CONNECTING WISCONSIN'S SCHOOLS TO MANUFACTURING

MANUFACTURING TODAY

FALL 2013

Wisconsin: A National Leader in Manufacturing

by Richard G. Chandler,
Secretary of the Wisconsin Department of Revenue

Wisconsin is proud of its longstanding status as one of the leading manufacturing states in the nation. Wisconsin's manufacturing sector employs one out of six Wisconsin workers and accounts for almost 20% of the state's economic output. Wisconsin ranks second in the country in the relative size of its manufacturing sector, with manufacturing employing more than 450,000 people in 2012.

Wisconsin manufacturing has moved far beyond the stereotype of the dirty, old-fashioned shop floor. It has been transformed by high-precision, high technology companies in a wide range of fields. It is also an industry that is growing rapidly with exciting, sophisticated job opportunities.

Manufacturing is Wisconsin's largest economic sector as a percent of gross domestic product, as shown in the table at right, and has recently been the state's fastest growing economic sector. With 12.5% growth over the past two years, manufacturing grew nearly twice as fast as the state's economy as a whole.

Wisconsin is among the nation's leaders in producing durable goods. In particular, Wisconsin excels in machinery, fabricated metals, and electrical equipment. Each of these industries employs over five percent of the nation's total employees in the industry.

About 160,000 people work in these industries, making innovative products sold across the nation and worldwide. Consumers around the world are familiar with Wisconsin products such as Harley-Davidson motorcycles, Trek bicycles and Mercury Marine motorboat products. Kohler plumbing fixtures and Ashley Furniture are household names, and builders are familiar with quality Wisconsin products such as Kolbe & Kolbe windows. Wisconsin companies are world leaders in construction and mining equipment, farm equipment, and yard care and snow removal products; major employers in these areas include Caterpillar, Joy Global, the Manitowoc Company, Case IH, Ariens, John Deere

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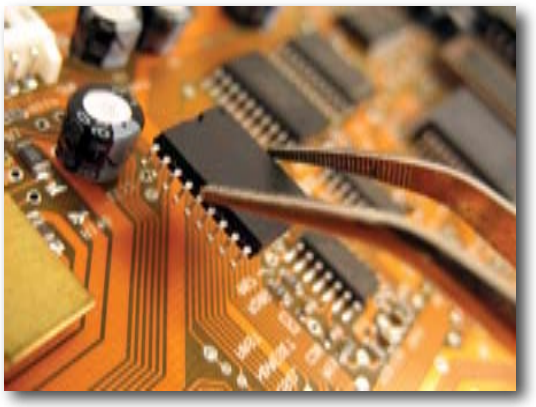
Wisconsin Gross State Product, 2012			
	Amount in Millions $	Share of Total	Growth from 2010
All Industry Total	261548	100.0%	6.6%
Agriculture, forestry, fishing, and hunting	4802	1.8%	9.9%
Mining	521	0.2%	-1.1%
Utilities	5563	2.1%	8.5%
Construction	8379	3.2%	3.5%
Manufacturing	49981	19.1%	12.5%
Wholesale trade	15460	5.9%	12.2%
Retail trade	15437	5.9%	4.8%
Transportation and warehousing	7913	3.0%	7.4%
Information	8089	3.1%	10.2%
Financing and insurance	21481	8.2%	6.6%
Real estate and rental and leasing	30997	11.9%	0.8%
Professional, scientific, and technical services	12036	4.6%	10.0%
Management of companies and enterprises	6257	2.4%	10.5%
Administrative and waste management services	6121	2.3%	7.3%
Educational services	2748	1.1%	8.6%
Health care and social assistance	23485	9.0%	4.3%
Arts, entertainment, and recreation	1921	0.7%	5.6%
Accomodation and food services	6734	2.6%	11.3%
Government	27242	10.4%	-0.3%



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.

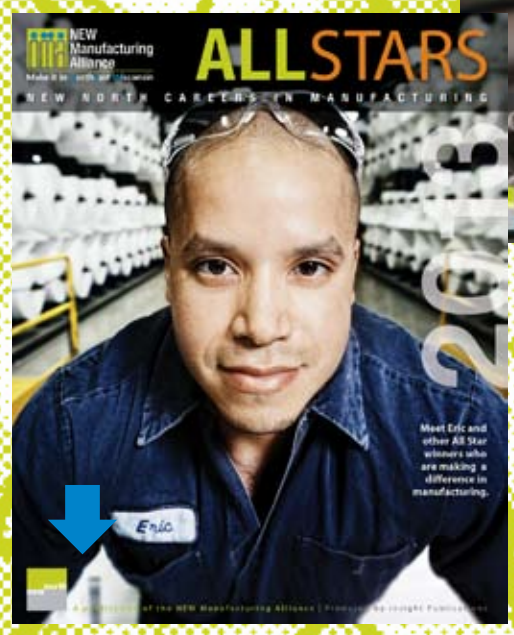
MANUFACTURING
BY THE NUMBERS

- 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. 30: NEW Manufacturing Alliance 2nd annual Excellent in Manufacturing/K-12 Partnerships Awards, in Green Bay

OCT. 31: Manufacturing First Expo & Conference, in Green Bay

PLUS: Student and Educator Plant Tours Throughout October

WEBSITE:
www.newmfgalliance.org

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

Welcome to the World of Manufacturing!

Joni Geroux, Outreach Program Manager
UW-Stout Manufacturing Outreach Center
Professional Education Programs & Services
Chair, Manufacturing Works/Gold Collar Careers

As a student or career seeking individual or an educator providing career pathway opportunities for your students, you deserve to be informed of the opportunities in advanced manufacturing that are high tech, high pay and are in high demand in your own backyard!

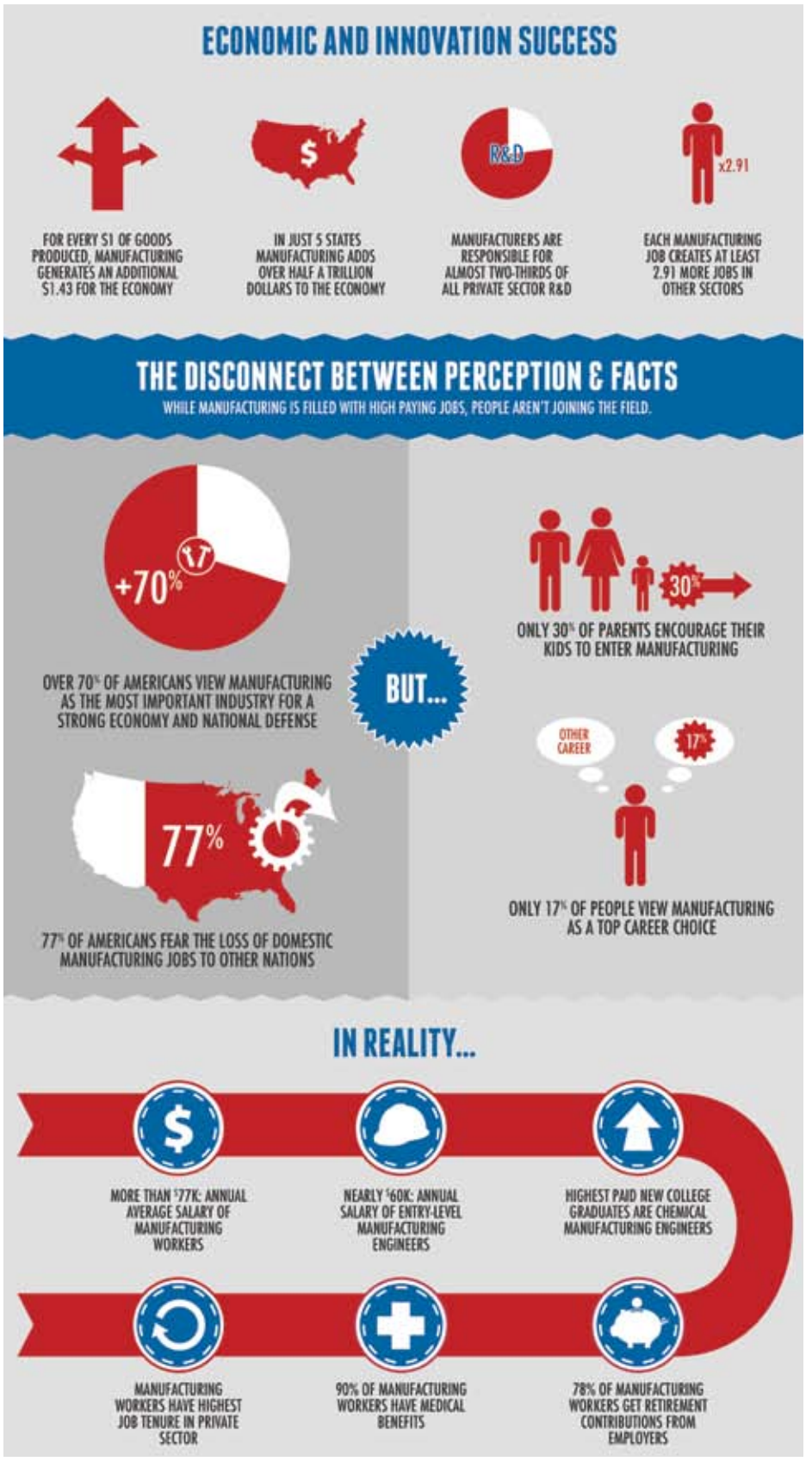
We invite you to learn more about the viable careers in advanced manufacturing, how to prepare at the secondary education level, next steps for required post-secondary education and what takes place on the job within various manufacturing fields.

Technological advances demand more highly skilled employees, and the looming retirement bubble makes the skills gap even more pronounced. As an industry and a community member, it is important that we become actively involved in the challenge to bolster the image of manufacturing and tackle the skilled labor shortage head on. It is critical to the health of our economy. The workforce is at a crosshairs and by 2030, it is predicted that 77% of skilled baby boomers will have left the workforce. A 2011 skills gap report from the National Association of Manufacturers indicated that 67% of manufacturing companies were already experiencing moderate to severe shortages of available, qualified workers.

Advanced manufacturing is good for the economy. As cited by NIST MEP, for every $1 of goods produced, manufacturing generates an additional $1.43 for the economy. While over 70% of Americans view manufacturing as the most important industry for a strong economy and national defense, only 30% of parents encourage their kids to enter manufacturing and only 17% of people view manufacturing as a top career choice. We must address this disconnect before it's too late.

Regardless of your current role or situation, we encourage you to dive into manufacturing in whatever capacity applies to you:

- **Students/Workforce:**
  Explore advanced manufacturing opportunities with an open mind. Great opportunity awaits you!



- **Parents/Educators/Influencers:**
  Learn about advanced manufacturing career pathways and share these outstanding options with your kids/students.

- **Industry:**
  Help us with the outreach mission to make a difference. There are movements taking place across the country, join us!

MANUFACTURING TODAY

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Lighting the Way to Careers in Manufacturing

J & R Machine in Shawno Has a Plan

Tim Tumanic, president of J & R Machine of Shawano

"We've been involved with the local high school for about 10 years now," said Tim Tumanic, president of J&R Machine in Shawano, a rapidly-growing 30-person company that makes complex metal parts. "One of our challenges is to find employees with technical aptitude and the right work ethic," he said. "Unfortunately, it seems with all of the tight budgets for schools, the industrial arts programs are the first to be hit with cuts and are completely strapped for funds and resources."

This chronic lack of support is what spurred Tumanic to donate two Haas Computer Numerical Control (CNC*) Machine Tools to the Shawano Community High School. (Haas provided a $15,000 discount on the machines). The school serves more than 900 students wishing to attend college, technical school, the military and those who will immediately enter the work force after graduation. To complement Tumanic's donation of the $70,000 state-of-the-art machines, the Shawano County Job Center donated another $10,000 to provide the programming software Master Cam as well as Solid Works, a high-end Computer Aided Design (CAD) application. These donations are the basis of a whole new machine shop curriculum for the school. "Previously, the program only offered lathes and other machines that haven't been used in the real world for years. Now, students can develop the skills that will enable them to get good jobs right out of high school." With this new curriculum, students can design, program and build parts – a complete package that stimulates creativity, technical aptitude and precision – all attributes that serve any student well in today's job market.

