

At the request of NIST, Missouri Enterprise/Missouri MEP has been working diligently to gather information in an effort to determine needs to better serve manufacturing companies throughout the State of Missouri. The following answers reflect the information obtained by Area Business Managers.

After speaking with many manufacturers, the predominant concern is the need for qualified applicants for jobs. I have spoken with Steve Stepp of National Audio Company, Chris Montgomery with Ciona Technologies, Brenda Ryan of Alliance Industries as well as Mandie Harris of National Enzyme Companies. The conversation is the same with these and all of our local manufacturing companies, regardless of the size. They are concerned about the changing labor market. As you can see from the first 3 article snapshots and links listed below, all show a great need for long term solutions. The answer may not be recruiting more low priced employees, but rather new technologies that improve efficiencies.

In their search for solutions, ERP systems are on the top of the list as a way to help consolidate, coordinate and control information for efficiency. Additionally, the emerging ROBOTICS market for manufacturing is here and moving beyond the automotive industry as they become more efficient and affordable to large manufacturers. The concern will exaggerate the need for qualified leaders to understand the solution and for experienced operators to run the advanced systems. With the addition of these technologies, the logical next step will be CYBER SECURITY to protect the investments. The biggest concern is that these solutions are often, not considered for the small to medium size manufacturing companies due to price and industry knowledge, so they are left searching for lower waged production workers. MEP Programs that could inform decisions, procure resources and train operators with quantified results are essential to economic growth!

Summary: The Small to Medium size manufacturer is in great need of affordable and efficient information, support and training on both **ERP systems, ROBOTICS and CYBER SECURITY! Sources, services and solutions** must become affordable and available to small manufacturers for them to **compete and survive in any future local or global marketplace!**

A skills gap

Nine percent of the St. Louis-area workforce is in manufacturing, about half of what it was in 1990. The recession hit the sector hard, but there's been a long trend downward because of greater efficiency in the production process. Companies often aren't looking for people to push buttons anymore, rather skilled workers who can fix things when the buttons stop functioning. "You just can't walk out of your high school graduation usually and get a job at a manufacturing facility," said Kevin Kliesen, a business economist at the Federal Reserve Bank of St. Louis. Told about a lack of applicants at Steuby Co. in Hazelwood, Kliesen said: "That's amazing." Wages quickly came to mind. "The economist response to that would be raise your wage and attract more qualified workers, but obviously in manufacturing you are competing not with just a national economy, but a global economy, so you are constrained a little bit on what you can offer," said. John Steuby, 88 while talking with his plant manager, Chad Hill, 46, at the John J. Steuby Co. in Hazelwood. Hill said he has worked for Steuby for twenty seven years. Steuby starts machinist trainees at \$12 an hour. The top of the scale is \$28 an hour, or \$58,000 a year. According to the government, the median machinist wage in St. Louis is \$22 an hour. Kliesen said some people may not want to work in a manufacturing setting. "A lot of it comes down to preferences," he said. There's a well-documented skills gap. Locally, that's seen in the scant number of applicants who initially seized the opportunity for \$6 million in scholarships at Ranken Technical College that were offered after the Michael Brown shooting in Ferguson. More broadly, 3.5 million manufacturing jobs in the U.S. will need to be filled in the next decade, as the industry is expected to expand and baby boomers retire, according

to a report by The Manufacturing Institute and Deloitte. There's concern that companies won't be able to meet their potential, which hits earnings, which hits the economy, which hits the St. Louis area. "A general lack of interest in the industry must be addressed," the report concluded. The Precision Machine Products Association, of which Steuby is a longtime member, sees similar trends. "Every shop I know would hire at least two or three people whether or not they had an open position, if these people had the talent and the skills," said Miles Free, director of industry research for the association, based near Cleveland. "The ones who find these careers are thriving and doing great."

http://www.stltoday.com/news/local/metro/he-has-manufacturing-jobs-in-hazelwood-filling-them-is-another/article_1739a75c-8a26-5a75-a3c5-4a2492e7369a.html

Searching for interested High School Graduates

St. Paul, Minnesota-based 3M (NYSE: MMM) presented Ozarks Technical Community College with a \$120,000 grant.

Written in partnership with Springfield Public Schools and 3M's Springfield plant, the grant is earmarked for OTC to buy a new training system and affiliated software, according to a Jan. 6 news release. The system and software will be used by OTC's continuing education workshops and regional manufacturer career-mentor partnerships. The grant also will allow OTC to create a new program in partnership with SPS. Starting this fall, SPS eighth-grade students can learn how to program, operate and maintain electromechanical and automated equipment.

"With manufacturing jobs in high demand both locally and nationwide, our collaboration with 3M and Springfield Public Schools will help younger students view manufacturing as a viable and lucrative career option before they enter high school," said Matt Hudson, OTC dean of technical education, in the release.

Funding from the 3M Gives Foundation invests in education, community and environmental causes nationwide.

