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SMART EXPORTER

Laipac Technology
is taking on the world

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Sharpen your edge with digital technology
Why you need to get serious about marketing

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Get serious about trade diversification

It has been a bumpy ride for trade since the real estate executive arrived in Washington, DC two years ago. Canada was insulted, kicked around and threatened by its neighbour, friend, ally and number one trading partner, but the nation held strong. Finally, a much-maligned NAFTA was settled and a renewed deal (USMCA) awaits ratification by the US Congress.

No chance to catch our breath, though. Now Canada finds itself in a rumble with its number two trading partner, as China expresses profound indignation over the arrest of Huawei Technologies executive Meng Wanzhou, in accordance with an extradition treaty with the US.

The Trump administration accuses the company of stealing technology and violating sanctions on Iran. China's response has been to retaliate against us by issuing dark threats, detaining two Canadian citizens on trumped up charges (pardon the pun) and quick-marching another Canadian to death row after a dubious drug trafficking retrial. Meanwhile, an ongoing diplomatic spat with Saudi Arabia has prompted builder SNC Lavalin to consider a retreat from the oil-rich desert kingdom, which is also looking like an iffy trade destination.

None of this makes exporting beyond North America seem all that appealing to reluctant manufacturers who have been urged to do so by governments, analysts, experts and assorted pundits. But it's time to get serious about diversification.

Trade is one of several pressure points that came up in the **PLANT** Manufacturers' Outlook 2019 study. It shows most revenue comes from Canada (67%) and most new market expansion is aimed at North America, which makes sense because of proximity, language, legal systems and the rule of law (a-hem, China).

Yet there are opportunities for entrepreneurs in Europe (CETA) and TPP countries, as well as other destinations. Here's the challenge: most companies are small with sparse resources, limited capacity and rising costs, a top concern. Contributing to their angst are the US tariffs on steel (25%) and aluminum (10%). And some Canadian suppliers are slapping surcharges on top of the tariffs to further plague Canadian companies, a complaint that came up during the Outlook roundtable in October. On the US side, manufacturers are warning they're quickly reaching a tipping point because of escalating costs and lost business from tariffs and retaliatory measures.

So, how to get small manufacturers to look farther a field?

Let's start by lowering the temperature a bit. President Donald Trump said the tariffs would end when USMCA gets through Congress. Assuming his word is good (cough), that will help with the cost issue, which is preventing some manufacturers from investing in their businesses.

And Peter Hall, Export Development Canada's vice-president and chief economist, predicts the US and China will eventually settle on a trade deal for both their benefit. That will calm some of the global upset.

Canadian Manufacturers & Exporters in a report (*Stalled Trade: Gearing up Canadian exports*) notes our small market and consumer base means suppliers and customers from abroad are needed to fuel growth. It has a plan based on three pillars: strengthen existing foundations with a focus on existing trade agreements; develop stronger support programs to encourage domestic investment and expand international growth opportunities; and attract foreign direct investment as well as global production mandates from large multi-nationals.

Good foundation, but what's needed is action. There's a federal election coming up – an ideal time for companies through their associations and networks, to make industry and trade a central issue during the campaign... as long as the slogan isn't, "Make Canada Great Again." Trade equals growth. That's something everyone can get behind.

Joe Terrett, Editor

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BULLETINS

Supremex Inc., a manufacturer of envelopes and paper-based packaging based in LaSalle, Que., has acquired exclusive rights to make Conformer products in Canada. **Port Conformer Products**, based in Port Washington, NY, makes envelopes, including expanded heavy-duty kraft board and corrugate mailers for e-commerce shippers.

Kraken Robotic Systems Inc. has been awarded a \$568,000 contract under Canada's Defence Innovation Research Program (DIRP) Call 3. The St. John's, Nfld.-based company makes software-centric sensors and underwater robotic systems. The DIRP contract is to develop a low frequency, ultra-wide-band Synthetic Aperture Sonar for use underwater. Kraken has also increased its ownership in **Kraken Power GmbH** to 75%.

Bombardier has sold four Global 6000 business jets to an undisclosed customer. The transaction is valued at US\$310 million. The aerospace company based in Montreal said the deal includes a contract for services.

Tulsar Canada is launching its Aquanaut series, a battery backup control system for residential sump pumps. The manufacturer of control systems for water and wastewater applications says the unit will be part of a pump package that's to be stocked by a major US chain store. Since moving to its new location in Brant County, the company has grown from 32 employees to 100.

Pipeline services company **Shawcor Ltd.** is acquiring **ZCL Composites Inc.** in Edmonton, a manufacturer of fibreglass, reinforced plastic underground tanks. The \$308-million deal gives Toronto-based Shawcor access to an expanded product portfolio and customer base. ZCL has two plants in Canada, four in the US and one in The Netherlands.

Waterloo Brewing in Kitchener, Ont. has partnered with **Cannabis Compliance Inc.** to secure research and standard processing licenses to begin developing cannabis-infused beverages ahead of the October 2019 legalization date.

Worker injured, steelmaker fined

HAMILTON — ArcelorMittal Long Products Canada MP Inc. has been fined \$75,000 for a worker injury at its Hamilton facility.

The steelmaker entered a guilty plea for a violation of the Occupational Health and Safety Act.

The accident occurred in March 2017 when a worker was critically injured while connecting oil tempered wire coils to a hoist with a chain. A coil fell forward and knocked the worker to the floor, resulting in critical injuries.

Coils are stored upright, leaning against a rotating block until they're moved to the strapping area. The worker attempted to place a chain around a coil according to procedure when it fell forward.

To prevent coils from tipping, falling or endangering a worker, the company required workers to lean the coils on a 10-degree angle but did not specify how this task was to be performed.

The coil was not stored so it would not tip, collapse or fall, and it could not be removed without endangering the safety of the worker.

The Ontario court also imposed a 25% victim fine that's used to assist victims of crime.

Power option cuts greenhouse gases from docked ships

Port plugs in Schneider Electric solution



Ship to shore power lowers greenhouse gas emissions.

PHOTO: SCHNEIDER ELECTRIC

MISSISSAUGA, Ont. — Schneider Electric Canada Inc. has developed a solution to reduce greenhouse gases (GHG), air emissions and noise from ships while they're docked at Centrum Container Terminal operated by DP World Vancouver.

Schneider Electric's EcoStruxure Platform based on a worldwide standard for power allows docked ships to plug into an electrical shore connection rather than run their engines for power. Shutting down the engines reduces air pollution.

The shore power capability also qualifies a ship for the Vancouver Fraser Port Authority's EcoAction program, providing discounted harbour dues and the opportunity to be recognized with a Blue Circle Award.

The system was successfully commissioned and connected to the first ship in October.

New Flyer launches new infrastructure fleet service

Will help drive zero-emission bus fleets

WINNIPEG — Bus manufacturer New Flyer has launched a service that will provide safe, reliable, smart and sustainable charging and mobility solutions for bus fleets transitioning to zero-emissions.

New Flyer Infrastructure Solutions will support mobility projects from start to finish and focus on energy management optimization as well as infrastructure planning and development.

The company will conduct site visits, provide design and engineering, as well as oversee qualified engineering, procurement and construction partners. New Flyer will also provide make-ready utility services and install chargers, coordinate certification, and provide onsite grid-to-bus testing and commissioning.

The Winnipeg-based company is the first North American bus manufacturer to offer such a service.

The Infrastructure Solutions team will be



CHARGE battery-electric bus.

PHOTO: NEW FLYER

based at the Vehicle Innovation Center in Anniston, Ala.

New Flyer has another initiative on the go. Its US subsidiary has introduced Connect 360 – a real-time, cloud-based business analytics dashboard for Xcelerator CHARGE battery-electric buses, operated by New Flyer Connect.

Connect 360 tracks battery-electric, zero-emission bus performance using secure cloud-based technology. Analytics are retrieved 24/7 via a laptop, desktop, tablet, or smartphone device using the new CONNECT mobile app.

NRC and Fives developing advanced profilometer

MONTREAL — The aerospace industry in Canada is eager to find ways to manufacture reliable, safe and cost effective composite structures.

The National Research Council of Canada (NRC) and industrial engineering group Fives Machining Systems Inc. in Cambridge, Ont. are collaborating to improve the efficiency of manufacturing composite parts. They're developing an advanced profilometer that will provide faster and more accurate part inspection.

Based on an innovative optical technology, the profilometer for composite placement will help manufacturers meet strict standards by providing superior measuring information without limiting process functionality. Faster, better measurements will speed up manufacturing processes and reduce the risk of errors.

Fives has already started the last testing stage of the next-generation profilometer with customers and expects to begin commercializing the technology before the end of 2019.

The NRC and Fives intend to continue working together to advance this technology.

KUKA brings Industry 4.0 to Seneca College will get robotics, curriculum development



Seneca to get state-of-the-art robotics. PHOTO: KUKA

a modern KUKA robotics lab within Seneca's new Centre for Innovation, Technology and Entrepreneurship at its Newnham Campus in Toronto. The lab was to open in January.

"This MOU is an important step for us to continue to meet the needs of employers across a variety of sectors that will require robotics, automation and mechatronics technology in the future," said David Agnew, Seneca's president.

The partnership has the potential to evolve into establishing internships and/or co-op opportunities. Seneca faculty members will also have the opportunity to take training and become KUKA qualified instructors.

KUKA Group, headquartered in Augsburg, Germany, is a global automation company with Canadian offices in Mississauga, Ont.

Seneca has campuses in Toronto, York Region and Peterborough, Ont.

TORONTO — Seneca College students will be getting a hands-on education in Industry 4.0 automation thanks to KUKA Canada Ltd.

The advanced manufacturing and automation manufacturer and the Toronto college signed a MOU that will see KUKA provide students with state-of-the-art robotic equipment. The robotics company will also work with Seneca to develop curriculum focused on Industry 4.0 automation.

The partnership includes

\$1.3M CED funding for Sherbrooke companies

SHERBROOKE, Que. — Four companies in Sherbrooke, Que. have received more than \$1.3 million in repayable contributions to further development projects.

Eagle Vizion received \$650,000, part of a total investment of \$2.8 million to start up a company that will develop optical waste-sorting technology for recycling centres.

Oneka Technologies received \$295,000 that's part of a total investment of \$1.5 million to support the start-up's development of autonomous seawater desalination units.

G.E. Gilbert Industries Inc., a manufacturer of small metal parts, received \$200,000. Its investment of almost \$4.1 million will purchase precision equipment.

Energy Solutions Air received \$160,000 as part of a total investment of \$850,000 to develop and market air exchangers that improve the energy efficiency of agricultural buildings, and new products.

The money came through the Canada Economic Development for Quebec Regions (CED) program.

OPG raises \$500M for Eagle Creek

Green financing to acquire US hydro operator

TORONTO — Ontario Power Generation (OPG) has raised \$500-million in green financing for its recent acquisition of Eagle Creek Renewable Energy LLC.

The company is an operator of small waterpower facilities in the US.

OPG entered into a purchase and sale agreement with Eagle Creek to acquire 100% of the company based in Morristown, NJ in June 2018.

The transaction closed at the end of November.

Eagle Creek owns and operates 63 hydroelectric facilities.

OPG's green bond framework allows for broad use of proceeds to finance and/or refinance eligible projects, which offer tangible environmental benefits.

