

SPIRIT INNOVATORS

Black Fly bites into
the RTD segment



Thordon's Sandy Thomson an award winner
Prepare to defend against ransomware attacks
How SRM software helps manage global risk
Sleeman is the first brewer to earn 3RCertified status

A high-angle photograph of two men in industrial safety gear. They are wearing green hard hats, safety glasses, and high-visibility yellow-green vests over dark long-sleeved shirts. They are standing on a grey metal grate floor. The man on the left is pointing his right index finger towards the camera. The man on the right is looking towards the camera with a slight smile. In the lower foreground, there is some industrial machinery, including pipes and valves. The background is a continuation of the metal grate floor.

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COVER: JACKIE NOBLE

PLANT—established 1941, is published 8 times per year by Annex Business Media. Publications Mail Agreement #40065710. Circulation email: blao@annexbusinessmedia.com Tel: 416-442-5600, ext 3552 Fax: 416-510-6875 or 416-442-2191 Mail: 111 Gordon Baker Road, Suite 400, Toronto, ON M2H 3R1. Occasionally, PLANT will mail information on behalf of industry-related groups whose products and services we believe may be of interest to you. If you prefer not to receive this information, please contact our circulation department in any of the four ways listed above. Annex Privacy Officer: privacy@annexbusinessmedia.com Tel: 800-668-2374. No part of the editorial content of this publication may be reprinted without the publisher's written permission. ©2019 Annex Publishing & Printing Inc. All rights reserved. Performance claims for products listed in this issue are made by contributing manufacturers and agencies. PLANT receives unsolicited materials including letters to the editor, press releases, promotional items and images from time to time. PLANT, its affiliates and assignees may use, reproduce, publish, re-publish, distribute, store and archive such unsolicited submissions in whole or in part in any form or medium whatsoever, without compensation of any sort. This statement does not apply to materials/pitches submitted by freelance writers, photographers or illustrators in accordance with known industry practices. Printed in Canada. ISSN: 1929-6606 (Print), 1929-6614 (Online).



Assess your climate change risk

Climate change is top of mind as we head into the final leg of 2019, and the news isn't good. While countries struggle to meet emission reductions targets in line with the Paris Accord – and mostly fail – the United Nations climate panel offers a grim forecast.

That suggests efforts to cut emissions must be more aggressive, but also underlines the need to adapt as the world faces a warmer and more dangerous future.

A report issued to world leaders during a UN gathering in September warned sea levels are rising at a quickening rate as ice and snow melts and oceans are getting more acidic while losing oxygen. On our current path we can expect seas to rise three feet by the end of the century, with fewer fish, lots of violent weather and all that entails.

Developed countries generally view climate action in terms of economic balance, a notion that is scoffed at by 16-year-old Swedish activist Greta Thunberg, who has observed: “We are in the beginning of mass extinction, and all you can talk about is money and fairy tales of eternal economic growth.”

Ouch. All the same, there are some realities that must be recognized. First, China (27.4%) and the US (14.75%) are responsible for more than 41% of the greenhouse gas emissions, compared to Canada's 1.63%. That's not to suggest we can afford to coast, but without commenting on the value of carbon taxes or energy efficient windows, Canada's contribution to the global cause isn't going to move the needle by much. And not to harp on the economic balance thing, Canada's energy sector contributes just under 10% of GDP, so the fossil part of that isn't going to be phased out tomorrow.

Nor will it be phased out anywhere else. Energy demand grew 2.3% last year, the fastest pace this decade, according to the International Energy Agency. And it will continue to grow as developing nations progress. The US Energy Information Administration projects coal, oil and natural gas will account for 77% of energy use by 2040.

Outside of stepped up efforts to drastically reduce greenhouse gas emissions to more acceptable levels, there are practicalities at ground level for which businesses must prepare.

The Federation of Canadian Municipalities and the Insurance Bureau of Canada offer new data that demonstrates the need for governments at all levels to invest in local climate adaptation. To avoid the worst impacts of climate change at the municipal level, the cost will be about \$5.3 billion per year, shared by the three levels of government.

Manufacturers should also plan ahead, starting with a climate change assessment. Consulting firm McKinsey and Co. breaks it down in a 2015 article, *How companies can adapt to climate change* (www.mckinsey.com). It offers six areas of risk to consider:

- Physical, related to the effect of extreme weather events on infrastructure, factories and supply-chain operations.
- Price, related to increased volatility of raw materials and other commodities.
- Product, core products becoming unpopular or unsellable.
- Regulation, government action prompted by climate change.
- Ratings, the possibility of higher costs of capital because of climate exposure such as carbon pricing, supply-chain disruption or product obsolescence.
- Reputation, stemming from a specific action or policy, or public perception of the industry.

We can hope for more effective measures that will prevent the global temperature from climbing too high, but it's also prudent to assess risks and prepare for the consequences of our industrialization.

Joe Terrett, Editor

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Subscription Price

Canada \$76.00 per year, US \$154.50 (US) per year, Foreign \$174.50 (US) per year. Single Copy Canada \$12.00. Add applicable taxes to all rates. Combined, expanded or premium issues, which count as two subscription issues.

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Circulation

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416-442-5600 ext. 3552
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BULLETINS

CO2 Solutions Inc. is looking to restructure under the Bankruptcy and Insolvency Act (Canada). The Quebec City innovator has been working toward commercializing its enzyme-enabled carbon capture technology for stationary sources. It has experienced significant cost overruns related to the completion of the CO2 capture unit located at the pulp mill at Résolute Forest Products in Saint-Félicien, Que.

The **Supply Chain Management Association** has changed its name to **Supply Chain Canada**. The association also launched a new website (www.supply-chaincanada.com) as part of an overall rebranding initiative that's summed up in its new tagline, "Professionals advancing the future." The national association represents more than 7,000 supply chain pros.

Jeosol Materials Research Corp., a materials research firm in Kingston, Ont., has received \$118,625 under the Canadian Plastics Innovation Challenge to develop a possible solution for recycling fibreglass. Transport Canada has challenged SMEs to develop innovative solutions for recycling or reusing fibreglass in an energy-efficient way that recovers as much material as possible.

Manufacture Adria Inc. has received a \$1.75 million federal CED repayable contribution to help fund a production project. The manufacturer of custom-made electrical products for the industrial sector and mining industry is based in Rouyn-Noranda Que. It will acquire and install production, handling and automated storage equipment, as well as state-of-the-art welding equipment. The project will create 23 jobs.

Looking for a place to locate a plant? The **City of Welland** recently opened its fourth industrial park on 38 acres of serviced, shovel-ready land. The economic development team touts competitive land prices, access to international transportation routes and financial incentives through the Niagara Gateway Economic Zone and Centre Community Improvement Plan Incentive Program. Approvals are fast-tracked (production in 12 to 18 months).

Microart completes aerospace AS9100D certification

PCB assembler operates under a stringent quality system, meets global standards

MARKHAM, Ont. — Microart Services has achieved AS9100D certification following an extensive independent audit by global standards certification firm BSI.

The designer and assembler of printed circuit boards in



Mark Wood, CEO of Microart Services Inc.

PHOTO: RODNEY DAW

Markham, Ont. joins a select group that have achieved compliance to the recently released and more rigorous Revision D standard. AS9100D shows that a compliant company operates under a stringent quality management system and meets the demands of international aerospace customers, as well as regulatory bodies.

In addition to printed circuit boards, Microart handles full box-build system assemblies for many

top-tier aerospace, military, medical, robotics, wearables, IoT and broadcast customers.

The company has nine production lines for PCB and box build, full-system assembly.

MMP/PGM program offered in French

MISSISSAUGA, Ont. — The Plant Engineering and Maintenance Association of Canada (PEMAC) and Institut technologique de maintenance industrielle (ITMI) are launching a French version of the Maintenance Management Professional (MMP/PGM) certificate program.

The MMP/PGM certificate, aimed at maintenance pros around the world, focuses on the tools, techniques, strategies and skills necessary for effective management of a plant's physical assets. The program designed by PEMAC, a not-for-profit association, provides training and accreditation to those in or aspiring to attain maintenance management or supervisory positions.

ITMI, based in Sept-Îles, Que., provides assistance, research and professional programs related to industrial maintenance.

The program's seven modules will be delivered live online starting in winter 2019 to participants outside Quebec. Experienced instructors who are also practicing professionals lead each module.

For more information about the program, visit www.pemac.org and www.itmi.ca.

Kraft Heinz renews Leamington deal

LEAMINGTON, Ont. — Highbury Canco has renewed its agreement with Kraft Heinz Canada to produce Kraft Heinz products at its Leamington, Ont. facility where it employs more than 600 people.

The multi-year agreement has a retail value of approximately \$1 billion.

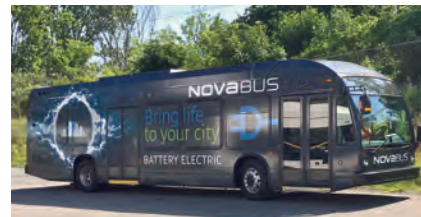
Highbury Canco produces brands such as Heinz beans, Heinz tomato juice and Classico pasta sauce.

"As our largest customer, Kraft Heinz Canada uses about 180 million pounds of Ontario tomatoes in its products every year. This agreement helps support the entire Leamington community," said Sam Diab, president and CEO of Highbury Canco.

The company provides co-packing and third party logistics services. Its 2.1-million-square-foot facility includes 24 production lines.

Nova sends two LFSes to CUTRIC

Integrated battery system delivers better fuel economy, reduces GHG emissions



Nova Bus LFS.

PHOTO: NOVA BUS

battery system that delivers better fuel economy, while reducing maintenance costs and greenhouse gas emissions.

SAINT-EUSTACHE, Que. — Nova Bus has delivered two LFS electric buses to Vancouver's bus authority as part of the Canadian Consortium for Urban Transportation Research and Innovation (CUTRIC) Canada-wide Interchangeability Project.

The TransLink buses are powered by an integrated

The Saint-Eustache, Que. bus manufacturer began its collaboration with CUTRIC in 2016 to help municipalities make electric buses and manufacturers' charging stations cross-compatible.

The goal is to standardize infrastructure and equipment to give transportation companies greater flexibility.

Micron Waste gets cannabis research licence for digester tech

System alters and denatures cannabis waste while recovering reusable water



Company will accelerate and expand its cannabis waste and wastewater programs.

PHOTO: ADOBE STOCK

VANCOUVER — Micron Waste Technologies Inc. has received a Health Canada cannabis research licence to develop its aerobic waste digester technology for the treatment of cannabis waste.

The five-year licence will be used to further develop a system that alters and denatures cannabis waste while recovering reusable water.

The Vancouver developer of organic waste treatment and water reclamation systems said its R&D team, led by Bob Bhushan, chief technology officer and founder, will employ the licence to accelerate and expand the cannabis waste and wastewater programs. They include its Cannavore waste processing system and its facility wastewater management program at the Micron Waste Innovation Centre in Delta, BC.

Micron will also begin profiling and cataloguing cannabis strains to identify resin and fibre content.

In-house characterization test programs will commence to identify the best microbe and enzyme blends for the highest performance in the Cannavore digestion process.

Micron's proprietary live agent blends, based on its patented bio-process, targets the most rapid and efficient destruction, digestion and denaturing of biomass, cannabinoid content and active pharmaceutical ingredients according to leaf, flower and stalk ratios.

The company has additional Cannavore systems under construction, working with strategic partner BC Research Inc. The Organivore food waste system prototype is being upgraded with new technology developed for the Cannavore.

Training funding for auto parts suppliers

WINDSOR, Ont. — The Ontario government is partnering with small and medium-sized auto parts companies to invest in technology and training.

It launched its Ontario Automotive Modernization Program (O-AMP) at the annual meeting of the Canadian Association of Moldmakers Sept. 9.

Total funding is \$10 million over three years.

The new program invests in technology adoption and lean manufacturing projects.

Technology adoption includes advanced manufacturing hardware, software and/or training to improve processes and

enhance competitiveness.

Lean manufacturing includes projects that support training in lean manufacturing practices to minimize waste during the production process and optimize productivity.

Funding will cover as much as 50% of eligible project costs up to \$100,000 with companies contributing the remainder.

The provincial government has also ended Ontario's Workplace Safety and Insurance Board (WSIB) unfunded liability charge, as of January.

This will result in a \$607 million reduction in costs to businesses.



