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A COVID HERO

Canadian Shield's pandemic journey

COVID-19 response: How the leaders made a difference
Diagnosing industrial door problems
How to deal with bad behaviour
Issues that impacted manufacturing in 2020

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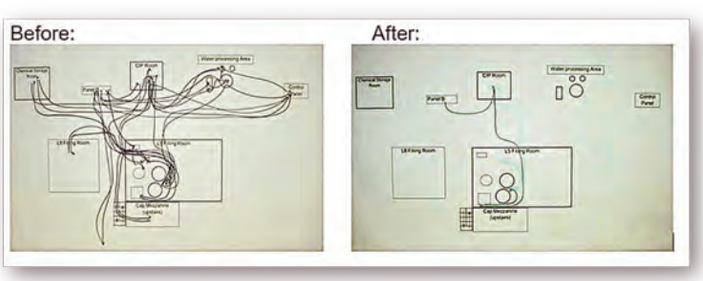

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Is the future electric?

Change is coming to Canada's automotive sector.

When the COVID-19 coronavirus pandemic was officially declared last March, companies across most sectors in Canada buckled up for a bumpy ride ahead, filled mostly with uncertainty. While some industries have been spared financial hits due to being declared an essential service, the automotive sector was not one of them.

According to a recent report from DesRosiers Automotive Consultants, automotive sales in 2020 fell to their lowest level in more than a decade. Last year, approximately 1.54 million cars and trucks were sold in Canada, down just under 20 per cent from the previous year. In the spring, many were fearing even worse numbers since sales dropped 75 per cent in April alone.

Pretty grim statistics; however, a few bright spots emerged in the sector. What are they, I'll give you a hint: they're electric.

Most recently. General Motors announced that production of its all-new BrightDrop EV600 electric light commercial vehicle will be coming to its Ingersoll, Ont-based CAMI manufacturing plant. GM will be investing an estimated $1 billion in having its EV600s ready to be built at the plant later this year.

This decision marks a historic moment in manufacturing history for Canada's automotive sector. The CAMI plant will be the first-ever, large-scale auto plant in the country to be retrofitted for the purpose of manufacturing electric delivery vehicles in Canada.

GM also tests autonomous vehicles in Canada at its Canadian Technical Centre Markham campus, and is setting up a vehicle testing facility at its CTC Oshawa campus. Both of these can include testing of EVs.

Earlier in 2020, Ford of Canada announced it would spend close to $2 billion at its plants in Canada ($1.95 billion), with $1.8 billion allocated to production of electric vehicless at its production plant in Oakville, Ont. In addition, then Canadian government and the Government of Ontario, announced that they would spend a combined $500 million to assist Ford of Canada on the mass production of EVs in Canada.

Other players in Canada's automotive market have also been busy building partnerships to research new EV technologies.

Tesla and Halifax-based Dalhousie University recently announced an extension of its exclusive partnership at the university (until at least 2026) related to developing advanced battery technologies. Dalhousie University and Tesla originally signed an exclusive partnership agreement in 2015, with work related to that agreement beginning in 2016.

Canada has been seen as lagging behind other parts of the world in terms of adapting to EVs. This is in no small part due to the vastness of our country, our harsher winter climates (which have a significant impact on battery life), and the lack of full-blown charging infrastructure.

However, plans are in place in parts of Canada to expand infrastructure, Petro-Canada opened its network of EVs chargers across Canada recently, with what the company dubs Canada's Electric Highway. Other initiatives are also in place to expand the infrastructure.

The world is trending towards EVs, and traditional issues related to battery life are being solved step by step (with many vehicles now being able to go approximately 400 kilometres on a single charge), the infrastructure is growing, and EV production is coming to Canada.

As a result, Canada has an opportunity to position itself in the driver's seat as a leader in EV research, design and production for years to come.

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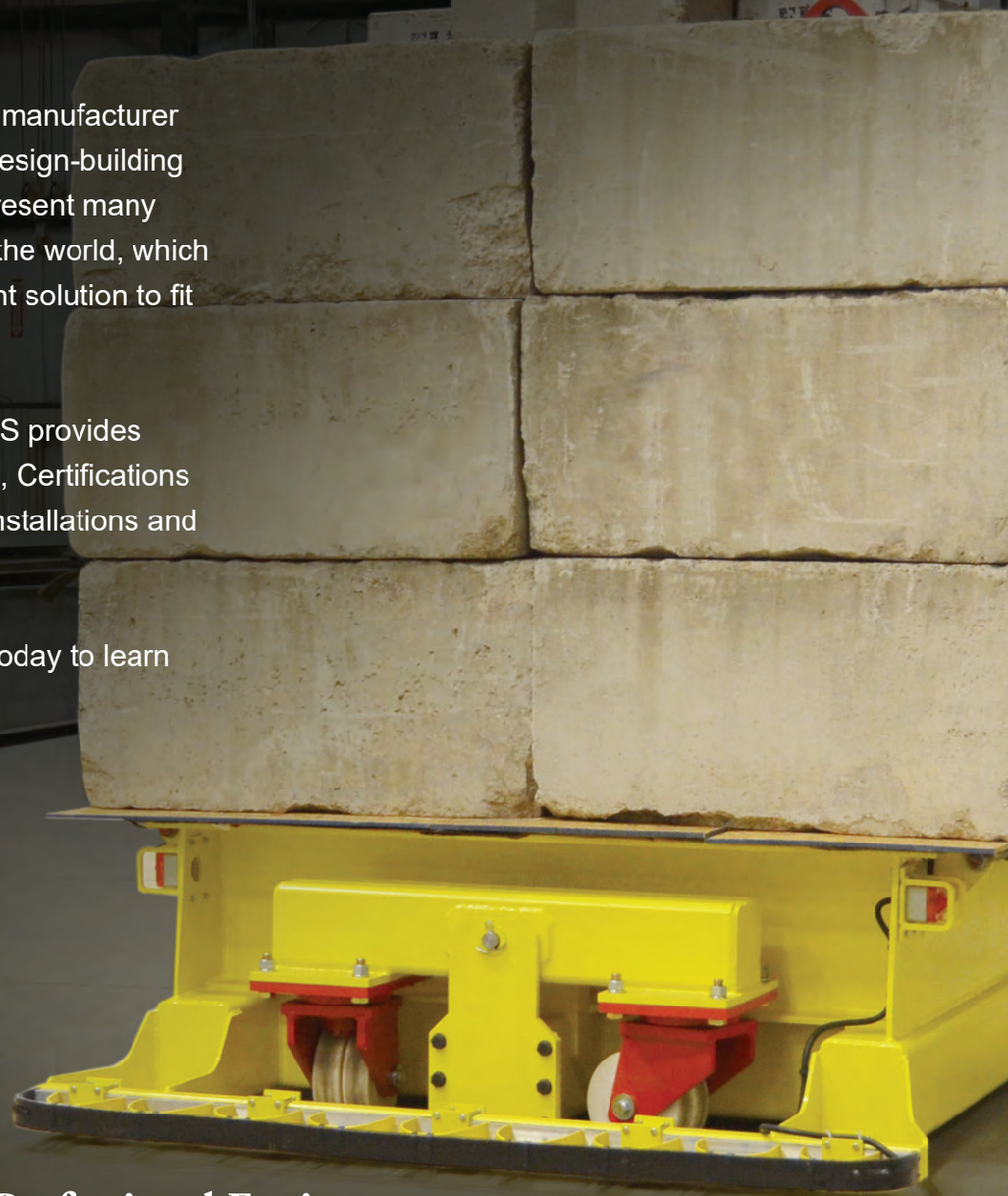

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INDUSTRY MIX | MISCELLANY FROM THE WORLD OF MANUFACTURING

Combilift gives kid lit a lift

The adults are Robert Moffett (technical director, Combilift), Martin McVicar (managing director, Combilift), Emer Conlon (author).

PHOTO: COMBILIFT

How do you get more young people interested in manufacturing and industry to fill an ongoing need for innovators, engineers, technicians and workers?

Combilift, the Irish forklift innovator and manufacturer in Monaghan, is taking a deep dive in the demographic pool with the release of a children's book (age four and up) that stars characters based on the company's forklifts.

The Forklifts and their Secret Superpowers was written by Irish children's author Emer Conlon. She was the marketing manager for a truck dealership when she won a first at the Writer's Digest Self Published Book Awards in 2016 for a similar book (part of her Vroom-Town series).

Combilift, with customers in 85 countries, is well known for its multi-directional forklifts that combine counterbalance, sideloader and narrow aisle into on vehicle.