CAREERS

Ford Motor Co. of Canada Ltd. in Oakville, Ont. has a new president and CEO. **Dean Stoneley** takes over from **Mark Buzzell**, who moves to North American fleet, lease and re-marketing operations as a director at Ford Motor Co. Stoneley joined Ford of Canada in 1992 and has held a variety of leadership roles in sales, marketing and service in Canada, the US, South Africa, South Korea, Japan and China.



Dean Stoneley

Boralex Inc. has appointed **Bruno Guilmette** vice-president and CFO. He succeeds **Jean-François Thibodeau**, who is retiring. Guilmette previously served as interim CIO at the Canada Infrastructure Bank. Boralex, based in Montreal, develops, builds and operates renewable energy power facilities.



Bruno Guilmette



Shannon Spano



Hasan Zobairi

Wakefield Canada, a Toronto-based manufacturer of Castrol premium lubricants, has appointed **Shannon Spano** vice-president, consumer sales, and **Hasan Zobairi** vice-president, commercial and industrial sales. Spano was previously retail sales manager. Zobairi was national sales manager, commercial.

Micron Waste Technologies Inc., a Vancouver developer of waste treatment systems for food and cannabis waste, has appointed **Alfred Wong** president and CEO. He succeeds CEO **Rav Mlait**. Wong, who joined the company as president in 2016, will oversee accelerating commercialization of the company's processing systems.

\$150M in funding boosts Algoma Steel

Steelmaker plans \$600 million in capital investments will add 3,050 jobs



Investment commitment will create 3,050 Algoma jobs in Sault Ste. Marie, Ont.

PHOTO: ALGOMA

SAULT STE. MARIE, Ont. — Algoma Steel Inc. is getting \$150 million in support from the federal and provincial governments to help fund \$600 million in capital investments over eight-years.

The integrated steel producer in Sault Ste. Marie, Ont. is adopting new technologies to improve productivity and modernize its core

production assets, including the rolling and plate mills, which will position the company to offer a wider range of steel grades and increase production capabilities.

The investment is projected to create 3,050 jobs.

The federal government is providing up to \$90 million while the Ontario government is providing \$60 million as a repayable loan.

The funding will help the company, formerly Essar Steel Algoma, as it deals with competitive pressures and US steel tariffs. The steelmaker is emerging from three years of bankruptcy protection.

The province has also negotiated an agreement that requires Algoma to implement a plan to identify and address past environmental contamination at the Sault Ste. Marie mill site. The plan includes a requirement to contribute \$3.8 million annually over 21 years to continue this work.

\$1B to combat plastic waste

Alliance seeks solutions



Protecting the environment.

PHOTO: ADOBE STOCK

OTTAWA — A global alliance of companies in the plastics and consumer goods industry is committing US\$1 billion to help combat plastic waste in the environment.

Comprised of nearly 30 member-companies — including Chemistry Industry Association of Canada (CIAC) members BASF, Dow, Imperial Oil (via ExxonMobil) NOVA Chemicals and Shell Chemicals — the Alliance to End Plastic Waste (AEPW) will invest US\$1.5 billion over the next five years to help end plastic waste in the environment.

The not-for-profit Alliance intends to develop solutions that minimize and manage plastic waste and promote its use by enabling a circular economy. Working with the World Business Council for Sustainable Development, the Alliance has an initial set of projects on the go that include partnering with cities to design waste management systems, collaborating with the United Nations Environment Programme and funding the Incubator Network by Circulate Capital.

The North American chemistry and plastics industries aim to have 100% of plastics packaging recyclable or recoverable by 2030 and 100% of plastics packaging re-used, recycled or recovered by 2040.

The CIAC says achieving these goals in Canada will require major shifts in resources, policies and consumer behaviour, as well as innovation from the chemistry sector.

"Unfortunately, nearly 80% of all post-consumer plastics in Canada end up in landfills mainly as a result of improper sorting, contamination and the limited divan tools at our disposal. This represents a terrible waste of energy and precious resources," said Bob Mas-terson, president and CEO of CIAC.



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).

Electric car sales soaring but Canada still far off goal set in 2009

<http://www.plant.ca/3KKWX>

A more apt headline for this article would be, "Electric car sales moribund. Would be non-existent if not for subsidies."

Equalization protests from Alberta likely pre-election talk: Quebec minister

<http://www.plant.ca/RWS9L>

Time has come to halt the equalization program. This is a Ponzi scam designed at the expense of Alberta (rob Peter to pay Paul) to bribe Quebec into

not separating from Canada. This program only promotes bad behaviour just to qualify.

NASA wants Canadian boots on the moon but feds still pondering space options

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

I would rather see Canada NOT join NASA's Lunar Gateway. It's a waste of resources that will likely delay the next Moon and Mars landings. Apollo 11 astronaut Buzz Aldrin, many other former astronauts and one former NASA administrator oppose the Lunar Gateway. Instead, I call on Canada to

have its own Moon and Mars programs, perhaps in cooperation with SpaceX. Let's beat NASA to the Moon.

New tax incentives for investment could increase Canada's emissions

<http://www.plant.ca/qs8wP>

For the last two years we have heard from the Liberals that the Trans Mountain pipeline will be built. Now we own it and guess what? It's not even close to starting.

Ottawa needs to listen harder to scientists on climate change: letter

<http://www.plant.ca/5CDO0>

A few hundred years ago all the scientists of the day said without a doubt the earth was flat. I grew up in the 60s hearing all about global cooling, then in the 90s global warming and finally climate change. The climate is constantly changing.

Humans still rule

Robot and AI study puts us ahead of the machines

Never mind those headlines about robots and AI replacing humans in factories. A survey of manufacturing leaders says humans offer more value on the factory floor than machines.

The study, by consulting firm A.T. Kearney in Chicago and Drishti, a Palo Alto, Calif. firm that focuses on extending human capabilities in an automated world, shows people remain central to manufacturing: they perform 72% of the tasks.

Respondents also noted a lack of data related to the activities people perform in a plant, which limits their ability to make informed decisions on capacity planning, workforce management, process engineering and many other strategic areas. And the survey suggests manufacturers may overprioritize automation due to an inability to quantify investments in the human workforce that would result in greater efficiencies.

"This massive imbalance in the analytics footprint leaves manufacturers around the globe with a human-shaped blind spot, which prevents them from realizing the full potential of Industry 4.0," said Michael Hu, partner at A.T. Kearney.

Analyzing tasks done by humans are essentially time-and-motion study methodologies that trace back to the time of Henry Ford and have not been updated for the digital age, said Prasad Akella, founder and CEO of Drishti. "The principles underlying these 100-year-old measurement techniques are still valid, but they are too manual to scale, return incomplete datasets and are subject to observation biases."

Respondents noted the significant overhead needed for traditional data gathering methodologies: on average, 37% of skilled engineers' time is spent gathering analytics data manually.

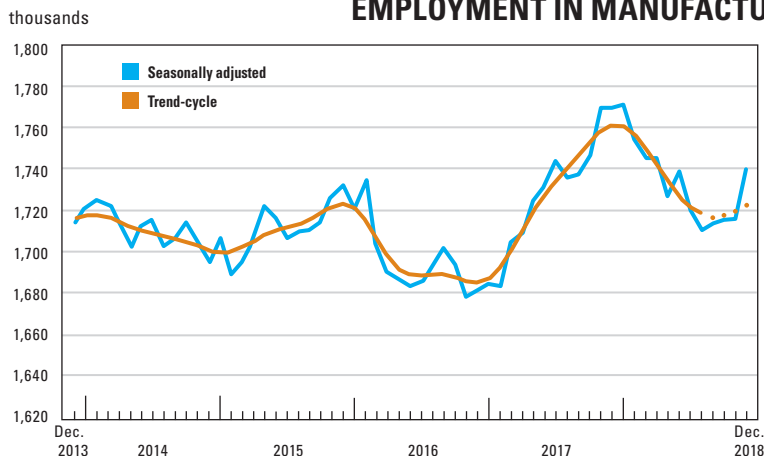
There's a flip side to human contributions on the factory floor: respondents noted 73% of variability stems from humans as well as 68% of defects, and 39% of engineering time is spent on root cause investigations to trace defects.

Visit Drishti.com for the complete report.

PLANT PULSE

ECONOMIC DEVELOPMENTS AND TRENDS

EMPLOYMENT IN MANUFACTURING



December was a good month for jobs in manufacturing with 24,000 more people employed. Ontario and Alberta benefited most from the increase. Statistics Canada says nationally, trend-cycle employment has levelled off in recent months following a period of decline that began in early 2018. Employment held steady during the month. The unemployment rate was unchanged at 5.6%. During the 12 months to December, employment increased by 163,000 (0.9%).



\$48.3
BILLION

Total exports in November, down 2.9% and the fourth consecutive monthly decline with eight of 11 sectors showing decreases. Volumes were down 1.8% while prices fell 1.1%. (Statistics Canada)

75%



Canada's total international merchandise exports destined for the US; Canada is the destination for 18% of US exports. (Statistics Canada)

\$2.153
BILLION



Value of the RFID market in 2025 driven by Industry 4.0 and growth of IIoT, compared to \$811.5 million in 2017. (Frost & Sullivan)

\$12.6 BILLION



Canada's aerospace industry's contribution to GDP in 2017. Manufacturing makes up nearly half of the sector, which includes more than 700 companies employing 85,000-plus skilled professionals. (Statistics Canada)



3.5%

The International Monetary Fund's forecast for the global economy in 2019. That's down from 3.7% in 2018 and represents a decline from the October forecast of 3.7% for the year. US growth is unchanged at 2.5% while Canada has been dialled back to 1.9% compared to the October forecast of 2.1%. Heightened trade tensions and rising US interest rates are cited for the global decline. Chief economist Gita Gopinath said trade uncertainty will dampen investment and disrupt global supply chains.

PLAYING IT SMART

MEET THE 2018 ONTARIO EXPORTER OF THE YEAR

Laipac Technology takes on the world with smart and engaging consumer electronics.

BY KIM LAUDRUM

Laipac Technology Inc. is taking on the world with innovative electronic products that are proving Canada is a player in the growing smart tech space.

Indeed, Laipac earned the 2018 Ontario Exporter of the Year Award for designing and marketing its leading Internet of Things (IoT) connected electronic products for consumer, business and government markets in more than 100 countries.

“Ontario companies are proving you can take on the world and win. This year’s export award winners each share incredible international success stories and are models for others to emulate,” said Jeff Brownlee, publisher, Canadian Manufacturing.com and **PLANT** Magazine, which hosted the award in November.

Winners and finalists represent a wide

range of players in Ontario’s economy, including transportation equipment and services, to consumer products, food, beverage and agriculture, and manufacturing and resources.

In addition to the overall Exporter of the Year Award, Laipac won the consumer category for exports of its smart watch. And the honours have continued.

Additional recognition came from Richmond Hill, which honoured the company as its Innovator of the Year. And in February, Laipac will receive a German Design Award for Outstanding Design Quality for its Look Standalone Smartwatch Project.

What’s the source of all this enthusiasm? Laipac’s product line includes GPS locator devices to track assets, vehicles and people. Chief among these consumer products is Laipac’s Look, a “smarter” watch that combines safety and security features for the user. It comes with GPS and an integrated SOS button that allows the wearer to phone a pre-set emergency number. Wi-Fi connectivity and motion sensors detect falls and there’s a push-to-talk button. This sleek,

waterproof watch that comes in six colour combinations monitors and records blood pressure, temperature, heart rate and glucose levels over time, and reminds the wearer to take medications. And it’s said to have “amazing” stereo sound. Look II, the newest version of the watch also features a video camera. In Canada, the retail price for all that functionality is \$249.