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Suncor invests \$1.4B in oil sands cogen units

Will provide steam generation for extraction, upgrading operations

CALGARY — Suncor Energy is replacing its coke-fired boilers with two cogeneration units at its Oil Sands Base Plant in Northern Alberta.

The Calgary-based energy company said the units will provide reliable steam generation required for extraction and upgrading operations and generate 800 megawatts of power while reducing greenhouse gas emissions by 25% (or 2.5 megatonnes).

The estimated project cost is \$1.4 billion with service by the second half of 2023.

Power will be transmitted to Alberta's grid, providing an equivalent 8% of current electricity demand.

Replacing the coke-fired boilers is also expected to reduce sulphur dioxide by 45% and nitrogen oxide emissions by 15%. The cogeneration units will eliminate the need for a flue gas desulphurization unit, which is currently used to reduce emissions associated



Oil sands product tanks, Fort McMurray, Alta.

PHOTO: SUNCOR ENERGY

with coke fuel.

Decommissioning the unit will reduce the volume of water the company withdraws from the Athabasca River by approximately 20%.

Cymat gets \$220,000 SAF grant

TORONTO — Cymat Technologies Ltd. was awarded a \$220,000 grant under the federal government's Steel and Aluminum Initiative.

The grant will be applied to funding the continued development of a new aluminum foam for a Spanish sandwich panel venture, and for Cymat's new premium version of architectural aluminum foam, Alusion Plus.

Alusion Plus will be manufactured from a new aluminum alloy to provide enhanced material characteristics.

Cymat, based in Toronto, makes stabilized aluminum foam (SAF) products. The advanced lightweight recyclable material has a range of features including customizable density and dimensions, energy absorption and thermal and acoustic insulation.



PLANT ONLINE SOUNDING OFF

What readers have to say about breaking news

Have you checked out **PLANT**'s daily news online? Here are some headlines that have inspired members of the Canadian manufacturing community to chime in. They're edited, but use the links to see the raw – and for some – longer versions of their remarks plus the stories that inspired their reactions.

Stay up-to-date on the developments – domestic and global – that affect Canada's industrial sectors by watching the news feed at www.plant.ca or reading **PLANT**'s twice-weekly newsletter (hit Subscribe on the website).

Tim Hortons drops Beyond Meat products except in Ontario, BC

<http://www.plant.ca/jPWuK>

✦ I applaud Tim Hortons decision to drop plant based "meat" products from most Canadian provinces. I remain appalled that BC and Ontario Tim Hortons continue to support anti Canadian beef and pork products. I'm done with the brand.

Some in Saskatchewan have beef with A&W Beyond Meat ad featuring Roughrider fans

<http://www.plant.ca/BDUyu>

✦ Beyond Meat is chasing the idea

of climate change. It's wrong and a detriment to our economy. All the cutting of CO2 in the world won't change the climate. There were predictions the world was going to end 1990 and it didn't. What's different now?

Teal-Jones halts harvesting timber on BC coast

<http://www.plant.ca/Yfs9x>

✦ Any NDP government knows only socialism policy, therefore industries like forestry will suffer and die. The NDP is good at tail chasing policy, employing more government workers at above market rates with costly benefits.

This looks good until they run out of taxpayer money, then raise taxes to keep up the pretence. That increases the cost of goods and service, so the price of everything goes up again. Tell me I'm wrong: gas \$1.40, highest in the country!

Embrace disruption: It's an opportunity for growth

<http://www.plant.ca/vFy7t>

✦ Worldwide use of robotic process automation has led to significant, positive impacts on business productivity. In 2018 adoption grew globally at a higher pace than ever before. Extrapolating RPA's growth trajectory into the near future would imply adoption as a necessary step that competitive businesses must take. According to the Institute for Robotic Process Automation and Artificial Intelligence Survey from June 2018, 66% of respondents were considering expansion of robotic process

automation programs and 70% were allocating increased funds for investment in 2019.

UK Parliament takes on pivotal day on Brexit as PM makes threats

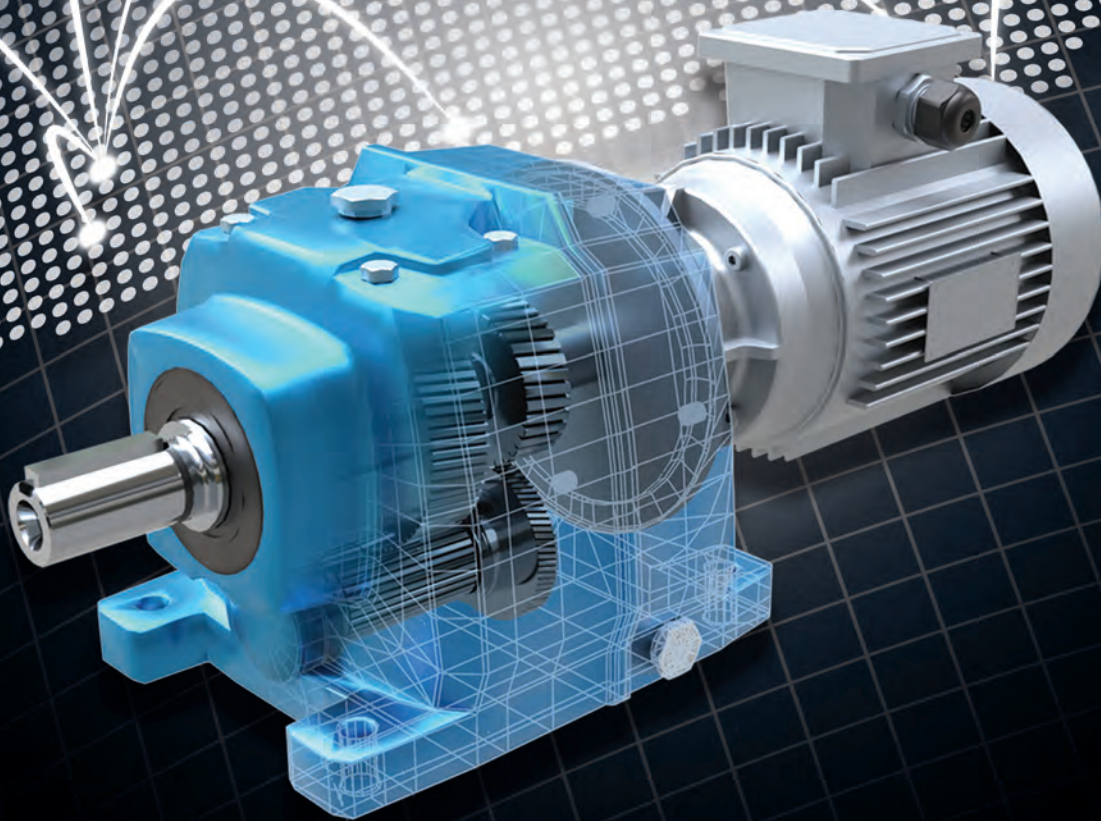
<http://www.plant.ca/LOSd1>

✦ Reminds of an old line from a song on Dark Side of the Moon by Pink Floyd that goes: "the lunatics are in the hall." As a Canadian I can't appreciate and/or fully understand Brexit but [from what] I've seen, the whole thing boils down to only a few issues. Instead of leaving the EU, work to tackle those main issues. I am sure the result would be much better. Businesses can carry on as usual and employees still work as usual.

AP FACT CHECK: Trump's illusory claims of gains from tariffs

<http://www.plant.ca/wzaFY>

✦ Why does any publication (and I mean any!) keep voicing Trump's lies and garbage innuendo? Don't they realize that giving him a voice will probably get this idiot re-elected? Shockingly, there are people who actually believe everything he says.



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BionicOpter lands Guinness record



World record for biggest flying robot bug.

PHOTO: FESTO

While visiting manufacturing trade shows you may have noticed a giant mechanical bug flying around. Not to worry, it wasn't some kind of mutant drone weapon. Festo was likely hosting the global company's BionicOpter, a robotic study of a dragonfly. The German manufacturer of pneumatic and electro-mechanical systems, components, and controls began looking at

nature to answer technology questions, starting with its SmartBird study of flight in 2011. Its R&D efforts are paying off beyond technological benefits. The BionicOpter has made it into the 2019 Guinness World Records (Robot chapter) where you will be amazed by super robots and artificial intelligence. The biggest flying robot insect—made of ultralight materials with carbon fibre wings covered with a thin foil—has a wingspan of 63 cm and body that measures 43 cm. Intelligent kinematics (geometry of motion) corrects vibrations that may occur during flight while data on the position and twisting of the wings is continuously recorded and evaluated in real time to stabilize the bug while it's airborne. Mechanical mosquitos should be very worried.

A plan for GM's Oshawa plant

A coalition of autoworkers and other activists with backing from unions and social justice warriors aren't about to let go of the idea General Motors' Oshawa Assembly plant can be put to good use. Green Jobs Canada is thinking big: using the GM facilities to



Green vehicles for the people. PHOTO: ADOBE STOCK

build electric vehicles under a public ownership model, emphasis on sustainable production. The idea is to produce vehicles for government fleets (for example, Canada Post). What does public ownership mean? A mix of governments (municipal, provincial and federal) responsible to citizens, not shareholders interested in the wrong kind of green. Goals would be subject to "some kind of democratic process." Getting their hands on GM's assets would involve either passing a law, all friendly like, or in a more "confrontational" manner, according to the FAQ section of the website (www.greenjobsoshowa.ca). A detailed study by Russ Christianson, president of Rhythm Communications, who has been involved in the development of many co-op initiatives, suggests an investment of \$1.4 billion to \$1.9 billion from the federal government would: generate more than 13,000 jobs; manufacture and sell 15,000 vehicles in the first five years; break even by year four, make a profit in year five; and by year five reduce CO2 emissions by 400,000 tonnes. OK, a government-owned auto company for the people, not profit? That high-pitch whirring sound you hear is GM's forefather, Colonel Robert Samuel McLaughlin, spinning in his grave.

Sky-high factory delivery

Material handling at Vision Profile Extrusions Ltd. is taking to the sky. The extrusions manufacturer has inked a deal with Drone Delivery Canada (DDC) Corp. to move stuff between its sites in Vaughan, Ont. This is the first commercial agreement for the publicly owned DDC through Air Canada Cargo (its sales agent). It recently opened a 16,000 square-foot operation centre in Vaughan, which is capable of managing 1,500 drones. DroneSpot takeoff and landing zones as well as additional flight infrastructure will be deployed on the Vision sites. Cargo will be carried by Sparrow drones capable of handling 4.5-kilogram loads over a few kilometres. DDC's fleet also includes the Raven, which carries 11 kilograms and flies 60 kilometres, the Falcon doubles the load over the same distance and the Condor has a 181-kilogram payload, travelling 200 kilometres. Service is slated to begin in November.



DDC drone ready for take-off.

PHOTO: DDC

We must do everything possible to avert the great fracture and maintain a universal system, a universal economy with universal respect for international law; a multipolar world with strong multilateral institutions...

UN Secretary-General Antonio Guterres in a "state of the world address" warning global leaders of the looming risk of the world splitting between the US and China, each creating rival internets, currency, trade, financial rules "and their own zero-sum geopolitical and military strategies."

Texas rustlers on the loose

Texas is aiming to rustle Western Canadian businesses. It's lobbying hard in BC, Alberta and Saskatchewan, enticing companies to relocate to the Lone Star state, *Canadian Press* reports. A Houston-area realty firm claims 40 mostly oilfield services companies have taken the bait in the last year and a half, attracted by a healthier oil patch and incentives such as free land, tax incentives and rail service that actually works. But manufacturers have been approached too. About 100 firms have fled in



Rounding up Canadian companies. PHOTO: ADOBE STOCK

the last 10 years. Alberta premier Jason Kenney is fighting back. His United Conservative government intends to lower taxes, ease regulations and cut red tape. And municipalities now have the power to offer tax holidays as well as other incentives. He intends to take it to the Texans, six guns blazing, when he visits Houston and Dallas in November. Yee-haw!

ECONOMY

2020 growth

Canada looking at 1.6%

Trade tensions and uncertainty continue to plague the global growth outlook, prompting TD Economics to revise its forecast for this year to 2.9% from 3% and next year (3.2% from 3.3%).

In its Quarterly Economic Forecast, TD reports deteriorating economic conditions in Asia and Europe with weakening demand. Trade flows will continue to slow growth in the US and Canada.

