

MANUFACTURING TODAY WI

CELEBRATING MANUFACTURING IN WISCONSIN

Since the late 1800s, manufacturing has been a central enterprise in Wisconsin. Early efforts in mining and timber cutting evolved into the production of both consumer goods and large-scale heavy machinery corresponding with America's rapid western expansion.

Wisconsin's manufacturers were nimble and responsive, absorbing the skills of craftsmen into factory systems with their economies of scale. Milwaukee emerged as an industrial power as immigrant labor was trained in the skilled trades. Milling grain gave way to papermaking and, with its abundant resources; Wisconsin quickly emerged as a world leader in the field.

Today's manufacturing sector is alive and well in Wisconsin. 17% of our state's workforce is directly employed in manufacturing and it accounts for nearly 20% of our state's GDP. At any given time, Wisconsin ranks either number one or two in the nation in manufacturing.

The equipment, facilities, processes, and training are all advancing, creating a

cleaner, safer, and highly innovative workplace. The careers in manufacturing are family-supporting jobs, positions that offer good pay and benefits.

Manufacturing has moved from manual mills and lathes to computerized numerical

control equipment and 3-D printers. Hand-held welders are being replaced with robotic welders.

Recognizing this technical revolution in manufacturing and the excellent opportunities that it creates will encourage a highly-skilled manufacturing workforce to flourish.



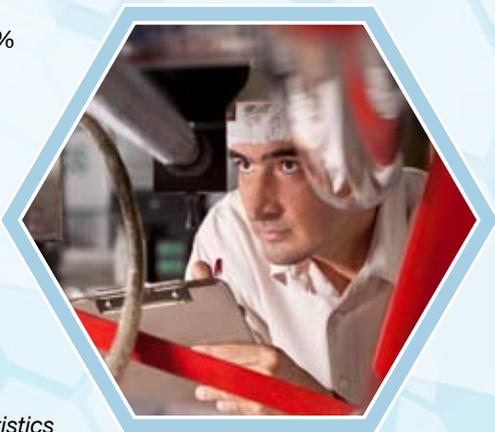
Manufacturing Output

- ▶ Wisconsin Total Manufacturing Output \$50 billion (2012)
- ▶ Manufacturing's Share of Total Gross State Product 19.1% (2012)
- ▶ Manufacturing Establishments in Wisconsin 8,939 (2011)

Source: U.S. Bureau of Economic Analysis, U.S. Census Bureau, International Trade Administration

Employment and Compensation

- ▶ Manufacturing Employment 458,400 (2013)
- ▶ Manufacturing Employment (% of Overall Non-Farm) 16.3% (2013)
- ▶ Average Annual Compensation in Manufacturing \$65,917 (2012)
- ▶ Average Annual Compensation in Private Non-Farm Sectors \$41,349 (2012)
- ▶ Manufacturing Pay Premium \$24,569 (2012)



Sources: U.S. Bureau of Economic Analysis, U.S. Bureau of Labor Statistics

Projected Job Openings, 2010–2020

Title	Total Openings	Annual Median Wage
Maintenance and repair workers, general	6,980	\$37,790
Welders, cutters, solderers, and brazers	4,850	\$37,980
Electricians	4,760	\$52,690
Machinists	4,730	\$39,830
Inspectors, testers, sorters, samplers, and weighers	3,940	\$33,540
First-line supervisors/managers of production and operating workers	3,280	\$52,820
Industrial machinery mechanics	3,270	\$46,140
Mechanical engineers	2,480	\$68,340
Computer-controlled machine tool operators, metal and plastic	2,330	\$35,860
Industrial production managers	1,970	\$78,590
Industrial engineers	1,550	\$69,390
Multiple machine tool setters, operators, and tenders, metal and plastic	1,400	\$35,740

Source: WI Department of Workforce Development, Office of Economic Advisors
Find more info at worknet.wisconsin.gov



NEW Manufacturing Alliance

Make it in **NorthEast Wisconsin**

Manufacturers partnering with educational institutions, workforce development boards, chambers of commerce and state organizations to promote manufacturing in the Northeast Wisconsin region.

MANUFACTURING BY THE NUMBERS

- 23% of all jobs in northeast Wisconsin are in manufacturing. (16% state average)
- 357,000 more maintenance and repair workers will be needed in the U.S. by 2018.
- 6,000 workers under the age of 25 enter manufacturing jobs each year in northeast Wisconsin
- 442,475 people were employed in manufacturing in Wisconsin in 2011
- \$48,000 average annual salary of manufacturing workers with an associate degree or technical training

NMA WEBSITE
www.newmfgalliance.org

- ➔ Arrange plant tours, youth apprenticeships, career speakers and mentorships
- ➔ Get lesson plans designed by educators and manufacturers
- ➔ Explorer career pathways
- ➔ View manufacturing-related math problem videos, complete with lesson plans
- ➔ Stay informed about upcoming career events

All Stars magazines are sent, free of charge to any school in Wisconsin.



Hear directly from people ages 18-35 about their careers in manufacturing!

UPCOMING EVENTS

- OCT. 21:** NEW Manufacturing Alliance Excellence in Manufacturing/K-12 Partnerships Awards in Green Bay
- OCT. 22:** Manufacturing First Expo & Conference, in Green Bay
- PLUS:** Student and Educator Plant Tours Throughout October

WEBSITE:
www.newmfgalliance.org
Contact: Ann Franz
E-mail: ann.franz@nwtc.edu
Phone: 920-498-5587

Strengthening Northeast Wisconsin as a world-leading region of advanced manufacturing opportunities

Choose a career in Advanced Manufacturing and **start** projects like these...



Toolmakers are essential to every product.

Every product that we touch in daily life, a toolmaker touches first. Toolmakers build precise, complex tools used in high technology industries such as aerospace, medical, automotive, defense, construction and consumer products.

If you are mechanically minded, hands-on person who likes problem solving, designing and building things, accepting responsibility, teamwork, math and industrial science, take a look at the advantages of being a toolmaker.

- Mentally challenging projects, each different from the previous one. Toolmaking is not repetitious production work.
- Good working environment. Today's tool and die shops are clean, safe, equipped with computerized machine tools and environmentally friendly. They are not the greasy, gloomy shops of yesteryear.
- Excellent advancement potential and the ability to move into other career areas.
- The highest level of job security and the financial strength to provide your family with nice vehicles, a beautiful home, and dream vacations.

Career Paths in Advanced Manufacturing

- Tool & Die Maker
- CNC Machinist
- Machinist
- Fabricator
- Press Set-up
- Mold Maker
- Mold Setter
- Programmer
- Tool Designer
- Pattern Maker
- Mold Designer
- Press Operator
- Safety Manager
- EDM Machinist
- Design Detailer
- Shop Supervisor
- Project Manager
- Sales & Marketing
- Owner – Estimator
- Machine Tool Sales
- Mechanical Engineer
- Plant Superintendent
- Production Scheduler
- Maintenance Machinist
- Special Machine Assembler
- Quality Control Inspector



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Hot career opportunities... You will always be needed

Look in the "Skilled Trades" and "Professional Technical" sections of employment ads to see the many opportunities available for tool and die makers. Whatever the economy, there are always jobs for tool and die makers. Experienced toolmakers continue to increase their pay, many go on to open their own shops.

Earnings potential if you choose an apprenticeship your earnings will look like this.

1st year*	(50% of \$20/hr.)	\$20,800
2nd year	(60% of \$20/hr.)	\$24,960
3rd year	(70% of \$20/hr.)	\$29,120
4th year	(80% of \$20/hr.)	\$33,280
5th year	(90% of \$20/hr.)	\$37,440

*All earnings are calculated on a 2,080 hour year, overtime pay may increase this substantially.

Upon completion of an apprenticeship, the typical journeyman will have earned in excess of \$145,600 and will have a job. The typical university graduate will have college debts of more than \$33,000 and may not be able to find a job in his or her chosen career.



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Learn more at: ToolMaker@TDMAW.org

Manufacturing in our High Schools —A Review

We had the pleasure of presenting many excellent manufacturing programs from Wisconsin High Schools in the first two issues of *Manufacturing Today WI*. You can read the full versions of these articles on our website <http://www.manufacturingtodaywi.com/>.