The company’s story begins in Argentina where Diego Lai, following his graduation from the Institute of Technology of Buenos Aires with an electrical engineering degree, was invit-



ed to the Canadian embassy late in 1997. Canada was looking for help with its Y2K problem at the time. Lai, who is CEO of the company, and his wife Maria Pacini, Laipac’s co-founder and CIO, were looking for a more stable place than Argentina to do business and raise their daughter Lisa (who is now the company’s executive assistant and user interface designer). They came north in 1999 and together started Laipac Technology with \$10,000 in the bank.

“We started at home, then rented a small office in Richmond Hill, Lai says. “At that time I only could understand about 20% English. I thought, maybe I could go to a trade show in South America where I could speak Spanish. I also speak a little Portuguese. So I went to Brazil with an Ontario delegation to Telexpo. I was lucky.”

There he discussed a project for a Call ID phone display with Siemens and landed the business. Other trade shows followed in South Africa, India, Turkey, Germany, Spain, Argentina, Peru and Mexico.

“I thought it was a good way for people to

Ontario Export Award winners

The winners of the 2018 Ontario Export Awards were announced at a gala event at the International Centre in Mississauga, Ont. on Nov. 20:

- Clean Technology: **Hydrogenics Corp.**
- Consumer Products & Technology: **Laipac Technology Inc.**
- Food, Beverage, & Agriculture: **Viva Naturals Inc.**
- Manufacturing & Resources: **Concours Mold Inc.**
- Services: **Switch Video**
- Transportation Equipment: **INKAS Corp.**
- Emerging Exporter: **Thornhill Research**
- Leadership: **Innovative Automation Inc.**
- Export Excellence: **Trade Accelerator Program (TAP)**
- Machines Italia Global Reach Award: **BGI Retail Inc.**
- Exporter of the Year: **Laipac Technologies Inc.**



know us. I'm a technical guy and I like to discuss with customers' their technical issues and how I could solve their problems. Often they were surprised. We put ourselves in their shoes. I think that's pretty important," Lai says.

Diversified markets

What's the key to Laipac's success? Internet of Things. Extensive product development incorporating an IoT platform has blasted the company into the stratosphere. The firm has gained a foothold in consumer electronics, law enforcement, healthcare, trucking, construction, banking and now even agriculture. It's this diversity of markets that gives the company a strong foundation in sales.

For example, Lola, a personal locator bracelet equipped with a geofence feature that issues alerts when the wearer ventures past an allocated area, sells into law enforcement and healthcare markets. Intended for keeping offenders under house arrest, Lola has other applications. A perpetrator with a restraining order wears one, as does the

person who took out the order. If they come too close to each other, an alert goes off on both devices advising the perpetrator to back off while the other person is warned of the danger nearby. The device can also be used in nursing homes to keep track of Alzheimer patients. Lai has photos of former Russian President Medvedev checking out the Lola. Russia has placed an ongoing order for long-term care facilities as have Indonesia and Mexico.

Laipac's reputation grew from identifying potential market segments for its products. For example, the UK and Germany have Lone Worker laws requiring safety protection for people working alone in potentially dangerous situations. A geologist working solo in the field, for example, could fall. Wearing Laipac's Look smart watch with fall detection would alert help. Laipac has sold the watches to the oil and gas industry in Norway and Australia. Lai suggests North America is not far from implementing similar laws and anticipates sales of the safety smart watch will soon increase.

Through word of mouth, Laipac landed a contract to supply Airbus Defence and Space with the Starfinder Lite. That's a compact, real-time vehicle-tracking device that provides the time and position of mobile assets. Pemex, Mexico's state-owned petroleum company, has a recurring order of 200 to 300 Starfinder Lites to track its oil truck fleet. Riyadh Bank and the National Commercial Bank, two of Saudi Arabia's largest financial institutions, incorporate the Starfinder Lite in their ATM machines. An embedded geolocator will tell the banks if a machine has been lifted out of its geofence and help locate it. Laipac has sold 4,500 of these devices to Saudi Arabia.

Lai has only good things to say about how the Ontario government helped the family's company gain a foothold in the electronic product market. Laipac was encouraged to seek business through Ontario trade show delegations. Support also came from the federal agency Export Development Corp. (EDC) in the early days.

In 2005 Laipac received a \$12 million order from Hyundai and Kia in South America to deliver many units of the earlier version of Starfinder. "At that time we didn't have enough cash to manufacture due to the terms of payment. We might have had to wait 45 days or more. For a small company, that's a big risk," he says.

PHOTOS: RODNEY DAW



Laipac's smart products.



Diego Lai and Mark Wood at Microart Services in Richmond Hill, Ont.



The Lai family: Lisa, Maria and Diego.

PHOTO: LAIPAC



Both of Laipac's OEA awards.

“TD Canada brought in EDC, which helped us with pre-shipment financing. They covered from 75% to 90% of the project as a loan. TD Canada also provided a 25% loan,” Lai says. “We needed it only for the first order, after that we were fine.” Without that help, he says it’s unlikely they would have succeeded.

It may come as a surprise that Ontario’s Exporter of the Year 2018 has not manufactured the firm’s advanced IoT products in Canada for some time. But that’s about to change. As of December, Laipac has moved the manufacture of its Lola enforcer bracelet and Starfinder Lite device from China to Microart Services Inc., an electronic manufacturing and design services company based in Markham, Ont. “If the price and cost was right I would be producing in Canada 100%,” Lai says.

Reasons for the change include escalating labour costs in China, a decreasing Canadian loonie relative to the US dollar, worldwide positive recognition of products made in Canada, and the threat of a 25% tariff in China.

The company’s focus is on what it does best: designing new products, finding solutions for customers, research and development, marketing, sales and support. Some products are shipped from its 9,000 square-foot facility in Richmond Hill, Ont. where there are 20 employees. Two more people work in Laipac’s Taiwan location. There’s also a business development manager in Mexico.

Mark Wood, CEO of Microart Services, says his company has grown 16% per year compounded over the past few years. “This year we expect our growth to be 22%,” he

told **PLANT** during a tour of the firm’s 42,000 square-foot plant in Markham. Microart employs 265 people. To what does Wood attribute that explosive growth? Products like Laipac’s and the Internet of Things.

“There are more and more products everyday that we are building. Non-traditional customers who, maybe five or 10 years ago didn’t have any printed circuit boards in their product, now – because of data acquisition – are forced to add printed circuit boards to acquire that data,” Wood says. An example? “Water pumps. Traditionally these were strictly mechanical. But now they require circuit boards to monitor the efficiency of the pump itself.”

It’s a whole new ball game, Wood says. “People have no idea where it’s going. It’s just getting started.”

Printed circuit boards

Microart makes a diverse selection of products for more than 150 clients – everything from an airplane cockpit to automatic paintball guns for leisure sports halls. Medical devices is a growing sector for Microart as the company adds electronic circuit boards to devices that monitor heart rate or blood glucose over time. Sensing devices also monitor whether or not a person is dehydrated.

Wood sees electronics manufacturing growing because many companies like Laipac prefer to specialize in product design and provide electronics solutions for their customers. “It’s an emerging trend,” he says.

Lai estimates the private company he co-owns with his wife Maria invests 30% of

the annual budget in R&D, and the payoff is worthwhile.

Laipac is currently working on an application for cattle breeders. Using a heat sensor monitor on a female cow helps determine the optimum time for artificial insemination. That could improve the cattle breeder’s success rate from the current 45% to 90%.

The company recently patented a Dynamic Crowd Assistance device designed to help prevent stampedes in public places. The project involved folks at Ryerson University, aided by the Ontario Centres of Excellence.

Laipac is certainly taking on the world. The more than 100 countries and regions it exports to include Russia, Indonesia, much of Europe, Turkey, Taiwan, Saudi Arabia, Algeria, South Africa, South Pacific, Asia Pacific, Australia, China, all of South America, Mexico and the US.

Other manufacturers can do the same and Lai encourages them to consider expanding their businesses by exporting. “Don’t fear. Canada is a great place for exports. Everything is in place here. There are many kinds of assistance. Go out and sell. Talk to people to learn. Canadian companies should export much more. The human capital here is great. Canada has a very good image.”

And Laipac is adding some shine to that image.

Kim Laudrum is a Toronto-based business writer and regular contributor to PLANT. E-mail klaudrum@rogers.com.

Comments? E-mail jterrett@plant.ca.

SUCCESSION

75 years for N.R. Murphy

A new owner, but part of the family

After 75 years in the industrial air-quality business, N.R. Murphy Ltd. has passed the torch to new owners, but it’s keeping the company that serves the North American market in the family.

Former sales manager Helder Armas has taken over as the new president of the Cambridge, Ont.-based manufacturer of dust collectors, fans and similar equipment for workplaces in many sectors. Armas is also now a co-owner with his wife, Lori Armas, who is the daughter of Norman R. Murphy, the company’s previous owner and its namesake.

“It is an honour to take over a business that has a highly esteemed reputation for dedicated customer service and uncompromising quality,” Armas said. “This is a legacy that I plan to carry on.”

“I couldn’t be happier keeping my 75-year-old business in the family,” Norman Murphy said.

The N.R. Murphy story began in 1943, when William Murphy managed, then



Norman Murphy (right) passes the torch to son-in-law Helder Armas.

later purchased Preston Price Air Conditioning. In 1948, he renamed the company Murphy Sheet Metal and switched the focus to supplying and installing dust-collection equipment.

As the firm continued to grow and expand its customer base, Robert Murphy took it over in 1956, and his son Norman became vice-president when the company moved to its present location six years later.

In 1966, Norman bought the company from his father, and it became N.R. Murphy.

In 1972, N. R. Murphy partnered with Rodgers Machinery, an American company, and formed Murphy-Rodgers Inc. in Los Angeles.

Murphy-Rodgers manufactured products based on N.R. Murphy’s designs and concepts for the US market, while the Canadian company manufactured for the domestic and export markets.

The partnership lasted until the closure of Murphy-Rodgers Inc. in 2010, yet N.R. Murphy has kept its American customer base.

So far the company has installed more than 14,000 dust-collection systems across Canada. — Paul Vautour

PRESSURE POINT

You can compete and win despite global trade disruptions.

BY KIM LAUDRUM

Many manufacturing exporters drew a sigh of relief when the new NAFTA agreement was signed last December, but the punitive steel and aluminium tariffs remain a concern. In addition, China and the US are engaging in trade war sabre rattling, while Brexit woes in the UK are also causing uncertainty on the trade front. And 65% of companies surveyed for the **PLANT** Manufacturers' Outlook 2019 study are very concerned about US protectionism.

Tariffs are the weapon of choice in a trade war. With tariffs come rising prices. "Some prices can be passed along to the customer but that interferes with a company's competitiveness," says Shawn Casemore, president of the Excellence in Manufacturing Consortium (EMC), based in Owen Sound, Ont. Of particular concern is the 25% steel and 10% aluminium tariffs slapped on exports to the US and the subsequent retaliatory tariffs introduced by the Canadian government in October.

He said some of EMC's 13,000 individual members have found ways to mitigate the impact of tariffs by applying for reimbursement from the federal government. "But it has still been a very difficult time for our members to function. Regulatory changes and tariffs can erode profits," Casemore says.