Conlon pitched the idea as a way to contribute to children's industrial education while reaching adults with some brand marketing. Martin McVicar, CEO and co-founder, liked the idea: The company has a number of programs that include, apprenticeships and tours. But he says the new CombiKids initiative will involve even younger children with Combilift. "The little ones would 'buy-into' the Combilift brand when they are young by creating an association with it – thus encouraging future engineers and lots of other budding talent, as well as motivating children to read."

It's all for a good cause. Book sales will be donated to a deserving charity. More info at https://bit.ly/3qg92uc.

Lithium-ion battery innovation

Electric car lithium battery pack and power connections.

PHOTO: XIAOLIANGGE/STOCK.ADOBE.COM

A researcher at Simon Fraser University has come up with a way to improve lithium ion batteries used in electric vehicles by creating tools to see inside of them.

Audrey Taylor was recognized for her work with the Department of Chemistry at Simon Fraser University in Burnaby, B.C., receiving a Mitacs Award for Outstanding Innovation — PhD. (Mitacs is a national innovation organization that collaborates on R&D with academic institutions). She has developed a high-tech tool that uses a diamond blade to cut the hard ceramic-like battery into ultra-thin slices for rapid testing of particles at the nano scale.

"Lithium ion batteries represent an emerging field and, therefore, we need new techniques to study them at the atomic level," said Taylor, who was able to obtain 60-nanometre-thick cross-sections of particles 20-microns-wide on one sample for viewing under a transmission electron microscope. The diameter of a human hair is roughly 70,000 nanometres or 70 microns thick. Her method is now being used by Burnaby, B.C.-based Nano One Materials Corp. to produce low cost, high performance cathode powders used in lithium ion batteries. She said the tool can also be used to understand what's happening at a battery's end of life.

"The more we know about what's happening inside the batteries, the better we can prevent adverse events and ensure high performance."

New online platform

Assembling a RAV4 at TMMC in Woodstock, Ont.

PHOTO: TMMC

Looking for a manufacturer in Ontario? The Trillium Network for Advanced Manufacturing has made it easier to do so with a new online platform.

The provincially funded non-profit organization in London, Ont. provides information about more than 6,000 facilities, ranging from automotive and aerospace to craft breweries and wineries. Manufacturers are identified by industry and searches according to production networks, supply chains, type of business, Statistics Canada industry codes or location, and street addresses.

TrilliumGIS (https://trilliumgis.ca/map) is available to the public, and is especially useful for manufacturers seeking potential customers, suppliers and partners, but it's also a valuable resource for others, such as economic development officials; educational institutions looking for learning partners; and site selectors looking for promising locations for new manufacturing investments.

There's also a guide for shoppers looking for Ontario-made products. The Ontario Made Consumer Directory comes from Canadian Manufacturers & Exporters (CME), with support from the Ontario government.

Consumers will find made in Ontario goods in the online, searchable directory at SupportOntarioMade.ca.

> People are angered by not being able to have a voice and not being able to have their concerns heard, but also what appears to be a lack of available information on questions that have been raised.
>
> *— Melissa Verspeeten, Get Concerned Stratford, regarding a minister's zoning order that prevents community groups from appealing a decree on the use of land, in this case, a 1-million-square-foot glass plant proposed by Chinese-owned Xinyi Canada.*

NRC opens clean energy R&D hub

The National Research Council of Canada's new advanced materials research facility in Mississauga, Ont.

PHOTO: NRC CANADA

The National Research Council of Canada (NRC) has opened an advanced materials research facility in Mississauga, Ont. to serve as a national clean energy hub.

Foundational research will focus on new materials for clean energy and additive manufacturing applications, then transitioning them for industrial use.

The facility will be part of the Canadian Campus for Advanced Materials Manufacturing (CCAMM), a joint initiative between the NRC and the Xerox Research Centre of Canada (XRCC).

The NRC will also house the Materials for Clean Fuels Challenge at the facility. This seven-year, $57-million program will develop new materials for use in the production of clean and sustainable energy.

GM will build its BrightDrop EV600 in Ingersoll, Ont. PHOTO: GENERAL MOTORS

GM to build commercial EV in Ont.

General Motors is bringing production of its BrightDrop EV600, an electric light commercial vehicle, to the CAMI manufacturing plant in Ingersoll, Ontario. GM will be investing approximately C$1 billion to have the EV600 ready for delivery in late 2021.

With the investment, CAMI becomes Canada's first large-scale auto plant converted to produce electric delivery vehicles in Canada. Work to convert CAMI will begin right away.

BrightDrop is a new GM business that offers an ecosystem of connected and electrified products and services designed to help with delivery of goods and services from the first to last mile. Initial products are an EP1 electric e-pallet, a software platform for fleet and asset management, and EV600.

"BrightDrop offers a smarter way to deliver goods and services," said Mary Barra, Chairman and CEO, GM. "We are building on our significant expertise in electrification, mobility applications, telematics and fleet management, with a new one-stop-shop solution for commercial customers to move goods in a better, more sustainable way."

Viva Healthcare Packaging to increase production of 'made in Canada' PPE

Viva Healthcare Packaging (Canada) Ltd., a Toronto-based manufacturer of plastic products, plans to produce more than 22,500,000 medical grade face masks per month after receiving an Ontario Together Fund investment of $450,000. The Ontario government is delivering targeted investments through the fund to increase the Province's stockpile of made-in-Ontario personal protective equipment (PPE). Viva is using this grant to retool operations and expand production of PPE supplies.

Viva's plans include the addition of two state-of-the-art high output face mask-making lines.

All lines will run 24/7 with inventory sufficient to support quick deliveries.

Viva's face masks are Health Canada approved and certified to ASTM F2100 Level 1, Level 2, and Level 3.

Prices are competitive and offer much shorter lead-times.

Viva also offers a line of medical and non-medical face shields, and will soon be introducing hand sanitizer gel sachets and wipes.

General Motors

New brand identity

General Motors has created a new brand identity that focuses on electric vehicles, and brings forth a new company logo.

"This was a project our team took so personally, not just for ourselves but for the 164,000 employees this logo represents," said Sharon Gauci, executive director of Global Industrial Design, GM. "At every step, we wanted to be intentional and deliberate because this logo signifies creative and innovative thinking across the global General Motors family."

As part of the change, GM has a new marketing campaign of "Everybody In," focusing on three themes:

- Exciting a new generation of buyers and accelerating EV adoption;
- Demonstrating GM's EV leadership, which includes the investment of $27 billion in EV and AV products through 2025, and the launches of 30 new EVs globally by the end of 2025; and
- Highlighting the range, performance and flexibility of the Ultium platform.

Ultium will be the foundation for GM's next-generation EV lineup, powering vehicles, including the GMC HUMMER EV and Cadillac LYRIQ. The platform will be capable of ranges of 450 miles on a full charge, and is capable of 0-60 mph times of three seconds on some models.

"GM has the talent, technology and ambition to advance a safer world for all, help reduce emissions and accelerate toward our all-electric future," said Deborah Wahl, GM global chief marketing officer. "'Everybody In' demonstrates our intent to lead, while inviting others – policymakers, partners, individuals – to play an active role in moving society forward, whether that's helping to expand infrastructure, advocating for progress in their communities, or simply taking an EV for a test drive to learn about the benefits of EV ownership."

CAREERS

Sonya Branco

Sonya Branco, CAE's executive vice-president, finance and CFO, was named one of Canada's Top 100 Most Powerful Women of 2020 by the Women's Executive Network. Her C-Suite Executives award recognizes women who play a significant strategic role, are innovators, are outstanding performers, lead with a strong vision, commit to diversity in the workplace and contribute to their organizations and society. Branco was appointed to her role in 2016 at the Montreal-based aerospace company where she oversees CAE's financial operations in more than 35 countries.

Bart Demosky has been appointed executive vice-president and CFO at Bombardier Inc. in Montreal, replacing John Di Bert who has left the company. He brings more than 30 years of experience in the transportation, energy, infrastructure and services industries. This includes leadership roles such as president and CEO of Universal Rail Systems Inc., executive vice-president and CFO for Canadian Pacific Railway and CFO for Suncor Energy.

Ryan McLeod moves up from interim CFO to CFO at ATS Automation Tooling Systems Inc., a manufacturer of automation systems in Cambridge, Ont. He joined ATS in 2007 as manager of reporting and compliance, became director of finance in 2010, and assumed the role of vice-president and corporate controller in 2014.

Jennifer Green, director of competitions and young women's initiatives at Skills Ontario, joins Canada's Most Powerful Women Top 100 presented by the Women's Executive Network. Her Skilled Trades category recognizes women who contribute value and demonstrate excellence in skilled trades, product or service innovation, and community involvement. She has a history of promoting skilled trades as career options for women.