Cardinal Manufacturing

Cardinal Manufacturing, a student-run machine shop located in Eleva Strum High School, is a glowing example of Tech Ed success. The shop runs like a well-oiled machine and jobs flow in at a steady rate. Students are step up to leadership responsibilities and the younger students are getting excited earlier about Tech Ed class, hoping that they, too, will make it into the program. This excitement has boosted both attendance and grades across the board. Cardinal Manufacturing students learn not only machine tool technology, but also many elements of entrepreneurship which gives them a working knowledge of the real business world.

"Students in Cardinal Manufacturing are the cream of the crop." Tech Ed instructor and chief instigator of this innovative program, Craig Cegielski states. "We only take the best. People wanting to get in need to go through an interview process, just like at a real business, and our admittance is limited."

Tiger Manufacturing

Tiger Manufacturing is a thriving enterprise, located within Webster High School, which provides its workers (students) with hands on experience in real world job skills that no textbook could give. This original idea for this business was to build cabinets and cabinet components for paying customers.



Working at Webster High School's Tiger Manufacturing

This continues right into today.

When asked "What do the students learn as a result of the class?" Technical Education instructor Roy Ward replied "The biggest thing they learn is how to work together. They learn about taking pride in everything they do and little things matter, each person's role is important. All the parts of the system must work together in unison to be efficient and productive. Standing around and doing nothing makes more work for someone else and will result in a loss of employment. This is knowledge that will benefit them no matter what career path they choose to pursue."

Stoughton High School joins digital fabrication revolution with its Fab Lab

When asked why the district would want to take on a big project such as the building and development of a Fab Lab,

Shimon said it all goes back to the students. "The Fab Lab is another way to get students excited about learning and to get them to take high-level math and science courses," said Brian Shimon, Stoughton High School associate principal. "We want to make sure that we're building access to all students," said Liz Menzer, Stoughton school board president. "We have about 25 percent enrolled would be consider non-traditional Fab Lab users. There is an opportunity to really excite and ignite kids in a field where they are eager to learn more." Additionally, projects in the Fab Lab use skills and disciplines from across the curriculum. Students are using science, art, math, and computer programming skills.

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Students at Stoughton High School Fab Lab

MANUFACTURING TODAY WI

PUBLISHER/EDITOR: Renee Feight
EDITORIAL: Andria Reinke
PAGE COMPOSITION: Andrew Clausen
WEBMASTER: Rachel Schimelman
SPECIAL PROJECTS: Allie Zacharias
ACCOUNT EXECUTIVE: Carrie Maass
Please direct articles, advertising, questions or comments to:

Manufacturing Today™
PO Box 1704
Eau Claire, WI 54702
Phone/Fax 715-839-7074
www.teachingtodaywi.com

Please direct all inquiries to:
renee@teachingtodaywi.com

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Manufacturing Today WI™ is a free non-political newspaper available to Wisconsin schools. It is made possible through the generous participation dollars of:

Gold Collar Careers
Tool, Die & Machining Association of Wisconsin
NEW Manufacturing Alliance
Dream It Do It Wisconsin
Mid-State Technical College
Northeast Wisconsin Technical College
UW Oshkosh
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TLX Technologies.

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Find resources, success stories, past issues, and learn all about Manufacturing in Wisconsin!

Check out our website at:

www.manufacturingtodaywi.com



Watch for all of the live links in the electronic/flip book



There's more *Manufacturing Today WI* just a <CLICK> away.



By Al Votis
Three Lakes School District

This year, the Three Lakes School District has implemented the first K-12 Fab Lab in the state. The Fab Lab concept is a product of MIT, and is designed to help bring technology, and fabrication and engineering skills to a broader mass of people. Three Lakes is incorporating these skills and processes throughout the entire K-12 curriculum, as well as specifically focusing on the underserved population in the district.

The Fab Lab at Three Lakes has brought in a number of pieces of technology to help the students learn these skills. This equipment includes a CNC Router, CNC Plasma Cutter, 5 3D printers, a laser engraver, a 4 axis mini-mill, and a vinyl cutter, along with a number of industry standard software programs.

The focus at Three Lakes isn't necessarily just on the technology, but using technology to help develop critical thinking skills, and give students the opportunity to learn manufacturing and engineering techniques to give them immediately applicable job skills. Students will learn the basic skills of using these different technologies, which will transfer into industry/design.

Three Lakes putting the Fab into fabrication

The school has partnered up with a number of local businesses to create a set of certificates. These certificates verify that students have become proficient in a set of skills, which the earning of gives the students a much more likely chance of being hired by these local businesses. Students can earn certificates in Manufacturing, OSHA Safety Certificate, Solidworks Basic User, Solidworks Intermediate certificate, and Youth Leadership.

Parts of each certificate can be earned through many different classes and experiences, with skills accomplished being checked off for each student on a master list, which has mapped all the locations in the curriculum where these skills are being taught. Also, students are picking many of these skills up through current manufacturing classes, as well as new curriculum such as the How To Make Almost Anything class, modeled on the MIT design. This class combines the MIT design with business concepts to give students an introduction to the technology and engineering design process, letting student creativity come into play and incorporating an overview of business concepts to make employees who understand the entire picture of a business.

Future classes will focus on building on the basic knowledge of techniques and equipment operation in How To Make by having students work through an entire business process,



writing business plans, creating product lines, manufacturing products to tolerance, marketing and selling these products. In the words of Dr. Karling, Three Lakes Superintendent, "we're not just putting in a fab lab, anyone can do that, we're creating a program to build skills to make our students very attractive for employers, and to help create a talent pool of workers to draw more business and industry to the area."

Three Lakes was able to purchase the equipment for the Fab Lab in large part through a grant from the Wisconsin Office of Skills

Development with a Fast Forward Grant. By developing business partners to work with the school, and a plan for training skills for workers, this grant was awarded to Three Lakes and covered a large portion of the funding needed to get the lab set up.

www.threelakes.k12.wi.us
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MANUFACTURING DAY EVENTS ALL ACROSS WISCONSIN IN OCTOBER

MFG DAY is a celebration of what 12 million people around the United States experience every day—pride at working in manufacturing.

On MFG DAY, manufacturers open their doors and show, in a coordinated effort, what manufacturing is — and what it isn't.



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10.03.14

On MFG DAY, you can explore the intriguing world of manufacturing with your students!

TO LOCATE A MANUFACTURING DAY EVENT HAPPENING NEAR YOUR SCHOOL, GO TO: www.mfgday.com/events

Taking charge of the skills gap

Changing perceptions and promoting manufacturing careers



By: Suzanne Kelley, president,
Waukesha County Business Alliance

Manufacturing is alive and well in Wisconsin . . . will it stay that way? The Waukesha County Business Alliance has taken that question to heart with several initiatives geared toward spreading the word about the many great career opportunities and pathways in manufacturing.

Wisconsin is blessed with a strong manufacturing tradition — 17% of our state's workforce is directly employed in manufacturing and it accounts for nearly 20% of our state's GDP. At any given time, Wisconsin ranks either number one or two in the nation in manufacturing.

As the manufacturing employee

base ages and more and more companies bring jobs back from overseas, it's absolutely critical that we work to fill the increased shortage of skilled workers in our state. For the Waukesha County Business Alliance, it is the number one economic development issue in our region. To help our high school students understand the wide range of available opportunities in manufacturing, we created the Schools2Skills™ program to help get kids into local manufacturers for a firsthand experience.

In its third year, the Alliance's Schools2Skills™ program continues to gain momentum; inspire students, parents and educators; and change perceptions about careers in manufacturing. The program gives Waukesha

County schools the opportunity to tour local manufacturers and see firsthand the innovative and advanced technology right here in Southeastern Wisconsin. The tours conclude at Waukesha County Technical College, where attendees learn about the education available for these types of opportunities.

Understanding that many people have never toured a manufacturing facility, the program takes people inside some of our area's leading manufacturing companies to learn more about manufacturing career paths and salaries.

We've hosted 38 tours in three years and have taken more than 1,200 high school students, parents and educators on tours. Last year, we expanded the program by taking middle school educators on a tour. We survey participants before and after the tours, and results prove that the tours are educating them on manufacturing as a safe place to work.

As we gear up to celebrate October as Manufacturing Month in Wisconsin again this year, I hope you take the opportunity to promote manufacturing career opportunities and help continue the great tradition of manufacturing success in Wisconsin.

Quotes from students who toured in 2014:

- "I enjoyed learning that I would have fun working in manufacturing AND make good money as well."
- "Touring these manufacturing

companies in Waukesha County was a great opportunity."

- "This helped me know that there are good job opportunities in Waukesha area."
- "It helped me see all the different hands-on careers and opened my mind to different jobs."
- "This opened my eyes to the world of manufacturing."