"Uncertainty regarding tariffs makes it difficult to plan. The price of steel – even sourced in Canada – has gone up because of foreign competition. Some Canadian mills are slapping on a 20% surcharge just because they can," he says EMC's members are telling him.

Some companies can pass those costs along but others



There's demand for Canadian products beyond North America.

PHOTO: ADOBE STOCK

'AFTA'

NAFTA

EXPAND YOUR REACH BEYOND NORTH AMERICA

can't. It's also putting a strain on sourcing quality steel.

"The longer it [the tariff situation] goes, the worse it will get," Casemore says.

"What can you do about it as an organization? If your product line relies on it, you can't pass along [tariff costs] anymore and your profit line is eroding to the extent that you can't invest in the future, then how long can you sustain it?"

Getting started

What's a manufacturer to do in a scenario where costs are escalating and competition is heating up?

Look beyond our borders. That is one suggestion many are considering, Casemore notes. Help from the federal Trade Commission and the Department of Global Affairs is available to help manufacturers get started. There are programs offered by Business Development Canada (BDC) and Export Development Canada (EDC). "All three orga-

nizations play a valuable role helping manufacturers identify and get into – despite of themselves – new markets."

Global Affairs offers expertise identifying markets for products and helps make the connections within those markets to get manufacturers going.

Casemore suggests interested manufacturers from across Canada check out EMC's free Magnet Export Business Portal as a first step (www.emccanada.org/magnet-export). They'll find information related to support programs, funding and resources, including opportunities and ways to overcome trade barriers in different countries.

Provincial governments can also help. Ontario Exporter of the Year, Diego Lai told **PLANT** his company, Laipac Technology Inc., gained significant market intelligence attending trade shows in South America and elsewhere with the Ontario government's trade commission. An exporter to 100 countries,

Lai is now accustomed to the diligence required to keep up with potential trade barriers. He mentioned his recent decision to bring some of his manufacturing back to Canada from China was in part spurred by the threat of new tariffs.

Peter Hall, EDC's vice-president and chief economist, says the organization is entrusted by the Canadian government to help companies expand and succeed in global markets in the world, "not just in that market to the south of us."

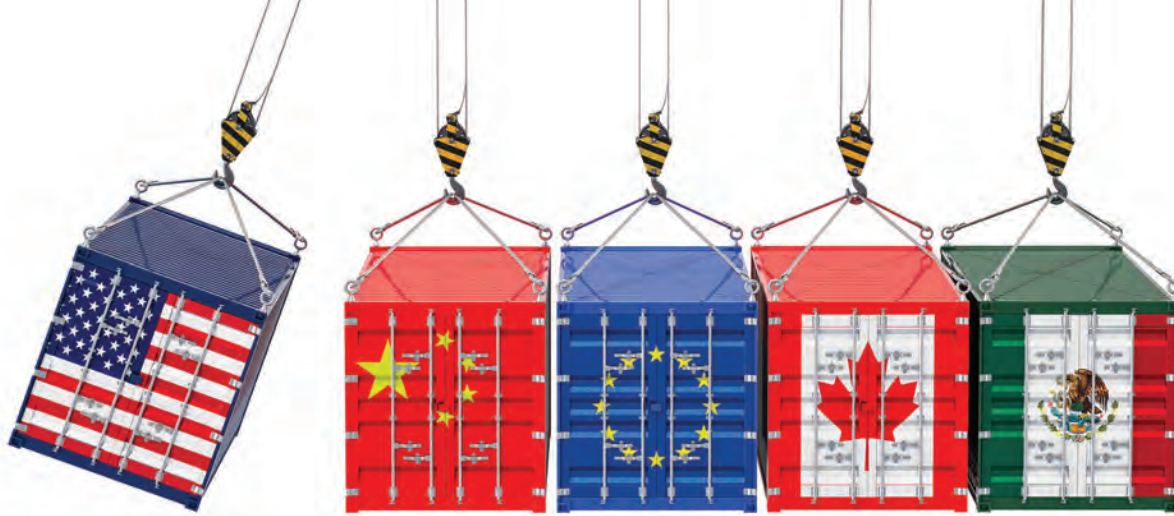
In his consultations with manufacturers across Canada, Hall says their top concerns include the new NAFTA deal, now called (in Canada) the Canada-US-Mexico trade deal or CUSMA (USMCA in the US). Will Congress hold up its passage?

"Second, they are concerned of all protectionism in general," Hall says, citing the China-US trade spat, which has seen the introduction of 25% tariffs on goods imported into the US. "Exporters are looking at that as a huge potential disruptor. Brexit was swamped in the news at the time. But probably a bigger

Managing export risk

Mitchell Osak, managing director of strategic advisory services at Grant Thornton LLP, an accounting, tax and advisory firm, advises manufacturers they can proactively mitigate risks in a number of ways. Osak offered the following tips in **PLANT** (July-August 2019):

1. Closely monitor the situation, be mindful of changes and prudently adjust inventory, headcount and decisions accordingly.
2. Diversify export and domestic markets.
3. Increase Canadian content. This could reduce the impact of higher US pricing and possibly reduce supply chain complexity.
4. Leverage the right financial management strategies, such as hedging strategies or strictly buying inputs and selling wares in US funds.



Protectionist behaviour and trade tiffs are rattling manufacturers' confidence.

PHOTO: ADOBE STOCK

concern now."

The third concern is steel and aluminium tariffs. "There is a tremendous amount of angst that they were not rescinded by the Nov. 30 (CUSMA) signing."

Recession is another concern, he says. "Some are asking, 'Are we going off a cliff?' The stock market stoked fears in December when it fell to historic lows." Trouble sourcing labour let alone skilled labour, remains a problem, too.

But the sky isn't falling.

"CUSMA negotiation process actually gives us a lot of confidence that this is not about permanently disrupting supply chains. A lot of incendiary stuff was being said about the existing NAFTA deal. It made it look like this was over and there was going to be a radical change that would rewrite rules," Hall says.

"But we actually have a modernized, upgraded deal that borrows from TPP [Trans Pacific Partnership]. It addresses trade and services, intellectual property, agricultural barriers. It addresses industries that didn't even exist when NAFTA was originally put forward."

There is an irritant that steel and aluminium tariffs still exist. But he says most will benefit from the new negotiated deal. "Globalization hasn't been weakened. It's actually been strengthened by CUSMA."

He said the noise between the US and China is "sabre rattling" between these major super powers. He expects the two to come to the table and negotiate a trade deal within the year because "they each have a very high incentive to resolve the sit-

uation and to do that as quickly as they can."

Such news would be welcomed by Canadian manufacturers in China who are wondering how long they can hang on in the frenzied current economic situation, he adds.

Mathew Wilson, senior vice-president, policy and government relations for Canadian Manufacturers & Exporters (CME), notes the "US is the most important trade partner we have. Name some of the 50 or so trade agreements we have with other countries in the world. None are as important as the one we have with the US."

Manufactured goods account for 33% directly or indirectly

Grow your exports

In its report *Stalled Trade: Gearing up Canadian exports*, Canadian Manufacturers & Exporters makes several recommendations to grow manufacturing exports:

1. Focus on trade with the US.
2. Leverage the North American supply chain to boost Canadian manufacturers' competitive position.
3. Implement tax reform that focuses on investment in capacity, productivity and exports. For example, lower the tax rate on profits generated from foreign sales
4. Create government and industry trade councils to help advise manufacturers seeking to export.
5. Leverage Canada's natural strengths. Establish a concierge service led by the private sector and supported by government to help SMEs scale up.

of Canada's total economic activity, accounting for 66% of all Canada's exports. Seventy-five per cent of Canada's exports are to the US. In 2017, Canada had both record exports and record manufactured goods exports. The US "can't be replaced with another market anywhere else in the world," Wilson says.

Trade deficits

Yet Canada's global trade deficit reached a record \$136 billion in 2017. According to CME's report, *Stalled Trade: Gearing up Canadian exports*, Canada's market share of exports decreased from 4.3% in 2000 to 2.4% in 2017. When China joined the World Trade Organization in 2001, it's global exports were US\$266 billion, roughly equal to Canada's, which were \$260 billion. By 2017, China's global exports had grown to \$2.6 trillion – yes, that's trillion – compared to Canada's \$421 billion.

"Frankly, the problem we have regarding exports is that not enough Canadian manufacturers export. That's the part of the equation often neglected," Wilson says.

The Manufacturers' Outlook 2019 study revealed that companies continue to harvest most of their sales in Canada (67%) and the US (23%). The remaining 10% of exports is divided among other countries. What's holding them back from exporting to other countries? Competition is cited by 33%, followed by transportation and logistics issues (28%) and trade barriers (26%).

Despite the fact manufacturing employs one in four Canadian workers (1.7 million jobs),

most manufacturing companies are small, of which 37% have fewer than 24 employees, according to the Outlook study.

Outside of the tech sector, only a small percentage of traditional manufacturing SMEs export – between 2% and 28% for most countries, according to CME reports. "Small is fine, but it also means they have limited resources," Wilson remarked. While many of these firms are experts in manufacturing, they might lack the business development expertise required to tackle exporting. They just might not have the time to devote to identifying new markets for their products.

"We need to get the government to give them more internal resources to bring in third-party resources," Wilson says. He cites EDC and notes the "Global Affairs trade commissioner is a great service, but it's difficult for small companies to navigate."

Most manufacturers are currently operating at 84% capacity – with 80% being full capacity – Wilson points out. To increase production for export requires investment.

"If they're making 10% return, they might be considered fairly profitable. They might be exporting to the US. But it doesn't make sense to look at exporting to China because they might have to double the size of the company. In that case they might decide not to expand or grow into foreign markets. There's too much risk."

Even considering developing new products for the same markets is risky, "capacity still plays an issue," Wilson says. But a government export tax credit could lower the burden for exporters. "It could encourage them."

There are opportunities out there. Record exports in 2017 indicate there's a demand for Canadian products and markets for them. Manufacturers would do well to get help identifying those opportunities and the best ways to tap into them.

Comments?

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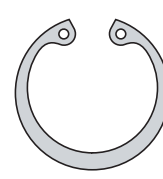
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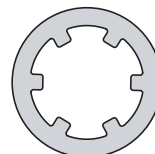
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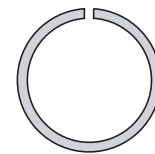
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PHOTO: ADOBE

Watch the trends and join manufacturing's new front line.

BY LISA SHEPHERD

As little as 10 years ago, Canadian business-to-business (B2B) manufacturers didn't worry about marketing. They concentrated on producing the best possible products, then hired good salespeople to spread awareness and sell them. Salespeople were essentially the company's evangelists. And that system worked well.

But the world of B2B buying and selling has shifted. Today, 94% of B2B buyers are doing their own research online before they want to talk with salespeople, according to a 2014 Accenture procurement study.

Marketing has become the new front line for manufacturers, and they have to get serious about it.

Here are five key trends:

1. The old sales tactics don't work. Gone are the days when cold calling and participating in a few trade shows each year generate enough leads to keep salespeople producing. Cold calling doesn't work anymore because no one answers their phone, and many trade shows have become prohibitively expensive based on the results they generate. Manufacturers

Marketing? Get SERIOUS

FIVE REASONS WHY YOU SHOULD EMBRACE IT

that want to attract leads need to embrace digital marketing, and that means going online where their buyers live, with a great website, strong content and campaigns to pull in prospects. The good news is digital marketing tactics are much more cost-effective than many of the old marketing methods that manufacturers once relied on.