As an employer, and as a community member who has worked with the schools for more than a decade, Tumanic sees a mismatch between the general view of what a manufacturing career offers, and what a manufacturing career actually entails. "The perception of students is that manufacturing is dirty and nasty," said Tumanic. In reality, manufacturing is technologically demanding, infinitely variable and continuously improving. It also offers the highest wages and the best benefit package of any sector – as well as great opportunity for career advancement.

For example, Tumanic cited the career path of one J&R's employees. Hired in 2005 after high school graduation, he began as a CNC machine operator, working full-time while attending NWTC to train for a career in the building trades. After two years, this employee decided that manufacturing was a better career choice. Soon, he was promoted to 2nd Shift Supervisor, and today, he is a Production Manager, earning substantially more than Wisconsin's median household income of $52,000 per year** at age 27. "The company is growing so rapidly that I expect him to continue to advance – he's now learning the 'business side' of our operation, so the sky's the limit," said Tumanic.

Great wages are just the start at J&R Machine.

A CNC operator checks parts after machining.

Benefits include:

- Full health insurance after 60 days of employment
- Dental Insurance
- Life Insurance
- Short & Long Term Disability
- 401k plan with company match
- Annual bonuses each year based on the company's profitability and job performance. (Paid for the past six years)
- Regular raises & promotions as on-the-job training is completed
- Work-out facility on-site
- Employee lounge featuring Direct TV on a 52" screen
- Four-day work week (4 ten-hour days with Fridays reserved for overtime at time and one-half)
- Company outings to Packer games, quail shoots and more

"We only promote from within, so everyone has the opportunity to develop their career – it all depends on what they choose to put into it," said Tumanic. The average age of employees at J&R Machine is just 28, and the company is growing rapidly. "We expect to hire another 15 people in the next 5 years," said Tumanic, "We look to the local high school for students with the right attitude and skills." Tumanic prefers to hire high-school graduates in order to train them in the methods that have made J&R Machine a very successful company.

Tumanic encourages teachers to take another look at manufacturing "Now is the time for a manufacturing resurgence in the US," he said. "Technology is the basis for today's manufacturing, and there are plenty of great jobs available right here, right now for students interested in computers, technology, design, and who want to create something new." He suggests that schools develop "feeder programs" similar to the programs now used to develop strong high school football and wrestling programs. "These top programs begin in middle school," said Tumanic. "It should start with a technical aptitude test that reveals abilities many students do not know they possess. Once the aptitude is discovered, these talents can be developed with targeted curriculum, similar to what is done in sports feeder programs," he said. Unlike sports feeder programs, these technology feeder programs would benefit the vast majority of students who participate. Few students in sports feeder programs will go onto careers in professional sports, while technology/manufacturing feeder programs would benefit all of the participants, the local employers and the economy.

Tumanic's thirty-plus employees are doing very well indeed. "They all own their own homes, they buy new vehicles every year, have plenty of toys and the time to play with them," he said. Another benefit is that Tumanic's employees can stay in the place where they grew up, providing stability to their families and the community – pumping their salaries into the local economy, generating benefits that go far beyond their own earnings (that are competitive with salaries in the Green Bay/Fox Cities area). Manufacturing is the growth industry that drives the Wisconsin economy, and more and more schools are investing in helping their students prepare for an interesting, fulfilling and well-compensated career in manufacturing.

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* CNC machines are automated milling devices that make industrial components without direct human assistance. They use coded instructions that are sent to an internal computer, which allows factories to fabricate parts accurately and quickly. There are many different types of CNC machines, ranging from drills to plasma cutters, so they can be used to make a wide variety of parts.

** Statistic from the US census Quick Facts, Wisconsin 2007-2011.

Manufacturing in K–12 Schools — *Really in the Schools!*

Assembled by Andria Reinke, Editor Teaching Today

These two schools featured in the articles below have several things in common. Both are located in small towns, both have supportive and forward thinking administrations, they have innovative and hardworking Tech-Ed teachers, and they are turning out graduates who are work-ready and have an advance lead for a college degree in the STEM fields.

How are they doing this? Eleva-Strum and Webster High Schools both house a successful manufacturing business within them. It wasn't always this way; it took a lot of creativity, hard work and community support to get there, but now their students are getting not only a hands on education in manufacturing, but also in accounting, sales, and marketing. It's not just the Tech-Ed department that is benefitting from this; other departments are getting involved as well.

Tiger Manufacturing

It all started with a question. "How can we better utilize technology in our schools?" An enthusiastic Tech-Ed teacher, Roy Ward and Jerry Olson (another Tech-Ed teacher) gave a PowerPoint presentation about their Idea. Could they start a business within the high school? They would use the Tech-Ed area to build cabinets and cabinet components for paying customers. "Yes!" was the answer "Go for it!" From there, many meetings with the school board and local businesses took place in order to come up with ideas on how to raise some startup money. Nexen Group, a local manufacturing company, believed in the idea and jumped on board. They agreed to match up to $8,000.00 of community funds raised. The Bridge (the student run school newspaper) wrote an article and stuffed the paper with a quarter size orange piece of paper asking for community members to help raise startup monies. There was an overwhelming outpouring of support that was received from community members who read the article. People sent in anywhere from two to hundreds of dollars.

A CNC router was purchased and the search for clients began. Roy and Jim Erickson (the Webster School District superintendent) had canvased the area meeting with anyone who would listen. They had a student written business plan in place, which was the foundation of the business meetings. Orders and jobs began to come in.

This was over six years ago. Today, Tiger Manufacturing is a thriving enterprise providing its workers (students) with hands on experience in real world job skills that no textbook could give.

When asked "What do the students learn as a result of the class?" Mr. 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. The more you know and can do the more valuable you are." This is knowledge that will benefit them no matter what career path they choose to pursue, but a student that is going down a manufacturing related career path could take Tiger Manu-

Continued on Page 6

Mr. Ward has started a STEM program for girls called "Technigal". "I created this class to offer girls an opportunity to show the boys what they can do. I believe this all girl's class softens the idea that shop classes are dirty and just for boys. They find out that they can compete in the technical areas and don't have to be intimidated by the boys." He stated.

Cardinal Manufacturing

Seven years ago, the shop at Eleva-Strum High School, laid in much the same state that many school shops struggle in. Underequipped and out of date, the shop needed to catch up with the times. The machinery that was there needed a tune-up. Some pieces needed cleaning; others, replacing, and many pieces weren't even there. The lighting was awful, heating was questionable, and air conditioning was unheard of.

This was the scene Craig Cegielski took in the day he accepted the job as Tech Ed Teacher. It was humbling, to say the least. But Cegielski had a mission. He'd come to plant an idea in this place, and with dedication, effort, and a love of getting his hands dirty, he would spur this program to new heights. Cegielski spent many extra hours bent over a worktable late in the night to meet deadlines. At other times, he was out in the community building partnerships with the local businesses. It's all paid off for him, though. Today, his program has become a nationwide epitome of what can happen in any school shop, with the right blend of work and ingenuity.

Cegielski's aim hasn't strayed from its mark. His mission is still the same as it was the day he first stepped through those garage doors. "(The intent was always) to run a higher-end manufacturing program, to close the skills gap, and to teach how a business works."

Cardinal Manufacturing, as this student-run business had been christened, is a glowing example of Tech Ed success. Today, the shop runs like a well-oiled machine. Jobs flow in at a steady rate.

"Cardinal Manufacturing's opened up my view of what I can do (with my life). If this program wasn't here, I don't think I would've picked manufacturing as a (future) job. I don't know what I would have done."

—Collin Higley, Junior

Many people have applauded Cegielski for his turnaround of the Tech Ed program. He tells them all, it's not him that deserves the pat on the back. "The list of people who have helped make Cardinal Manufacturing doesn't end. I've got a binder in my office stuffed full with different business cards from all the businesses that have helped us to where we are now. People think I'm some genius; I feel more like a traffic director."

Students are stepping up to leadership responsibilities. 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. Cegielski believes the program could easily break $35,000 gross income this year.

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Tiger Manufacturing Continued from Page 5

facturing for two years and walk out ready for a job. "We have the technology and software as good as the local tech schools. If the student has the time in their schedule and the desire to learn every part, they can get what would be comparable to a 2 year degree right here in high school."

Students have individual jobs, but they work together as a team. Everyone's job is important and they help each other all the time. Mistakes are made everyone takes ownership including Roy. There is no finger pointing. Instead, they ask "what could I have done to prevent the mistake from happening?" Students know that their teachers will not get mad if they make a mistake. Roy wants to know when this happens so that it can be corrected and that everyone learns from it and to make sure it doesn't happen again. Students take a great deal of pride in working for others and aim to produce the perfect product.

Regarding the future of Tiger Manufacturing, Mr. Ward had this to say,

We will continue to build community relations and do the things we have been doing well. I never been satisfied with mediocre and always am willing to advance with technology. As we get better and things take us less time, it opens the door to new products. The future of the program looks good. We have fulfilled our promise to build customer/community relations, paid off the business loan and created a positive work experience for our students — it has been a win/win experience for everyone involved.

When asked what the average time it takes to finish a project, Roy replied,

"It depends on the size. We usually design the project and order material a week ahead of time. If material is on hand, we can design, program and cut in a matter of minutes. There have been times when a customer needed their product ASAP and we got a fax that morning, designed, programmed and cut all the parts (26 4x8 sheets) and it was out the door at the end of the day. We do whatever needs to be done to meet the customers' expectations. Typically we have more lead time and we four to eight sheets per day. Smaller jobs take us less than a week and big jobs can take months. "

One recent job done by Tiger Manufacturing was a kitchen cabinet system for a couple's dream home. The lady admitted to being a bit nervous about her "dream kitchen" in the hands of a group of high school students, but when the job was complete she was thrilled with the work that they had done.

There is a video on the Tiger Manufacturing portion of Webster high School's website. It is an overview of three STEM programs and Tiger Manufacturing is featured in it. This is a very good video.

www.webster.k12.wi.us/high/tigermanufacturing.cfm

Cardinal Manufacturing Continued from Page 5

Every year, Cardinal Manufacturing seniors are graduating with priceless experience that can't be taught in a classroom. These seniors enter college with two years of experience with running a business under their belt. Many even have guaranteed jobs with local businesses and a $500 scholarship is given to a deserving senior each year.

"Students in Cardinal Manufacturing are the cream of the crop." 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."

This rigorous admission procedure may seem like a chore to some, but one student sees them much like the Pearly Gates. "It's like judgment time, to see whether you make the cut. Do you get in or don't you? I mean, once you make it, it's like any shop student's dream. To work during school… for a paycheck." It's true. Students do get a part of the profit. After all the figures have been totaled, the shop expenses cut out, and reserve money set aside, the rest goes to the students.

About 50 different schools from across the country visited Cardinal Manufacturing last year. They all want to know how all this was accomplished and are interested in similar concepts in their schools. Craig and his students have been traveling as well. They went to the PMTS tool show in Ohio for a week, had their own booth and did a presentation at show, attended the Amerimold show in Illinois in June with Modern Machine Shop Magazine, and went to Atlanta, Georgia last December with Reality Works and presented with them. There were also presentations at the WTEA Conference, the Wisconsin State Counselor Conference, and at the CVTC open house.

Cegielski's payment system is based not only on total hours, but also performance reviews. That means if a student has kept his tardy and sick days to a minimum, they might just find a bonus in their paycheck.

It's clear why only the best get into this prestigious program. Responsibility is key. "(These projects) are not just something they're turning in for a grade." Cegielski explains. "They've got the paycheck to work for. If they mess it up, they're the ones in the truck going for more material, they're the ones staying after to get it finished, and in the end they'll have to look that customer in the eye whether they finished his work order or not."

There is more information and a video of Cardinal Manufacturing on their website. This video is also on Youtube, and on *Modern Machine Shops* magazine website.

cardinalmanufacturing.org

Both Tiger Manufacturing and Cardinal Manufacturing say that they owe much of their success to their communities help and support through donations of money and equipment, job orders, and goodwill towards the endeavors of their business ventures.

The support of the administrations at both schools has been key. From the beginning when the ideas were first presented to the administrations, to the present day, there has been encouragement and assistance provided by them.

It takes the heart to love your students enough to build programs like these for their education.

It takes the brains to figure out how to accomplish this feat.

And it takes the determination to see it through to completion – never giving up even when it takes late nights, stress, and great effort.