Quotes from educators who toured in 2014:

- "It was great to learn about modern manufacturing process, facilities and the wide range of careers."
- "This is helping to change the belief that factory work is 'dirty/bad conditions.' FANTASTIC to see that first hand!"
- "Seeing manufacturing environments in 2014 was much different from what I had seen in the past."

www.waukesha.org
(262) 542-4249





STUDENT VIDEO CONTEST

Enter the Dream It. Do It. Wisconsin student video contest for your chance to win prizes including a 32GB iPad Mini or iTunes giftcards. Show us what the world would look like "The Day Manufacturing Stood Still!"

Win an iPad Mini

THE DAY MANUFACTURING STOOD STILL

- 1 WHO: 8th – 12th Grade Students from Wisconsin
- 2 WHAT: Student Video Contest
- 3 WHEN: September 1 – October 31, 2014
- 4 WHERE: www.dreamitdoitwi.com
- 5 WHY: Demonstrate the impact of "The Day Manufacturing Stood Still"
- 6 HOW: Submit to dreamitdoitwi.com



ABOUT US

Dream It. Do It. Wisconsin demonstrates the value of the good-paying, exciting, challenging manufacturing careers available today in southeastern Wisconsin.

www.DreamItDoltWi.com

dreamitdoitwi@gmail.com

Partnering for Success in Central Wisconsin

Karl Easttorp, Director of Communications, Mid-State Technical College

In a country where manufacturing careers have long been a means to attaining the

American dream and a strong economy, Wisconsin remains a leader in the \$2 trillion industry. Gleaming machinery, cleanrooms, and high technology have replaced the grungy manufacturing factories of yesterday. Equipment, facilities, processes, and training are all advancing, creating a cleaner, safer, and highly innovative workplace with family wage jobs. According to the U.S. Bureau of Labor Statistics, Wisconsin is one of only seven states that can claim manufacturing as the industry of highest employment in 2013, down from 36 states in 1990. In 2011, Wisconsin employed 459,636 people in the manufacturing sector for an average annual compensation of \$65,917.

However, the need for highly-skilled workers, along with an antiquated public perception of manufacturing, means that many Wisconsin manufacturers are strug-

gling to fill employment opportunities—a predicament often referred to as the skills gap. This challenge will only worsen as a large generation of the manufacturing workforce enters retirement in the next five years.

Stevens Point Area Public School District, primarily Stevens Point Area Senior High (SPASH), and Mid-State Technical College (MSTC) have joined forces with area businesses to increase awareness of the abundance of good-paying, quality jobs among Wisconsin's manufacturers. To achieve this, SPASH recently applied for and was awarded a High School Pupil Workforce Training Program grant for \$33,110. The grant is a part of the Wisconsin Fast Forward effort.

SPASH College & Career Readiness Program Coordinator and Career & Technical Education Coordinator Brigitta Altmann said SPASH is using the grant funds to enhance its curriculum to meet area employment needs in manufacturing. As a result, SPASH curriculum will be better aligned with MSTC to increase the number of transcribed credit opportunities, meaning SPASH graduates will already have had the opportunity to earn

MSTC credits prior to graduation and have a head start on their college education. The grant also includes expansion of the Manufacturing/Machining Youth Apprenticeship program. Eleven SPASH students will receive services through this grant. MSTC and employers will also provide SPASH instructors with enhanced on-the-job training that provides exposure to state-of-the-art machining technologies.

"This grant and associated collaboration is designed to cultivate and sustain a manufacturing workforce that will be large enough to meet the workforce needs of area manufacturers such as Pointe Precision, Marten Machining, the Worth Company, Metal Crafters Inc., and G3 Industries," SPASH Machining instructor Dan Strobel said.

According to MSTC Technical & Industrial Division Dean Al Javoroski, North Central Wisconsin's estimated employment in manufacturing is projected to grow more than 6.5% through 2020. Joe Kinsella, president of Pointe Precision, said that many local employers are



MSTC, one of 16 colleges in the Wisconsin Technical College System, offers more than 100 associate degrees, technical diplomas, and certificates. The college serves a resident population of approximately 165,000 in central Wisconsin with campuses in Marshfield, Stevens Point and Wisconsin Rapids, and a learning center in Adams. Nearly 9 in 10 MSTC graduates are employed within six months of graduation.

For more information about MSTC technical and industrial degrees and certificates, call 888.575.MSTC or visit:

www.mstc.edu

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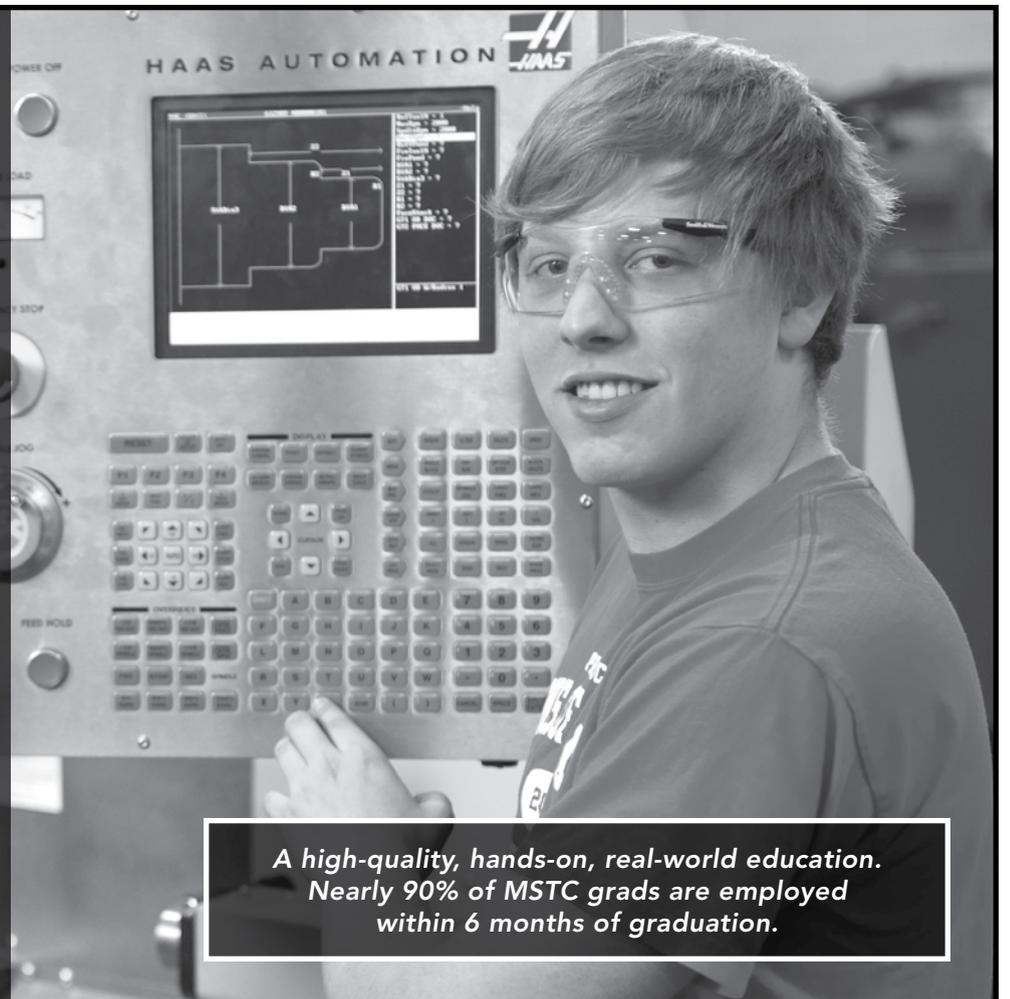
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- Renewable Energy Specialist
- Solar Electric Technician
- Sustainable Heating and Cooling Technician
- Welding

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Adams, Marshfield, Stevens Point, and Wisconsin Rapids, WI



*A high-quality, hands-on, real-world education.
Nearly 90% of MSTC grads are employed
within 6 months of graduation.*

Manufacturing in our High Schools Continued from Page 4



Purple Knight Manufacturing at Beloit High School.

Investing in the Manufacturing Pipeline — Purple Knight Manufacturing

The Beloit School District has made a commitment to begin challenging students by guiding them to a pipeline of careers that are in high demand.