2. Marketing builds reputations and credibility. According to a Stanford University study, 75% of people judge the credibility of a company based on its website alone (see *Business.com, Just Say No: 7, Website design mistakes that can hurt conversion*). A good reputation and strong credibility are critical to the success of any business – and especially in B2B. Because manufacturers sell vital equipment and components, buyers need to trust their suppliers. Their own companies and jobs are on the line. So even if a manufacturer comes highly

recommended, an amateur website or unprofessional sales collateral can make a poor first impression.

3. Essential support for the sales team. Today, marketing plays a larger role in the selling cycle than it used to. B2B sales people lean more heavily on marketing support to help progress their deals. Case studies, ROI calculators and other materials are essential to keep conversations going with prospects, demonstrate a vendor's value and guide buyers along their purchasing journey. As the number of decision makers involved in each B2B purchase continues to expand and the sales cycle gets more complex, marketing helps companies stay in touch with prospects more cost effectively than the sales team.

4. Marketing helps attract talent. By 2020, manufacturing will have nearly 3.5 million job vacancies to fill in the US alone (*Deloitte, Help*

wanted: American manufacturing competitiveness and the looming skills gap). Despite the shift to automation, manufacturing jobs still rely on uniquely human skills such as critical thinking, creativity and ingenuity. But when it comes to attracting talent, especially millennials, manufacturing doesn't hold the same allure as other industries. Manufacturers need to learn how to build and market their culture in addition to their exciting product plans to acquire and keep the brightest stars.

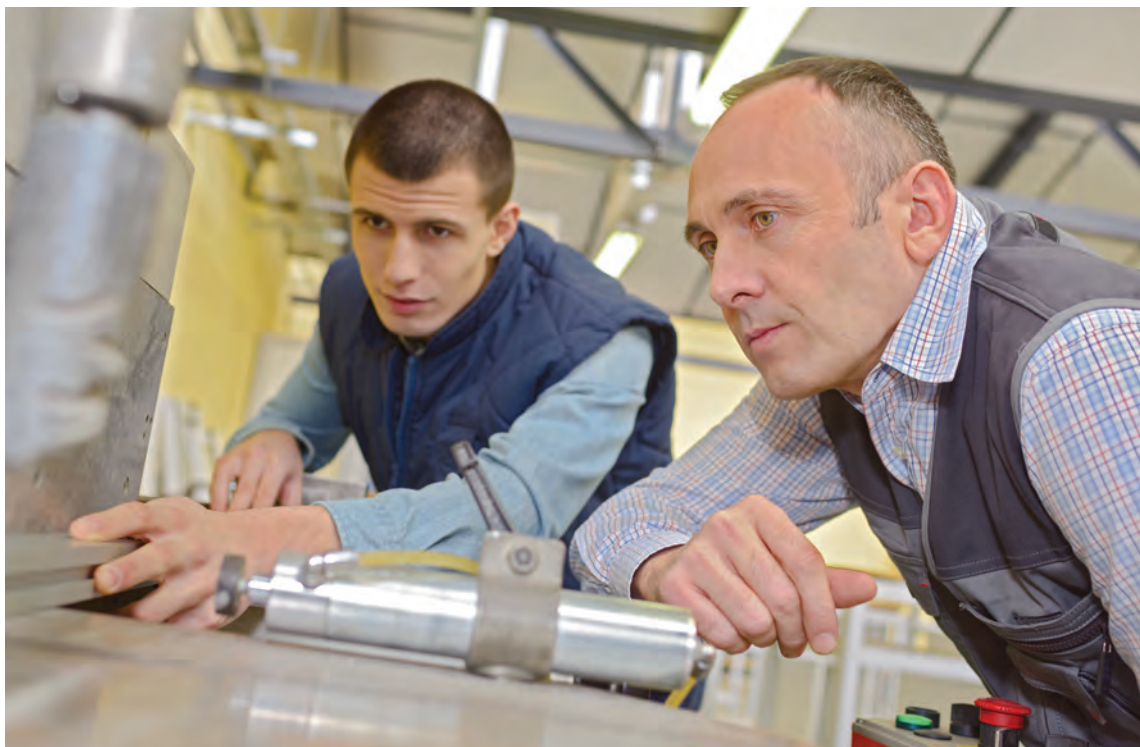
5. Marketing increases a manufacturer's corporate value. Many owners of small and midsize companies are baby boomers. They're at a stage in life and career where they're thinking about exiting. If that's the case, marketing helps increase the value of the sale in three ways:

- Enhancing the company's image and raising its profile to provide more curb appeal.
- Raising the profile puts the company on the radar of more potential buyers.
- Good strategic marketing generates leads and increases sales. A growth story is easier to sell than a company in decline. Marketing helps grow revenues, increase profits and diversify the client base – all of which increases valuation.

It's not uncommon for small, midsize and even large manufacturers to expect their salespeople will increase awareness and pull in most of the leads. But that's not the way the world works anymore. Buyers are turning to marketing to guide their decision-making and manufacturers need to embrace that truth.

Lisa Shepherd is the founder of The Mezzanine Group, a B2B marketing firm in Toronto. Visit www.themezzaninigroup.com.

Comments?
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PERFORMANCE

Your job is easier when learners feel good about what they're doing.

PHOTO: ADOBE

dards we hold them to. Rather, we set a learning context where, regardless of what's happening day-to-day, they learn. Choose words and ways of speaking that don't add to the bad stuff going on in their lives.

Language matters. The challenge is to be aware of phrases that might distract people from learning.

Hugh Alley is an industrial engineer based in the Vancouver area who helps organizations achieve significant performance gains. Call (604) 866-1502 or e-mail hughalley@gmail.com.

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Watch your LANGUAGE

KEEP IT POSITIVE TO SPEED LEARNING AND SUCCESS

Think again before saying, "think again" when an error occurs during training.

BY HUGH ALLEY

If you are a trainer – and let's face it, if you're a supervisor or manager, you are one – strike the phrase "think again" from your vocabulary.

When you see someone making what seems to be an elemental error, "think again" is a natural response but it's not effective training.

When someone is learning a new skill, one of the challenges is not knowing to what he/she should pay attention. Which machine settings really matter? What properties of the material make a big difference? How tight is tight enough, or is having a tight fastener even an issue?

"Think again" presumes the

hearer actually knows the answer. Learners don't know because... they're learning! The phrase doesn't help them recognize what was missed, nor is it specific enough to drive improvement. Our job is to help learners succeed, not stump them.

There's another problem with the phrase. It's most commonly delivered with a disparaging tone, presuming the person isn't thinking and implying he/she is deliberately ignoring what was taught, which is rarely the case. Establishing a safe context for learning is critical for people to learn faster.

By now, some of you are saying to yourself, "Get off it. They shouldn't have such thin skins." Or, "It's just a phrase."

There's some truth to that, but here's why we should pay attention. You will intuitively recognize people don't all arrive for work in a great mood.

They may be distracted by any number of things, so do the stuff that increases the odds they will learn faster.

It's not that we, as trainers and managers, become counsellors or therapists or lessen the stan-

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LUBRICATION

Poor lubricant practices cost industry millions of dollars annually.

BY STEVE GAHBAUER

Although maintenance of lubricating oils in critical applications is essential, many programs lack the basic tools, manpower or maintenance budget needed to keep them within specification. Furthermore, lubricant maintenance is often reactive in scope and limited to reducing particulate rather than targeting the causes of failure.

We've been using lubrication to fight friction for more than 4,000 years. One would think that by now we would be better at it. Yet statistics published by the world's leading bearing manufacturers – companies such as SKF and FAG – suggest less than 5% of bearings reach their engineered L10 lifecycle. Furthermore, they report as much as 80% of bearing failures are directly attributable to poor lubrication practices. Such failures result in costly downtime and missed production targets. With so much at stake, one wonders how the simple task of injecting grease into a bearing, or choosing the correct oil for an application could go so horribly wrong.

That's why fluid cleanliness management of industrial



Checking the lubrication system of an electric motor and centrifugal pump.

PHOTO ADOBE STOCK

Keeping them **CLEAN** TIPS FOR MANAGING INDUSTRIAL OILS AND FLUIDS

lubricants is so important. This subject was dealt with in depth at a recent Education Day seminar, convened by the Hamilton Section of the Society of Tribologists and Lubrication Engineers (STLE). Off the top, Olga Minikh, the field technical advisor of Ontario Exxon Mobil Imperial, strongly suggested al-

ways following OEM recommendations, properly maintaining filtration systems and regularly draining water from sumps.

Fluid varieties

Hydraulic fluids must be resistant to the formation of internal deposits, and compatible with all elastomeric materials. There's a

wide variety of hydraulic fluids that can be used, including mineral, synthetic, biodegradable or fire-resistant oils.

Minikh said regular draining of water from compressor oils is necessary. Heat and water are detrimental to compressor lubes, while dirt and dust are abrasive to parts. Corrosive contamination is to be avoided, and good gas filtration is necessary.

Good lubrication management also increases productivity and improves sustainability by extending equipment and oil life, while reducing energy consumption. Synthetics are more energy efficient and have a better oxygen stability than mineral oils. They also have lower volatility and a low pour point.

At the same seminar, John Melanson, engineering manager of SKF Canada Ltd. (offices in Toronto) outlined what a solid lubrication management program should cover:

- Logistics and supply chain
- Lubricant selection
- Storage and handling
- Tasks planning and scheduling
- Application procedures
- Analysis and condition monitoring
- Waste handling
- Training
- Automatic lubrication systems

Melanson said SKF has designed a structured program that helps identify needed improvements to lubrication programs. Get details about the SKF Lubrication Management program by contacting him (john.melanson@skf.com) or visiting www.skf.ca.

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

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Lube program tips

Having a lubrication program helps prevent unplanned failures and ensures plant assets achieve their planned life cycle. It also detects abnormal wear, reduces inventory, eliminates unnecessary oil changes and, most important, saves money.

This is illustrated by a case study involving the implementation of a lubrication program at Cameco's Cigar Lake uranium mine operation (see **PLANT**, July-August 2018).

Cigar Lake is the company's newest mine, located in northern Saskatchewan. During construction, Cameco decided that a lubrication program was needed.

The mine has significant challenges: it's not just one plant or area to set up; and there's a fleet of equipment, both underground and on the surface, with both mobile and stationary assets.

There is also a diesel power generation unit and a fleet of freeze compressors. Each area and component presents its own issues.

Bradley Owen, Cameco's senior reliability technologist at the Cigar Lake operation, notes there are several aspects to a successful lubrication program, but they don't all come together at once.

A good program takes effort and time. Note these key factors:

- Safety must always be the top objective.
- Lab reports require proper interpretation and need to be reviewed periodically.
- Enter work notifications and follow up.
- Lubrication technicians should be certified to MLT I.

There are also training opportunities through PEMAC programs and certification initiatives (www.pemac.org).

FACILITY

Manufacturer of all-terrain lift trucks invests in productivity and the future.

BY TREENA HEIN

Like most companies celebrating 50 years in business, Sellick Equipment, a manufacturer of all-terrain lift trucks in Harrow, Ont., has evolved in focus, size, production practices and markets.