Both Craig and Roy possess these qualities in abundance and their students are at an advantage because of that.

The article at right is reprinted from a blog post that appeared on wmep.org in January 2013 when John Brebeck was a senior at Watertown High School. Today, John is preparing to enter UW Platteville to pursue a 4-year degree in Mechanical Engineering. He's pursuing the dream he's had since his freshman year in high school.

Following his Dream . . . Mechanical Engineer

My name is John Brebeck, I am a senior at Watertown High School and I am 18. I used to play football and run track, I am the president of the SkillsUSA chapter in Watertown and was a Secretary in 4-H three years ago. I work at Baker-Rullman as a 3-D modeler/Engineer in training. I enjoy any class that allows me to be down and working in the metal shop. I have taken and enjoyed many Project Lead the Way (PLTW) courses and have taken Manufacturing 1 & 2.

I first became interested in engineering and manufacturing my freshman year when I took the PLTW course Principles of Engineering, which focuses on the more math side of engineering. We created different things like Rube-Goldberg machines and bridges made of Balsa wood. That was my first taste of engineering or manufacturing on any level.

My sophomore year I took my second PLTW course, Introduction to Engineering Design. This was the class where I learned how to use Inventor (a 3-D modeling software) optimally and took Manufacturing 1. I learned to use the lathe, the mill, how to weld, and how to make different sheet metal parts. I also joined SkillsUSA that year and started competing in different manufacturing events like Technical Drafting, where I used inventor to make 3-D models and then turned them into 2-D, fully dimensioned drawings.

My Junior year I took my third PLTW course call Engineering Design and Development, where I was teamed up with a partner and was working on trying to make a lunchbox that would heat itself. We went through all the stages on the engineering wheel in our classroom except for Test and Evaluate and everything after that. We created a prototype that ended up flopping and by the end of the year had nothing to show for it but a bulky prototype. This year, though, was still a big year for me because my team had won State level in Automated Manufacturing Technology and was headed to National competitions in Kansas City.

Turns out that we were good enough to take home gold for the first time in many years for Wisconsin, it was exhilarating. And as if that wasn't enough that night we found out that that year was the first year that anyone had gotten 100% of the points possible on the 2-D drawings that were handed in, and I was the person who had done the drawings. I can't take credit for that alone since I did ask that the other two members of my team (one being Zach Timm) check them before I deemed them done, but I found most of my own mistakes and did have little that needed fixing. This year is my final year of high school and I am taking the last PLTW course I can which is called Computer Integrated Manufacturing. I am now learning the other two parts of the Automated Engineering Technology competitions, how to code parts and run the CNC.

I stay interested in manufacturing because there is always a new challenge. I really enjoy being challenged with the question of how to make something or simply having to look at blueprints. I enjoy looking at something and problem solving how to make it so that it works. Or looking at something and trying to figure out what the best way to make it is. There is always something to be made and new challenges are made every day.

So far I have only been out of the office at Baker-Rullman once. I took a trip down to Remington Indiana to take a look at a bulk storage building that we were to recreate and add on to. I went to not only see what I am making but to help take measurements so that we could recreate it. Otherwise my job consists of making 3-D models and 2-D drawings of products we are making for different projects. My first job was to make different fill doors on the top of the building that the grain would slip through to fill the storage bins. I will eventually get to go into the shop though and get to make some of the things that I draw. I am looking forward to that day.

Ever since my freshman year, after my first engineering course, I knew that I wanted be an engineer or manufacturer. There was just something about seeing a before and after part that entranced me. I loved to do everything we were doing in that class and in all classes I have taken so far. Without this new found stimulus, I don't know what I would have done. Engineering and manufacturing are everything to me now!

Wisconsin: A National Leader in Manufacturing Continued from Page 1

and Gehl.

These major companies are spread throughout Wisconsin, and they support a vast network of supplier companies in every corner of the state to provide them with components and services. The concentration of companies in these fields means that Wisconsin employers hire thousands of skilled workers every year, from technical college graduates to engineers, researchers and information technology professionals with four-year college and post-graduate degrees. The opportunities for exciting, rewarding careers are tremendous.

Wisconsin's strengths extend to many different fields. For example, the development and manufacture of health care devices and products is a significant and growing share of Wisconsin's economy, with key companies such as GE Healthcare, Accuray, and Promega making cutting edge products.

Since Wisconsin is "America's Dairyland," it isn't surprising that we are among the nation's leading states for butter and cheese, along with chocolate, meat, frozen foods, canned fruits and vegetables, and beer. Among non-durable goods industries, food production directly accounts for $6.5 billion of the state's economy and employs over 62,000 people. Major companies in the food sector make Tombstone pizzas, Sargento cheese, Oscar Mayer meat products and Miller beer, and hundreds of other producers make award-winning beer, cheese, fruit, sausage and other products.

Wisconsin is also among the nation's leaders in paper, printing, and packaging. These sectors employ 60,000 people and include companies such as Kimberly-Clark (household products such as Kleenex), Quad/Graphics (one of the largest commercial printers in the world) and the Menasha Corporation (a leading producer of high-end packaging and merchandising products), along with paper companies throughout the state. Wisconsin's employment share in these areas is more than three times the national rate.

Looking forward, Wisconsin's manufacturing prospects are solid with steady projected growth. The Wisconsin Department of Revenue's quarterly economic outlook anticipates manufacturing employment will grow by two to three percent annually through 2016, adding thousands of well-paying jobs for skilled workers.

Projected 2020 Production Employment

SOC Title	2020 Projected Employment	Median Salary
Production occupations	**315920**	**32850**
Team assemblers	33340	28490
Packaging and filling machine operators and tenders	20110	28030
First-line supervisors/managers of production and operating workers	19100	52820
Machinists	17000	39830
Inspectors, testers, sorters, samplers, and weighers	13840	33540
Helpers--production workers	13400	24260
Welders, cutters, solderers, and brazers	13120	37980
Assemblers and fabricators, all other	11940	28880
Printing press operators and job printers	7920	37510
Paper goods machine setters, operators, and tenders	10280	41240
Cutting, punching, and press machine setters, operators, and tenders, metal and plastic	7830	33150
Computer-controlled machine tool operators, metal and plastic	6680	35860
Production workers, all other	8080	29020
Electrical and electronic equipment assemblers	5820	30650
Molding, coremaking, and casting machine setters, operators, and tenders, metal and plastic	7470	28520
Food batchmakers	5890	29860
Multiple machine tool setters, operators, and tenders, metal and plastic	5660	35740
Coating, painting, and spraying machine setters, operators, and tenders	5100	31300
Woodworking machine setters, operators, and tenders, except sawing	3680	28350
Engine and other machine assemblers	3900	36340
Slaughterers and meat packers	3060	24790
Tool and die makers	3390	48270
Bakers	3860	21640
Print binding and finishing workers	3430	32630
Laundry and dry-cleaning workers	3810	20170

Source: Office of Economic Advisors, Wisconsin Department of Workforce Development, September 2012

Printed from the Wisconsin DWD

Manufacturing Month

By Buckley Brinkman, WMEP CEO

It's time to celebrate and support our manufacturers. During October, Wisconsin will celebrate Manufacturing Month, including participating in a national Manufacturing Day on October 4th. Special events are planned throughout the state and everyone is invited to experience modern manufacturing in action.

Wisconsin is one of the top manufacturing states in the country. Over 19% of our private, nonfarm workforce is involved with designing and making the products that the rest of the world consumes. Manufacturing jobs command a $21,000 pay premium over other jobs in the state. Manufacturing drives a third of Wisconsin's economy and will play a prominent role in our future.

Our future economic success depends on a vibrant manufacturing sector. Manufacturing's impact reaches far beyond providing good, family-supporting jobs. It continually generates business in a range of support sectors and drives more than 2/3 of the country's research and development spending. Innovation and future breakthroughs depend on a strong manufacturing base. Those breakthroughs open new markets throughout the world and drive our exports and ability to compete around the world. Oh yes…a strong manufacturing sector is crucial for future success.

We have a strong manufacturing base in Wisconsin and we face serious challenges to maintain our leadership position. Our state will need more than 700,000 skilled workers to fill vacancies coming in the next eight years. Wisconsin's population is aging and – while the workforce-aged population will remain relatively flat – our emphasis on four-year degrees and white collar jobs is creating a shortfall of qualified workers into the future. We must change the trajectory and meet these challenges head-on and create a successful future.

Manufacturing is a terrific place to build a career and requires a different skill set than in the past. It's not your Grandpa's manufacturing: Dumb, Dirty, and Dangerous. Instead, Wisconsin's leading factories look more like modern research laboratories than the sweatshops of a Dickens novel. Brawn is no longer the only requirement for success in a manufacturing environment. Modern manufacturing requires smarts to run technologically advanced equipment; teamwork to bring complex products together; and people skills to work effectively with customers – even (especially) on the front lines.

It's time for you to come out and see the new opportunities for yourself! Dozens of Wisconsin manufacturers are opening their doors and showing you what they do. They are proud of their companies, their products, and especially their people and they want to share that pride with you. It's time for a field trip! Come out and see the best our state has to offer.

The options are limitless. Manufacturing Month and Manufacturing Day are great ways to start to explore these options and catch a glimpse of the future!

Visit the following websites throughout October to find plant tours of local manufacturers in your area.

www.mfgday.com

wimanufacturingmonth.org

Buckley Brinkman is the CEO of the Wisconsin Manufacturing Extension Partnership

The WMEP is a private, nonprofit organization committed to the growth and success of Wisconsin manufacturers. The WMEP receives financial support from the Wisconsin Economic Development Corporation and the NIST Hollings Manufacturing Extension Partnership. The WMEP also partners with many public and private organizations to serve Wisconsin manufacturers. Since 1996, the WMEP has helped more than 1,300 Wisconsin manufacturers make nearly $400 million in improvements in technology, productivity and profits; helping to generate more than $2 billion in economic impact and creating or saving more than 14,000 manufacturing jobs. Visit www.wmep.org.

Manufacturing is good for Wisconsin.

The Wisconsin Manufacturing Extension Partnership (WMEP) is good for manufacturing.

Since 1996, the WMEP has been helping Wisconsin's small and midsize manufacturers grow and prosper. Through programs like the Wisconsin Profitable Sustainability Initiative™, ExporTech™ and services that support Next Generation Manufacturing, the WMEP provides the advice, training, and assistance essential to the growth of manufacturing businesses.

Manufacturing Extension Partnerships are located across the country as part of a successful federal program to help small and midsize manufacturers. The WMEP receives both state and federal funds, providing an ROI of approximately 30:1. In fiscal year 2013 the WMEP served 633 manufacturers, and of that number, 106 independently reported the following impact:

- $374 million in increased or retained sales
- Saved $66 million in operational costs
- Spurred $213 million in investment
- Created or saved 829 manufacturing jobs

Charles Pipke, Team Leader/ Welder at The Wagner Companies, Milwaukee

We're proud of Wisconsin manufacturers and we encourage teachers to bring students to tour manufacturing facilities in your communities during October. Manufacturers want to share the interesting, innovative and family-supporting careers they enjoy. Go to **www.wimanufacturingmonth.org** or **www.mfgday.com** for more information.

Check out the great manufacturing videos online YouTube - look for wmep. **www.wmep.org**

WMC FOUNDATION

Manufacturing Month
OCTOBER 2013

CELEBRATE MANUFACTURING MONTH IN OCTOBER

Celebrate
Manufacturing Month in October

As an educator...

- Learn about the value manufacturing brings to Wisconsin
- Develop business-education partnership opportunities
- Access best practices and job data

Help your students...

- Realize the wide variety of careers available
- Understand job expectations, current needs, and wages
- Discover the change from old to modern day manufacturing

Sign up for our e-newsletter on workforce development! Send an email to Jim Morgan at jmorgan@wmc.org and place the word Newsletter in the subject line.

www.wimanufacturingmonth.org

Ariens · Baker Tilly · BMO Harris Bank · Boldt · Bretting · Briggs & Stratton · Caterpillar · John Deere · waupaca · DWD Department of Workforce Development · Wisconsin Department of Public Instruction · 100 years of making futures Wisconsin Technical College System

When WMC engaged in establishing Manufacturing Month, we set out to raise awareness of the value manufacturing brings to Wisconsin's economy, promote the good paying opportunities the industry offers, and celebrate the quality Wisconsin manufacturing is known for worldwide. Hundreds of newspaper stories were written, several television and radio interviews took place throughout the Badger State, and numerous articles were posted online. Thousands of messages were sent out through trade associations, local chambers of commerce, and education groups. And employers opened up their facilities to students, parents, counselors, and educators so they could see first-hand what advanced manufacturing looks like.