A COVID HERO

CANADIAN SHIELD'S PANDEMIC JOURNEY

Jeremy Hedges on the plant floor wearing the Canadian Shield face shield and a mask.

PHOTO: CANADIAN SHIELD

A small manufacturer of education technology retools to make a big contribution to face shield production.

BY ALANNA FAIREY, ASSOCIATE EDITOR

Jeremy Hedges may be just 27-years-old, but he has always understood what it means to be a leader and that confidence led to the creation of The Canadian Shield, one of the earliest responders to the COVID-19 pandemic fight, filling the need for personal protective gear.

The company now produces reusable protective face shields and was recognized for its efforts at the Responding to COVID-19: Industry Leadership Honours event. This virtual event on Sept. 17 was hosted by Canadian Manufacturing, PLANT and EP&T magazines.

Sponsored by Machines Italia, the Association for Manufacturing Excellence (AME) and Wello, the COVID awards honoured manufacturers from across Canada that went above and beyond to help out as the COVID-19 pandemic escalated across Canada.

The Canadian Shield won the Personal Protective Equipment (PPE) – large manufacturer and the Ultimate COVID Hero awards.

The Hero award recognized Canadian Shield for having the most significant impact overall through the scope of its efforts, ingenuity and challenges it overcame, all within a few months. So how did this big result spring from InkSmith, a small company (about eight employees) making educational materials for schools?

Hedges traces his leadership instincts and the need to make a difference in the community to his youth. Growing up in Cambridge, Ont., he was heavily involved in athletics and student leadership when he attended Preston High School and Wilfrid Laurier University, where earned a degree in international development and politics. He credits his university studies for giving him a sense of the challenges and hardships people face around the world.

"I've always had a knack for entrepreneurship," Hedges says. "While I was in university, I worked in sales and marketing roles, and as an IT recruiter. From a pretty early age, I always knew I wanted to be an entrepreneur."

Almost immediately after graduating in 2016, Hedges launched his first company, the Waterloo, Ont.-based InkSmith. It works with school boards across Canada to create meaningful learning experiences by bringing technology into the classroom. InkSmith designs tools such as 3D printers, robotics kits and laser cutters used to make tech tools for building critical thinking skills.

The Climate Action Kit teaches students about climate change issues in the context of their possible solutions, Hedges explains. "Students might learn about deforestation and then design, build and code an automated tree planter."

A call to action

Although the world shut down on March 20 because of the pandemic, Hedges became aware of the virus in early January through overseas connections.

"They were sounding the alarm in China about how dire things were looking," Hedges says. "March 20 was probably our second or third day shutting

down because we were going into lockdown."

A local doctor reached out to Hedges and his team a short time later, looking for support to print ventilator pieces. "I told him that we didn't really have the technology to print ventilators, " Hedges recalls. "But I'd been following a group of innovators out of the Czech Republic doing face shields."

The next day, the doctor said the Waterloo Region was short an astronomical 10,000 face shields, so Hedges decided to take on the challenge.

"We weren't thinking we were starting a new business," Hedges recalls. "We just thought, 'we have the tools, we can jump in and help our community – let's do this.'"

And thus, The Canadian Shield was created.

At the height of the pandemic, the new company began manufacturing the clear plastic Canadian Shield face protector for frontline workers, providing coverage against exposure to coronavirus droplets from ear-to-ear, and hairline to neck. By May, the company had launched consumer sales online.

Production pain points were speed of production, access to source materials, keeping costs low, and complementing existing PPE kits. In addition, Canadian Shield launched consumer sales for its products online in May.

Working long days in the initial first few weeks, his team had the tools to laser cut the face shields, and Hedges put out a call on Twitter looking for someone to print the headbands.

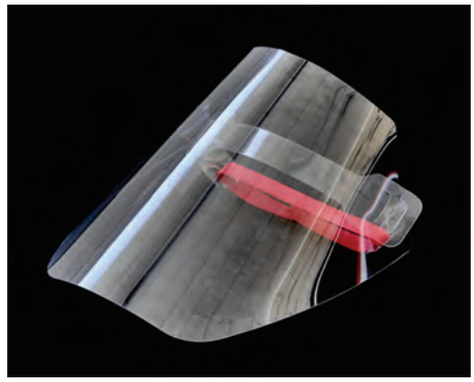
Conversations about the overall PPE shortage in Ontario and across Canada soon followed. Within days, he had contracts for hundreds of thousands of shields.

The company went through what Hedges describes as "radical transformations," shifting from focusing exclusively on 3D printing and laser cutting to stamping, and then purchasing automated travelling head cutting presses. "That took us from being able to do thousands or in the low tens of thousands of shields a day to hundreds of thousands a day."

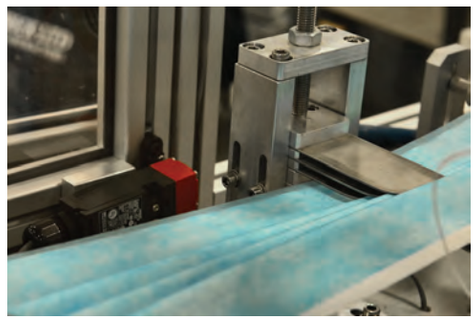
Working 16- to 24-hour days, production ramped up fairly quickly – so much so that Canadian Shield received its medical device licence in four days, when the average wait time is about 120 days.

The company moved from a 2,500 square-foot space to a 50,000 square-foot building – sight unseen when Hedges signed the lease – within four weeks, to create a fully operational manufacturing facility.

"There's no real book on how to operate



The Canadian Shield face shield. PHOTO: CANADIAN SHIELD



Three layers of melt-blown and spun-bond polypropylene is fed into the machine and pleated before being welded and cut into masks. PHOTO: STEPHEN URHANEY

A machine attendant monitors the mask ear-loop welding process. PHOTO: STEPHEN URHANEY

during COVID," he says with a laugh.

Once the space was secured, he began hiring staff (now more than 300 on the payroll) that could not only help scale up production, but who also had a strong understanding of the job's purpose.

"We had to build a solid management team so we put out job advertisements for general labour roles and we got 6,000 applicants in a span of three months. What was really rewarding is they all knew what we were doing, that it was mission-driven and they wanted to be part of something. We were making products for the frontline and people were excited to get to work."

The team's enthusiasm and desire to do the right thing was noticed.

In April, Canadian Shield announced Public Services and Procurement Canada (PSPC) had awarded it a contract to manufacture

10 million units of its reusable face shields for healthcare providers and essential workers by August.

Hedges credits the support of his team, and the support of the community.

"The Kitchener-Waterloo community and particularly [tech start-up] Communitech has been an incredible supporter," Hedges says. "We owe them our success and have to make sure they share the spotlight."

A bright future

To date, Canadian Shield has donated more than 68,000 face shields to over 143 organizations in nine provinces and territories.

In addition, Canadian Shield launched a "Buy One Get One" campaign on its website. For every shield purchased online, one is donated to healthcare facilities in need.

Through this initiative, the company has donated more than 900,000 face shields that have gone to teachers across Canada.

When COVID-19 is over, there will always be a need for face shields, medical masks and other forms of PPE.

"Volumes will decline. It's not always going to be astronomical numbers like we're seeing today," Hedges explains. "I think Canada's total demand for masks in the next year is between 1.5 billion and 2 billion. Probably during a normal year that number is closer to 200 million. So there's going to be a sustainable market there."

Even so, the company's capacity is going to be much greater than what's needed to support Canada. "The long-term plan is to expand and get as much global market share as possible. The only way we can do that is by being vertically integrated and highly automated. In that way, we'll get our cost centres down so we can compete dollar-for-dollar against countries like China."

The company is now producing cloth and surgical mask lines, ramping up to more than 300 million per year.

Hedges also sees the company selling raw material for making masks. He's thinking green too, but the focus will continue to be on helping those in need.

"We're investing in making masks compostable. We'll sell the automation to make masks, we'll sell masks, and we'll sell the raw material that we can to help other countries in whatever way they need."

Naturally, Hedges the entrepreneur is thinking big.

Alanna Fairey is the associate editor of Canadian Manufacturing, an Annex Business Media publication.
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Responding to COVID-19

HOW THE LEADERS MADE A DIFFERENCE

When the COVID-19 pandemic swept across Canada and by March the country was shutdown, it was evident the healthcare system was short of personal protective equipment, ventilators and other safety supplies.

Manufacturers and other suppliers responded to a federal government call to action by shifting their operations to produce COVID-related supplies, which meant buying equipment, securing suppliers and quickly ramping up production.

