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ADVANCING CANADIAN MANUFACTURING

Volume 73, No. 03 April 2014

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CANADIAN INDUSTRIAL EQUIPMENT NEWS

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- Nova Scotia harnesses tidal energy
- Truck simulator cuts emissions
- Weighing free trade with Korea
- Embrace crowdfunding for new capital
- How to avoid racking failures

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Levelling the playing field

General rule: governments should focus on providing an economic environment that is conducive to good business and leave the good business to companies that understand the markets in which they operate. If the market is sound and business is good, there are jobs and lots of spin-off economic activity, the taxes roll in and everybody's happy.

But providing that hospitable environment for huge projects sometimes requires governments to play a few hands using the taxpayer's money to make their bets, and it has been argued in this space that the automotive industry is such a case because governments of competing jurisdictions are doing the same. It's about levelling the playing field.

Not everyone agrees with this view, including several readers of last issue's editorial. The consensus is governments should not be in the business of picking winners and losers, and taxpayers certainly have good reason to be skeptical considering some of the "investments" that haven't paid off.

In the 1970s New Brunswick provided an initial \$4.5 million to get the Bricklin sports car with the fancy but impractical gull-winged doors into production. By the time the company went bankrupt, the government was owed \$23 million.

In 1989, Newfoundland was down about \$13 million after a hydroponic super cucumber venture it invested in went soft.

And more recently, there is the bizarre case in Ontario where the Liberal government (blame former premier Dalton McGuinty) will be responsible for investing about \$1.1 billion on behalf of taxpayers to not build two natural gas power plants.

And in Quebec, the Parti Quebecois has committed the taxpayer to a \$450 million stake (loan and direct investment) in a \$1 billion modern cement plant that proponents of the province's industry say isn't needed.

The McInnis Cement project (controlled by Beaudier, a Bombardier-Beaudoin family holding company Beaudier) in Port-Daniel-Gascons is getting \$275 million financing from a syndicate led by the National Bank of Canada. Beaudier is kicking in \$150 million.

The firm will receive tax breaks for 10 years, the plant will also avoid the BAPE environmental assessment other industrial operations must go through and it will be eligible for a break on power costs.

In a region where unemployment is running at 16.4%, the project is supposed to create 1,500 jobs during two-years of construction and provide direct employment to 200 when the plant is up and running.

But the other industry players protest. They say their plants are barely operating at 60% capacity and this revived, 20-year-old project wouldn't see the light of day without the government's involvement.

The Port-Daniel-Gascons plant will eventually produce 2.2 million tons of cement, with a potential increase to 2.5 million tons. Most of the cement produced is to be exported out of Quebec, serving the reviving construction demands of the Boston-Washington, DC corridor, yet the existing cement plants say they already serve this market with up to 25% of their capacity.

They claim any drop in production resulting from the new, subsidized plant will threaten the 650 jobs at Quebec's four other cement plants, and thousands of indirect jobs.

"People realize what's happening here is Peter's being robbed to pay Paul," said Michel Binette, the group's spokesman.

With a hefty position in this enterprise, the Quebec government is hardly neutral about the project's fortunes. If the McInnis cement plant's success comes at the expense of the other industry players, it will certainly provide a twist to government levelling the playing field.

Joe Terrett, Editor

Comments? E-mail jterrett@plant.ca.



COVER IMAGE: STEPHEN UHRANEY



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» Bulletins



The 415 forest firefighter.

PHOTO: BOMBARDIER

Bombardier Aerospace in Montreal has signed a firm US\$73.7 million purchase agreement with Newfoundland and Labrador for two of 415 amphibious aircraft. Deliveries will begin during the second quarter of 2014.

Natural gas operator **Keyera Corp.** in Calgary has acquired a number of western Alberta gas processing assets from **Whitecap Resources Inc.** in a deal worth \$113 million. It's taking an 85% ownership interest in the West Pembina 6-28 plant with varying interests in some oil batteries, compressors and gathering pipelines; a 4.6% ownership interest taking it to 100% in the Bigoray gas plant; and Nisku reserves currently tied into the Cynthia and Bigoray gas plants.

