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Trade school resurgence with welding investments

Two new labs push to meet welding and fabricating needs of industry

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George Brown College has a long history of opening its doors to welding apprentices requiring a place to achieve their in-class requirements. But it has been some time since the college has offered a post-secondary program for welders. That will all change soon, with a new program being offered in its new lab.

Trade

The growth of post-secondary programs, particularly in colleges, tends to indicate where a driving need in industry lies. The opening of two new programs in Toronto and Montreal suggests that welders and fabricators are in demand, and these two programs are determined to make the student experience the best it can be, by using the latest, most sophisticated technology in the classroom.

George Brown's Smart Welding Lab

George Brown College in Toronto has a long history of opening its doors to welding apprentices requiring a place to achieve their in-class requirements. But it has been some time since the college has offered a post-secondary program for welders. That will all change soon, when it launches its one-year welding techniques program.

It was with this program in mind that the college began planning its new Smart Welding Lab at the Centre for Construction and Engineering Technologies (CCET) at the college's Casa Loma campus.

"This is the most advanced lab of its kind in the country," said Thomas Hunt, lab operations and development CCET.

The 3,053-square-foot facility features 26 welding seats with new Lincoln Electric® welding machines that allow students to perform all different welding processes. The shop is equipped with large video screens for demonstrations of welding processes and cameras that can capture the puddle transfer of a weld so that students can observe and review a weld deposit.

“The welding machines have the potential to be networked so instructors can download the student’s weld parameters to a cloud storage system, which enables the instructor to assess the student’s performance on an aggregate scale,” said Hunt. “The instructor can view amperage and gas flow settings the student had the machine at, how long they welded for, and how the weld parameters look compared to what the student did. In the past the only type of technology we could use that had similar capabilities was a virtual welder format.”

The classroom also has several VRTEX® virtual reality welding simulators from Lincoln Electric. They allow students to test their welding capabilities in a virtual environment before ever turning on a real machine.

“The virtual reality on these machines allows you to virtually weld, say, a stainless steel cylinder,” said Hunt. “In reality the part is a plastic mockup of a cylinder, but when the parameters in the system are changed, that cylinder can appear in your VR glasses as other types of metal.”

Lincoln Electric helped the college work through precisely what it would need to create the ideal learning environment for the students.



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 “I think this investment really shows the college’s commitment to be at the forefront of technology, and our focus on meeting or exceeding the needs of industry,” said George Brown’s Tom Hunt. Here we see the lab’s Hydroguard® bench welding rod ovens and Torchmate® Growth Series™ plasma cutting table.

“I think this investment really shows the college’s commitment to be at the forefront of technology and our focus on meeting or exceeding the needs of industry,” said Hunt. “The college is determined to train students to be as effective as possible in the workplace.”

Hunt has been welding for 20 years, and some of the capabilities of the equipment have him excited to work in the shop as well.

“The settings on the Power Wave® C300s [used for GMAW and FCAW in the lab] are so broad that you could work with them for a long time and never truly experience everything they have to offer,” he said. The welding power source offers the pulse welding modes and special features of the larger Power Wave welding machines. “Probably the most interesting technology for me that we’ve brought into the shop is the Square Wave® TIG 200 welder, which allows you to weld aluminum in AC. A square wave form spends more time in the heating and cleaning phase, which is a huge performance enhancer when welding aluminum. It doesn’t have the sort of arbitrary or momentary peaks and troughs you often experience with sine wave machines, which makes it very forgiving.”

With the realization that some graduates may not have immediate access to modern machines, there is the option of bypassing all the “helper” modes so students can experience what it’s like to work without them, but Hunt insists that having these options is critical for students.

“Welding is becoming very high tech,” Hunt said. “With the variety of metals and alloys that students will have to face on the job, it’s important to stay on top of the technology that can help them get the job done.

“Once students are there for 16+ hours a week doing a hands-on, extensive welding program with the theory to back it up, they will truly benefit from the technology the college has invested in.”