Changing the Dialogue

Selling Manufacturing One Conversation at a Time

By Jim Morgan, WMC Foundation President

Why do parents speak with great pride about their 4-year university-bound children, but when discussing their technical college student often precede the comment with "he's just attending tech school"?

Why do we only care about K-12 system measurements that revolve around 4-year institutions?

Why is there outrage if an advanced placement course is cut, but silence as many career and technical education departments die on the vine?

Why do so many consider a job in manufacturing not as "prestigious" as a job in a cubicle?

Why aren't we as concerned about lifetime employment as we are about lifetime education?

Why do we think the expectations of students entering the Wisconsin Technical College System are lower than the University of Wisconsin System?

Why do so many value manufacturing jobs… for someone else's children?

I am guessing those questions hit a nerve for anyone following the workforce paradox in Wisconsin.

What has amazed me more than anything else during the past 12 months of preaching the value of manufacturing and manufacturing jobs is the complete lack of understanding of what these careers and companies mean to Wisconsin. And before the financial, healthcare, energy, legal or transportation industries get upset, I can make a pretty strong argument that the citizenry is at least aware that you exist and values what you do. But manufacturing? Not a clue.

In addressing the workforce paradox, WMC and the WMC Foundation set out a few goals 12 months ago:

- Raise the awareness of manufacturing
- Improve the image of manufacturing
- Challenge people's perceptions of manufacturing
- Celebrate the value of manufacturing

A quick summary of recent articles covering WMC events and presentations indicates we are making progress:

"Manufacturing is not a dirty word – nor is it an industry for the uneducated." - Daily Tribune, Wisconsin Rapids

"Many parents saw factory jobs disappearing from Rock County a few years ago and became convinced that manufacturing as a career path is dead. On this Labor Day weekend, however, we're here to tell you that notion is wrong." - The Janesville Gazette

"Last year, 47 hourly workers at Strohwig Industries (each) took home more than $100,000." - The Reporter, Fond du Lac

"People don't understand we are still employing 430,000 in manufacturing in this state." - Green Bay Press-Gazette

"To help close the skills gap, companies across the state are adopting strategies to get high school students interested in manufacturing-related jobs." - La Crosse Tribune

Progress!

And now, October has been declared "Manufacturing Month" and it will be another opportunity to educate. That will be followed by WMC Foundation-led regional sessions offering solutions and best practices to help local communities continue to ensure they are providing quality education and meeting the needs of the workforce. The journey continues.

In the end, competitiveness is what provides business with an advantage. Wisconsin, Germany, Green Bay, Illinois, China, Prairie du Chien – everyone has a workforce problem. More than any other issue, the country/state/community that can offer workforce solutions will win. My money is on Wisconsin. **BV**

Follow Jim on Twitter @JimMorgan1960

Employers, community leaders and educators gathered at WMC this summer to discuss the workforce paradox.

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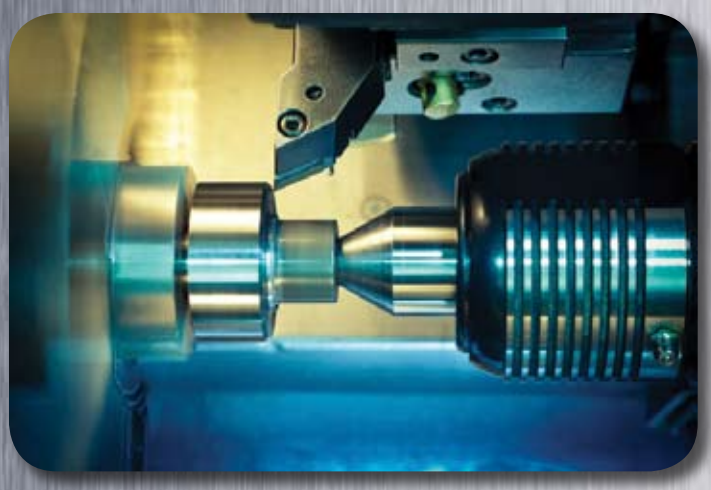
A resource of the University of Wisconsin–Stout Discovery Center

Uncovering pathways to greater profitability and growth through:

- **Strategic Direction**
- **Top Line Growth**
- **Continuous Process Improvement**
- **People and Culture**

"The folks at UW-Stout took a vested interest in helping us succeed! We continue to partner with them as they have now helped take us and employees to new levels!"

—Michael Hunter, Volm Companies



Learn more about our services, expertise and proven results at:

www.uwstout.edu/moc

Email: moc@uwstout.edu

Phone: 866.880.2262

OEM Fabricators Partners with Baldwin-Woodville School District and WITC to Promote Advanced Manufacturing as a High Potential Career Choice

The Baldwin-Woodville School District, OEM and Wisconsin Indianhead Technical College (WITC) created the Manufacturing Careers Pathway Partnership in 2010 to provide educational opportunities and exposure to advanced manufacturing as a great career to students in high school. The pathway program is made up of many elements including:

- career exploration
- job shadowing
- youth employment
- state of the art training facilities
- dual enrollment
- tuition assistance

The Baldwin-Woodville School District has been a true leader in this effort. The district understands the importance of offering exposure to advanced manufacturing in high school so students can learn about all of the opportunities that exist in manufacturing as a possible career choice. Over the past five years the school district has:

- Purchased a new plotter to print blueprints for Architectural and Mechanical Drafting
- Purchased SolidWorks so that students can work on the same 3D CAD system used by industry
- Purchased a Laser Engraver to use as an instructional aid and to use to help raise funds for the technical education department
- Purchased a new set of textbooks for Print Reading, SolidWorks and Automotive Technology classes
- Expanded the computer lab in our area from 16 seats to 20 seats and has purchased 30 new computers and permanent stations

Additionally, the Baldwin/Woodville School District committed $40,000 to the technical education department to purchase a new CNC Mill, a portable CNC Simulator and OEM has contributed new welding equipment, a portable CNC Simulator and a new Hass CNC Lathe to support the program. In 2012 alone OEM's contribution to the technical education program at the Baldwin-Woodville High School exceeded $50,000.00.

Wisconsin Indianhead Technical College is an innovative technical college that strives to push the envelope to deliver cutting edge programs that meet and exceed the needs of business and industry in Northwestern Wisconsin and the college's participation in this program is just one example of its commitment to helping to build the manufacturing pipeline for the future.

Left to right: Larry Grahs and Andy Hennes with OEM Fabricators, Inc.; Jake Kusilek and Kyle Miller, Technical Education teachers at Baldwin-Woodville High School; and Scott Exner with OEM Fabricators, Inc. in front of the new equipment in the technical education department at Baldwin-Woodville High School.

The Manufacturing Careers Pathway Partnership begins with career exploration for 8th and 9th grade students. Students are taught science, technology, engineering and math (STEM) in context so they can experience how each of these subjects relate to manufacturing operations. Students choose a career path in their junior year and take college

Continued on Page 19

STEPS program inspires girls to pursue STEM careers

When Kalley Curtis was going into seventh grade, she loved math and science but was hesitant to say so because it seemed like a boy thing.

Then she heard about the STEPS for Girls program at University of Wisconsin-Stout, a summer experience designed to show girls in middle school that science, engineering and technology can be a career path for them too.

STEPS stands for Science, Technology and Engineering Preview Summer program.

That was six years ago. Curtis is about to start her freshman year at UW-Stout and plans to major in a highly technical field that she learned about at STEPS — packaging. "I fell in love with packaging," she said.

STEPS has made a difference in Curtis' life, and she hopes it will in the lives of girls who attended this summer's 1st annual program. Forty girls a week, 160 total, mostly from Wisconsin and Minnesota participated in the four weeklong sessions starting in early July.

Curtis loves STEPS so much that she has remained involved year after year. After her first STEPS camp, she went to an Advanced STEPS program, then became a junior counselor, lab assistant and, this year, a counselor overseeing a group of 10 girls each week.

"I really think girls walk away with a new understanding of what engineering, technology and science is all about," said Curtis, from Maple Plain, Minn., who graduated last spring from Orono High School in Orono, Minn.

"I also hope they're walking away with the confidence to be a woman in a STEM field because I walked away with that confidence when I was a camper."

STEM stands for science, technology, engineering and mathematics.

One of the program's professional volunteers, Brianne Maier, attended the first STEPS camp in 1997. Like Curtis, Maier became interested in packaging and graduated from UW-Stout with a packaging degree. She worked at General Mills in the Twin Cities before taking a job recently as a packaging engineer with 3M in St. Paul.

"I credit the camp for a lot that's happened in my life," said Maier, who comes back every summer to help. "The camp strives to get girls interested in fields that are male-dominated. There are starting to be quite a few success stories."

The STEPS experience focuses on manufacturing engineering through the fabrication of a unique product, an obstacle-avoiding robot, the Bug Bot, in a realistic produc-

Continued on Page 22

Participants in STEPS for Girls at UW-Stout work with the Bug Bot, an obstacle-avoiding robot. Girls in the program experience hands-on lab sessions for packaging, plastics, electronics, automation and foundry, and produce essential components for the robot.

Gold Collar Careers

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LOGY

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Set-Up Person • CNC Operator
umerically Controlled Operator)
inist (Computer Numerically
lachinist) • Die Repairman • Cell
CNC Machine Setter (Computer
Controlled Machine Setter) •

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Hey Educators and Administrators!

- ✔ *Schedule an in-service with a manufacturer in your district today to take a tour and learn more about advanced manufacturing opportunities!*
- ✔ *Want to hear about successful in-service models from West Central and Northwest Wisconsin? Contact Manufacturing Works/ Gold Collar Careers at:*

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Contact your local technical college or university and learn how you can get the Gold Collar Career skills to compete!

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Internship was the start of a great engineering career

John Guldan, who attended Milwaukee School of Engineering, parlayed his passion for manufacturing into a career as a product engineer at Waukesha® Metal Products, an international provider of custom metal stampings, sheet metal fabrication, and in-house precision tooling.

John Guldan traces his initial interest in manufacturing to his memory of fixing-up an old speedboat his father purchased as a teenager. "It took three summers to fix, but when we were done, it was worth more than ten times what we put into it," John said, "That was when I realized there is a lot of power in how things are made."

It wasn't until Guldan was an engineering student at the Milwaukee School of Engineering (MSOE) that his passion for manufacturing really blossomed.

Guldan has parlayed that passion into a recently launched career as a product engineer at Waukesha® Metal Products, an international provider of custom metal stampings, sheet metal fabrication and in-house precision tooling. The company operates plants in both Sussex and Grafton.

While a student at MSOE, Guldan took part in an engineering internship program at Waukesha® Metal Products. Through the internship, the company exposed Guldan to various facets of the business, including quality, quoting and working directly on the shop floor.

"I learned welding, how to run a brake press and a list of other marketable skills," he said.

Guldan said the company provided him with his first "real" exposure to manufacturing engineering. After earning a bachelor's of science degree in mechanical engineering from MSOE in 2011, Guldan took a permanent job with Waukesha® Metal Products.

Through his training at the company, he has developed a strong foundation as an engineer and has become a key player in the Fabrication Division at Waukesha® Metal Products.

The path to success in the manufacturing sector often doesn't come easy, as students are forced to overcome long-standing stereotypes about the industry being fraught with dirty and dangerous jobs that pay paltry wages.

"It was hard to overcome that, but on the first day, I quickly found out there is so much more to manufacturing" Guldan said.

Some schools do "absolutely nothing" to promote careers in manufacturing and that needs to change, Guldan said.

The internship at Waukesha® Metal Products' Sussex facility helped alleviate any concerns Guldan had about a career in manufacturing.

"It opened my eyes and made me realize that these stereotypes just aren't true," he said.

Certain classes at MSOE, including one focused on plastics manufacturing, also sparked Guldan's interest in embarking on a career in the industrial sector.

Through the internship and classes, Guldan, who currently works at Waukesha® Metal Products' Grafton facility, witnessed first-hand how products are made as well as the various types of jobs that are available in a manufacturing environment, which go far beyond just the plant floor.

