

## CANADA'S KETCHUP

Select Food Products:  
On the front line of  
the condiment war

Be the disrupter, not the disruptee  
Automotive and aerospace embrace IIoT  
Artificial intelligence: Let the machines do it  
CFTA offers freer interprovincial trade  
Short on maintenance pros? Try multitasking  
DAILY MANUFACTURING NEWS [www.plant.ca](http://www.plant.ca)



# Motor analysis without the downtime

**FLUKE**

**APPLICATION NOTE**

**Why you should add motor analysis to your maintenance routine**

Four keys to understanding motor efficiency, and causes for failures

Electric motors transfer electrical power to mechanical rotational torque that are the source of the industrial world. Monitoring and analyzing these force-mechanical power, torque and speed as well as power quality characteristics are important to assessing performance of rotating equipment. These measurements can not only help predict failures and thus help prevent downtime, they can also help quickly determine whether sufficient diagnostics, such as vibration testing, shaft alignment analysis or insulation testing, are needed to contribute the findings.

Traditionally, obtaining accurate motor analysis data required costly replacement of the motor to allow for the installation of mechanical sensors. But only one is the extremely difficult and sometimes responsible to properly install mechanical sensors, the expense of the sensors and the time and effort required to install them are often prohibitive and therefore variable that decrease overall system efficiency.

Modern motor analysis tools make it easier than ever to troubleshoot direct on-line electric motors by non-invasively analyzing the power and reducing the number of components and tools necessary to make critical diagnostic decisions. For instance, the new Fluke 438-II Power Quality and Motor Analyzer enables technicians to measure electrical and mechanical performance of electric motors, and evaluate power quality by assessing the three-phase input to the motor, without mechanical sensors.



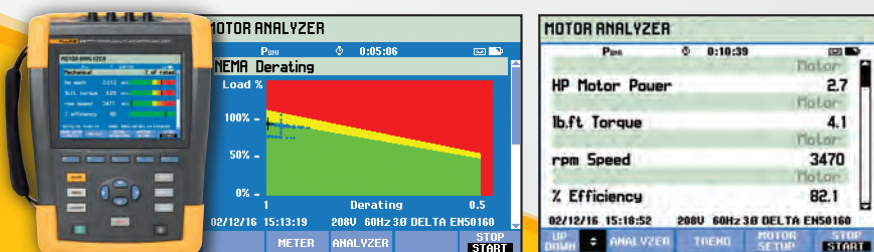
## Troubleshoot direct-on-line motors while in service, without mechanical sensors—so you don't sacrifice uptime.

New technology is available that can obtain accurate motor analysis information—mechanical power, torque and speed—that can help predict failures and help avert unplanned downtime.

Download the free app note, “**Why you should add motor analysis to your maintenance routine,**” to learn the 4 keys to understanding motor efficiency and causes for failure.

**Download the FREE application note at**  
[fluke.com/motoranalysis](http://fluke.com/motoranalysis)

**Discover how the new Fluke 438-II Power Quality and Motor Analyzer can play a key role in maintenance programs.**



**FLUKE®**

*Fluke. Keeping your world up and running.®*

©2016 Fluke Corporation. 6007977a-en



## 12 FOOD

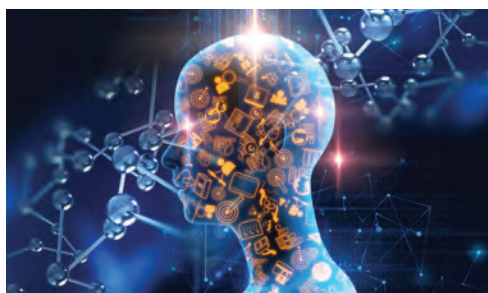
Select Food Products Ltd. is on the front line of Canada's ketchup war.



**16 TRANSPORTATION** The Industrial Internet of Things is changing the auto and aerospace industries.



**17 STRATEGY** Disruption is setting the stage for a vastly different business future.



**18 TRAINING** A better way to teach how to use new industrial software.



**20 INTERPROVINCIAL TRADE** Provincial CFTA deal levels the playing field across Canada.

## FEATURES

- 19 PRODUCTIVITY** Are eldercare issues affecting your business?
- 21 PACKAGING** A BC box company invests in high-end labelling machinery.
- 22 HUMAN RESOURCES** Fill maintenance skills gaps with multiskilling.
- 24 THINK LEAN** By the numbers is an effective way to track production output.
- 25 INVESTMENT** Pilkington boosts its Collingwood plant's auto glass capacity.
- 26 ARTIFICIAL INTELLIGENCE** Join the AI revolution and let the machines figure it out.
- INDUSTRY 4.0** CRIQ's cyber lab aims to bolster digital transformation.
- 28 GOVERNMENT FUNDING** SR&ED headache? There are other programs that will ease the pain.
- 29 ENERGY EFFICIENCY** New federal program helps reduce consumption.

## DEPARTMENTS

- 4 Editorial
- 6 News
- Bulletins
- 8 Careers
- 10 PLANT Online
- 11 PLANT Pulse
- 31 CIEN Feature: Automate repeatable tasks with AGVs
- Supply Lines
- 33 Product Focus: Material handling
- 34 Products and Equipment
- 37 Plantware
- Events
- 38 Postscript

Cover photo by Silvana Mitallo

**PLANT**—established 1941, is published 8 times per year by Annex Business Media. Publications Mail Agreement #40065710. Circulation email: [stelian@annexnewcom.ca](mailto:stelian@annexnewcom.ca) Tel: 416-442-5600 ext 3636 Fax: 416-510-5170 Mail: 80 Valleybrook Drive, Toronto, ON M3B 2S9. Occasionally, PLANT will mail information on behalf of industry-related groups whose products and services we believe may be of interest to you. If you prefer not to receive this information, please contact our circulation department in any of the four ways listed above. Annex Privacy Officer: [privacy@annexbizmedia.com](mailto:privacy@annexbizmedia.com) Tel: 800-668-2374. No part of the editorial content of this publication may be reprinted without the publisher's written permission. ©2017 Annex Publishing & Printing Inc. All rights reserved. Performance claims for products listed in this issue are made by contributing manufacturers and agencies. PLANT receives unsolicited materials including letters to the editor, press releases, promotional items and images from time to time. PLANT, its affiliates and assignees may use, reproduce, publish, re-publish, distribute, store and archive such unsolicited submissions in whole or in part in any form or medium whatsoever, without compensation of any sort. This statement does not apply to materials/pitches submitted by freelance writers, photographers or illustrators in accordance with known industry practices. Printed in Canada. ISSN: 1929-6606 (Print), 1929-6614 (Online)





# Invest in smart tech

**M**anufacturers, especially smaller ones, are a bit tight when it comes to investing in innovation and new, transformative digital technologies that would improve lagging productivity and their competitiveness.

There has long been an investment gap in Canada with competing jurisdictions, but it was narrowing until this year when the gap widened. A C.D. Howe Institute report shows investment is a paltry 55 cents against each dollar invested in US workers. That's down sharply from 77 cents in 2013.

But who can blame companies for being careful with their dollars these days, even with the economy expanding 4.5%, punctuated by manufacturing job growth (65,700 since February) and rising exports (up 10.6%). Aside from the usual domestic challenges, companies are operating in a business environment that's marinating in crazy sauce.

When you-know-who got elected US president last year, we all suspected 2017 would be special, and three quarters of the way through it's turning out to be quite the whacky year.

Let's talk disruption, and not the good kind: There's domestic trouble in the US (our biggest customer) thanks to increasingly visible far-right acolytes of wing-nuttery, encouraged by the absence of sincere condemnation from the president; elsewhere Donald Trump is destabilizing global peace with his idiotic tweeting; his repeated threats to tear up the NAFTA deal, even as negotiations are underway, undermine our most important trade relationship while threatening about 14 million US jobs; and his attack on environmental regulations is giving US industrial competitors a cost advantage over more regulated and taxed Canadian manufacturers. We should also steady ourselves for the fallout that may come from his tax reform plans.

Meanwhile, smaller business owners at home are dealing with escalating costs. Never mind crippling, high electricity bills in some jurisdictions (hello Ontario), and an inventory of climate change-related costs to deal with our less than 2% contribution to global warming. Ontario is joining Alberta with the implementation of a \$15 per hour minimum wage. Putting aside the merits of this change (or lack thereof), this represents a significant cost increase for many smaller manufacturers. And there will be more pain for entrepreneurs caught by federal changes that limit their ability to lower corporate taxes by splitting income among family members.

So what are smaller manufacturers to do?

Despite the current extraordinary circumstances, the way forward is to unlock the cash box, invest in advanced, digital technologies and embrace Industry 4.0, which is exactly what their global competitors have been doing with gusto.

But Canadian adoption is lagging. For example, **PLANT's** 2017 Outlook survey shows only 6% of respondents are engaged with the Industrial Internet of Things.

The good news is 40% of small and medium manufacturers have implemented 4.0 projects, according to a BDC survey. Only 3% have fully digitized their production, but 36% are part way there and 17% intend to do so. On the other hand, 42% have done nothing, and most investments in 4.0 over the past two years were \$100,000 or less. BDC's survey shows higher investment increases the benefits.

It's not going to be easy for all. A third of the respondents reported the process to be challenging noting a lack of skilled personnel, high costs and unclear benefits. BDC recommends getting started by focusing on customer needs, being strategic, empowering employees and walking before running.

It's a long road leading to what will be a very different business future. Canadian companies won't get ahead travelling in the slow lane.

**Joe Terrett, Editor**

**Comments? E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**

**PLANT** | ADVANCING  
CANADIAN  
MANUFACTURING

**Publisher**

Michael King  
416-510-5107  
[mking@plant.ca](mailto:mking@plant.ca),  
[mking@cienmagazine.com](mailto:mking@cienmagazine.com)

**Editor**

Joe Terrett  
416-442-5600 ext. 3219  
[jterrett@plant.ca](mailto:jterrett@plant.ca)

**Art Director**

Andrea M. Smith

**National Account Manager**

Ilana Fawcett  
416-510-5202  
[ifawcett@plant.ca](mailto:ifawcett@plant.ca)

**Account Coordinator**

Barb Vowles  
416-510-5103  
[bvowles@annexbizmedia.co](mailto:bvowles@annexbizmedia.co)

**Annex Business Media**

**Vice President/Executive Publisher**

Tim Dimopoulos  
(416) 510-5100  
[tdimopoulos@annexbizmedia.com](mailto:tdimopoulos@annexbizmedia.com)

**COO**

**Ted Markle**

[tmarkle@annexweb.com](mailto:tmarkle@annexweb.com)

**President & CEO**

**Mike Fredericks**

**Circulation Manager**

Beata Olechnowicz  
416-442-5600 ext. 3543  
[bolechnowicz@annexbizmedia.com](mailto:bolechnowicz@annexbizmedia.com)

**Subscription Price**

Canada \$72.50 per year, US \$146.95 (US) per year, Foreign \$166 (US) per year. Single Copy Canada \$12.00. Add applicable taxes to all rates. Combined, expanded or premium issues, which count as two subscription issues.

**Mailing Address**

Annex Business Media  
80 Valleybrook Dr.,  
Toronto, ON M3B 2S9  
[plant.ca](http://plant.ca)  
Tel: 416-442-5600,  
Fax: 416-510-5167  
(if busy use 416-510-6875)

**Customer Service**

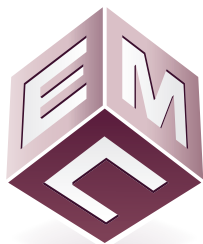
Bona Lao  
416-442-5600 ext. 3552  
[blao@annexbizmedia.com](mailto:blao@annexbizmedia.com)



**Canada**

We acknowledge the [financial] support of the Government of Canada.





EXCELLENCE  
IN MANUFACTURING  
CONSORTIUM

1997 - 2017  
[www.emccanada.org](http://www.emccanada.org)



ANNIVERSARY

*your* CANADIAN MANUFACTURING NETWORK 



Manufacturing **GPS**

EXTENSIVE  
UP - TO - DATE  
CANADIAN  
LABOUR MARKET  
INTELLIGENCE

LOCATE YOUR ADVANTAGE

FREE ACCESS

2017 Employer Survey now available

[www.manufacturinggps.ca](http://www.manufacturinggps.ca)



EXCELLENCE  
IN MANUFACTURING  
CONSORTIUM

*your* CANADIAN MANUFACTURING NETWORK 

Canada 

This project is funded by the Government of Canada Sectoral Initiatives Program



## BULLETINS

**General Electric (GE)** is closing its Peterborough, Ont. manufacturing plant by the end of Q3 in 2018, eliminating 358 jobs. The facility produces engines for the oil and mining industries. An engineering division will remain at the plant retaining 50 jobs. Work from the Peterborough plant will be shifted to the UK, France, Brazil and Mexico.

**Savaria Corp.**, a manufacturer that builds stairlifts and elevators for homes and workplaces, is expanding its lineup with the acquisition of **Visilift LLC** in a deal worth \$6.3 million. Visilift, based in Eaton, Colo., builds octagonal panoramic glass elevators for the residential market. Savaria plans to shift Visilift's production to its plant in Brampton, Ont.

Aerospace manufacturer **CAE Inc.** has purchased full control of three aviation training centres it owns jointly with Malaysia's AirAsia Berhad for US\$100 million. The training centres in Sepang, Malaysia; Singapore; and Ho Chi Minh City, Vietnam are the three hubs of the Asian Aviation Centre of Excellence (AACE), a joint venture between CAE and Air Asia.

**Export Development Canada** is providing US\$15 million in financing to **Discover Energy Corp.** to acquire a plant in South Korea. The Vancouver-based manufacturer develops battery products for transportation, motive, energy storage and distributed power applications.

Charles Deguire, president and CEO of **Kinova**, will chair the federal government's advanced manufacturing table, one of six Economic Strategy Tables. Participants will identify opportunities for innovation. Kinova manufactures assistive robotics in Boisbriand, Que.

**Thales Canada Inc.** and **Thales Australia Ltd.** have won an \$800 million, eight-year service contract for Canadian navy ships. The joint venture will provide refit, repair, maintenance and training for the Arctic and Offshore Patrol Ships, and Joint Support Ships. The federal government has an option to extend services for up to 35 years – worth an estimated \$5.2 billion for the life of the vessels.

## Oetiker in Alliston celebrates 75 years

Swiss parent began as a one-person workshop in 1942, now employs 1,885



Oetiker's Alliston, Ont. team.

PHOTO: OETIKER

**ALLISTON, Ont.** — Oetiker Ltd. in Alliston, Ont. is celebrating 75 years as a developer and manufacturer of clamps and rings for automotive and other industrial applications.

The plant employs about 150 people.

The Canadian company, a member of the Excellence in Manufacturing Consortium, is part of the Swiss-based global manufacturer that began with one 24-year-old employee in a mechanical workshop that was part of a small house in Horgen. By 1951, founder Hans Oetiker had patented the world's first ear clamp.

Today the company has 1,885 employees in 28 countries. Thirteen locations on three continents help produce nearly 2 billion clamps, rings, straps, quick connects and thermal management products annually.

## Taxes take a big bite: Average family paid 42.5% of income

**VANCOUVER** — The average Canadian family spent more on taxes in 2016 than housing, food and clothing combined, according to a new study by the Fraser Institute.

The Canadian Consumer Tax Index shows the average household earned \$83,105 and paid \$35,283 in total taxes last year, compared to \$31,069 on housing (including rent and mortgage payments), food and clothing or 37.4%.

In 1961, the average family spent 33.5% on taxes and 56.5% on food, clothing and housing (56.5%).

The total includes visible and hidden taxes paid to the federal, provincial and local governments covering income, payroll, sales, property, carbon, health, fuel and alcohol.

The jump from 1961 levels represents a 2,006% increase. For comparison, housing costs have risen 1,527%, clothing by 677%, and food by 639%.

Taking inflation into account, the think tank says the tax increase works out to 157.6% over the period.

## Great Lakes Manufacturing Council ceases operations

**DETROIT** — Following 10 years of working to improve the conditions for successful manufacturing in the Great Lakes region, the board of directors of the Great Lakes Manufacturing Council (GLMC) has decided to cease operations.

The organization will pass the torch to the Council of the Great Lakes Region (CGLR).

Established in 2007 as a bi-national organization, GLMC played a pivotal role in advancing the idea that the Great Lakes economic region – comprised of eight US states, Ontario and Quebec – represents the third largest economy in the world.

As GLMC winds down, CGLR will take up the focus on manufacturing.

## Redpath upgrades Belleville plant

\$5.2 million project to create 80 jobs



Redpath's Toronto sugar refinery.

PHOTO: REDPATH

**BELLEVILLE, Ont.** — Redpath Sugar Ltd. is investing \$5.2 million to upgrade its Belleville, Ont. plant to add new pouch packaging capabilities.

The investment includes a \$624,263 contribution by the Ontario government's Eastern Ontario Development Fund. The project will create 80 jobs.

Redpath, which employs 291 people, refines cane sugar for a range of products supplied to consumers, food service outlets and food manufacturers across Canada.

The Belleville plant co-manufactures major retail brands and private label products, such as iced tea, hot chocolate, drink crystals, gelatins and milk powder blends.



