The Sales Pitch

Kaukauna Holds Secrets to Skilled Labor Shortage

Matthew Jaster, Senior Editor

The skilled workers are still missing in action. An entire generation of personnel with the manufacturing, engineering and mathematic skills to succeed is retiring. Small communities around the country can't fill these positions fast enough. Manufacturing ghost towns are becoming the norm. It's a story that's been reported thousands of times.

But not this time.

This is a success story. We've been inundated with so much bad news in manufacturing that when we hear some good news it's a wonderful change of pace. Even better is the fact that the people involved have barely scratched the surface when it comes to solving the skilled labor shortage; they have bigger plans and bigger ideas for the future. Listening to these ideas and hearing the enthusiasm and passion for what they've done and what they plan to do, it becomes difficult, almost impossible, to not buy into what they're selling.

A Recipe for Success

100 miles or so north of Milwaukee, Wisconsin sits a town on the Fox River called Kaukauna. You've heard of it. In 1918 Hubert Fassbender formed a distributing company known as South Kaukauna Dairy which eventually became Kaukauna Cheese. Fassbender experimented with several methods of cheese production. The company eventually became the nation's largest manufacturer of cheese balls and cheese logs. But it's not just cheese in Kaukauna, Wisconsin. The town (15,000+) and surrounding area manufactures black boxes for airlines, oil and gas probing equipment and military defense equipment. There are paper mills, wind and solar technologies and plenty of metal fabricating and machining job shops.

"You're looking at an area that specializes in high-tech and high-quality metalwork," says Nels Lawrence, technology education teacher for the Kaukauna Area School District. "If a student has an interest in a career in manufacturing/engineering in and around Kaukauna, they have plenty of options."

There are a few particular statistics that set the town of Kaukauna apart from similar small towns in the Midwest. While the national unemployment rate is hovering around seven percent, the unemployment rate in Kaukauna is at 5.4 percent. The salaries in Kaukauna for full-time workers under 25-years-old are $12,000 over the national average of $38,000. In fact, Lawrence has placed 600+ students in manufacturing positions from the Kaukauna High School Technology and Engineering Program.

"There's probably not a machine shop within 20 miles of my front door that doesn't have a former student of mine," Lawrence says. "I'm enthusiastic every day I come in to teach a class because I see that it's paying off. Our local companies are doing well and our community is thriving."

Ryan Veldman is a senior at Kaukauna High School. His Youth Apprentice employer has been hiring Lawrence's students for many years in this program. One of his current supervisors is a former student from the class of 2000. Veldman had to apply for the program and has already taken machine tool classes at school (photos courtesy of Nels Lawrence).

Get the Message

The skilled worker epidemic is being fought on the local as well as national front. When the SME acquired Tooling U in 2010, it combined two important organizations to promote the health and growth of the manufacturing industry.

"Our online training compliments SME's in-person training and certification programs and the full range of development resources," says Chad Schron, division manager, Tooling U-SME. "We're here to support both the schools and the companies as they try to solve the skilled labor shortage."

Therese Schustrich, government and education group, Tooling U-SME, worked with Lawrence to customize the online curriculum at Kaukauna High.

"The same curriculum works for both industry and education. We offer beginner, intermediate and advanced classes. Each class offering allows the instructor to tailor the workload for each student," Schustrich says. "It's similar to taking different courses in college. Students get a mindset that this is something they might want to pursue down the road as a career."

So what is it about manufacturing and engineering that is interesting for kids at the college, high school and even middle school level?

"It's the demand for highly skilled and highly technical careers that I think kids are starting to pay attention to," Schron says. "The dirty, grimy shop floor perception is still wrong. These jobs include robotics, lasers and advanced CNC equipment. Entry-level positions are high-paying and students are beginning to realize the options available to them. The more awareness we can bring to the industry the more it benefits educators, manufacturers and their communities."

Lawrence, in particular, knows what keeping Kaukauna grads in Kaukauna

after graduation means to the community.

"I'm proud to say that some of my recent students that were apprentices during high school are now full-time employees in job shops around town. These are 21-year-olds that are purchasing homes, buying cars and establishing their careers. The school board can relate to this. These are your taxpayers, these are your citizens; this is your community. If the kids in Kaukauna become doctors or lawyers it's wonderful, but they typically leave town the first chance they get."