To do this we have decided to invest in our Career and Technical Education program, specifically in the areas of Manufacturing and Welding. The Beloit School District is fortunate to have a forward thinking Superintendent in Mr. Steven McNeal, as well as a supportive school board. Through their direction and support we have begun developing a program that will help meet the skilled trade challenges not only locally but also nationally.

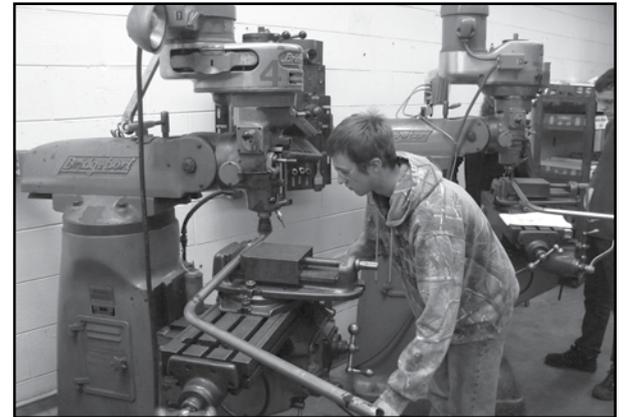
In December of 2012 the renovation of the Manufacturing and Welding area began. Our first semester with the new equipment has been a learning experience, with new equipment and tooling also come new challenges.

Youth Apprentices of Kaukauna High School

In Kaukauna, a Fox Valley high school program provides part of the solution year after year. The steady growth of the machine tool and metal trades in the area means opportunity for the Youth Apprentices of Kaukauna High School. Even during the worst of the economic downturn employers continued to hire 16-18 year old students through the CO-OP and YA program. Graduates of the program are now key employees with 16-17 years' experience. One time student trainees have founded their own machine tool companies and they now hire the next wave of high skill high pay trades people.

It Isn't Just a Shop Anymore!

It isn't just a shop any more. The metals lab at Badger High School is morphing to meet the demands of the work-



The metals lab at Badger High School, Lake Geneva



Kaukana High School Youth Apprenticeships.

force as manufacturing jobs move back to the area thanks to a growing economy and a paradigm shift in career and technical education. Since taking over the manufacturing program five years ago, Technology Education Instructor Clint Geissler has been honing his four-year program to better prepare his students for careers in manufacturing and welding.

Students enrolled are seeing academic growth and potential for high-wage, high-skill jobs. Most importantly, however, Geissler hopes his program instills in his students the necessary skills to become productive, self-sufficient community members once they leave Badger.

Partnering for Success Continued from Page 8

already expanding to fulfill this increased demand.

"We need to grow our highly-skilled manufacturing workforce to keep pace with growth in the manufacturing industry," Kinsella said.

SPASH, MSTC, and several local manufacturers are longtime partners in the Youth Apprenticeship program, a school-to-work program targeting high school juniors and seniors to help them make connections between school and the world of work. MSTC is also employing a recent \$348,743 grant to fuel expansion of three high-demand programs, including its Welding program and Diesel & Heavy Equipment Technician program, to train nearly 70 workers. This is in addition to a \$14.9 million Department of Labor grant to all 16 Wisconsin technical colleges designed to improve and enhance job training for highly skilled jobs in advanced manufacturing. MSTC also regularly promotes manufacturing

through participation in student bus tours of local manufacturers, as well as open houses so people can get a hands-on look at manufacturing and other career education available at MSTC.

As we celebrate Manufacturing Month, now is a great time to inspire careers in manufacturing. The collaborative approach described here is one example of how communities are fostering a technology-fueled revolution that is enriching our manufacturing future. SPASH teachers and counselors are raising awareness of the benefits of a career in the manufacturing industry, MSTC is supplying SPASH graduates with the advanced skills they will need to be successful, and businesses are hiring these highly-skilled people into high-paying careers.

It should also be noted that while the aforementioned partnership focuses on high school students, there are ample opportunities at MSTC and local manufacturers for people looking to start a



new career. Recognition of a technical revolution in manufacturing—and the opportunities it creates—will grow our highly-skilled manufacturing workforce and help Wisconsin sustain its role as the premier manufacturing state in the country.

www.wisp.k12.wi.us
(715) 345-5456



What Manufacturing Needs from a New Employee



By David Jasperson
Industrial Technology
Hustisford School District

What are manufacturers looking for when hiring an entry-level employee? This is the question that I needed to answer daily when I stepped out of public education and into the manufacturing industry.

It started when I was laid off from my employment at Menomonee Falls high school due to reduced student numbers. I was then employed by a manufacturer in Sussex, WI. What does a manufacturer of dynamometers want with a high school Tech-Ed teacher? The owner needed 1 or 2 new employees a year with entry level skills and he couldn't find people with the basic skills needed to work for him. That's where I enter the scene. He had a vision of training several people with machine tool skills, retaining one or two to fill his production needs, and then 'selling' the remainder of the individuals to manufactures in the Milwaukee region. I filled that vision by creating a training program for adults who possessed mechanical skills and had an interest in the manufacturing

industry. It is called MRT — Manufacturer's Resource Training. I advertised and searched for applicants and then pre-tested, interviewed, and drug tested them. If they met our requirements they attended an 8 week course on learning basic machinist skills. We met daily for eight weeks, 8 hours a day, and paid them \$8.00 and hours. These people were learning the skills to find a job and getting paid for it! At the completion of their training I would assist them in finding employment in the greater Milwaukee area.

The upside of this training is that manufacturers looking for entry level machinists were not so much looking for these people to be professional with their newly found skills. They were looking for people who were pre-screened, that's me, and had met the soft skills of showing up to work on time every day, diligently learned machine tool set ups, worked well with others, safely, and could follow directions. Their machinist skills were honed with their new employers through mentoring and several are in apprenticeships at this time. After one year 22 students from MRT graduated and had employment.

If they did not meet the core expectations of MRT their employment was terminated and I did not help them find employment. In three classes a total of 5 individuals were 'fired' for reasons that included failed drug screen(2), unsafe work practices(1), late to class(1), low interest in the training(1). Employers who hired the students from my program were extremely pleased to know that our standards were very high with regard to the soft skills needed to stay employed in the manufacturing industry.

Bringing the training model to the Hustisford School District

Hustisford school district has a mission for me: Give their students the skills necessary to make informed decisions after high school plus the skills and attitudes to gain employment in the manufacturing industry. I was hired to address these needs by implementing a similar model of training and high expectations I used in industry and bring it to the high school level.

A variation of my training model worked at my last school quite well. The students in my classes clearly understood the need to actively participate in the class and shop and to function at a higher level of expertise. The outcome for those high school classes was potential employment for those looking to work part-time during school and summer and, for some, full employment.

My current shop facility at Hustisford is of moderate size to hold woods, metals, home repair, and middle school STEM classes. What have I walked into? The shop currently has one 50 year old 12" lathe. There are no knee mills, no CNC equipment, and little space for it all. There is an adequate welding set up with 5 booths, multiple stick and MIG welders along with one TIG welder, oxy/acetylene torches and one plasma arc cutter.

Upon speaking with the school and district

administrators I believe I found a diamond in the rough. The district has been trying to find a way to address the need to train their students to be prepared to enter the workforce. Many more graduates are moving onto 2-year degrees, certifications, or full-time employment than those students going to a 4-year school. There is most definitely a need for the school to provide the training and education that can lead to employment in the manufacturing industry. I have submitted a \$102,000 proposal for the machine tools, tooling, and other equipment to move my shop into a more realistic training facility. I know this is difficult for a small community and school district to support. But, with a long term vision and patience I am confident that I can find the support through the manufacturing community and the school district to fulfill this need for student preparation.

At this time we have a long-term plan to improve the current facility to handle the need for the equipment necessary for preparing our kids to go onto school or to move into the workforce. Since I just came to the district I am in the process of building relationships with local and regional manufacturers. This is occurring through a CTE advisory board and personal meetings with manufacturers.

I know that I can provide the needed training for our kids at Hustisford so they have more than just an opportunity to be prepared for the manufacturing industry; they will have the abilities, interest, training, and motivation to be part of a great industry that exists in Southeastern Wisconsin.

www.hustisford.k12.wi.us
(920) 349-3261



Resources for Careers in Manufacturing

These can be found under the Resources tab on our website — www.manufacturingtodaywi.com

360° Manufacturing and Applied Engineering Center of Excellence

360° is building a pipeline of talented individuals for the advanced manufacturing industry by promoting the industry and providing accurate and enticing career information to individuals at all levels from middle school age to adult workers. 360° has developed the 360° Seamless Career Pathway for manufacturing careers which shows individuals that manufacturing offers a career with no dead ends.

