

CANADIAN

DECEMBER 2021

# Fabricating & Welding

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A large, vibrant green tree stands in a tall, modern industrial facility. The tree is planted in a large, light-colored rectangular planter. In the background, workers are visible near machinery, and the ceiling features complex piping and lighting fixtures. The overall atmosphere is one of a clean, advanced manufacturing environment.

Planting  
the  
seeds  
for  
greater  
efficiency

*Planter manufacturer  
Green Theory Design takes  
production to a new level  
with laser, brake innovations*

Wood eventually became president of the CWB's University of Alberta student chapter while pursuing his PhD at the CCWJ on the topic of laser cladding overlays for wear and corrosion protection.

"It gave me a chance to attend conferences and also be involved with the CWBA's National Advisory Council, where I got to know the people involved, the culture, and the goals of the organization," he said.

Wood's day job as a research and development engineer for Edmonton-based Apollo-Clad Laser Cladding, a division of Apollo Machine and Welding Ltd., involves working on optimizing laser-based coating processes, improving efficiency, and maximizing productivity.

"As metallurgists, our team looks at the chemical composition of our coatings and what impact that will have on product performance," he said. "We develop our custom coatings for applications from the alloy design phase through to the laser welding deposition process, and that really opens the doors to tailoring the end product to what the customer needs. The possibilities are pretty much infinite, which makes it a challenge and great opportunity to find the best solution."

Wood's involvement with the welding community and technical societies didn't slow down when he graduated with his PhD in 2017. He is now an expert delegate of the Canadian Commission of the International Institute of Welding (CCIW) in Commission IV on Power Beam Processes, a member of the American Welding Society (AWS) Technical Papers Committee, chair of the CWBA National Advisory Council, and in his spare time, chair of the local CWBA Edmonton Chapter.

Wood is very proud of his local chapter work in Edmonton.

"Our entire executive team are former students from the CCWJ," he noted. "Many technical societies struggle to get young people involved, so I'm really proud that our whole executive team is under the age of 35. We have a vibrant young core of welding professionals that are passionate about our Canadian welding industry."

The chapter holds regular dinner meetings that include both local speakers and professionals in other areas of the welding industry from across Canada.

"We are lucky that with our connections at the university and industry friends, we're able to bring in very interesting speakers from further afield who can teach us about areas of the industry that we may not connect with regularly here in Alberta. There's always a lot to learn, and after a decade I still look forward to our technical dinner meetings."

The chapter also awards scholarships locally: one at the Northern Alberta Institute of Technology (NAIT) and a graduate and undergraduate award to deserving students from the CCWJ.

"We've prioritized as a chapter building and growing this scholarship program as part of our mission to support and educate the next generation of welding professionals," said Wood. "A great side effect of this student support is that many of our scholarship winners stay connected and involved with the CWBA and our chapter in their professional careers."

## **Mackenzi Johnston and Jolene Borrelli, Co-founders, The Red Bench**



**Mackenzi Johnston**

Sometimes it takes a while to find your path in life and work.

Sometimes the longer it takes, the more determined a person is to succeed. Both Mackenzi Johnston and Jolene Borrelli are good examples of this. Johnston spent a year at Carleton University in engineering and the following year learning how to weld while taking courses at Southern Alberta

Institute of Technology (SAIT) before choosing to study materials engineering at the University of Alberta. She became a member of the Canadian Centre for Welding and Joining (CCWJ) shortly thereafter as an undergraduate researcher in hydrogen testing. Among other pursuits, Borrelli was trained as a horticulturalist and a JavaScript programmer before also focusing

on materials engineering at the U of A. She became a member of the CCWJ as an undergraduate researcher in Charpy impact testing.

Pre-pandemic, Johnston was approached by a number of her female colleagues asking her to teach them how to weld; although they were doing materials and welding-related research, none had ever held a welding torch or welded a bead.

"I was just showing them basic welding equipment safety and how to do a few simple welds," said Johnston. Borrelli was one of the attendees. "All of the women gained so much confidence and knowledge in their studies. And I didn't just have women who were in engineering, there were women from other disciplines as well. Both Jolene and I really enjoyed the sessions, so when COVID-put an end to them, we decided we needed to keep the momentum going. We wanted to take the idea out of the university and into the community."

From this, the concept for The Red Bench was formed.

"We are creating The Red Bench as a community shop for women in Edmonton," said Borrelli. "It will be a space where women can gain confidence, meet mentors, and hone technical skills

in a casual, community-driven environment. In the beginning we will have group projects that we will work on together and volunteer-led workshops from industry professionals. Eventually we want to have the space opened to self-directed projects. We are there to connect mentors to mentees and to facilitate what goes on in the space.

"Our hope is to draw women to the skilled trades and technology and encourage them to pursue educational and professional opportunities that align with their technical interests," Borrelli continued. "We want women to not only enter into industry, but to stay there and feel like they belong."

Borrelli herself has experienced the challenge of having nowhere to practice her new welding skills.

"I took gas tungsten arc welding classes at NAIT, but after I finished the course, I had nowhere to practice,"

she said. "If we want women to enter the trades, it's important that they have safe spaces where they can comfortably practice and develop their skills."

The Red Bench encourages women above 18, from all walks of life, to take part. Their membership base already includes newcomers to the trades, seasoned tradeswomen; hobbyists; and university, college, and continuing education students as well as graduates.

Johnston and Borrelli are still in the process of raising funds to meet the cost of the shop's insurance and utilities payments for their first year of operation. At this stage, they have raised more than half the money necessary and secured a shared space with a welding engineering firm in Edmonton, Canwe Solutions Ltd.

It's a testament to their determination that in a short year and a half the pair have achieved so much while alternating between university classes and co-op placements.

"We are both incredibly driven; we are determined to succeed in this," said Borrelli. "And in the process, we have developed so many skills—from learning how to write a business plan to running a fundraiser and cultivating a social media presence."

"We are developing so many skills beyond our engineering degree," Johnston said. "That is such an important part of being a professional in an industry like this."

The next step for the pair is to secure equipment for the shop.

"We have already had offers from a number of individuals who plan to donate some tools, and we are hoping to encourage the donation of older equipment that shops plan to retire as they buy new equipment," said Johnston. "We are confident that we will be able to source what we require. It's looking very positive thanks to the strong, organic support we receive."

To learn more, visit their website at [theredbench.ca](http://theredbench.ca). 

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Jolene Borrelli