MOMENTUM

MOHAWK COLLEGE COMMUNITY MAGAZINE

SPRING 2019

SUPERCLUSTER: LEADING MANUFACTURING TRANSFORMATION

DRIVING INNOVATION IN STEEL MAKING THROUGH DIGITAL TECHNOLOGIES.

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ABOUT: Mohawk College educates and serves 32,500 full-time, part-time, apprenticeship and international students at three campuses and City School locations at the Eva Rothwell Resource Centre, the Central Public Library and the City School mobile unit in Hamilton, Ontario. Mohawk is among the top 25 colleges in Canada for applied research activity and has been named among Canada's greenest employers for 5 years and ranked third in North America for associate colleges for the Advancement of Sustainability in Higher Education's 2018 Sustainable Campus Index. VISIT: mohawkcollege.ca or mohawknewsdesk.ca to learn more. **COVER:** Brian Benko, Vice President of Digitalization. **LOCATION:** ArcelorMittal Dofasco, Hamilton, Ontario.

FROM THE PRESIDENT

As plans for the Advanced Manufacturing Supercluster become reality, as partnerships form, as projects roll out, and as jobs get created, we at Mohawk College are researching cutting-edge technology, helping our industry partners develop and test solutions, and educating the workforce needed for a rapidly changing industrial world.

We couldn't be more confident about our capacity to be a catalyst within collaborations that will transform the face of advanced manufacturing locally and across the country.

Faculty and students at Mohawk College have deep relationships with manufacturers of all sizes and across all industries that seek to create, validate, prototype and integrate new products and processes. Working with our College gives industry partners access to our state-of-the-art labs, eager and talented students, and the deep expertise of our faculty.

Mohawk College has established its leadership through investments in centres of excellence in MEDIC (mHealth and eHealth Development and Innovation Centre), the Additive Manufacturing Innovation Centre, and the Energy & Power Innovation Centre.

We are focused on leveraging new areas of strength, including automation, big data, cyber security, avionics, sustainability, and the Internet of Things. We are helping industry partners validate energy-saving solutions and to use drones to inspect buildings and map vast plots of land.

The College has also entered a first-of-its-kind partnership in Canada with augmented and virtual reality pioneer EON Reality that includes a training academy and a development lab for industry projects that will help partners integrate the power of augmented and virtual reality into their training and marketing.

This issue of Momentum showcases just a fraction of the leading-edge initiatives underway at Mohawk that demonstrate just how we bridge what is possible today with what the world will look like tomorrow.

Regards,

Ron J. McKerlie

Supercluster:

Leading manufacturing transformation

Stephanie Holko, LMF Project Lead with Brian Benko, VP Digitalization, ArcelorMittal Dofasco

Canada's investment in the Advanced Manufacturing Supercluster comes at a time of unprecedented emergence and convergence of transformative technologies, including automation and robotics, industrial Internet of Things, big data, augmented and virtual reality, and artificial intelligence.

These are all areas of strength at Mohawk College.

The investment also comes at a time when companies are more open than ever before to solving problems and seizing opportunities together, says David Santi, Dean School of Engineering Technology and Aviation at Mohawk College.

"There is a new world out there in which companies have to operate. They can't be on their own anymore and get ahead of the game. The Supercluster will help build and sustain an ecosystem that will make Canada a leader in advanced manufacturing."

Next Generation Manufacturing Canada (NGen) is an industry-led not-for-profit founded in December 2017 to be the engine behind the Advanced Manufacturing Supercluster. It assesses, funds and monitors projects and programs under the federal government's Innovation Supercluster Initiative.

The power of collaboration

In 2017, the Government of Canada announced it would invest up to $950 million in the Innovation Superclusters Initiative, challenging Canadian businesses of all sizes to collaborate with other innovation actors, including post-secondary and research institutions, to propose ambitious strategies that would transform regional economies and develop job-creating superclusters of innovation.

NGen is matching federal funds and private investments to industry-led projects across the country that leverage Canada's strengths in advanced technology to scale our capabilities in customized manufacturing.

NGen's 10-year targets include injecting $13.5 billion into the Canadian economy and creating 13,500 net new jobs.

"Achieving those targets requires taking on transformative projects. We are looking for ideas, products and solutions that have commercialization potential," said Jayson Myers, CEO of NGen.

Mohawk College is perfectly positioned as a partner for companies across Ontario and beyond who need expertise in a wide variety of fields for their Supercluster-funded projects, says Santi.

"We want to see as many students and faculty as possible working on Supercluster initiatives."