<http://sbj.net/Content/ENEWS-ARTICLES-LOCKDOWN/ENEWS-ARTICLES-LOCKDOWN/Article/3M-grants-OTC-120K/93/625/107845>

Manufacturing Progress

Kurt Hellweg is helping International Dehydrated Foods Inc. navigate global waters as manufacturers embrace technology in a new plan for the future.

If you look at how manufacturing has been philosophically over the ages, it all started with humans making these things. And then in the industrial age we started the machines making them. What we're going through now is that instead of humans controlling the machines, now computers are controlling the machines. So, for us to really build manufacturing jobs, there's going to be less people. There's going to be more machines, but the skillset that people are going to need is that they are going to have to be able to program those machines. We're going to have to be able to fix those machines: electricians, welding skills – some of those things are going to be very important. So, what the Springfield area can do, I think, is start looking at that kind of education, at that kind of skillset and making sure we as manufacturers and as residents of Springfield are making sure we have that in our school system. We are raising a generation that can fulfill those manufacturing jobs.

<http://sbj.net/Content/ENEWS-ARTICLES/ENEWS-ARTICLES/Article/2017-Manufacturing-Outlook-Kurt-Hellweg/29/82/107802>

ERP Software for Small Shops

What can ERP do for managers running a small shop? The answer is pretty much everything, if you're aiming to boost sales, make manufacturing production goals and build high-quality parts, and in turn satisfy customers and make a decent profit. While enterprise resource planning (ERP) is often seen as the domain of large-scale manufacturers, job shops of all sizes in discrete manufacturing greatly benefit from digitizing operations with modern software that often lifts the smaller builder out of working off paper-based systems and Excel spreadsheets into the latest ERP automation with digital scheduling and production analysis tools.

<http://advancedmanufacturing.org/erp-software-for-small-business/>

ROBOTICS and workforce

In fact, there are currently [two million jobs going unfulfilled in the manufacturing sector](#), largely due to an aging workforce — [the average age of a manufacturing worker is almost 45](#), two and a half years above the national non-farm median — and negligible interest in those jobs from younger generations. As long as we've had technology, we've had Luddites who sometimes literally destroy technological advancements. These numbers lead to a different conclusion: Robots aren't stealing our jobs — they're improving them. Robots are safer. They are more reliable. They are more ethical than using exploited labor overseas. Plus, they're incredibly cost-effective, often delivering return on investment (ROI) in 12 months or less. That is a game-changer in an industry relentlessly driven by cost reduction and plagued by slow-drip evolution. The subsequent cost savings produce a ripple effect. More jobs that are more desirable can remain in North America. Manufacturers can focus on and invest in innovation. As a result, new jobs are created that require and build a better educated, highly skilled workforce. There will be short-term job displacements, but long-term benefits to workers and society as a whole.

<https://techcrunch.com/2016/10/09/industrial-robots-will-replace-manufacturing-jobs-and-thats-a-good-thing/>

A new generation of robots is on the way—smarter, more mobile, more collaborative and more adaptable. They promise to bring major changes to the factory floor, as well as potentially to the global competitive landscape. Robots deployed in manufacturing today tend to be large, dangerous to anyone who strays too close to their whirling arms, and limited to one task, like welding, painting or hoisting heavy parts. The latest models entering factories and being developed in labs are a different breed. They can work alongside humans without endangering them and help assemble all sorts of objects, as large as aircraft engines and as small and delicate as smartphones. Soon, some should be easy enough to program and deploy that they no longer will need expert overseers.

<http://www.wsj.com/articles/meet-the-new-generation-of-robots-for-manufacturing-1433300884>

NIST on CYBER SECURITY for SMALL MANUFACTURING

In 2011 50 percent of small businesses thought they were too small to be a hacker target, while the Verizon 2013 Data Breach Investigations Report found that 62 percent of breaches impacted smaller organizations. In 2011 the average cost to a small or medium-sized business from a cyber-attack was over \$188,000.

<http://nistmep.blogs.govdelivery.com/small-business-large-cybersecurity-risks/>

Finding “Qualified” applicants – (this includes being able to pass a drug test)

Stark Brothers Nurseries
Knight Equipment Company
Buckhorn Rubber Products
Doyle Enterprises
Riverview Manufacturing
Brooks Brothers Trailers
Watlow Industries
Trailerman Trailers

Workshop on Food Safety / upcoming changes to HACCP and other government organizations

Joe Fazio Bakery
Lasco Foods
DiMares Italian Specialty Foods
St Patrick Center

Hiring Process Assistance – help them develop methods to screen resumes

Winco Windows
Doyle Enterprises
Knight Equipment Company

Supply Chain

- Integration / aligning of suppliers production to our demand – if we make 10 they should make 10...
- Total cost of ownership
- Balance low cost vs risk avoidance...(suppliers want more quantity vs. need for multiple vendors per component)
- How to increase our flexibility (and get vendors as well)
- How to leverage international vendors