"Even workers starting in entry-level positions will find satisfying career opportunities at many manufacturers," he said.

"There are a lot of career opportunities for advancement, no matter which position you start in," Guldan emphasized.

For more information from John Guldan regarding his path in manufacturing, or from any of the other Waukesha® Metal Products employees please visit

www.waukeshametal.com

. . . or go and see them at either of their locations on October 4th, National Manufacturing Day. Details for this event are available at

www.mfgday.com/events/waukesha-metal-products.

Wanted: Three Wisconsin students with a passion for manufacturing

Students can apply to be a part of a panel discussion at the Manufacturing Matters! Conference on February 27, 2014 and attend the entire event at no charge (along with one accompanying teacher). The value of this offer is more than $1,000 per student/teacher.

Manufacturing Matters! is an annual conference that draws 450+ manufacturing leaders from around the state. The conference features a keynote speaker and 21-28 breakout sessions that explore issues that impact manufacturing. Last year, an extremely popular session was a panel discussion featuring high school students and young manufacturing employees talking about why they're interested in manufacturing, and what manufacturers can do to stimulate interest in manufacturing careers. Last year, both John Brebeck and John Guldan participated in the panel (they're contributors to this newspaper as well). Go to www.manufacturingmatters.org to see last year's event information.

To view last year's session featuring students, goto: www.manufacturingmatters.org/sessions/why-gen-ys-choose-manufacturing-career

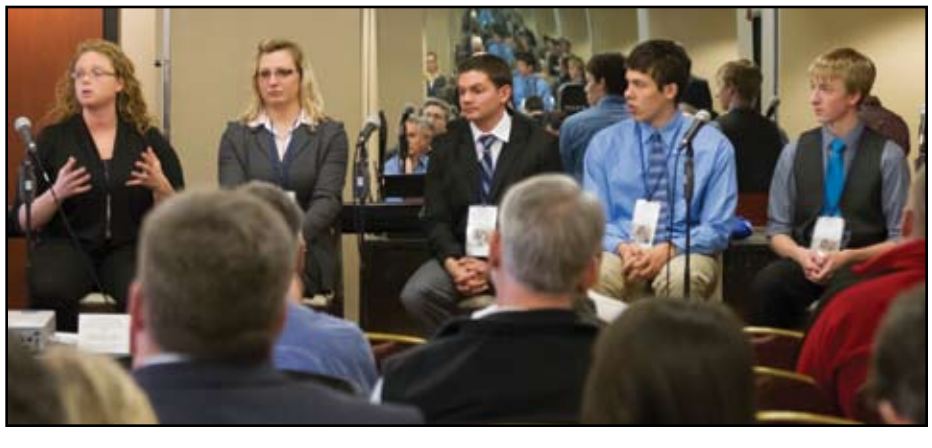
We are opening the 2014 session up to three Wisconsin high-school students who would like to participate in the panel discussion.

Interested applicants are invited to go to: **www.wmep.org/mm-student** and provide an essay about why they are uniquely qualified to talk to manufacturing leaders about their interest in a manufacturing career. Applications must be received by October 31st.

Manufacturing Matters!

Thursday, February 27, 2014

Hyatt Regency Hotel, downtown Milwaukee



The GenMet Story

The need for technically trained employees is the most significant factor controlling the growth of GenMet Corp., a 75-employee metal fabricating operation in Mequon.

"It's truly challenging work to be in a manufacturing today. It is no longer back-breaking work like it used to be, instead it is demanding, technical work requiring a broad set of skills that include understanding lean manufacturing principles and advanced quality systems," said Mary Isbister, president of GenMet and chairwoman of the Wisconsin Manufacturing Extension Partnership's board of directors.

Mary Isbister is the president of GenMet Corp., a 75-employee metal fabricating operation in Mequon, and chairwoman of the Wisconsin Manufacturing Extension Partnership's board of directors.

As the pace of change in technology continues to accelerate, manufacturing has become truly high-tech. A stronger comprehension of math and excellent problem solving skills and technical aptitude are essential, she said. The next generation of manufacturing talent will be made up of the best and brightest students, able to tap into the excellent salaries, great benefit packages and fulfilling career paths available in manufacturing.

Manufacturers and educators have a shared responsibility to acquaint students, their parents and prospective job seekers with the full spectrum of careers available in manufacturing, Isbister added. In addition to technical production-related careers, manufacturers need specialists in customer service, purchasing, sales, accounting, marketing, human resources, information technology and many fields that are necessary for a successful business. "The idea that a manufacturing job means standing on a line for 8 hours and mass-producing parts is simply not the case," said Isbister. "Today's manufacturing facilities are clean, high-tech and incredibly precise. Most of the machines are computer-controlled, requiring highly trained, technically astute professionals."

Producing a complex product requires many functions, from working with the customer to design the part, sourcing the materials that produce it, to developing the most efficient way to manufacture the part, to making sure that part gets to the customer on-time and meeting specifications. Literally dozens of people are involved in developing and producing a single part. And this doesn't include all of the support staff that insure the business is running efficiently, customers are being served and bills are being paid.

Our Director of Operations began at GenMet as a customer service rep, then into production operations, purchasing and supply chain management and she's now just about running the entire business," she said. "It takes hard work, but the rewards, both financially and career-wise, are substantial."

GenMet is sponsoring its second Manufacturing Day event on October 4th. The theme for this year's event is "Making Things is Cool." GenMet will host tours for students, educators, parents, and the general public.

"Our mission in hosting this event is to allow people to see firsthand what manufacturing is all about. Visitors will see high tech equipment being used to transform raw materials into everything from trucks, to wind turbines, to displays that they see in Best Buy and Sports Authority stores," Isbister said. "Not only will they witness manufacturing in real time, they will see how much our team members enjoy the work that they do. We want everyone to experience the feeling we have everyday — that making things is really cool."

Manufacturing Recruitment Campaign Gathers Momentum

Growing Number of Area Organizations Now Supporting Dream It. Do It. Initiative

Since launching last year, Dream It. Do It.® – a collaborative effort designed to guide the next generation of manufacturing talent toward the sector's good-paying, technologically advanced careers – continues to make inroads and is now expanding across the state.

Dozens of local manufacturers, educational institutions and economic development organizations have joined the effort, taking a lead role in promoting manufacturing as a great career choice. Their ongoing contributions include:

- Sharing employee stories through professional videos filmed on-site
- Opening career pathways by offering internships, job shadowing, speakers and more
- Engaging with candidates at career fairs
- Partnering with educators to align curriculum with their needs
- Showcasing their workplaces through facility tours

> ***This initiative provides manufacturers an opportunity to demonstrate their pride for the industry and help change the image of career opportunities in manufacturing.***
>
> **Joseph Weitzer**
> *Dean, Center for Business Performance Solutions, Waukesha County Technical College*

These and other initiatives continue to gain visibility and popularity. For example, a program called ***Schools2Skills™***, involving hundreds of students touring dozens of area manufacturing facilities and Waukesha County Technical College, is back by popular demand this year in Waukesha County.

Highlighting the Advanced Technologies and Operations of Today's Manufacturing

The companies and organizations supporting Dream It. Do It. – including over a dozen official Manufacturer Ambassadors who've made a long-term commitment to the program – represent a diverse cross-section of the region's high-technology operations.

"It's exciting to see so many great, leading-edge companies working together to help our industry solve the key challenge of recruiting. We're grateful for the efforts of everyone involved," said Suzanne Kelley, President of the Waukesha County Business Alliance. *"From companies to schools to civic groups, we're building some very valuable partnerships to help us attract and retain the skilled workers we need to keep thriving."* ■

Who's Involved?

- Aries Industries, Inc., Waukesha
- Bradshaw Medical, Kenosha
- Busch Precisions, Inc., Milwaukee
- Cousins Subs
- Custom Equipment, Richfield
- Dedicated Computing, Waukesha
- Dickten Masch Plastics, Nashotah
- DUECO, Inc., Waukesha
- Eaton Corp., Waukesha
- Ellison Technologies, Pewaukee
- Gateway Technical College
- GE Energy Waukesha Gas Engines, Waukesha
- GE Healthcare, Waukesha
- Generac Power Systems, Waukesha
- GenMet, Mequon
- HUSCO/Incova, Waukesha
- Kenosha Area Business Alliance
- Kenosha County Job Center
- LMI Packaging Solutions, Kenosha
- Mahuta Tool Corp., Germantown
- Matzel Manufacturing Company, Milwaukee
- MetalTek International, Waukesha
- Metalworld, Inc., Racine
- MicroPrecision, Inc., Delavan
- Milwaukee Area Technical College
- Milwaukee Area Workforce Investment Board
- Milwaukee7
- MMAC
- Moraine Park Technical College
- Multi Products Co. Inc., Racine
- Nelson Brothers & Strom Co., Racine
- Pioneer Products, Racine
- Power Test, Inc., Sussex
- Prop Shaft Supply, Elkhorn
- Quad/Graphics, Sussex
- Racine Area Manufacturers & Commerce
- Racine County Workforce Development Center
- R&B Grinding, Racine
- School District of Waukesha
- Sentry Equipment Corp., Oconomowoc
- Shurpac, Inc., Racine
- Signicast, Hartford
- SPX Waukesha, Waukesha
- Superior Crane, Waukesha
- Trefoil Group, Milwaukee
- Walworth County Economic Development Alliance
- Waukesha County Business Alliance
- Waukesha County Technical College
- Waukesha® Metal Products, Grafton and Sussex
- Weldall Mfg. Inc., Waukesha
- Wiscon Products, Inc., Racine
- Wisconsin Technical College System
- W-O-W Workforce Development, Inc.
- Xten Industries, Kenosha

Visit **dreamitdoitwi.com** to discover more about this vital effort – and how you can support it.

Dream It Do It®
YOUR FUTURE IS HERE FOR THE MAKING.

For Safety's Sake

CVTC team's winning invention makes kids' bikes more visible

Eau Claire, WI - Bob Grzegorek watched the taillights on the bicycle his 12-year-old son was riding move further away in the darkness. He saw the lights brighten as the boy applied the brakes, then return to normal brightness, still visible 200 feet away.

Grzegorek knew then that the product he and his fellow team members from the Chippewa Valley Technical College (CVTC) chapter of the Society of Manufacturing Engineers (SME) developed was a good one.

"It's about safety for the kids. This might save a life," Grzegorek said. He isn't the only one who likes the product. "We had a team of 12 engineers looking at this, and they all thought it was a great idea."

That judging team awarded the CVTC team second place in the 2013 SME Student Design Manufacturing Competition at the SME International Conference in Baltimore, Md., earlier this month.

The product, called the Solar Brake Assembly, gives a bicycle rear taillights and brake lights that work like those on a car or motorcycle. The lights are powered by two AA rechargeable batteries, which are automatically recharged by a solar panel mounted on the rear of the bicycle. The LED lights ensure plenty of brightness with little power used. A mere four hours of daylight fully recharges the batteries.

Engineers at the conference said the Solar Brake Assembly is certainly marketable, perhaps patentable. Where the product goes from here is uncertain. For now, the team members, which include Electromechanical Engineering students Grzegorek, Adam Clark, Benjamin Paffel and Jon Keeley, and Manufacturing Engineering student Scott Steenerson, are thrilled to have done so well.

"I told the guys, even if we didn't place, we're still winners, no matter what," Grzegorek said.

CVTC SME Chapter Advisor Tom Vanderloop encouraged his students to give the competition a try.

Grzegorek started brainstorming right away. "The team wanted to try something outside their experience with a focus on safety and renewable energy. Our original idea was an electric scooter, but we realized we would not have a budget large enough, or the time to completely manufacture our own design," Grzegorek said.

It was Grzegorek's idea to narrow the concept to the brake and tail light assembly. Other team members contributed their ideas, and soon the team was designing a printed circuit board for a solar recharging system. The target market was children's bicycles.

"The team researched the idea at a local bicycle business and found that the concept had not yet been explored," Grzegorek said.

Each member of the team contributed in his own way. "I got to do a lot of the soldering. This was a new experience for me, since I'm just out of (Eau Claire North) High School," said Paffel.

"I helped design the circuits and selected what parts we used," said Clark.

"It was just amazing how they put everything together and worked as a team," said Vanderloop.