Blame politics as the dispute between the US and China continues, and as the US threatens the EU with auto tariffs. Throw in Brexit, Argentina, Iran and Hong Kong, and you have more risk to growth, although TD reports resolutions to these issues could quickly switch risks to the upside.

Meanwhile, a decent US outlook (2.3% for the year) is offsetting the deteriorating global growth and trade tensions that are weakening prospects of Canadian export growth. TD has recalibrated Canada's 2020 projection for the US to 1.7% from 1.8%.

In Canada, a rebound in the second quarter of the year will be followed by more modest growth, projected to be 1.5% for 2019, and 1.6% in 2020.

Download a copy of the complete report at <https://economics.td.com/ca-quarterly-economic-forecast>.

New deficit tally

When the federal Liberal party campaigned for election in 2015, the deal was deficits to stimulate the economy for three years and back to surplus.

The federal government's annual financial statement pegs the budgetary deficit for the 2019 fiscal year at \$14 billion, although that's a bit under the budget estimate of \$14.9 billion.

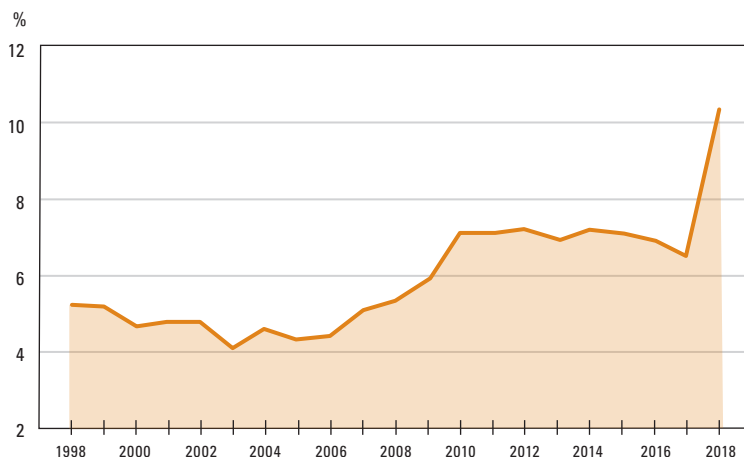
The federal debt is now \$685.5 billion, compared to \$611.9 billion during the pre-Trudeau government 2013-14 cycle. Debt charges were up \$1.4 billion (6.3%) and 6.7% of expenses in 2018-19. That's way down from a peak of nearly 30% in the mid-1990s.

Canada's total government net debt-to-GDP ratio continues to decline, from 31.3% in the previous year to 30.9%, the lowest among G7 countries.

PLANT PULSE

ECONOMIC DEVELOPMENTS AND TRENDS

MINIMUM WAGE EARNERS



Source: Statistics Canada, CANSIM

From 1998 to 2018, the average nominal minimum wage in Canada increased at a faster pace (3.5% annually) than the average nominal wage for all employees (2.7%), according to a Statistics Canada analysis. Increases in Ontario, Alberta and BC resulted in a number of existing employees joining the ranks of minimum wage workers. In the first half of the year, the percentage of minimum wage earners declined from 10.2% to 9.2% compared with the same period in 2018, almost entirely the result of fewer employees in Ontario.

12%



Net employment outlook for durables manufacturers in Q4, down 6% from a year ago; 9% for non-durable manufacturers, down 3% year-over-year, according to the Manpower Groups quarterly report.

22%



Percentage of female STEM graduates in 2016 who worked in STEM occupations, compared to 41.5% of males, according to a Statistics Canada analysis of grads over a 10-year period ending in 2016.

6%

Canadian small and medium-sized enterprises that are forecasting 5.1% to 10% growth, according to the American Express Global SME Pulse Survey. That's a significant decline from 28% in 2018.



4,500

Number of manufacturing jobs added from July to August, according to ADP Canada's National Employment Report. Overall total for the month was 49,300.



Number of countries that chose Canada as their top choice of oil and natural gas exporter among the world's top 11 energy-exporting nations. The Canadian Association of Petroleum Producers' 2019 Global Energy Pulse survey (www.globalenergypulse.com) found one-third of global respondents view Canada's energy industry as a leader in technology and innovation aimed at minimizing the environmental footprint. The International Energy Agency's 2018 World Energy Outlook anticipates oil and natural gas to make up 52% of total global energy demand by 2040.

SPIRITS OF INNOVATION

BLACK FLY WINS WITH NOT TOO SWEET

Ready-to-drink distiller sets its sights on growth, innovation and sustainability.

BY CAROLYN COOPER

When Black Fly Beverage Co. moved into its new London, Ont. facility in January, it entered the next phase of its evolution as one of Canada's premier independent alcohol businesses.

The relocation allowed the 14-year-old, family-owned company to fully automate its production process, improve operating efficiencies and reduce waste. At the same time, the 60,000-square-foot facility – currently Canada's largest plant dedicated to ready-to-drink (RTD) beverage alcohol – allowed Black Fly to bring previously outsourced services in-house, boost its R&D capabilities and expand new business opportunities.

"Quality, innovation and growth have always been the driving force for Black Fly, and how we want to grow," says co-founder Cathy Siskind-Kelly. "So where we are today is actually truly beyond where we ever imagined we would go, which is pretty exciting."

When Siskind-Kelly and husband Rob Kelly considered entering the beverage alcohol industry, the entrepreneurs initially thought of the craft-brewing sector. In 2004 the market

was bursting with possibilities as consumers clamoured for premium-quality, locally made alternatives. However, a chance conversation turned their attention to the mixed alcohol – or cooler – sector that was also building momentum and capturing a sizable chunk of the beer market. "We thought, 'How can we evolve the category?'" recalls Siskind-Kelly, who notes at the time the sector was dominated by syrupy sweet products made by large international manufacturers. "It was a great opportunity to launch something local, something Canadian, something significantly less sweet and more natural in a category of alcoholic beverages that was seeing really explosive growth."

In 2005 the couple opened Black Fly Beverage Co., the first business granted a distillery licence in Ontario in more than 100 years. Since launching

(L-R) Forty-gram preforms are heated to 97 degrees C for the inline reheat stretch blow moulder to produce 133 bottles per minute.

Production associate Sheena O'Connell bags bulk bottles from reheat stretch blow moulder for future filling.

Daily production of 140,000 bottles keeps Black Fly's fully automated plant busy 20 hour per day. Production associate Martha Rincon performs a quality check on flagship flavour Black Fly Vodka Cranberry custom-designed 400 mL bottles.





Rob Kelly and Cathy Siskind-Kelly with Black Fly's full product line.

PHOTOS: JACKIE NOBLE

its first product – a 7% alcohol per volume (alc./vol.) Vodka Cranberry, which is still its number-1 seller nationally – Black Fly has taken a big bite out of the beverage alcohol market. The company's vibrant four-packs of 400-millilitre (mL) PET bottles immediately stood out among competitors' smaller glass bottles. So did its use of natural fruit juices and cane sugar (most manufacturers use high-fructose corn syrup); and its lightly carbonated, more grown-up flavour that was about 60% less sweet than traditional coolers. The resealable bottles, wide flavour range and less gender-based design also helped usher in a new category of more sophisticated RTD cocktails.

"Fairly early on we changed the way we referred to our beverages. We don't call them coolers because that came with a lot of preconceived ideas about who might enjoy the beverages and at what time of year," says Siskind-Kelly. "The RTD category is about convenience – it's premade, it's fast to serve, it's consistent. Because we were a small producer and we were going to be going side-by-side with large global companies, we knew we had to give people more on all levels. We tried to look at every single angle to offer a high-quality, craft-produced beverage, and deliver something really unique to the marketplace. Lo and behold the market responded beautifully."

Consumers also responded favourably to the company's green initiatives, such as its use of fully recyclable PET bottles, and its open-sided corrugated carriers, which feature a glueless closure system. "As we've grown we've tried to implement green practices into all areas of our business," Siskind-Kelly says.

Today Black Fly's RTD line includes more than 15 flavours and/or classic cocktails retailing



across Canada and the eastern US featuring vodka, tequila, gin, rum and whisky. Martin Kamil, vice-president of finance and operations, says the company has grown by its initial size every year. Sales in 2018 grew between 15% and 30% across Canada depending on the province (30% in Ontario), and 22% south of the border.

Siskind-Kelly says with the move to the new facility the business is on target to produce more than 750,000 cases of 24-bottle equivalents this year.

The new plant – 10 times larger than the company's former home – offers the potential to triple production capacity, boost sales of business-to-business bulk alcohol and begin co-packing for other manufacturers, Kamil adds. It also allows Black Fly to vertically integrate many aspects of the business, including previously outsourced services such as warehousing, shipping and receiving; and invest in new equipment, such as a canning line.

"Having the ability to bring our own canning line in-house was the whole rationale for moving," says Kamil, who sets the total investment in the facility at approximately \$12 million.

The canning line, which includes a pasteurizer and sleeve, has expanded Black Fly's canned lineup of 473-mL vodka and whisky sours, and introduced a lighter-calorie line of canned gin and vodka soda fizzes. It also addresses the issue of can shortages currently plaguing the industry. The company already blew its own bottles from supplied PET preforms. The addition of injection moulding equipment means Black Fly will soon produce its own preforms.

The changes have already boosted production efficiency, while saving money and energy.

"It's nice when dollars and environmental measures align," Kamil says. "Just by moving and by being able to bring things in-house we've removed hundreds of trucks per year off the roads,



which was a huge transportation cost. Accepting tanker trucks of pure alcohol (versus smaller shipments of lower alcohol by volume) cuts shipping costs dramatically, and by moving our preforms in-house, we're going to eliminate about 50 additional trucks off the road per year." The company also has the capacity to buy bulk sugar in totes, which they recycle.

Automated process

Although the building was a retrofit, Kamil says all equipment is energy efficient. The entire production process is also completely automated, and waste reduction is a priority.

"When it comes to water our old lines at the other facility had about a 10% loss ratio; now we're below half of 1% of liquid loss. With packaging we always try to remove material whenever we can. We recycle close to 100% of our corrugate and plastic waste, and now we're looking at recycling our bottle and preform waste, while minimizing our footprint as well as aluminum loss by compacting our cans."

With the move to full automation, Black Fly "updated all of its processes," Kamil says. "We're one of the only alcohol beverage plants that's kosher and has

vegan certification, and we're pursuing our HACCP certification. Moving to automation from manual we've actually grown in employees, and we've transformed the low-paying jobs into higher-skilled, high-paying jobs."

Siskind-Kelly agrees.

"When it comes to millwrights and machine operators, we have a lot more expertise and a larger staff. So it was a positive on every level – training, expertise, salaries – and it's been exciting for existing employees. We're very fortunate to have such a passionate group of employees who have helped to drive the success of the business."

The company started with three employees. Today there are more than 50 full-time team members, with "exceptional backgrounds and talents," says Siskind-Kelly, including four full-time millwrights, the vice-president of finance and operations, a vice-president of sales and marketing "and the best administration, operations and sales team members on the planet."

Siskind-Kelly also credits steady, grassroots growth, thanks to fans taking ownership of promoting the homegrown brand across the country. "Part of our success is definitely a spirit within Canada that

(Top) Industrial millwright Pat Meanwell tends the shrink sleeve, which works with a new pasteurizer for filling both non-printed bright cans or printed cans. (Below) Moving a pallet of Black Fly Vodka Soda Fizz cans, Brent Dobbin, senior production supervisor takes cue from Black Fly's new automated management system.

supports local and takes pride in promoting local, and that's from the buyers to the front-line retail staff to consumers ... Your business doesn't grow if there isn't that word of mouth, and that passion."

The focus continues to be on growing the Canadian market before venturing into further exports. "We'll look internationally in time, but there's so much growth happening domestically," Siskind-Kelly says. "So innovation is going to be a big focus for us, as well as output."

One recent innovation that already has the market buzzing is Black Fly's Tequila Shaker Shots, a mix of premium 17% alc./vol. tequila and lemon-lime soda sold in packs of four 50-mL "test tubes" (actually a bottle preform), which are designed to fizz spectacularly when shaken.

"With the flexibility our new plant offers to us as masters of our own destiny, there's room for a huge amount of innovation, for specialty products, seasonal products, and different formats," she adds. "And we're really excited about the opportunity to be able to work with other partners in the industry."

Like the insect, the company has taken a bite out of the beverage market. Unlike the bug, its fans welcome Black Fly all year, which will continue to drive this innovative RTD's growth.