## Structurlam first Canadian firm certified to SFI

Will use the designation to expand its timber products into new markets



*The wood looks nice but there's also a green benefit.*

PHOTO: STRUCTURLAM

**PENTICTON, BC** — Structurlam is the first Canadian manufacturer of cross-laminated timber (CLT) to be certified to the SFI 2015 2019 Chain-of-Custody Standard.

CLT is a multi-layer timber product spanning two directions that provides a secure, airtight,

lighter than concrete construction material used for any floor, wall, roof or core.

The timber manufacturer in Penticton, BC has manufactured the wood product for six years and supplied it to more than 350 North American projects.

The SFI 2015-2019 Chain-of-Custody Standard, administered by the non-profit Sustainable Forestry Initiative, tracks certified forest fibre content through production and manufacturing to the end product.

It applies to the supply chains of more than 740 organizations, representing more than 2,000 sites, in 45 US states, seven Canadian provinces and 23 countries.

Wood products sold as certified under the SFI Chain-of-Custody Standard are good for Leadership in Energy and Environmental Design (LEED) credits through the LEED Alternative Compliance Path, or credits through the Green Globes Rating System.

## Bombardier wins US\$143.7M rail contract

Will replace direct current motors on London Central line trains

**BERLIN** — Bombardier's rail division has been awarded a contract by the London Underground to supply new motors and traction control equipment for its fleet of Central line trains.

The contract, which commenced in August, will run until 2024. The deal is valued at approximately US\$143.7 million.

Bombardier will also provide ongoing maintenance support.

The transportation manufacturer will replace the direct current traction motors on Central line trains with Mitrac alternating current traction motors and Mitrac traction control equipment.

The Central line trains are the last Underground trains to use DC traction motors. Bombardier says the Mitrac motors improve performance and reliability while reducing energy consumption.

The contract involves 680 cars.

The project will be led from Bombardier's



*The contract runs until 2024.*

PHOTO: BOMBARDIER

Västerås site in Sweden.

The installation of the first train, plus associated vehicle integration works and testing, will be performed at Bombardier's Derby site in the UK.

## Vantage Foods scales up with \$18M expansion

**BELLEVILLE, Ont.** — A Canadian meat processing company with production facilities in Ontario, BC and Manitoba is investing \$18 million to expand its plant in Belleville, Ont.

Vantage Foods Inc., which packages case-ready meats for Metro and Food Basics grocery stores, said the investment will add a new seafood line to the facility, which opened in 2011. The move is expected to add 70 jobs.

The project, which includes a \$1.5 million contribution from the Ontario government, will outfit the facility with new equipment and general upgrades aimed at improving productivity and increasing capacity.

Vantage is to finish the expansion by late 2019.

## ACOA provides \$1.5M for Dynamic Air Shelters

**GRAND BANK, NL** — Dynamic Air Shelters Ltd. is receiving \$1.5 million in repayable funding from the Atlantic Canada Opportunities Agency (ACOA) to expand its business.

The manufacturer in Grand Banks, NL, custom designs, engineers and manufactures lightweight, rapidly deployable textile shelters. Its main product is a blast-resistant shelter but it also supplies the oil and gas, construction industries, emergency and first responder operations, and the promotional sector.

The company plans to expand its fleet of rental inflatable air shelters, carry out international marketing activities and construct a 3,500 square-foot facility expansion in Grand Bank that will consolidate operations in one location.

The Department of Tourism, Culture, Industry and Innovation is providing an investment of \$570,000 in the project.

Other financial details were not provided.

Dynamic Air Shelters is based in Calgary, with plants in Grand Bank and Fortune, NL and a sales office in Houston. The company employs almost 70 people, including over 50 employees at its Grand Bank facility.

## Winli Apparel fined \$49,000 for not paying employees

**TORONTO** — A Toronto-based garment manufacturer that went out of business and failed to provide termination pay to some of its workers after being ordered to do so, has been fined \$49,000 in court.

Claims were filed against Winli Apparel Manufacturing Inc. under

Ontario's Employment Standards Act by the Chinese and Southeast Asian Legal Clinic on behalf of the workers. The provincial government says many of the garment workers were vulnerable and not fluent in English.

The Ministry of Labour issued

Orders to Pay amounting to about \$26,000, which the company failed to comply. Winli was then charged with 14 counts of failing to comply.

The court has also imposed a 25% victim fine surcharge as required by the Provincial Offences Act, which assists victims of crime.

## CAREERS



Faisal Kazi

Siemens Canada has a new president and CEO. **Faisal Kazi** is replacing **Robert Hardt**, who left the company in June to take on a partner role at next47, Siemens' separate unit for start-ups. Kazi, who joined the company in 1981 and has held various positions in the Netherlands, Germany and the US, will be responsible for leading the company's overall strategic direction. He was previously Siemens' senior vice-president responsible for the energy management division in Canada.



Ashwani Girdhar

Danfoss has a new Canadian sales manager to support its heating business. **Ashwani Girdhar** takes over the position for the manufacturer of high-efficiency components and controls for air-conditioning, heating, refrigeration, industrial, and water systems. He will also support the company's business in district energy. Girdhar spent six years as a senior sales manager for Danfoss in India.

The Excellence in Manufacturing Consortium (EMC) has appointed **Tonya Starr** field service advisor for Brampton, Mississauga, Milton and Orangeville, Ont. Previous positions include AG Simpson, Hermatite and Velcro Canada, and brings more than 20 years of manufacturing experience to the not-for-profit organization based in Owen Sound, Ont. EMC also appointed **Kevin Lenko** as senior advisor for lean program development. He has a 30-year career in manufacturing and extensive experience in lean management systems.

Resolute Forest Products Inc. has appointed **Patrice Minguez** president of the tissue group. Minguez will oversee all tissue operations as well as sales and marketing functions at Atlas Tissue in Florida, and tissue and converting facilities at Calhoun, Tenn.

## SSL to provide EchoStar XXIV satellite to Hughes Jupiter system

**PALO ALTO, Calif.** — Space Systems Loral (SSL) has signed a contract to provide an ultra high-density satellite to Hughes Network Systems LLC.

The EchoStar XXIV will be part of the Hughes JUPITER System, a high-throughput platform of more than 20 satellites operated by various providers of broadband enterprise, mobility and cellular services.

No financial details were provided.

SSL, the Palo Alto, Calif.-based manufacturing arm of communications company MacDonald, Dettwiler and Associates Ltd. (MDA) in Richmond, BC, said the satellite's technol-

ogies include 18 patented "advances" that provide more concentrated capacity over high-use areas.

Its new architecture includes miniaturized electronics, solid-state amplifiers and more efficient antenna designs.

"The new capabilities that we have developed will underpin the next generation of satellite systems that will serve the increasing consumption of data around the world," said Dario Zamarian, SSL's group president.

Hughes, based in Germantown, Md., is a wholly owned subsidiary of EchoStar Corp., a global provider of satellite operations.

## Rope-maker embarks on \$5.85M plant expansion

Includes a new building and production equipment to broaden its product range



Atlantic's ABL soft shackles rope.

PHOTO: ATLANTIC BRAIDS

**CHUTE-A-BLONDEAU, Ont.** — Atlantic Braids Ltd. has started work on a \$5.8 million expansion project at its facilities in Chute-à-Blondeau, Ont.

The expansion will add nine new jobs to its current 18 positions with the help of a \$837,750 investment from the Ontario government's Eastern Ontario Development Fund.

The company is a family-owned manufacturer that makes rope products for industries including oil and gas, arboriculture, agriculture, utilities and mining.

The expansion includes the purchase of a new building and production equipment that will improve productivity, expand the company's product range and boost exports.

The expansion is to be completed by September 2020.

## Cascades closes New York City plant

**KINGSEY FALLS, Que.** — Cascades Inc. will close its packaging plant in Maspeth, NY, as part of the company's modernization and optimization efforts in the Northeastern US.

The plant, which currently employs 148 people, will close by the end of Dec. 2018.

Employees will be offered jobs at the company's other facilities.

Cascades produces packaging and tissue products composed mainly of recycled fibres. The company has 11,000 employees at 90 production facilities in North America and Europe.

## \$200,000 fine for worker death

**SUDBURY, Ont.** — Glencore has fined \$200,000 for an incident at its Sudbury, Ont. mine that left one worker dead.

The accident took place at the company's Nickel Rim South Mine on the outskirts of the northern Ontario city in October 2015. It involved a heavy mining vehicle being used underground.

There were no witnesses to the incident, but Glencore and the Ministry of Labour reached several conclusions following separate investigations.

The Ministry of Labour says a worker was operating a load haul dump machine, when the vehicle's bucket collided with a wall. The worker, who wasn't wearing a seatbelt, was thrown from the cab and run over by one of the vehicle's tires. It also appears the cab door opened just before the loader's bucket hit the wall.

The labour ministry said it's likely the worker would have been injured rather than killed if the seatbelt, which was found to be functioning properly, was used.

Glencore pleaded guilty to violating the Occupational Health and Safety Act, specifically for failing to provide sufficient information about the use of a seatbelt in a load haul dump machine.

— *Files from CanadianManufacturing.com*



## Schneider Electric, Claroty partner on cybersecurity

Allows manufacturers access to real-time ICS/OT monitoring

**MISSISSAUGA, Ont.** — Claroty and Schneider Electric are partnering to address safety and cybersecurity challenges in Canada's industrial infrastructure.

Claroty, a cybersecurity company headquartered in New York, will market its real-time OT/ICS network monitoring and detection product to Schneider Electric's energy management and automation customers through the company's Collaborative Automation Partner Program (CAPP).

Claroty says its platform protects industrial control systems and continuously monitors networks for cyber threats. End users identify anomalies while protecting complex and sensitive industrial networks. Passive-monitoring safely inspects traffic without the disruption that can result from traditional IT security software using active queries or requiring a footprint on the network.

The system secures remote employee and



Protecting industrial control systems.

PHOTO: FOTOLIA

third party access to critical systems, and records the sessions.

Schneider Electric, based in Mississauga, Ont., says the partnership adds a key component to its cybersecurity efforts. It protects connected and edge control products within EcoStruxure, its IoT-enabled, open and interoperable system architecture and platform.

## Thermotech scores \$450,000 to automate production

**MONT-LAURIER, Que.** — A Quebec thermal glass manufacturer will use \$450,000 in federal funding to support the purchase of new equipment and establish an automated production line.

Thermotech is a thermal glass manufacturer based in Mont-Laurier. Its products are used in door and window manufacturing.

The funding comes from the Quebec Economic Development Program.

## Bleacher-maker lands \$180,500 investment in plant expansion

**ALMONTE, Ont.** — Sport Systems Canada will use \$180,500 from Ontario's Eastern Ontario Development Fund to add 10 jobs to its existing 21 positions.

The company, based in Almonte, Ont., manufactures and assembles bleachers and sports equipment for the Canadian and international markets.

Customers include schools, universities and municipalities.

The provincial funding will support a \$1.38 million plant expansion and the purchase of new production equipment.

The project is to be completed by the end of 2019.

## Kuntz Electroplating kicks off \$10.8M expansion

**KITCHENER, Ont.** — An Ontario manufacturer that supplies Ford, General Motors, Harley-Davidson and a number of other major automakers with polished and plated parts is scaling up its operations in Kitchener, Ont.

Kuntz Electroplating Inc. plans to spend approximately \$10.8 million to modernize its equipment, expand one of its four automated electroplating lines and install an automated material handling system.

The company employs more than 400 workers at its approximately 400,000 square-foot facility in Kitchener. The new project will create an additional 25 jobs at the site.

The Ontario government has agreed to commit just over \$1 million to the expansion, while the company will contribute nearly \$9.8 million.

The project is to be complete by August 2020.

## Electrical enclosures for all your applications.



Whether your needs are industrial/commercial, indoor/outdoor, or small/ large, Hammond has **thousands of enclosure options** to address your needs.

Visit [hammondmfg.com](http://hammondmfg.com) - by far, the **easiest enclosures website** to find your equipment protection solutions. Our brief video at [www.hammondmfg.com/qsearch](http://www.hammondmfg.com/qsearch) explains why.

Contact a Hammond enclosure expert today:  
[hammondmfg.com](http://hammondmfg.com) 519.822.2960 [sales@hammondmfg.com](mailto:sales@hammondmfg.com)



## Jobs at risk from Ont. labour reforms

Business groups project job losses at 185,000 over two years

**TORONTO** — A coalition of business groups says Ontario's proposed changes to labour laws will put 185,000 jobs at risk in the first two years of being implemented.

The Keep Ontario Working Coalition, which includes groups such as the Ontario Chamber of Commerce and the Retail Council of Canada, has released an economic impact analysis of the labour reforms in Bill 148.

A spokesman for the coalition says the bill will have "dramatic unintended consequences," including job losses.

The proposed legislation would, among other things, raise the minimum wage to \$15 an hour, require equal pay for part-time workers and expand personal emergency leave.

Business groups have repeatedly expressed concerns about the minimum wage increase and the pace at which it would be

implemented.

The minimum wage will rise with inflation from \$11.40 an hour to \$11.60 in October, up to \$14 on Jan. 1, 2018, and \$15 the following year.

Data from the economic impact analysis shows businesses would take a \$23 billion hit over the next two years alone. Of the 185,000 jobs at immediate risk over the next two years, 30,000 will be workers under 25.

The coalition asserts the Ontario government would need to borrow \$440 million more to cover the increases in new costs from this legislation. If the government were to provide offsets to businesses, as they have indicated, the province's treasury will take a bigger hit.

Municipalities will also be forced to increase employee wages by \$500 million without additional offsetting revenues.



Business groups have expressed concerns about the minimum wage increase.

PHOTO: FOTOLIA

The Ontario Federation of Labour doesn't agree with the coalition's analysis.

The labour group, which represents 54 unions and more than one million workers, says the analysis doesn't acknowledge increases in consumer spending, reduced demand on social services and the strengthening of household financial stability resulting from a more equal distribution of income.



## 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](http://www.plant.ca) or reading **PLANT**'s twice-weekly newsletter (hit Subscribe on the website).

### NAFTA issue: Getting Mexican workers a pay raise

[www.plant.ca/i1tTf](http://www.plant.ca/i1tTf)

Mexico has been raped and plundered by industrialized nations for years. Close proximity to the world's largest consumer market, cheap land, non-existent environmental

and labour regulations and very low pay are only some of the benefits manufacturers enjoy. The average workers' lives have improved marginally but remain far behind their North American counterparts.

### Wynne promises unspecified relief for businesses amid planned minimum wage hikes

[www.plant.ca/pCSD1](http://www.plant.ca/pCSD1)

A minimum wage hike would be beneficial to workers if implemented slowly and progressively. This is too far, too fast. Wynne is simply buying votes and playing with fire. Time will tell whether this ploy ends with a net benefit or penalty to the very people she claims to assist.

### 200 kgs of hash found in shipment of chocolate bars in Halifax

[www.plant.ca/tCOL4](http://www.plant.ca/tCOL4)

"This is a significant seizure, and a great example of how our bor-

der services officers use a combination of instinct, training and tools to intercept illegal drugs," Calvin Christiansen, the agency's Atlantic director-general, said in a statement. Are you kidding me? You got tipped off! Nothing to do with instinct or training or anything else.

### Freeland concerned Canadian armoured vehicles used against Saudi citizens

[www.plant.ca/xSnL5](http://www.plant.ca/xSnL5)

I can't understand why we are dealing with this country... it's one of the worst in the world on human rights. It's all about the money... Shame on the Canadian government for dealing with them at all. I'm sure a lot of Canadians agree with me.

### Interesting times, be prepared

[www.plant.ca/doEsA](http://www.plant.ca/doEsA)

Easy fix, kill NAFTA, CETA and TPP. You save the Canadian

environment. The Canadian economy will boom. We don't need Chinese garbage. I am a proud Canadian manufacturer. Free trade was dreamed up for crooked politicians and the religious freaks. ZERO benefit for Canada.

### Softwood dispute redux – it's time to secure new lumber markets

<http://www.plant.ca/0v9bG>

I have never understood why it was good to export our natural resources to a single market. Once we developed China's market, we should have expanded, not contracted when the pressure was off in the US. If American consumers realize price increases resulting from the duties are permanent, even after we win our cases, they will be very angry at the politicians. We should be looking to diversify markets for oil and gas as well as minerals and agriculture.



## Guess who's hiring?

SME's share of new jobs reaches 42% between 2010-16

Canadian manufacturers of less than 100 employees should be pleased to learn that despite suggestions business activity among their category has been cooling, they're actually much stronger than perceived, according to a CIBC Capital Markets report.

Small businesses created 42% of new jobs between 2010 and 2016, which is an increase from 30% during 2000 to 2010. And SMEs have accounted for a bigger share of jobs since 2010.

"Beyond the threshold of five employees, there is a clear positive correlation between size and growth, with larger firms within the SME spectrum seeing progressively stronger growth recently," said Benjamin Tal, CIBC's deputy chief economist.

In 2016, more than 350,000 businesses were created against the just under 300,000 that left the field. Although the rate of businesses entering the economy relative to the total has been declining since 2004, the exit rate is more stable, despite disruption resulting from falling oil prices a couple of years ago.

