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MANUFACTURING IN AMERICA

Featuring

HOMEMADE
Supporting the domestic workforce

GENDER GAPS
Empowering women in the field

THE RENAISSANCE IS HERE

Mike Rowe of "Dirty Jobs" addresses the skills gap and the need to nurture our country's talent.

EDITOR'S PICK

PAGE 14: SECRETARY OF COMMERCE PENNY PRITZKER Addresses this Manufacturing Renaissance and Upcoming Industry Trends

MANUFACTURING IN AMERICA

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MEDIAPLANETUSA

What manufacturing really looks like

Manufacturing currently supports 17.4 million jobs in this country and for the first time in more than 10 years, manufacturing output and employment are growing.

Manufacturing is so much more than many people think. More than just the source of goods we use every day, manufacturing is a source of opportunity and strong economic growth. That's why the manufacturing community created Manufacturing Day (#MFGDay14). On Oct. 3, hundreds of manufacturers will open their doors to show off what gets made in local communities and what it takes to make it in America. The public will be able to learn firsthand about all of the career opportunities manufacturing offers and how valuable it is to our communities and country.

A skilled workforce

Taken alone, U.S. manufacturing would be the eighth largest economy in the world. These skilled jobs pay more, on average, than many other industries.

Zara Brunner

Mark Schmit

NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY (NIST) MANUFACTURING EXTENSION PARTNERSHIP

> "There are about half a million manufacturing jobs unfilled today, waiting for the right person with the right skill set to apply."

Manufacturing in America provides careers to engineers, computer technicians, designers, researchers, welders, assemblers, electricians and many more skilled workers.

Manufacturing Day lets companies celebrate their work and their workers and energize a future pipeline of skilled employees. After all, a quality workforce is critical to the success of any business. And there are about half a million manufacturing jobs unfilled today, waiting for the right person with the right skill set to apply. To help address this issue, manufacturers and local colleges across the country are partnering to make sure training programs provide those skills. And they're participating in Manufacturing Day.

New opportunities

Last year, more than 35,000 people attended events hosted by more than 800 manufacturing facilities, schools and professional societies across the country. We hope to nearly double that number next month so that students, parents, educators and other visitors will learn about career opportunities, training and resources.

We're working together to update old notions of what manufacturing is all about. This Manufacturing Day, challenge your visions of what manufacturing really looks like and participate in an event.

ZARA BRUNNER & MARK SCHMIT
editorial@mediaplanet.com

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'At 3M, the opportunities are truly unlimited.'

– Robin Higgs, Site Manager

3M develops people to lead and grow in Supply Chain, including roles in manufacturing, engineering, quality, environment, health & safety, and the laboratory.

For example, Robin Higgs started her career at 3M as a chemical engineer. Today she's managing a major manufacturing site with multiple plants.

Her story is not unique. Many outstanding women have worked hard and flourished at 3M. Here is what just a few of these leaders have to say.

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"I've had so many opportunities to grow as a leader. At 3M, the opportunities are truly unlimited for those who choose to pursue them!"

Robin Higgs
Site Manager

"There are a multitude of opportunities here to learn and develop both my people and technical skills."

Alisa Wood
Plant Manager

"3M lets me contribute to a great team, shares my core values, offers a huge variety of career paths, and supports my growth as an engineer."

Corri Schmidt
Plant Manager

"If you take advantage of opportunities to develop and learn, the career path can be astounding."

Tamera Fenske
Plant Manager

"Manufacturing has many opportunities for women, and at 3M they are limitless."

Tracinda Yaw
Plant Manager

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INSIGHT

PHOTO: THINKSTOCK

BRIDGING THE GENDER GAP IN MANUFACTURING

"I was so used to being alone as a woman. It was a surreal experience." That's what Lesa Nichols says about her first experience at the Women in Manufacturing (WiM) Annual SUMMIT. Nichols has built a successful career in the manufacturing sector as a management and leadership coach and the owner of Lesa Nichols Consulting, but she reports that she has had mostly male colleagues. It was that reality that first attracted Nichols to a membership with WiM and to the 2013 SUMMIT in Detroit.