Carolyn Cooper is a freelance business writer based in Kawartha Lakes, Ont. who has deep roots in the food and beverage industry. E-mail cjcooperbrown@outlook.com.

Comments?

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ENERGY

Alberta innovators take some of the risk out of bitumen transport.

BY PLANT STAFF

Although some provincial governments, the federal government and the energy industry are at odds over how to get stranded fossil fuel from Alberta and Saskatchewan to tide water by pipeline, two Calgary companies have demonstrated there is another way by container or rail that appears to be safe and efficient.

Melius Energy, a new player (as of this year) in Canada's energy industry is working with BitCrude, which represents a process by the same name that creates semi-solid bitumen. They announced on Sept. 25 the successful transport of 130 barrels worth of BitCrude from Edmonton to Prince Rupert, BC via intermodal rail. From there, the custom 20-foot shipping containers will travel by vessel to international markets.

What makes their process a potential game changer is the safety factor. Shipping raw or semi-refined bitumen by rail, and then by vessel, comes with the risk that a derailment and spill on land or into waterways would have harmful environmental consequences.

BitCrude, developed by Alberta innovator Cal Broder, founder and chair of BFH Corp., is designated as a non-dangerous good and non-flammable for transportation purposes. It floats in both fresh and saltwater in custom containers, and is non-toxic to marine life. As a solid, it doesn't disperse in water so it's easier to recover.

Melius Energy notes the product meets or exceeds all regulatory requirements of Bill C-48, ensuring safe and efficient export out of Prince Rupert.

The proprietary process developed by Broder (beginning in 2003) uses an electric diluent recovery unit that removes all additives from diluted bitumen,



BitCrude bitumen shipping out in 20-foot containers.

PHOTO: MELIUS ENERGY

Shipping BITUMEN

A SEMI-SOLID AND GREENER ALTERNATIVE TO LIQUIFIED

leaving a 100% pure crude. Recovered diluent is sold back to the market for re-use in Canada.

The solid is heated and into the custom containers where it cools and solidifies, making it safe for transport. At its final destination, the bitumen is heated and converted back into a liquid, ready for refining.

"Now that we have tested the intermodal transportation method for exporting bitumen, Melius Energy is focused on scaling the BitCrude transportation solution," said Nicole Zhang, the company's president.

Melius is establishing relationships with refineries in Asia and is working to provide a long-term, stable supply. Those refineries plan to turn the Alber-

ta bitumen into products such as asphalt and low-sulphur diesel.

Solid pellet

CN Rail is also working on a safe way to transport bitumen with Wapahki Energy, a midstream company owned by the Heart Lake First Nation in Alberta. *The Globe and Mail* reported earlier this year each will invest \$16.7 million in a pilot project that will take two years to build.

CN's patented CanaPux is a solid pellet about the size of a bar of soap composed of heavy crude blended with a polymer inside and as an outside wrap. The pellets are turned back into a liquid, separating the polymer for reuse. Like BitCrude, CanaPux is non-volatile, dust-free

and is easily retrieved in the event of a derailment or if the pellets wind up in the water.

Under its Advantage Heavy Oil Development Ltd. company, CN plans to build a facility capable of producing 100,000 pellets a day. It will include a recovery unit and rail facility where pellets will be loaded into hopper cars capable of moving an equivalent 650 barrels of oil. That compares to a tanker, costing ten-times more to lease, at 500 barrels. Savings for producers are estimated at about \$15 per barrel. The company is targeting Chinese refiners.

Wapahki Energy is looking at a 10,000 pellet per day facility in Northern Alberta that will include a polymer recycling facility and biomass energy plant that will process forest and construction and demolition waste. It plans to supply pellets for non-combustible uses in China and to off-takers in South Korea.

The next step for Melius Energy and BitCrude is to fully commercialize their product with a solid international customer base and secure long-term supply agreements with producers.

Comments?

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RANSOMWARE

Being prepared minimizes the impact of a cyber attack.

BY IMRAN AHMAD AND
KATHERINE BARBACKI

There has been a marked increase in cyber attacks on organizations of all sizes, with ransomware being the leading threat for manufacturers.

It costs hackers almost nothing to launch an attack, and there's potential for a major payday if they are successful. This is because hackers can easily infect a desktop, a server or an entire network – typically through a simple phishing e-mail – and completely paralyze operations in a matter of minutes. And they look for payment in an untraceable cryptocurrency (such as bitcoin).

As manufacturing becomes more complex and increasingly dependant on technology and data, the risks posed by ransomware attacks should not be taken lightly.

Ransomware is a type of software that infects a computer, a server or an entire network and encrypts the data. There's typically a demand for a payment in exchange for the decryption key that recovers the data. Often, an end user who mistakenly clicks or opens a malicious link or file installs ransomware.

Because of the sophisticated nature of certain new types of ransomware variants, hackers are successfully bringing manufacturers' operations to a standstill until payment is made. This is happening despite manufacturers making significant investments in IT security, processes and technologies. Often ransomware infects backups, rendering them useless. This presents an unpleasant dilemma: refuse to pay and be offline for a prolonged period or pay and get right back to business.

Putting aside the ransom amount, the greatest impact comes from the costs related to recovery and business interrup-



You are a hacker's TARGET

REDUCING THE RISK: WHAT YOU NEED TO KNOW

tion. For example, Norsk Hydro, a global aluminum producer, was the target of a devastating ransomware attack that has so far cost the company approximately \$73 million. It paralyzes IT systems and forced the company to temporarily shut down certain production plants. Similarly, a recent attack on Asco Industries, a global aerospace company, was targeted by an attack that affected a major part of its operational activities, especially plants in Belgium, Canada, the US and Germany, and caused a month-long reduction in production.

Crippling attack

Some companies have paid large ransoms, resulting in lengthy and expensive restoration efforts, and costs arising from the interruption to business.

This is not solely an IT issue and no technology immunizes a business from a potential attack. But there are specific steps you

can take to lessen the likelihood of a crippling attack.

Here are six tips:

- 1. Check your backups.** Make sure they can be used for quick restoration, that they're segregated and that the backup is done frequently (daily if possible). Backups on tapes are generally ineffective and time-consuming.
- 2. Have a cyber incident response plan.** Do you know what to do and who to call (police, IT service provider, your lawyer) when you receive a ransom note from the hacker? Don't respond to the hacker yourself. Unsure? Revisit your response plan.
- 3. Get cyber insurance.** Most cyber policies will offer extortion coverage, including refunding the manufacturer for any ransom payment. Review insurance coverage with your broker and understand what coverage is available. Insurance also pro-

Respond quickly to cyber attacks.

PHOTO: ADOBE STOCK

vides access to cyber specialists (lawyers, forensic firms, crisis communications firms). The advantage is they'll have been vetted by the insurer and have pre-negotiated rates.

4. Figure out your cash situation. Hackers will likely want to be paid in bitcoins. Firms that make the payment on your behalf will need to be paid upfront. Determine whether you can quickly wire funds, if needed.

5. Communication with customers. If the business is offline for a material period, have a plan for what you tell customers. Ensure the incident doesn't have a long-term, negative impact on your relationship.

6. Employees are the weakest link. After an attack, most forensic investigations reveal that "patient zero" was an e-mail received by an employee who clicked on a suspicious link or file. Employees will make mistakes and that's okay; however, they need to know they should report the mistake quickly and to the right people, without fear of losing their job. Regular training is key to educate them on proper cyber hygiene and protocols.

Ransomware attacks will only increase in frequency, complexity and impact. Understand what needs to be done, in what sequence and by whom. Preparation goes a long way to minimize their impact.

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PURCHASING

It reduces non-value-added work and provides real-time insights.

BY STEVE TREAGUST

Purchasing is central to most business processes, so software applications that address its entire value chain and integrate tightly with other vital areas of a business are an asset that drives greater operational agility in supplier relationships.

Imagine having a customer relationship management (CRM) application to streamline and record high-frequency and complex interactions with your suppliers and have all that communication connected to appropriate supplier quotations and agreements. This is exactly what an enterprise resource planning (ERP) system with an embedded supplier relationship management (SRM) solution can deliver. Here are some factors to consider:

Smoother supplier interactions. Users track supplier interactions, including formal RFI/RFQ processes that result in supplier agreements or purchase orders. It addresses requisitions to order through delivery monitoring and goods arrival, managing both direct and indirect materials – including support for authorizations. Supplier schedules facilitate forecasts and call-offs in repetitive environments.

React to trade policy change and cooperate with supply chain partners. Businesses operating globally must adjust to rapid changes in trade policy, which could restrict supply and increase landed cost. SRM brings purchasing, the supplier and the customer into a single view. Then lock in longer-term pricing agreements with suppliers in regions potentially affected by protectionist trade policy.

It's also possible to collaborate with your supply chain partners to divide up the issues caused by tariffs or non-tariff



Purchasing in a complex global market.

PHOTO: ADOBE STOCK

Manage global RISK

USE SRM SOFTWARE TO STREAMLINE PURCHASING

barriers such as: is the vendor going to absorb that added cost, is it passed on to the customer or divided up among the supplier, your company and the customer? Because all the necessary information can be captured, the landed cost of the item is calculated, put into inventory value and, after evaluating basic cost realities, a decision is made on what action to take.

A holistic, controlled approach. The supply chain team manages by exception. Ideally, the system is configured to let most purchases proceed with minimal interventions, but some purchases may be subject to greater review. This includes those without a default supplier, purchases above a certain dollar threshold, purchases that align with specific projects or other cost centres that may have their own rules or processes, and any purchases that are not for acquisitions of raw materials.

Business processes are often split up between different people for regulatory and risk management purposes. SRM software prevents a single person from creating a supplier record, approving a purchase order to that person and then receiving the product.

Segregating duties

These preventive integrity controls can be automated using data on each user's role and permissions. Such segregation of duties also helps companies doing business globally conform to multiple jurisdictions' compliance frameworks.

Part management for better decision-making. A part may be expedited by choosing a different shipping method. Or the same part may be obtained from a different supplier for a shorter lead time and at a lower cost, but with the added hassle of performing inspections internally. This dovetails with materi-

als requirement planning and planning for required lead times. This should accommodate complex functions including scheduling by part and supplier, supplier splits, project- or progress-based billing, and costing via landed cost. But in a global environment, the ability to identify part information by supplier helps a manufacturer mitigate emerging risks among suppliers that may come under sanction, or those located in politically or economically unstable regions.

More than almost any other function, purchasing is interwoven with the fabric of the business. That means the SRM needs to be part of a tight, enterprise-wide ERP suite that enables purchasing and supply chain professionals to drive more value. It should automate and streamline much of the administrative overhead associated with purchasing, but it's also a powerful tool in ensuring compliant and low risk purchasing on a global scale – especially at a time of increasing volatility.

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PERFORMANCE

Resistance is natural and avoidable when people play an active role.

BY HUGH ALLEY

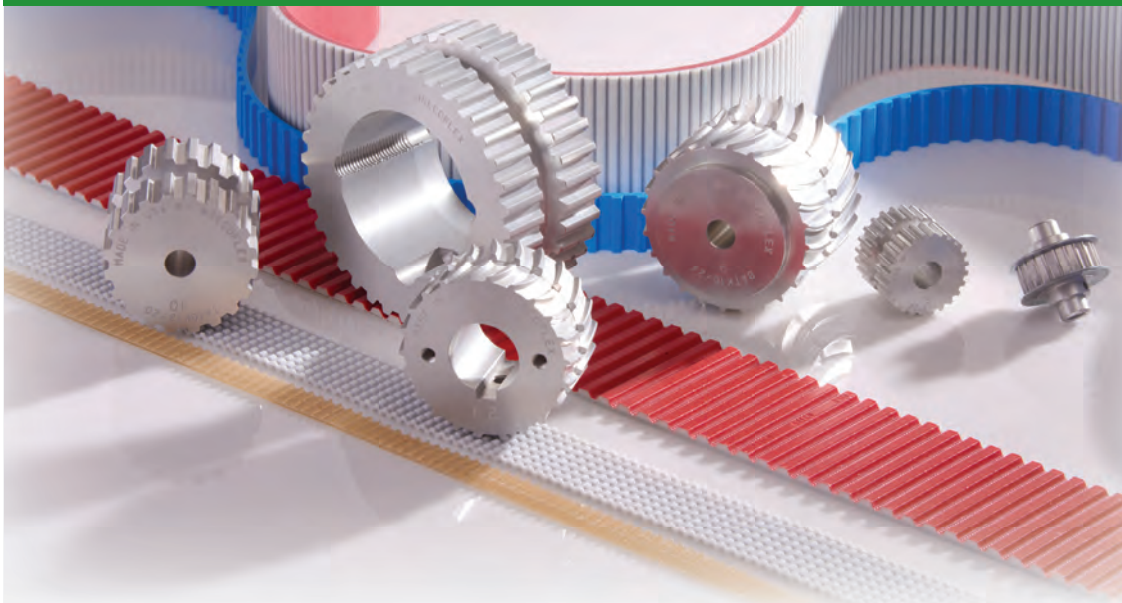
A manufacturer wanted to reduce customer wait times, which were averaging 26 minutes. The average needed to be below 20 minutes.