Their innovations and agility resulted in a steady flow of safety supplies and the development of hospital equipment for frontline healthcare workers and consumers. To honour their efforts, Canadian Manufacturing, **PLANT** and **EP&T** magazines (Annex Business Media) hosted the Responding to COVID-19: Industry Leadership Honours, covering 10 categories. This virtual event was sponsored by Machines Italia and the Italian Trade Agency, Association for Manufacturing Excellence and Wello.

The large manufacturer and overall hero awards are covered in the Canadian Shield feature. The following looks at the eight other categories and their winners.

To honour manufacturers' efforts, Canadian Manufacturing, PLANT and EP&T hosted the Responding to COVID-19: Industry Leadership Honours.

PHOTO CREDIT: S. URHANEY

Some of the manufacturers who responded to the pandemic and excelled.

Sorting MPC face shield headbands.

Molded Precision Components

PPE – Medium-sized manufacturer

The shortage of face shields for frontline workers battling the COVID-19 pandemic prompted auto parts manufacturer Molded Precision Components in Shanty Bay, Ont. to shift production to supply the protective gear.

When COVID-19 took hold in March, MPC designed, prototyped and made provisional patent applications in under five days. Within two weeks of completing the design, the first high quality injection moulded parts were in production.

The company had to expand its 28,000 square-foot plant facility by 45,000 square feet, helped along with funding from Next Generation Manufacturing Canada. And the federal, Ontario and Alberta governments stepped up with purchase orders to support the manufacturing investment, securing more than 27 million face shields for delivery by September.

The move to face shield production allowed MPC to maintain its team of 55 people, and 40 full-timers plus 65 student workers.

The company produced 450,000 Shield-Us per day and as of mid-July it had exceeded 5 million units. Partner Sterling Industries, a contract manufacturer of medical devices and components in Toronto, packaged and fulfilled the government orders as a priority.

It was a challenge to ramp up quickly. New moulding machines, associated robotics and handling equipment displaced the operational MPC warehouse on-site, which was moved to the local hockey arena. The fire hall, vacated for a new facility, was converted into a state of the art manufacturing hall.

MPC also partnered with two local moulders, placing five new machines in their facilities for additional production volume.

Orders for quantities of less than 100 pieces for non-medical applications are being fulfilled by Sentinel Supplies in Shanty Bay, run by high school and university students associated with MPC and Sterling.

The companies are also committed to donating at least 25,000 free shields to local businesses.

TroMed facemask.

i3 Biomedical

PPE – Small Manufacturer

Developing protective gear for the COVID-19 pandemic inspired i3 Biomedical in Mirabel, Que. It came up with a mask infused with its TrioMed technology that deactivates the COVID-19 virus and has supplied it to frontline workers and the general public.

i3 BioMedical has focused

on novel antimicrobial products that prevent the spread of infection and disease. TrioMed Active Technology for general medical products actively fights microbes at the molecular level, deactivating and/or killing them. This novel molecule is grafted to medical materials and engineered to look like a target for microbes, then destroy them. Third-party laboratories have proved it eliminates infectious agents in minutes.

The University of Toronto's Biohazard level 3 laboratories tested TrioMed incorporated in facemask material against Coronavirus-Sars-2, which causes COVID-19. After repeat testing, it was concluded the virus was completely deactivated.

Space Engine ventilator components.

Space Engine Systems

Assisting the sick

Space Engine Systems in Edmonton is an aerospace innovator developing the next generation of propulsion technologies for air travel and space.

Many of the technologies used in its light and reusable, multi-fuel DASS GN1 and GNX engines can be put to work in other industries.

When the COVID-19 pandemic hit and it was evident there weren't enough ventilators to treat the sick, the company applied its expertise to the rapid development of a multi-patent machine. It did so in 21 days.

The DASS G1 ventilator was accepted for sale on the Africa Medical Supplies Platform and will be licensed in a variety of global markets.

This low-cost, richly featured instrument uses a blower rather than a bag and a touchscreen to deliver informative waveforms.

Following the success of the DASS G1 ventilator, SES began developing the DASS G2 intelligent ventilator. It can be operated remotely, reducing the risk of pathogen exposure. It comes with its own oxygen generator as well as a module that converts water to oxygen.

iLobby office kiosk.

iLobby

Disease detection

iLobby, a Toronto-based provider of visitor management technology joined the fight against COVID-19 with Fever Check. This technology uses a thermal camera to scan a visitor's temperature.

The company consolidated COVID-19 screening into one

system with an automated process that takes less than a minute to complete. Visitors are pre-screened prior to arrival and verified on-site when they sign in. Each person is automatically logged in to meet compliance requirements and provide audit-ready reports. If an incident occurs, the automated logs provide a digital trail for easy contact tracing.

iLobby quickly developed the key components for the system, such as Touchless Sign-In, and a contactless thermal camera to automate screening of elevated body temperatures.

The company's community outreach includes the donation of iPads to long-term care facilities and hospitals to help families stay connected with loved ones.

Bruce Power distributing facemasks.

Bruce Power

Services

The shortage of personal protective equipment (PPE) at the beginning of the pandemic presented a danger to frontline health workers and essential staff.

Bruce Power, the nuclear power provider and supplier of medical isotopes based in Tiverton, Ont., recognized the problem and quickly marshalled its resources to stream more than 2 million pieces of PPE to over 100 frontline organizations and Ontario's Ministry of Health and Long-Term Care.

It collaborated with the University of Toronto and Promation on the Accelerated Ventilator Development Program, providing the automation integrator in Oakville, Ont. company with funding and expertise. Within 68 hours, the team produced a working ventilator prototype.

And Bruce Power launched an online portal called Strength in Numbers that provides local municipalities, businesses and community organizations with access to affordable PPE.

There's more COVID-19 activity to report:

- A Go Fund Me page was created to collect donations ($120,000 from current and former employees) to support 38 local food banks.
- 100 isolation beds were established for recovery centres in Grey-Bruce and a 50-bed pop-up isolation centre was set up to support of agricultural workers in Essex County.
- 50,000 litres of hand sanitizer were donated to the community.
- $1 million was raised and contributed for urgent needs across Ontario.
- $400,000 from Bruce Power and the Power Workers' Union was donated to University Health Network (UHN) to accelerate research.
- 190,000 community updates were distributed in partnership featuring local health units to raise awareness and stop the spread of the virus.
- Collaborated with Public Health to co-host virtual town halls with the local Medical Officer of Health.
- Released the Grey-Bruce-Huron Strong App – a platform to provide public health updates, and to support local small businesses.
- Established the Retooling and Economic Recovery Council and associated initiatives.

Envision SQ Inc.

Sanitization – Innovation

Manufacturers' response to the COVID-19 crisis put the innovators to work and Envision SQ Inc., a Guelph, Ont. manufacturer of pollution filters, proved to be one of the leaders. It created a semi-permanent disinfectant that sticks to virtually any surface and kills COVID-19.

GermStopSQ solution.

EnvisionSQ is an R&D company that creates photocatalytic nano-coatings designed to break down air pollution. Prior to the pandemic, it was perfecting SmogStop, a coating proven to be effective for reducing indoor and outdoor air pollution. When the pandemic hit, the Envision team reworked the formula, creating a coating that kills disease-causing germs, including the coronavirus responsible for COVID-19.

GermStopSQ is a non-toxic liquid that kills on contact and dries to create a clear, self-sanitizing coating that disinfects for weeks. The nano-engineered adhesive incorporated in the formula sticks to virtually any surface. It can also be applied to gowns, face shields and other PPE to enhance

protection. The current formulation is semi-permanent – it will stick to surfaces unless it's scrubbed or dissolved in water.

The liquid is applied in a variety of ways: wiped on with a cloth, sprayed on using compact hand-held sprayers or applied with pressure-pump sprayers for large-scale applications. It's also applied to new products on the assembly line.

Independent lab tests show GermStopSQ kills proxies for the virus – 99.993% of coronavirus 229E and 99.99999% of cystovirus Phi6 – within five minutes.

In April, the company secured a grant from Next Generation Manufacturing Canada to scale up production of GermStopSQ to produce more than 1,000 litres a week. That's enough solution to coat one million doorknobs, 75,000 kilometres of handrails or the interiors of 200 passenger airplanes.

ECOLogical hand sanitizer.

Hunter Amenities

Sanitization – Hygiene

The COVID-19 pandemic quickly demonstrated a need for hand sanitizers and Hunter Amenities responded.