Tools for success

Founded in 2009, WiM is now nearly 500 members strong with representation from all across the country and a wide array of industries. With a robust online community as well as extensive programming at the regional and national level, WiM works to give members the resources and network they need to succeed. And women's success in manufacturing is important—for women and for manufacturing.

The U.S. manufacturing sector recently got some good news. According to the Institute for Supply Management (ISM), the sector's pace of growth in August rose to its highest level in three years.

But hidden in those numbers is a set of troubling issues. The first is that even as manufacturing booms, the struggle to find skilled workers continues to plague employers. The second is that, while the U.S. manufacturing sector is growing, the number of women working in the sector still lags.

Breaking barriers

Women can and should pursue careers in manufacturing, but too often they conclude that manufacturing is a better fit for men. When we break down the negative stereotypes that create barriers for women, we will increase the number of women in manufacturing and help to decrease the skills gap.

WiM's community is its strength, both for assisting women already in manufacturing and for building a bridge for the future of the sector. Young women are more likely to consider manufacturing careers if they have ready access to role models with whom they identify. Role models like Sue Silverstein, a welding instructor and program chair at the Milwaukee Area Technical College.

Like Nichols, Silverstein shared her experiences in manufacturing on the WiM blog. She explained that she enjoys seeing the fruits of her labor at the end of the day and found value in the stability, flexibility and salary welding has provided. "Being a woman is not a limitation," she said. "You can be anything you want."

ALLISON GREALIS,
DIRECTOR,
WOMEN IN MANUFACTURING
editorial@mediaplanet.com

Building the Innovators of Tomorrow

"Science, math and engineering can give you the exhilarating power to become not mere spectators or consumers, but the active explorers, makers and doers who will help invent the future."

Dr. Susan Hockfield
President Emerita, MIT

By igniting interest in manufacturing careers, Alcoa Foundation is working to change the face of manufacturing in America. With more than one in seven U.S. private sector jobs depending on the U.S. manufacturing base, it has never been more important to educate students about the world of manufacturing and the career opportunities that await them.

ALCOA FOUNDATION

Discovery Education salutes Alcoa Foundation for their commitment to empowering educators and supporting students who will become the workforce of tomorrow.

Discovery EDUCATION

Alcoa Foundation is proud to partner with The Manufacturing Institute, the American School Counselor Association, the Hope Street Group and other like-minded organizations to educate tomorrow's leaders for careers in manufacturing and engineering. Visit ManufactureYourFuture.com, for more information on tools for educators, school counselors and families.

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INSIGHT

DID YOU KNOW

Sustainable practices

David Wilsted, Executive Vice President for FCA, LLC, shows how custom industrial packaging is changing.

Q: What innovations in manufacturing transportation do you find are changing the way we ship?

A: We are seeing a big push to fully utilize the trailers that are shipping. Our major customers have implemented systems to develop "milk run" routes that maximize less than truckload (LTL) shipments. Customers are often even holding orders until enough product is available to fill a truck completely.

Q: What are some of the ways your industry is developing sustainable solutions and practices?

A: As customers require more sustainable options, innovative wood packaging products serve both sustainability and economic objectives.

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THE IMPORTANCE AND PROMISE OF AMERICAN MANUFACTURING

Forget what you know about the manufacturing industry. Modern manufacturing is innovative, high-tech and cutting edge.

Manufacturers in the U.S. are the most productive in the world. Higher production means higher wages for workers and higher living standards for all of us. In America, manufacturers employ over 12 million workers who earn nearly nine percent more than other non-farm employers in the U.S. We need to keep the industry strong by changing the perception of manufacturing to claim its true status as the most advanced, high-tech industry in the country.

Manufacturers across the country are opening their facilities to their communities on Manufacturing Day to display what manufacturing really is and isn't, allow students to explore new opportunities, and show parents and teachers the rewarding career opportunities available. Manufacturers like GenMet in Wisconsin, which hosted 200 students to create their own metal person, or ACE Clearwater Enterprises in California, which showed students 3-D printers and welding simulators.

AJ Jorgenson
THE MANUFACTURING INSTITUTE

> "Higher production means higher wages for workers and higher living standards for all of us."

Seeking skills

Manufacturers across the country need smart, new minds. More than 80 percent of our nation's manufacturers can't find the skilled workers they need, and the impact to our economy is staggering. To add to the growing skills gap, the current manufacturing workforce is nearing retirement and no one is there to fill the void they will leave.