Paper products manufacturer **Cascades** in Kingsey, Falls, Que. is celebrating its 50th anniversary. When the company that makes most of its products with recycled fibres began in 1964, it had a handful of employees and made a few hundred thousand dollars in sales. It now employs 12,000 people and has sales close to \$4 billion.

Export Development Canada (EDC), is covering \$500 million in financing for **Reliance Industries Ltd.**, the Indian multi-sector conglomerate and the country's largest private-sector company. Reliance is now working on its telecom rollout with Canadian suppliers. The export credit agency says the transaction is among the largest financing packages it has extended in Asia.

Calgary-based **Pure Technologies Ltd.**'s US subsidiary has a US\$23.2 million contract running over four years with the Board of County Commissioners of Miami-Dade Water and Sewer Department to provide inspection and monitoring services for part of the water and wastewater system.

Canadian Natural Resources Ltd. has completed the acquisition of **Devon Canada's** domestic conventional assets, excluding Horn River and the heavy oil properties. No financial details were provided.

Vari-Form retires first hydroformer

Old Faithful started with pressure sequence Chrysler parts in 1990

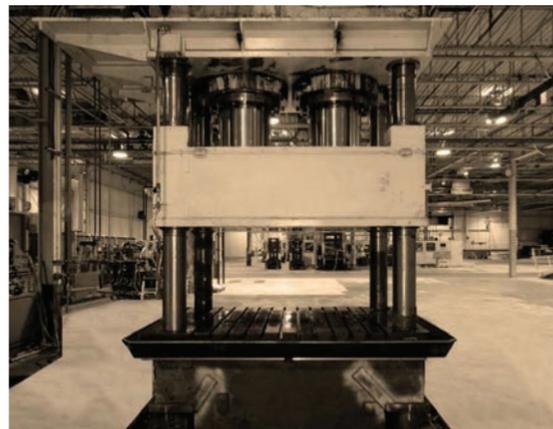
TROY, Mich.: Vari-Form, which pioneered the hydroforming of automotive parts, has retired the first machine created for that purpose.

The manufacturer of pressure sequence hydroformed parts based in Troy, Mich. began using the machine in July 1990 to produce instrument panel beams for Chrysler S body minivans. Eventually, it was used to produce structural parts for several subsequent generations of Dodge Caravans, Chrysler Town & Country vans and Plymouth Voyagers.

Dubbed "Old Faithful" by Vari-Form engineers, its production peaked at over 700,000 units per year in 1996 and over 23 years of active use it produced nearly 10 million units.

Company president Stephen Dow noted Vari-Form worked with a leading machine tool manufacturer to build the press to its specifications, launching large-scale production on it in 1990.

"At the time, we had to convince car makers of the benefits of hydroformed assemblies – better quality, reduced space and weight, lower per-unit costs, and less tooling. Today, millions of vehicles in North America incorporate Vari-Form hydroformed parts. Many of those were produced on



"Old Faithful," the first machine to hydroform an automotive structural part.

PHOTO: VARI-FORM

'Old Faithful,' he said.

The company is currently working on applications involving advanced materials that permit thinner walls to reduce part weight without sacrificing strength or stiffness, all produced on faster, more efficient equipment.

Vari-Form has production facilities in Strathroy, Ont., Reynosa, Mexico, Kunshan, China and Liberty, Mo.

Manufacturers among "best managed" companies

Deloitte says winners outpaced Canada's forecasted 3% growth rate

TORONTO: The winners of Deloitte's Canada's Best Managed Companies program showed resolve and the ability to build and grow sustainable businesses for the long term with double-digit growth, according to the Toronto-based professional services firm.

The companies that made the list outpaced Canada's forecasted 3% economic growth rate and those that have significant export sales grew in international markets by more than 40%. Growth is being achieved by focusing on profitability, talent, M&As, productivity and innovation.

The award recognizes Cana-

dian privately owned and managed companies with revenues over \$10 million for outstanding performance and innovative management.

Winning manufacturers are: KUDU Pumps, Calgary; Sealweld Corp., Calgary; Arconas, Mississauga, Ont.; Napoleon Group of Companies, Barrie, Ont.; CenterLine Ltd., Windsor, Ont.; AMEC Black & McDonald Ltd., Dartmouth, NS; and Cherubini Metal Works Ltd., Dartmouth.