To achieve this, 14 experi-

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ments were tried over 13 weeks. Changing the priorities of the tasks done by team members was key. The thinking was that with a common understanding of task priorities and the right set, the waiting time would drop.

Managers expected resistance. It's natural. People fear a loss of control and the unknown.

The following communication tips helped to avoid resistance:

1) Team members were told what was happening in advance. The corporate objective was made clear from the start, and the process to be used was described.

2) It was explained they were experiments, not a new system. Each trial was deliberately small – a temporary change to see how it worked.

3) Outcomes were shown daily. A key aspect of any experiment was to make a prediction about the change and measure relevant outcomes.

4) The details of each experiment were driven by input from staff. When they identified an element that wasn't working, they were asked for suggestions, which were built into the experiments.

As a result, team members were keen participants. Even the quietest of the staff participated.

At the end of the 13 weeks average waiting time was reduced to 14 minutes, and team members asked if they could continue using the process they had developed. It made their lives easier, as much as it reduced their customers' waiting time. And it made a huge difference in the willingness of staff to be part of a radical change.

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.

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CCOHS SAFETY TIPS

Understand the properties of the materials being used.

Nanotechnology – the manipulation of matter on a near-atomic scale – is used in a growing number of applications. They include computer hard drives using the magnetic properties of nanoparticles to store more data on much smaller devices, water filtration systems, protective and glare-reducing coatings for eyeglasses and cars, stain-free clothing and new medical treatments.

Nanomaterials are extremely small with dimensions roughly between one and 100 nanometres (nm). A nanometre is one billionth of a metre. For example, a human hair is about 70,000 to 80,000 nm, a red blood cell is about 7,000 nm and a virus is about 10 to 100 nm.

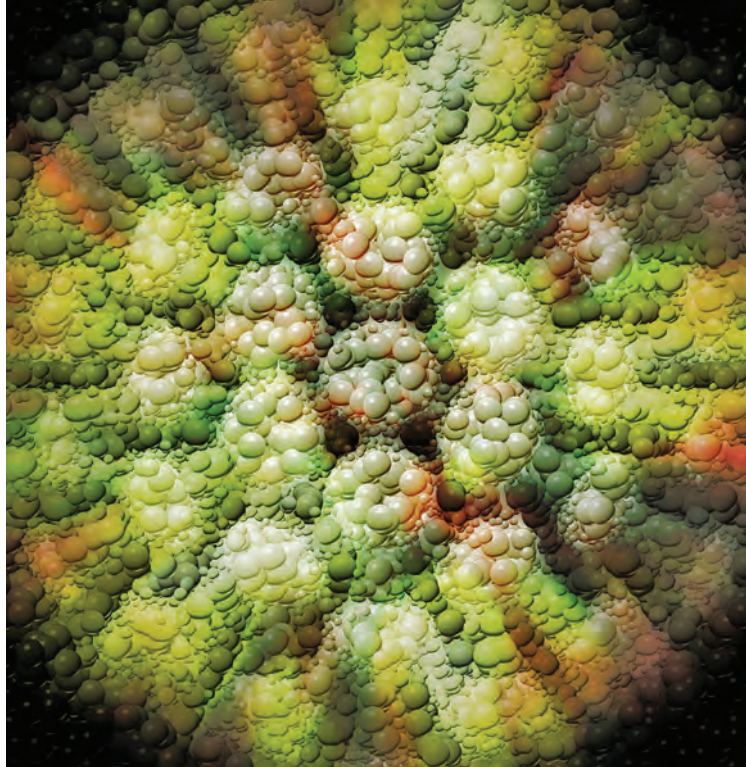
Nanomaterials can have unique physical, chemical and biological properties that make them useful in a wide variety of applications, such as making stain-free textiles using nanoscale additives or surface treatments, or targeting drugs selectively to cancerous cells.

As applications move from laboratories to industrial settings, workers and employers should be aware of potential hazards and adopt appropriate measures to control exposure through inhalation, skin contact or ingestion.

Much of the information available about specific hazards is incomplete. Nanoparticles are generally more toxic than a larger dimension of the same chemical substance, but it's impossible to determine by how much due to a lack of exposure data.

Nanoparticles appear to enter the body through inhalation, ingestion or absorption through the skin. Some studies have shown as particles become smaller, the likelihood of injury to occur increases.

Nanomaterials are most likely to enter the body through the respiratory system if they are



Near-atomic MATERIALS

PROTECT WORKERS FROM EXPOSURE TO NANO HAZARDS

airborne and in respirable-sized particles, ending up in all areas of the respiratory tract, depending on their size and composition. From there, they enter the blood and lymph circulation systems, and are then distributed throughout the body. Once in the blood system, the liver, spleen, bone marrow, heart and other organs can absorb them.

Research into skin absorption suggests if it occurs, the amounts will be low.

Hazard data

It's important during a risk assessment to understand the hazardous properties of the material. Since there is a limited amount of hazard data available, it's challenging to establish the toxicological behaviour of specific materials with any degree of certainty. In most cases, it will be necessary to refer to information obtained for similar materials. In this case, establish that the information you find is relevant for the material being used. Safety data sheets are useful for

this purpose.

Combine the following measures and best practices to control potential exposures:

- **Elimination.** Getting rid of hazardous substances, including nanomaterials from processes and products, is the most effective control.
- **Substitution.** Use a non- or less-hazardous substance, or a different and safe technology.
- **Engineering controls.** NIOSH states "current knowledge indicates that a well-designed exhaust ventilation system with a high-efficiency particulate air (HEPA) filter should effectively remove nanomaterials." Where operations can't be enclosed, provide local exhaust ventilation equipped with HEPA filters, and design it to capture the contaminant at the point of generation or release.
- **Administrative controls.** Establish procedures to address cleanup of nanomaterial spills and decontamination of surfaces. For example, prohibit

Nanomaterials have unique physical and biological properties. PHOTO: ADOBE STOCK

dry sweeping or use of compressed air for dust cleanup. Use wet wiping and vacuum cleaners equipped with HEPA filters. Prevent the consumption of food or beverages in workplaces where nanomaterials are handled, and provide facilities for hand washing, showering and changing clothes. Separating eating rooms and changing facilities are also good options.

- **Personal protective equipment (PPE).** Provide appropriate personal protective equipment such as respirators, gloves and protective clothing. Use PPE when other measures are insufficient or not feasible. HEPA filters, respirator cartridges and masks made with fibrous filters, protective clothing, goggles and gloves can be used. Filtering half masks have to fit properly. Protective clothing made from airtight, non-woven textile are more effective than cotton and polypropylene. Nitrile, latex and neoprene gloves are effective for nanoparticles with a 10-nm diameter when exposing the glove for a few minutes. Workers should be informed of the protective equipment's limits, its validity and correct use.

Nanotechnology safety doesn't need to be complicated. Worker exposure will be minimized if each step of the manufacturing operation is enclosed and the appropriate controls are in place.

The Canadian Centre for Occupational Health and Safety (CCOHS) in Hamilton contributed this article. CCOHS provides information, training, education, management systems and solutions that support health and safety programs and the prevention of injury and illness in the workplace. Visit www.ccohs.ca.

Comments?
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SPERRY AWARD

Sandy Thomson is recognized for his polymer bearing innovations.

In the bearing world there are some global brands that come to mind such as SKF in Sweden NTN in Japan and Timken in the US, but Canada has its own innovative player and its patriarch has been awarded the global transportation sector's most distinguished accolade.

Thordon Bearings' founder and polymer materials pioneer George (Sandy) Thomson is the 2019 recipient of the Elmer A. Sperry Award for "advancing the art of transportation," joining luminaries such as Donald Douglas, Ferdinand Porsche, Sir Geoffrey De Havilland and Malcolm McLean.

Established in 1955, the award commemorates the life of Elmer A. Sperry, whose creations include the gyroscope, the first electric automobile and navigational aids that contributed to the advancement of many modes of transportation.

"To be presented with this prize is a testament to the talent and dedication of all those working tirelessly within the company to develop safer, more environmentally friendly solutions for all sectors of industry," said the 81-year-old Thomson. "It's our material scientists, technologists and engineers – some of the best in the world – that must take all the credit."

Humble though he is, Thomson deserves the recognition. If not for him and two colleagues, there would be no Thordon polymer bearings.

A native of Burlington, Ont., he graduated from Northrop University in Inglewood, Calif. and graduated as a mechanical engineer. After a brief stint working for a Boston based mechanical seal manufacturer, he returned to Canada to join Thomson-Gordon Ltd. in the 1960s, founded by his grandfather in 1911.

After several prototypes prior to 1967, the world's first polymer



Sandy Thomson and SeaThigor tailshaft seal.

PHOTO: THORDON BEARINGS

Transportation INNOVATOR

THORDON BEARINGS FOUNDER JOINS GLOBAL LUMINARIES

alloy bearing was installed in a vertical pump at a local steel plant, replacing traditional rubber bearings that typically wore out within a few weeks.

His attention shifted to the marine market and Lake Ontario where the bearing was tested in horizontal applications. The world's first Thordon water-lubricated propeller shaft bearing was installed on a Great Lakes tug owned by McKeil Marine in Hamilton in the late 1970s. Today McKeil is the largest tug/barge owner on the Great Lakes.

Thordon seawater-lubricated bearings soon found their way into a variety of ocean-going vessels. Thomson's newly formed company – Thordon Bearings Inc. – caught a significant break when Royal Canadian Navy Halifax class frigates ran into problems with rubber bearings. Thordon's propeller shaft bearings solved the

problem. Since then more than 40 navies and coast guard fleets have installed the COMPAC propeller shaft bearing system with its lifetime guarantee.

Lubricated with seawater

Aside from durability, there's a significant environmental benefit to the Thordon product. Because it's lubricated with seawater, the bearing eliminates a major cause of ocean pollution – oil and grease leaked from conventionally lubricated tailshafts.

Thordon has also developed RiverTough bearing material that withstands abrasive conditions typically encountered in America's inland waterways. Thomson also developed the SeaThigor tailshaft seal for blue water, and the TG100 for abrasive water environments. Both designs feature an inflatable emergency seal that allows the vessel to safely proceed if the

seal face is damaged.

The company's pollution-free polymer materials have been used in many other maritime applications, including rudder bearings, deck machinery, dredger cutterhead bearings and floating production storage and offloading vessel turret and mooring equipment.

And Thomson continues to find opportunities for his polymer technology. He formed Marsh Brothers Aviation to provide aircraft solutions, among them the AeroTough GF, a self-lubricating polymer (that replaces greased nickel-bronze bushings), and ThorFlex elastomeric polymer seals. These materials are also long-lasting self-lubricating, cleaner and weigh significantly less than the alternatives. All were developed and tested on his personal Aero-star aircraft.

Clean power generation is his latest interest. Thordon Bearings' sister company, TGDNALOP purchased a small hydro facility in Poland, which is acting as a demonstration site for Thordon's water-lubricated bearings and seals in a new generation of Kaplan turbines for the renewables industry.

The company, located on a commercial-industrial road in Burlington, operates from a 70,000 square-foot plant where 114 team members are employed and continue the founder's quest for innovation.

The Elmer A. Sperry award is given jointly by the American Institute of Aeronautics and Astronautics, the Institute of Electrical and Electronics Engineers, the Society of Automotive Engineers, the Society of Naval Architects and Marine Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

This is an edited version of a longer article contributed by Thordon Bearings.

Comments?

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Your asset STRATEGY

TIPS FOR IMPROVING PERFORMANCE

Following a formal business process optimizes reliability.