Tal says small business optimism is higher since bottoming out early last year and is heading back to levels seen prior to the oil price shock. "With the Canadian economy in recovery mode, the environment for small businesses remains constructive."

The World Bank ranks Canada as one of the best places to start a new business, thanks to the availability of capital and a favourable tax regime, but the report highlights several gaps.

The 25 to 39 age group represents less than 15% of small and 10% of medium-sized business owners, compared to the 50 to 64 demographic that represents 47% and 51% respectively.

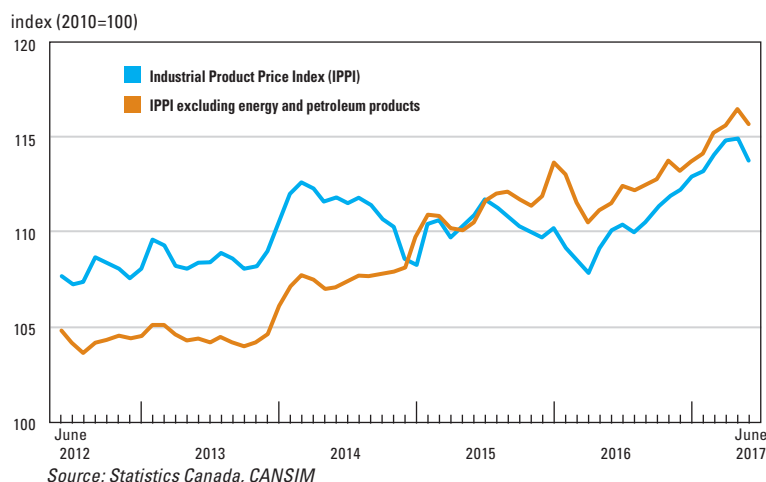
One reason for the discrepancy is companies with younger owners have a tougher time externally funding their businesses, Tal says.

The report also sees women as an untapped resource in the SME space, representing less than 20% of majority ownership.

SMEs have also been slow to expand revenue sources outside of Canada and North America. The report notes there's room to increase the ratio of Canadian goods and services exported to Asia and Latin America.

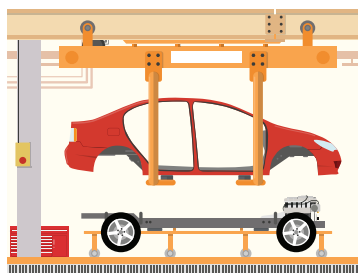
# PLANT PULSE

## ECONOMIC DEVELOPMENTS AND TRENDS



### JUNE SALES SAG

Manufacturing ended a three-month run of sales increases with a 1.8% decline to \$53.9 billion in June. Statistics Canada reports 15 of 21 industries representing 72.1% of the sector showed decreases. Sales of non-durable goods were down 2.2%, while sales of durable goods dropped 1.5%. Much of the slippage came from lower sales in petroleum and coal, transportation equipment and chemicals.

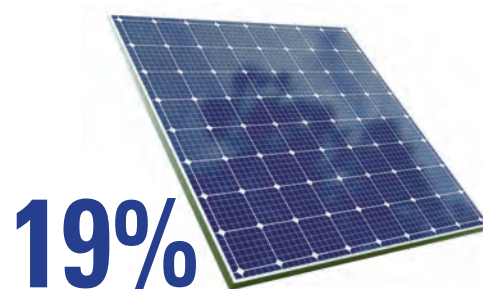


2.1M

Annualized automotive sales in June. This represents a 6.5% increase, year over year, reports Scotiabank. Annualized sales are about 2% above the January-May average.



New Ontario debt (annually) between now and 2019-20. The Fraser Institute notes debt growth between 2008 and 2016 was 7.6%; annual economic growth averaged 3.2%.



The decline of Canada's clean technology patents (worldwide), from 1.6% in 2011 to 1.3% in 2015, according to the 2017 Clean Technology Industry Report by Analytica Advisors.



28%

Percentage of Canadian SMEs trading with the US and/or Mexico that say the renegotiation of the North American Free Trade Agreement (NAFTA) will alter their export and import plans. A survey by Canadian Federation of Independent Business finds 33% of small businesses say favourable free trade agreements influence their trade decisions. Industry Canada data shows small businesses account for more than 90% of exporters.

# CANADA'S KETCHUP

## PRODUCING FRENCH'S MOST PATRIOTIC CONDIMENT

Food manufacturer transforms itself to meet growing national demand.

BY MATT POWELL,  
ASSOCIATE EDITOR

Select Food Products Ltd. is a name you likely don't know behind a brand you do know. The company has gained some local cache after being a party to a ketchup war that created a social media uproar across Canada.

That would be the Heinz versus French's kerfuffle that started when Heinz bailed on its Leamington, Ont. plant to make ketchup in the US, leaving local tomato farmers in the lurch. The plant's closure cost 700 Ontarians their jobs.

But French's swooped in to save the day, announcing it would produce its ketchup using locally sourced ingredients. Many Canadians turned on Heinz to align with French's con-

diment commitment. One Facebook post (February 2016) by an Orillia, Ont. man who switched was shared 135,000 times. In it, Brian Fernandez explained why and urged other Canadians to join him and his family.

"Since Heinz decided to pull the plug on its Canadian plant in Leamington, 740 jobs were lost. Heinz decided to make its ketchup solely in the USA. Then, French's stepped in and decided to make ketchup. They also decided to use those same Leamington tomatoes from Canadian farmers," Fernandez wrote. "The result: A ketchup .... free of preservatives. Free of artificial flavours. Also, free of high fructose corn syrup!! We bought a bottle. Absolutely love it!! Bye. Bye. Heinz."

French's has always used Canadian tomatoes, but the ketchup was produced at a plant in Ohio. Fast forward a year and

Select, under new ownership and leadership, won a contract to produce French's Canadian-sourced ketchup, part of the food giant's "French's Promise in Canada" campaign.

The Toronto-based food manufacturer, founded in 1941, has made a name for itself as a private label supplier of BBQ sauces, mayonnaises, mustards, salsas, salad dressings, gravies and specialty sauces and condiments. Its foodservice, co-pack and industrial customers span Canada, the US and beyond.

Select's unassuming food production facility in the city's northeast end is now churning out 5,000 litres of French's ketchup every hour, or 250 bottles every minute. By 2018, production will hit 10 million bottles.

A shiny new production line takes up what used to be a large storing facility where tomatoes

*Centre: Andrew Mitchell, president and CEO of Select Food Products, acquired the company in June 2015.*

*Left: Select's ketchup line will process 40,000 bottles this year.*

*Right: French's Ketchup is made from Canadian-grown tomatoes sourced in Leamington, Ont.*

PHOTOS: SILVANA METALLO







shipped as a paste are mixed with French's signature spice blend and cooked before heading down a bottling line, then to packaging.

Although labels on the ketchup say the product is made in Canada, there aren't any plans to export the condiment, so the Select product is the nation's own ketchup.

### Canadian suppliers

More than 90% of the ingredients, including tomatoes, vinegar, water and sugar, are sourced from Canadian suppliers, says Andrew Mitchell, Select's president and CEO who acquired the company in June 2015 from descendants of its original owners.

Mitchell, who was in a past life sold advertising for **PLANT**, has food manufacturing in his blood. His family owns Trophy Foods, a manufacturer of nuts, dried fruits, confectionery and bulk foods with facilities in Mississauga, Ont. His twin brother Scott owns a printing company called Acorn Packaging that also serves the food industry. After five years in consulting at Deloitte, earning an MBA and deciding magazine sales weren't for him, it was time for Andrew to have a go on his own.

"I was aware of Select – I'd done a ton of research and knew

that the owners didn't have a succession plan within their family. The company had a good base, but it's product was kind of tired and needed a bit of an overhaul," Mitchell says, adding that the original owners wanted someone who would preserve the company's legacy. "I became the successor they didn't have." He officially purchased the company June 28, 2015, aiming to inject some life into the operation.

"The most significant thing we've done is put in place a new management team. I've done what a private equity firm would do. I've blown the company up and put it back together, while maintaining the existing workforce and facilities."

There was a time when Select's quality and reputation weren't great because of corner cutting and shortcuts in the manufacturing processes. He brought in food quality experts to help with a turnaround.

Before Mitchell, tasks such as scheduling were performed the day before, collecting performance metrics was non-existent, and there was no overall vision or plan. He committed to being smart about what the company was doing, and not operating as a day-to-day business, which wouldn't have been



sustainable.

“Implementing a new vision has been a lot of work, and has taken a lot of training, but we’ve been able to cultivate a culture and reinvigorate our workforce by focusing on improving things such as maintenance and safety practices,” he says. “There was a lot of ‘not my problem’ – but people weren’t happy. I’m in for the long haul – I don’t need people around who aren’t part of the program.”

He also emphasizes the importance of serving customers, and that doesn’t necessarily mean selling them what they want. For example, there were some tough conversations about not producing organic product with a 12-month shelf-life. “That’s impossible.”

Select is home to 155 employees, 130 of whom work in manufacturing, maintenance and shipping. During peak periods, Mitchell adds an additional 50 or so temporary staff, and the 100,000 square-foot plant on Sunrise Avenue in North York is producing about 12 million litres of product annually.

Mitchell made the decision to outsource sanitation, and doing so on a midnight shift to minimize disruptions to production. A big part of that decision had to do with line staff performing sanitation chores at the end of the day when they just wanted to go home. The result was a lot of corner cutting.

Select has also outsourced all retail goods and co-pack finished goods to a third party logistics provider, but that move was influenced less as a process-based decision, and more as a necessity to grow the business by taking on additional capacity. Enter Select’s state-of-the-art ketchup line.

Mitchell recalls an out-of-the-blue phone call in April 2016 from Elliot Penner, president of The French’s Food Co., who went on to describe the company’s strategy for the Canadian market, its commitment to local ketchup production and its intention to bring on a local co-packer.

### Production line

French’s has also expanded its partnership with Highbury Canco in Leamington, which sources and packages all the tomatoes and tomato paste used in French’s ketchup.

“This all happened when the whole French’s ketchup thing was going crazy,” Mitchell says. “So we put together a pretty detailed plan. At the time, we didn’t have production lines automated to a level that would make us competitive and efficient, but we used their expertise to pull one together.”

A new production line didn’t come without some pain. To make room, Select had to outsource a number of finished goods and move ingredient stor-







age to a 25,000 square-foot facility across the road. Because of health and contamination issues, the space had to be outfitted with new floors, walls and fixtures, such as hand-washing stations. New infrastructure includes boilers, a new HVAC system and chillers.

To handle increased power requirements, the facility was converted for 1,600 amps, which also required a new transformer and electrical room.

The production line is made up of a cooking and filling system, bottle blower and capper, a labelling machine and a palletizer that was acquired from a shuttered Wrigley Gum factory 15 minutes away.

"It was a huge investment because we had to create a manufacturing space where there wasn't one," Mitchell says, adding that two 32,000-litre liquid sugar tanks had to be plumbed into vinegar tanks to create an automated system to ensure product could be produced.

French's partnered with Select on the new plant. Mitchell says having a partner was an important factor for other lenders. There was also a \$75,000 investment by the Greenbelt Fund, a not-for-profit that supports agriculture businesses in the Greenbelt (a permanently protected green space in Southern Ontario) and the province. Select also hired 10 additional workers to manage the new capacity.

"That investment was important to us because it shows

the government is aware that supporting local food producers is valuable to the economy," Mitchell says. "A lot of the volume is about farmers and primary growers, but not many people talk about the secondary processors. Food will always be produced in Canada because Canadians want to buy products manufactured here."

### Funding help

Select also received \$350,000 through Growing Forward 2, a federal-provincial-territorial initiative that supports competitiveness in Canada's agri-food and agri-products sector. The funding was for a state-of-the-art ERP system that manages R&D, production, scheduling and purchasing. It will also trace all product ingredients and allow Select to make data-driven decisions to improve efficiency and productivity.

The new line started production in April, kicking it all off with an event attended by Toronto Mayor John Tory.

Looking ahead, the focus will be on increasing automation and labour, and longer production runs.

Mitchell admits there's a certain amount of risk involved, but it's necessary to remain competitive. He's also looking at doing more business in the US.

"I don't want to do production runs that are less than a day long, so there's going to be a point where we're going to be doing bigger business with copackers and other companies,

and most of them are in the US," Mitchell says.

That includes plans to go to two shifts, five days per week, partly to keep up with competitors running 24-hour-a-day operations.

"That's a huge identity change compared to when I bought the company," Mitchell says. "It's what you need to do today to make sure you're covering overheads."

As a manufacturer in Ontario, Mitchell lives with daily challenges, including high energy costs. Like many of his manufacturing brethren, he's also concerned about the province's plans to raise the minimum wage to \$15 per hour and how it will affect his operations.

"The minimum wage issue is one we can't just pass off to our customers because the Loblaws of the world can buy things from anywhere. That could be a hit to our profits for sure," he says. "The incentive to change is minimal when it's expensive to change. But I guess making those decisions are the cost of being an entrepreneur."

Yet he has managed to find some opportunities among these challenges, and they're related to innovation and product development. Like customer demand for organic and non-GMO-type products that fetch higher prices.

Developments in environmentally-conscious packaging are also a chance to "wow" customers with new, higher-end products.

"People aren't going to buy a \$5 barbecue sauce if it's packaged in a toothpaste tube."

Meanwhile, the battle for dominance in the Canadian ketchup market continues and Select's partnership with French's demonstrates how a tasty ketchup and a commitment to "made-in-Canada" resonates with customers.

### Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).

Centre: Line operator Wayne Vassell (L) and Mitchell (R) supervise the ketchup bottling line.

Left: Select's new ketchup line includes a state-of-the-art bottling and capping machine.

Bottom middle: Finished ketchup moves to the packaging station, which includes a palletizer purchased from a former Wrigley gum plant.

Top right: Line assistant Tanya Wright and line supervisor Howard Lawrence perform quality control on the ketchup production line.

## TRANSPORTATION

Assembly line operations deploy high-level data to correct defects immediately.

BY MICHAEL MARTIN

You have likely heard of the Industrial Internet of Things (IIoT). It connects complex equipment and systems to cognitive and analytical intelligence so they run better, safer, cleaner and more efficiently.

In the automotive and aerospace sectors, operating models continue to move toward connected systems that drive cost reductions and improve other business considerations related to product quality and time-to-market.

Until recently, transportation manufacturers have operated in an assembly line model. In automotive plants, vehicles have been built using the same design and manufacturing plans for each one. Processes are mostly manual, including critical quality assurance stages that are executed as stand-alone tasks along assembly lines.

As more manufacturers adopt IIoT to improve manufacturing processes, they're testing and diagnosing production-related issues via real-time analysis. Instead of building then checking, they're testing in real time as vehicles flow along the assembly line to detect, identify and correct defects immediately.

One major car manufacturer performs all testing before the body has been attached to the vehicle's chassis, completing diagnostics along the assembly line. As vehicles become more complex, real-time diagnostics are driving more value to the bottom line.

Unlike 20 years ago when quality assurance would focus on the engine, the transmission and other major components, manufacturers must now check systems we would have never imagined years ago. Are the seats heating and cooling as they should? Do seatbelts meant



# Making a DIGITAL transformation

## HOW IIOT IS CHANGING THE AUTO AND AEROSPACE INDUSTRIES

to activate with the brakes actually work? With IIoT, computers are continually talking to each other to ensure all these parts work seamlessly and exactly as designed.

Taking this one step further, manufacturing in real-time through IIoT allows for optimization and customization. Vehicles used to come fairly standard. Now, production lines quickly scale up and down to meet customer demand for a product, while easily personalizing vehicles to customer specifications.

The IIoT approach is also leeching into aerospace. Real-time diagnostics minimize physical inspections and downtime. Now, preventive maintenance is performed with

periodic checks, requiring the physical removal of pieces of the aircraft for inspection. But with continuous inspection by thousands of sensors, last minute issues are caught before they become critical concerns.

### Identifying issues

IIoT systems identify issues before they're seen by the human eye. This minimizes downtime and improves passenger safety.

IIoT also allows aircraft manufacturers to rebuild components such as wings and make major changes to the aircraft aerodynamics. New sensors measure every twist, flex, lift, compression and stress on the plane's wings, communicating that information in real-time to cognitive analytic systems.

*Manufacturers are re-engineering processes to use technology at a more granular level.*

PHOTO: FOTOLIA

New airplanes are being built to track data from thousands of sensors. Pratt & Whitney's new geared Turbo Fan engine has 5,000 sensors that generate up to 10 gigabytes of data per second. To put that into perspective, a single twin-engine aircraft equipped with one Pratt & Whitney engine – average flight-time of 12 hours – would produce up to 844 terabytes of data.

What will they do with all that data? Married to cognitive computing, it produces artificial intelligence that predicts demands on the engine, maximizing thrust levels to cut fuel use by up to 15% while reducing engine noise and emissions.

Manufacturers that maximize the benefits of IIoT to boost analytics functions perform better quality control, speed up processes, and track plant assets with the benefits accruing to the bottom line. Multiple tasks (such as assembly and quality assurance) are done in parallel to make better use of resources, which is reducing costs and increasing the speed new products come to market.