Manufacturing Technology

- Integration of original component CAD drawings with tooling design / manufacturing programs
- Integration of original component CAD drawings with Mazak / machining programs
- Additive manufacturing – when is it right for manufacturing vs prototyping
- How to leverage 3d scanning / measuring / modeling technology

- How to be more productive across the company – what tools / technology increase productivity the most – how do manufacturers get as productive as farmers

Business Technology

- Implementation of ‘next generation’ ERP software (probably would look beyond MO Enterprise for this however)
- How to operate in an ‘open / non-secure’ world...assume we will be hacked...now what
- Data analysis tools – we collect tons of data...what are the best methods for analyzing the data and distributing the information...how do we make good decisions with the data we collect (this is a huge problem)

Other random information

- How to transition from an older to younger workforce...we are going to have lots of retirees soon...how do we manage the transition / maintain the corporate knowledge...
 - How to keep an aging workforce healthy...
 - How to win sales vs. low cost competitors...
 - How to export in a strong dollar world (filled with low cost producers)
 - Creativity / new idea – products, processes, technology – generation...how do we enhance the creativity of our team
 - How to design next generation products (managing existing regulatory hurdles – huge problem)
 - How to manage the ‘chicken or egg’ problem – do we create next gen solutions without a market ‘first mover’ or wait for the market to develop and be an ‘improver’
- The audits for business – there are lots of recurring audits we have by a whole variety of companies that are required...recurring business is good...
- Alternatively, teaching skills to proactively minimize the negative effects of all the audits would be great –

Ozark Sheltered Industries-

The primary concern is in developing market strategies and products in order to gainfully employ the individuals with disabilities whom we serve.

One specific concept they have not yet researched is imports, import and assemble/import and repackage. They will express an interest in services to address the facilitation of import and distribution concepts.

BBC-

Handheld scanners (like strapped to wrist) for tracking production/material handling/labor

Metalcraft Enterprises-

Hard to find skilled employees. How to automate with low-skilled labor.

Integrate software with robotics.

SRG

Human-machine interface (HMI).

Robotics.

PLC programming and troubleshooting (Kevin--we do this already)

K-D Tool and Machine

Lack of skilled operators for CNC/lathe/milling.

Cybersecurity

3-D printing

Mid-Continent Nail

Finding skilled or talented employees who will show up

Madison County Wood Products

Mississippi Lime

Need a methodology/templates/process for integrating all the individual pockets of information a company has into one central place where all can access it.

Link Electronics

QuickBooks training and assistance

Ace Manufacturing

Automating processes

The following reflects the responses received from the interviewed companies relevant to the NIST MEP RFI.

1) Carmeco, Inc . – Donti Hawkins, VP Operations and Kris Deitz, Purchasing Manager

Carmeco's primary need is for a qualified workforce, which seems to be the number one challenge expressed by most manufacturers we contact. While that is a general need, Ms. Hawkins expressed a need in training for supervisors to help them develop the behaviors and disciplines necessary to reduce employee frustrations and enhance the employee experience, which results in high retention.

In the area of critical manufacturing technologies, Ms. Hawkins expressed an interest in additional automation of the manufacturing process and quality management. She specifically mentioned help in evaluation and integration of appropriate technologies.

2) Meramec Instrument Transformer Company – Nick Sanazaro, President and CEO

While the company is experiencing challenges in finding people with the right skill sets, their most pressing need is attracting people for the higher, professional level jobs, such as engineers and programming. Mr. Sanazaro specifically mentioned the need for PLC (Programmable Logic Controller) programmers. They do not have the demand to hire a full-time PLC Programmer, and must go out of state to find one. Therefore, he recommended that NIST MEP develop and provide PLC programming capabilities in the state of Missouri that could be shared between his company and others who need this service. While that is his specific need, he mentioned that NIST MEP should research the market demand from companies in various states for similar professional and technical services that could support a shared resource they otherwise could not realistically support on an exclusive, full-time basis. He mentioned Machine Calibration as an example. He suggested transitioning our offerings into a greater emphasis on actually providing various technical services, without such a heavy dependence on training.

In the the business services sector, Mr. Sanazaro mentioned that Cybersecurity would be a could service for NIST MEP to provide.

Regarding supply chain requirements, he indicated that actual assistance in investigating and evaluating potential foreign suppliers would be valuable. Assistance in Supply Chain Analysis and International Supply Chain Management would, also, be appreciated.

3) Haviland Corporation – Jan Haviland, Executive Vice President

Ms. Haviland immediately said that their most pressing need is in marketing. Haviland's industrial-strength squeegees are very durable and built to last. However, the market is increasingly favoring lower-cost products that are short-lived. Her second expressed need is in supply chain management, particularly how the supply chain can be managed to combat rising supply costs, such as cardboard, which has recently increased by 8-10%. She, also, mentioned a need that would fall into the category of adopting critical manufacturing technologies. The company is in the process of upgrading equipment, and would be open to consider additional automation in the manufacturing process and quality monitoring.

As you can see, a common theme is prevalent in the concerns these manufacturers have.