The team got some important contributions from community resources, which impressed the judges, as did the team's presentation focusing on safety and saving lives.

The team members' efforts appear to have resulted in a good boost for their personal careers.

The sustainability focus of the contest fit in well with Clark's plans. "I'd like to make a contribution at a factory with a good culture of sustainability," he said.

"These guys were offered opportunities for work a number of times," Vanderloop said. "Guys came up to them and said 'when you guys graduate, I want to see your resume.'"

"General Motors tried to recruit us, and Knuth Machine Tool out of Illinois wanted to see our resumes," said Paffel.

A team of CVTC students in the Society of Manufacturing Engineers chapter placed second in the Student Design Manufacturing Competition at the SME International Conference recently. Shown with the Solar Brake Assembly device installed on a bicycle are, clockwise from lower left, Ben Paffel, Jon Keeley, team leader Bob Grzegorek, Scott Steenerson and Adam Clark.

Society of Manufacturing Engineers

We strive to promote professionalism and cooperation between Manufacturing Engineering and all engineering students as well as members of regional industry. We do this by helping students enhance and apply knowledge gained in the classroom by observing and learning from working professionals.

- UW Stout contact is Glenn Bushendorf bushendorfg1999@uwstout.edu.
- Chippewa Valley Technical College contact is Tom Vanderloop tvanderloop@cvtc.edu

OEM Continued from Page 13

level courses earning credit toward their high school diploma and their technical college degree at the same time. Students begin to work part-time in OEM's shop as juniors and continue until they graduate from their technical college program. This provides students with income while in school and the tuition reimbursement program effectively covers the cost of their technical college experience. This program is a tremendous win for students, parents, the school district, WITC and OEM.

Currently, OEM Fabricators, Inc. has three students or former students from Baldwin-Woodville High School participating in the Manufacturing Careers Pathway Partnership program. Additionally, Jake Kusilek, Technical Education teacher at Baldwin-Woodville High School has spent the last two summers working for OEM Fabricators, Inc. as a Machinist.

Baldwin Woodville High School with OEMs assistance, is in the process of developing a for profit business that will be embedded in the technical education department at the school. This will allow the Manufacturing Careers Pathway to sustain itself by reaching into the business community for real world work and generating an ongoing revenue stream that is not dependent on the local taxpayers and school levy.

Jump start on college

Dual credit approach benefits students, employers

Lomira High School students gather to celebrate Dual Credit Day. (Photo courtesy of Moraine Park Technical College)

Kondex Corporation President Jim Wessing and Lomira technical education teacher John Marx (holding plaque) are joined for Dual Credit Day by Moraine Park Technical College President Sheila Ruhland (second from left), Superintendent of Public Instruction Tony Evers, Wisconsin Technical College System President Morna Foy, and members of the Kondex team. (Photo courtesy of Moraine Park Technical College)

Did you know that students in every Wisconsin high school have the opportunity to earn college credits at no cost to the student? While the offerings may vary by school, the opportunity to get a jump start on college or career does not.

April 30, 2013 was Dual Credit Day in Wisconsin. All 16 Wisconsin technical colleges publicly recognized the importance of dual credit – courses that provide transcripted technical college credits while fulfilling high school graduation requirements, at no cost to the student – and highlighted their offerings.

Wisconsin Technical College System (WTCS) President Morna Foy spoke with students and employers during a celebration at Lomira High School, where students interested in manufacturing careers are benefitting from a promising partnership between the high school, Moraine Park Technical College, and local employers, including the Kondex Corporation.

Kondex President Jim Wessing was a pivotal player in this collaboration. Wessing, in reflecting on how the effort came together, said "I'm proud of the partnership we've built in Lomira – business, K-12, and technical colleges working together to create economic opportunity for our students and community."

"It isn't just Moraine Park with this type of innovative partnership," WTCS President Foy said. "Every one of our colleges across the state is committed to ensuring high school students have an opportunity to earn college credits and explore careers."

Projections by the Wisconsin Department of Workforce Development and national groups consistently indicate that more than half of the job openings in the next decade will require more than a high school diploma, but less than a four-year degree. In the manufacturing sector, employers looking for high-skilled workers often rely on postsecondary programs focused in areas like automated manufacturing systems, Computer Numeric Control (CNC) machining, tool & die making, industrial electronics, and mechanical design.

Wessing believes strongly in the promise of a dual credit approach to increasing skill levels and awareness of manufacturing career opportunities. "Best of all, I believe it can be replicated anywhere there's will and a vision."

Wisconsin educators take "tour of excellence"

Educators across the state earned graduate degree credits in June for learning more about Wisconsin's technical colleges.

Teachers, counselors and administrators who participated in the week-long "Tours of Excellence" visited a different technical college each day for hands-on learning about the programs and services available to students, as well as the 21st century career options that await WTCS graduates. Tour participants completed an action plan for disseminating what they learned, and had the option to earn 3 graduate credits from Marian University in Fond du Lac.

The tours were delivered on a regional basis to allow for broad participation with local partners, with north, central and south sections. Space was limited to 30 individuals per section.

A participant from a prior year remarked in her evaluation, "I feel much more prepared to share the opportunities for jobs and associate degrees that the technical colleges offer, as well as suggesting programs I feel my students would excel in."

Trisha Hornburg, Waukesha County Technical College Student Recruitment Supervisor and the coordinator for the south section of the Tour, said "My experience is that every participant leaves with an increased appreciation for the great career and entrepreneurship opportunities available through WTCS programs. Earning three graduate credits makes it a true win-win."

Registration for the event typically occurs each March. Contact your local technical college to find out more.

The Benefits of Manufacturing Jobs

The role of the manufacturing sector in the U.S. economy is more prominent than is suggested solely by its output or number of workers. It is a cornerstone of innovation in our economy: manufacturing firms fund most domestic corporate research and development (R&D), and the resulting innovations and productivity growth improve our standard of living. Manufacturing also drives U.S. exports and is crucial for a strong national defense.

- On average, hourly wages and salaries for manufacturing jobs were $29.75 an hour in 2010 compared to $27.47 an hour for non-manufacturing jobs. Total hourly compensation, which includes employer-provided benefits, was $38.27 for workers in manufacturing jobs and $32.84 for workers in non-manufacturing jobs, a 17 percent premium.
- The educational attainment of the manufacturing workforce is rising steadily. In 2011, 53 percent of all manufacturing workers had at least some college education, up from 43 percent in 1994.
- The innovative manufacturing sector relies more heavily on STEM (science, technology, engineering and mathematics) education than the non-manufacturing sectors. In 2011, nearly 1 out of 3 (32 percent) of college-educated manufacturing workers had a STEM job, compared to 10 percent in non-manufacturing sectors.
- Higher educational attainment for manufacturing workers carries higher premiums, and the size of the premium, including or excluding benefits, increase consistently with educational attainment.
- Furthermore, the compensation premium has risen over the past decade across all levels of educational attainment.

In sum, manufacturing jobs provide benefits to workers with higher overall compensation than other sectors, and to the economy through innovation that boosts our nation's standard of living.

U.S. Department of Commerce
Economics and Statistics Administration
www.esa.doc.gov

Project Mini-Chopper

A best practice collaboration

By Conor Smyth,
Director of Strategic Partnerships,
Wisconsin Technical College System

Perhaps reality TV has redeeming value after all.

About 10 years ago, the Discovery ChannelTM show American Chopper inspired Fox Valley Technical College's Associate Dean of Manufacturing, Mike Cattelino. He believed this popular concept, building custom motorcycles, would be a great way to engage high school students in technical education and expose them to high-wage, high-demand careers in manufacturing.

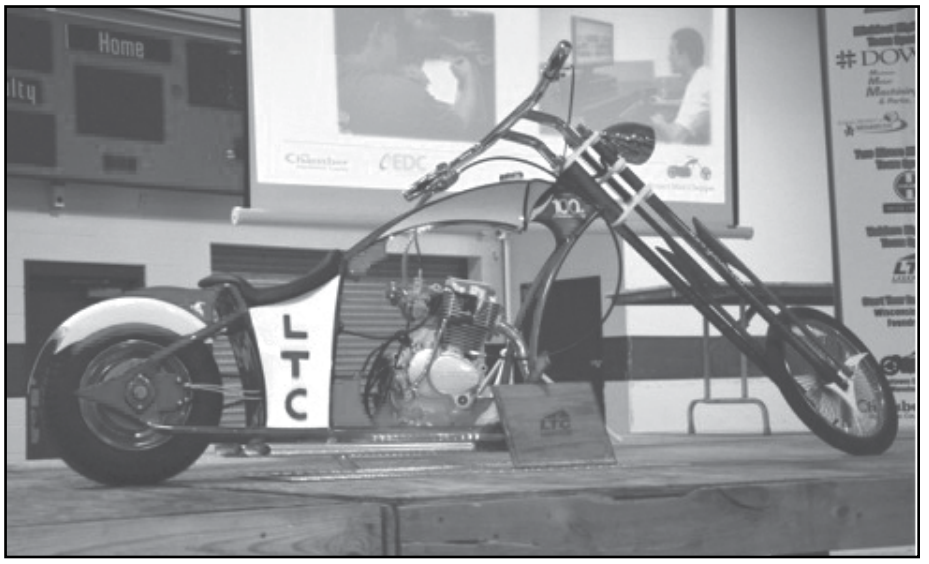
Cattelino and Fox Valley put together a consortium of interested high schools and employer partners. The plan? High school students would design and build "mini-choppers," with oversight and support from K-12 teachers and technical college instructors, and the financial backing of area employers.

In the process, the students would gain valuable hard skills — like CAD, blueprint reading, welding and metal fabrication and soft skills like teamwork, responsibility and project management.

This approach has since been adopted by Fox Valley's sister institution, Lakeshore Technical College, which serves the majority of K-12 school districts in Manitowoc and Sheboygan counties, as well as the Kiel, Cedar Grove-Belgium and Random Lake districts.

In Manitowoc County, Lakeshore found willing partners for "Project Mini-Chopper" in the county's Chamber of Commerce and Economic Development Corporation. For the 2012–13 school year, this dynamic consortium reached out to area employers to sponsor four area high school teams:

- Two Rivers, sponsored by HMF Metal Finishing,
- Mishicot, sponsored by Dowco, Manitowoc Motor Machining & Parts, and Eis Implement),
- Lincoln, sponsored by Miller Ag-Bag, and
- Valders, sponsored by Lakeshore Technical College.



The chopper designed and built by Valders students, sponsored by Lakeshore Technical College, in 2012-13. (Photo courtesy of Project Mini-Chopper)

Fox Valley's Cattelino willingly shared his detailed original mini-chopper concept, which has spawned a number of similar programs elsewhere. For example, Lakeshore and its partners adapted this promising practice to launch "Project Grill," where elaborate barbecue grills replace mini-choppers for the team-based projects. The effort plays on the area's national reputation as the home of Johnsonville Sausage, a regular supporter of the project.

There are countless opportunities to create these types of secondary-postsecondary educational partnerships. Imagination, energy and collaboration: a recipe for success.

The Hard Truth About Soft Skills

By Dan Conroy

There are two things that are almost certain about tomorrow's (good) careers.

1. You will almost certainly need education beyond high school to attain the skills for jobs that pay well.

2. You will need to have the soft skills required to work together well with other human beings.

The first point is easy to understand. If the job doesn't require any significant skill, it isn't likely to pay well, or perhaps it can be done in some third world nation.

The second point is a bit more nuanced. What you learned in kindergarten really does matter. You do have to be able to play together nice in the sandbox. An employee who has excellent technical skills, but can't communicate or interact well with others is a high maintenance employee. This is a person who makes a workplace toxic. This is a person everyone hopes will be fired.

The problem is that this is easier to see in others than it is in yourself. Do you engage in gossip? Are you negative or argumentative? Are you condescending or critical?

What are soft skills anyway? Wikipedia says "Soft Skills are behavioral competencies. Also known as Interpersonal Skills, or people skills, they include proficiencies such as communication skills, conflict resolution and negotiation, personal effectiveness, creative problem solving, strategic thinking, team building, influencing skills and selling skills, to name a few."

One day, I was at a meeting with a number of business people, educators, and job placement professionals. All were complaining the lack of soft skills in the workplace. When pressed about what to do about it, no one had a solution. In my moment of frustration, I wrote out my version of soft skills on the back of a napkin. They may not be perfect, but they are pretty close. . .