We are working to help manufacturers attract quality talent and develop the workforce pipeline. We are partnering with colleges to ensure students receive industry-based certifications and a direct path to a manufacturing career. We are joining with local officials and governments to ensure success.

When we all work together, manufacturing is stronger and when manufacturing is stronger, the U.S. is stronger.

AJ JORGENSON
editorial@mediaplanet.com

Our campuses awarded over $825,000 in scholarships this year with the mikeroweWORKS Foundation.

Enter into Titan's World of American Manufacturing
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MIKE ROWE: CALLING ALL QUALIFIEDTRADESMEN

CEO of mikeroweWORKS Foundation, trade activist and host of Discovery Channel's "Dirty Jobs" encourages all forms of learning to bridge the skills gap.

I have a neighbor named Doris, she's approximately 130-years-old and legally blind. Doris called me on Labor Day and asked if I would help her assemble a bookshelf — I said sure (why Doris needs a bookshelf is a bit of a mystery, but neither here nor there).

The instructions were on the box, along with some helpful illustrations of a child, happily putting the whole contraption together in six easy steps. I figured the job would have taken a person of average mechanical aptitude about 10 minutes. I gave myself a half an hour. Three hours later, I was still in Doris' living room, staring up at a tilting bookshelf and contemplating a handful of extra nuts and screws.

This is the great genetic injustice of my life; My grandfather could build a house without a blueprint, my cousin can overhaul an engine blindfolded, my brother builds bridges and tunnels. None of them need to read the instructions for anything, they just seem to know how stuff works — not me. Somehow the "handy gene" passed me by, and now poor Doris is left with a crooked bookshelf and the distinct impression that IKEA is Swedish for "complicated."

The skills gap

I'm in awe of people who can put things together. At base, that's what skilled labor is all about, and I know with certainty that I'm completely dependent upon people who can build and fix things. I also know the skills gap is real and bad news for the country. During "Dirty Jobs," I saw "help wanted" signs in all 50 states — even at the height of the recession. Ever since, I've tried to call attention to thousands of great opportunities that people simply don't aspire to.

Today, it's no different. Hundreds of thousands of manufacturing jobs exist that employers can't seem to fill. And yet, talented welders and heavy equipment technicians are making six-figure salaries all over the place—diesel mechanics can write their own ticket. The best opportunities no longer require a degree—they require training. But we still tell our kids the best path for the most people is an expensive four-year degree.

Exploring careers

America's skills gap is a massive problem, but its causes are not mysterious. Like most things, it's a reflection of what we value, and right now, we seem confused about the proper definition of a good job and a good education. This has to change. We need to nurture mechanical talent in all those who possess it and encourage all forms of learning. Otherwise crooked bookshelves will be the least of our problems.

MIKE ROWE
editorial@mediaplanet.com

PHOTO: SPECIAL THANKS TO MICHAEL SEGAL

A material difference in how you LEARN

SAINT-GOBAIN

Not all learning happens inside the classroom. Saint-Gobain is making a material difference in how students learn through our support of blue-collar science, technology, engineering and math education. We're taking STEM out of the classroom and onto the production line, helping the U.S. to meet the demand for a new generation of highly skilled workers on the factory floor while helping our businesses and economy to grow.

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ROWE
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DON'T MISS

Strengthening the middle class

Manufacturing is returning at full speed to America, bringing with it a re-emergence of the middle class that was squeezed in the recession.

Making quality products has always been the backbone of the country, but the U.S. lost a large portion of its production when companies were lured by cheaper offshore labor. That trend is reversing as part of "reshoring," which is pulling manufacturing back to U.S. soil. Sensing opportunities, global powers are also investing in North America. The numbers are going in the right direction. In the 2010 U.S. Census, manufacturing was about 10 percent of the U.S. market, while today it is roughly 12 percent.

Stephen Gold, president of the Manufacturers Alliance for Productivity and Innovation, estimates manufacturing has already 75 percent recovered from the recession en route to hitting pre-recession before the end of 2014. His organization suggests U.S. manufacturing could create up to 5 million factory and service jobs over the next seven years.