Many companies focused on cost cutting to match expected declines in revenue during the 2009 economic crisis. As the economic picture improves,

focus has moved from to growth and profitability, and a concentration on segments or customers that generate higher revenue growth.

Deloitte found lagging firm-level investment and risk taking by mature Canadian companies in technology and machinery and equipment leaves Canada behind the US and other developed countries.

The best are closing the gap by investing in enterprise resource planning systems and customer relationship management systems to increase productivity.

Find the full list of winners at www.deloitte.com.

Resolute invests \$105M in Calhoun

MONTREAL: Resolute Forest Products Inc. is investing US\$105 million in an upgrade to its Calhoun, Tenn. pulp and paper mill.

The Montreal-based forest products company will install a modern continuous pulp digester and other wood chip processing equipment.

Resolute said the project, to be completed by mid-2016, would help lower the mill's costs, increase its pulp capacity and improve its versatility.

The project will add about 50 new jobs to the 480-employee workforce currently at the mill.

The company expects the project's implementation to produce efficiencies from better wood yield, lower steam and chemical use, increase the pulp machine's production output and maximize dryer utilization for internal purposes. It says this will give the mill the versatility to manufacture a range of products, including specialty papers such as the Align uncoated freesheet substitutes, and value-added grades not presently in the product offering.

The Calhoun mill operates three machines and a pulp dryer. Total mill capacity is approximately 609,000 tonnes of market pulp, specialty papers and newsprint.

APMA's Steve Rodgers retiring

Will remain in an advisory capacity



Steve Rodgers concludes five years.

PHOTO: APMA

TORONTO: The Automotive Parts Manufacturers' Association (APMA) has announced

Nasty winter was good for Canadian gas producers

OTTAWA: An exceptionally long and cold winter helped to drive up North American natural gas prices and improved the financial outlook for producers, according to a Conference Board of Canada report.

"Natural gas prices briefly reached record highs at the start of the year, which will help industry revenues this year," said Michael Burt, director, industrial economic trends at the Conference Board in Ottawa.

Following two years of losses, the industry is expected to post a pre-tax profit of approximately \$220 million in 2014.

The Conference Board notes in the last quarter of 2013, the natural gas benchmark in Alberta averaged US\$3.4 per million British thermal units (mmbtu), a 40% increase from the \$2.4 per mmbtu in 2012. It forecasts a correction in the summer. Although prices will remain higher than in recent years, they won't return to the peaks reached in the mid-2000s.

However, the Conference Board warns that despite the improvements in prices, a recovery in Canadian natural gas production is unlikely in the short term because of growing production in the US where new extraction technologies have reversed its production decline.

The report, *Canadian Industrial Outlook: Canada's Gas Extraction Industry*, observes Canadian producers are looking to Asian markets as an important source of growth, but are constrained by a lack of infrastructure. Drilling activity in Canada will remain weak, and output is expected to decline.

Bombardier signs \$83M TRAXX deal

15 diesels for Paribus-DIF scheduled for 2015

BERLIN, Germany: Bombardier Transportation and Paribus-DIF-Netz-West-Lokomotiven GmbH & Co. KG have signed a US\$83 million contract for 15 TRAXX Diesel Multi-Engine locomotives.

This is a first-time purchase for Paribus-DIF, a joint venture of the German investment management company Paribus Capital GmbH and the Dutch Infrastructure Fund (DIF), a Europe-focused institutional investor in infrastructure assets.

Bombardier Transportation, the Berlin-based rail division manufacturer of Bombardier Inc. in Montreal, said the contract

includes an option for up to five additional locomotives.

An additional service contract worth US\$8 million was also signed with the customer's sister company Paribus-DIF-Netz-West-Waggon GmbH & Co. KG.

Delivery is scheduled for 2015.

The locomotives, to be deployed to transport passenger trains from Hamburg to Westerland/Sylt, are designed for speeds of up to 160 kilometres per hour.



TRAXX multi-engine locomotive.

PHOTO: BOMBARDIER

The multi-engine concept enables four engines working simultaneously to be controlled individually. This maximizes energy efficiency.