NGen, based in the McMaster Innovation Park in Hamilton, also promotes technology adoption, skills improvements and greater collaboration between technology and manufacturing to help Canadian companies of all sizes navigate the global shift to advanced manufacturing. NGen aims to develop an artificial intelligence-enabled global database platform to link companies, researchers and investors so they can work together on innovation.

"Mohawk College is a critical piece of the Advanced Manufacturing Supercluster because it provides the pipeline of next-generation skilled talent companies need and is a great model of how postsecondary institutions can partner with industry to the benefit of both," said Myers.

"Raising the awareness of the capabilities of a place like Mohawk is crucial to what we are doing. Creating the links between a resource like Mohawk and manufacturers and technology companies is central to our success."

It's more than appropriate that the Supercluster be centred in Hamilton, which was the country's manufacturing powerhouse for decades. The city has reimagined and reinvented itself, just as Canada's manufacturing sector must do in a time of disruption and transformation.

Ladle metallurgy furnace at ArcelorMittal Dofasco

ArcelorMittal Dofasco's automation of its ladle metallurgy furnace (LMF) is among the first projects to be considered for Supercluster funding. Projects are evaluated and approved by independent expert panels.

Advanced digital technologies will revolutionize the operation of the LMF, improve the quality of products, and create a safer work environment, says Brian Benko, Vice President of Digitalization.

Traditionally, operators manually heat, alloy and sample the liquid steel to minimize impurities before it is cast into steel slabs. Automation will put that operator into an analytical supervisory role, leaving robots to physically sample the steel and digital sensors controlling what to add and when.

"The project would be an excellent fit for the Advanced Manufacturing Supercluster as our collaborative work with project partners ensures we all gain significant knowledge about how to integrate a new generation of digital technologies into brownfield manufacturing sites, gain experience and knowledge with big data and advanced analytics, create digital twins of manufacturing assets for the purpose of running simulations, use emerging hardware technologies, such as smart cameras, smart sensors and WiFi-enabled devices and upskill our people to work in an advanced manufacturing environment," said Benko.

Dofasco, a founding partner in the Supercluster, would be among the first in the world to digitize its LMF.

"All of this work and learning provides the supply partners with applied experience that can then be leveraged in other manufacturing sectors. The net result will contribute to the further development of Canada's manufacturing ecosystem."

Mohawk and Dofasco have a long-standing and multi-layered relationship across a number of programs. The college helps the company develop and deliver the curriculum and training resources for its next-generation employees and Dofasco experts are integral to a number of program advisory committees where cutting-edge technology is transforming business and skilled trades.

The Supercluster is "really about building capacity in our manufacturers to adopt technology in order to grow," said Sean Donnelly, President and CEO of ArcelorMittal Dofasco. That means connecting manufacturers to the 3,500 organizations engaged in R&D and technology innovation in southern Ontario "so they can attack common business development challenges and rapidly apply technology."

Solutions to compete globally

Supercluster projects focus on developing and applying new and integrated technology solutions that will help Canadian manufacturing companies compete globally. NGen seeks projects with a total cost between $1 million and $20 million that can develop high potential technologies, create ground-breaking process transformation, and de-risk the adoption of technology.

NGen will reimburse up to 44.4 per cent of a project's eligible costs incurred following the signing of a project agreement.

Myers says advanced manufacturing is more than technology. It is workforce and leadership development, supply chain efficiency, operational improvements, financial management, and environmental stewardship.

"It is all encompassing. We are approaching this a broad, holistic way. Advanced manufacturing is really systems design."

Mohawk will play a large role in upgrading the skills and capabilities of everyone from frontline workers to executive leadership as organizations adapt to new ways of doing business, says Myers.

"New technologies are changing almost every aspect of how people work. An enormous amount of retraining and retooling of thinking is required."

For small- or medium-sized companies, the adoption of technology can seem impossible. Mohawk will help them overcome the hurdles, says Myers.

"Mohawk has the expertise to demonstrate technologies, carry out projects, and help companies see the possibilities."

Santi points to the deep and broad partnership between Mohawk and McMaster University as a critical regional asset and an example of the potential in the Advanced Manufacturing Supercluster.

"We are leaders in different ways. By standing together with our collective competencies, we are boosting our horsepower. Multiply that across the Supercluster and that is the kind of sustained pattern of collaboration that does great things."

Left to Right: Michael Davidson, Dr. Ethan Paschos, Bhoomin Rajendra Patel

BREAKING IT DOWN

More than just fungi

A Mohawk College research project is studying the decomposition power of fungi, with the hopes of finding a solution for the masses of coffee cups piling up in landfills.

Fungi are natural decomposers of polymers found in wood, paper and textiles. They can consume a fallen tree in five or six years, for instance. The fungi's mycelium, which are tiny, cotton-like roots, degrade material as they grow through it. The fruit of the mycelium is mushrooms.