There's a seismic shift in manufacturing as integration of connected technology meshes with virtually every industry ecosystem. The global IIoT market reached nearly \$130 billion in 2016 and is expected to grow at a compound annual growth of more than 25% by 2025, even as it evolves.

Manufacturers at the beginning of their IIoT journey should not consider it an all or nothing model. It takes time to transition from older to newer systems. A staged and thoughtful approach will drive tangible value.

*Michael Martin is senior executive, Internet of Things lead at IBM Canada Ltd. in Markham, Ont.*

**Comments?**  
**E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**



## STRATEGY

Prepare for a vastly different business future by setting the right strategic priorities.

BY BENJIE THOMAS

Today's business environment is evolving at an exponential rate. For manufacturers, this has translated into a range of disruptive forces that are shifting business dynamics. To keep pace with new technologies, spiralling customer demands and mounting competition, companies must innovate and evolve. Failing to do so risks more than a potential loss of revenue or reputational damage. They may also risk obsolescence – a fate that many companies in other industries have already experienced thanks to disruptors such as Amazon, Uber and AirBNB.

To avoid this fate, take a closer look at the implications and risks associated with disruption. In fact, a KPMG report says 75% of Canadian companies responding to a CEO survey see this unique point in time as an opportunity for growth. But seizing the moment won't come easy.

*Disrupt and grow: 2017 Canadian CEO Outlook*, a report based on a KPMG survey of 1,300 global CEOs (including 51 Canadians), notes that while 86% of them identified their business as an active disruptor in the marketplace, maintaining that position for the long haul will require setting the right strategic priorities. For those in the industrial and manufacturing sectors, this includes increasing technological investments, becoming more customer-centric, strengthening cybersecurity and remaining focused in the face of geopolitical uncertainty.

While exponential technologies are redefining most industries, few are more impacted than manufacturers. Many companies are already adopting robotic process automation, cognitive technologies, blockchain



Technologies are redefining most industries. PHOTO: FOTOLIA

# Embrace DISRUPTION

## ITS AN OPPORTUNITY FOR GROWTH

and data analytics, and rapidly redefining manufacturing processes.

Organizations that fail to invest heavily in the early-adoption phase of these new technologies risk a loss of competitiveness, and a potential loss of relevance. Most survey respondents cited emerging technologies as a significant risk to their organizations, making it the second highest risk cited in the survey.

Many of the Canadian executives have invested significantly in new technologies over the last 12 months, most notably in the Internet of Things (39%), blockchain (29%), data analytics tools (27%), cognitive technologies (25%), cognitive automation (24%) and robotic process automation (10%). Given the prominent role technology will play in the future, manufacturers would be well served to maintain or increase those investments. In recent years, it has become clear the world's most successful

companies are capable of constantly evolving in response to shifting customer expectations. Canadian CEOs understand this imperative, with 78% saying they feel a growing responsibility to represent the best interests of their customers. However, achieving customer-centricity is easier said than done.

### Cyber secure

For manufacturers, this imperative lies in prioritizing innovation. To succeed in an age of disruption, companies should be asking three critical questions:

- How can we use disruption and innovation to create operational efficiency?
- How can we improve sales channels through innovation?
- How can we innovate to open up new sales channels?

Cyber breaches have increased dramatically over the last few years and are expected to become more common. Understanding this, CEOs are taking steps to ensure

their organizations are cyber secure and able to recover swiftly should a breach occur. Thirty-seven per cent of Canadians say they're fully prepared for a cyber event, compared to only 13% in 2016.

But there's still work to be done. The pace of change in manufacturing will likely create more complex cyber risks. As hackers become more sophisticated and manufacturers become more vulnerable to external attacks – thanks to such technologies as the Internet of Things and Big Data – companies must evolve with them. This means adapting cybersecurity policies and procedures to better monitor evolving risks and reflect emerging threats, such as distributed denial of service attacks, social media hacking and employee-led breaches.

Geopolitical uncertainty and its impact on exports is a great concern for manufacturers. While interest rate risk tops the agenda for most CEOs, manufac-

turers are also waiting anxiously as the fate of the North American Free Trade Agreement hangs in the balance.

### Political upheaval

While it's difficult to develop and execute strategic plans in the face of such uncertainty, it's important for manufacturers to focus on what they can control. For the most part, CEOs are doing just that – 44% said increasing penetration in existing markets is a priority. In the same vein, 65% said their primary investment objective is to improve bottom line growth, 50% were aiming to improve organizational resilience and 46% are focused on increasing productivity.

But to thrive in the future, manufacturers may also want to focus on disrupting competitors, creating new products and services, and transforming business and operating models.

They should also look at disruption through a more global lens to ensure they're focused on the priorities, investments and opportunities most likely to deliver a competitive advantage. Already, the majority of companies say they're engaging in scenario planning to address geopolitical uncertainty. By staying on top of emerging trends and shifting customer needs, they avoid being blindsided while uncovering business opportunities faster.

Now is the time to disrupt and grow. Admittedly, becoming a disruptor will not be easy, yet it's a major priority for Canadian manufacturers. They recognize future success hinges on elevating disruption, innovation and competitiveness to the top of the corporate agenda.

Download the report at [www.kpmg.ca/CEOoutlook](http://www.kpmg.ca/CEOoutlook).

*Benjie Thomas is the Canadian managing partner, advisory of KPMG in Canada. E-mail [bthomas@kpmg.ca](mailto:bthomas@kpmg.ca).*

### Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).

## TRAINING



*Consider how easy software will be to use.*

PHOTO: FOTOLIA

# Figuring out SOFTWARE

## HOW TO GET LEARNERS UP TO SPEED FASTER

BY HUGH ALLEY

Employees are very resourceful. When asked to do something they'll find a way, even if the solution is less than elegant because management skimped on training, building reports or queries.

When selecting software, business analysts ask operational staff what they need. Their focus is transactional stuff: "I need to be able to receive an incomplete shipment... I need to be able to adjust inventory after a count... I need an alert when something is scrapped."

But few analysts ask about training needs or ease of learning.

The following steps will get your team up to speed faster, with fewer errors – a benefit you'll enjoy every time a new

person is hired:

- **Count keystrokes and screens.** Simple, but it works. Identify the half dozen processes most commonly handled by each role. Count the keystrokes and the screens needed to complete each process. Pick the software with fewer keystrokes and screens.
- **Count user errors in a trial.** Give a four year old an iPad and within an hour he/she is using it without thinking. Business software should be that intuitive. Arrange a trial with each short-listed package. Give users a 15-minute orientation and ask them to test the six processes. Count how many times they have to go back and re-do something: reposition the cursor, go to a different screen, select a

different option from a menu, search for a menu item – anything that doesn't get them directly to the end of the process. Pick the solution that generates fewer errors.

- **Ask the vendor about their instructional methodology.** If they can't tell you how the instruction process was developed, take it as a warning. Two options to look for are instruction designed by someone with credentials in instructional design or the Training Within Industry (TWI) model. Either works. One software vendor started using the TWI process and saw learning time shorten by half, with better compliance to new processes and fewer calls for help.

Follow these steps for less stressful learning and staff that are more productive and accurate.

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

### Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).



## PRODUCTIVITY

# Eldercare ISSUES

## THEY MAY BE AFFECTING YOUR COMPANY

Programs that help employees cope reduce absenteeism and turnover.

Canada's aging population is affecting more than the replacement of retiring executives and skilled workers: its costing almost \$1.3 billion in lost productivity as more employees deal with eldercare issues.

More than 25% of employed Canadians provide care and assistance to an elderly family member. A Conference Board of Canada report says this may lead to significant pressure related to balancing work with care, elevated stress levels, absenteeism and work interruptions.

The Ottawa-based research firm says this is costing companies an estimated \$1.28 billion per year in lost productivity.

Formal programs are not common. A survey of primarily medium and large employers found 37% offer eldercare leave; 32% indicated the leave was unpaid; 2% offered paid leave; and another 3% offered a combination of paid and unpaid leave.

*The Juggling Act: Balancing Work and Eldercare in Canada*, offers broad guidelines for developing an eldercare strategy:

- Assess obligations currently affecting employees.
- Consider measures already in place. Assistance programs offer helpful services.
- Align strategies with needs. Days off, reduced work hours or a short period of leave may be more beneficial than greater flexibility.
- Prioritize managerial and organizational support. Support from a direct manager



Formal eldercare programs are not common.  
PHOTO: FOTOLIA

often determines the extent to which an employee will avail themselves of eldercare accommodations.

- Adjust programs as necessary.


Eldercare is unpredictable and changes over time.

Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).

# TITAN™

## The Gold Standard for Performance



### Titan™ chain offers the ultimate in extended wear-life.

When it comes to critical applications, reliability is everything. But not just any chain can withstand the nonstop stress of high speeds and harsh conditions. That's why Tsubaki designed its Titan chain to deliver superior durability in challenging environments. Specially coated pins, solid lube groove bushings\* and a patented ring-coining process increase fatigue strength while minimizing wear. The result is a significantly longer wear-life, even in extreme environments.







So go on, hold your chain to a higher standard — the Titan gold standard.

**To learn more, call 800.263.7088 or visit [tsubaki.ca](http://tsubaki.ca)**

\*Lube groove bushings available in sizes 80–140.

ROLLER CHAINS • ENGINEERING CLASS CHAINS • BACKSTOPS • SPROCKETS • CABLE & HOSE CARRIERS • POWER TRANSMISSION PRODUCTS

**Total Package**  
TSUBAKI.CA





The CFTA provides easier access to government procurement projects.

PHOTO: FOTOLIA

# Breaking down BARRIERS

## CFTA LEVELS THE PLAYING FIELD

The new deal improves trade, investment and worker mobility between provinces and territories.

BY IMRAN AHMAD AND  
SUMEYA MULLA

**M**any Canadian manufacturers find it easier to do business in the US rather than other provinces because of interprovincial trade barriers.

In an effort to make internal trade freer, the federal and provincial governments have replaced the existing Agreement on Internal Trade (AIT) with a

new deal.

Under the old arrangement domestic companies had to deal with a host of territorial barriers while international trade agreements ensured foreign companies had freer access to the Canadian market. The AIT opened trade in a limited number of sectors, restricted the sale of certain products inter-provincially and added limitations to labour mobility.

The Canadian Free Trade Agreement (CFTA), which came into force July 1, ensures Canadian companies enjoy the same access to domestic markets as foreign businesses.

It aims to improve trade, investment and worker mobility within Canada by reducing, and in some cases eliminating existing interprovincial barriers, except for specified exemptions.

This is a big change from the positive list approach taken by the AIT, which was limited to 11 sectors. It required provinces and territories to itemize all the goods and services allowed to be traded.

CFTA's "negative list" requires any remaining barriers to be specifically noted in the agreement. Liquor and beer are among a few of the exceptions, but the agreement will create

a working group to liberalize trade in this area.

The new agreement also provides better access to government procurement. Under CETA, European Union companies get access to all government contracts digitally. Canada's internal trade rules did not provide for electronic access, so domestic companies would be at a disadvantage for contracts outside their territories. Under the CFTA, companies can bid for projects online through a "Canada-wide single point of access" that levels the playing field with foreign businesses.

### Dispute resolution

CFTA's dispute settlement mechanism, similar to the one outlined in the North American Free Trade Agreement, covers both state-to-state and person-to-state violations. The mechanism includes government-to-government and person-to-government provisions. Monetary penalties for violations will range from \$250,000 to \$10 million.

A reconciliation process reduces regulatory barriers imposed by provinces or territories to trade, investment or labour mobility. If a party wants "to adopt or modify a regulation that may have a significant effect on trade or investment within Canada," it must provide a minimum of 30 days notice, and allow other parties and interested persons to comment on the proposed regulation.

What does this new internal trade deal mean in dollars and cents? It's projected to add up to 0.20% of GDP, and that presents some significant opportunities.

---

*Imran Ahmad is a business law partner at Miller Thomson LLP. Sumeya Mulla is a human rights, immigration and refugee lawyer at Waldman & Associates. E-mail [iahmad@millerthomson.com](mailto:iahmad@millerthomson.com).*

### Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).



# GLBC ups its GAME

## NEW MACHINES BOLSTER INHOUSE PRINTING, LAMINATING



AB Graphic's Digicon Series 3 digital label converting machine.

PHOTO: AB GRAPHIC

A BC company that manufactures custom and flexible packaging, corrugated boxes and folding cartons has purchased three new packaging production machines to bolster its operations.

Great Little Box Co. Ltd. (GLBC), founded in 1982 in Richmond, BC, says the purchases will help expand its product line.

The new equipment includes a digital label printing press, a digital label converting machine and a digital laminator.

GLBC's HP Indigo WS6800 digital printing press allows the company to complete all digital production in-house. An AB Graphic International's Digicon Series 3 digital label converting machine comes with a 50T Hot

Foil & Emboss unit called "Big Foot", one of only five of its kind in North America.

The unit produces small, short runs of simple labels all the way up to high-end multiple foiled jobs for the wine and beverage markets.

And a Stock LLM/HP label laminator provides corrugated customers with higher-end box-

es, trays and displays.

The company expects the installation at its Richmond plant to be completed by the fourth quarter.

GLBC also has operations in Victoria, Kelowna and Everett, Wash.

**Comments?**

**E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**



### Engineered Systems, Products & Services

*Keep your operation  
on the move with  
ergonomic solutions  
for lifting, manipulating  
and transferring loads.*



Schmalz JumboFlex



Ingersoll Rand Bundle Handler



Parker Moduflex IO-Link



Parker L90LS Mobile Valve

A variety of solutions from Wainbee and its partners - Ingersoll Rand, Schmalz & Parker.

Your **Motion & Control** Solutions Partner • 1-888-WAINBEE • [www.wainbee.com](http://www.wainbee.com)

Maintenance pros learn best with real-world, hands on activities that demonstrate applications.

BY STEVE GAHBAUER

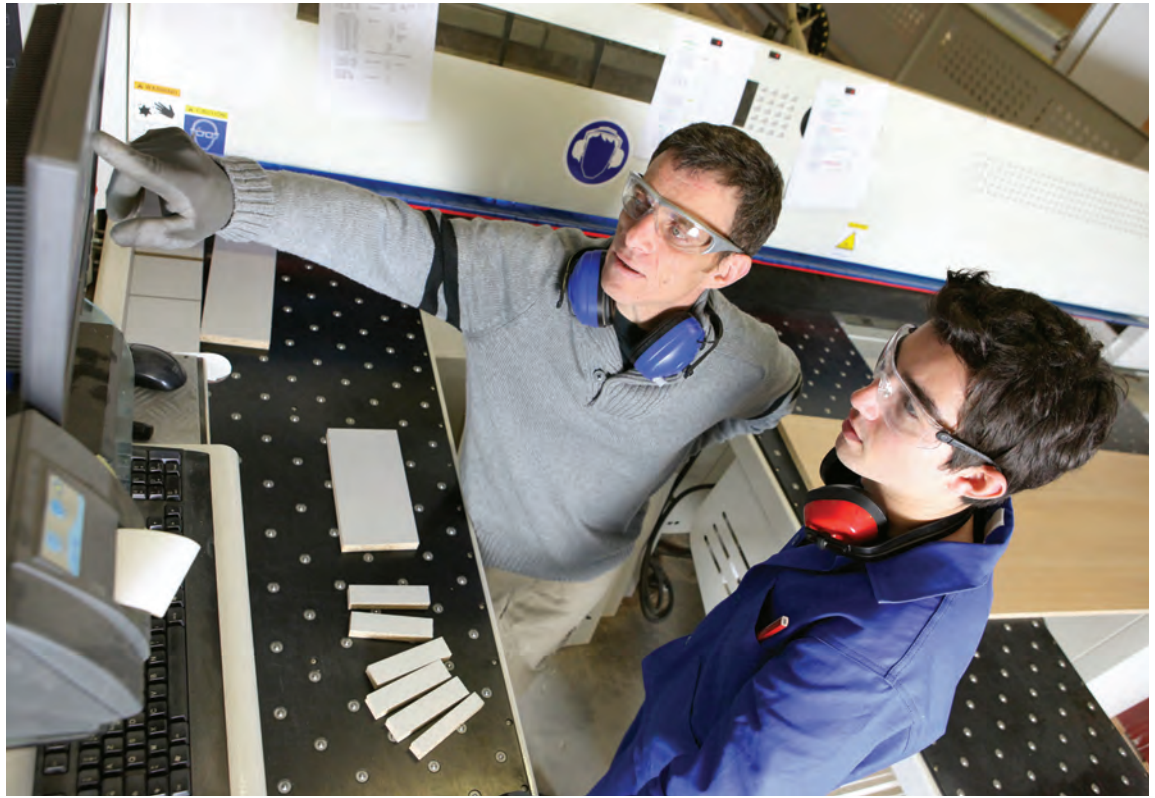
A shortage of skilled maintenance trades is an ongoing issue exacerbated by constantly evolving new technologies that require new capabilities. But employers are also looking for people who are collaborative, have a good attitude and possess a range of soft skills such as communicating, critical thinking and problem solving.