The multinational cosmetic manufacturer with an operation that covers about 235,000 square feet in Burlington, Ont. and employs about 1,500 people, quickly pivoted its manufacturing focus to produce a hand sanitizer that isn't scented or alcohol-based.

This was something new for the company that makes personal care products such as shampoos and lotions for hotels, spas and retail outlets.

Within a few weeks Hunter Amenities developed, tested and manufactured a line of non-alcohol based hand sanitizers; procured difficult to obtain ingredients; obtained Health Canada and FDA approval; instituted highly rigorous additional quality control; developed sales and marketing materials; listed with several large retailers; and brought back all of its manufacturing team.

To drive production efficiently, cycle times were analyzed and several lean studies were conducted leading to doubling and tripling of throughput compared to 2019.

Filling lines were modified to optimize the flow of liquids and reduce machine cycle time, and blending processes were standardized while blending time was reduced, which led to reduced rework and defects.

High-strength alcohol hand sanitizer.

Forty Creek Distillery Ltd

Machines Italia – COVID Hero.

Forty Creek Distillery Ltd. (a Campari Canada company) in Grimsby, Ont. has done its bit for the COVID-19. And that has earned the distiller of whisky the Machines Italia Hero award, for the company that has the most significant or novel impact on the pandemic using Italian-made machinery.

After quickly acquiring a COVID-19 site licence from Health Canada at the outset of the pandemic, Forty Creek Distillery began producing and donating high-alcohol hand sanitizer to St. Catharine's General Hospital, Red Cross Niagara and other community and health organizations. Other distillers were also helped. Forty Creek donated high-strength alcohol to support their sanitizer efforts.

Help was provided to bartenders, hard-pressed by the closure or scaling back of restaurants and bars, with a $50,000 cash donation to the Bartenders Benevolent Fund. This donation was part of the #ShakenNotBroken initiative that Campari Group has undertaken globally.

Campari Canada's Stir Crazy program, in collaboration with Bartender Atlas, engaged over 130 bartenders to create cocktails and content. Through this program, Campari Canada paid more than $35,000 directly to some of Canada's most creative bartenders. The company has also partnered with Longslice Brewery and The Aviary Brewpub to buy meals for those in need. With the latest donation, Campari Canada provided more than$85,000 in support to the hospitality industry.

In 2017, the bottling facility at Forty Creek was upgraded. Italian suppliers GAI and Maspack installed equipment for a new production line, increasing capacity by 30 per cent.

Comments? E-mail: mcywinski@annexbusinessmedia.com

Rules work for general, problematic issues that have not responded to individual correction.

IMAGE: ETIAMMOS/STOCK.ADOBE.COM

Problem EMPLOYEES

HOW TO DEAL WITH BAD BEHAVIOUR

Don't be too quick to impose new rules for isolated misbehaviour.

BY HUGH ALLEY

Last September, B.C.'s chief public health officer issued a new order immediately closing nightclubs and banquet halls noting many of the recent COVID-19 cases could be traced to those venues. People were ignoring the physical distancing guidelines and rules prohibiting gatherings of more than 50 people.

The move was divisive. Some weeks before, the association representing banquet halls had suggested shutting them down so they could escape the pressure from customers to ignore rules. Meanwhile the CEO of a local Chamber of Commerce complained the move would bankrupt many of the halls, and would force the gatherings into unregulated locations.

How does this dispute in a small corner of the province with just 5 million people affect your plant?

It provides a great example of when to use rules to address a problem versus dealing with the problem.

B.C. had strong contact tracing. Public health people knew it was happening in many of the facilities, not just a few, and they had direct conversations with the offending organizations, but the problem continued.

When behaviour is general, problematic and has not responded to individual correction, developing a rule or policy is appropriate. However, managers can be too quick to impose new rules because one or two employees are misbehaving. That avoids difficult conversations.

Misguided rules

It's misguided for three reasons: people who are misbehaving will probably ignore the new rules too; people who are evading the rules will tend to hide the behaviour; and the rules turn frontline leaders into police officers, rather than people developers. In the end, they'll still need to have the difficult conversations.

Smartphone use at work is an example. People are on the phone too much during working hours. When there are safety concerns it's perfectly appropriate to have rules. No phone use while operating equipment is fair. But no phone use during work hours?

Ask yourself, do you take personal calls during work? And if you can take personal calls, why not others? Life happens. If it's not frequent, what's unreasonable? It's disrespectful to allow it for one class of employees but prohibit it for others.

Instead, when someone abuses a reasonable freedom, speak to that person directly. Do not make a rule. It will become unenforceable, a distraction for your managers, and everyone who's behaving reasonably will resent it.

In many cases, rules happen because frontline leaders don't have the skill to deal with situations. If managers need to shore up skills, so they can deal with these situations, the freely available Training Within Industry Job Relations module is an excellent starting point.

Count it as a win every day you can avoid a new rule by dealing directly with problem behaviour.

Hugh Alley is an industrial engineer based in the Vancouver area who helps organizations achieve significant performance gains in delivery, quality and cost in a short timeframe. Call (604) 866-1502 or e-mail hughralley@gmail.com.

Comments? E-mail: mcywinski@annexbusinessmedia.com

Pause and OBSERVE

ADD A SPAGHETTI DIAGRAM TO YOUR PROCESS MENU

This simple tool delivers powerful results using just pen and paper.

BY RICHARD KUNST

If you really want to continuously improve, first learn how to pause and observe. Of course it's more natural to observe then jump to a solution, but there's a risk of missing out on a much larger opportunity.

There are several methodologies that help us pause and observe and even allow us to gather significant data that leads to the creation of a much-improved future state. A very simple but useful tool is the spaghetti diagram. All you need is a sheet of paper, a pen and a time to observe.

First, sketch out a top view of the area to be observed, denoting benches, key pieces of machines and of course storage shelves. Translate the operator's movements onto the paper diagram, including repetitive walking paths that will show a very solid black line.

A typical process consists of a series of movements. Often people never challenge the location of specific items and adjust their movements to accommodate the process requirement and the location of the items. How many times has a process been improved by doing something as simple as moving a pallet closer to the off-load section of a conveyor? Two steps equals about 1.5 metres, which takes 0.6 seconds. That may not sound like a lot of time but over thousands of steps, it quickly adds up. The objective is to ensure operators are safe, clean and comfortable so minimizing walking will keep our operators fresh longer. Mission accomplished.

The second paradigm to confront is how to change muscle memory, which results from doing a task repetitively for an extended period. Engrained patterns can be changed to reduce wasted time and effort. Here are some tips that will help you create a spaghetti diagram that will lead to improved operator movement:

- Find a perch to observe the entire process (maybe a mezzanine).
- Sketch the observation area. Accuracy is not that important for distance and object size.
- Observe, draw, observe, draw, observe, draw and reflect. Make sure you add all of the anomalies such as replenishing operating supplies.
- Reflect. Go back and observe again with a vision of adjustments in place.
- Adjust.
- Back to the perch and observe and sketch again.
- Compare and calculate.
- Document into a visual work Instruction (a new best practice).
- Wait one or two weeks and again perch, observe and sketch.
- Reflect again. What reverted back and which changes stuck?

Use a spaghetti diagram to design a new process and include your proposed task times, delays and moves. It will help you visualize and balance processes.

Comments? E-mail: mcywinski@annexbusinessmedia.com

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https://exair.co/18_prods

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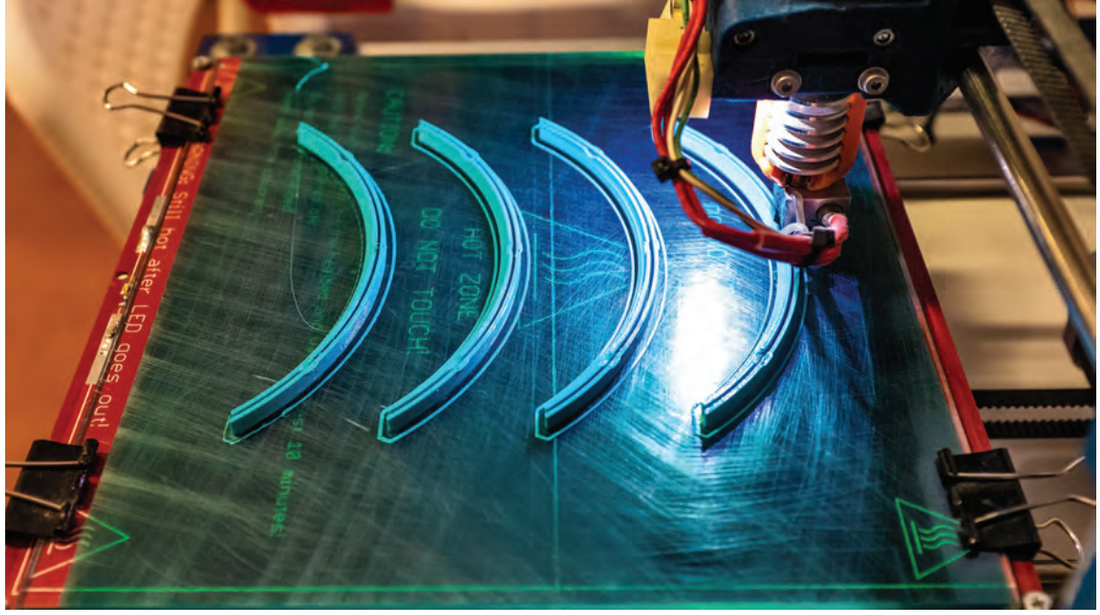


3D printer making plastic parts for medical protective shields.