Lawrence can't stress enough the snowball effect that takes place when industry, education and government work together on these initiatives.

Getting Around Town

Students in and around Kaukauna are starting to see firsthand the tremendous opportunities available in their own backyard. Leave it to someone like Lawrence to produce the sales pitch. It's his own personal history that makes him more than qualified to do the job.

"I returned from deployment in the Gulf War and made a career change from sales engineer for a medical laser company and used my GI benefits to get an MS in technology education," Lawrence says. "I also have certifications in manufacturing, construction and transportation. I served as a Naval Engineering Officer in the Coast Guard, ran a department for a large interstate construction company, managed shipyard operations, and worked in medical manufacturing."

He's been teaching now for 18 years and watching the interest continue to grow in manufacturing and engineering over that time period. "The biggest change is the number of advanced students who want to be engineers learning hands-on skills in our area," Lawrence says. "For them it rounds out their education. We've maintained a steady flow of students who enter Technical College, or apprenticed trades through our Youth Apprentice cooperation with industry."

Companies like G&G Machine, Fox Valley Tool & Die and Team Industries have former Kaukauna students that represent Lawrence's entire teaching career. "Many of my students were placed in apprenticeships when I first started teaching," Lawrence says. "Last year, I was able to have several students hired at a brand new machine tool operation that was founded by former co-op students.

Ryan Veldman's work day varies as they rotate him between the stamping and metals plant and the CNC operation across town to maximize his learning. He plans to continue full time while attending Fox Valley Technical College to earn a two year A.S. degree in machine tool.

Five to ten years out of high school and these guys started their own company."

Since engineering/manufacturing still boasts many more men than women, Lawrence taps three young female engineers (and former students) to come back regularly and talk to the girls about the opportunities available. "One recent graduate is a foundry engineer at Waupaca Foundry and she's responsible for troubleshooting parts for General Motors," he says.

Another former student recently came to speak to Lawrence's class. "He's 24-years-old and he's the head of prototyping at Kimberly/Clark, a company that has more than 52,000 employees. Kids were really excited to hear about what he does on the job. It's always great to get that phone call from a former student that wants to come back and talk to the kids," Lawrence adds.

More to Come

When Lawrence isn't taking his class outdoors to see the inner-workings of a wind turbine, you'll probably find him writing grants. "I went to J-School and I learned how to write well enough to put together a nice grant proposal or two," Lawrence says.

Currently, his students have access to a weld shop for up to 28 students with Mig Tig and Stick welders as well as a computer plasma table. "Our machine shop has mostly older machines: 13 South Bend Lathes, two horizontal mills, two Bridgeports with readout, and an older Mazak with Cam2. We also have a foundry set up to do aluminum castings and an assortment of sheet metal working tools breaks and rollers," Lawrence says. "In the Engineering FAB Lab we have two rapid prototype machines (smaller Makerbot) two small mills, a laser 3-D scanner, an injection molding system and a 3-D router table. This is also supported by a 30 seat lab with *Solidworks* CAD software and a standalone Electronics lab."

Additionally, students learning control systems can use the Haas Trainer in the Fab Lab and they can earn one college credit for completing the Programmable Logic Controller class with PLC programming hands on instruction.

"Our high school has kept many machines and equipment that other high schools have scrapped," Lawrence says. "The grants definitely help. My writing is better than the average shop teacher so they keep giving me money."

He's currently on a personal quest for some newer CNC equipment. "We need some help in this area. I'd like to replace some of our older machines and upgrade. We're also working on getting more solar and wind energy equipment in here to promote careers in green technology," Lawrence says.

He will continue to get more advanced equipment into the classroom that the students can truly benefit from as well as promote the apprenticeship opportunities around Kaukauna. These apprenticeship opportunities offer their own distinct set of challenges for both the school and the companies involved.

"Companies need to adjust to teenagers, for sure," Lawrence jokes. "Part of the secret of making this work is that we

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screen things up front. You need to know the strengths and weakness of each student. You can't take an ineffective student out of school and place him or her in a high-tech job and expect it to work out."

"There certainly is a lot of math to know," says Schustrich at Tooling U-SME. "The math requirements are some of the biggest challenges. People are starting to realize that they need to go to the middle school level to discuss options in science, engineering and manufacturing. We need to get to the kids earlier. Time management is another challenge. It's important that each student is comfortable with the workload."