To expand on those markets, boost efficiency and increase manufacturing capacity, founders Walter with his sons David (vice-president) and Howard Sellick (president) decided a few years ago to build a new plant. It's night and day compared to the old plant. A much-higher ceiling alone means the Sellick team can produce trucks with greater lifting capacity, plus state-of-the-art parts and materials storage systems make use of that extensive vertical space to save workers a lot of handling time.

All machines and fabrication equipment were moved to the new building by late May 2017. By July, the company's 14 welders were settled in, and by November, the paint, assembly, engineering departments and office staff completed the transition.

The company got its start in 1969 when the Sellicks produced their first outdoor forklift, converted from a Ford 4500 tractor (in production since 1965). At that time, there was a 15% duty to import forklifts into Canada so a home-grown option was attractive. Sellick quickly established itself as one of the origi-



Sellick's assembly line produces 30 units per month on a single shift. That number will double at optimum production.

PHOTOS: SELICK

New plant, NEW ERA

SELICK EQUIPMENT INCREASES ITS LIFT

nal Canadian manufacturers of all-terrain forklifts, primarily used in lumberyards and to move totes of farm produce.

One-piece frame

As the Sellicks continued to make forklifts from tractors into the early 1970s, major change came with the introduction of the one-piece frame. The family acted quickly to move into brand

manufacturing for big name companies such as John Deere and International Harvester. By the 1980s, Sellick was manufacturing new models ranging in capacity from 5,000 to 12,000 pounds. By the 1990s, Sellick was increasing the capacity of its models, improving operator comfort and adding diesel engines.

"We currently have 84 employees and do \$45 million in sales

annually," says David Sellick. "Markets are 20% domestic and 80% export, with active export markets being the US and Chile."

Sellick currently makes rough terrain forklifts with capacities from 5,000 to 16,000 pounds, as well as truck-mounted units with capacities up to 7,000 pounds, completing everything but the power train and hydraulic components.

"We have set ourselves apart from the competition because of the wide range of custom options we offer, options that meet the needs of customers in lumber, mining and other sectors," Sellick says.

The S Series, for example, comes with a wide range of carriages, forks and attachments. There's a rough terrain tow forklift for moving modular homes and other heavy objects, a low-height unit with specific features



Sellick's weld bay.



The overhead entrance to the automated paint booth.



Vertical lift modules reduce wait time retrieving parts.

for use in poultry barns, and a forklift-teletruck that's both a lifter and a loader, with quick and easily changed attachments. Vehicles are sold in the US and Canada through 230 locations.

With much of the production going to the US, Sellick says the US steel and aluminum tariffs and the renegotiation of NAFTA are a challenge (noting that these "protectionist measures are dramatically increasing material costs"). But the new plant promises a solid future.

Any new purpose-built facility will have many goals in mind and Sellick's new plant is no exception.

"The objectives were to improve product quality and worker productivity by reducing material handling, allow for more efficient use of equipment, and to reduce floor space used for inventory management," explains Ken Thoman, Sellick's manager of special projects and OEM sales.

While the new floor space is much larger (107,000 square feet compared to 80,000) and the ceiling is much higher, it's the way space is used that makes production much more efficient compared to the best that could be achieved at the old plant.

The previous building, a former canning factory until the Sellicks bought it in the 1970s, was cramped and convoluted, with girders every 15 feet. Ironically, production there

required 15 lift trucks to move parts between various locations as new vehicles were being built, along with a nightmarish list of other time-consuming handling issues. Open space in the new facility has slashed handling of both raw materials and components to a fraction of what it was previously, and the one-way manufacturing flow is ideal. Also, more height allows the production of lift trucks with higher masts and capacities of up to 24,000 pounds.

Improved productivity

Ten cranes from Gobel do some of the work forklifts used to do. In addition, overhead lines make moving parts into the finishing area easier. With the addition of an oven, Sellick has slashed paint-drying time from about 24 hours to three, and a separate paint booth comes in very handy for extremely heavy parts that the line can't handle.

Because many of Sellick's older units are still in operation in Canada and beyond, providing spare parts is critical. Retrieval and tracking of these parts used to be a time-sucker, but two Kardex Remstar storage units have revolutionized their management. Each has a set of vertically stacked and enclosed trays on either the side of an extractor in the centre. The system delivers required trays to the access window with a push of a button or a scanned barcode. It also au-

tomatically scans the height of products in each tray and finds the ideal storage location within the unit. "These systems significantly reduce the time it takes to pick parts and also keeps them free from dust," Thoman notes. "The chance of making mistakes is also reduced, and inventory updates are automatic. It's very easy to put material away. There's no walking around and wasting time with that."

Thousands of parts are stored up to the ceiling, and the systems display an image of each part on the screen as retrieval begins, allowing for visual double-checks. Thoman says the floor space required, compared to a conventional shelf system, is more than 20 times less.

For raw materials inventory management, the Sellick team chose an Intertex bar stock vertical storage system. Thoman says it's very efficient for quick storage and retrieval of raw materials, from tubing (square, round, rectangular and so on) and bar (solid square, round and rectangular) to angle iron, sheet metal and channel.

"Along with the software to track inventory, it has put an end to hunting for material, which used to take a very long time," he observes. "It's also safer. We used to have to climb the racks to get at the materials higher up."

When the correct drawer emerges from the system, it automatically releases the metal

directly to the saw and cutting department, boosting efficiency by five times.

Altogether, the systems have saved Sellick about 6,000 square feet of floor space, essentially paying for themselves in space saved. The new building and all its equipment cost about \$22 million and with a seven-year ROI.

Staff had to get used to the new systems, and some new issues arose. Training on the new equipment was required, especially in the paint area where some of the largest changes in equipment automation were made. The implementation of increased requirements for C-TPAT and PIP were also required. "The new plant needed further security for Sellick to remain approved for pre-approved border crossing," Thoman says. "This placed restrictions on movement in and out of the plant by authorized employees only, and the use of electronic ID for all employees."

All short-term pain for longer-term gain. And thanks to that high ceiling, Sellick Equipment is looking at a future that may include forklifts with 20,000- and 24,000-pound capacities.

Treena Hein is a freelance business writer based in Pembroke, Ont. E-mail treena-hein@outlook.com.

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THINK LEAN

Eliminate the silos and tap the strengths of your team members.

BY RICHARD KUNST

Culture is hard to understand, difficult to measure and surrounded by wrong thinking, making it challenging to talk about in any meaningful way.

Culture is created as soon as two people collaborate. It may naturally evolve while in other cases certain elements are added to create a focus. In most cases the focus is on appreciating the strengths in others, understanding weaknesses and aiming at being the best you can be. Many organizations mimic the Toyota Production System by implementing the methodologies and hoping the culture will follow.

As a leader, you can create a positive culture through subtle mannerisms.

Treat relationships as “adult to adult.” This means respecting others to follow traditional norms such as cleaning up after yourself, working in a clean environment and respecting what is given to you.

A uniform is one way to help this along. Everybody looks the same so you can focus on the individual’s attributes.

Everyone brings strength to the organization; from the CEO who provides strategic direction and focus to the person who ensures the premises is the cleanest on the planet.

Toyota started with a key element to define its culture: Jidoka. If something is not correct, you are empowered to stop the process to apply a remedy. This is a powerful attribute. Imagine a long conveyor snaking its way through a plant engaging more than 1,500 people along the way and an individual is empowered to stop the line, thus idling all of those people until the problem is resolved. It’s not an empowerment to be taken lightly.

A big part of culture is communication:



Manage communications and you manage culture.

PHOTO: ADOBE STOCK

Create a positive CULTURE

MAKING A DIFFERENCE DRIVES STRATEGIC ADVANTAGE

- Is the sharing of information open and free flowing, or is information held close to the vest and used as a weapon in some cases, or protection in others?
- What is the level and style of teamwork and collaboration? Are individuals and departments working together and sharing thoughts, ideas, information and resources?
- Are people eager to work toward common goals, or are they more likely to be engaged in “turf protection” and unproductive competition?
- How are decisions made?
- How do we see problems being addressed and resolved?
- How are goals and objectives being set?
- When different ideas, facts, and opinions are held, how is agreement and consensus managed?
- What is the approach to learning? Or to innovation?
- How does your organization go about motivating and reinforcing high levels of performance, if they do so at all?

Create communities

Many companies complain about a silo mentality in their organizations. If you want to eliminate a silo culture, bulldoze the cubicles and eliminate the fancy offices. People will naturally migrate to create communities that will concentrate on helping the customer. However, just as it is in school and university, you’ll need a “library” where people can go to conduct research, study or just find a little bit of quiet time.

Daily stand-up meetings allow everyone to understand the “centre of truth.” Indeed, com-

munication is constant through individual exchanges or meetings, but bringing everyone together for five minutes to reflect on the past 24 hours and define expectations for the coming 24 hours reduces confusion and – more importantly – rumours.

Culture makes a difference, but does it support or hinder the development and sustenance of a sustained strategic advantage, such as getting new products to market quickly, making operating and customer service decisions quickly, or implementing new technologies quickly and effectively?

You manage culture when you manage communications, problem solving, decision-making and planning, motivating for performance, collaboration and teamwork, teaching and learning, managing agreement and innovating.

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.kunstsolutions.com. E-mail rkunst@kunstartofsolutions.com.

Comments?

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Left unchecked it will impact workers and the bottom line.

Whether it originates from within or without, the pressure to work at an optimum pace and performance level takes a toll, which can negatively impact employees and the company. Studies show stressful working conditions are associated with increased absenteeism, tardiness, high staff turnover, reduced productivity and product or service quality, and increased compensation costs, all of which have a negative effect on the bottom line.

The results of stress on workers may include tobacco, alcohol or drug abuse, violent/bullying behaviour, sleep problems, anxiety, depression, inability to concentrate and irritability. Chronic stress may also cause health issues such as back problems, heart problems, stomach ulcers and hypertension, and it can weaken the immune system.

Some factors are more likely to lead to stress in the workplace than others. Examples include:

- **Job design.** It's not matched to worker skills and abilities; poor work shift design.
- **Role.** Lack of clarity about responsibilities and/or expectations. Conflicting roles and/or multiple supervisors.
- **Relationships.** Constant discord, bullying, harassment or openly aggressive behaviour.
- **Control.** Not having it when it comes to planning and deciding how work should be completed, or solving problems.
- **Training.** Lack of it to equip employees with the knowledge and skills they need to do their jobs.
- **Demands.** Unreasonable or unrealistic performance targets.
- **Culture.** Poor communication, poor social environment, lack of support and respect.
- **Physical environment.** Excessive noise, poor air quality, uncomfortable temperatures.



Stressful working conditions can affect a worker's health.

PHOTO: ADOBE STOCK

Work STRESS

HOW TO RELIEVE THE PRESSURE ON EMPLOYEES

Although some of these factors may occur in a workplace without leading to stress, the risk increases when they occur over prolonged periods.

But there are some things employers can do to lower stress levels.

Treat all employees in a fair and respectful manner. Assess risks by looking for pressures that could cause high and

prolonged levels of stress, then follow up with appropriate action to prevent pressures from becoming negative stressors.

Define roles

Match the workload to workers' capabilities. Clearly define roles and responsibilities, and design meaningful jobs that are stimulating and provide opportunities for employees to use their skills.

As much as possible, allow employees to have control over their tasks. Provide them with the training, skills and resources needed to do their jobs and establish work schedules that are compatible with demands and responsibilities outside the job.