"We can exploit this ability of the fungus. We have to figure out the process to maximize the efficiency of the degradation," says Biotechnology Professor Dr. Ethan Paschos, who is growing fungi and using shredded paper cups, which take 500 to 1,000 years to decompose in a landfill, as a food source.

The fungi can consume roughly 10 litres of material and transform it into about half a litre of biomass within 4 months, says Dr. Paschos.

Biotechnology student Michael Davidson worked in Paschos's lab through Mohawk's Campus Student Employment Program (CSEP) before graduating in April 2018. Davidson developed, tested and set up experiments, all while being paid.

"This was a great opportunity to gain relevant work experience," said Davidson, who now works as a lab technologist with the Chemistry, Environmental and Biotechnology department.

"We were finding solutions. I got to apply my skills in a creative way."

Bhoomin Patel, a fourth-semester Biotechnology student, aims to use his CSEP experience in Paschos's lab to gain Canadian experience. He wants to land employment in a food lab.

"Choosing Mohawk is one of the greatest achievements for me."

RECOVERING HEAT

Supporting local start-up automate and monitor its heating recovery process

Mohawk College played an important role in a pilot project to recover and re-use the wasted heat coming from a pilot natural gas boiler that lowers both operational costs and carbon emissions.

Mohawk faculty, staff and students in the Energy & Power Innovation Centre (EPIC), under the direction of General Manager Mariano Arriaga, helped technology developer Carbon Cap Inc. automate the heat recovery system, create the Human-Machine Interface (HMI), set a remote monitoring system, and analyze the system performance.

Boilers exhaust gases at about 160°C. Capturing that heat and putting it to good use boosts the efficiency of the system, says Raphael Kolenko of Carbon Cap Inc.

He says there is "so much value all the way around" in his company's partnership with Mohawk.

"Mohawk has a great reputation for rolling up its sleeves and getting things done."

Students Kevin Wazny and Jaydeep Prajapati worked on the system automation, installation and commissioning supervised by Professor Rubaid Khan; while Bassam Assaf worked on remote communication, data acquisition and running tests to ensure system performance under the guidance of project manager Zahraa Khalil.

"This has been a very hands-on project. It matched together the theory of my classes with the practical very well," said Bassam Assaf, an Energy Engineering Technologist student.

"It's a very rich experience for students. They are working on real-life projects and solving problems as they go," said Zahraa Khalil.

The system was automated during the Fall 2018 and has been extensively tested in a mock-up boiler in Ancaster during Winter 2019.

The project has received funding from the Ontario Centres of Excellence and a Bloom clean technology grant.

Left to right: Raphael Kolenko, Carbon Cap Inc., Bassam Assaf, Co-op student, Zahraa Khalil, EPIC Project Manager, Rubaid Khan, Professor

THE NEW REALITY

Innovative AVR partnership could change the nature of training in the future

Kurt Muller, Dean, McKeil School of Business, Media and Entertainment at Mohawk

A partnership with augmented and virtual reality (AVR) leader EON Reality is the first-of-its-kind in Canada and a new model for Mohawk College.

The initiative has two facets, says Kurt Muller, Dean, McKeil School of Business, Media and Entertainment.

The first is an academy where EON experts teach AVR content creation to Mohawk students, staff and faculty who will earn certification. The second is a development lab where Mohawk will work with industry on AVR projects using state-of-the-art equipment and EON's software platform.

More and more companies are seeing the benefits of using AVR. For example, Walmart is using virtual reality to train workers, and IKEA is using augmented reality to help customers choose products. The EON platform is easy to use and intuitive – you don't have to be a coder or software expert to use this technology.

This is EON's first partnership with a postsecondary institution in Canada.

"I've been working in Canada a long time, looking to find the right partner that had the same goals," said Frank Botdorf, EON's Director of Business Development.

"Mohawk has the right mindset about joining forces," he said. "We are breaking new ground with this type of partnership."

EON has 30 partnerships around the world and a big reason is that the company, in a rapidly emerging technology sector, has more projects than resources to complete them.

"By partnering with academic institutions, we can help train the industry's workforce and pick from the cream of the crop to hire ourselves. The eight months of training is a great way for us to vet people and to provide a pipeline of talent for our needs."

Mohawk has an exclusive deal to share in the royalties of EON software that is licensed in Ontario and will take over instruction in the academy once enough faculty are trained.

The AVR academy is training its first cohort, a group that will earn certification after a four-month immersion in the EON software, followed by four months working directly with industry partners on AVR solutions.