Recovery spans the country

According to Susan Nutson, senior vice president of human resources for the Saint-Gobain Corporation, a large building materials company, Michigan, Texas and Indiana have shown significant rises in manufacturing job growth over the last several years. "But Saint-Gobain is seeing opportunities in virtually every part of the U.S.," she adds, noting the rebirth isn't only urban centers, but also in suburban and rural communities. The company has invested $2 billion over the last five years in U.S. operations and its American workforce.

What's different today is the impact of innovative technologies which yield a competitive edge. "We remain enormously powerful from a technological standpoint," says Ben Bernanke, the former Federal Reserve chairman, adding the American workforce is young, entrepreneurial, diverse and growing. U.S. employees are also the most productive in the world, according to the National Association of Manufacturers.

Expanding manufacturing in America has the potential to nourish the middle class by creating high-quality, blue and white-collar jobs. A crucial issue is the training of candidates for the roles, which require some level of technical expertise such as electricians, welders, machinists and operations workers.

"America's hope of a vibrant, growing middle class depends on a pathway for people who want to do something different than go to a four-year university," says Nutson, adding this is especially salient given that in coming years, between a third to half of all U.S. job will require more than high school, but less than four years of college. "And many will involve some sort of technical or practical training."

FAYE BROOKMAN
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LEAPING FORWARD
The largest manufacturing event in America, The International Manufacturing Technology Show 2014 in Chicago
PHOTOS: IMTS

AMERICAN MANUFACTURING LEADING THE CHARGE IN AUTOMATION

Adopting groundbreaking technologies for real world applications.

Earlier this month more than 100,000 manufacturing professionals came together in Chicago at the largest manufacturing event in America, The International Manufacturing Show 2014, to get a glimpse into the future of manufacturing. They left inspired and confident that American manufacturing is not only healthy and well, but leading the global charge for innovation.

Demonstrated dramatically during the six days of the show, which reached historic levels in size, attendance and equipment investments, it was clear that American manufacturers are competitive again and plan to continue their journey. They are adopting groundbreaking technologies as mainstream applications and embracing automation.

This was highly evidenced by a demonstration of a futuristic manufacturing process in AMT's Emerging Technology Center. "Strati," an electric vehicle purpose-built for the urban transportation needs of Chicago, was actually manufactured in the ETC using a large-scale 3-D printing process. This process is poised to revolutionize many areas of manufacturing. In cooperation with several American manufacturing sources, including Oak Ridge National Laboratory, the car build team from IMTS partner Local Motors used this new technology to create the car body and chassis right before the eyes of the IMTS community, proving that this technology has gone from theory to practical application. Then, sourcing parts from actual IMTS exhibitors, the car was completed and driven off the show floor onto the street.

The explosion of 3-D printing technology is reminiscent of one of the greatest leaps in manufacturing which occurred in the 1950s—the acceptance of computer numerical controls (CNC) for machines. Time will tell.

PETER EELMAN,
VICE PRESIDENT OF EXHIBITIONS AND COMMUNICATIONS,
THE ASSOCIATION FOR MANUFACTURING TECHNOLOGY (AMT)
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NEWS

DID YOU KNOW

Connecting the physical world with cyber-physical systems

We are quickly moving towards intelligent technology. Important facilitators for this development are information and communication technologies and embedded systems. Through these channels, useful information can be collected. Then, the devices can be connected to the internet so the information can be processed and acted upon. This will enable a future where products in a factory will autonomously find their way through a production process.

DR. MARTIN HELGOSON
SENIOR PROJECT LEADER & PRINCIPAL ENGINEER, INTELLIGENT MACHINING, SANDVIK COROMANT
editorial@mediaplanet.com

The next generation of skilled workers

Science, Technology, Engineering and Mathematics (STEM) are some of my favorite words. STEM is the basis for the most important education that is being offered to millennials or to any generational group. STEM is designed to educate and encourage the learning process of individuals to qualify them for available positions within the manufacturing job market. However, fewer students are pursuing a STEM education. This increases the widening skills gap.

In the book "Remaking America," Harry Moser of the Reshoring Initiative reminds us that "the quality of recruiting and training a skilled manufacturing work-force has become the most important controllable factor influencing U.S. offshoring and reshoring trends." With Baby Boomers retiring, Michele Nash-Hoff writes "Baby Boomers are retiring, and about 10,000 per day will turn 65 for the next 19 years." If this research is accurate, we are facing a substantial loss within the manufacturing work force with no one to fill their shoes.