Sylvia Metz, a business manager with the WorkBC Employment Services Centre in Vancouver, sees a need to draw a distinction between soft and hard skills. Many soft skills are overarching, but hard skills are dependent on specific jobs and industries. They evolve. The objective, therefore, is cross training.

There are many sources for acquiring trades skills. The WorkBC services offer free resources for employment seekers and employers. Agencies funded by the federal and/or provincial governments offer professional insight; several agencies as well as learning institutions offer assistance; and the Plant Engineering and Maintenance Association of Canada (PEMAC) provides courses and certification for maintenance management and asset management professionals.

However, there is another way – multiskilling, which is the ability to seamlessly transfer knowledge and skills from one area of application to another.

This is an important human resource development tool, although there are barriers to training such as: time constraints; lack of in-depth theoretical knowledge among the applicants; equipment complexity; and existing social views on company culture. But there are ways to do it right, which were



*New equipment involving computers and microcontrollers increases the pressure on available skills in the workplace.*

PHOTO: FOTOLIA

# Multiskilling for MAINTENANCE

## AN EFFECTIVE TOOL FOR ACQUIRING MISSING TRADE SKILLS

demonstrated in a technical session presented at a Main-Train maintenance conference, convened by PEMAC.

Mick Andic, program head and instructor of Bachelor Technology in Manufacturing at the British Columbia Institute of Technology, noted many practitioners are underequipped and inadequately trained. That's because advances in electronics, computers and dedicated microcontrollers are consistently increasing the demand on skilled trade people, such as electricians, millwrights, mechanics, instrumentation technicians and others. New machines are often underutilized when the pace and volume of new equipment introductions exceeds the skills and knowledge of the users.

Modern equipment is an

amalgam of mechanical, fluid power, electrical and electronic components and systems. Some form of multiskilling is logical. But the traditional division of labour divides responsibility among two or three different skill groups, which leads to problems with unions.

The challenge is to present multiskilling training in a way that organized labour does not perceive it as a threat.

### Hands-on training

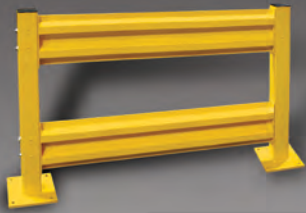
Knowledge and computer-related training is mostly based on a methodical and logical approach to problem solving and the application of mathematics. But skilled trades work in an environment where intuition and experience take precedence over strict logic. "Rules-of-thumb"

are used instead of mathematical analysis. The question then becomes: what is a suitable training method for learners who have an incomplete base in fundamentals?

Andic offered several formats for this type of training: formal sessions through local colleges or private training providers, typically delivered in two- to five-day intensive courses; part-time training, one or two evening sessions per week for a number of weeks; and interactive computer- and internet-based sessions. The cost varies widely among formats.

Skilled trades people learn best with lots of hands-on examples that illustrate and demonstrate applications. If trainees get experience with new equipment and methods, the learning





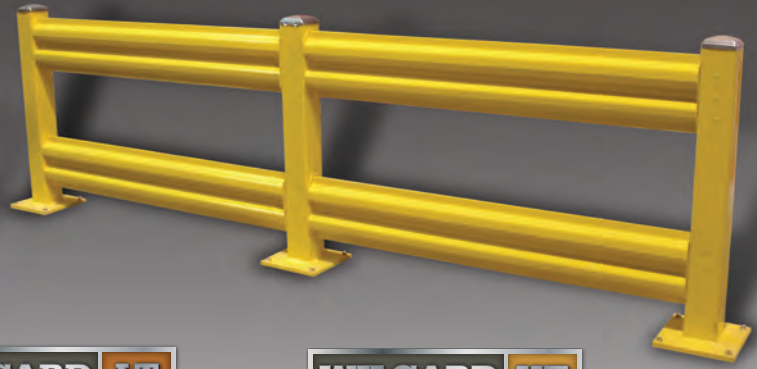
**WILGARD MT**

Medium duty. Conforms to 'industry standard' impact rating.



**WILGARD LT**

Lighter-duty. Contractor-grade and also protects your budget.



**WILGARD XT**

Extra tough. The 'gold standard' in protective guard rail.

## THREE LEVELS OF PROTECTION. THE CHOICE IS YOURS.

More guard rail designs than any other U.S. manufacturer.



When it comes to protective guard rail for your facility – you now have three powerful choices to protect your equipment, machinery, and most importantly, your people. With the expansion of Wildeck's industry-leading Wilgard® guard rail brand, the new Wilgard® XT, MT and LT offer a wide range of impact resistance to best fit your application.

**One tough family. Three levels of protection. The choice is yours.**

800-325-6939 | WWW.WILDECK.COM

©Wildeck, Inc. 2016 WGD 1604 AD



**ELEVATE  
YOUR  
STANDARDS®**



**CARTS**

## HOLD MORE WITH CREFORM CARTS

From a single cart to an entire fleet, Creform® carts provide the flexibility to handle virtually any parts. Creform carts can be an integral part of optimizing your plant and warehouse operations. Our carts can provide the high levels of product protection, presentation efficiency and ergonomic ease required in today's industrial facilities. When used in combination with workstations, flow racks and AGVs, Creform carts answer the call for an integrated and systems approach to material handling.

**Create other economical, flexible, reliable structures and AGVs.**



**WORKSTATIONS**



**FLOW RACKS**



**AGVs**

**CREFORM® MATERIAL  
HANDLING  
SYSTEMS**  
www.creform.com • 800-839-8823

process is likely to accelerate without them necessarily knowing the theoretical fundamentals and underlying mathematical principles.

Training should deal with problems and situations that closely resemble actual working conditions. In Andic's experience, the most effective format involves sessions over three to four days, each day with six to eight hours of instruction.

Multiskilling works. Andic cited an example in the automotive industry involving a major manufacturer that sent 300 of its newly hired maintenance employees, in groups of 40 to 60, for training before they undertook their responsibilities in the plant. They were already highly skilled in their respective areas, but the objective was to cross-train them. Mechanics and millwrights received electrical training, electricians received mechanical training, and everybody received training on computer-based controls and their applications.

The cost was jointly borne by the company and the government. All equipment maintenance personnel were candidates. Trainees returned to work immediately following the completion of their sessions. Follow-up feedback interviews were conducted with 25% of those who completed training and were working for six months or more afterward.

All courses were delivered at a local college with qualified instructors who had years of industry experience.

Multiskilling proved to be effective for the automotive manufacturer, which demonstrates that manufacturers have another option for solving their skills challenges.

*Steve Gahbauer is an engineer, a Toronto-based business writer and a regular contributing editor to PLANT. E-mail [gahbauer@rogers.com](mailto:gahbauer@rogers.com)*

#### Comments?

E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).

## THINK LEAN



Analyze your data according to mean, median, mode and range.

BY RICHARD KUNST

**G**emba walks encourage leaders to go where the action is and observe processes. It's a good starting tactic, but not enough.

Taiichi Ohno, father of the Toyota Production System, coached his leaders to carefully observe reality by drawing a chalk circle on the floor, stand in it for several hours and observe reality with their minds wiped clean, undistracted by things seemingly more important to do. This intensive practice imbued them in kaizen thinking, which was necessary before they could coach others.

So go to the gemba and stand in an imaginary circle to really observe a process for at least 30 minutes while taking lots of notes (read more about standing in the circle here <https://>

# By the NUMBERS

## HOW TO STUDY A PROCESS

[kuntsolutions.com/blog/stand-circle](https://kuntsolutions.com/blog/stand-circle)).

But sometimes you need to go beyond observation and study the numbers.

Most processes track outputs, so grab production documents from at least the three previous months and plot the numbers on a graph.

Why three months? Because you need a minimum of 30 data points to establish a trend.

The target output was likely envisioned by the engineer who designed the process and it became the standard for costing and usually twice the rate of demonstrated output, which includes all of the noise

and disturbances to flow that impact the process. Since it has been demonstrated, this is what the teams should consistently achieve.

### Analyze the data

When people analyse data the typical approach is to calculate averages, but they won't reveal whether or not your process is actually in control.

Instead, analyze data in mean, median, mode and range. If the process is under control, the three Ms should be very close with your range at its minimum.

Mean, median and mode are three kinds of averages. Mean is the average where you add up all



the numbers and divide by the number of numerals.

Median is the middle value. The numbers have to be listed in order from smallest to largest.

Mode is the value that occurs most often. If no number in the list is repeated, there is no mode

for the list.

The following example will help with the calculations:

To find the mean add and divide these numbers:  $(13 + 18 + 13 + 14 + 13 + 16 + 14 + 21 + 13) \div 9 = 15$ .

Note that the mean isn't a value from the original list.

Don't assume it will be. This is a common result.

To find the median, rewrite the list in numerical order: 13, 13,

13, 13, 14, 14, 16, 18, 21. There are nine numbers in the list, so the middle one (median) is 14.

The mode is the number that's repeated more often than any other, so it's 13.

The largest value in the list is 21, and the smallest is 13, so the range is  $21 - 13 = 8$ .

Of course, by the numbers isn't the only way to go, but it certainly enhances what comes out of the circle.

*Richard Kunst is president and CEO of Cambridge, Ont.-based Kunst Solutions Corp., which helps companies become more agile, develop evolutionary management and implement lean solutions. Visit [www.kunstofsolutions.com](http://www.kunstofsolutions.com). E-mail [rkunst@kunstofsolutions.com](mailto:rkunst@kunstofsolutions.com).*

**Comments?**

**E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**

## INVESTMENT

### Pilkington invests in Collingwood

Expansion boosts capacity by 45%



*\$4.3 million investment will create 60 jobs.*

PHOTO: FOTOLIA

Canada's last remaining automotive windshield manufacturer is making a hefty commitment to its Collingwood, Ont. plant, investing \$3.9 million to deploy new technologies and add to its workforce.

Pilkington Glass of Canada Ltd. has called Collingwood home for almost 50 years and currently employs about 250 workers. Its windshields are found in Honda, Toyota, GM, Chrysler and Nissan vehicles.

The company expects to increase its production capacity from 1.8 million windshields per year to 2.6 million units. The added capacity will require the hiring of 60 employees.

Pilkington's \$4.36 million project includes a \$436,400 investment from the Ontario government's Southwestern Ontario Development Fund. The work is to be completed in March 2019.

Pilkington, which has another plant in Whitby, Ont., is a subsidiary of Nippon Sheet Glass (NSG), a manufacturer based in Tokyo. NSG acquired Pilkington in 2006.

**FESTO**

**Are you ready for a revolution in pneumatics?**

**Festo Motion Terminal**  
The Future of Pneumatics

will be unveiled at

**CMTS**  
CANADIAN MANUFACTURING TECHNOLOGY SHOW

**Join us! Booth #3919**

[www.festo.com/motionterminal](http://www.festo.com/motionterminal)



Implementing high technology advances leverages data to improve productivity.

PHOTO: FOTOLIA

# Join the AI REVOLUTION

## ...AND LET THE MACHINES FIGURE IT OUT

Heavy investment by government and industry is making Canada an AI powerhouse.

BY MATT POWELL,  
ASSOCIATE EDITOR

**M**anufacturers should be paying close attention to developments in artificial intelligence (AI). We're not talking Skynet, killer robot type technology from the Terminator movies, but rather something that provides endless opportunities to improve efficiency and productivity.

Machine learning is now capable of handling algorithms in ways once thought impossible. Before, algorithms had to be adjusted manually to adapt to changing environments or operations. Today, much smarter machines learn and adjust on their own.

These deep mathematical models, called neural nets, are based on the networks of the human brain, and they enable the analysis of incredible quantities of data to – among other things – handle discrete tasks.

Some of the leading developments in this advanced technology are coming from Canada,

which is developing into a centre of excellence for AI research. Central to this excellence is Toronto's Vector Institute, established through a government-industry partnership. Its mission is to help startups grow next generation technology without leaving Canada; and entice foreign companies to set up their R&D centres here. Last year the province attracted \$2.84 billion in investment.

### Smart robots

Looking ahead, an IoT/data analysis report from Frost & Sullivan, a San Antonio, Tex.-based consulting firm, concludes development of smart and safe robots using machine learning techniques will be a prime area of focus.

While humans are still needed for logical and reasonable decision making, the report notes cognitive technologies that allow machines to detect

changing manufacturing scenarios and then respond in real time will lessen the need for hands-on intervention. But manufacturers need to make significant investments in AI to benefit from these advances.

A number of Canadian industry heavyweights have joined the AI movement, including RBC and Scotiabank, auto parts manufacturer Magna and Canada's crown investment arm BDC Capital. Together they've provided no-strings-attached funding worth \$200,000 to startups as part of the NextAI program.

Ride-sharing giant Uber is in with a multi-year pledge, including \$5 million to establish a research hub at the Vector Institute to improve autonomous vehicle technology.

The hub will be led by University of Toronto professor and well-known machine perception researcher Raquel Urtasun. Her research has focused on developing software that allows self-driving cars to "see" objects around them.

Magna has invested \$5 million in the Vector Institute to attract, develop and retain homegrown AI technology and the people behind it.

The auto parts giant's strategy focuses on two key areas.

In manufacturing, it involves leveraging AI to provide human operators with enhanced information for decision making; automating quality, sorting and material handling to reduce

### Trends to watch

- Growth in the adoption of autonomous robots
- Cognitive insights generated by AI feeds on big data
- Machine learning driving an evolving landscape
- Pushing up economic growth and driving down human employment
- Growing implementation of cognitive solutions created by demand for improved productivity

Frost & Sullivan

### It's already here

Artificial intelligence is part of our daily lives. Have a Netflix account? Machine learning powers algorithms that predict what we might want to watch next. Doctors use it to diagnose disease by comparing thousands of medical images in real-time, and some manufacturers are deploying self-driving vehicles that navigate around a plant identifying objects in their paths.



production costs; and applying AI-enhanced predictive maintenance systems to ensure greater machine up-time.

### Evolving mobility

The other area is autonomous driving. As future mobility evolves, AI will play a major role in dynamic decision-making. Object detection and classification combined with scene segmentation, including traffic volume, speeds and road conditions (weather, light, visibility), will be key.

In Ottawa, Raven Telemetry AI has developed a powerful, user-friendly tool meant to encourage manufacturers to leverage AI by easily making sense of big data.

The company's solution

collects data from shop floor machines for real-time analysis and documents the results. Martin Cloake, Raven's CEO, says the product interprets massive amounts of raw data before sending it to supervisors and operators so they can act on it to accelerate decision-making and problem-solving.

This is in contrast to a more traditional approach, which is to deploy management tools such as Microsoft Excel. It collects performance numbers in enormous files, then presents the data in graphs and charts that require engineering expertise to understand.

Cloake has found many operators don't use the data because the information doesn't provide meaningful suggestions for

improving operations.

Raven's AI solution crunches the data to provide a simple direction on which shop floor operators can act. Monitoring processes quickly detects anomalies that could be problems or identifies areas that contribute to improvements. Cloake says Raven's clients see, on average, increased overall equipment efficiency of 15% over six months, resulting in close to \$4 million in

additional output per year using existing staff and the same equipment.

In manufacturing, money talks and AI is poised to make the conversation a lot more interesting. Canada playing a leading role in the field will be good for manufacturers who adapt the technology.

**Comments?**

**E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**

## INDUSTRY 4.0

### CRIQ's cyber lab

Aims to bolster digital transformation

BY PLANT STAFF

The Centre de recherche industrielle du Québec (CRIQ) has opened Canada's first-ever cyber-physical laboratory in the Montreal borough of Saint-Laurent.



*Festo's cyber-physical learning and research platform.*

PHOTO: FESTO

The facility will provide manufacturers in the province with access to a real factory of the future, new production technologies and an online system to help them integrate with and develop Industry 4.0.

The CP Laboratory is a smart factory design used as a learning and research platform. Manufacturers will observe and understand the effects of Industry 4.0 technologies within a demonstration environment before having to commit to making investments in the technologies. The lab has the potential to incorporate new, available technologies and represent several domains along the value chain.

CRIQ has partnered with Festo Canada to bring the project to life. The global provider of factory automation equipment, with Canadian headquarters in Mississauga, Ont., has tapped its subsidiary Festo Didatic to provide cyber-physical lab equipment and professional training services.

Saint-Laurent is a key industrial and technology hub in Quebec, home to 4,700 companies that employ more 107,000 people. The borough represents more than a third of Montreal's manufacturing jobs.

CRIQ was established almost 50 years ago to boost the competitiveness of Quebec-based businesses by promoting innovation, productivity, exportation and eco-efficiency in the industrial sector.



## CRITICAL PROTECTION

THE SULLAIR 10-YEAR DIAMOND WARRANTY

**Start your Diamond Decade today, and protect your compressor's most critical components.**

One of the market's most comprehensive programs, our exclusive Diamond Warranty offers:

- 10 years air end protection
- 5 years coverage on the main motor, aftercooler, oil cooler, separator vessel and variable speed drive (if equipped).

**Find your distributor at [Sullair.com](http://Sullair.com)**

Warranty available on S-energy line and other select models.



[Sullair.com](http://Sullair.com)

a division of Accudyne Industries

© 2016 Sullair, LLC. All rights reserved.

Federal help is available outside the cumbersome R&D program that will aid your innovation efforts.