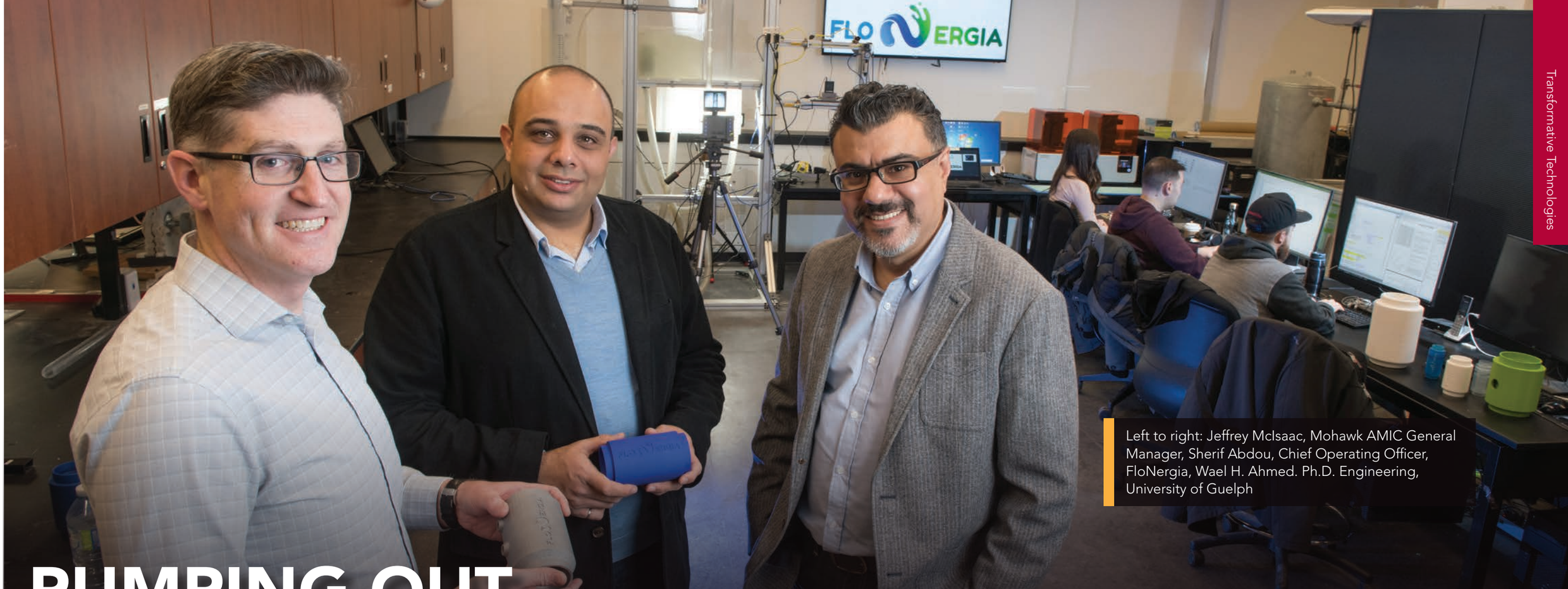
In September 2019, the academy will also launch a post-grad certificate program that Muller expects will attract industry enrolment.

Leif Peng, a professor in Mohawk's Graphic Design program, is among about 10 faculty and staff on a secondment to earn the AVR certification. He plans to build the technology into his curriculum.

"This is something I know my students are going to need. Graphic designers will be called upon to use their skill sets in an AVR world. I think AVR is going to have a massive impact on everything we do in our industry and across life generally."

The college and EON are now hosting workshops and demonstrations to introduce faculty, staff and industrial partners to AVR and to the new partnership and the potential it brings. "There are AVR applications across any industry you can think of, from education to energy to retail to health care," said Muller.

Those learning skilled trades can be immersed into situations that are too dangerous, difficult or expensive to be simulated in real life. Workers can be trained virtually to use equipment that isn't on hand yet. There are also AVR applications in empathy training and return-to-work simulations.



Left to right: Jeffrey McIsaac, Mohawk AMIC General Manager, Sherif Abdou, Chief Operating Officer, FloNergia, Wael H. Ahmed. Ph.D. Engineering, University of Guelph

PUMPING OUT SOLUTIONS

Mohawk's AMIC guides FloNergia from prototype to production

Not only did Mohawk's Additive Manufacturing Innovation Centre (AMIC) help a start-up produce a commercial-level prototype of its water pumps, it linked the company with a manufacturer to get its product to market.

FloNergia, which produces pumps for the aquaculture and hydroponic markets, commercializes research at the University of Guelph.

The researchers had experimented with 3D printing, but when it came to testing the most cost-effective additive manufacturing method and materials to produce the pumps, FloNergia turned to Mohawk.