But the benefits of these apprenticeship programs are numerous. "My students who took apprenticeship positions at G&G Machine felt they had a big head start on older workers and were really ready for Tech College," Lawrence says.

With all the machines in school, the apprenticeship programs and the curriculum from Tooling U-SME, you'd think Kaukauna would sit back and enjoy each and every success story.

Not quite.

"There's a blueprint in place for sure, but so much more we can do," Lawrence says. "I always talk to employers and try to get more field trips in place. We also need to work more closely with the Tech Colleges."

"This is the future of manufacturing we're talking about here," Schon says. "The discussions need to continue. How can the schools and the manufacturing communities do better?"

"Perceptions still need to change across the board," says Schustrich. "Facility tours are ideal so students can come and see what actually happens on a shop floor instead of what they think happens."

"I love when engineers/manufacturers come to the school to talk with my students, but it's much more beneficial to spend more than just 45-minutes discussing the work," Lawrence says. "I've had people from industry come in and do things with the students. They might spend three or four class periods building something hands-on."

How about summer externships for teachers?

"The science, math and technology instructors have experience in these fields, but what about the principals, the counselors and the English teachers? Many of them have no idea what's behind the door to manufacturing facilities in their own cities and towns. We need to get teachers to work in a plant over summer break, get an idea of the jobs available and the skill sets needed to succeed in the community. Once they see the modern working conditions they begin to realize that we shouldn't push students in just one direction," Lawrence says.

Reinvigorating manufacturing in the United States is going to take a little thinking outside of the box. Some other examples from Lawrence:

There's a major electronics company in Wisconsin that farms out small jobs to a local high school where the students are putting together circuit boards. There's also a job shop in a high school that is making parts for a local manufac-

turer. The profits are going back into the school to assist the technology/manufacturing program. "By participating in projects like this, the work becomes real to the kids. They see what is being manufactured in their own communities and they want to be a part of it."

ToolingU-SME is also doing their part. "Our government and education group formed six years ago to prepare students for positions in manufacturing," adds Schustrich. "Today, there are more than 450 high schools and community colleges taking part in a hybrid learning environment that offers more hands-on training and less administration."

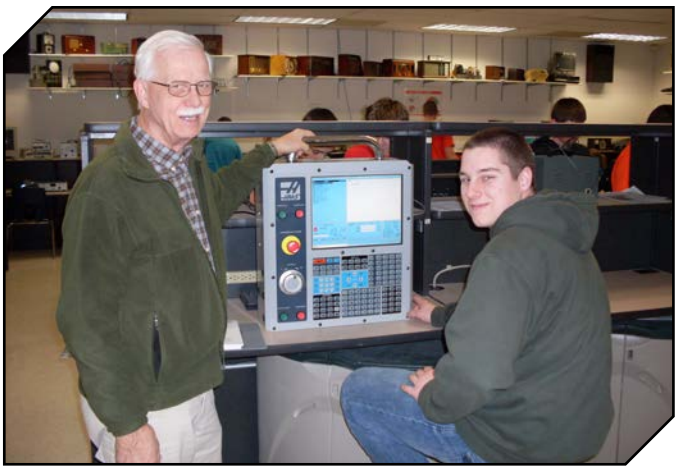
Sometime in the first quarter of 2014, ToolingU-SME will roll out another initiative that will help the cause.

"We're going to create a roadmap that will basically break down the common job classifications within areas like engineering, welding, fabricating and other industrial segments," says Schron. "It will identify exactly what skillsets you need to do those jobs. The potential is extremely exciting and with the combined efforts of ToolingU and SME this will serve as curriculum development in the future."

And Lawrence has one more story from his classroom:

"I have a 16-year-old student that raised more than $7,500 in a week on Kickstarter for a manufacturing project. He has already found a supplier in China willing to make the stuff. He came up with a backpack that charges your cell phone. When I first had him in class two years ago his parents were concerned. They thought he was wasting all this money on these crazy inventions. I told them to wait and see. This kid is your retirement plan."

There's a sales pitch any parent could buy into.



Ryan Veldman (right) wants to learn to program CNC equipment. Here he is using a Haas simulator trainer with instructor Nels Lawrence.

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