Calling for change

How can we decrease the skills gap while creating awareness of the manufacturing market as gainful and successful employment? How can we encourage students to pursue a career in today's manufacturing world? According to a BCG report, we will have a shortage of 875,000 machinists, welders, industrial-machinery mechanics, and industrial engineers by the year 2020, increasing the skills gap further.

With these daunting figures at America's doorstep, the writing appears on the wall with greater detail every day. What would happen if at midnight tonight our entire skilled workforce retired? Are we as a nation, prepared to fill this gap?

A major sign of relief is the Job Driven Training for Workers Memorandum signed by President Obama in January 2014. This indicates a recognition from the executive branch of the urgency to develop a coherent strategy for schools that would in turn be the beginning of the necessary pipeline to fill the skills gap.

Possible solution

Considerable funding at the state and federal level is necessary to re-implement educational programs such as vocational institutes and trade schools and bringing back shop class to middle and high schools throughout our country. State assessment of curriculum is also required as a foundation to produce an early understanding and interest in the new positions that will be available.

MARGARITA MENDOZA
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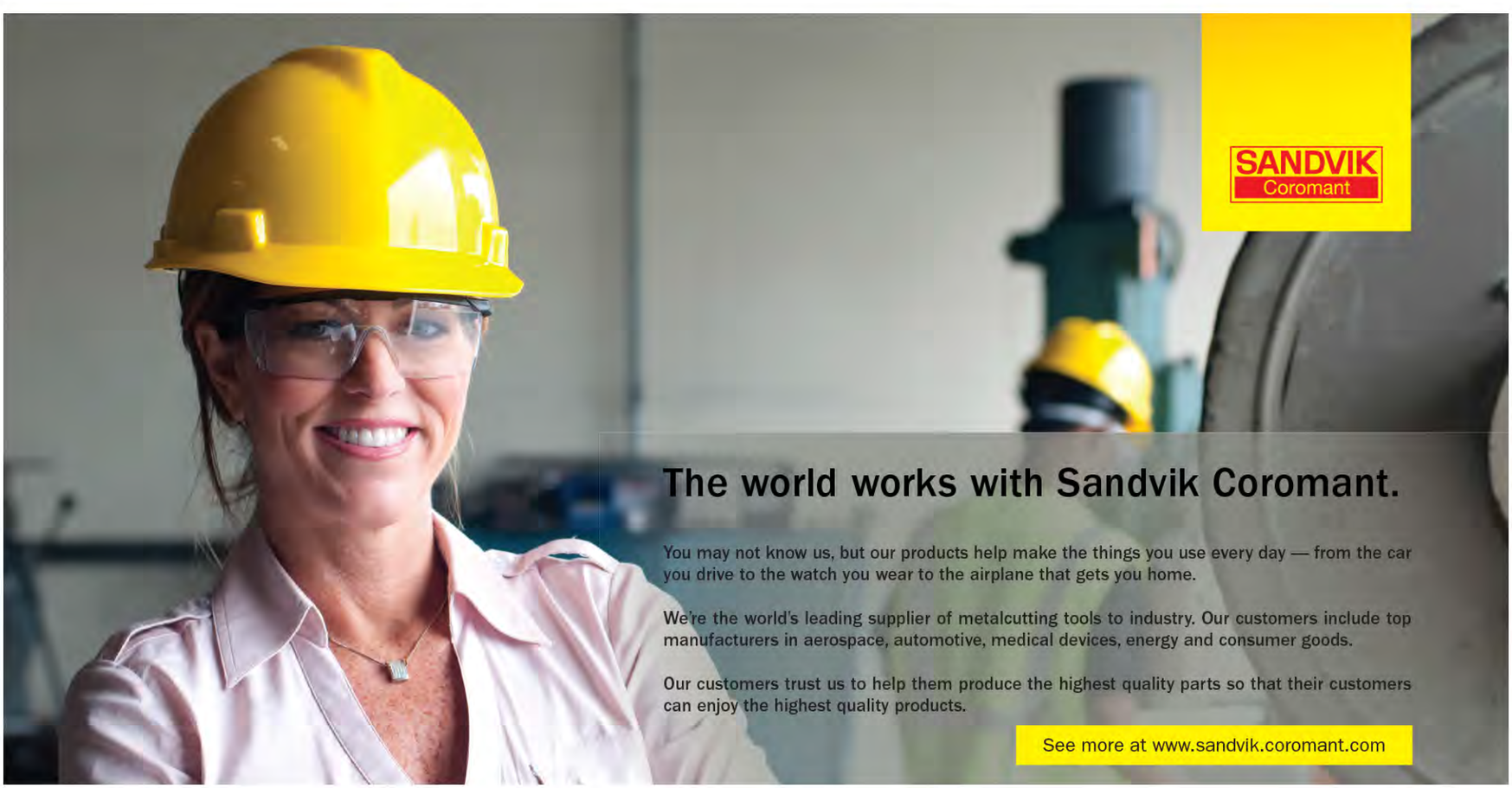