PHOTO: JIŘÍ TASHI VONDRÁČEK/STOCK.ADOBE.COM

Year of the PANDEMIC

ISSUES THAT IMPACTED MANUFACTURING IN 2020

CME's Management Issues Survey examines 2020 and looks ahead.

BY PLANT STAFF

Manufacturers endured a crazier year than normal in 2020 thanks to the disruption caused by the COVID-19 pandemic, although the change in government below the 49th parallel will settle some aspects of business and trade uncertainties.

Needless to say, the biennial Management Issues Survey from Canadian Manufacturers & Exporters is of even greater relevance following such an historic year. More than 560 companies from 19 industries responded. While it highlights issues that continue to impact the sector, the 2020 survey provides some insight into how the pandemic affected manufacturers, including disruptions to their supply chains and increased labour and skills shortages.

During the pandemic, manufacturers, deemed essential by governments, acted quickly to meet shortages of personal protective equipment (PPE), medical devices and associated safety products during the pandemic. Fifteen per cent scaled up or retooled to make components and products, such as PPE for frontline healthcare workers.

But the pandemic added costs. To ensure their operations are safe, about 60% of respondents are purchasing PPE to protect their workers, at an average estimated cost of $373,400 each for 2020.

The Canada Emergency Wage Subsidy (CEWS) proved to be key for 53% of manufacturers. And close to 22% of respondents have participated in the Canada Emergency Business Account (CEBA).

Thirty-per cent of manufacturers reported production had returned to the pre-pandemic levels of February 2020 while 6% said they'd do so by the end of the year, but many more anticipate a drawn-out recovery, said Alan Arcand, CME's chief economist in his analysis. Another 10% were very pessimistic about the business outlook, and 5% predict their sales will never fully recover.

"While the results tell us that many manufacturers believe the economic scars of the pandemic will linger for years to come, the survey also shows that Canada has an enormous opportunity to win back manufacturing investment," said Dennis Darby, CME's president and CEO.

Manufacturer growth

Most manufacturers indicated they were confident about their growth prospects over the next three years. About 41% were optimistic, compared to 5.5% that were pessimistic. But only 20% were optimistic about the Canadian economy, while 18% were optimistic about the U.S. economy. About 16% were pessimistic about growth prospects for the Canadian economy, higher than the roughly 13% of respondents' U.S. outlook. Businesses were mostly neutral about the global economy with 14.5% optimistic, just ahead of the 12.5% who were pessimistic.

Companies intend to invest: 77% said they'll be spending on workforce training while 76% plan to invest in new machinery and equipment, and 70% are looking at boosting innovation and commercialization. Two-thirds plan to invest in new production capacity over the next three years.

Manufacturers ranked insufficient domestic demand (40%) and insufficient foreign demand (23%) as the top factors limiting their ability to increase sales or production. Between them was a shortage of skilled (36%) and unskilled (26%) labour.

Sixty per cent of companies surveyed have immediate labour shortages. This compares to 70% in 2018 and 40% in 2016. Manufacturers in Quebec, B.C., and Ontario were having the most trouble finding workers.

CME's report highlights the need for government action. Manufacturers would like to see lower payroll and other taxes, more effective promotion of skilled trades and other career opportunities aimed at secondary students, and more direct funding to support on-the-job training.

Darby notes the pandemic revealed the need for manufacturers to diversify supply chains, describing them as they are too reliant on a limited range of markets.

"This should elicit a strong response from Canada's governments to step up its global competitiveness, so it can attract investment from firms looking to re-shore manufacturing," he said in a statement.

Close to 40% of respondents want to see improved tax competitiveness. They prefer two measures: new and expanded tax credits to encourage machinery and equipment investment, and lower headline corporate tax rates.

Manufacturers were split on the impact of government climate policies on their ability to compete globally: about half reported no or minor impact; and the other half rated the impact from moderate to severe.

The most popular climate measures were government support to help companies make greenhouse gas-reducing investments through direct funding, or a green tax credit and the full recycling of carbon pricing revenue back to the manufacturing sector.

CME's survey report is available at: https://cme-mec.ca/blog/initiatives/2020-management-issues-survey.

Comments? E-mail: mcywinski@annexbusinessmedia.com

MAINTENANCE

What's up DOCK?

DIAGNOSING INDUSTRIAL DOOR PROBLEMS

Address them promptly to protect against environmental and security issues.

BY JON SCHUMACHER

A door off its track is easy to spot. PHOTO: RITE-HITE

Doors are critical gateways, whether they're positioned at the exterior or interior. They span a wide variety of uses. Doors might separate inside from outside, help protect workers from dangerous processes or isolate micro-climates for optimal production efficiency. When they aren't working properly, facilities could face unscheduled downtime and costly shipping or production delays.

It's important to ensure that doors work properly. When they aren't, the simplest response is to repair the door. This means regular audits and maintenance should be performed to ensure it's operating properly and sealing effectively, especially in temperature-controlled areas. After all, facility managers don't want to play a guessing game that involves asking, "What's behind door number one?"

There are many reasons that doors can break down and many problems that should trigger investigation into problematic doors. These typically include:

- Won't open or frequently get stuck;
- Leaking or the seal is damaged;
- Dents, damaged or hit by forklifts;
- Off their track;
- Impacted by grime build-up, oxidation/rust or other signs of deterioration; and
- Frost accumulation along the edges and/or are in areas where maintaining proper temperatures is an issue.

Many of these problems are obvious. A door that's difficult to open or is off its track is easily noticed. However, some problems are much less obvious such as a leak or poor sealing properties. Lackluster seals lead to wasted energy, damaged product, and safety issues.

Frost management

Take frost accumulation. This problem is often the result of wide temperature differences and a bad seal. As moisture from a warmer, higher humidity area draws nearer to a damaged door opening near a cooler or freezer, it condenses in the form of frost. The ice buildups lead to slips, as well as difficult "speed bumps" to cross safely. And these coolers must work harder to maintain the required temperature for the products inside. Many facilities will invest in defrost systems to prevent this from occurring, which increases energy use.

Since an ineffective door creates a cascade of problems, it's important to evaluate them immediately to determine if they are reparable.

Caught early, some of the more minor problems can be repaired by facility staff, but some will not be easily fixed and others will require external expertise.

When repairing doors in-house, always keep safety in mind. Ensure the door is locked out/tagged out, cannot fall on someone and that the repairers are wearing personal protective gear – even if they are just investigating.

Remove the obvious

Rule out the most obvious problems first, such as empty or malfunctioning power sources for automatic doors or grime that needs to be cleared from the tracks. Power doors that are off their tracks should not be forced back on. The repair team should only attempt to put the door back onto its track if the door and track aren't physically damaged, and the spring or chain is still intact.

When diagnosing a problem with a cold storage or freezer door, keep in mind the cause will determine the scope of repair needed – and it may go beyond just the door. While it's easier to replace components, such as hinges or panels, it will likely be more difficult to replace or repair walls, floors and entire refrigeration systems.

Address problems as quickly as possible to avoid further disruption to the business and to avoid security or environmental risks. Facility and operation managers should be diligent checking on door conditions. The best practice is to keep to a comprehensive maintenance schedule that will prevent big issues down the road.

Jon Schumacher is the a director at Rite-Hite Doors, based in Brown Deer, Wis. E-mail jschumacher@ritehite.com. Visit www.ritehite.com.

Comments? E-mail: mcywinski@annexbusinessmedia.com

SUPPLY LINES

NEW ROMANIAN PLANT

Armstrong Fluid Technology, a manufacturer of fluid flow equipment based in Toronto, has moved to a new facility for European production and warehousing of circulator products.

The plant in Jimbolia, Romania increases the company's capacity for the production of high-efficiency and standard wet rotor circulators. Supported by Armstrong's global supply chain, the site will employ 65 people.