"We had the expertise, software and printers they needed," said Jeff McIsaac, AMIC General Manager.

Additive manufacturing, or 3D printing, allows the unit to be built as one.

"It's better mechanically, it's lower cost and there is no assembly required," said McIsaac.

AMIC modified the pump design to suit 3D printing, and tested various metals and plastics, eventually guiding FloNergia to a form of printing and a type of plastic that is UV stable, prints quickly, and doesn't require any post-printing processing.

From there, a production-ready prototype was built.

Fish farms and hydroponic operations traditionally have separate water circulation and aeration systems. FloNergia's airlift pumps use air injection to supply circulation and aeration in a single device. That cuts energy consumption by 50 to 70 per cent and FloNergia's technology improves water flow, oxygenation, and quality, says Sherif Abdou, Chief Operating Officer.

"They have extensive knowledge of additive manufacturing," he says of AMIC. "That is not our expertise. They have the facilities to test and create samples. That's been very valuable to us."

For McIsaac, another key outcome was introducing FloNergia to additive manufacturer Anubis 3D, another AMIC partner.

"It was great to be able to facilitate that and solve another challenge for a partner. We know Anubis can provide what they need."

AMIC employs five full-time staff and has 10 to 20 projects underway at any given time, with 10 students assigned to two or three.

"That's the best part of the lab, that students get to work directly with our industrial partners in a hands-on way," said McIsaac. "They are deeply involved with design, using the software and printers, and then with production and dealing with suppliers."

Mechanical engineering technologist student Addison Wood worked on the FloNergia project, helping to modify the design and testing 3D printing methods. His time in the lab has led to a full-time job offer with a steel company investing in additive manufacturing.

"It was a fantastic experience for me to work with clients right through the process."

WELDING THE PATH FORWARD

Welding Engineering Technologist Professor Nicole LeClair got a bursary to pursue her passion. Now she's providing that to the next generation of welders.

LeClair has set up a yearly $1,500 scholarship for an Ontario student entering any year of a postsecondary welding program. Applications are now open through the Canadian Welding Bureau's (CWB) Welding Foundation.

It is her legacy, she says, and her way to give back.

"I am looking forward to seeing this grow over the course of my lifetime."

No one ever suggested the trades to her as a career path, but she found it herself, falling in love with welding during a night-school class. She then enrolled in Cambrian's Welder Fitter program where she was just one of two women in a class of 65 and graduated second highest overall. She then pursued Welding Engineering Technology at Conestoga College and received a $1,000 bursary from the CWB, which she never forgot.

Since then, she has been an advocate and mentor for the field, speaking at high schools and women's career events. There is tremendous demand in a career that offers good pay, variety, lifelong-learning and advancement.

She found her "perfect job" when she started teaching at Mohawk in 2016.

"I feel so uplifted and grateful for this job and those I work with."

Learn more about the Nicole LeClair Welding Bursary Award at easydonate.com/NicoleLeClair.

Nicole LeClair

Esteve Hassan

THE NATURAL FIT

Helping to lead Internet of Things-based projects

Esteve Hassan, an Electrical and Computer Science professor at Mohawk College, leads Internet of Things-based projects in the new Technology Automation Lab (IIOT).

Hassan came to Mohawk in 2017 and immediately availed himself of the research resources and support available at Mohawk. Through his talent and experience, Esteve works with the IDEAWORKS team to solve industry challenges quickly in the transformative area of IIOT.

"Mohawk is a leader in applied research and has a strong reputation," says Hassan.

Hassan has completed the first phase of two projects funded through the Ontario Centres of Excellence and is involved in several others in health care, building automation and IIOT.

"There are big things ahead for the lab," said Jeff McIsaac, General Manager of the Additive Manufacturing Innovation Centre at Mohawk. "It will bring great benefits to our partners and position them well to understand and adopt the technology."

Hassan holds a PhD and a master of engineering (MEng) from the University of Limerick in Ireland, and a master of science (MSc) from the University of Jordan. He has taught at Brandon University, and is passionate about student learning. "I try to inspire them to reach their potential. It's up to us to show them how to leave their mark."

Iain Paterson, Managing Director, CYCURA INC.

BUILDING THE NEXT LEVEL OF DEFENCE

Cyber Security Lab will train online guardians in the battle against internet attacks

The question was how to build a platform to educate the next generation of cyber professionals and the answer is Mohawk College's Cyber Security Testing Lab.

There, teams of students in blue teams and red teams will plan, launch, thwart and defend, in real time, cyber-attack simulations that will teach how to prevent, detect, predict and respond to threats against computer systems, networks and data.