Website: www.360mn.org

Wisconsin Youth Options

Learn about Wisconsin's youth options program which allows public high school juniors and seniors who meet certain requirements to take postsecondary courses at a UW institution, a Wisconsin technical college, one of the state's participating private nonprofit institutions of higher education, or tribally-controlled colleges. Approved courses count toward high school graduation and college credit. The program opens the door to greater learning opportunities for motivated students considering a technical career, wishing to begin college early, or preparing themselves to enter the workforce immediately after high school graduation.

Website: www.dpi.wi.gov/youthoptions

Wisconsin Career Pathways

Explore career clusters and pathways and discover opportunities for seamless education. This site focuses on high skill, high demand, and high wage careers. You can build a program of study on the website by contacting your local technical college's Tech Prep Coordinator to obtain a user name and password. Contact information is available on the website.

Website: www.wicareerpathways.org

wistem.org: Wisconsin's Source for all things STEM

Wisconsin's industry continues to experience competition on a global scale due in large part to an expanding technological world. Increasing Wisconsin's STEM leadership is essential to maintaining our workforce competitiveness and spurring economic growth.

STEM is an acronym for Science, Technology, Engineering, and Mathematics. When integrated, the STEM disciplines provide a unique way of promoting critical thinking, innovation and creativity which are all key 21st Century skills.

Website: www.wistem.org

Wisconsin Youth Apprenticeship

Obtain guidance on the Wisconsin's Youth Apprenticeship Program - part of a statewide School-to-Work initiative. It is designed for high school students who want hands on learning in an occupational area at a worksite along with classroom instruction. This one or two year elective program combines academic and technical instruction with mentored on-the-job learning.

Website: www.dwd.wisconsin.gov/youthapprenticeship

NWTC Striving to Meet the Workforce Demands of the Community



Brooke Holbrook,
Coordinator, K-12 Relations
Northeast Wisconsin Technical College

Northeast Wisconsin Technical College (NWTC) and our K-12 educational partners promote college and career readiness with distinct Career Pathway programming. Several of our high school partners have initiated TECH NOW partnerships to implement manufacturing career pathways at their high schools. TECH NOW partnerships are designed to provide for

- increased student awareness in career pathways in technical education;
- delivery of science, technology, engineering and math (STEM) curriculum and hands-on industry aligned learning;
- increased number of students pursuing a credential beyond high school;
- reducing time from high school to workforce with dual credit coursework at the

high school level; and

- shared resources and professional development for high school teachers.

These partnerships not only benefit the high school student and teacher with curriculum relevancy, they also improve opportunities for building and sustaining a skilled workforce in our communities.

The Manufacturing Career Cluster is an area of significant growth within northeast Wisconsin. The 2014 Manufacturing Vitality Index identifies that one in three manufacturers plans to hire throughout each quarter in 2014, with 60 percent anticipating difficulty locating talent in the region. Meanwhile, manufacturing technology programs in high schools across the state of Wisconsin have been adversely affected by budget cuts. This is especially true in rural areas where districts have dramatically cut and/or nearly eliminated technology programs—the very programs that have historically provided youth with mean-

ingful class work by applying learned concepts to real-world situations. These courses require students to apply advanced knowledge and understanding of science, technology, engineering, and math (STEM) to progress in the subject matter. This lack of technology and mathematics training is detrimental to the future employability of the youth of northeast Wisconsin as well as the communities they come from. With nearly one quarter (23 percent) of the northeast Wisconsin employment base comprising manufacturing combined with the median age of the workforce pipeline, the continued demand for technical professionals within manufacturing will not be met without greater exposure to and success in STEM subjects.

NWTC and K-12 educators are looking to discover and grow local talent in the area of manufacturing through alliances such as the TECH NOW partnerships. Through early exposure and involvement of the business and industry community, NWTC strives to meet the workforce demands of the community. NWTC partnerships related to manufacturing are unique and vary among districts. Partnership activities include use of mobile lab environments that bring Computer Integrated Manufacturing (CIM) and Electro-Mechanical/Automation resources to K-12 districts.

The labs support middle school career exploration and high school dual credit coursework. “Train the Trainer” coursework, offered every summer, introduces high school instructors to NWTC curriculum products that they then can deliver in a dual credit fashion at the high school. Other partnership activities involve NWTC and business/industry partners supporting high-precision manufacturing lab experiences in their high schools, allowing students to gain experience and employability skills in a realistic environment. Additionally, NWTC offers Youth Options and Youth Apprenticeship opportunities for many rural partners that are without technical education programs.

NWTC looks to assess each school district’s needs in a collaborative fashion to leverage resources and skills for student and community growth. We look to evaluate business/industry demands within manufacturing and create opportunities for and with our K-12 partners.

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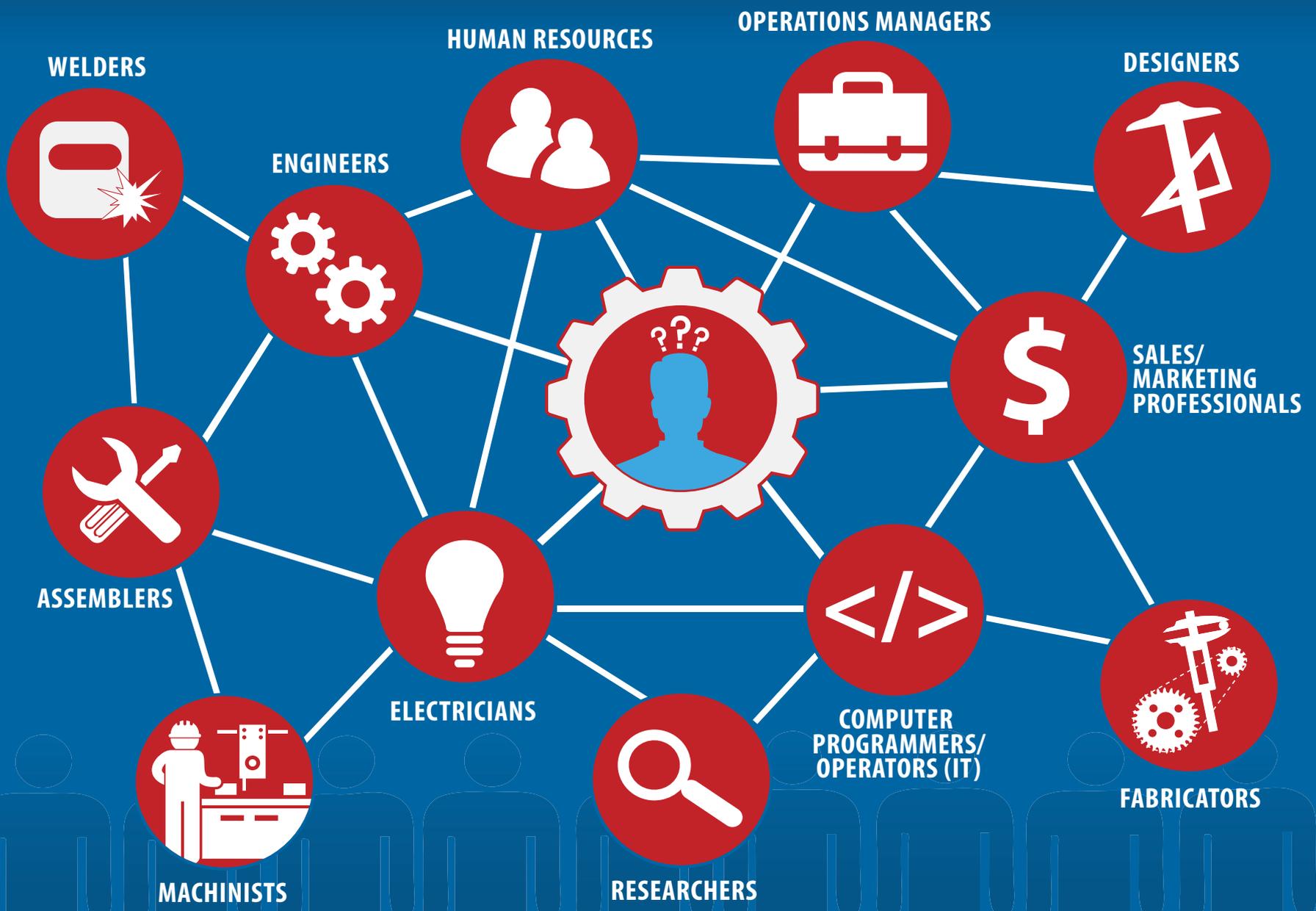


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- REFERENCES -

National Institute of Standards and Technology, National Association of Manufacturers, The Manufacturing Institute, National Science Foundation, U.S. Bureau of Labor Statistics, U.S. Bureau of Economic Analysis

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NIST
National Institute of Standards and Technology
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By Tom Barnhart, Ashwaubenon High School

There's never been a better time for educators in our profession to build or make use of an existing advisory board. I've taught Technology Education at Ashwaubenon High School for almost six years. By far the most important achievement I've accomplished with our program is working with my department to establish and put to work our Technology and Engineering Advisory Board. Prior to my experience in Ashwaubenon, I had the privilege to work with and be mentored by Dave Dixon in the Racine Unified School District. Through the use of an effective advisory board, Dave and his team were able to establish one of the first NATEF certified automotive programs in the state. This endeavor required revising the program's curriculum and facilities. By witnessing this program's success I was able to understand the impact advisory boards have on our profession. I offer these guidelines as suggestions to implementing an effective advisory board, based on my experience.