Armstrong operates seven manufacturing facilities worldwide.

SPARK ADDS LASERS

Spark & Co., a distributor of waterject and EDM cutting technology in Boisbriand, Que., has added Han's Laser brand to its product line.

The manufacturer based in Shenzhen, China makes 2D, 3D and tube lasers as well as additive manufacturing machines and press brakes used across multiple industries.

Han's Laser purchased Quebec City-based CorActive High-Tech, a manufacturer of specialty optical fibre and fibre laser modules, in 2016.

CorActive fibre lasers provide back reflection protection for reflective materials. An operation frequency of 60 hz for faster hole burning increases cycle times.

Han's also manufactures cutting heads, tables and automation assemblies.

BETA EXPANDS IN NA

Italian toolmaker Beta Utensili SPA, has expanded its global presence with a subsidiary that will serve the North American market.

Beta Tools USA, based in Columbia, Penn., will support Canadian and American customers from its 20,000-square-foot office/warehouse.

The company supplies Italian-designed and manufactured tools for industrial maintenance and other market segments.

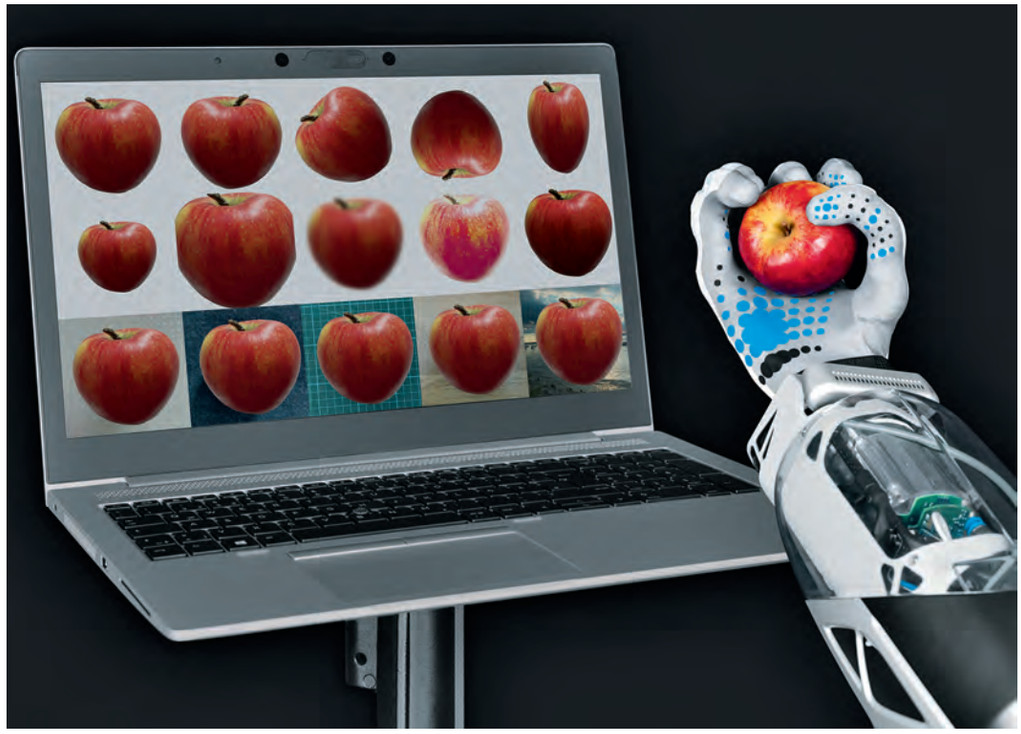
CONFINED SPACE RESCUE

Safetyscope has been contracted by Hydro One to provide confined space rescue services.

The company, a specialist in safety training based in Vaughan, Ont., will provide the electricity transmission and distribution utility with confined space attendant and rescue training and consulting services, plus assistance in developing custom rescue plans.

LEADING EDGE

Innovative ideas for plants



Bionic Mobile Assistant. PHOTO: FESTO

GET A GRIP

Festo is exploring how automation systems can get a better grip with its Bionic Mobile Assistant robotic helper.

The German automation innovator (with Canadian headquarters in Mississauga, Ont.) developed the concept collaborative robot in its Bionic Learning Network, where research is based on learning from nature. In this case, focus is on the human hand.

The 2.0 version is mounted on the DynaArm electric robot arm with a ballbot for 360-degree mobility. Because it's modular, it quickly mounts and for commissioning on other robot arms.

To mimic the amazing gripping ability of a human hand, 2.0 contains compact valve technology, sensors, electronics and mechanical components integrated in the tightest of spaces. Fingers and the opposable thumb are made of flexible bellows structures with air chambers, surrounded by a firm, yielding knitted fabric.

Potential uses? In manufacturing, use it for carrying out ergonomically strenuous or monotonous assembly tasks. At home, it could be a personal assistant or service robot. In challenging environments, use it to serve meals in hospitals where there is an increased risk of infection.

www.festo.ca

AR COMING FOR PACKAGING LINES

Harpak-ULMA, a provider of packaging line technology in Taunton, Ma., is extending its platform capabilities to support augmented reality (AR) on its Rockwell Automation-enabled packaging solutions.

The company is in the beta-phase of its AR that will help manufacturers bridge skills needs.

Industrial experience indicates real-time, active-learning dramatically accelerates front-line staff learning curves and reduces error. For example, Boeing workers completed intricate wire harnesses assemblies using AR-based work instructions, cutting assembly time by 25%, and reducing error rates to nearly zero.

Rapid upskilling with augmented reality. IMAGE: HARPAK-ULMA

Staff with little or no formal training rapidly up-skill to perform nonrepetitive complex activities. When a machine malfunctions or a tool change is required, AR guides the operator or maintenance worker visually step by step through task execution.

The AR option will also provide a library of experiences for tool changes, maintenance, expert capture of training processes, and related device recommendations.

www.harpak-ulma.com

SHARP SCANNING IN 3D

Exact Metrology has increased the capability of its Artec 3D handheld scanners with an HD mode. This artificial intelligence-powered technology provides ultra-sharp, clean and detail-rich scans for Artec Leo and Artec Eva.

Sharp 3D scans have a resolution of up to 0.2 mm, detecting familiar patterns, surface details and shapes. This allows reconstruct of a higher number of polygons per frame, resulting in 3D data that's both denser and higher quality.

HD density can be selected from a standard 1x density up to 36X for Eva (~3 mln polygons per frame) and 64x for Leo (~5 mln polygons per frame).

Exact Metrology, based in Cincinnati, provides 3D technology.

www.exactmetrology.com

Arec 3D scanner. PHOTO: EXACT METROLOGY

OUTDOOR MENUS GO DIGITAL

Taking your order. PHOTO: MELITRON

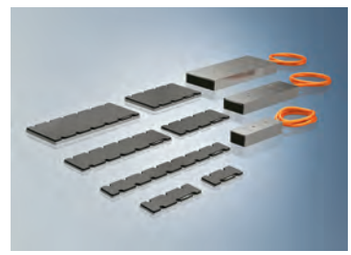
When you pull into a fast food drive-through you're likely ordering at a digital menu board made by a Guelph, Ont. manufacturer that makes outdoor display technology for customer-facing markets.

Melitron, a contract manufacturer of integrated metal enclosure systems for technology products, partnered with Samsung Canada to design and manufacture weatherproof outdoor systems with fully integrated Samsung displays.

During COVID times when dining rooms are closed or restricted, drive-through sales are essential to food businesses. Prior to the pandemic, up to 70% of restaurant revenues came from drive-through orders. Going digital has increased sales by promoting the right products at the right time through automatic menu changes.

Melitron is now offering tablet, pedestal, street and wall digital kiosks.

www.melitron.com



AL8000 product line. PHOTO: BECKHOFF

NEXT-GEN LINEAR MOTORS

Beckhoff has added AL8000 high-performance and modular linear motors to its product line, developed in co-operation with its Fertig Motors subsidiary.

This next-generation modular line consists of motors and magnetic plates in three widths: 50 mm (AL8x2x), 80 mm (AL8x4x) and 130 mm (AL8x6x). Each width category offers a range of different motor types in terms of length, winding and cooling for a total of 28 choices to suit specific application requirements. Peak forces of 120 to 6,750 N are possible as well as maximum speeds of up to 12 m/s.

www.beckhoffautomation.com

EVENTS

ProMat Manufacturing and Supply Chain Show 2021
MHI
April 12-14, 2021, Chicago
ProMat is presented by MHI, the international trade association that represents the material handling, supply chain, and logistics industries. Features the latest material handling and logistics equipment and technologies. Includes over 140 sessions from industry experts who will provide the latest information on manufacturing and supply chain trends, technologies and innovations.
Visit www.promatshow.com.