» Careers



Joris Myny

Joris Myny has been appointed senior vice-president of the industry sector at Siemens Canada. Myny, who joined Siemens in 1990, is responsible for the overall strategic direction and management of the industry sector business in Canada.

Nick Orlando has stepped down as Martinrea International Inc.'s president and CEO but will remain involved with the automotive parts manufacturer as a consultant.

AirBoss of America Corp., a manufacturer of rubber-based products based in Newmarket, Ont., has appointed an interim CFO to replace **Stephen Richards**, who is also COO. **Wendy Ford**, director of finance, will take over the role while Timothy Toppen, president of the firm, will assume the COO role.

KPMG LLP (Canada) CEO **Bill Thomas** has been appointed chair of KPMG's Americas Region. The role was held by KPMG's US chairman and CEO John Veihmeyer, who was recently appointed global chairman.

Xebec Adsorption Inc., a Montreal-based provider of biogas upgrading, natural gas, field gas and hydrogen purification and filtration systems has expanded into the US. **Parag Jhonsa** joins Xebec Canada as corporate vice-president, business development, and president of Xebec Adsorption USA.

Financing done for \$850M K2 Wind project

GODERICH, Ont.: Construction began on the K2 Wind Power Project (K2 Wind) as of March 24 following the completion of the \$850 million in financing secured with 15 financial institutions.

K2 Wind, developed jointly by Samsung Renewable Energy Inc., Pattern Energy Group LP and Capital Power LP, has set up the financing as a construction loan that will convert to long-term operational debt.

The K2 Wind developers say the 270 megawatt wind power project in Goderich, Ont. is hiring local workers and using Ontario-made products, including 140 wind turbine towers made in Windsor, and blades manufactured in Tillsonburg.

Once operational in the second half of 2015, K2 Wind will generate power for approximately 100,000 Ontario homes annually.

The partners say the project will create 18 to 24 permanent full-time positions, generating about \$1.5 million of employment income annually.

Food manufacturers retool for global thrust

143 plant closures, 24,000 jobs lost more transition than decline

LONDON, Ont.: Canada's food manufacturing industry is reorganizing to be a strong global player, according to a report by the Ivey Business School.

The Changing Face of Food Manufacturing in Canada: An Analysis of Plant Closings, Openings and Investments,

tallies 143 plant closures between 2006 and 2014, resulting in projected losses of almost 24,000 jobs, but overall no decline in employment.

The report by David Sparling and Sydney LeGrow also examines plant openings and investments.

It says the food manufacturing industry went through a challenging period in 2007 and 2008 when 48 closures outnumbered the 27 openings and plant investments. But from 2008 to 2014, 105 closures were balanced by 105 openings and plant investments.

They note Ontario was the hardest hit while Quebec's picture was more positive.

The most commonly cited reason for closures was plants that were no longer competitive and, in many cases, production was being consolidated in another location.

The report observes that closures appeared not to be a sign the industry had lost its competitiveness, but rather it was reorganizing production to retain its competitiveness.

Openings were often large scale and incorporated new technology to drive down costs.

"The results are leaner operations, higher productivity and stronger companies better equipped to compete," says Sparling, chair of Agri-food Innovation at the Ivey Business School at Western University.



COMMUNITY BUILDER

Schneider Electric Canada, a manufacturer of energy efficient electrical products and technology, has reached a milestone in its relationship with Habitat for Humanity, the non-profit organization that brings together volunteers to build affordable housing for those who would otherwise not be able to own a home. Schneider Electric Canada president Daniel Peloquin presented Kevin Marshman, president and CEO of Habitat for Humanity Canada, with a \$230,000 cheque at the company's Mississauga, Ont. office. The donation brings Schneider Electric's total contributions to close to \$2 million since 2004.

PHOTO: SCHNEIDER



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Chrysler's Brampton plant certified ISO 50001

Automaker cuts energy costs, adds automated HVAC system

WINDSOR, Ont.: Chrysler Group's Brampton Assembly Plant (BAP) is the first auto assembly facility in Canada to achieve ISO 50001: 2011 "Energy Management" standards certification by TÜV, an international certification organization.

Introduced in 2011, ISO 50001 includes globally recognized requirements for energy management systems.