Involve employees in decision-making and seek their input on issues affecting their jobs. Also improve communications and reduce uncertainty about career development and future employment prospects.

Finally, value and recognize individuals' results and skills, provide opportunities for social interaction among employees and provide access to Employee Assistance Programs.

Respectful workplaces that encourage good communications and healthy work systems are more likely to have healthy and productive workforces.

What employees can do

The source of the stress is often something that can't be changed immediately, so it's important to find ways of maintaining good mental health while being proactive when dealing with stress. Tips include:

- Relax, take several deep breaths throughout the day or have regular stretch breaks.
- Take 10 minutes at the beginning of each day to prioritize and organize the day.
- Be constructive and make practical suggestions.
- Be realistic about what can be changed.
- Take breaks. Go for a walk at lunch or do something enjoyable that's not work-related.

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.

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INDUSTRY 4.0

IoT streamlines business processes for an enhanced customer experience.

BY DALE KEHLER

Is your manufacturing business ready for digital transformation? Are you forging ahead, or falling behind? Now is the time to consider how you can better prepare for Industry 4.0 and take that all-important step of digitalizing your plant.

Manufacturing insights firm IDC believes by 2020, 60% of all enterprises will have fully articulated an organization-wide digital platform strategy and implemented it. It predicts by then, 50% of the Global 2000 (world's largest public companies) will see much of their businesses depend on creating digitally enhanced products, services and experiences.

IDC sees digital transformation at a macroeconomic scale as signalling a new, digital economy, and estimates its value at \$20 trillion, or more than 20% of global GDP.

As the boundaries between digital and physical continue to blur and new technologies disrupt the status quo, many manufacturers are preparing to digitalize their operations to get ahead of the competition and harness the potential available in a globalized, volatile and evolving marketplace. The challenge lies in identifying the innovations that will provide the most benefit, then successfully manage the integration into current operations.

Implementing Internet of Things (IoT) technologies opens a world of infinite possibilities. Not only will they facilitate more streamlined and automated business processes that reduce the need for human intervention, it will also improve



Manage data with an IoT-enabled enterprise resource planning system. PHOTO: ADOBE STOCK

Apply digital LEVERAGE GAIN A COMPETITIVE EDGE IN EVOLVING, VOLATILE MARKETS

service delivery, and enhance the customer experience. Manufacturers will be able to manage warehouse inventory in real-time using IoT sensors to monitor and track incoming and outgoing items.

Imagine arriving at your customer's store to change light bulbs just before they go out or to re-gas the fridges before they stop keeping perishables cool?

An IoT solution with data carefully managed and processed through an IoT-enabled enterprise resource planning (ERP) system has benefited Insulated Structures. The company sells refrigerators to major supermarkets and bases its service level agreements (SLA) with retailers on uptime. A refrigerator that's not working can mean a loss in product and sales. Even if only

the light is off, consumers may avoid purchasing products from that unit. Initially Insulated Structures was not meeting its SLAs because it could only take action after the supermarket called to report a problem.

Collecting data

Using the ERP's IoT infrastructure, devices were put into the refrigerators, which started collecting data stored in the cloud. Every evening, using the data connectors, the data was summarized from the cloud to – in this case – the SYSPRO database.

This IoT infrastructure allowed Insulated Structures to detect whether: a specific refrigerator reached a certain threshold, the temperature was going down or up, or the humidity was dropping.

SUPPLY LINES

SOLDERING ADDED

Diverse Electronics has added JBC Soldering Tools' high-end equipment to its product line-up.

The electronic components distributor based in St. Laurent, Que. notes JBC recently developed unique soldering profiles for its systems that enable dynamic control of the tip temperature. This allows for maximum precision while reducing the thermal stress on components such as MLCCs.

Another innovation is the sleep-hibernation mode, which extends tip lifespan by five times.

JBC's US headquarters is in St. Louis.

NEW FLEET SERVICE

Andy, a transportation, logistics, warehousing, and maintenance group based in Montreal, has launched a new business.

Tristan Cartage is a power-only outsourcing fleet solution (truck and driver on demand) for local and regional for-hire carriers of all sizes, private fleets, third-party logistics companies, retailers, manufacturers and distributors that have fluctuating transportation needs.

Customers control the schedule and the routing, and pay only for what they need.

The service covers the Quebec-Ontario territory.

TWO SALES DIVISIONS

Wakefield Canada, a manufacturer and distributor of Castrol premium lubricants, has created two separate sales divisions: consumer, and commercial/industrial.

The move comes after a first full year of operating the Castrol industrial business.

The Toronto-based company said both markets represent a significant growth opportunity. Its brand portfolio includes Castrol lubricants, Wakefield branded lubricants and SuperClean, a line of cleaners and degreasers.

When the IoT device detects a particular threshold, a workflow connector is used to begin a process that sends a technician to the affected store. The workflow creates a job and sends a push notification to the technician's mobile application.

Technicians are then dispatched to the supermarket to repair the refrigerators before they go down. Insulated Structures is now meeting its SLAs and has turned this predictive ability into a competitive advantage. Ensuring their fridges work protects customers' bottom lines. But the company is no longer just in the refrigerator business. It's now in the business of enabling retailer profitability!

By harnessing the power of the data, Insulated Structures is learning the life spans of light bulbs and filters, and compressor details to predict when any of the refrigerator parts might break down, then fix them before they do.

Imagine all the opportunities available to manufacturers by incorporating data pulled from auto identification tags tied to GPS-enabled connections that continuously update location and movement. This also allows automatic delivery of business intelligence and alerts directly to relevant operators and service agents.

By embracing new, exponential technologies such as IoT and implementing a future-fit ERP solution that allows for their incorporation, manufacturers make the digitalization process easier while opening the door to greater efficiencies and profitable growth. Further enabling these tools with the power of machine learning, predictive analysis and anomaly detection opens up whole new revenue streams.

New technologies are disrupting the status quo with profound implications for the way manufacturers will do business. In today's competitive landscape, the question shouldn't be: are you ready for digital transformation, but why aren't you ready?

Dale Kehler, based in Mississauga, Ont., is senior vice-president of SYSPRO Canada's product services. SYSPRO is a provider of ERP software and services. Visit syspro.com. E-mail dale.kehler@ca.syspro.com.

Comments?

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A 316L stainless steel enclosure. PHOTO: EMERSON

POWER AND DATA FOR IIOT

A panel for use in hazardous locations

Emerson has combined power and data into one enclosure that streamlines adoption of the Industrial Internet of Things (IIoT) for use in hazardous locations.

Appleton PlexPower Fiber Panel brings together power and fibre communication cables, saving users up to 77% of installation, commissioning and maintenance costs.

Belden MIPP fibre splice boxes minimize installation time for patching and allows easy access for organizing and managing up

to 12 straight tip, subscriber and lucent connectors.

Circuit breaker modules provide explosion-proof protection for standard off-the-shelf breakers. Breakers are easily replaced, upgraded or added in the field with no bolted cover to remove, no sealing or rewiring and no danger of compromising flame path integrity.

Emerson is a technology company based in St. Louis.

www.emerson.com

VTC-300C ENHANCES CONTROL WITH SMOOTH TECHNOLOGY

Adds speed and accuracy to part production

Mazak Corp. has enhanced its VTC-300C vertical machining centre with Mazatrol SmoothG CNC and its suite of Smooth Technology software.

The new control complements the VTC-300C's full travelling-column design, automatic tool changer and 15,000-rpm, 30-hp 40-taper spindle, all of which combine for fast cycle times and accurate machining of extremely long and heavy work pieces.

EIA/ISO and conversational programming brings speed and accuracy to complex part production. Advanced hardware – including a pivoting CNC panel and 19-in. multi-touch LCD control screen – is easy to use, while a CFast memory card stores up to 32 GB of program data.

The machine and waycover design has been enhanced to provide 1,582 ipm rapid feed rates on all axes. Its fixed 78.74- by 30-in. table provides process flexibility for a wide range of applications, while an optional centre partition divides the work envelope into two separate areas to allow cycling in one area while loading, unloading or setting up in the other.

The machine's axis travels are 65.35 x 30 in. in Y and 25.6 in. in Z.

Mazak, based in Florence, Ky., is a manufacturer of machine tools.

www.MazakUSA.com

The VTC-300C machine platform. PHOTO: MAZAKO





Sensor mounts to the bearing. PHOTO: ABB

SMART SENSING

Assess mounted bearing health

Get ahead of mounted bearing problems early with the ABB Ability Smart Sensor for Dodge mounted bearings. It assesses bearing health from vibration and temperature information. This helps to prevent downtime on applications such as bulk material handling conveyors and food or beverage processing.

The sensor mounts to the bearing and communicates wirelessly via a smartphone or other device and enables easy access to health data in locations that may be difficult or dangerous to reach.

ABB in Canada, a Swiss provider of industrial technology, is based in St. Laurent, Que.

www.abb.com



Ultrasonic test for defect in steel plate.

PHOTO: ADOBE STOCK

TRENDS: GLOBAL NDT

Tech convergence is transforming the market

Rebounding from a two-year slump, the global non-destructive test (NDT) inspection services market is undergoing an overall transformation, reports research firm Frost & Sullivan.

Convergence of Big Data, predictive analytics, digital twin, cloud computing and smart factories is enhancing growth opportunities in the market, giving rise to several new business models.

Vendors are making concerted efforts to convert Big Data to smart data and shift the market from the traditional time-people business model to be more proactive and performance-based.

The research firm says automation companies are increasingly repositioning themselves as service providers, while sensorization and predictive analytics have enabled vendors to develop innovative business models. This evolving market ecosystem will encourage numerous

mergers and acquisitions as NDT inspection service companies look to broaden their capabilities.

Revenue opportunities from leveraging cutting-edge technologies include:

- AI-powered industrial robots in inspection and material handling.
- Intelligent algorithms for processing huge amounts of data in real time.
- Drones to inspect components and repair damaged components in the wind energy sector.
- Mechanical follow-up tools to ensure adherence to the structure of the actual part or new advanced technologies such as CT 3D X-rays.
- Combined synergies of NDT inspection services with online monitoring.

Visit <http://frost.ly/30g> to purchase a copy of the report, *Global Non-destructive Testing Inspection Services Market, Forecast to 2022*.

YALE GOES MOBILE

Manage your fleet by smartphone

Even the forklifts are getting smarter. Yale Materials Handling Corp. has a new mobile app for its Yale Vision telemetry vehicles.

Data-driven insights come via smartphones. Users view fleet utilization metrics in near-real time and receive notifications from the app when events such as impacts or errors on pre-shift safety checklists occur.

The app is compatible with android and iOS devices. Download it from the app store and enter existing Yale Vision credentials for access.

Yale, a division of Hyster-Yale Group, is based in Greenville, NC.

www.yale.com



Yale's new mobile app.

PHOTO: YALE



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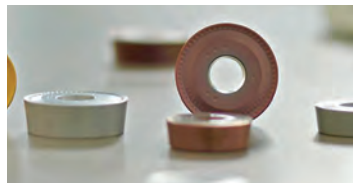
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The new inserts combine roughing and medium finishing chipbreakers with Duratomic grade technology.

-RR93s boost tool life, improve productivity, increase product reliability, enhance chip management and generate a superior surface finish.

For medium finishing applications in steels, difficult stainless steels and super alloys, the -R3 geometry delivers optimally positioned grooves.