Good maintenance is all about performing it well and striving for excellence. It's not always easy, and there are pitfalls. Two sessions presented at a MainTrain maintenance, reliability and asset management conference, presented by the Plant Engineering and Maintenance Association of Canada (PEMAC), offered concise tips

for improving asset performance.

1. Follow the strategy

John Ballentine – a maintenance strategy expert and the engineering manager for North America at global consulting firm ARMS Reliability, said a properly executed strategy removes inconsistent outcomes, allows for the deployment of excellence, and drives continuous reliability improvement. It's quick and easy to deploy; changes and updates

strategies; clones strategies across multiple sites; provides visibility and governance of operating context changes; leverages pockets of reliability excellence; and it improves accuracy, productivity and efficiency.

2. Understand the process

Ballentine said a plant maintenance manager understands the total reliability process and roadmap, ensures blocks of work are well defined for a total approach, establishes goals for individual levels, cultivates learning and growth, requires training and adherence to the plan, and captures the lessons learned.

Takeaways include:

- separating strategy management from work management;
- leveraging pockets of excellence;
- deploying the best strategy to all assets all the time;
- enabling continuous learning

by managing change; and

- good data begins with good engineering, reliability and CMMS partnership.

3. Deliver predictable performance

Christer Idhammar, founder and vice-president of reliability and maintenance management firm IDCON Inc. in Raleigh, NC, said reliability engineers are often thrown into situations where they may have theoretical knowledge from college but little practical experience.

The answer is to focus on managing existing equipment and to get involved in new equipment design and procurement.

Having an effective asset strategy management process and adhering to it will reduce risk, failures and downtime, all while tallying cost savings.

Comments?

E-mail jterrett@plant.ca.

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THINK LEAN

Maintain the focus to keep your strategy alive.

BY RICHARD KUNST

Key performance indicators (KPIs) are put in place to ensure that sites, departments or teams are meeting objectives. However, one often-missing component is the need to be local, relevant and have a team that adjusts behaviour to bring the KPIs back in line.

A key question for frontline workers is, “How do you measure a successful day?”

Here’s a formula that works: make your plan, work your plan, meet your numbers.

Typically the first report to develop is billings, bookings and backlog, or the “flash report.” It allows you to monitor the health of your value streams.

Check that billings and bookings are in balance with forecasts. Quickly divide the backlog with average day’s billings to determine what order turnaround time will be and adjust accordingly. As the backlog increases, add throughput capacity.

You can look at multiple sites quickly and make the necessary course corrections. The report showing the previous day’s activity needs to be simple, a single page and on your desk first thing in the morning.

Next is an improvement strategy. The best tool for creating eyes for waste and eyes for flow is value stream mapping. It puts your team “on” the business instead of being “in” the business for a few days. The outcome of this workshop provides the fodder for policy deployment.

Based on the prioritized list of opportunities, you manage teams or sites to ensure they’re meeting due dates and delivering desired results. As coach and mentor, provide the teams with the resources they need to ensure success.

Here’s how the tools form a hierarchy of management and communications within your



Make a plan, work it and meet your numbers.

PHOTO: ADOBE STOCK

Measuring PERFORMANCE ... FOR MULTIPLE SITES, DEPARTMENTS OR TEAMS

organization:

STEP diagnostic. A five-year forward view of KPIs, the supporting enablers and definitions that show a common understanding exists within the organization. Once defined, it acts as a quick scorecard.

X-matrix. This one-year plan of intended accomplishments links KPIs to strategic initiatives, balancing resources and KPIs. It’s also used as a balanced scorecard.

Team reflections. Using a slight twist of the Demming PDCA cycle, teams check on performance and trends against the previous month’s forecast while planning for expectations three months forward.

Weekly debriefs. This a great tool for managing multiple remote locations. Managers reflect on the week’s activities – on what worked well, what did not work well, what to do different, and planned accomplishments. This report should be completed within five minutes. Clearly the focus is on planned accomplish-

ments for the user and coach.

Daily reports. A three-minute stand-up meeting that typically occurs where the work is being performed to ensure teams have the resources needed to accomplish the plan and to reflect on critical KPIs. The 48-hour view is typically combined within the communication methodology that includes shift start/exchange meetings.

Leader standard work. The format is more like a TPM for leaders to ensure tasks that need to be accomplished daily, weekly, monthly or quarterly are synchronized.

Visual standard work instructions. This is how you want tasks performed for consistency of output and the ability to audit process. Typically 50% of the instruction should include pictures.

Total productive maintenance checklist. The power of an operator applying pencil to paper exponentially increases emotional attachment to process and hence the ability to

detect potential problems early so they are rectified before causing a significant issue.

A3 methodology. Provide a summary document about the status of a project or resolution to a problem. Since it follows a consistent format, you can churn through a lot of data quickly and if needed, request additional information.

Don’t take anything for granted. If you can’t “taste, touch or feel” an attribute, it’s probably a story. So when you go to visit another site, you must allocate time to conduct a physical audit of various attributes and make sure your local leader does not act as the parade marshal. Get off the beaten track to see what lurks beyond the parade route.

Successful leaders know once a strategy loses focus, the initiative will likely die. And use your name stamp. It’s like leaving foot prints in the snow. People will know you were there.

Richard Kunst is president and CEO of Cambridge, Ont.-based Kunst Solutions Corp., which helps companies become more agile, develop evolutionary management and implement lean solutions. Visit www.kunstofsolutions.com. E-mail rkunst@kunstofsolutions.com.

Comments?

E-mail jterrett@plant.ca.

Green status for **SLEEMAN**

FIRST BREWER TO ACHIEVE 3RCERTIFIED

Diverts 98% of its solid waste from the Guelph, Ont. brewery.

BY PLANT STAFF

Sleeman Breweries Ltd. is doing its environmental duty when it comes to handling solid waste with its overall diversion rate of 98%. And the brewer, based in Guelph, Ont., is the first in Canada to achieve 3RCertified status.

3RCertified (3RCertified.ca) is a voluntary program run by the Recycling Council of Ontario that evaluates how companies manage solid waste.

Status is awarded at one of four levels based on the total number of points earned following on-site third-party evaluation.

Here's how Sleeman is reducing its solid waste:

- A long-term organizational commitment has been made and strategy established for sustainability practices, including annual goal setting, measurement and an audit of all waste reduction initiatives.
- No delivery truck is ever empty. Wood and plastic pallets, top sheets and tier pads are returned to the supplier at time of the next delivery.
- Single-use disposal is avoided and reuse ensured. Airbags that secure trailer loads are refilled using an on-site air compressor.
- Crown boxes and liners are offered to employees for personal use or donated to local food rescue agencies.
- No item is too small. Used



Sleeman's beer brands include Sleeman, Okanagan Spring, Unibroue, Sapporo and Pabst Blue Ribbon. PHOTO: SLEEMAN

gloves are placed in receptacles throughout the brewery and sent to a facility for cleaning and reuse.

- Glass beer bottles collected by The Beer Store are returned and reused up to 20 times. Sleeman also considers

long-term impacts of the goods and services it buys. Procurement policy requires vendors to supply goods with minimal packaging, and accept returned goods at end-of-life for reuse and recycling.

Comments?

E-mail jterrett@plant.ca.

SDT **ULTRA**Checker

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sdtultrasound.com/ultrachecker

Nourishing a growing world



▲ Potash plant – Saskatchewan, Canada. Potash mineral on left with transport trains. (iStock)

GETTY IMAGES

Crop nutrition has a vital role, backed by Saskatchewan's potash mines and Rittal's HD enclosures

The United Nations estimates that world population will climb from 7 billion to 9 billion by 2050. This means higher demand for food for the growing population, and more work for the farmers to produce more food. And they will need fertilizers to do it, which is where potash comes in, as 96% of the world's production of potash is used in fertilizers. The ten potash mines in Saskatchewan presently account for more than 7 million tonnes of potash or about 25% of the annual world production.

The mission of these potash mines is to help the world grow the food it needs. By striving to produce and deliver the highest quality, most innovative crop nutrition products, they help farmers rise to the challenge.

The simplest measure of the health of the potash industry is the price the nutrient commands on the world market. But whether the price per tonne dips to US\$150, as was seen in 2005, or skyrockets to US\$900 like in the heady days of 2009, the true guarantor of success in the industry depends on cutting unnecessary expenses, ensuring safety and benefiting from the long-term planning made possible by market-leading processes, equipment and technology.

Challenges: Potash is a Beast

Potash is by no means easy to process; demanding material characteristics combined with unique processing requirements make it a challenge to mine. Since potash is a corrosive material, it can progressively destroy metal through chemical action. Potash creeps its way into nooks and crannies to eat into equipment, and hardens into sharp crystals that can cut and tear into seals.

When Scott Paish of Rittal visited some Potash Mines in Saskatchewan, along with Rittal's distributor partner, Jonathan Petryk of E. B. Horsman & Son, the doors of the traditional Nema 4X enclosures were falling off due to caustic dust lodging inside the hinges causing corrosion. The potash mines were looking for an enclosure to protect automation, instrumentation and electrical equipment that come into contact with potash during processing.

Petryk says, "Our main goal has been to find an enclosure that can withstand the corrosive atmosphere, offer all-round protection, and last longer in potash mines. This will help keep the bludgeoning costs in this potash mining industry down, if the enclosures have some longevity!"

Rittal's Hygienic Design (HD) enclosures

After evaluating and introducing Rittal's Hygienic Design (HD) enclosures in two of the potash mines in Saskatchewan, they became more convinced that they could have hit upon the perfect solution.

SECURE BLUE SEAL: The seals around the enclosure doors often fail due to the corrosive potash destroying them. Rittal's HD enclosures offer the ability to replace just the distinctive blue seal, not the entire door, saving huge costs. The one-piece secure air-tight silicone seal does not leave a gap around door for potash to seep through.

Paish adds, "Usually, the mine workers have to use a screwdriver or sharp tool to chip away the corrosion and build-up around the seals, and often, the enclosure gets damaged. With the HD enclosures, this does not happen, leading to valuable savings in time and costs!"

INNER HINGES: Exposed hinges pose a significant problem, and keep rusting, disintegrating and falling off on all enclosures, no matter who the manufacturer is. Rittal's HD enclosures are located on the inside of the box. Hence, they are protected against the corrosive dust

prevalent in the potash mines.

EASY MOUNTING: HD enclosures do not have additional holes for mounting which is an advantage, as they are able to mount them any way they choose by welding directly to the enclosure. This enables them to be fitted into any space or orientation, and the absence of holes means less apertures for the harmful potash dust to creep into and destroy!

STEEP SLOPING ROOF: The 30° roof angle allows liquids to run off easily so the HD enclosures can withstand frequent high pressure wash downs, and the steep slope plus the smooth surfaces prevent bacteria and harmful build-ups on the surfaces.

In potash mines, it is important to ensure that the critical automation equipment housed inside the enclosures is working efficiently at all times. After all, reduced downtime leads to more potash for fertilizers, and ultimately, increased food production for a healthier, happier world!

Already, Rittal's TS8 enclosures, climate control and power distribution systems have earned a name for themselves in the potash mines, and now it's time for Rittal's Hygienic Design enclosures to shine: they not only last longer for all the reasons mentioned above, but they are easier to mount and move, leading to huge savings in resources and more efficiency!

So far, Rittal's HD enclosures have been adopted in two of Saskatchewan's potash mines. Petryk adds, "The good news is that so far, we've had nothing but positive feedback on their performance and we are looking forward to expanding their use". The other potash mines in Sask. have been evaluating various enclosures, and the HD solutions have drawn the most interest. Hopefully, we will soon see these HD solutions being specified for new mining projects, and the future for potash mining will be hygienic and bright!



For more information,
visit www.rittal.ca/hd
or contact marketing@rittal.ca.

ELECTRICAL



Inspecting with infrared thermology.

PHOTO: IRSS

Systems determine the condition of electrical distribution assets.

BY STEVE GAHBAUER

Inspection and surveillance equipment yields its most valuable results when applied to electrical distribution equipment operating under full load conditions. But doing so while working within CSA Z462 guidelines can be challenging because the surveillance equipment can endanger maintenance crews. The equipment normally requires direct access to energized components inside an electrical system, which means panels have to be open. Electrical maintenance surveillance device (EMSD) technologies don't require panels to be open.

A case study from an Ontario

EMSD TECHNOLOGIES

- Infrared thermography
- Airborne ultrasound
- Motor current analysis
- Partial discharge testing
- Corona cameras
- Visual inspections.

