

MAKING A MASK

An Ontario automation company has designed and built manufacturing equipment to help produce a new mask line and accelerate the availability of made-in-Canada PPE

BY KRISTINA URQUHART

When Andrew and David Glover, co-owners of the Harbour Technologies plant in Windsor Ontario, needed to outfit their employees with face masks in the early days of the pandemic, they ran into the same problem as almost every Canadian business, medical facility and government agency. There weren't any to be had.

The brothers – who together run their family's third-generation automation company – decided to take matters into their own hands and make the personal protective equipment (PPE) themselves. But some initial research showed the machines most often used to produce PPE originate in China.

Not only did that present bottlenecking issues at a time when the world was in lockdown, but those machines “had a lot of control systems that were obviously unique to the Chinese market,” says Andrew, “which would make it probably pretty difficult for manufacturing the PPE once we'd purchased that equipment.”

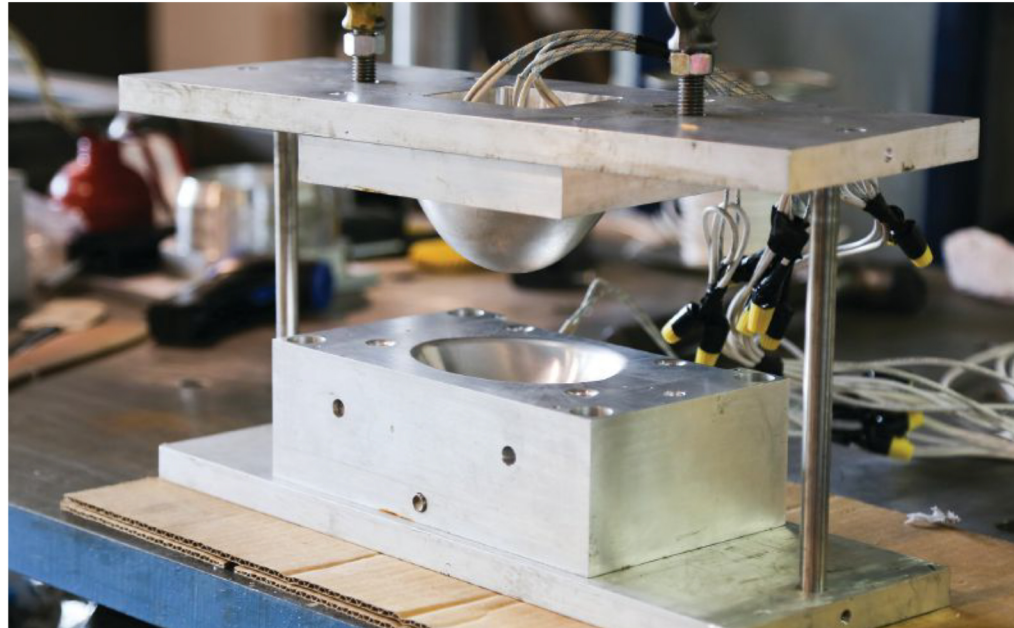
Harbour Technologies already does machine builds and tooling for the automotive, aerospace, oil and gas, and nuclear industries. So, the Glovers thought, why not build the PPE machines, too?

“We investigated designing our own equipment to North American standards – everything from the control systems and the PLCs to the safety systems [to what] would be more common in North America,” Andrew says.

Building an N95 machine

They began building prototype tooling to test fabric materials and filtration media for an N95-style mask. The N95 features a cup design that creates a better seal on the face than the centre-fold KN95 style – this is what makes the N95 so sought-after for use in front-line health care, but also more complicated to manufacture because the moulding and material assembly are completed separately.

They developed several automated operations for the N95-style mask making, including



Harbour Technologies developed a cup moulding process to make the N95-style masks for ATMIS, a new PPE company.

a cup-moulding process that forms the inner shape of the mask, automated cutting of the mask's inner filtration and outer spunbond materials, material welding to attach the cup to the filter and the outer material, and die cutting of the mask's perimeter to provide optimal comfort against the end user's face. The masks then move on down the line to assembly of the aluminum nosepiece and ultrasonic welding of the elastic headbands, and finally to a vision system for quality checking.

Once the production line was built and operational, the company had the province's only cup-type N95 mask machine (the other N95 machine operating in Ontario is for the pleated-type N95 masks). It also had the means to create the PPE its staff sorely needed, the in-house capabilities – design, engineering, machining, manufacturing, production and fulfillment – to leverage that PPE into a full-scale brand, and the blueprint for N95 mask-making equipment that they could replicate for other Canadian manufacturers.