BY MATT POWELL,  
ASSOCIATE EDITOR

The Scientific Research and Experimental Development (SR&ED) tax incentive program is designed to encourage manufacturers to develop new technologies and bring them to market. But the program's cumbersome application and documentation requirements have confused and frustrated manufacturers looking to offset massive, upfront R&D costs. Many manufacturers aren't convinced the program is doing enough for them, which is deterring them from investing in the development of new products and processes.

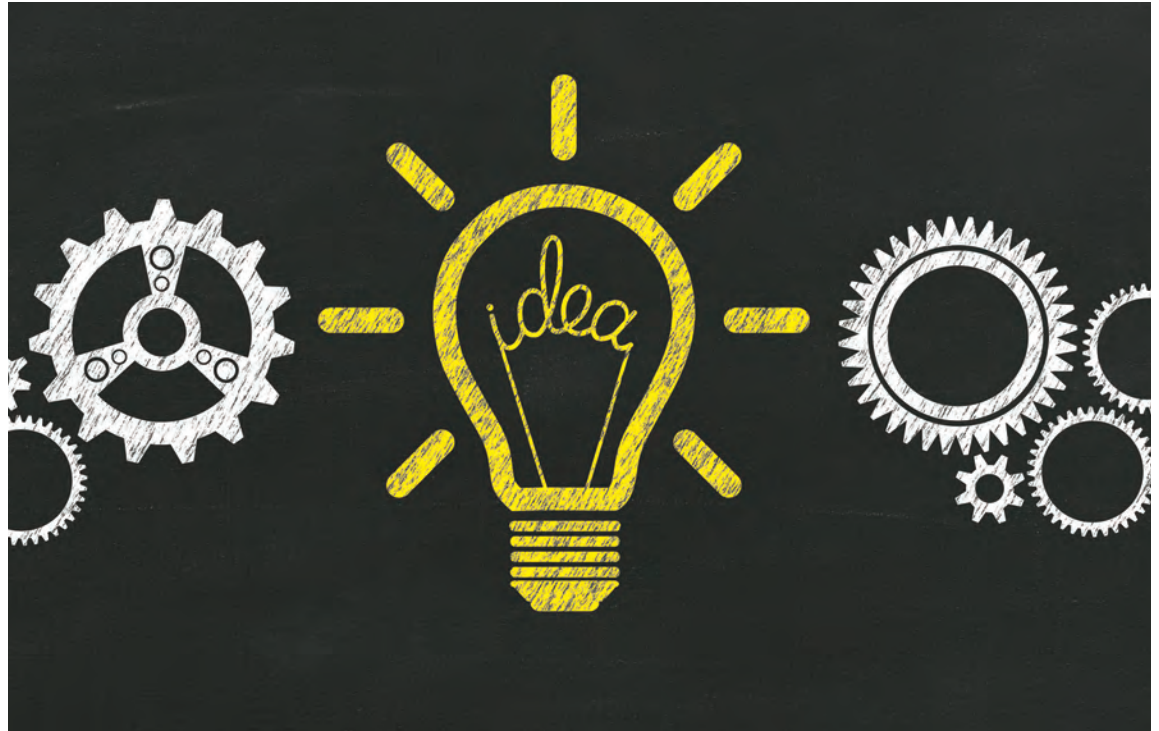
"There's a lack of consistency in the application of the CRA's tax legislation during site visits, and manufacturers are seeing a discrepancy between the definitions of technological uncertainty and technological advancements, and the link to business R&D," says Martha Oner, national leader on R&D and government incentives at Grant Thornton LLP, an audit, tax and advisory firm.

Given the federal government's focus on boosting innovation in its 2016 budget and the breadth of programs available, consider funding outside of SR&ED if it's causing too many headaches.

Here's a look at a few of the programs available to manufacturers:

**Automotive Innovation Fund.** It provides \$500 million to support an automotive firm's strategic, large-scale automotive R&D projects that are aimed at building innovative, greener vehicles.

It's a good program for companies considering robotics and advanced IT systems to improve their processes, but not so good for smaller businesses. Proposals involve private sector



SR&ED isn't the only option for innovation funding. PHOTO: GETTY IMAGES

# Cure your SR&ED HEADACHE

## THERE ARE OTHER INNOVATIVE PROGRAMS THAT WILL EASE THE PAIN

investments of \$75 million over five years.

**Canadian International Innovation Program.** It supports collaborative industrial R&D projects with potential for commercialization between Canada and partner countries.

The program accesses support and funding; accesses intelligence on technology and markets; accesses new markets through technology partnering; leverages investment to reduce risk for R&D projects that support commercialization of Canadian technology; and reduces market entry risk plus costs associated with technology adaptation, co-development and validation.

Consider this program if you

can source knowledge from abroad to address technical gaps. Avoid it if you're going beyond Israel, Brazil, India, China or South Korea.

**CanExport.** It provides up to \$50 million over five years in direct financial support to SMEs looking to export in high-growth, priority markets and sectors.

The program covers: travel costs for up to two employees; the cost of registration for conferences or trade fairs for two employees; translation/interpretation costs; and legal fees pertaining to incremental activities targeting the export of products and/or services.

Use this program if you're going to a trade show, but don't

apply if your revenue is less than \$200,000 or more than \$50 million.

**Energy Efficiency for Industry.** It offers cost-shared assistance to industrial companies to implement energy management projects, including ISO 50001 Energy Management Systems Standard pilots; and process integration and computational fluid dynamics energy studies. Natural Resources Canada provides up to 50% of eligible costs to a maximum of \$40,000.

Use this program if you're looking at implementing the ISO 50001 standard, but don't choose long duration projects.

**Industrial Research Assistance Program.** It provides financial support for technology



innovation to qualified SMEs. You have to demonstrate: business and management capabilities and the potential to achieve expected outcomes; financial capabilities and a plan to commercialize the developed technologies; and technical aspects of the project, including its potential impact on your company.

Apply to this program if your business has fewer than 500 employees. You can stack innovation programs by reducing costs with the funds you receive, but still claim SR&ED on your excess spend.

**MITACS Accelerate Program.** It solves research challenges with university expertise,

matching funds, and one-to-one support. Internships start at four months and scale up as much as needed. Contributions start at \$7,500 and are matched dollar for dollar.

The program requires on-site supervision to develop the student's business acumen by working in the "real world."

**SDTC.** There are different funds to support innovative cleantech projects through development and demonstration. Funding rounds are opened annually or bi-annually.

Eligible projects must displace an existing technology and deliver quantifiable reductions to: GHG emissions; water, soil or air contaminants; and water

consumption.

Use this program to go for the big dollars. SDTC funds 33% of eligible project costs, assuming your project is going to cost at least \$750,000, and you must retain the rights to the IP.

No matter which market your company serves, there's innovation funding available, but you have to look beyond research costs and instead consider R&D spending over the next 12

months. A planned approach to innovation funding helps your business become more competitive and productive while enhancing your bottom line.

*A version of this article appears in PLANT's Manufacturers' Outlook 2017 report. Download a pdf at [www.plant.ca](http://www.plant.ca).*

**Comments?**

**E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**

## ENERGY EFFICIENCY

### New Energy Star program for industry

Will help you analyze and reduce consumption



Program builds on the Canadian Industry Program for Energy Conservation.

PHOTO: FOTOLIA

**ST. ANDREWS, NB** — The federal government is launching a new initiative for industry that aims to improve energy efficiency and reduce greenhouse gas emissions.

The ENERGY STAR for Industry program ([www.energystar.gov](http://www.energystar.gov), Buildings & Plants) is an expansion of the existing ENERGY STAR Canada program that will increase the industrial contribution to a low-carbon and clean-growth economy.

Canada's industrial sector contributes 37% of the country's greenhouse gas emissions. The government claims the new program will help facilities track, analyze and reduce energy consumption, which will also reduce operating costs.

Certification will provide energy performance indicators (EPI) for benchmarking performance.

First up is the Integrated Steel Mill EPI.

Additional EPIs are being developed for commercial baking, automotive assembly, and cement and fertilizer manufacturing.

ENERGY STAR Canada is a voluntary partnership between the federal government and more than 1,500 organizations working to use natural resources more wisely through greater energy efficiency.

## Air-Driven Power Meets Results. Guaranteed.

The NEW MDL15 Industrial Air-Vac offers 15 gallons of cleaning capacity, for powders & combustible dusts, with no electricity required! With its uniquely portable design, 99% filter efficiency rating, noise levels below OSHA standards, and a performance guarantee, the MDL15 is more than an industrial vacuum cleaner; it's a business asset!

- VAC-U-MAX Single-Venturi Power Unit: Adjustable for "Double-the-Vacuum" Power
- PTFE Pre-Filter & Secondary Cartridge Filter
- After 60 years, still the lowest compressed-air consumption on the market
- Suction Power at 16" HG (208" H<sub>2</sub>O)
- Anti-Sparking 304SS & 316SS
- Cleaning Tool Kit for Floors, Walls, Machinery and Overhead Surfaces
- Off-the-Shelf Static-Conductive Poly-Bags
- Quiet!

**NEW!**  
MDL15 Air-Vac  
For Powders &  
Combustible Dusts  
"Intrinsically Safe"  
Conforms to NFPA  
Standards

Preview Video!  
[www.vac-u-max.com/MDL15](http://www.vac-u-max.com/MDL15)



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

VISIT [www.vac-u-max.com/MDL15](http://www.vac-u-max.com/MDL15)  
OR CALL (800) VAC-U-MAX



## REGISTER NOW for the Plant Expo/DEX Kitchener manufacturing show!

Two great tabletop events under one roof | October 11

FREE registration | Great door prizes | Educational lunch | FREE parking | Networking

Attend Plant Expo/DEX to see the latest manufacturing technology and solutions,  
and discuss your shop floor needs with the industrial experts!

### DON'T MISS THESE INDUSTRY-LEADING SPEAKERS:



**Welcoming Remarks:**  
**DENNIS DARBY,**  
President & CEO  
Canadian Manufacturers  
& Exporters



**Lunch Speakers:**  
**JAMES WEIR,**  
Vice President of Sales,  
SYSPRO Canada  
Where Will Enterprise Resource  
Planning (ERP) be in Ten Years?



**Keynote Speaker:**  
**MATT RENDALL,**  
CEO, OTTO Motors  
Industry 4.0 – The Era of  
Digital Manufacturing



**KATE BAGSHAW,**  
Senior Electricity Advisor,  
Bruce Power Direct  
The Energy Market  
Transformation in Our Backyard:  
Exploring the Risks and  
Opportunities

All lunch attendees will be entered to win a Chelsea Evolution Shell Jacket from Helly Hansen  
(attendees must be present to win).

**SPACE IS LIMITED. REGISTER NOW TO SECURE YOUR SEAT.**

**PLUS:** All Plant Expo/DEX attendees have a chance to win a PARROT AR.DRONE 2.0 POWER EDITION!



Registration is FREE but space is limited!  
Visit **www.PLANTExpo.ca** to register now.  
**SEE YOU AT THE SHOW!**



Presented by:

**PLANT** | ADVANCING  
CANADIAN  
MANUFACTURING

Canadian  
**MANUFACTURING**  
.com

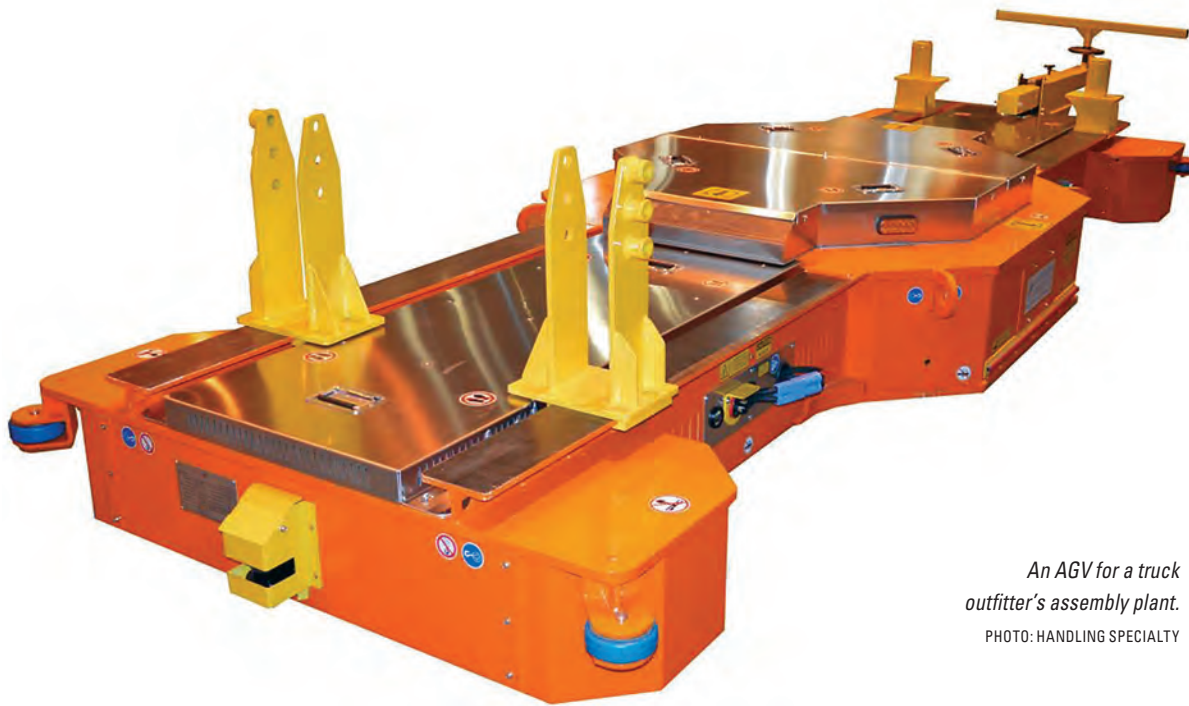
Thank you to our Presenting Sponsors:

 **SYSPRO**  
Simplifying your Success

BRUCE POWER  
**DIRECT**



## MATERIAL HANDLING



*An AGV for a truck outfitter's assembly plant.*  
PHOTO: HANDLING SPECIALTY

# Improve your PRODUCTIVITY

## AUTOMATE REPEATABLE TASKS WITH MANUAL AND AUTOMATED GUIDED VEHICLES

They replace traditional conveyor systems that don't provide flexibility in paths, processes or the handling of products.

BY MICHAEL POELTL

Assembly lines have long been equipped with in-floor drag chains or manually pushed carts, but automated guided vehicles (AGVs) are turning up in more manufacturing and assembly operations across

several industries to handle repetitive material handling tasks.

These mobile robots navigate the facility by following markers or wires in the floor, or by using vision, magnets or lasers. They're customizable and adaptable to changing production lines, can be implemented in stages and they save energy.

Although their costs are falling, AGVs are a prohibitive choice for some smaller outfits looking to grow their operations, but there's an alternative. Manually guided vehicles (MGVs)

multi-task across several departments, covering every aspect of a facility's floor space. An MGV is a less expensive alternative to a forklift. Operators require little training, no licensing, and fitting the units with scissor lifts plus other tooling fixtures covers the same functions.

They're also a good "walk before your run" step before upgrading to AGVs. MGVs fitted with multiple safety features and options are simple to operate. Ramping up production is accomplished easily by employing

## SUPPLY LINES

### EWEL MASTERS DREXAN

Drexan Energy Systems Inc., a manufacturer of heating cables for freeze protection and process temperature maintenance, has appointed Electrical Wholesalers Edmonton Ltd. (EWEL) its exclusive master distributor in BC, Alberta and Saskatchewan.

The self-regulating and constant wattage products are made in Kelowna, BC. Drexan also has an R&D facility in Vancouver.

### INDUSTRIAL LUBE DISTRIBUTOR

Castrol Industrial North America has appointed Wakefield Canada its exclusive national distributor of Castrol Industrial lubricant products.

Wakefield, based in Toronto, has been Castrol's national strategic partner since its inception in 2005, and also holds exclusive licence to Castrol's Canadian consumer, and commercial markets.

### EXTENDED METER REACH

Ace Instruments Ltd. is the new distributor of Photon Control Inc.'s Focus 2.0 optical gas flow meter and related products in BC, Alberta and Saskatchewan.

Photon, a developer of optical measurement technologies in Richmond, BC, says Ace will extend its reach in the oil and gas sector.

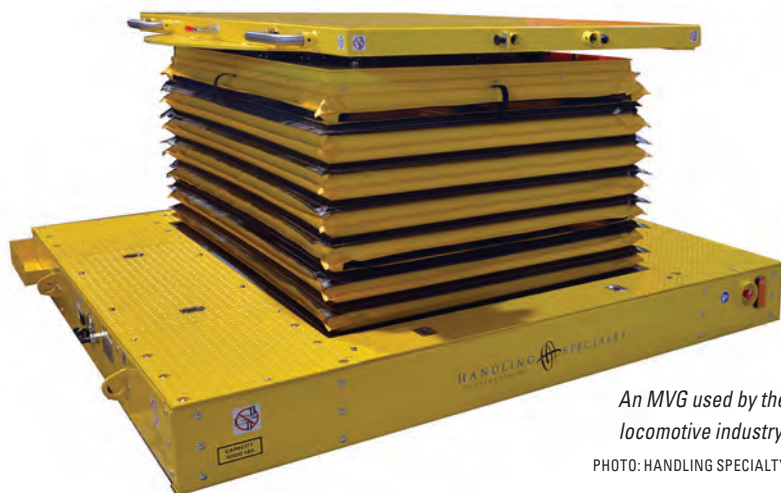
Ace is an instrumentation and electrical company in Fort St. John, with offices in Dawson Creek, Grande Prairie and Calgary.