The Cyber Lab will provide cutting-edge experiential learning opportunities to students in Mohawk's new Cyber Security Program, which is an eight-month post-graduate certificate launching this fall. It will also be used extensively by students in existing technology programs such as the Network Engineering and Security Analyst advanced diploma program and other programs from Continuing Education. This lab adds to Mohawk's strong collection of labs including Networking labs and will provide a major competitive advantage for our students and programs.

The lab, which officially launches in the fall, will also deliver customized training for industry partners, along with the opportunity to test cyber security plans and protocols, and debrief after a simulation.

"There is nothing like being in a room and acting and reacting in real time," said Tracy Dallaire, Senior Director Technology Integration Academic at Mohawk.

The cyber lab will also help industry partners determine the right architecture, investment and strategies to mitigate their risk, she says.

"Our lab will allow them to test their environments in a low-risk way, while our students get experiential learning."

The lab will teach future cyber professionals the triage skills necessary to set priorities, the forensic skills to find out what went wrong in a cyber incident, along with the communication skills needed to effectively advise stakeholders in a crisis, says Dallaire.

Cycura Inc., worked with Mohawk to guide and shape the vision and architecture for the new lab, which is located in The Joyce Centre for Partnership & Innovation.

"We are an offensive security research and development company," said Managing Director Iain Paterson. "We specialize in helping people understand where attacks can happen, where their vulnerabilities are, and then fixing them."

Mohawk consulted with cyber security experts in many fields, including the defence and nuclear industries, to ensure everything about the program and lab aligns with industry needs.

The global skills shortage in the cyber field is estimated at 1.5 million people, says Paterson, and it continues to grow. There are about 20 professions in the field and that's growing, too.

"It's very astute of Mohawk to be building this program at this time. Attackers evolve, threats evolve. The industry needs people with fresh skills and perspectives to build the next level of defensive capabilities."

The cyber lab has an "air-gapped network" and an internet pipeline that is entirely separate from that of the College. It features a range of industry-leading software platforms including IBM's QRadar Security Incident and Event Monitoring System (SIEM) and Cymmetria Maze Runner – a deception platform that builds attack and defend scenarios.

"We are doing something so new that there is no playbook. This is a cyber lab that is scalable and robust," said Dallaire.

The lab will be used to instruct undergraduate students, along with those in Continuing Education and the broader business community through Mohawk College Enterprise.

Faculty from across the College are invited to work with the lab staff to build its assets and resources into course curriculum.

"Our job now is to communicate to other programs how this rich resource can be used."

A DRONE'S-EYE VIEW

Exploring drone-based solutions

Faculty and students have used drones to inspect a 27-storey building, to monitor the progress of a massive construction project, and to map a forestry plot.

Drones are a disruptive technology across a range of applications, says Richard Borger, a professor in Building and Construction Sciences. Mohawk helps its industry partners learn about and adapt the use of drones for their needs, he says.

"There are so many opportunities for us. As our use cases grow, the projects will, too."

Mohawk is the only educational institution in eastern Canada with drone-mounted LIDAR to measure distances precisely using lasers.

Inspecting the structural envelope of a commercial building in the traditional way means dropping inspectors over the side to take photos and samples. It can take a day to cover 10 to 15 per cent of a building at a cost of several thousand dollars.

Drones can cover the same building in an hour at a fraction of the cost.

Matt Charbonneau, a project manager at Edison Engineers, says its partnership with Mohawk showed drones will be a useful tool to help clients boost energy efficiency.

"Mohawk has been our resource for choosing the best drones and cameras, configuring the equipment for our needs, and coordinating with authorities."

Building and Construction Sciences students (left to right): Tyler Sowden, Quincey Bailey, Kevin Robinson, Ardaela Gjoka, and Jessica Kingdon

Left to right: Kerri Moreno, Digital Client Manager, IBM Canada; Program Coordinators Lisa Cuncic-Pegg, Business Analysis and Steven Way, Analytics for Business Decision-Making, Mohawk Graduate and Media Studies

GET AN INDUSTRY-READY EDGE

Micro-credentials set students up for success in the workplace

Mohawk College professors are achieving IBM digital badges and encouraging their students to do the same.

The college is a key supporter of the IBM Skills Academy, a training institution for IBM software platforms, tools and processes that grants industry-recognized micro-credentials.

The badges signify specialized knowledge in 11 fields, including business process analytics, business intelligence analytics, cyber security, artificial intelligence, cloud applications, and mobile applications.

Explorer badges take between 36 and 54 hours of in-class and self-study hours, followed by an exam. Mastery badges take about six weeks of studying and demonstrated use of the tool, and then one chance to pass an exam.