Starting out

In hindsight, forming our T & E advisory board was backwards from how it should have been done. As a department, we simply created and contacted people from a suggested members list and asked them to participate as an advisory board member to help our program. If I could go back in time, I'd have suggested that our department come up with a mission statement to present to suggested members so everyone knew ahead of

Establishing A Tech Ed Advisory Board & Putting It To Work

time what they were getting into. Luckily it turned out good for us.

During our first few meetings we informally discussed why we were all there and then collaboratively worked on creating a mission statement and formulated goals. This is what the mission and goals turned out to be:

Mission

To prepare Technology & Engineering students to be contributing members of tomorrow's workforce in N.E.W. by partnering with higher education, business, and the community.

Goals

- Give students authentic experiences.
- Sustain our local workforce with quality employees through student preparation.
- Expose students to training opportunities and jobs.
- Educate students on the needs/demands/skill sets required for tomorrow's workforce.

Who sits on the advisory board?

Over the past four years we've had multiple people sit for a length of time on the board. Generally, I like to see the number of people somewhere close to 12. With this number I find it easiest to:

1. Move efficiently and effectively through agenda items. Too many members can create frustration in this realm and the last thing you want to do is make members feel like a number.
2. Allocate enough members to run an effective meeting by offering multiple perspectives in the event that a few members cannot attend.
3. Create enough room to have representation from multiple Career Cluster Pathways.



What role does an advisory board play in your program?

Feedback from an advisory board as it relates to curriculum, facilities, equipment, job opportunities, and private sector trends is extremely valuable information for your program. I've always thought of our advisory board as a checks and balances system for these kinds of subjects. By gathering feedback from the advisory board, your program can be designed to satisfy all stakeholders.

Influence school boards and administration with your advisory board

Several times during my career I've wondered how much influence I personally had with my fellow staff and partners in education. In my opinion, an organized group of people teamed together can achieve greater things and provide greater influence.

Creating a task force within the advisory board

It's extremely important once you've established an advisory board to put your team to work. Board members need to know their time vested in the group is accomplishing something. These are just a few things that creating a task force within the advisory board can do:

- develop curriculum
- help attain certifications
- design and upgrade facilities
- advise and possibly purchase equipment related tasks
- support student awards and recognition
- create student job shadow and apprenticeship opportunities

Once artifacts, like curriculum updates and facility upgrades, have been accomplished, board members have something to be proud of and showcase to the entities they represent.

In summary, advisory boards can be one of the best ways to create effective partnerships for a Technology Education program. Create a vision as an educator and make the vision become reality with your advisory board.

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Email: rioux@uwosh.edu
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Dr. Patricia Terry,
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Northwood's Manufacturing at Hurley High School

"Where Manufacturing Education meets real world application"



Northwood's Manufacturing featured last spring is finally underway and taking on business, as of the start of the 2014/2015 school year. Northwood's Manufacturing is a student run business ran out of the Hurley High School technology education department. This program is based from the well-known Cardinal Manufacturing located out of the Eleva-Strum High School.

Since last year a lot has happened in the Hurley School shop, A complete transformation you could say. The shop went from being a typical high school technology education classroom to a advanced manufacturing learning department.

A lot of this is due to the industry support the school was able to receive throughout the year. Industry such as Ironwood Plastics,

Hitt's Fine Furniture, Bretting Manufacturing and many more have been involved with the school throughout the transformation. On top of the Industry support many members of the community also got involved and donated money to the cause. Because of this, the school was able to raise over 100,000 dollars to help revamp the shop and boost the start of Northwood's Manufacturing. Some of the new updates the facility received last year include:

- A freshly painted shop from floor to ceiling
- Modified and painted ventilation system
- 3 Miller 252 mig welders
- 3 Miller Sycrowave 210 tig welders
- 3 Miller Thunderbolt stick welders
- 5 welding booths

- All new tables
- Two Mills
- A CMM Machine
- Toolboxes
- Updated Oxy-acetelene welding stations
- 1 Clousing lathe with digital read out
- Radial arm drill press
- New air line system with air drier
- updated hand tools
- 3 Mini lathes
- Drum sander
- Jointer
- Shopbot wood CNC
- Sharp 3 axis metal CNC

Like other programs the students of Northwoods's manufacturing start out with basic skills and work their way into Northwood's Manufacturing. After getting into Northwood's manufacturing, students produce real work for paying industry and people. The goal of Northwoods's Manufacturing is to eventually be a self-sustaining program, able to purchase high end equipment without having to eat up that precious school budget. Projects range from small welding jobs to sophisticated fixtures produced on the Sharp CNC for local industry. The money produced from these jobs goes directly back into the program and a portion into the pocket of the students in the class.

On top of the updated facility, Both



teachers Roger Peterson and Jacob Hostettler have seen an increase in class numbers and a complete moral change within the students. Hostettler says, "The students are much more focused on learning and self-progression than at the start of last year". Since the start of the program behavioral issues have went down drastically and students take more pride in being in a "SHOP CLASS". It's something that they can look forward to and be proud of at the end of the day. After all, a program like this would never be possible without the students.

"So far the Program has been a huge success; we are excited for our first year in business and can't wait to see what the future for Northwood's Manufacturing holds".

For more information about Northwood's Manufacturing Please visit our Website or email: northwoodsmfg@hurley.k12.wi.us

www.hurley.k12.wi.us
northwoodsmfg.org



'Pathways' offers viable alternative to traditional college route

A pilot program is underway at Rice Lake High School (RLHS) that addresses the needs of an often overlooked portion of the student population: students who, for whatever reason, are reluctant to commit to post-secondary education. The RLHS 'Pathways' initiative will include many tracks—from agriculture, to business, to manufacturing—all focused on giving students skills that can be immediately applied in the workforce. Years in the making, groundwork for the first 'welding pathway' began in earnest this spring, thanks to the added efforts of Technical Education Instructor Chuck Carr, and the cooperation between Rice Lake School District and local manufacturer Rice Lake Weighing Systems (RLWS).

Since May of 2013, RLHS instructor Chuck Carr has been undergoing continuing education of his own, working closely with engineer, Kevin Larson, to learn the specialized skills required of a welder. While mastering these skills and immersing himself in modern manufacturing culture, Carr has also partnered with the manufacturer to develop a comprehensive welding curriculum for the high school.

In the new welding pathway, students will be able to complete up to four levels of welding-focused coursework in as little as two years. Pending budgetary and equipment needs, RLHS hopes to enroll students as early as fall of 2014. The Pathways goal? Get students the skills necessary to earn an entry level position, in a field of their

choosing, upon graduation. The hope? Put graduates to work locally.

Larry Brown, District Superintendent, has been a leading supporter of the Pathways program since the beginning. "This is about making education more relevant for our kids," Brown says. "I've taught in this kind of environment before. That's why when Curt (Pacholke) brought this to me, I said, 'Yes, we definitely need to pursue this.' We're just very fortunate that Chuck (Carr) is willing to take this on, because it takes an instructor who wants to do it and a principal willing to support it."

Win/Win . . . and Win.

RLHS's mission is "to prepare each individual to become a knowledgeable,

resourceful, resilient, and respectful member of our global society by providing a challenging education in partnership with families and the community." And with Pathways, they're certainly achieving it. "Global-level skills need to be what we teach our kids," notes Pacholke. "As technology improves and skills change, we need to be current with those techniques. The only way we can be current is if we know exactly what globally competitive businesses are doing."