Ten Commandments for Career Success

I. Be Positive — Attitude is everything

II. Show Up — On time, every day, reliably

III. Work Hard — Earn your keep, get something done

IV. Get Along — Play together nice in the sandbox

V. Pay it Forward — Do more than is expected today, and you will receive more than you expected

VI. Be Flexible — Willingly take on different tasks

VII. Figure It Out — Be a problem solver, not a problem asker

VIII. Join the Club — Be proud to be a part of your organization

IX. No Whining — Communicate positively and well. Don't be high maintenance

X. Keep Learning — If you don't keep up, you will become obsolete

CVTC stays on cutting edge with water jet

Latest equipment helps prepare students for job market

Eau Claire, WI – Instructor Assistant Corey Wegner proudly shows off a steel cutout in the shape of an elk, done in such fine detail that the texture of the hairs on the elk's neck is apparent. The metal was cut on the latest piece of equipment in the welding shop at Chippewa Valley Technical College (CVTC).

Amazingly, the metal was cut without applying any heat, and in fact, it is specifically because no heat was used that the detail was so fine.

A Flow Water Jet Cutter did the job, and students enrolled for the fall term will be learning how to use it. It's another example of how CVTC continues to stay on the "cutting edge" of manufacturing equipment. It's rare indeed for the graduate of a CVTC manufacturing program to enter the workforce and be baffled by the technology. The College is generally ahead of the curve.

"We are constantly talking to companies, and they are very good about telling us what the new trends are. The College is very good at keeping up with that," says Jeff Sullivan, associate dean of manufacturing.

A case in point is the water jet cutter, which uses a high pressure fine stream of water to cut metal in fine detail.

"It's cutting using the erosion process instead of heat, so you don't get the heat-affected areas you do from heat cutting," says Walter Quaschnick, head of the Welding program. Intense heat can affect the properties of the metal being cut.

"And because we use water, we can cut through other things like ceramic, wood and rubber," Quaschnick continues. "It's a unique type of cutting process."

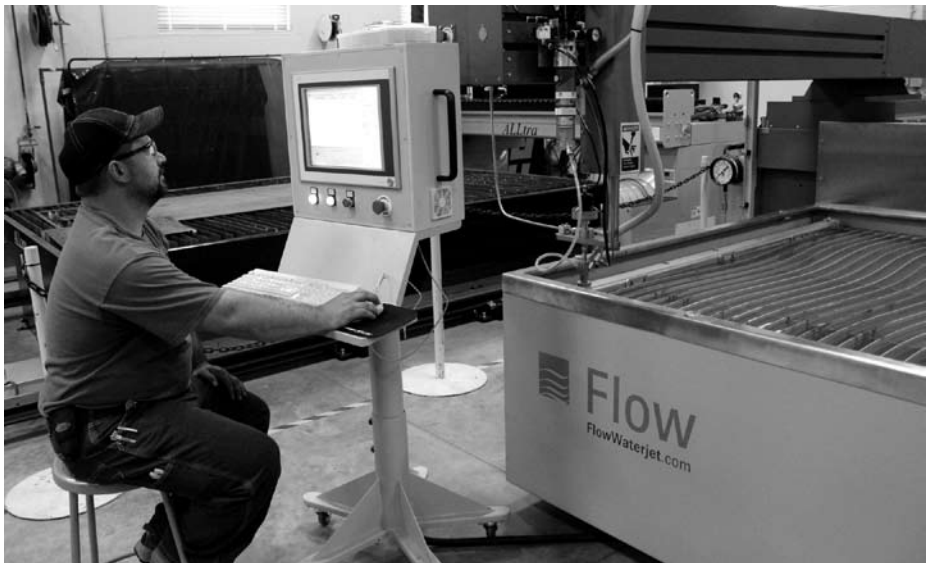
One of the biggest applications is in cutting stainless steel, which is susceptible to rusting if cut with a torch. Midwest Stainless in Menomonie uses a water jet.

CVTC's strategy works two ways. Students are better prepared to enter the workforce by having training on the latest equipment, and the fact that trained workers are available encourages industry to modernize. It's how education can drive economic development.

Also new at CVTC this year is a Haas VM-2 unit in the Machine Tool area. Sullivan notes it is capable of a 1,000-rpm spindle speed. "If you make an analogy, it would be like a standard computer compared to a high-speed computer," Sullivan said.

Examples of such high-technology capability at CVTC's Manufacturing Education Center area abound:

- The Welding program has a computer interface so students can evaluate their techniques with a computer program.
- The Machine Tool program has the capability of micro-machining.
- The Industrial Mechanic program has an assembly line simulator in which students can troubleshoot problems.



Instructor Assistant Corey Wegner programs the new water jet cutter at the Chippewa Valley Technical College welding show. The equipment uses water under high pressure to cut metal and other materials.

- The NanoEngineering Technology program has a Class 100 cleanroom, unique in the state.

CVTC's manufacturing technology is so sophisticated that the College receives requests from private industry to use it, which is possible through the College's Equipment Access program. However, the best way CVTC helps local manufacturers is by providing them with workers trained in the latest technology.

Chippewa Valley Technical College delivers superior, progressive technical education which improves the lives of students, meets the workforce needs of the region, and strengthens the larger community. Campuses are located in Chippewa Falls, Eau Claire, Menomonie, Neillsville and River Falls. CVTC serves an 11-county area in west central Wisconsin. CVTC is part of the Wisconsin Technical College System (WTCS) and is one of 16 WTCS colleges located throughout the state.

STEPS Program Inspires Girls Continued from Page 13

tion setting. Girls in the program experience hands-on lab sessions for packaging, plastics, electronics, automation and foundry, and produce essential components for the robot.

Physics, chemistry, biology and math activities provide background for the project. Communication skills are sharpened in cross-media graphics and multimedia design.

Girls see all aspects of a manufacturing process. They go to the foundry and help make aluminum robot parts, learn about plastic thermoforming and make the robot shell, build antennas in an automation class and, in a packaging class, make a case to carry their robot.

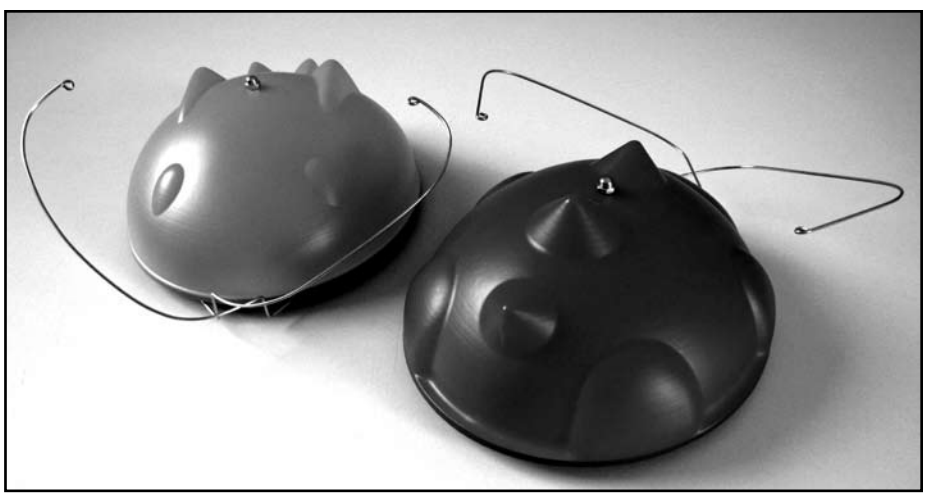
By the third day of their week, girls assemble their saucer-size robots. By the fifth day, they run them through obstacle courses in a low-key competition to see whose perform the best.

One program participant, Maiya Fuller of Danbury, enjoyed the plastics lab and using the mold for the robot shell, as well as learning how to solder parts together."We used solder to do the wiring. It's easier than it looks actually," said Fuller, who will be a seventh-grader this fall at Webster (Wis.) Middle School. "STEPS camp is awesome."

Grant and sponsors

This year's STEPS for Girls Program was supported with a $32,500 grant from the Otto Bremer Foundation, in St. Paul. The money was used: to provide tuition for the campers who attended without charge because they qualify for free and reduced-cost lunch in school; to provide materials and instruction related to the robots; and to evaluate program graduates through the campus Applied Research Center.

"Without the generous grant from the Otto Bremer Foundation and support from other sponsors, STEPS for Girls would not be possible," said Glendali Rodriguez,



an associate professor in the construction program and STEPS director.

Sponsors fund about 40 percent of program costs, with tuition covering 40 percent and UW-Stout 20 percent. For a full list of sponsors and to apply for the 2014 STEPS program go to thewebsite.

More than 2,600 girls have participated in STEPS since it began in 1997.

All activities are presented by university STEM College faculty or professionals in the field; most of those presenting are women. Many UW-Stout students and departments are involved.

WITC Manufacturing Programs

Wisconsin Indianhead Technical College offers nine manufacturing-based programs spanning a spectrum of exciting career choices. For more information on these or any other programs, visit witc.edu/programs.

Automated Packaging Systems Technician

Students in this two-year, technical diploma program will be trained to service and repair a wide variety of packaging equipment and automated systems.

CNC Machine Tool Operation

In this program, students learn the skills to set up and operate manual and computer numerically-controlled (CNC) machine tools, and to measure and inspect parts for accuracy.

Composite Technology

This associate degree program prepares students to be successful in today's highly competitive world of aviation composite technologies. Supported by a background in composite theory, students gain experience in all the stages of the aircraft's life from design to production and repair.

Industrial Automation, Controls, & Networking

Students receive theory and lab instruction with several manufacturing systems to help understand computer and programmable logic controller (PLC) interfacing, control systems, network installation, and administration.

Industrial Maintenance Technician

This technical diploma program gives students experience in welding, hydraulics, electricity, mechanical maintenance, maintenance machining, and programmable logic controller (PLC) equipment maintenance.

Machine Tool Operation

This one-year program focuses on the machining skills necessary to set up and operate manual and computer-controlled machines. Students learn to read prints, use hand tools, use precision measuring instruments and create parts using manual and computer-aided manufacturing systems.

Machine Tool Technician

The two-year Machine Tool Technician program prepares students to operate and set up machine tools for the machining industry.

Machine Tooling Technics

The Machine Tooling Technics program emphasizes both industry machining and machined mold and tool making for plastic injection. The program covers print reading, programming, precision measurement, basic and computerized machining.

Welding

The Welding program provides students will be taught welding skills and theory, fabrication, layout, print reading, welding symbols, math, and welding codes.

Choosing a Career Path

By Shawnda Schelinder
Wisconsin Indianhead Technical College

Bryant Burns had known since the eighth grade that he wanted to enroll in Ashland High School's youth options program and attend WITC-Ashland his senior year. At that time, he wasn't really sure what he wanted to do, but he knew he had the support of his parents and counselor. During his junior year, Burns' career path became clear.

"I took the high school machine tool class as a junior," Burns says. Ashland High School's machine tool class is taught at WITC by Paul Kalin, who also teaches WITC's machine tool operation program. This one-year program focuses on the machining skills necessary to set up and operate manual and computer-controlled machines.

"My goal is to help students acquire a solid foundation of machining and problem solving skills that will allow them to build a rewarding career in the machining industry," says Kalin.

Students learn to read prints, use hand tools, use precision measuring instruments and create parts using manual and computer-aided manufacturing systems. Graduates of the program may work as a machine operator, apprentice or journeyman machinist in a maintenance ship, machine shop, or tool and die shop.

"I knew I liked machine tool and I like the instructor," Burns says. "So it's almost like a two-year program because I've been here since last year."

And the experience shows. Despite his youth, Burns was described as a class leader by Kalin. Those kudos came in the form of a recommendation letter, which helped Bryant land a career at C. G. Bretting Manufacturing Co., Inc., an international manufacturing company located in Ashland.

Jesse Pischlar, SME Student Member Highlight

Jesse Pischlar, CMfgT, a native of Sudbury, Ontario, Canada, has always had an interest in building things and working with his hands. After watching his mother work as a medical lab technologist analyzing samples to diagnose illnesses, Pischlar became inspired to improve the quality of human life through the application of technology.

Pischlar is now a manufacturing engineer in the Neuromodulation Division at Medtronic Inc. in Fridley, Minn. His daily tasks include manual assembly and validating laser welding and injection molding processes. He is also involved in the process development for implantable neurostimulation devices that help treat chronic pain and movement disorders.