### RAIL-SWITCHING DEAL

Cando Rail Services has won contracts to handle switching at Domtar pulp and paper mills in Rothschild and Nekoosa, Wis.

Employee-owned Cando, based in Brandon, Man., moves 2 million tons of pulp, paper and lumber a year in more than 20,000 railcars.

Operations in Rothschild began in early June and Nekoosa in July.



An MVG used by the locomotive industry.

PHOTO: HANDLING SPECIALTY

more MGVs or upgrading to two or three AGVs.

With Auto-locate and some inhouse training, an operator pre-programs a course for basic, repeatable tasks and changes the programming when required.

When advancing to an AGV, the facility will be reviewed and magnetic tape laid on the plant or warehouse floor.

The continuous line movement navigated by the AGV's magnetic sensor eliminates the need for an operator and navigating a team of MGVs to do the same work.

### Trained pros

An AGV system will require trained professionals to oversee the charging and maintenance of the units. Controls, guidance systems and power technology versus weight distribution varies.

Some points to consider:

- AGVs typically run automatically through a pre-programmed and/or magnetic tape system, but also include a manual option to remove the vehicles from the line for maintenance and charging. This control can either be plugged into the unit, or supplied as a wireless remote system.
- Batteries are part of the design. They're based on lifecycle and other conditions related to the specific application.

For example, if battery weight is 10% of the AGV's weight, the battery will have to work 10% harder and the unit will run 10% less of the time.

- Additional motion control may be needed. Companies usually request north, south, east and west, but another option called crabbing involves travelling diagonally and rotating 360 degrees in a zero degree radius.

Other factors to consider include vehicle configuration, system simulations, flooring and grading. But the general condition of the facility's overall features is also key. They include square footage, temperature, humidity, UV sensitivity, floor paints (which may remove conductivity), drains, Wi-Fi, electro-magnetic interference and grounding chains.

Deploying MGVs and AGVs improves safety and productivity, reduces labour costs, and saves energy that's not used for fixed conveying assets – important factors for manufacturers who are growing their businesses.

*Michael Poeltl is the marketing and business development manager for Handling Specialty Manufacturing Ltd. (www.handling.com). E-mail mpoeltl@handling.com.*

**Comments?**  
**E-mail jterrett@plant.ca.**

## PRODUCT FOCUS MATERIAL HANDLING

### MAINTENANCE-FREE ROLLER CHAIN

*iwis* Megalife roller and conveyor chains help to reduce conveyor downtime thanks to their longer replacement intervals.

They're used wherever lubrication is not possible, such as dry ambient conditions and installations with restricted maintenance access found in a variety of industries.

Seamless sintered bushes are hardened and specially treated for enhanced tribological properties. The pin has a wear-resistant, friction-optimized surface coating, and the seamless roller has a corrosion-protected, wear-resistant surface. These properties lead to longer service life and greater strength than

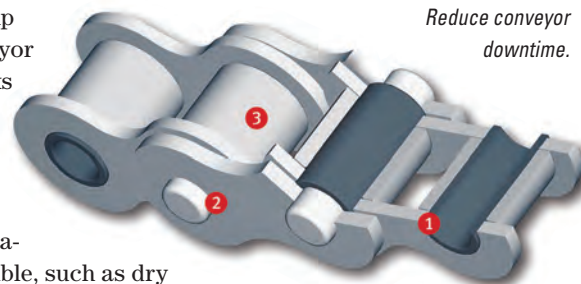
conventional low-maintenance chains.

Components are nickel-plated for corrosion protection and handle temperatures from -40 to 160 degrees C.

Chains are supplied dry or with additional special lubrication.

Chain specialist *iwis* Drive Systems LLC is based in Indianapolis, Ind.

[www.iwisusa.com](http://www.iwisusa.com)



Reduce conveyor downtime.

Murphy means  
**MORE.**

more  
**Value**

**No one gives you more.**

Feature for feature:  
Murphy packs more in

Get it done right the first time.

**MURPHY LTD.**  
N.R. **DUST COLLECTORS**

430 Franklin Blvd., Cambridge, ON N1R 8G6  
(519) 621-6210 Fax: (519) 621-2841  
E-mail: 4nodust@nrmurphy.com  
Web Site: [www.nrmurphy.com](http://www.nrmurphy.com)





## PROTECT RACKS FROM FORKLIFT IMPACTS

*Install easily.*



Wildeck Inc.'s end-of-aisle steel rack protectors guard against forklift impact at corners in busy storage facilities, warehouses and distribution centres.

Three models handle heavy- (XT), medium- (MT) and light-duty (LT) conditions.

They reduce the need for repairs, prevent injury from falling materials, eliminate costly downtime and avoid damage to expensive inventory

Right, left and double-sided versions install easily.

Wildeck, based in Waukesha, Wis., is a material handling equipment and safety products manufacturer.

[www.wildeck.com](http://www.wildeck.com)

## VISION-GUIDED VEHICLES PICK UP AND DELIVER

Seegrid's GP8 Series 6 pallet truck combines infrastructure-free vision guided vehicles with fleet management and enterprise intelligence data for hands-free load exchange from pick-up to drop-off.

These self-driving vehicles pick up and drop off palletized parts to the production line without human interaction, operating without wires, lasers, magnets or tape. Change routes in-house or operate the units in manual mode.

Seegrid, based in Pittsburgh, is a supplier of connected, self-driving vehicles for materials handling.

[www.seegrid.com](http://www.seegrid.com)



*No human interaction.*



*Adjustable swivel frame.*

## TABLES AID CONTROL PANEL ASSEMBLY

Assemble and wire a control panel or its back plate in a safe, practical, ergonomic manner with Alfa's AMT assembly tables.

Three models feature a freestanding, solid caster-equipped base with an adjustable swivel frame that holds the panel or back-plate. The 1,100 x 1,900 mm swivel frame has an extension element for holding most panels. Maximum load is 200 kg.

AMT tables are distributed by ITC Electrical Components in Concord, Ont.

[www.itcproducts.com](http://www.itcproducts.com)

## Build a Connector and Calculate Cost Savings

With HARTING's Industrial Connector Configurator and Savings Calculator App



The **Connector Configurator** lets users create a custom modular connector and send it to a HARTING expert for feedback.

The **Savings Calculator** shows how using a connector can save money over time as compared to hardwiring the system.



[HARTING-usa.com/hartingapplications](http://HARTING-usa.com/hartingapplications)

## Stop Hardwiring and Start Connecting

Say goodbye to hardwiring and simplify with HARTING connectors. Reduce the number of wiring errors, save time and headache.

**Download the app and white paper to learn how connectors outperform hardwiring.**

HARTING, first established in 1945, delivers unrivaled reliability, efficiency, innovation and performance in connectors.

**Get a complete plug-and-play solution** - Inquire to HARTING about its Customized Solutions business to build your assemblies. **Learn more at:** [HARTING-usa.com/customized-solutions/](http://HARTING-usa.com/customized-solutions/)

# DEPENDABLE. RELIABLE.

QUALITY WHEN IT MATTERS MOST.  
EVERY TIME.

**MADE IN THE USA SINCE 1923**

**AIR / WATER SERVICES**

**WASHDOWN POWER SOURCE VACUUM WELDING GAS**

FOLLOW US: **#COXREELS**

FOR OUR COMPLETE LINE OF HOSE, CORD, & CABLE REELS:

[WWW.COXREELS.COM](http://WWW.COXREELS.COM) | 800.269.7335 | [INFO@COXREELS.COM](mailto:INFO@COXREELS.COM)

## PRODUCTS AND EQUIPMENT

### THERMAL IMAGING

#### CAMERAS BRING PLANT PROBLEMS INTO FOCUS



1,280 x 960 resolution.

Fluke Corp.'s Ti480 and TiX580 infrared cameras quickly detect problems in industrial environments.

The Ti480 provides 640 x 480

resolution in a rugged, pistol-grip form factor for multiple point-and-shoot inspections while the TiX580's 240-degree rotating screen easily navigates over, under and around objects to preview and capture images. Its 5.7-in. screen increases the viewing area from a standard 3.5-in. screen for quick identification of issues in the field and easily

editing of images directly on the camera.

MultiSharp Focus takes multiple images that combine to produce one focused image of near and far objects.

Both cameras provide a 1,280 x 960 image and include: LaserSharp Auto Focus, which calculates the precise distance to the target for sharper images; and IR-Fusion that combines the infrared images with picture-in-picture, full visible light and AutoBlend.

Connect SmartView Desktop Software analyzes the images, generates customizable reports and exports them in multiple formats to the Fluke Connect Cloud.

Fluke is a manufacturer of electronic test tools and software for measuring and condition monitoring based in Everett, Wash. Canadian offices are in Mississauga, Ont.

[www.fluke.com/Ti640x480](http://www.fluke.com/Ti640x480)

### FASTENERS

#### STUDS INSTALL QUICKLY AND EASILY



PEM concealed-head, self-clinching studs and standoffs from PennEngineering install permanently in thin metal assemblies. Strong and reusable threads mate hardware while preserving a smooth and unmarred appearance on the side of the sheet opposite installation.

Installation is easy. Place the fastener in the hole and apply sufficient squeezing force. The fastener head locks securely in the sheet and handles substantial loads.

The concealed-head satisfies strict ingress protection requirements in assemblies where a sheet must remain completely sealed from air, liquid, dust, gases and other potential contaminants.

Use the fasteners in steel or aluminum sheets as thin as 0.062 in./1.6 mm. Studs (aluminum or stainless steel) come in thread sizes #4-40 through #10-32 and M3 through M5, in lengths from 0.250 in. through 1 in., and 6 mm through 25 mm. Standoffs (stainless steel) come in #4-40 through 1/4-20 and M3 through M6, in lengths from 0.187 in. through 1 in., and 4 mm through 25 mm.

PennEngineering, based in Danboro, Pa., is a manufacturer of fasteners.

[www.pemnet.com](http://www.pemnet.com)

### MACHINING

#### ROTO MAX DELIVERS CONSTANT SPEED, TORQUE

Suhner's flexible shaft machine

with interchangeable hand pieces handles a variety of industrial machining operations.

Rotomax functions as an angle grinder, straight 2 to 4.7 hp. grinder, drum polisher, belt sander, tube polisher or die grinder simply by changing the hand piece.

Power ranges from 2 to 4.7 hp with electronically controlled speeds ranging from 500 to 15,000 rpm in increments of 100 rpm. Combining an industrial grade motor and solid-state electronic control ensures constant speed and torque during any application. And with no gearing, the Rotomax operates very quietly.

Other features include soft start, integrated braking and an LED-displayed speed gauge.

Suhner Industrial Products LLC is a manufacturer of machining tools based in Rome, Ga. [www.suhner-abrasive-expert.com](http://www.suhner-abrasive-expert.com)

#### WELD CLEANING SYSTEM PERFECTS FINISHES



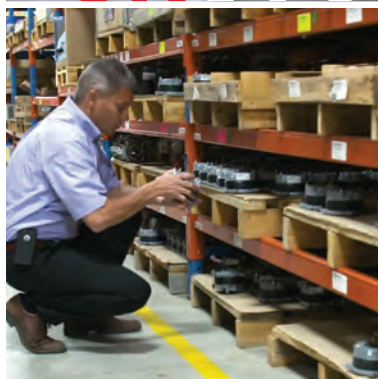
Eliminates manual operations.

Walter Surface Technologies' Surfox 205 and Mini Surfox products use an electrochemical process to clean and passivate TIG and spot welds, replacing manual operations such as mechanical abrasion or hazardous solutions such as pickling paste.

Applicable materials include stainless steel, aluminum and titanium.

Both units allow operators to clean TIG or spot welds on aluminum and stainless steel to a perfect finish on delicate surfaces.

Walter is a manufacturer of metalworking products based in



Fast and accurate 24/7/365  
SELECTION SUPPORT



On hand inventory means  
SHORT WAIT TIMES

VISIT: [SEWCAN.CA/REPAIR](http://SEWCAN.CA/REPAIR)  
TORONTO | MONTRÉAL | VANCOUVER





Windsor, Conn.  
[www.walter.com](http://www.walter.com)

## MARKERS STREAMLINE PRODUCT MARKING

Kwik Mark Inc.'s X Series markers improve overall operation and streamline product marking.

A cantilevered marking head provides a clear open line of sight, and retracts "back" to clear other tooling and equipment. Up to six axes are motion control ready and PCs or control boxes aren't required. An additional I/O is available for custom integration with logic.

The dot peen marker has machine-tool quality construction with twin rigid upright column lead screws and a ball slide design, brushless servomotors, non-contact limit home sensors and a large t-slot table for fixturing. It's also available with a full column height, programmable Z axis.

Embedded controls include a CF card memory with preprogrammed functions, job selection or data input and bar code input ready.

Kwik Mark is a manufacturer of dot peen pin marking machines based in Chicago.  
[www.kwikmark.com](http://www.kwikmark.com)

## WORKHOLDING

### CLAMP SYSTEM REDUCES SETUP CHANGES



Schunk's VERO-S clamping system syncs workholding with machines to maximize spindle uptime, while reducing set up changes by 90%.

Resetting workpieces, clamp-

ing devices and other equipment on 3-, 4-, or 5-axis machining centres is fast and precise with the quick-change pallet system.

Workpieces are directly clamped and machined from five sides without restricting accessibility. Components are then exchanged in the machine, positioned, fixed and clamped all in one step with a repeat accuracy of less than 0.005 mm.

Clamping height is adjustable with extensions so the machine spindle reaches all five sides of the without any special tools.

Schunk is a German workholding and clamping equipment manufacturer with a Canadian office in Mississauga, Ont.

[www.us.schunk.com](http://www.us.schunk.com)

## MOTION CONTROL

### MOTORS DELIVER SMOOTH MOTION

PI's PIMag V-731 linear motor stages have



*Rapid acceleration.*

incremental linear encoders for direct position measurement in applications including micro-assembly, biotechnology, precision laser machining, optics, lens testing and photonics alignment.

PIMag stages don't require mechanical components in the drivetrain because the force is transmitted magnetically to the motion platform, eliminating friction and wear on the drive.

The ironless, non-cogging linear motors provide smooth motion and dynamic velocity range along with rapid acceleration, which is necessary in applications where high constant velocity is required and maximum uptime is crucial.

Integrated linear encoders provide 10 nanometers resolution and crossed roller bearings with anti-creep cage assist ensure repeatability.

PI is a manufacturer of motion control products based in Auburn, Mass.

[www.pi-usa.us](http://www.pi-usa.us)

## SCANNERS

### SCANNER FITS INTO TIGHT SPACES

IDEC Corp. describes its SE2L safety laser scanner as the world's smallest, and first with



*Master/slave functionality.*

master/slave functionality combined with dual protection zones.

It's certified for use in safety applications including AGVs, forklifts, robots and other items of moving equipment found in industrial facilities.

The SE2L acts as a master that communicates with up to three other scanners. The safety controller only communicates with the master, reducing the required number of input and

# Be a LUBExpert



## Grease Bearings Right

 **Right Lubricant**

 **Right Location**

 **Right Interval**

 **Right Quantity**

 **Right Indicators**



1-800-667-5325 • 905-377-1313  
[sdtultrasound.com/lubexpert](http://sdtultrasound.com/lubexpert)



## PRODUCTS AND EQUIPMENT

communication channels on the controller. This allows lower-cost safety controllers to be used in applications that, for example, provide full 360-degree protection for an AGV, which requires four scanners.

With dual zone protection, one SE2L scans two adjacent zones simultaneously and independently, performing the work of two scanners. A common application is providing dual

light curtain protection for two robots mounted side by side.

A standard 270-degree arc protects up to 20 m, and this area configures into any pattern using either the programming software or teach mode.

The scanner stores up to 32 patterns that are selected and applied on the fly by sending commands through the ethernet port, or by configuring the encoder input to react to changes

in speed.

IDEC is a manufacturer of industrial automation and control products based in Sunnyvale, Calif.

[www.idec.com/SE2L](http://www.idec.com/SE2L)

### POWER CONVERSION

#### CONVERTERS PACK A POWER PUNCH

MicroPower Direct's MD900xRU packs 9 W of regulated output

power in a miniature SIP package of single and dual output DC/DC converters.

Eighteen models operate from 4:1 inputs of 9 to 36 VDC, and 18 to 75 VDC, providing single and dual outputs of 3.3, 5, 9, 12, 15, 24,  $\pm 5$ ,  $\pm 12$  or  $\pm 15$  VDC. Efficiency is 89%. Features include input/output isolation of 1,600 VDC, a remote on/off control input and low noise operation.

All models operate in temperatures between -40 to 85 degrees C.