The student benefit goes beyond getting first-hand knowledge of current industry practices. By integrating Pathways with other school-to-work courses like the

Continued on Page 21

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Manufacturing, Engineering and Technology Program Continues to Expand and Prepare Students for the Future

In spring 2014, the Manufacturing, Engineering, and Technology (MET) Department at Hortonville High School (HHS) underwent a major face lift. As part of a \$7 million renovation to the high school, the department's space was completely redesigned and made over. This came about because the community as well as district leaders saw the need that will allow the department to expand and better prepare their students for success after high school.

In 2011, the department added a pre-engineering pathway for the students to study as well as enhanced its manufacturing / trades curriculum. Since that year, the department has added additional courses each school year to continue challenging and preparing students for future education and the workforce. A common theme among the courses is offering project-based learning where students engage in group activities to solve problems and challenges.

One of the newest additions to the curriculum at HHS is Computer Integrated Manufacturing (CIM). This course applies principles of robotics and automation to Computer Aided Design (CAD) and builds on computer solid modeling skills developed in Introduction to Engineering Design and Principles of Engineering, the two other courses offered at HHS. Students also get the opportunity to use Computer Numerical Control (CNC) equipment to produce actual models of three-dimensional (3D) designs. Examples of projects being done in the class are:

- Programming VEX robots and robotic arms to communicate with one another and create entirely automated processes
- Proto-typing by using a laser cutter and 3D printer to test form, fit and func-

tion

- Using CNC machines to create wooden, non-electric sound amplifier that students will be able to use for their personal communication devices

"Students can really benefit from taking courses in our department because they get to learn by doing; they are able to see the concept on paper first, and then use critical thinking and problem-solving skills to physically make something work," explains Mr. Jeff Lebeck, department chair for the MET at HHS. Not only do students get hands-on experience with our courses, but they gain lifelong skills that can be transferred to post-secondary education or the workforce. One HHS student who has taken multiple courses, explains:

"We have the opportunity to explore multiple fields of engineering, from electrical to robotics to structural. This is great because we can find out which field we enjoy the most before going to college. I have decided that I'll be going to school for computer/electrical engineering because I really liked this in the courses I've taken here at HHS."

Another course was just added this year to the curriculum, allowing even greater opportunities for HHS students. Engineering Design and Development (EDD), a capstone course, will give students the chance to identify a problem in a business or society and create a solution to that problem. Students from other school districts who have taken this course have even received patents on their designs.

On the manufacturing /trades side, we have added a welding and fabrication class for juniors and seniors as well as a measure-



Principles of Engineering (PoE) students building their alternative energy car.

ment and benchmark class for sophomores to our already robust course offerings. The measurement and benchmark class is the first class in a series of three intended to expose students to the machining field.

Through the youth apprenticeship program, the department places several students during their senior year in machine shops where they are gaining much needed experience in the workforce. Several of their students are offered full time jobs after graduation because of the opportunities the students had while taking courses in the department.

Two HHS students who went through the youth apprenticeship program said this:

"The CAD and shop classes we took in the high school gave us the basic knowledge and sparked an interest that we didn't have before. We both went from knowing nothing about the

trades – to wanting to pursue a career as a machinist thanks to the Manufacturing, Engineering and Technology department and the apprenticeship program."

Mr. Lebeck adds, "We thank the HASD community, board of education and administration for their continued support of the Manufacturing, Engineering and Technology department. Without this support, we would not be able to provide students all of the great opportunities that our curriculum and space has to offer."

www.hasd.org/schools/hs
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Innovative Technology Experiences for Students and Teachers (ITEST)

The (ITEST) program through research and model-building activities seeks to build understandings of best practice factors, contexts and processes contributing to K-12 students' motivation and participation in the science, technology, engineering, and mathematics (STEM) core domains along with other STEM cognate domains. The ITEST program funds foundational and applied research projects addressing the development, implementation, and dissemination of innovative strategies, tools, and models for engaging students to be aware of STEM and cognate careers, and to pursue formal school-based and informal out-of-school educational experiences to prepare for such careers.

Deadline: Nov. 6, 2014

Website: www.nsf.gov/funding/pgm_summ.jsp?pims_id=5467

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Deadlines: Applications are accepted year-round

Website: www.ppgfoundation.com/Home.aspx

N-Visioning a Brighter Future Grant Program

Westinghouse awards grants that support STEM (Science, Technology, Engineering, Mathematics) education to promote knowledge and skills that will be needed by its future workforce. Schools or teachers who want their students to learn more about STEM through a hands-on project should apply for this grant. Any US elementary, middle, or high school can apply.

A total of \$3,000 is awarded to three schools (\$1,000 awarded to the school, and \$2,000 granted to the science department).

Deadline: Applications are due November 14, 2014.

Website: westinghousenuclear.com/About/Community-and-Education/Educational-Grant

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Monica Gabor

Are American manufacturing workers getting back in the game, again?

In “Made in America, again: why manufacturing will return to the U.S.” (Boston Consulting Group, August 2011), Harold L. Sirkin, Michael Zinser, and Douglas Hohner—mainly by showing that China’s competitive edge is shrinking—contend that American manufacturing is making a comeback in the world market.

America’s share of worldwide manufacturing had weakened because of the postwar boom in imported products from

rebuilt Europe and in novelty items labeled “Made in Japan” and later by items labeled “Made in Taiwan” and “Made in India.” But then America’s manufacturing made a comeback in the late 1990s, dominating everyone else in high-value industries, such as computers and pharmaceuticals.

However, after joining the World Trade Organization (WTO) in 2001, China became perhaps the greatest competitive threat ever experienced by America. With its workers then making less than \$1 an hour, and with other financial conditions supportive of manufacturing, China became business’s default option to lower costs. What ensued was a massive building of goods-producing plants there. Now the “perfect storm” of advantages leading to this great outsourcing of manufacturing to China is ending. And the way is open for a rebirth of manufacturing in the United States.

For more than a decade, manufacturing companies have looked beyond U.S. borders, especially to China. In addition to enjoying low labor costs, corporations have accepted the sweet deals, such as corporate-tax holidays, cheap loans, and cash grants that Asian (and European) governments have used to entice companies beyond America’s shores. Not only did

outsourced companies succumb to China’s cheap labor, artificially low currency, free infrastructure, and other incentives, manufacturers saw the great potential of the rapidly growing Chinese domestic market.

In recent years, however, the picture is looking better for American manufacturing, particularly in the South. For one thing, China’s wages are rising rapidly because of increased consumer demand and labor strikes, which occasionally have included worker suicides. (In 2010, for example, Honda was forced to raise wages by 47 percent, after a series of strikes.) However, even with higher wages, labor has become scarce in many parts of the China. But wages, though still much lower than those in America, are only part of the story.

Chinese utility costs have risen rapidly, up 15 percent from 2010 to 2011. And there is no more cheap industrial land available. So, to build new plants, manufacturers must move inland, thus also incurring higher transportation costs. Industrial land per square foot costs \$17.29 in Shanghai and \$21 in Shenzhen. By contrast, similar land in Alabama runs \$1.86 to \$7.43 and costs \$1.30 to \$4.65 in Tennessee and North Carolina. Addressing this land-costs advantage, the federal government and especially Southern states have vigorously pursued manufacturing facilities.

Other increased costs for manufacturing in China include rising transpacific shipping rates, the steady appreciation of the renminbi against the U.S. dollar, and—just as many a general has learned in battle—the numerous costs and other problems associated with an extended supply chain. Another potential problem is rising punitive damages from intellectual-property theft and trade disputes. For instance, under the WTO Safeguard Agreement, the United States increased duties by 25 to 35 percent in 2009 on some Chinese tires.

Additionally, Chinese productivity increases lag behind wage increases. And although greater automation, thus lowering production costs, seems a way to increase productivity in China, this is a false assumption. Greater investment in automation would reduce a product’s labor content, and the main competitive advantage of Chinese manufacturing is its low labor costs. So increased automation in China is unlikely to change the manufacturing cost equation. Therefore, although manufacturing goods with high labor content on a vast scale probably will remain in China, plants will be built

more and more in the United States where workers have higher productivity.

The authors speculate that by 2015, the labor cost savings will probably not be enough to justify outsourcing new production of many manufactured products to China.