A trail of hard work and dedication led up to where Pischlar is today.

In December 2011, Pischlar graduated summa cum laude with a bachelor's in manufacturing engineering and summa cum laude with a bachelor's in plastics engineering from the University of Wisconsin-Stout in Menomonie, Wis.

Pischlar joined SME in 2008 as a member of the University of Wisconsin-Stout S088 and has since enjoyed the many membership benefits available to students.

"It helped in knowing people in the industry, learning from them at events, talking to guest speakers and being in collaborative environments," says Pischlar. "I used the database a lot to look up a lot of articles and resources, which helped in doing assignments and to gain more knowledge of the industry."

As an undergraduate student, Pischlar had the opportunity to work as a manufacturing engineer intern at Medtronic Inc. in the Cardiac Rhythm Disease Management Division in Mounds View, Minn.

"Exploring uncharted territory for the company was exciting," says Pischlar about his favorite project as an intern. "It involved investigating the feasibility of new welding and joining technologies for our cardiac rhythm management products. Since graduation, I've moved to a different part of the company, but my old group is still pursing the project. It makes me proud that they saw enough value in the work that I did to continue working on it."

See more at: www.sme.org/studentmemberhighlight

Manufacturing offers high placement, pay

CVTC graduates finding good jobs

Eau Claire, WI – Graduates of Chippewa Valley Technical College's (CVTC's)manufacturing programs continue to find good jobs, with impressive annual salaries.

Nearly all of the graduates from the 2011–2012 academic year are either working full time or have gone on for further education, such as entering a four-year university for a bachelor's degree. The following table shows the job placement rate, the percentage of graduates returning to school and the average annual salaries of those working, according to CVTC's Institutional Planning and Research.

These most recent placement figures available are very similar to figures for previous years.

Chippewa Valley Technical College delivers superior, progressive technical education which improves the lives of students, meets the workforce needs of the region, and strengthens the larger community. Campuses are located in Chippewa Falls, Eau Claire, Menomonie, Neillsville and River Falls. CVTC serves an 11-county area in west central Wisconsin. CVTC is part of the Wisconsin Technical College System (WTCS) and is one of 16 WTCS colleges located throughout the state.

Field	% Working	% School	Avg. Salary
Nano Engineering Technology	75	25	$50,000
Electromechanical Technology	94	6	$47,615
Industrial Mechanic	93	7	$41,447
Machine Tooling Technics	100	0	$39,992
Welding	91	4	$39,066

The Manufacturing Engineering Technologist program prepares graduates to work in the manufacturing sector. They will assist engineering and management in the design and development of new products and in the improvement of production processes.

The Electromechanical Technology program offers instruction for non-clinical laboratory workers with hands-on training. The students will perform a variety of laboratory and testing procedures using an array of equipment. It also provides instruction on the design, operation, and support of production facilities with a focus on food safety and quality assurance. Scientific coursework includes biotechnology, microbiology, chemistry, food lab science, and nanoscience.

Industrial Mechanical Technician program prepares you to install, maintain, operate, diagnose, and repair automated equipment used in manufacturing industries and to maintain facilities/buildings with automated systems that create the products we use every day.

The Industrial Engineering Technician program at CVTC is designed to support regional food processing industry.

Industrial Mechanic program provides training in electrical, HVAC, pneumatics, troubleshooting, welding, hydraulics, programmable logic controllers (PLCs) and maintenance.

The Machine Tooling Technics program offers training for employment as a Computer Numerical Control (CNC) Programming, CNC Programmer, Mold Maker, and in quality-control or inspection.

Welding program includes: Robotic welding — set-up, programming, operation, and fixturing for automatic welding, CNC plasma cutting — using a computer program to control the cutting on an automated plasma cutter, CNC equipment processes and Welding certification.

Welding Fabrication program-- students will gain skills and knowledge in advanced welding processes, along with the traditional processes of SMAW, GMAW, FCAW, GTAW, and Oxy-Fuel welding and cutting.

Good Business in Small Town Wisconsin

Loading the CNC Lathe at Nexen

Dan Conroy, Nexen

Why would anyone want to have a business in small town Wisconsin? I always tell people we have the good fortune of working for a great company like Nexen, and living where other people come for vacation. It's bigger than that though.

It's all about the people and the community. We know the schools matter to us a ton. They educate the sons and daughters of our employees. They are educating potential future employees for Nexen. They are what make our communities vibrant.

So when Nexen has a surplus machine why wouldn't we want to help them? When we identified a Haas CNC lathe as surplus, we asked the Spooner School District if they could use it. They responded with an enthusiastic yes! It suited the future vision of their tech ed program perfectly, and dollars were scarce for an outright purchase. We tuned it up, cleaned it up, boxed up some tooling, and delivered it to the school.

Their Tech Ed teacher Jeremy Vogler was grinning from ear to ear about the prospect of getting this machine, but he was also apprehensive about his skills with this technology. He came to Nexen and job shadowed for two weeks. His head was spinning from what he learned, but he also felt he was ready to move forward.

Here are his own words . . .

"Thank you so much for everything you have done for us here at Spooner High School. The machine is sure nice to have, and will be a great addition for the students to learn with. It is exciting. The machine is assembled and ready to go. Just waiting for a few final wiring things to be completed, I hope within the next day or so it will be up and running. It was nice that I was able to come over and be taught how to run the machine. Everyone was kind and very helpful I learned a lot and it was really fun. I enjoyed the days at Nexen and I thank everyone for all the help. Everyone is just so kind and helpful it was nice. Also the pride everyone has in the work they are doing. Nexen is a great place. I find it amazing what the machines can do. I thank you and everyone for everything you have done, I will keep you posted on the progress of the machine, and metals program here. I will send photos. Thanks again talk to you soon.

Have a great day
Jeremy Vogler."

Our employees went above and beyond for Jeremy. They offered to come over on their own time and help. The Machine Tool Instructors from the local technical colleges did as well. We are excited to see how this will impact the students at Spooner. They will now be able to experience how cool it is to shave metal. Some may go on to technical college and eventually become a future Nexen employee.

Give generously – in the end you will find that you have received more than you gave.

Partnerships with K–12 Education

Nexen Group, Inc. has long understood the value of education, and has taken an active role in the community to support education. The following is just a portion of these efforts.

Career Education in the Classroom

Nexen has partnered with the local school systems to bring a variety of career insights to students. Dan Conroy has keynoted several school assemblies about the critical importance of education beyond high school, and how they can prepare and succeed. Many Nexen professionals present to students about careers in engineering and advanced manufacturing. They inspire girls to take an interest in STEM through STEPA, First Lego League, and women in Technology events. Human Resources staff talk with students about job seeking skills, communication and interpersonal skills, and family economics. Faculty members and students have job shadowed at Nexen, and there are lots and lots of tours.

Plant Tours

There are a multitude of tour groups that come to the Webster facility. We have students as young as Kindergarten (even as young as Head Start) tour our plant in order to get a sense of what manufacturing is all about, as well as to expose them to career choices early on. We also have tours of older students, especially in technology education (shop), which tour or plant.

Various groups of Teachers and School Administration also tour our facility. In addition to these K–12 tour groups, we also provide tours to numerous technical college classes. In each case, the tours are customized to the target audiences needs and level of understanding.

Teacher In-Services

As a result of Nexen's lead in the Education for Employment Initiative, their history of support for education, and their investment in technology, we have been asked to provide in services (training) for some of the schools. In some cases, this has meant that the entire educational staff (teachers, aides and administration) has spent a half-day at the plant. They listen to Nexen Employees speak to the needs of the business, the sophistication of the workforce, the need of post-secondary education, the importance of lifelong learning, the challenges and opportunities presented by technology, etc. We also speak about the need for employees to have good communication and inter-personal relations skills, critical thinking and problem solving skills, and adaptability to change. We follow that up with a plant tour, and allow for much interaction with our employees.

Student Internships

Nexen Group, Inc. has been involved with High School student internships almost since the inception of the plant. Students work in the office or the shop (in approved tasks) for about four hours per day. They are exposed to a variety of career activities, interesting technology and practical application of skills. They learn about work expectations and gain confidence and insight by working as a peer in the adult world.

nexen®

Nexen Group, Inc.
Webster, Wisconsin

Jeremy Vogler is smiling!

PLAN TO ATTEND!

WISCONSIN MANUFACTURING & TECHNOLOGY SHOW

Oct. 8 - 10, 2013

Wisconsin State Fair Park Exposition Center

Closing the Youth "Skills Gap" in Manufacturing

The "skills gap" is taking its toll on the workforce and, by extension, American manufacturing. As the workforce ages, the talent pool to replace retiring workers is shrinking. Additionally, an increasingly complex industry requires employees with superb problem-solving and multitasking skills—all of which are needed to improve productivity, profitability and quality across the modern manufacturing process.

A collaboration of businesses, manufacturing employers, industry experts and educators will discuss how to attract and engage today's youth for jobs in manufacturing, in order to revitalize the industry. **Don't miss these free seminars!**

TUESDAY, OCTOBER 8 • 2:30 pm

How We Make Manufacturing Sexy

With Karin Lindner, Corporate Coach & Author

Karin's message recognizes that the shift from the industrial age to the age of knowledge worker requires new approaches. Explore the skills that will be the foundation of manufacturing's future. The first 50 in attendance will receive a FREE copy of Lindner's book *How Can We Make Manufacturing Sexy*.

WEDNESDAY, OCTOBER 9 • 2:00 pm

Skills Gap Solutions & Changing Perceptions of Manufacturing

Presented by Founder Terry Iverson and GPS Education Partners

Find out what is going on in today's modern manufacturing process and how students can become involved.

THURSDAY, OCTOBER 10 • Student Day

Governor Walker will start the day with an address, followed by presentations for high school & tech school students including powerful video from ChampionNow, Mary Isbister of GenMet Corp. speaking on Manufacturing Makes Us Strong, and MATC and GPS Education Partners manufacturing education experts. Students from all over the state will be in attendance. If you would like to attend, please call Jill at 800-367-5520.

Manufacturing Labor Initiative is sponsored by

BIG KAISER PRECISION TOOLING INC. · CAMWorks A Geometric Product · I&Co. IVERSON & COMPANY · GPS EDUCATION PARTNERS · MILWAUKEE AREA Technical College · Morris Midwest · sme Making the future. Together · Tool, Die & Machining Association of Wisconsin · WMEP

Register Today at www.WIMTS.com

Take a fresh look at manufacturing careers

Visit a Wisconsin technical college campus to meet our instructors and experience first-hand the latest manufacturing technologies available to your students and graduates.

- High school students have many learning options available through Youth Apprenticeships, Youth Options, Career and Technical Education, Dual Credit, and more.
- Employers are finding tremendous value in these offerings – see a small sample of their comments below.

Degrees in demand: At least 54% of Wisconsin's jobs in the next decade require technical education.

A few of our manufacturing/STEM careers:

- Automated Manufacturing Systems Technician
- Automated Packaging Systems Technician
- CNC Production Technician
- CNC Machine Operator/Programmer
- Electrical Engineering Technology
- Electromechanical Technology
- Electronic Systems Installation & Maintenance
- Industrial Automation Controls & Networking
- Industrial Electronics Maintenance
- Industrial Engineering Technician
- Industrial Mechanic
- Machine Tooling Technics
- Mechanical Design Technology
- Tool & Die Making

"The technical colleges provide education and training allowing manufacturing companies in Wisconsin to remain competitive."

-Mike Vander Zanden, President & CEO, Amerequip Corporation

"The true benefit we see as an employer with the Youth Apprenticeship Program is that we are going to get a great employee."

-Nick Rolf, Human Resources Manager, HUI

"We look to [our technical college] ... they are tremendous partners and tremendous educators."

-Duane Erwin, President & CEO, Aspirus

"The technical colleges have invested not only in curriculum but in the actual machines they are teaching on, so they are giving real life applications, real life training, and that enables employees to start very quickly and move into a career progression."

-Eric Reisner, Vice President & GM, Global Products Services, Rexnord

Please visit **http://wistechcolleges.org/explore_careers/**today!
Here you'll find video overviews of all of our education programs.

WISCONSIN TECHNICAL COLLEGE SYSTEM
we are futuremakers