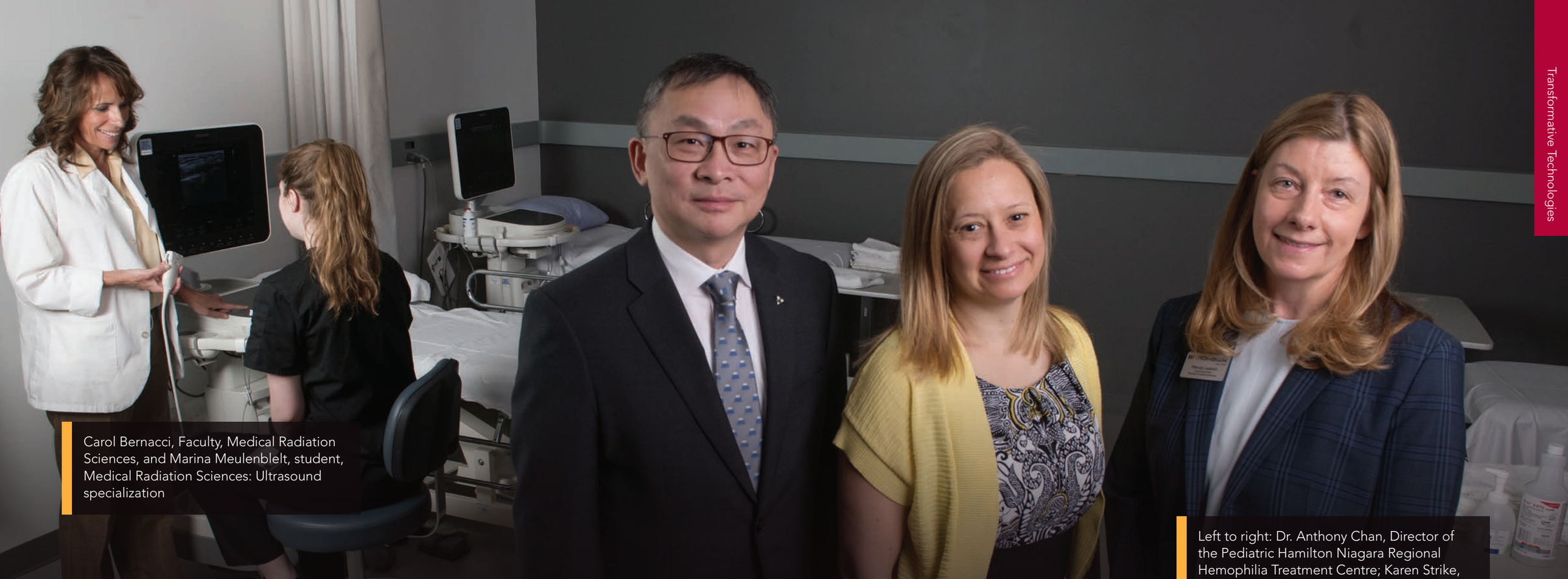
"As a faculty member, this provided me an opportunity to stay up-to-date and gain new tools and skills after being out of the industry for several years," said Lisa Cuncic-Pegg, Coordinator and Professor in the Business Analysis program in the McKeil School of Business, who has earned a mastery badge.

"I jumped at it and was supported by Mohawk College. This was learning offered by one of the world's best tech companies and now I will infuse it into the curriculum and pass it on to students."

For industry, micro-credentials are reassurance that a new hire is ready to jump right in, without lengthy or expensive training, she says.

The badges will differentiate Mohawk College students, agrees Steven Way, Coordinator and Professor in the Analytics for Business Decision-Making program.

"When a candidate doesn't have experience, companies are hiring for a specific tool set. Here, they are getting industry-recognized credentials beyond their academics."



Carol Bernacci, Faculty, Medical Radiation Sciences, and Marina Meulenblelt, student, Medical Radiation Sciences: Ultrasound specialization

Left to right: Dr. Anthony Chan, Director of the Pediatric Hamilton Niagara Regional Hemophilia Treatment Centre; Karen Strike, Registered Physiotherapist, Hamilton Niagara Regional Hemophilia Centre; Wendy Lawson, Associate Dean, Special Projects, School of Health, Mohawk College

A CLEARER VISION

Partnership guides new hemophilia treatment protocols

When Hamilton Health Sciences physiotherapist Karen Strike questioned how she could provide more accurate treatment information to hemophilia patients, she turned to Mohawk College.

Six years later, the result is the development of protocols, training, and research validating the use of point-of-care ultrasound on the frontlines of hemophilia treatment.

"We have an exceptional reputation in the area of medical imaging," said Wendy Lawson, Associate Dean, Special Projects, at the School of Health at Mohawk College.

This collaboration builds on the partnership of Mohawk and McMaster University at the Institute for Applied Health Sciences (IAHS).