One can reason that with manufacturing in China losing some of its luster, companies will turn to other low-cost countries, especially in South Asia, to outsource manufacturing. (Hourly wages average \$1.80 in Thailand, 49 cents in Vietnam, 38 cents in Indonesia, and 35 cents in Cambodia.) Although some transfer has taken place, the sheer number of Chinese workers dwarfs the workforce of these other countries. Additionally, Chinese workers are more productive than other workers in low-cost nations, China has a first-rate infrastructure, and the government offers many incentives. Also, wages in South Asian countries are rising. Thus, South Asian countries are incapable of absorbing all of the manufacturing for export that is projected to leave China.

And although it appears that Mexico—with its proximity to the United States (goods usually reach the United States in 1 or 2 days, compared with 21 days by ship from China) and low wage costs—would be considered for outsourcing manufacturing, drawbacks include safety concerns, poor infrastructure, and a shortage of skilled workers.

Thus, the authors believe that the return of production in the United States will accelerate in the future. However, they do not think a renaissance in U.S. manufacturing will diminish China’s role as a global manufacturing entity, especially for Europe and Asian countries. But they conclude that, if current trends continue through 2020, with all costs considered, the cost equation of manufacturing in China may reverse itself—with costs in the United States being cheaper for many items, especially for North American markets.

If the above is true—and the cost gap between China and America is closed—consumers checking manufacturers’ labels increasingly will see “Made in the U.S.A.”

Reprinted from the U.S. Bureau of Labor Statistics — www.bls.gov/opub/mlr/2013/beyond-bls/a-welcome-sticker-shock.htm

‘Pathways’ Continued from Page 19

school’s COOP program, students may have the opportunity to test drive a career path before making a costly investment in education. “Knowing what you don’t want to do is sometimes just as important as knowing what you DO want to do,” says Carr. As student-loan debt can be a long-term financial burden, a try-before-you-buy approach can be especially appealing.

Of course, there is no true replacement for on-the-job experience, and Pathways students will be able to start acquiring that experience three-to-five years sooner than their college-bound classmates.

Upon graduation, these young adults will be able to harness the relationships they’ve established within the community to begin a skilled career path and earn a living wage. While Pathways doesn’t eliminate the need for post-secondary education for a well-rounded career path, it does make that education more relevant. With a solid understanding of their chosen path, a student may be more likely to complete the education he or she pursues.

Human Resources Director Jake Nolin explains the company’s challenge in finding enough skilled labor. “We’ve looked at

apprenticeship programs, we’ve looked at companies who’ve developed their own schools, and many other short-term intensive training programs. Pathways is filling a void, and giving these kids an opportunity to come out of high school with the knowledge, skills and abilities to do an entry level welding job.”

“Kevin is going to be a great resource for me as I begin the program. This whole thing is really going to help me be a better teacher.” Carr remarks, “I’m just really looking forward to teaching kids these skills. In fact, I have kids right now that are just as excited as I am about the program and the opportunity it presents.”

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Baldwin Woodville Industries and OEM Fabricators Partner for Success



Kyle Miller
Technology Education
Baldwin-Woodville High School

Baldwin-Woodville is a small high school with around 400 students. There are two Tech Ed teachers who teach a wide variety of classes. We have been very fortunate to have had some great support from our administration and area businesses to help us purchase equipment and develop new curriculum.

Many of the changes to our program began about six years ago when I teamed up with our other Tech Ed Teacher at the time, Jake Kusilek. I had been here for a year when the position opened and we hired Jake. I really wanted to make some changes and update our equipment and curriculum and Jake was totally on the same page. We began by updating our curriculum and course descriptions with the goal of giving students a place to apply what they were learning in other classes.

We picked up new equipment along the way through fundraising and through the help of our administration. Things really began to take off however about three years ago when we began working very closely with OEM Fabricators Inc. out of Woodville. President S. Mark Tyler came to us with the idea of developing a Manufacturing Pathway for students. His idea started with students taking Tech Ed courses as

Freshmen and Sophomores. We then began working with WITC to set up Transcribed Credit Courses that students could take as Juniors and Seniors. During this time students interested in this as a career pathway also would begin working at OEM. Upon graduation OEM would hire these students and then pay for them to attend WITC to complete their degrees. Upon graduation from WITC OEM would then hire the students full time. While the program is still in its infancy we do have a couple of students currently working at OEM and attending school. Our goal is to eventually have



Dirt Bike Swing Arm Extensions

around 15–20 students a year complete this pathway. We have gotten to the point of having a total of 5 transcribed credits that we can offer students.

As a result of this program we also completely transformed our Metal Shop. We painted it, added new equipment, and got rid of outdated equipment. OEM was a big help in doing this. They donated multiple welders and when the school bought a CNC mill, they matched it and bought us a CNC lathe. The goal of updating everything was to help us become self-sufficient as well as to meet some of the criteria required for the transcribed credit courses.

We set up Baldwin-Woodville Industries with the goal of creating a student run business within the school. Jake was mostly in charge of this aspect and began manufacturing parts and selling them. The goal of the business is to purchase new equipment in the future to help us keep advancing our program. We have now hit a little bit of a hiccup as Jake resigned to work in the private sector and we are currently seeking another Tech Ed teacher to pick up where he left off. Currently we have a former Tech Ed Instructor filling in and are trying to keep things going as they were before. The only real difference so far is we are only able to offer 2 transcribed credits in my Mechan-



ical Drafting Class now. We still are offering the Manufacturing Class and will be having a former student that is currently working at OEM come in to help teach students how to use the CNC mill and lathe during the transition to a new instructor.

[www.bwsd.k12.wi.us/
highschool/bwindustries](http://www.bwsd.k12.wi.us/highschool/bwindustries)



A note from OEM Fabricators

OEM has worked with the Baldwin-Woodville High School and has hired 5 students/graduates so far through the Tech Ed program. While they were in the Tech Ed. program they were learning vital skills that have benefited OEM such as CNC programming, reading blue prints, put in weld hours, and learned about manufacturing processes.

The past students that are currently employed at OEM from the Tech-Ed program are currently enrolled in advanced programs to attain their degree at an area technical college or a university.

OEM did employ former Tech Ed. instructor, Jake Kusilek over two seasons working in our facility. This gave him hands on experience and a better understanding of manufacturing processes.

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UW-Platteville in partnership with UW Colleges provides the opportunity to pursue an ABET-accredited bachelor's degree in electrical or mechanical engineering from UW-Platteville.

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The UW-Platteville engineering courses offered through distance technology are recorded during live classes and then made available via UW-Platteville's online course management system, Desire2Learn.

HOW IS UW-PLATTEVILLE ENGINEERING UNIQUE?

- Hands-on, lab-heavy experiences
- Theory-based curricula
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- UW-Washington County



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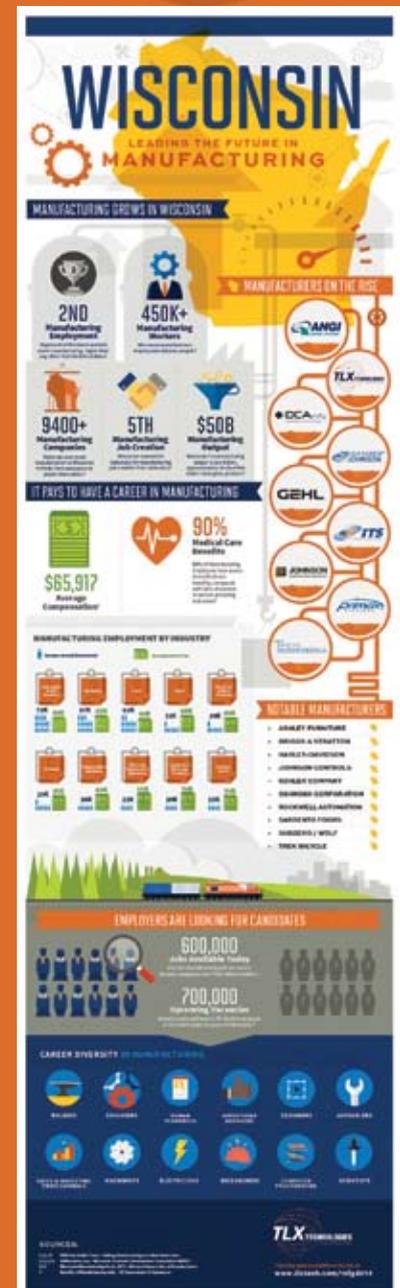
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