The plant's energy management efforts include lighting control projects that have cut electricity costs by \$110,000, plus an automated HVAC management system and scheduler that saves an estimated \$2 million, while reducing excess negative exhaust by

1.2 million cubic feet per minute.

The 2.95 million square-foot facility served as the automaker's pilot plant for certification among its North American manufacturing plants. The remaining plants are expected to be certified by the end of the year.

The facility, opened in 1987, currently manufactures the Chrysler 300, Dodge Charger and Challenger, and the Lancia Thema. It employs more than 3,200 workers on two shifts.

Brampton previously achieved ISO 9001 standards for quality and ISO 140001 for environmental management.



An employee at the Brampton plant moves a suspension to the production line.

PHOTO: CHRYSLER

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» Events

Gauge Repair & Maintenance Mitutoyo

May 17, Mississauga, Ont.

Free workshop hosted by Mitutoyo Canada. It will cover how to assess if your gauge is repairable; Mitutoyo gauge preventive maintenance; and what methods to apply to ensure a gauge is in good operating condition. Visit www.mitutoyo.ca, Events & Exhibits.

AUTO21 Annual Conference AUTO21

May 27-28, Niagara Falls, Ont.

Presented by AUTO21, a national research initiative supported by the Government of Canada. Sessions include: Automotive outlooks with Dennis DesRosiers and Mustafa Mohatarem; Powertrain panel with speakers from OEMs and tier ones; and vehicle connectivity with speakers from Ford, QNX and Microsoft Canada. Visit <http://event-mobi.com/auto212014>.

APMA 2014 Annual Conference & Exhibition

APMA

June 4-5, Windsor, Ont.

The Automotive Parts Manufacturers' Association (APMA) presents its annual conference. This year's theme is "Technological Leadership for Competitive Growth." Visit www.apma.ca and click on Calendar.

PTDA Canadian Conference PTDA

June 5-7, Quebec City

The Power Transmission Distributors Association (PTDA) features sessions, round-table networking and member panel meetings. Visit www.ptda.org.

NDT in Canada Conference 2014 CINDE

June 16-18, Toronto

The CANDU Owners Group (COG) and the Canadian Institute for NDE (CINDE) host the 5th International CANDU In-service Inspection (ISI) workshop, in conjunction with the NDT in Canada 2014 Conference. Special emphasis will be placed on new developments in NDE technology and the qualification of inspection systems. Visit <https://events.cinde.ca>.

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www.airnozzle.info/18/2san.htm

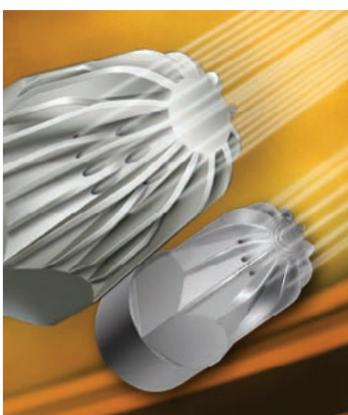
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If you don't know your actual cost per 1,000 SCF, 25¢ is a reasonable average to use.

SCFM saved x 60 minutes x cost/1,000 SCF = Dollars saved per hour.

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28.5 cents per hour x 40 hour work week = \$11.40 per week.

\$11.40 per week x 52 weeks = \$592.80 per year.