Full load EMSD CONDUCT SAFER MAINTENANCE INSPECTIONS

beverage bottling facility and presented at the 2018 Main-Train maintenance conference in Ottawa demonstrated how EMSD is easily retrofitted onto existing distribution equipment to become the nexus for an electrical infrastructure reliability program. The session was presented by Rudy Wodrich, vice-president of engineering services at IRISS Inc. in Bradenton, Fla., and Scott Thornton, business development manager for DTM Consulting Services Inc. in St. Thomas, Ont., a specialist in critical asset surveillance technologies (CAST).

Electrical maintenance surveillance devices fall into three categories: windows, ports and online monitoring. Windows

allow inspection in the visual, ultraviolet and/or infrared spectrum. They must be properly sized and allow the inspector to "see" target inspection points, which are typically cable terminations, bus bar joints and critical current-carrying components that are equipment-specific.

It was the windows category that one of North America's leading bottled water companies applied to make maintenance inspections safe for its crews.

The primary goal was to define cost-effective, consistent maintenance processes by adopting the technologies to support and sustain processes.

Thornton was engaged to provide recommendations for place-

SUPPLY LINES

LED TOWER WINNER

Lind Equipment, a Markham, Ont. manufacturer of portable industrial lighting, has won its second Pro Tool Innovation (PTI) award for its Vertical Mast Beacon LED Tower.



The judging panel included

Lind's Vertical Mast Beacon LED Tower.

PHOTO: LIND

contractors, construction business owners, tradesmen and media professionals from across the US.

The Lind entry was recognized for its more compact design, manoeuvrability from the caster upgrades and the added safety of the new winch design.

NEW ATLAS DISTRIBUTOR

Central Air Equipment Ltd. in Calgary is Atlas Copco Compressors' newest distributor.

CAE will be focused on selling Atlas industrial range of air products and servicing the equipment with OEM spare parts, primarily in Alberta.

Atlas Copco is a Swedish manufacturer of industrial tools and equipment.

ILS FOR NA

ExxonMobil is expanding its Mobil Serv integrated lubrication services (ILS) program for industrial operators in the US, Canada and Mexico.

The Spring, Tex.-based manufacturer of lubricants is working with maintenance services provider Reliable Industrial Group (RIG) in Houston to provide end-to-end plant commissioning, reliability and integration services.

Support will cover vibration analysis and flushing, oil-related preventative maintenance and pre-commissioning services.

ment, sizing and type of infrared windows to be installed. After an initial site survey, DTM recommended the IRISS CAP-CT series in various sizes. CAP-CT series is a NEMA 4/IP65-rated IR window suited for indoor applications. A reliability and maintenance policy was developed that includes a three- to five-year improvement plan. This policy was then communicated to all employees.

The company outlined all essential elements and stressed the importance of key performance indicators aligned with reliability-centred maintenance (RCM) and reliability-based maintenance (RBM) programs for overall plant safety. It subsequently determined IRISS transparent polymer infrared windows would provide a safer method for conducting standards-compliant inspections.

The reliability team decided on large format windows for main switchgear bus connections, main breaker connections and fused switches to find hot spots through the IR windows. As a result, more frequent inspections of energized equipment could be performed for routine maintenance. The closed-panel inspections didn't require the elevated levels of personal protective equipment (PPE) mandated by NFPA 70E and Z462, thus reducing time and inspection costs.

Thermal imaging was not new to the maintenance and reliability team. Its members had previously retrofitted some equipment with traditional round calcium fluoride windows. However, it was determined a transparent polymer infrared window available in various large formatted sizes would provide both visual and thermal inspection, thus fewer units were needed. With the infrared windows in place, there was no need to remove panels or for personnel to wear increased levels of PPE. Inspections could be performed more often and on electrical equipment that had previously been impossible to inspect because of arc flash incident energy.

The bottled water company has proceeded with implementation of the IRISS infrared window solutions at 29 of its sites in North America.

Steve Gahbauer is an engineer, a Toronto-based business writer and a regular contributing editor. E-mail gahbauer55@gmail.com.

Comments?

E-mail jterrett@plant.ca.

LEADING EDGE

Innovative ideas for plants

DIGITAL TWINNING FOR PICKMASTER Tests virtual robotic configurations

ABB Robotics' third-generation of PickMaster software for vision-guided random flow picking and packing applications is equipped with digital twin technology. This shortens commissioning times in plants where higher output, faster response times and quick changeovers are vital.

It allows testing of robotic configurations on virtual production lines before physical lines are built. The simulated twin connects directly to production operations. This optimizes the picking process virtually, at the same time as the process is being implemented.

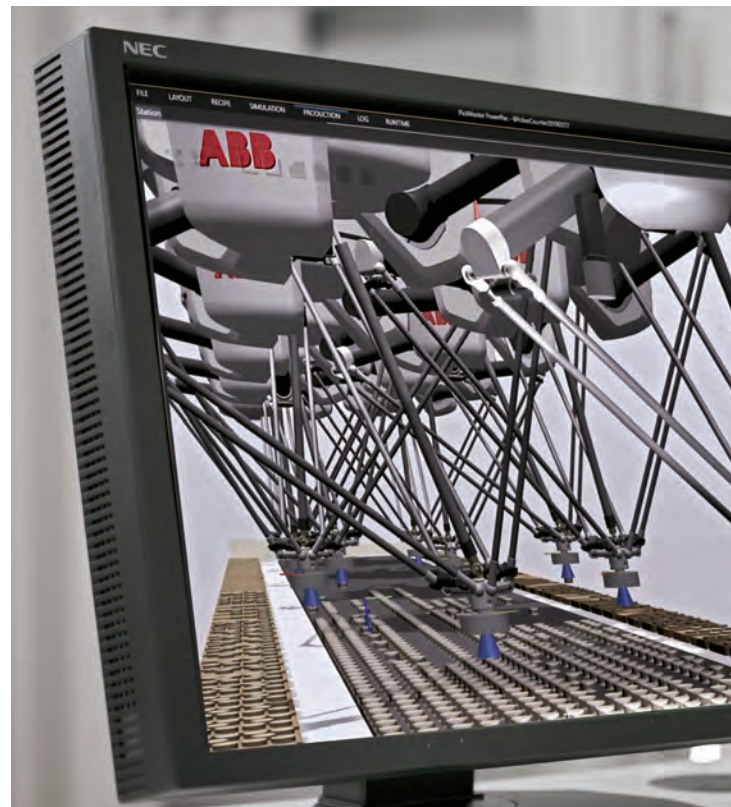
When product lines are installed faster, time to market is shortened. Picking times are shortened by 15% while output and total line efficiency are increased by 40%.

ABB's Ability Zenon Operations Data Management provides easy data visualization on dashboards. Online visual tuning of the workspace in both X and Y directions maximize output and increases overall equipment effectiveness.

Multitude configurations work seamlessly with all ABB robots, and a range of virtual and physical machines.

ABB Robotics, based in Auburn Hills, Mich., manufactures industrial and collaborative robots and advanced digital services.

www.abb.com/robotics

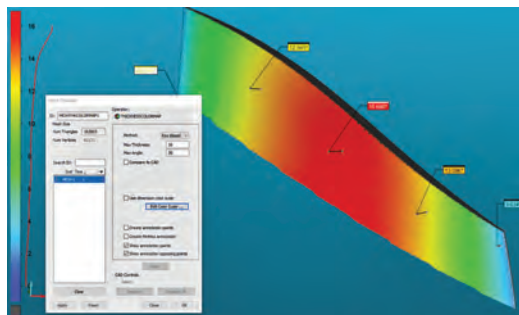


Production lines installed faster.

PHOTO: ABB

PC-DMIS SOFTWARE ENHANCED Several improvements made to the user experience

Hexagon's Manufacturing Intelligence division has launched the latest edition of its measurement software.



Includes helpful content.

PHOTO: HEXAGON

PC-DMIS 2019 R2 introduces Home Page, which makes recent programs and favourites accessible directly from the home screen. Users create folders and organize measurement routines while PC-DMIS provides direct access to the latest product news, support contact, helpful videos, the PC-DMIS idea centre and the regular PC-DMIS newsletter.

A roughness scan command is created in one click, without extensive training or learning new software.

Colormap shows measured thickness using mesh or point cloud data, or it shows deviations to the CAD model, immediately identifying where attention is needed.

OCR recognition is also improved, including feature control frames, datums and datum targets.

Hexagon's Manufacturing Intelligence division is a metrology and manufacturing specialist with Canadian offices in Burlington, Ont.

hexagonmi.com



Water-resistant grease.

PHOTO: NSK

ROLLING MILL INNOVATION

Bearings increase service life

Rolling mills typically use pairs of work rolls to move slabs of steel or other metals into specific shapes such as sheets. Bearings carry these heavy loads at high speeds in high temperatures while under constant exposure to water sprays and metal particles.

Severe conditions lead to premature bearing failure from damage conditions such as flaking. This creates coarse regions within the bearing that eventually make it inoperable.

Failures also result from rust and water used for cooling.

NSK Ltd. has developed a four-row, sealed tapered roller bearing for rolling mills with water resistant grease that extends service life even under severe conditions.

The new grease provides a thicker oil film and protective layer between the raceway and rollers. Grease additives also inhibit corrosion.

Bearing manufacturer NSK Ltd. is based in Ann Arbor, Mich.

www.nskamericas.com/

METER GOES THE DISTANCE

Measures up to 40 metres

Fluke's most compact laser distance meter speeds up layouts with instant, one-button measurements up to 40 metres with an accuracy of ± 2 mm.

The 417D's bright laser tracks targets at long distances or in hard-to-reach spots.

Take it into harsh environments. The unit withstands a one-metre drop and is rated IP54 for dust and water resistance.

It has a large, two-line illuminated LCD screen and delivers continuous measurements as well as quick area calculations.

An automatic shut-off saves battery life, providing up to 3,000 measurements.

Fluke Corp., based in Everett, Wash., makes electronic test tools and software for measuring and condition monitoring.

www.fluke.com



Two-line illuminated LCD screen.

PHOTO: FLUKE



1,000 nit touchscreen.

PHOTO: PANASONIC

TOUGH MOBILE COMPUTING

Toughbook customizable for industrial use

Panasonic's TOUGHBOOK 55 semi-rugged mobile computer adapts to the changing needs of industrial users. The customizable, thin, light unit accommodates expansion packs that offer a variety of additional features such as I/O ports, a fingerprint reader, dedicated graphics or a second storage drive.

Both the main storage drive and optional second drive are quick-release for easier installs and access to the drives.

The battery lasts all day or an optional second batty can be hot swapped without powering down.

Tech includes an optional 1,000 nit touchscreen, AMD dedicated graphics and the latest Intel 8th Gen quad core i5 and i7 processors, plus tetra-array microphones for highly accurate speech recognition.

Panasonic is a manufacturer of mobile computing technology with Canadian offices in Mississauga, Ont. na.panasonic.com/ca/



BUCAN
BUCAN ELECTRIC HEATING DEVICES INC.

www.bucan.com










PRODUCTS AND EQUIPMENT

ELECTRICAL

JOYSTICKS, SHORT OR LONG LEVERS



55 mm and 79 mm.

The new line of ECX4500 panel Joy-sticks for mounting in a 22.5 mm cut-out have either short (55 mm) or a

long (79 mm) levers.

Different operation modes include: zero plus one, two or four positions that are either maintained or non-maintained.

Both joysticks come with a mounting collar and the appropriate number of cULus contact blocks, already mounted.

ITC Electrical Components is a master distributor based in Concord, Ont.

www.itcproducts.com

CUTTERS

CUT WIRE ROPE WITH PRECISION

KNIPEX Tools' Wire Rope Cutter handles high-strength wire ropes up to 5/32 in. and cable up to



Precision cutting edges.

3/16 in. with the same power and precision as many larger cutters in a compact 6 1/4 in. configuration.

With a double bearing box joint design for greater stability, the cutter's precision ground cutting edges and shear-type action cuts cable and wire rope cleanly and evenly without the wire ends splaying or fanning out.

The cutter, made of ball bearing steel, includes a thumb lock to secure the tool when not in use and an opening spring for easier use during repetitive cutting.

KNIPEX Tools LP in Buffalo, NY is the North American sales and marketing organization of KNIPEX-Werk, a pliers manufacturer based in Wuppertal, Germany.

