future aspirations with the company. It might make the difference between keeping and losing your best talent.

5. TRUST TEAM MEMBERS

Employees value jobs where they can grow and learn. Sometimes that means taking risks. Don't be afraid to give team members challenges that will take them out of their comfort zones. They will probably thank you later.

"When you take someone and place them in a genuine stretch assignment, you not only motivate them — you motivate everyone around them. Take a few risks, appoint people before they're 100 percent ready ... Demonstrate that talent really does progress around here and that success is rewarded quickly," says HR professional, Neil Morrison.

6. HIRE SMART

When it is time to hire a new staff member, pull out all the stops to make sure the person who is chosen is the best candidate for the job and the most compatible with the company culture. The harder you work to find the right fit, the more likely the employee you choose will remain in the job.

"If employees can feel safe and believe that they can contribute at a high level, they are more likely to stay longer and contribute more effectively. To create the conditions for this to happen, you need to match the candidates to the culture from the very beginning. If you want to get the best retention results, you need a hiring strategy that communicates the values and culture of the company," says Leanne Abraham, writing for LinkedIn. For more information, visit www.aerotek.com



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MEADVILLE RESIDENT SURPRISED TO WIN NATIONAL COMPUTER-AIDED DESIGN CONTEST

ORIGINALLY PRINTED IN THE MEADVILLE TRIBUNE

When he traveled to Dallas at the end of January for the annual SolidWorks World conference, Meadville resident Doug Kuhn expected to enjoy the weather and learn more about the world of 3-D design. He did not expect to establish himself as one of the most capable members of the 3-D design community.

But that is exactly what happened when Kuhn's name was announced as the surprise winner of the conference's annual Model Mania contest.

Kuhn, 33, has attended SolidWorks World conferences since 2008. In the past he assumed he was not skilled enough to make entering Model Mania worth his time and effort. With more than 5,000 annual conference participants, several hundred of whom entered the event this year, and a first-place prize of an Xbox One and a \$200 Best Buy gift card on the line, the competition can be stiff.

SolidWorks, first introduced in 1995, is a leading computer-aided design (CAD) application with nearly three million users in 80 countries. Kuhn uses the program every day in his role as engineering manager at Kuhn Tool & Die, the local shop founded by Kuhn's grandfather and currently owned by his parents. As a certified SolidWorks expert, he has helped to teach classes in SolidWorks design at the Precision Manufacturing Institute and has even contributed to recent SolidWorks certification exams after completing his own exams so quickly that he drew the developer's attention.

This year the software reseller who supplies Kuhn Tool & Die encouraged Kuhn to enter the contest. After finishing the contest in 13:32, about two minutes faster than the second-place finisher, Kuhn is glad he listened.

Mark Schneider, product marketing manager at SolidWorks, has organized the Model Mania contest each year since 2002. He was there again this year to shake Kuhn's hand after announcing the winners and calling them onstage in front of the thousands of industry colleagues at the conference and thousands more streaming video of the conference online. Schneider describes the event as a "friendly contest" among the leading people in the field.

"The contest seems to get a cult following with SolidWorks experts," Schneider said. "They get a real kick out of it."

Kuhn, however, was less than hopeful when he finished. He had already seen numerous friends fail to complete the design task within the 20-minute time limit. "It was kind of surprising that I even finished it," Kuhn said. "I thought I did horrible."

Competitors report to one of several curtained booths in the trade show pavilion where they are given an engineering drawing and a plastic model of a simulated part. With these they create a 3-D model of the part within the SolidWorks program. After completing this first step, they are then given a second design that requires them to make wholesale revisions to the part they have just modeled on the computer.

When they have incorporated the changes, they use SolidWorks to perform a structural analysis that compares their design to the original and tests the safety of their model. Any mistakes result in disqualification, thus putting a premium on accuracy while still requiring contestants to finish in mere minutes.

Kuhn has improved his efficiency with the SolidWorks program through years of experience as well as by customizing the settings for the version that he uses every day at work. For the contest he was forced to use the program's default settings, with which he is less familiar.

Despite feeling he had little chance to win, Kuhn said, "It was fun when I did it. When I came out, I said, 'How'd I do?' and the guy said, 'We can't tell you.' You truly don't know until they call your name in front of all those people."

Even before his victory, Kuhn was eager to spread knowledge of SolidWorks and 3-D design generally. In recent years, he has mentored Meadville Area Senior High School students in the RoboBOTS program, which he feels has made a huge difference in helping many kinds of kids see that manufacturing in the region is not like what they may have been exposed to in popular media representations. As a result, several participants in the program have made contacts that led to summer internships and jobs, while others have continued



Doug Kuhn, engineering manager at Kuhn Tool & Die, sits at his computer and uses the SolidWorks computer-aided design (CAD) software to design parts for the shop to produce

to hone their technical communication skills at colleges such as Penn State, Cornell and Massachusetts Institute of Technology.