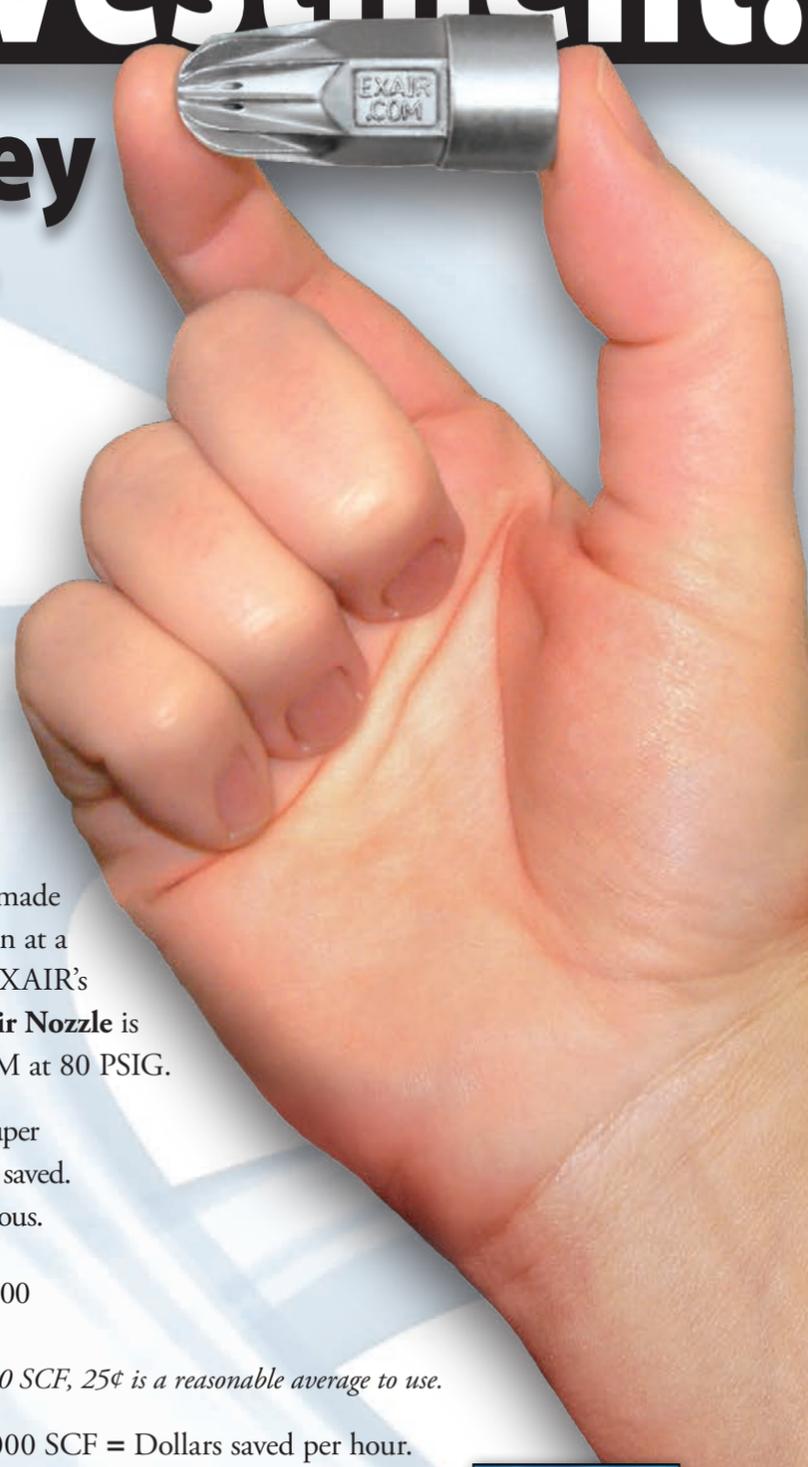
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Modernizing rail would boost the economy

BY JERRY DIAS

It's time Canada developed a modern passenger rail service that helps the environment, reduces congestion and creates the jobs needed to build a more stable future for our children.

That means more frequent trains to better meet the needs of travellers, whether for business or pleasure, and the introduction of high-speed rail in our busiest travel corridors, such as Toronto to Montreal or Calgary to Edmonton.

Other countries such as Japan and Ger-

“Passenger rail is much more than a good way to visit Grandma for the holidays. It's also a vital part of our economic infrastructure...”

many have invested in their rail systems and the result is a network of trains that efficiently and effectively move people to where they need to be, when they need to be there.

Canada has gone in the opposite direction, cutting funding for Via Rail, which leads to services cuts and declining ridership – making the next round of funding cuts almost inevitable. In June 2012, Via Rail management announced

cutbacks in both employment and train frequency. Earlier that year, the federal government announced another round of cuts to Via Rail's funding, continuing through 2014. It's a policy direction with a near-perfect record of failure.

Unifor believes there is a better way to do things, and recently released a policy paper, *Getting on Board or Running off the Rails?* that makes the case for a modern rail system and outlines



Expanding passenger rail is good for the economy.

PHOTO: THINKSTOCK

the many benefits that would come with building a modern passenger train system.