ISA Calgary Show
Formerly: April 13-14, 2021
Changed to: September 28-29, 2021, Calgary
The International Society of Automation in Calgary presents the Instrumentation, Systems and Automation show. The latest industry trends will be covered with technologies on display and opportunities for networking.
Visit https://isacalgary.com.

Western Manufacturing and Technology Show (WMTS)
SME
June 1-3, 2021, Edmonton
WMTS is Western Canada's manufacturing marketplace. Look for the latest manufacturing tech, take in the keynotes and network.
Visit https://wmts.ca.

PLANTWARE

Arc welding robot. PHOTO: DP TECHNOLOGY/ALMACAM

END-TO-END CAM

DP Technology Corp. and Almacam have partnered to combine ESPRIT CNC software and Alma CAD/CAM for robotics to provide an end-to-end solution for programming robot additive direct energy disposition (DED).

Advanced toolpath planning in both subtractive and additive areas combines with robotics trajectory computation and off-line programming of arc welding robots. This allows Alma to use the full ESPRIT additive DED cycles such as 3x, 4x, and 5x, and ESPRIT to support several robotics brands. This workflow provides users with: dedicated additive tool path planning and programming; robot programming, simulation, verification, collision detection and code generation; subtractive finishing process planning, simulation, verification, collision detection and G-code generation.

www.espritcam.com

VISUALLY SECURED

Visualization systems are among the most expensive plant floor systems to maintain and are a common target for unauthorized users. Thin clients are computers connected remotely to a server storing applications, rather than using a local hard drive. For mission critical applications, users deploy Allen-Bradley VersaView 6300 PCs and thin clients improve reliability and security. They combine with Rockwell Automation's FactoryTalk View HMI and ThinManager thin-client management software to create a complete visualization system.

Each model is designed to minimize or remove frequent points of failure such as fans and connectors.

www.rockwellautomation.com

What lies ahead for manufacturing in 2021?

BY JAYSON MYERS

It's been a crazy year for manufacturers across Canada, and around the world! COVID-19 aggravated a lot of challenges they were already facing – slowing demand, rising trade tensions, intense competition and all sorts of disruptions arising from rapid technological change. When COVID hit, economies fell off the shelf.

Manufacturing sales plummeted by almost 40% in March and April. The second whammy came as suppliers shut down and manufacturers scrambled to secure their supply chains and make them more resilient. Cash flow came under severe pressure, especially for smaller companies, and more than 250,000 manufacturing jobs were lost in the early days of the downturn.

However, in May there was a strong rebound. By September, sales had regained pre-pandemic levels, although employment has been slower to recover. Meanwhile, productivity has shot up dramatically and now stands at record highs. The need to find solutions to the pandemic challenge has forced manufacturers to improve processes, deploy digital technologies and take advantage of new supply opportunities.

Still, it has been a bumpy ride. While overall sales have recovered, performance has been very uneven sector by sector. Automotive manufacturers have experienced the craziest rollercoaster ride. Production fell by 94% in March and April as assembly plants shut down across North America. Yet by mid-summer, sales were 10% above pre-pandemic levels. Production of medical, food and wood products, plastics, textiles, and electrical equipment also surpassed pre-pandemic levels. But sales of petroleum products, fabricated metal products, electronics, aerospace equipment and furniture are still suffering.

A similar pattern exists around the world. Looking ahead, the global manufacturing recovery faces significant risks as market demand and business confidence are undermined by a second wave of COVID-19; and supply chains are disrupted by heightened trade tensions and technology nationalism. Growth will be strongest in China and its periphery – Taiwan, South Korea and Vietnam. It will be fuelled by exports of electronic and healthcare products, a strong Chinese economy, and the diversification of electronics production in the face of U.S. trade restrictions on Chinese manufacturers. Other countries, more exposed to market and supply chain risk production will struggle to sustain momentum.

While business confidence in manufacturing was riding high in September, rising rates of COVID-19 infection are dampening expectations for continued recovery. This also increases the risks of supply chain disruptions and production closures, particularly among smaller companies facing increased cash flow difficulties that will slow investments in additional production capacity, technology and innovation. Those differences are also fuelling a growing imbalance in merchandise trade. Exports of manufactured products have fallen significantly from all major industrial economies, except China. Merchandise imports, on the other hand, have risen sharply, again with the notable exception of China. There's no evidence to date the pandemic has led to a large-scale reshoring of manufacturing activity. However, rising trade tensions, especially between the U.S. and China, and many governments restricting the import or export of technologies, will impact the structure of supply chains and the location of new capacity over the year ahead. Meanwhile, there are restrictions on the export of critical healthcare products. Resulting shortages in national inventories of personal protective equipment, medical devices and therapeutics are leading to more widespread measures by governments, including Canada's, to subsidize and protect domestic capacity.

Supply chain disruptions and shortages created during the pandemic and protectionist trade measures imposed by the world's largest manufacturing economies continue to heighten speculation about a large scale reshoring from China to Europe and North America. However, supply chains will need to remain globally competitive. Reliable and competitive relationships are not likely to be disrupted for well-established product lines. And in the face of intense competitive pressures, new sources of supply for commodity goods are more likely to be found in lower-cost emerging economies than in higher-cost economies such as Canada, the US and Europe.

The type of manufacturing capacity most likely to be localized in developed economies will be based on new product development and the deployment of advanced technologies. This will depend more on proximity to innovation ecosystems comprising research, technology, and flexible manufacturing capabilities; and start-ups, supporting business services, as well as a highly qualified workforce. But the danger is heightened market uncertainty and cash flow constraints on investment. Increasing trade protectionism and technology nationalism are more likely to slow manufacturing activity in developed economies than encourage the innovation that will be required to drive future growth.

"THE GLOBAL MANUFACTURING RECOVERY FACES SIGNIFICANT RISKS AS MARKET DEMAND AND BUSINESS CONFIDENCE ARE UNDERMINED BY A SECOND WAVE OF COVID-19…"

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SPECIAL FEATURES 2021

GROWING YOUR BUSINESS
March / April

Covid 19 challenged manufacturers in 2020, but many companies proved their agility by finding new markets, new suppliers and making productivity moves that ensured production continued.

PLANT investigates the potential for 2021: planning for growth; innovation of products, processes and customer service to quickly address market needs; investment in tools and equipment to enhance productivity; financing; and expanding markets through exporting.


NAVEE - STOCK.ADOBE.COM

SUPPLY CHAIN MANAGEMENT
May / June


ENDOSTOCK - STOCK.ADOBE.COM

Business uncertainty resulting from volatile trade issues and global disruptions are forcing manufacturers to examine their supply chains.

Who supplies their suppliers, and where are they sourcing materials? What happens if there is a disruption and who are the alternate suppliers? Are they geographically close? Should manufacturers be looking at reshoring?

These are questions **PLANT** will address in a special report.

HR REPORT, EXECUTIVE SKILLS AND TRAINING
July / August


MONKEY BUSINESS - STOCK.ADOBE.COM

PLANT magazine's annual salary survey of manufacturing executives shows senior management and business owners how their compensation breaks down according to a range of criteria. But it also provides senior management's take on business confidence; investment issues, challenges; and changes they foresee over a five-year span.

PLANT will also look at the skills issue. A shortage of qualified people is an ongoing problem. Where are the gaps? How do leading companies approach training, recruitment and employee retention? What are the most effective ways to find the right people?

FACTORY OF THE FUTURE
September / October


ZAPP2PHOTO - STOCK.ADOBE.COM

Canadian manufacturers lag their global peers in the implementation of technologies, which improve productivity, production efficiency and provide deeper visibility into business operations. As companies recognize the need to adopt "factory of the future" technologies to deal with skills and labour shortages, improve production and provide real-time views of their business, **PLANT** will identify trends, technology solutions, application of business intelligence and the challenges to implementation and how to address them.

CYBER SECURITY
November / December

A growing concern among manufacturers is the risk of cyber attacks.

It has become increasingly necessary for manufacturers to implement risk management plans to protect themselves, and to deal with incursions that will come.

Our in-depth report will explore what leading companies are doing to stem the risk of cyber attacks, and deal effectively with them when they do occur.


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- All CLICK PLC units use our FREE programming software with a simple but practical instruction set
- Easily expand your CLICK PLC with snap-on I/O modules for up to an additional 128 discrete or 48 analog I/O points

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Tim in OXFORD, AL

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