Like the Model Mania contest, the RoboBOTS program fosters friendly rivalries. It also shares a strong sense of community with the larger 3-D design world. In fact, part of what Kuhn appreciates most in his experience with SolidWorks is the attention the company devotes to people like him. Program enhancements are largely user-driven, he said.

"If there's something that more than a few people want, it gets fixed," Kuhn said.

Kuhn will see a preview of future changes to the program next year at SolidWorks World 2017. He already plans to attend the conference, which will take place in Los Angeles. Once again, Kuhn hopes to enjoy some nice weather and learn from colleagues in the design field. But this time he definitely plans to enter the Model Mania contest and hopes to extend his bragging rights another year.

"I've got to repeat," he said with a hopeful smile. "I'm going to take my customized settings and blow the next person out. It won't even be close."





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TAX CREDITS FOR HIRING VETERANS: DOWNLOAD USER-FRIENDLY FREE GUIDE

BY BRIG. GEN. (RET.) MARIANNE WATSON
CENTER FOR AMERICA DIRECTOR OF OUTREACH

There are new tax credits every business leader should know about. While politics has dominated the news in 2016, there is at least one achievement by Congress that deserves a few minutes of your time.

At the end of 2015, Congress renewed and expanded key tax credits for employers which hire eligible veterans, National Guard and Reservists – and it couldn't have come at a better time. Federal labor statistics reveal that 5.6 million jobs are available in the U.S. and, at the same time, more than 200,000 active duty military each year for the next several years will be re-entering the civilian workforce. Tax credits for hiring qualified veterans can provide thousands of dollars to offset the IRS tax bill....while hiring highly motivated veterans and service members.

NTMA members are in the sweet spot to take advantage of this opportunity. Eligible veterans, many of whom have skills and training in the use and management of sophisticated machinery, should be an excellent resource to help fill the skills shortage.

A new, free Tax Guide for employers is now available to help you and your team cut through the red tape and take advantage of the current federal tax credits. Published by the nonprofit

Center for America, in collaboration with the prominent tax law firm Caplin & Drysdale, the Tax Guide explains in "business English" key federal tax credits available. It provides step-by-step instructions for employers to ensure the employer qualifies for the maximum tax incentive for 2015 and beyond. The Guide even provides direct internet links to all the government forms necessary to claim the credits.

By claiming the tax credits, NTMA members can use the proceeds to help defray the costs of stepped-up in-house mentoring for new veteran employees. The good news is that programs like the first-rate machining training program at Front Range Community College in Longmont, Colorado and at other community colleges throughout the country, are partnering with machining companies to provide successful work-train transition from military experience to careers with in the machining industry.

When combined with GI Bill benefits – particularly tuition benefits that enable veterans to get the gap skills training they may need – the tax credits provide a meaningful "economic stimulus" for employers and veterans alike. But, as with all things political, the time to act is now, when the credits are expected to be in force for the coming few years.

General Watson served for several years as the J1 (Chief Human Resources Officer) at the National Guard Bureau for several years after a

30-year career in the National Guard including deployment to Bagram, Afghanistan as Chief of National Guard Affairs. You can contact General Watson with your ideas and suggestions at MWatson@CenterForAmerica.org or Steve Nowlan at SNowlan@CenterForAmerica.org.

org, 201-513-0379.

Link for Front Range Community College:

http://www.timescall.com/longmont-local-news/ci_25799856/longmont-home-frccs-new-million-dollar-machining-facility



2016 NATIONAL EVENTS AND TECHNICAL SEMINARS

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Japan Tech Tour

April 27th

Financial Managers Roundtable, Akron, OH

May 20th-22nd

NRL Competition, California, PA

May 20th

Workforce Development Roundtable, California, PA

June 8th-10th

Emerging Leaders Conference, Chicago, IL

June 8th

Financial Managers Roundtable, Denver, CO

September 12th-17th

IMTS, Chicago, IL

September 28th

Sales & Marketing Workshop, Philadelphia, PA

October 11th

Financial Managers Roundtable, Charlotte, NC

October 12th-15th

Fall Conference, Charlotte, NC

October 26th

Plant Managers Roundtable, Boston, MA

November 2nd

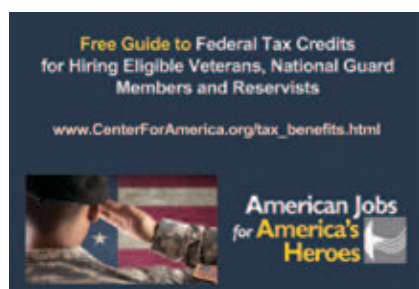
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