One of the biggest benefits would be jobs: on the trains for ticket agents and crews, plus employment tied to manufacturing the trains and rails, and jobs to put them in place. There would be jobs created for companies supplying and servicing the manufacturers, and at the transportation companies moving those supplies and finished products to market. With the introduction of faster and more efficient rail service, there would also be jobs researching and developing the next generation of trains.

More jobs would be created when the people employed in those manufacturing, transportation and research jobs go out and spend the money they earn.

Reduce congestion

Trains are a more environmentally responsible way to move people between cities than cars, so improving service would cut pollution levels and greenhouse gas emissions.

More trains would also reduce congestion. In Toronto its cost on the economy is pegged at some \$6 billion a year in lost productivity, according to a study done for the Metrolinx transit agency.

No one is saying passenger rail is the one thing that's going to turn the Canadian economy around, but it is one of the many creative solutions that would provide our youth with hope for a stable future.

Passenger rail is much more than a good way to visit Grandma for the holidays. It's also a vital part of our economic infrastructure. It enables people to travel easily between cities to work together on the projects that drive our economy.

Railways helped build Canada. With a little imagination, they can help build the Canada of tomorrow.

Jerry Dias is the national president of Unifor, Canada's largest union in the private sector with more than 300,000 members. It represents a merger of the Canadian Auto Workers and the Communications, Energy and Paperworkers unions.

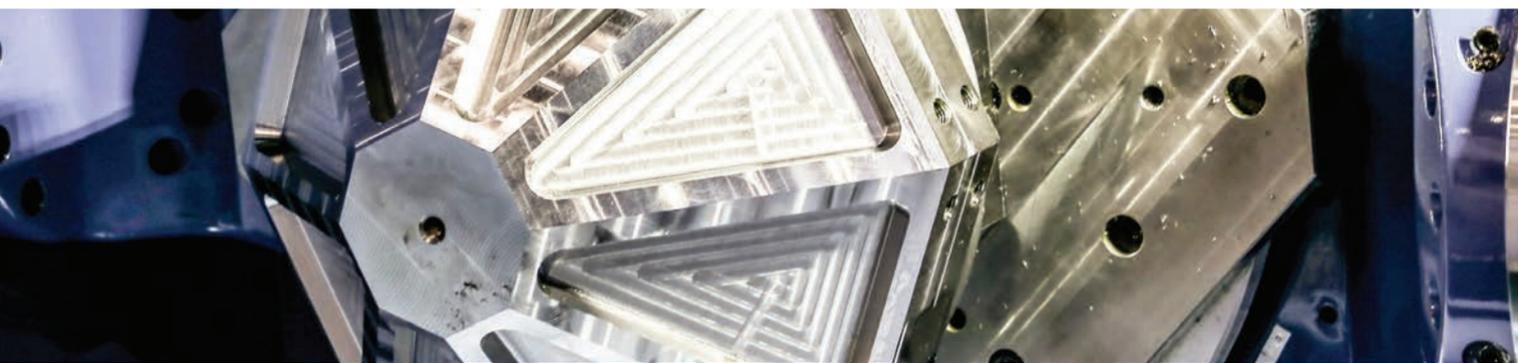
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PLANT PULSE

ECONOMIC DEVELOPMENTS AND TRENDS

Rising from the ashes Industries poised for growth

Manufacturing has come off of a tough decade, losing 20% of its companies with its share of GDP dropping from 16% to 12%, yet many industries are now positioned to buck that trend, says a CIBC World Markets report.

“Though some failed to survive, many who did are stronger, leaner and more productive. The long and painful adjustment is starting to pay off, with many industries in better shape to take advantage of the weaker dollar to regain positions in US markets and to better integrate into global supply chain opportunities,” says Benjamin Tal, CIBC’s deputy chief economist and one of the report’s authors.

With the value of the loonie balancing out at lower levels and as market conditions improve, the brightest prospects include: wood products, primary metal, machinery, aerospace, computer and electronic, miscellaneous, plastic and rubber, and paper. High levels of capacity utilization will slow growth for some, but lead to more capital investment.

