

MANUFACTURING IN MINNESOTA

As more businesses make Minnesota their corporate home, skilled welders are in high demand

by Abbe Miller, editor-in-chief

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The people from Minnesota aren't just known for their funny accents or their strange affinity for lutefisk. They're also known for their warm and friendly personalities and their strong work mentality.

So it's no surprise that some of the world's largest corporations have made a home in the Twin Cities and the surrounding communities. Companies like Target, 3M and Cargill have all come to the area to tap into one of the nation's hardest working talent pools. And the fact that the area is centrally located with quick access to I-90 doesn't hurt.

About 65 miles north of the Twin Cities, Eric McAllister, a welding instructor at St. Cloud Technical & Community College, is preparing students to excel in the Minnesota workforce in industries like construction, military, and oil and gas. The state's proximity to North Dakota pipelines and Canadian offshore drilling firms further emphasizes Minnesota's

position as a large manufacturing hub. It goes without saying, though, that the manufacturing companies of Minnesota must adapt with the times. With the oil and gas industry constantly in flux, McAllister can't stress to his students enough the benefits that come from being well rounded and versatile.

"Our program is a one-year program," McAllister explains. "We start with 24 students in August, who will graduate in May. A second group of 24 starts in January, and they will graduate in August. The two different starts and stops accommodate the hiring patterns of the local community."

By the time students graduate, they've been through classes on thermal cutting and a multitude of

welding processes, including all of the main materials, like mild steel, steel, aluminum and stainless, as well as welding methods, like GTAW, GMAW, short arc, pulse and spray, oxyacetylene, flux cored and stick.

As if that weren't enough, McAllister also produces graduates that are ready to hit the ground running through the school's intro to robotics course and CNC plasma cutting and fabrication projects where students get the opportunity to design, research and build. They also take courses on metallurgy, print reading, math and symbols, AutoCAD and machining.

Producing talent

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St. Cloud Technical & Community College exposes students to a wide range of welding processes in its one-year programs.

recent grads are expected to pass specific competency tests according to the needs of the new employer. McAllister ensures that his students will pass those tests with flying colors thanks to the versatile courses offered at SCTCC.

“The school offers a jack-of-all-trades

type of training,” McAllister says. “We need to expose students to enough information and training so that when they get to their new jobs, they can begin to be productive in short order.”

The training McAllister refers to also takes into consideration the types of industries that are represented in the area. Due to the vast tank manufacturing happening in Minnesota, for example, courses include instruction in ASME Section 9 Code as well as AWS B 1.1 Structural Welding Code. When graduates enter the local industry, they most likely will be experienced in the application at hand.

With SCTCC’s long-standing reputation for producing well-rounded job candidates, local employers see value in the school’s curriculum. Some employers, however, might wonder how oxyacetylene found its way into the welding mix, considering the method has lost ground to other types of welding processes.

“It’s not that it isn’t being used in today’s workplace, it’s just that the need for it and the way it’s being used have changed over time,” McAllister explains. “It’s a tried-and-true process because you can heat, cut and bend metal with it. So it’s still a necessity,



but in a different way than in the past. It's adapted with the times."

The ultimate goal at SCTCC is to prepare people for the job force. Therefore, McAllister is incredibly cognizant of the changing way that

people use oxyacetylene. In fact, he's come up with a way to use the welding process to teach students other important welding skills – and in a cost-effective way.

"We don't necessarily include oxyacetylene in our curriculum to teach students how to join metals," McAllister says. "We include it because it's an available tool and one that can help us stress safety. We want students to learn how to turn a torch on and off safely. Also, welding can be a repetitive job and the simple way to learn repetition is through repetition. Leveraging

oxyacetylene helps us to create that foundation for students.

"Using oxyacetylene, we can also help students create the muscle

memory to be able to TIG weld," he continues. "The two techniques are fairly similar, but oxyacetylene is a little more forgiving in regard to learning the integration of the heat and the rod. It's also cost-effective in that there's much less expensive material to procure, such as aluminum and stainless steel. So, through the use of oxyacetylene, we're able to create future TIG employees."

A perfect blend

To deliver a learning environment that is effective and engaging, SCTCC works with Tooling U-SME, a training service that provides workforce development training to engineers, machinists, press operators, assemblers, industrial maintenance professionals, welders and students alike. The group works with schools, businesses and individuals to help them develop and improve the skills necessary to thrive in the manufacturing and fabricating industries.

"In the school market, our classes are being used like a textbook," says Chad Schron, division manager at Tooling U-SME. "The students enjoy the program because our classes are online – and it goes without saying that a digital classroom can be a lot more fun



St. Cloud Technical & Community College is centrally located in Minnesota, offering graduates access to employment opportunities around the state.

St. Cloud Technical & Community College was established in 1948 and boasts a high placement rate for its graduates.

than reading a textbook.”

Tooling U-SME classes start out at the 101 level, assuming that students have no knowledge of the topic and then they build from there. Within the oxyacetylene program, for example,

students start with basic concepts:

What the process is, the equipment and gases used, applications and the safety component – from equipment to PPE to gas safety and flames.