MicroPower Director is a manufacturer of power conversion products based in Stoughton, Mass.

[www.micropowerelectronics.com](http://www.micropowerelectronics.com)



Single and dual outputs.

### ACCELEROMETERS

#### SIX NEW MEMS ACCELEROMETERS

Silicon Designs Inc. has added six new versions of high-performance MEMS capacitive accelerometers to its product line.

They include the single axis Model 2220 or triaxial Model 2470 with aluminum housings and a standard 1 m integral cable; and the single axis Model 2240 or triaxial Model 2480, which have hermetically sealed titanium housings and an integral connector. The single axis Model 2276 or triaxial Model 2476 also come with aluminum housings and an integral connector.

The accelerometers are also relatively insensitive to temperature changes and gradients.

Silicon Designs is a manufacturer of MEMS capacitive chips and accelerometer modules based in Kirkland, Wash.

[www.silicondesigns.com](http://www.silicondesigns.com)



Improved temperature performance.



# BAD MOVE.



Up to 75% more tensile strength and 30% higher transmittable force.

**move-series**  
The New Generation of Timing Belts

**BRECOflex CO., L.L.C.**  
High Precision Drive Components

[www.brecoflex.com](http://www.brecoflex.com)



## PLANTWARE

### ADVANCED MANAGEMENT FOR CNC MACHINE TOOLS



*Handles high-end milling.*

NUM's latest generation Flexium+ CNC (V4.1.00.00) platform provides advanced management – especially for complex, high-end milling and HSM applications in the mould and die market for manufacturers operating multiple CNC machine tools.

The database installs on a server platform for multiple use in a large production plant or for a single CNC machine tool.

Its software includes PLC libraries, plus dedicated CNC functions and HMI pages, and handles many tools of different types in standard, medium or large sizes.

Duplo tools with identical cutting characteristics are also supported, as are different types of tool magazines such as disk, chain or rack.

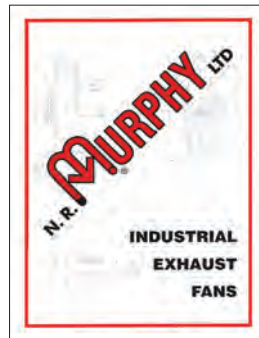
New tool characteristics are managed at maximum speed and feed rate. Tool life is monitored over time by wear amount or by the number of operations. Pre-emptive warning messages are generated automatically when limits are approached.

NUM Corp. is a machine tool control specialist based in Naperville, Ill.

[www.num.com](http://www.num.com)

## Industrial Literature Reviews

### INDUSTRIAL EXHAUST FANS, IMMEDIATE DELIVERY



N.R. Murphy carries a large inventory of industrial exhaust fans in a wide range of sizes, in the most popular designs and arrangements, fully built and ready to ship. N.R. Murphy has the experience and manufacturing

capacity to quickly respond to unusual requirements. The free catalogue includes the complete line of fans, specs and guidelines. E-mail [4nodust@nrmurphy.com](mailto:4nodust@nrmurphy.com).

[www.nrmurphy.com](http://www.nrmurphy.com)

**N.R. Murphy Limited**

### AUTOMATED SYSTEMS FOR CONVEYING



This brochure offers a detailed overview of the VAC-U-MAX range of pneumatic conveying components and automated systems. These include conveying, weighing and batching of powders and bulk

materials in food, pharmaceutical, chemical and petrochemical processes.

[www.vac-u-max.com](http://www.vac-u-max.com)

**VAC-U-MAX**

### 2017 COMPREHENSIVE TIMING BELT CATALOGUE B212



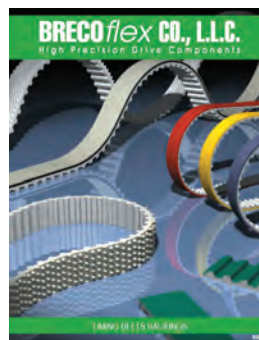
BRECOflex CO., LLC's comprehensive 2017 Polyurethane Timing Belt B212 catalogue is 182 pages of technical information, part numbers and scaled drawings for metric and English pitch

timing belts. Self-tracking belts, profiles, belt backings, pulleys and accessories are also included. Call (732) 460-9500 for free samples, catalogues and technical support.

[www.brecoflex.com/literature](http://www.brecoflex.com/literature)

**BRECOflex CO.**

### HIGH PRECISION TIMING BELTS WITH BACK COVERS



BRECOflex CO. LLC offers high precision timing belts with a variety of backing materials and surface textures. Materials include solid and foam polyurethanes, natural, synthetic rubbers, silicone and PVC. Polyurethane timing belt accessories

include pulleys, clamps, tensioners and slider beds. The B208 catalogue contains complete specifications including coefficient of friction, typical application uses, and flexibility ratings.

[www.brecoflex.com](http://www.brecoflex.com)

**BRECOflex**

## EVENTS

### PLANT EXPO 2017

#### PLANT/CMO

**Oct. 11, Kitchener, Ont.**

A tabletop show presented by **PLANT** Magazine and [Canadianmanufacturing.com](http://Canadianmanufacturing.com) (CMO) featuring the latest products and solutions for the manufacturing, processing, machinery, and maintenance and repair markets. Visit [www.plantexpo.ca](http://www.plantexpo.ca).

#### 2nd Annual Infrastructure

#### Asset Management East

#### Canadian Institute

**Oct. 25-26, Toronto**

This conference brings together maintenance pros who will learn how to: craft asset management plans that secure corporate buy-in and funding;

attack multifaceted issues; and collaborate with experts on common challenges.

Visit [www.canadianinstitute.com](http://www.canadianinstitute.com).

#### Lubrication fundamentals

#### STLE Hamilton

**Nov. 2, Hamilton**

The Hamilton Section of the Society of Tribologists and Lubrication Engineers (STLE) presents a seminar on lubrication fundamentals that will cover: what tribology is; oils; greases; filtration; lubricant application; lubricant audits; and an open panel discussion. Visit [www.stle.org](http://www.stle.org)

#### FABTECH 2017

#### FMA, SME, PMA, CCAI, AWS

**Nov. 6-9, Chicago**

North America's largest metal forming, fabricat-

ing, welding and finishing event featuring 1,700 suppliers. Presented by Fabricators & Manufacturers Association, SME (Society of Manufacturing Engineers), Precision Metalforming Association, American Welding Society and Chemical Coaters Association International. Visit [www.fabtechexpo.com](http://www.fabtechexpo.com).

#### FABTECH Canada 2018

#### FMA, SME, PMA, CCAI, AWS

**March 20-22, 2018, Toronto**

World-class suppliers, the latest products and developments, and tools to improve productivity. Presented by Fabricators & Manufacturers Association, SME (Society of Manufacturing Engineers), Precision Metalforming Association, American Welding Society and Chemical Coaters Association International. Visit <http://fabtechcanada.com>.



# NAFTA renegotiation is a failure of education

BY JUSTIN BEDI

Canada, Mexico and the US have begun a complex, time-consuming and difficult renegotiation of the North American Free Trade Agreement (NAFTA) that could change everything – or almost nothing. The risk and uncertainty outweigh the potential rewards, because we already had the ultimate reward: free trade.

Only the US wanted to renegotiate NAFTA and President Donald Trump's election campaign clearly brought the reason to light: We have failed to educate the world on the merits of free trade. People just aren't buying it.

Mainstream trade discussion is no longer about economics – it's about politics. Trade enhances productivity, improves real wages and grows economies, but not enough people know how or why.

Trade discourse and government policy making, are about one thing: growing exports. There has been a regression back to the age of mercantilism in the White House, where exports are 'good' and imports are "bad."

In truth, imports are just as important to an economy as exports: they provide cheap inputs for value-added manufacturing, access to goods and services we can't produce efficiently (or at all) domestically, and a greater selection of products at lower prices for consumers.

It's discouraging to see influential individuals and world leaders incorrectly use concepts such as current accounts, trade balances, dumping and subsidies as guises to hurt international business and argue for protectionism.

Current account deficits and negative trade balances aren't inherently bad: many countries have consistently had both for decades, including Canada and the US, and both are G7 countries at the top of the industrial world.

Dumping and illegal subsidies are legitimate threats to global trade and should be treated as such. However, too often both anti-dumping and countervailing duties are applied simultaneously and without sufficient evidence. That was the case when the US applied duties on Canadian softwood lumber earlier this year, even though it has previously been demonstrated that Canadian lumber producers are guilty of neither trade offence.

Ironically, one reason we've come to this point is

the dominance of industry sectors in trade policy. Almost every government is far more likely to listen to their concerns and wishes than those of consumers, and will enact policies to shield their domestic industries against international competition.

Part of this is our fault: industry is well organized and consumers are generally not. Given the math, it's not hard to see why.

If a country reduces tariffs on an import – say avocados – the benefit for one person could be as little as \$10, or perhaps as high as \$100 a year if they purchase many avocados. In contrast, the negative impact on a business from the same tariff reduction could mean thousands or tens of thousands of dollars in lost revenue.

Collectively, protectionist trade policies such as tariffs and quotas have been proven to have a greater effect on consumers than on producers. But individually, it's difficult to conceptualize the benefits of pushing for freer trade when it may only mean a few dollars in savings annually.

NAFTA renegotiations could improve trade in North America through greater regulatory co-operation, improved dispute resolution and the elimination of technical barriers to trade, provided duty-free access is maintained.

However, fixing these issues didn't require drafting an entirely new agreement.

NAFTA is being renegotiated under very questionable terms and certainly not for economic reasons.

International trade, in its simplest terms, is just a commercial transaction between a foreign buyer and a foreign seller.

If more of us thought about trade that way, we wouldn't be spending millions of dollars and hours renegotiating NAFTA. And we could focus on growing trade elsewhere – like within Canada.

*Justin Bedi is a trade analyst who specializes in international monetary economics. He holds a master's degree in International Trade from the University of Saskatchewan's Johnson-Shoyama Graduate School of Public Policy. Distributed by Troy Media © 2017.*

**Comments? E-mail [jterrett@plant.ca](mailto:jterrett@plant.ca).**

MAINSTREAM TRADE DISCUSSION IS NO LONGER ABOUT ECONOMICS – IT'S ABOUT POLITICS...



# REIMAGINED WITH PROS IN MIND.

SEE PROBLEMS CLEARLY WITH  
THE RE-IMAGINED, SIMPLE-TO-USE **FLIR Exx-Series™**

E75 / E85 / E95

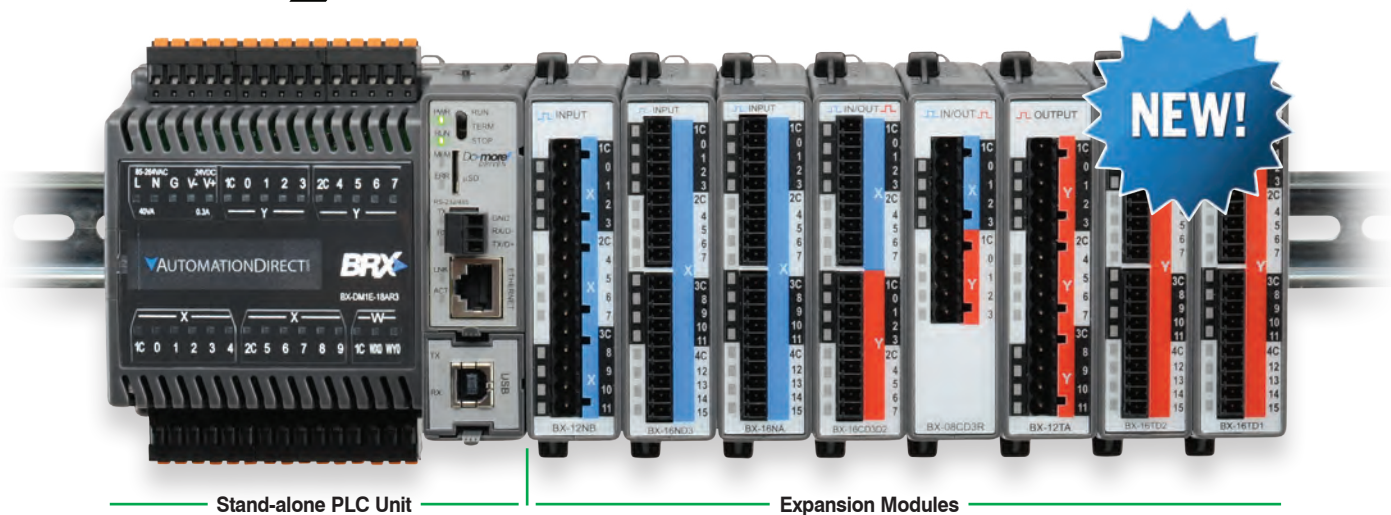
FLIR E75, E85, and E95 cameras offer the superior resolution and range performance needed to quickly identify hotspots and discover potential points of failure in electrical distribution and mechanical systems. Avoid costly shutdowns and lost production time through regular predictive maintenance routines with these rugged, intuitive cameras.

Learn more at [www.FLIR.ca](http://www.FLIR.ca).



The World's Sixth Sense®

# BRX The 1st micro PLC with a can-do attitude



Stand-alone PLC Unit

Expansion Modules

## The new BRX Micro PLCs are determined to get it done!

The new BRX PLC family incorporates many high-level features in a small, solid package - allowing it to stand strong no matter the challenge. Loaded with options and using the very popular Do-more! DM1 technology as its engine, this micro controller packs a big punch for a little price!



**Starting at  
\$199.00**

(BX-DM1-10AR-D)  
with 10 built-in discrete I/O

### The BRX PLC family offers:

- Advanced motion control
- Robust data logging
- Onboard serial and Ethernet ports
- Discrete, high-speed and analog I/O
- Expansion capabilities
- Interchangeable communications port
- Free programming software (with simulator)
- Integrated video help
- Free technical support
- Much, much more...

CPU and I/O Comparison	AutomationDirect BRX PLC	vs.	Allen-Bradley Micro 800	vs.	Siemens S7-1200	vs.	IDEC FG6A
PLC Unit (with Ethernet)	<b>\$473.00</b> BX-DM1E-36ED13-D		<b>\$642.00</b> 2080-LC50-480VB		<b>\$814.00</b> 6ES7 214-1AG31-0XB0		<b>\$550.00</b> FG6A-C40K1CE
(28) 24VDC Inputs	<b>\$38.00</b> BX-08ND3 (8-pt DC IN module + 20 DC IN on PLC unit)		<b>Built-in</b> (28 DC IN on PLC unit)		<b>\$443.00</b> 6ES7 221-1BH30-0XB0 (16-pt DC IN module + 14 DC IN on PLC unit)		<b>\$95.00</b> FG6A-N08B1 (8-pt DC IN module + 20 DC IN on PLC unit)
(20) 24VDC Outputs	<b>\$45.00</b> BX-08TD1 (8-pt DC OUT module + 16 DC OUT on PLC unit)		<b>Built-in</b> (20 DC OUT on PLC unit)		<b>\$443.00</b> 6ES7 222-1BH30-0XB0 (16-pt DC OUT module + 10 DC OUT on PLC unit)		<b>\$140.00</b> FG6A-T08K1 (8-pt DC OUT module + 16 DC OUT on PLC unit)
(4) Analog Inputs	<b>Built-in</b> (4 Analog IN on PLC unit)		<b>\$149.00</b> 2080-IF4		<b>\$330.00</b> 6ES7 234-4HE30-0XB0 (4IN/2OUT Analog combination module)		<b>\$359.00</b> FG6A-L06A1 (4IN/2OUT Analog combination module)
(2) Analog Outputs	<b>Built-in</b> (2 Analog OUT on PLC unit)		<b>\$89.00</b> 2080-OF2				
Total System Price	<b>\$556.00</b>		<b>\$880.00</b>		<b>\$2,030.00</b>		<b>\$1,144.00</b>

Prices are U.S. published prices. AutomationDirect prices as of 7/1/2017. Allen-Bradley, Siemens and IDEC prices taken from [www.catalog.automationdirect.com](http://www.catalog.automationdirect.com) 7/1/2017.



**Do more!**  
DRIVEN



[www.BRXPLC.com](http://www.BRXPLC.com)



**Orders over \$49 get FAST FREE SHIPPING**

**Our shipping policies make it easier than ever to order direct from the U.S.!**

Fast free standard shipping\* is available for most orders over \$49 U.S., and that includes the brokerage fees (when using an AutomationDirect nominated broker). Using our choice of carrier, we can reach most Canadian destinations within 2 to 3 days. Order by 6pm ET and in-stock orders ship the same day!

\*2-day free shipping does not apply to drop-ships, or orders requiring LTL transport, but those shipments can take advantage of our negotiated super-low flat rates (based on weight) that include brokerage fees.

See Web site for details and restrictions at:  
[www.automationdirect.com/canada](http://www.automationdirect.com/canada)



To see all products and prices, visit [www.automationdirect.com](http://www.automationdirect.com)

All prices shown are U.S. Dollars



**Order Today, Ships Today!**

\* See our Web site for details and restrictions. © Copyright 2017 AutomationDirect, Cumming, GA USA. All rights reserved.

**AUTOMATIONDIRECT**.com  
**1-800-633-0405** the #1 value in automation