Continuing to make America great

While U.S. manufacturing makes up a smaller share of total employment than in decades past, the sector remains a vital source of our standard of iving and economic growth. The United States boasts the world's most productive, innovative manufacturing powerhouse. The sector is key to future economic growth and America needs to take appropriate measures to encourage and expand innovation and production.

Still made in America
It's a myth that we no longer make anything in this country. If the U.S. manufacturing sector were its own nation, its $2 trillion worth of annual value-added would make it the world's eighth largest economy.

Supporting millions of other jobs
One in six U.S. private sector jobs depends on manufacturing, with the factory sector supporting 26 million domestic jobs, including roughly 14 million in professional services, wholesale and retailing, transportation, agriculture and other sectors.

Driving innovation
Manufacturers account for 68 percent of all business research and development performed in America; spillover effects from these investments spread new ideas across sectors.

Generating more economic activity than any sector
Manufacturing has a higher multiplier effect than any other sector: every dollar of final sales in the sector generates $1.92 in economic activity throughout the economy.

Driving productivity growth
Superior productivity growth leads to low inflation for goods, thus stretching family budgets and lifting living standards. U.S. manufacturers are leaders in this metric because they embrace—and develop—advanced technology.

The lion's share of exports
U.S. manufacturers exported $99 billion in goods per month last year to almost every country on earth. Manufactured products represent more than half of all American exports, helping bridge the country's huge trade gap.

STEPHEN V. GOLD, PRESIDENT AND CEO, MANUFACTURERS ALLIANCE FOR PRODUCTIVITY AND INNOVATION (MAPI) AND DANIEL J. MECKSTROTH, PH.D., VICE PRESIDENT AND CHIEF ECONOMIST, MANUFACTURERS ALLIANCE FOR PRODUCTIVITY AND INNOVATION (MAPI) editorial@mediaplanet.com

Industry Perspective

1 How is your industry benefitting from the renewed focus on U.S. manufacturing?

2 What can we do to change our country's perception of skilled labor professions?

Jeff Wilcox
Vice President, Engineering, Lockheed Martin

In aerospace and defense, we are embracing advanced manufacturing to deliver innovative, highly affordable solutions to our customers. We are engineering the future in areas that include additive manufacturing, advanced materials, digital manufacturing and next-generation electronics.

If we provide the right training and tools today, our skilled labor professionals will be at the core of the factory of tomorrow—one where humans and robots seamlessly interact to quickly and affordably create new designs and technologies.

Lori McFarling
Chief Marketing Officer & SVP, Partnerships, Discovery Education

The renewed focus on U.S. manufacturing has coincided with educators' efforts to look for even more creative ways to connect classroom lessons to real-world applications. Strengthening this connection in the STEM field, and all academic disciplines, better prepares today's students for careers. A career ready workforce truly benefits all industries, and significantly strengthens America's economic prospects.

Changing perception requires knowledge and experience. If we are to change the perception of skilled labor, we need to empower educators to create learning environments that mirror the problem solving required in all careers, including skilled labor.

Jim Fitterling
Vice Chairman, Business Operations, Dow

Manufacturing drives competitiveness like no other sector. This benefits not only our industry, but also our nation's economy. Every manufacturing facility job can spur the creation of three to five external jobs, leading to economic competitiveness, increased productivity and innovation.