Hemophilia is a bleeding disorder with no cure that affects patients across their lifespan. A common complication is spontaneous bleeding into joints and muscles that causes pain and limits mobility. But most critically, blood damages cartilage and bone, made worse by physical activity, says Strike.

Since the bleeding is episodic, it's crucial to determine accurately when it's appropriate for a patient to return to normal activities.

Strike's research confirms that if the patient or a parent of a child can see in an ultrasound image that blood is still present, it helps them stay committed to a treatment plan.

"It's so meaningful to see their own joint in real time."

Lawson is chair of a national steering committee guiding the adoption of point-of-care ultrasound. At least one physiotherapist from 17 of the country's 25 hemophilia clinics has been trained, along with international practitioners. The team has published papers and presented internationally.

The IAHS work began with joints and it is now the only centre to offer training in ultrasound for muscles. It is also launching a lab at IAHS to develop and test training and protocols for other disciplines, including neonatology and obstetrics.

"We are extremely excited and proud of what we have accomplished and what potential lies ahead," said Lawson. She credits the involvement of Dr. Anthony Chan, a hematologist and chair of research at the department of pediatric medicine at McMaster.

"This initiative has come out of the power of an inter-disciplinary team. It has been so successful for patients because everyone has brought their strengths and their expertise to the project team.

Left to right: Joseph Iaccino, Paul Belisario, Jason LaPorta (in car), Tyler Yuskow, Ethan Trumbley, Cameron Behnke

READY, SET, ECO!

Driven to compete

They have designed it, created and modified the components, and built the vehicle. Now it's time to put it up against other student-designed vehicles in a fuel-efficiency challenge.

The Mohawk College eco-car team is gearing up to compete in the Shell Eco-marathon Challenge in Sonoma, California.

The competition is based on building a fuel-efficient prototype – a single-seat vehicle – or a two-seater concept vehicle. The vehicles can be powered with lithium ion batteries, hydrogen or gas.

The 10-member Mohawk team will compete in the battery prototype division.

Project manager Jason LaPorta, now in his sixth semester in Electrical Engineering Technology, has spent all three years at Mohawk on the eco-car team. He joined for the hands-on work and says the learning process, the teamwork and his leadership experience have given him a head-start in landing a job.

It is a demanding commitment. At least one day a week, the team puts in an eight-hour day and most days are three to four hours. By the third week of March, LaPorta has put in more than 160 hours in 2019.

Each year, new students come on board, who learn from the older ones. They are all guided by faculty members who lend their expertise and advice. It's just like getting a start-up off the ground, he says.

"It's been a great experience. I realize how difficult it is to get something to work. There are always challenges to overcome. It's frustrating but it's important."

MOHAWK HAPPENINGS

HIGHLIGHTS

1. Mohawk honours nine outstanding alumni. **2.** Students to restore aircraft that sat in family's Hwy. 6 field for 40 years. **3.** The Hon. Catherine McKenna, Minister of Environment and Climate Change hosts town hall at The Joyce Centre. **4.** Honouring the Class of 1968. **5.** Mohawk hosts annual police fitness competition for college students. **6.** May Safe Work visits Marshall School of Skilled Trades and Apprenticeship. **7.** Tony Cupido named Sustainability Research Chair. **8.** Rochelle Reid receives 2019 Advocating for Black Excellence Award from TOES Niagara. **9.** Students vie for top spot in NASA organized International Space Apps Challenge. **10.** Mohawk expands partnership at St. Elizabeth Village. **11.** MEDIC receives International honours from World Federation of Colleges and Polytechnics. **12.** Mohawk employees and students wear orange shirts in support of Every Child Matters. **13.** Mohawk opens PSW campus at The Village of Wentworth Heights. **14.** Mohawk Aviation students to benefit from KF Aerospace expansion at Hamilton Airport. **15.** Alumni of Distinction Jad Saliba wins Premier's Award of Excellence. **16.** Zero Carbon Ambassadors help educate students and community on The Joyce Centre. **17.** Mohawk uses 3D printing to bring campus to life with tactile map for visually-impaired students. **18.** Mohawk hosts Truth and Reconciliation conference. **19.** The Lieutenant Governor of Ontario, Elizabeth Dowdeswell visits Mohawk. **20.** Sun shines on Ontario's largest solar carport at Mohawk's Fennell Campus. **21.** Redeemer University College President Dr. Robert Graham tours Mohawk. **22.** Mohawk to work more closely with Hamilton and Burlington public libraries on access initiatives. **23.** Mohawk students travel to Jamaica to renovate a primary school.

To learn more about the happenings at Mohawk, visit **mohawknewsdesk.ca**

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