A new PPE company

As the Glovers were developing the machinery,

they were approached by their friend Trevor Pare, a graphic design and marketing professional, to help scale up a new brand he was working on called ATMIS Protective Equipment, which would bring made-in-Canada PPE direct to consumers.

“The vision here was to create a name brand that people would be able to recognize and trust because it's made here in Canada,” Trevor says. “People know where it's coming from, and they know the people behind it.”

ATMIS developed two disposable, civilian-use masks – the N95-style ATMIS C95 mask, and the surgical-style ATMIS C3. The C95 is built to the same specifications as an N95 mask and offers the same filtration properties, but ATMIS has not yet finished the certification and licensing process with Health Canada.

ATMIS also started designing a new style of face shield they called the ATMIS Sphere – lightweight and low profile, with a clear view the face. The shield, engineered for civilians and those who work in non-medical settings, features scratch-resistant polycarbonate and an anti-fog coating.

They've sourced North American-made

The company not only had the means to create the PPE its staff sorely needed, but also the in-house capabilities to leverage that PPE into a full-scale brand. They also had equipment they could now replicate for other manufacturers wanting to produce PPE in Canada.

materials where possible, such as made-in-Canada foam nosepieces for the shields and an option for filter material from the U.S. “Our systems are designed to be flexible to run different melt-blown filtration materials and thicknesses, allowing [us] to not be dependent on one material source,” explains Andrew.

Ramping up production

The Glovers are currently ramping up to a starting daily capacity of roughly 2,000 face shields, 9,000 N95-style masks and 22,000 surgical masks, all produced by a team of 25 people in Harbour Technologies' 20,000-square-foot plant – though not for long. ATMIS is already looking for a separate facility to house production and ramp up its workforce, extending to production staff, engineering, maintenance and quality control.

In addition to the equipment for masks and face shields – which will be shipping by mid-October and mid-November, respectively – the Harbour team has designed a robotic machine for manufacturing surgical gowns and is in talks with several Canadian manufacturers that are currently sewing gowns by hand.

“Building the machines, running them, doing the production and actually selling the product gives us a very significant advantage and allows us to scale a lot quicker,” says Trevor. “Scaling up our production might be as simple



The ATMIS Sphere shield fits on the face like safety glasses would.

as getting [Harbour Technologies] to build another machine and bring it online, or looking at the existing machines that we have and finding efficiencies or other opportunities.”

ATMIS is pursuing large-scale contracts for its products, but also has found a niche for small businesses and consumers, who they say have been overlooked in the rush to manufacture PPE for front-line health-care workers.

“There's [been] a huge burden put on the Canadian industry that has to purchase PPE,” Andrew says.

'Open for business'

David Glover credits the Harbour Technologies' industrial partners with helping to build or execute components for the equipment in short order, including panel building, pneumatics and ultrasonic welding.

This has helped to solidify ATMIS' local supply chain, ensuring business continuity in the face of a second wave of coronavirus. He envisions a collaborative approach among manufacturers to further drive growth of made-in-Canada PPE equipment.

“As production takes off, the demand is going to increase. We're forecasting we will need more equipment [to be] built, but we're also open to manufacturing equipment for other suppliers,” he says.

“We're not a closed door – so other medical suppliers that are looking for equipment, we're happy to build it. And we're happy to build custom equipment for them – if they have a unique design that they want to produce, we're able to do that.”

In addition to the N95-making machine they built for ATMIS, Harbour Technologies is shipping three more N95 machines to other parts of Canada for production of the its clients' own products.

“ATMIS and Harbour alone can't produce all the PPE required in Canada ourselves,” David says. “We're open for business.” | MA

With our modular safety gate system you can build an individual safety gate solution optimally tailored to your application!

- **Configurable safety controller PNOZmulti 2:** Modular and compact solution as flexible as your application
- **Safety gate system PSENSlock:** Safe position monitoring with process guarding in one system
- **Pushbutton unit PITgatebox:** Simple operation of your safety gate system
- **Safety gate system PSENmlock:** Safe interlock and guard-locking in one product with optional escape release

 **GERMAN TECHNOLOGY DAY** October 14, 2020 - Digital Online Show
Visit www.germantechnologyday.com

Pilz Automation Safety Canada L.P. - Mississauga, ON - www.pilz.ca - info@pilz.ca

Modular safety gate system:
Your gate. Our system. Your safety.

PILZ
THE SPIRIT OF SAFETY