Skilled labor professionals are an integral and essential part of our workforce. As a company that relies heavily on this talent, we must be the ambassadors for this change in perception, working with educators, today's parents and tomorrow's workforce.

INSPIRATION

TAKING CONTROL OF TODAY'S SKILLED LABOR SHORTAGE

U.S. Secretary of Commerce Penny Pritzker speaks out on the manufacturing renaissance.

BREAKING A STIGMA Secretary Pritzker toured the BMW plant in Spartanburg, SC on March 28, 2014

PHOTO: COURTESY OF THE DEPARTMENT OF COMMERCE

Mediaplanet You've said that a renaissance in American manufacturing is underway. What is the evidence of this and what is the Department of Commerce doing to support it?

Penny Pritzker Manufacturing in the United States has turned a corner. For the first time in more than 10 years, both manufacturing output and employment are growing steadily. Since the end of the recession, the manufacturing sector has created more than 640,000 high quality, good paying jobs. The Commerce Department is the lead agency for the Obama Administration in our efforts to grow our manufacturing base by investing in activities like training, research and development and advanced manufacturing. That commitment includes a significant initiative of President Obama's called the National Network for Manufacturing Innovation (NNMI), a public-private partnership that aims to strengthen our long term competitiveness. NNMI supports the creation of regional centers for industry and academia—from large companies to their smallest suppliers; from major research institutions to community colleges—working together to make breakthrough technological advances, such as in 3-D printing, that will benefit an entire region's manufacturing base.

MP Can you talk a little more about the Open for Business Agenda and why you've made skills a top priority?

PP The Commerce Department's Open for Business Agenda was put together using input from a listening tour I embarked on once taking office, during which I visited 13 cities in 12 states and met with hundreds of business leaders and CEOs, entrepreneurs, thought leaders and commerce employees, as well as foreign leaders and the international business community. One of the most pressing concerns I heard particularly from the CEOs is the challenge they face in finding the right workers to fill available jobs. The skills mismatch is a threat to U.S. competitiveness, which is why we've made prioritizing job training and skills a department focus for the very first time. Specifically, we are supporting public-private partnerships and working to transform workforce development programs so they are driven by industry needs.

MP What big trends do you see affecting American manufacturing over the next decade?

PP There are a lot of positive trends that have the opportunity to boost American manufacturing. CEOs recognize the investment potential and want to do business in America not only because of our abundant energy resources, but also because of our educated and productive workforce, world-class universities, research and development hubs, dynamic supply chains, and strong intellectual property protections, all of which support the manufacturing sector. Specifically, new technologies like 3-D printing hold vast potential to transform production in the United States and inspire the next generation of manufacturing entrepreneurs.

MP What's the best way for companies to get involved and take advantage of this manufacturing renaissance?

PP Start by opening your factory doors and join us in celebrating National Manufacturing Day on Oct. 3. Manufacturing Day celebrates the sector's contributions to the economic health and growth of the United States. We need to update the image of manufacturing and change the fact that too many parents, teachers and students still do not understand that 21st century manufacturing is different from manufacturing of 10, 15 or 20 years ago. Through efforts like Manufacturing Day, companies around the country will open their doors to educate our young people about what a career in manufacturing holds and how these jobs are great careers that pay 18 percent more than similar jobs in other sectors.

editorial@mediaplanet.com

Keeping "MADE in the USA" Just That...

Since 1857, Klein Tools has been manufacturing tools in America, and it's as important for the sixth generation Klein family members to keep that tradition, as it was for the founder, Mathias Klein, more than 150 years ago.

Over the last ten years we've invested hundreds of millions of dollars in American manufacturing and we continue to invest in new facilities, such as our new heat treating plant in Mansfield, Texas. This state-of-the-art building is another example of Klein's commitment to U.S. manufacturing, along side our forging facility and screwdriver/nut driver facility in Illinois, Klein Cutlery in New York, Klein Plastics in Michigan, and our new manufacturing headquarters in Mansfield, Texas.

By investing in these world class facilities, Klein Tools can continue its tradition of utilizing high quality materials, superior craftsmanship and advanced technology to produce premium tools for professionals.

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