<http://knipex-tools.com>

PLUGS

HEAVY-DUTY LUGS FOR TIGHT SEALS



Sizes up to 900 mm.

Use HFT Pipestoppers aluminum plugs in applications where pipes carrying fluids need to be plugged or sealed.

The aluminum plug's low-friction washer eases tightening of the ring nut that expands a rubber ring and makes a leak-tight seal.

Standard plugs are fitted with a natural rubber seal, but

alternatively silicone, nitrile, neoprene or Viton are also available.

The washers are available in sizes up to 900 mm and accommodate temperatures up to 250 degrees C.

Applications include immersion in chemicals or exposure to high temperatures, leak testing, isolation, sealing, stopping and weld purging of pipes in harsh environments. The plugs are also used to seal and protect tanks, vessels and containers during cleaning and transportation, particularly when they are pressurised with inert gas.

Huntingdon Fusion Techniques (HFT) manufacturers weld purging products. US headquarters is in West Melbourne, Fla. Products are handled in Canada by Justram Equipment Inc., in Aurora, Ont.

www.huntingdonfusion.com

TESTING

FIVE TESTERS IN ONE

Megger's MTR105 single, hand-held dedicated static motor tester performs multiple tests including insulation resistance, motor rotation, DLRO, multimeter and LCR meter.

A fully automated three-phase connection allows testing without having to reconnect the unit for each phase-to-phase measurement. There's also temperature correction for insulation resistance testing.

A guard terminal helps to eliminate the effects of surface leakage and delivers accurate results in harsh environments thanks to improved diagnostics.

All major functions are selected using a single rotary dial. Internal memory stores up to 100 results that are recalled on the full colour graphic display, or downloaded to a standard USB drive.



Improved diagnostics.

Superior Suction, Safety & Solutions. Guaranteed.



VAC-U-MAX compressed-air powered industrial vacuum cleaners are engineered for 100% more suction power for even the finest powders & combustible dusts - now ATEX Approved & Certified - the first line offering for Class I & Class II hazardous area locations. Since 1954 VAC-U-MAX has provided "Intrinsically Safe" Industrial Hygiene Solutions for Flammable Liquids - **FL Series™**, Combustible Dusts - **CD Series™** and the **SR Series™** for Reactive Powders.

Flammable Liquids
MDL55 23954

Reactive Powders
MDL55SR

Combustible Dusts
MDL15



Combustible Dusts
MDL30 40008SS
(Food/Pharma)

Combustible Dusts
MDL55 40012/3 (General Purpose)

Let us solve your industrial vacuum cleaning challenges.
Visit vac-u-max.com/vacuum or call 800-VAC-U-MAX.



WET/DRY • AIR OPERATED & ELECTRIC DRUM-TOP • CONTINUOUS DUTY
COMBUSTIBLE DUST • CENTRAL SYSTEMS • CONTINUOUS-BAGGING • LIQUID & SLUDGE
FLAMMABLE LIQUIDS • SUBMERGED RECOVERY • METALWORKING • PHARMACEUTICAL
STEEL SHOT • INTERCEPT HOPPERS & PRE-SEPARATORS
HSE / INDUSTRIAL HYGIENE SOLUTIONS • METAL CHIP COLLECTION & CLEANING

Insulation resistance testing is performed at user-selectable voltages from 10 to 1,000 V. The unit also supports PI, DAR and timed sets, which provide additional information about insulation condition.

For low resistance testing, there's a single continuous range from 0.01 to 1.0 MΩ for continuity measurement. The device supports four-wire testing from .001 to 10 Ω and has a bi-directional test option that automatically reverses the current without reconnecting the test leads.

Megger is a manufacturer of test and measurement equipment based in Sellersville, Pa. <http://us.megger.com>

METROLOGY

SCAN TINY MECHANICAL PARTS

The Artec Micro supplied by Exact Metrology Inc. is an automated metrology-grade desktop 3D scanner for tiny mechanical parts, such as engine valves or connectors, for inspection and reverse engineering.

Twin cameras with blue LED

lights are synchronized with the scanner's dual axis rotation system, creating an accurate digital copy using minimal frames.

The fully automated, industrial scanner creates a high-resolution colour 3D scan that delivers high point accuracy of up to 10 microns (0.004 in.), a tenth the size of a single grain of table salt. Resolution is 0.029 mm (0.0011 in.) from a 6.4 MP camera that allows for the capture of texture data.

Exact Metrology is a provider of metrology services based in Cincinnati.

www.exactmetrology.com



Twin cameras.

FILTERS

PROTECT PUMPS FROM BYPRODUCTS

Mass-Vac Inc. has added several MV specialized filter elements to PosiTrap and MultiTrap vacuum pump inlet traps that capture

specific types of vapours and particulates.

The filters protect pumps from harmful process byproducts in applications with vacuum flow rates from 25 to 2,000 cfm.

New elements include AmoniaSorb for ammonia and amines, MerSorb for mercury vapours, and Potassium Permanganate to filter hydrogen peroxide.

The elements that come in 4.5- and 9-in. cartridges are suitable for adsorption, neutralization and reactive filtration requirements.

Stainless steel mesh, copper gauze, and polypropylene elements

come in sizes from 0.1- to 20 microns.

Depending on the filter and application, they provide up to 99.9999% efficiency.

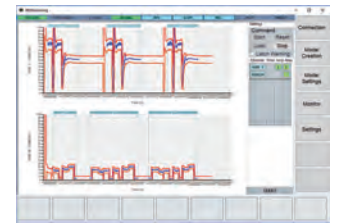
Mass-Vac is a filter manufacturer based in Billerica, Ma.

www.massvac.com



Flow rates from 25 to 2,000 cfm.

PLANTWARE



Real-time process monitoring.

MONITOR TRANSFER MACHINE PROCESSES

Relatively small operating issues can rapidly escalate into much larger, more expensive problems for high throughput, multi-process CNC production systems such as transfer machines.

To minimize system downtime and maintain production quality, a new NUM software monitors power/current values of the electric motors in real time through milling, turning or grinding processes to guard against faults. Typically, faults include worn or damaged tools and undersize or oversize workpiece blanks.

NUMmonitor initially operates in learn mode to acquire the varying loads and drive motor currents when the CNC machine tool is running at optimal performance levels. Up to eight motors are monitored simultaneously throughout the machine's operating cycle, and the software accommodates up to 11 different error detection criteria per motor.

With multi-NCK systems, a further eight motors can be monitored for each additional NCK. On transfer machines, it's sufficient to monitor just the load of the spindle motors. During each cycle, the level and duration of each load event are measured and recorded. Repeating the process captures average values.

There's no limit to the number of different load events accommodated during a complete machine cycle. Minimum and maximum curves are automatically generated from the learn cycles and the user defines the types of error detection and the logic.

NUM is a Swiss-based developer of CNC control technology with North American offices in Naperville, Ill.

www.num.com

EVENTS

Physical Asset Management Program University of Toronto School of Continuing Studies Nov. 4-8, Toronto

An intensive five-day course covering asset management strategies offered in partnership with the Faculty of Applied Science and Engineering. Focus is on cost-related issues. Dr. Andrew Jardine, an international authority in the asset management field, leads the program. A new topic this year is the "Role of Emerging Technologies in Physical Asset Management." Register at <https://bit.ly/2potm1n>.

Industry Briefing for BC Manufacturer and Stakeholders Excellence in Manufacturing Consortium Nov. 6, Squamish, BC

Presented with the Economic Development partners from the District of Squamish, this industry briefing will discuss issues affecting manufacturing and how EMC's not-for-profit resources and activities across Canada are being deployed throughout BC. Visit <https://www.eventbrite.ca>.

Machinery on-line monitoring techniques Hamilton STLE Nov. 7, Hamilton

The Hamilton Society of Tribologists and Lubrication Engineers (STLE) education day session covers reliability centred maintenance, thermography, vibration monitoring systems, online lubricant testing and trending and machinery alignment. E-mail kevin.ray@fuchs.com. Visit www.stle.org.

Best Manufacturing Apps Conference Microsoft Canada Nov. 12, Mississauga, Ont.

Best Manufacturing Apps Conference (BMAC) brings together Canadian manufacturers and industry experts, keeping them ahead of manufacturing's digital transformation. Visit <https://voxism.com>, click on Events.

2019 BC Safety Committee Conference Pacific Safety Center November 14-15, Langley, BC

Sessions specifically for BC's new and experienced safety committee members, including Joint Health and Safety Effectiveness by Manufacturing Safety Alliance, and a tabletop tradeshow, plus education and training sessions. Visit <http://scc.pacificsafetycenter.com>.



Leading the way to the future

BY JAYSON MYERS

"TEAM CANADA'S SUCCESS IS JUST ONE EXAMPLE OF HOW CANADIAN STUDENTS ... ARE BEING RECOGNIZED AROUND THE WORLD."

It's time for a shout out – congratulations Bogdan Malynovsky and Mateusz Cwalinski!

In August, Bogdan and Mateusz took home a medal of excellence from this year's World Skills Competition held in Kazan, Russia. They placed fourth in the mechatronics competition, slightly behind competitors from Taiwan, China and Japan, but well ahead of contestants from Germany, the US and Korea.

The electromechanical engineering technology grads from Humber College in Toronto represented Team Canada at the competition, along with 15 other college students from across the country. Overall, more than 1,300 young professionals representing 70 countries competed in 56 different skills on the basis of their vocational education and training and teamwork abilities.

The 30 teams that competed in the mechatronics competition were required to build a system that does not require human intervention to produce or assemble a product. The contest took 21 hours to complete and tested the competitors on time management, professionalism, Industry 4.0, efficiency, and data sorting.

Team Canada's success is just one example of how Canadian students – and more generally colleges and polytechnics – are being recognized around the world.

Colleges play an exceptionally important role in our knowledge and innovation supply chains. It's not only the high quality trades training and technical education they provide students who will become our next generation industrial workforce. Or the applied research and technical expertise most offer. There are advanced manufacturing centres in many of our local colleges where companies go to learn about new technologies, test innovative applications, pilot new products and processes, and work with students and instructors, accessing resources they don't have on their own while checking out the talent pipeline.

There is another important reason why our colleges play a leading role in preparing industry for what lies ahead. It's the close connection they make with local companies and their communities. They're incredibly grounded in their ability to respond to current business needs with an eye on where technology is going. As a result, they are pretty innovative when it comes to delivering skills training or technical support manufacturers.

Take Humber. The college's new Barrett Centre for Technology Innovation just opened its doors last April. The facility, funded by both private and public sources, provides collaborative space for smaller manufacturers to train workers on new

equipment, work with students and technical experts on projects involving new technology applications, and learn about new advanced manufacturing technologies and systems.

The Barrett Centre brings together a number of industry partners, including Cisco, Cimetrix Solutions, DMG Mori, Festo Didactic, Kuka, Rockwell Automation, SEW-EURODRIVE and Sick Sensor Intelligence. Festo's Industry Digital Factory, a modular learning factory combining intelligent sensors, programmable controllers, communications and manufacturing execution systems; and SEW-EURODRIVE's Innovation Lab, which integrates mobile, augmented reality, IoT and automation technologies, are unique not only in Canada but in North America.

Humber isn't alone in its ability to support the skills and technology requirements that manufacturers need now and in the future. A good place to identify available resources across Canada's college network is Tech-Access Canada (<http://tech-access.ca>), which provides an entry point into technology access centres. TACs are facilities associated with colleges or cégeps that provide access to specialized technology, equipment and expertise for local industry.

Keep your eye out as well for centres that are operating or being set up at your local college. Within a couple hundred kilometres of where I live in southern Ontario, I can point to Conestoga's Centre for Smart Manufacturing and Digital Innovation, Mohawk's Additive Manufacturing Resource Centre, Niagara's Advanced Manufacturing Innovation Centre, Sheridan's Centre for Advanced Manufacturing and Design Technologies, Georgian's Advanced Technology Centre, Fanshawe's Centre for Product Validation, Lambton's Bluewater Technology Access Centre, and George Brown's planned urban manufacturing hub.

Like Humber, they're all open to manufacturers looking to learn more about and to pilot the application of advanced technologies.

Canada's colleges are jewels in our advanced manufacturing ecosystem. The quality of technical education is first rate. They're committed to actively supporting local manufacturers and are doing so in very innovative ways as they prepare companies for the future. Just ask Bogdan and Mateusz. I'm pretty sure they're lined up with good jobs.

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Comments? E-mail jterrett@plant.ca.



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