Alongside the welding machines in the lab is plasma cutting and arc gouging equipment. The lab was designed to be fully AODA-compliant, including two wheelchair-accessible welding booths.

EMSB Welding and Fitting

In November 2017 the English Montreal School Board opened a new training facility for welding and fitting. The program shares a building with a newly kitted out auto mechanics program.

The project to develop the program began about five years ago.



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“Probably the most interesting technology for me that we’ve brought into the shop is the Square Wave® TIG 200 welder, which allows you to weld aluminum in AC,” said Hunt. “A square wave form spends more time in the heating and cleaning phase, which is a huge performance enhancer when welding aluminum.” Also seen here are Power Wave® C300 advanced multiprocess welders.

“The school board saw that there was a big demand from local industry partners, especially large fabricators inside and outside Montreal,” said Sulaman Khan, centre vice-principal of the Laurier Macdonald Career Centre Welding and Automechanics Facility. “We didn’t have the proper equipment to run a program for welding and fitting, so the school started a feasibility study. Basically, we came to the conclusion that we needed a brand-new building to properly introduce the program.”

The result is a 60,000-sq.-ft. shop with 110 welding booths, 24 assembly tables (which can accommodate two students each), and a fabricating area that includes a horizontal band saw, an ironworker, a shear, 10 gear head drill presses, 25 oxycutting stations, seven plasma cutting stations, a hydraulic notching machine, a ring roller, CNC shear, CNC press brake, and bench grinders.

The welding booths have been equipped with Lincoln Electric Flextec® 350X multiprocess welding machines with Power Feed® 84 Dual wire feeders that can be used for GTAW, GMAW, SMAW, and FCAW.

“The shop is designed to look and work as a proper fabrication shop, where you have metal coming in one end of the building and finished welded assemblies at the other end,” said Khan. In addition, the shop is equipped with the latest fume extraction equipment.

It’s important to the team at EMSB that the program meet the needs of the community and industry partners. “Our goal is to provide our students with the right environment to acquire the necessary skills to be industry-ready,” said Anna-Maria Borsellino, centre principal of Laurier Macdonald Career Centre Welding and Automechanics Facility.

“The demand for skilled fabricators especially is picking up a lot in Eastern Canada,” said instructor Robert Martin. “We’ve had a number of local company owners come to us because they are in need of employees in both welding and fitting. Because this is a government-run school, it includes 1,800 hours of core competencies training, but the enrichment and extras we offer are topics encouraged by industry. For instance, a number of companies have said they need welders who can do gas tungsten arc welding on stainless.”

Although the shop isn’t exclusively equipped with Lincoln Electric welding equipment, it does represent the bulk of the welding machines in the shop.

“We partnered with Lincoln Electric from the start because they have always been big supporters of education and their equipment is top of the line and will give students the experience they need to appreciate what they need to understand to work in industry,” said Martin. “You can fine-tune so many parameters to what joint you need on the Flextec 350X, the main machine we’re using; it’s much easier to use than older machines. It’s interesting to play with and perfect for what our students are doing.”

The school is already very busy. It has seven instructors and around 150 students currently enrolled. It also hosted the local skills competition in early 2018.

“We also helped a group of McGill University engineering students prepare parts for a robot competition in which students design and build a robot that would be propelled to Mars,” said Khan. “Some of the parts for their project were welded and fabricated in our shop.”



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Here we see the Laurier Macdonald Career Centre Welding and Automechanics Facility's welding shop with Flextec® 350X multiprocess welding machines, Power Feed® 84 Dual wire feeders and welding booths with Lincoln Electric central fume extraction system, LTA 2.0 CW telescopic wall-mount fume extraction arms, and backdraft panels.

The main goal of the school is to serve the community.

“We need to be able to teach students what the industry is demanding right now,” said Martin. “This is so important in every sector. It is hard to cover everything that industry is hoping for, but we do our best to meet their needs.”

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Images courtesy of Lincoln Electric Canada.

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