They control chips even at depths of cut as small as 0.059 in. (1.5 mm), at high feed rates from 0.024 in./rev to 0.047 in./rev (0.6 mm/rev to 1.2 mm/rev) and at cutting speeds from 3.543 in./min. to 6.299 in./min. (90 m/min. to 160 m/min).

Seco Tools is a provider of metal cutting solutions based in Troy, Mich.

www.secotools.com

ROBOTICS

ROBOT COLLABORATOR HANDLES REPETITIVE TASKS

Omron Automation's TM collaborative robot works seamlessly with people to handle repetitive tasks.

The transportable robot complies with safety requirements for human-robot collaboration specified in ISO 10218-1 and ISO/

TS 15066. And it's easily trained to perform almost any repetitive task in any location thanks to a manual teaching function that allows operators to teach the robot using hand-guidance without software.

The programming interface is intuitive and quick to set up with its flowchart-based interface. No prior robot programming experience is necessary.

The robot comes with built-in vision and integrated lighting for capturing products with a wide viewing angle. Image sensing functions include pattern matching, barcode reading, colour identification and more.



Easily programmable interface.

Omron Automation Americas is a manufacturer of industrial automation technology with Canadian headquarters in Toronto.

<http://omron247.com>

VISION

CAMERAS CAPTURE ACUTE DETAIL



Corrects unwanted artifacts.

Basler has expanded its camera portfolio to include new ace U models with the rolling shutter IMX183 CMOS sensor from the Sony Exmor R-series.

Resolution is 20 megapixels with a 1-in. sensor size and a compact design with 29 x 29 mm footprint for the inspection of the finest of structures, as required by PCB or display production.

Basler's PGI feature set for colour and monochrome cameras corrects unwanted artifacts, providing a particularly good evaluation on a pixel level.

The innovative BI (back-il-

luminated) sensor technology provides outstanding sensitivity and low noise at a 2.4 µm pixel size. With these particularly light-sensitive sensors, the four new ace cameras deliver high image quality even in low light.

All four models are available with a GigE and USB 3.0 interface and include the PGI feature set that includes 5x5 debayering, colour-anti-aliasing, denoising and improved sharpness.

Basler is a manufacturer of cameras and accessories for industry based Ahrensburg, Germany.

www.baslerweb.com

CONTROL

AMPLIFIER ELIMINATES NON-LINEARITIES

Aerotech's XL4s linear amplifier for closed-loop servo control of voice coil and single-phase motors, eliminates the non-linearities common with PWM



Controls digital PID.

amplifiers.

Features include a multi-core, double-precision, floating-point DSP that controls the digital PID.

All parameters are

software-settable including control-loop gains and system safety functions. It leads to industry-leading settling times, long-term thermal stability, and sub-micron-level tracking accuracy with advanced features such as full state feed-forward, 192 kHz servo rates and look-ahead-based velocity control.

The 192 kHz servo rate directly correlates to better tracking errors and part quality at high-speeds in applications such as fast-tool servos, high-dynamic optical focusing axes and high-speed pick-and-place machines.

The XL4s has an encoder interpolation feature, dedicated analogue and digital I/O, fibre-optic interface, and separate power connections for motor and control supply voltages.

Aerotech is a manufacturer of motion control, positioning tables/stages, and positioning systems based in Pittsburgh.

www.aerotech.com

SENSORS

ENCODERS IMPROVE ACCURACY, RESPONSE

POSITAL's next generation of analogue rotary encoders for position control feature improved accuracy, faster dynamic response and new programming options. They also accept a wider



Designed for analogue positioning.

range of supply voltages.

They're designed for positioning tasks that use analogue control systems. Outputs are either voltage (0-5 V, 0.5-4.5 V, 0-10 V or 0.5-9.5 V) or current (0-20 mA or 4-20 mA).

The encoders are programmable with measurement characteristics that are customized to meet specific application requirements.

Programming is done at the factory thanks to the easy-to-use UBIFAST tool.

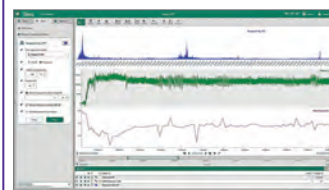
Programmable characteristics include direction of rotation (CW or CCW), zero set and the encoder output range.

For single-turn models, the measurement range can be set to 90, 180, 270 or 360 degrees. For multi-turn models, the range sets anywhere between one and 65,536 complete rotations.

POSITAL is a supplier of advanced industrial position sensors with headquarters in Cologne, Germany and distribution in Canada.

www.posital.com

Plantware



Tabulated metrics

ADVANCED ANALYTICS FOR PROCESSING

Seeq Corp.'s R21 advanced analytics for process manufacturers rapidly analyzes, predicts, collaborates and shares insights to improve production outcomes.

An expanded scorecards feature displays calculated tables in Seeq Workbench and Organizer. The tabulated metrics, measurements and other summary data appear as tables with conditional formatting support and user-defined columns.

R21 also adds frequency analysis capabilities to transform segments of a time-series signal into the frequency domain. The frequency analysis tool is accessed via a panel that guides users through the transformation process and displays results as a power spectrum. Frequency allows engineers in processing industries to understand what's causing variability.

Seeq, based in Seattle, Wash., is a data analytics specialist.

<http://seeq.com>

EVENTS

Forum 2019: The Changing World of Work CCOHS

March 5-6, Winnipeg

The Canadian Centre for Occupational Health and Safety (CCOHS) brings together leaders and stakeholders from government, labour and workplaces for an event that explores the changing workforce, workplace and nature of work. Visit www.ccohs.ca/forum.

Hannover Messe Deutsche Messe AG April 1-5, Hannover

An international trade fair focusing on industrial technology from R&D, industrial automation, IT, industrial supply, production technologies and services to energy and mobility. Visit www.hannovermesse.de.

PLANT Expo 2019 Annex Business Media, FMA Inc.

April 3, Winnipeg

April 23, Mississauga, Ont.

May 15, Abbotsford, BC

June 19, Sherbrooke, Que.

Products and solutions for manufacturing, processing machinery and MRO markets. Co-located with Design Engineering's DEX Expo and Canadian Metalworking's MMP Expo. Visit www.plantexpo.ca.

Automate 2019 Association for Advancing Automation

April 8-11, Chicago

Automate, presented by A3 (Association for Advancing Automation), showcases the full spectrum of automation technologies and solutions from traditional industrial applications to cutting edge. Held

every two years. Visit www.automateshow.com.

ISA Calgary DMG

April 9-10, Calgary

The international exhibition for instrumentation, systems and automation features instrumentation, control and automation services, technologies and equipment. Visit <https://isacalgary.com>

CNAM 13th Annual Conference Canadian Network of Asset Managers

May 6-9, Kelowna, BC

The annual conference and tradeshow will explore challenges through leading edge professional development, idea sharing, workshops and networking with peers and new players in government, academia and industry. Visit <http://cnam.ca/upcoming-/2019-conference>.



This is advanced manufacturing

BY JAYSON MYERS

As leader of Canada's Advanced Manufacturing Supercluster, I get a bird's eye view of some of the country's remarkable research, technology and manufacturing capabilities.

Many Canadians – and frankly many industry leaders – are not aware of Canada's strengths in advanced manufacturing. It's funny sometimes, the assumptions people make. I remember, for instance, during a plant tour in Germany being lectured about how Canada really doesn't have very much to contribute to Industry 4.0 while standing on a shop floor surrounded by automation systems manufactured in Cambridge, Ont.

But Canadians should know better. It's disappointing when start-ups think they need to go half way around the world for manufacturing capabilities that exist only a few kilometres away, or when manufacturers are unaware that Canadian technology capabilities could help solve some of their pressing production problems.

The Advanced Manufacturing Supercluster is dedicated to raising awareness about what's happening in Canada, connecting and building greater collaboration among manufacturers, technology providers, researchers, educators and supporting services, to speed up the adoption and scale-up of technologies. We want Canadians to ask is, "What's next?" instead of "Who knew?"

We should be proud of Canada's global leadership in advanced manufacturing. We have cutting edge capabilities in many areas, notably artificial intelligence, computing and data science, robotics, lasers, materials, software and machining. It's not just about public relations, though. It's about making a compelling argument as to why businesses would want to invest and grow in Canada, and our ability to attract the skilled employees. It starts with recognizing some of the world-leading companies that call Canada home.

One of those companies is MDA, the developer and manufacturer of the next generation Canadarm used on the Space Shuttle and Dextre, the two-armed tele-manipulator that forms part of the International Space Station. These two technologies have given global, even extraterrestrial, prominence to MDA and to Canada.

During a recent visit to MDA, I found it continues to develop and manufacture a range of robotics, vision systems, guidance, and communications technologies for applications in outer space. They range from autonomous robots and AGVs on Mars, support for experiments on the Space Station and other spacecraft, to the latest in satellite guidance, cameras, and communications. MDA's manufacturing systems are a model for Industry 4.0 – smart, automated, connected, data-driven, and focused

on enhancing productivity and customer value.

But this innovative company with offices across Canada and in the UK, is much more than a leading manufacturer of space systems. It develops, manufactures and supports applications for its technologies in a variety of other industry sectors ranging from defence and the nuclear industry, to mining, medicine and medical devices, and manufacturing. MDA is not just a manufacturer, but a technology provider, an engineering, systems support, data and software services company. Today that's what advanced manufacturing is all about.

The company doesn't operate on its own either. It's affiliated with other businesses working in the fields of satellite and spacecraft systems, high-resolution imagery, geospatial mapping and data analytics. And MDA is also at the centre of a network of researchers, technology providers, manufacturers and service suppliers that extends across Canada and the world.

What really impressed me was how the MDA team members spoke about what the company does. Despite all of the great technology offered, they don't see the business in terms of products or services. They spoke simply of their ability to provide new capabilities that customers could manage and afford. That's a pretty good description of any successful business model.

They were also clear those capabilities extend far beyond the technology. Fundamental lean principles such as improving processes that generate customer value and eliminating those that do not are key to their approach to business and the engineering solutions they offer.

People need to be front and centre in any technology deployment. Of course, training is essential, but, so too is ensuring that workflow and information systems are managed to achieve desired results. In a modern production environment, that often requires an enterprise-level view of the business. People also need to buy into the technologies and processes they're working with. MDA's experience with astronauts learning to trust robotic arms while orbiting thousands of kilometres above the earth brings that point home very clearly.

MDA is a big company – one of the few OEMs that Canada has – but it can teach any advanced manufacturing company large or small about how it approaches business and successfully deploys or scales-up technologies.

Jayson Myers, the CEO of Next Generation Manufacturing Canada, is an award-winning business economist and advisor to private and public sector leaders. E-mail jayson.myers@ngmcanada.com. Visit www.ngmcanada.com.

Comments? E-mail jterrett@plant.ca.

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- cULus & CE approvals
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- IP67 protection rating
- Quick-disconnect or axial cables
- cULus & CE approvals
- Lifetime warranty on most models

Capacitive Proximity Sensors

Starting at \$59.00 (CR1-00-2A)

- Industrial automation models
- Wide variety of sizes:
 - 12mm round
 - 18mm round
 - 30mm round
 - Rectangular
- IP65 or IP65/IP67 protection rating
- AC powered models (30mm)
- Quick-disconnect or axial cables
- cULus & CE approvals
- Lifetime warranty

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