Like SCTCC, Tooling U-SME places a lot of emphasis on safety. Once students understand all of the safety components, they move on to putting the equipment together, configuring regulators and lighting the flame. From there, the classes get into the application side, like how to hold a weld gun and how to execute the welding process.

“A lot of our classes have universal

appeal, such as OSHA safety classes and classes on inspections and lean manufacturing,” Schron explains. “We also have several shop essential classes, like basic shop math. Across the board, though, people are signing up because of the demand in the marketplace for skilled labor.

“The baby boomers that have retired have created a vacuum for skilled labor – and these are good-paying jobs that are available,” Schron continues. “We’ve seen a strong call for skilled laborers for quite some time, and it’s getting stronger as more baby boomers retire.”

He says that welding is one of the



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hottest areas where Tooling U-SME sees a big demand. Opportunities in the oil and gas industry, in shale jobs in particular, are growing – and employers are paying huge wages.

As mentioned previously, Tooling U-SME isn't just for those who are first-time entrants to the manufacturing industry. And it doesn't just focus on its online courses. Tooling U-SME works with companies from all around the United States to customize their programs – from Fortune 500 manufacturing companies to smaller fabricating businesses.

"We offer classes online, but we understand that you're not going to be a welder by only attending virtual classes," Schron says. "We're big believers in blended learning. All of our classes have a knowledge component and a skill component. We're going to help you with the theory, but you're going to have to pair that up with hands-on training. With that foundation, the hands-on training becomes so much more effective."

Schron recommends that manufacturers and schools start off with safety courses and then follow those up with classes like basic shop math and then welding. Overall,

The mission at St. Cloud Technical & Community College is to prepare its students for life-long learning by providing career, technical and transferable education. Established in 1948, the school offers more than 90 programs of study and has held a placement rate of more than 90 percent in the last 10 years.

Centrally located in Minnesota, graduates can find ample opportunities in the local job market or in surrounding areas. The Twin Cities are just 65 miles south of St. Cloud. Each year, Eric McAllister, a welding instructor at SCTCC, prepares 48 students in the school's welding program to join the Minnesota workforce in industries like construction, military, and oil and gas.

In the Land of 10,000 Lakes, business owners are looking for more skilled labor as every year passes. In fact, in an article published in Minneapolis's *Southwest Journal*, Katie Clark Sieban, the Minnesota Department of Employment and Economic Development Commissioner, said that the state's manufacturing sector is growing at a rate twice the national average.

Minnesota manufacturing at a glance:

\$21.4 billion – Value of agricultural, mining and manufactured goods exported by Minnesota businesses in 2014 – a record for the state. – *St. Paul Pioneer Press*

14.02 percent – The percentage manufacturers in Minnesota account for in regard to the total output in the state. *

11.2 percent – Percent of the Minnesota workforce employed by manufacturers. *

\$43.74 billion – Total output from manufacturing in 2013. *

318,600 – The number of manufacturing employees in Minnesota in 2014. *

\$70,560 – The average annual compensation for manufacturing employees in Minnesota in 2013. *

* According to the National Association of Manufacturers



improve quality or reduce scrap, overcoming onboarding issues or the issue of retirement, and bringing in new technology when the proper human capital isn't available.

"We stress the importance of maintaining long-term momentum," Schron says. He follows up his statement with a series of important questions that businesses must consider. "Six months down the road, how will you maintain your momentum? How do you measure the return on your program?"

To keep things from fizzling, Tooling U-SME assigns a success manager to keep a pulse on the program. They can help a business set objectives and put metrics in place and they can also help to determine what's working and what's not working along the way. Additionally, Schron stresses how essential it is to make sure that everyone is on board.

"When programs aren't successful, it can sometimes be because an organization doesn't have good buy-in from its executives or even the person on the shop floor who's doing the program," he says. "Supervisors and mid-tier management need to understand and see value in the programs. If they don't, they won't want those people to be pulled off of the floor to train."

In Minnesota, and around the nation, a career in welding can be incredibly rewarding. McAllister explains that the rewards aren't just in a financial sense. He says that the wonderful thing about the welding community is that there's room for everyone. "We have a wide spectrum of opportunities – for people that are sculpting and using their creativity to the fullest limit to people in math and science who will become metallurgists, engineers and non-destructive testing personnel.

"You can do just about anything you want," he continues, "indoors, outdoors, remote areas or right in

downtown Chicago. You could be working on the high lines in Montana, a nuclear site in the desert or here in Minneapolis building our new stadium. I have students that have gone on to such high-tech stuff that they end up looking like doctors wearing lab coats in a clean room. They're working to improve water systems in the United States and around the world. With the right knowledge, the possibilities are basically endless." ▶

**St. Cloud Technical & Community College
Tooling U-SME**

however, participants can control how their programs work. And if participants want assistance customizing their programs, Tooling U-SME has a dedicated group that will go into a facility to help create a customized training solution.

Maintaining momentum

Tooling U-SME also works to ensure that a company or a school keeps its students on track. Long-term success is always the end goal, and aligning a training program with business objectives will set up the best possibility for success. Those objectives can be anything from wanting to