Food manufacturing is not ranked highly, marking just a 2% gain since 2009; but that’s because it has done so well in the domestic market, and has not needed to increase its productivity as fast as other groups. Tal says it will have to nurture its export markets in search of growth.

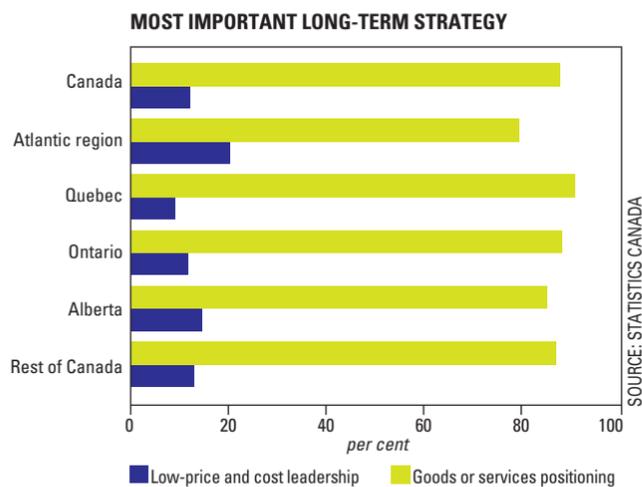
CIBC found wood products to be in the best position to succeed thanks to strong productivity growth and a lower dollar, which will propel exports to the US.

Primary metals had the best productivity growth since 2009 and is also well positioned to take advantage of the lower dollar thanks to its favourable net exports position.

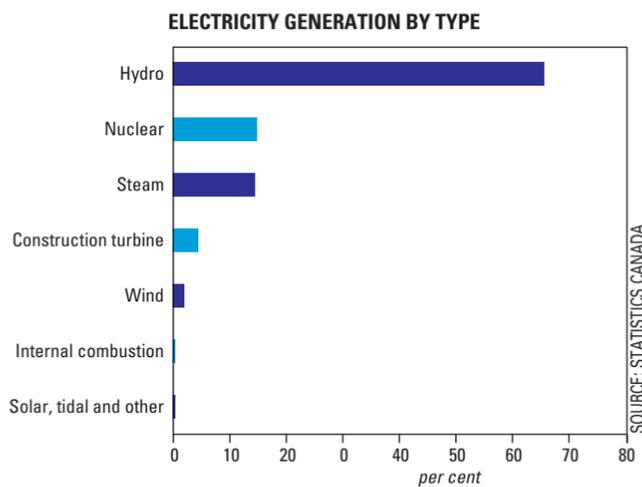
Machinery manufacturing has the strongest export position in all of the sub-industry groups thanks to the lower value loonie, which will raise the cost of imports.

Aerospace will also benefit from a weaker loonie. The report noted productivity gains in the broad transportation industry group were driven by plant closures and capacity downsizing which have hampered its export position, leaving it behind aerospace.

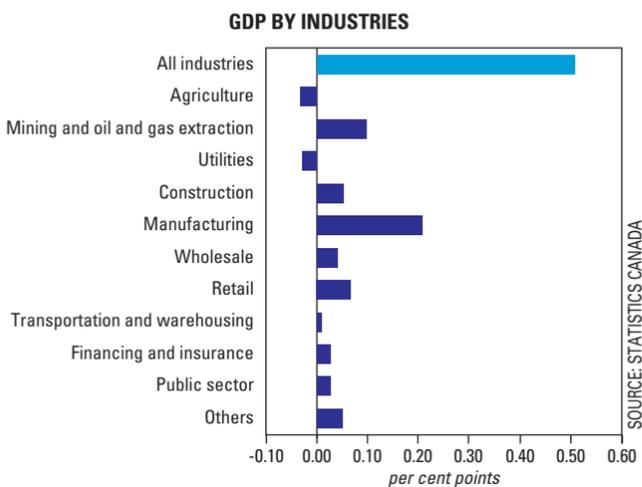
Philip Cross, former chief economic analyst for Statistics Canada, sees the impact of the lower-value loonie a little differently. In a commentary for the Fraser Institute think tank, he notes (among several negatives) that manufacturers import 55% of their machinery and equipment. Faced with higher prices, they’ll buy less and consequently limit production, which may limit employment opportunities and hurt worker wages.



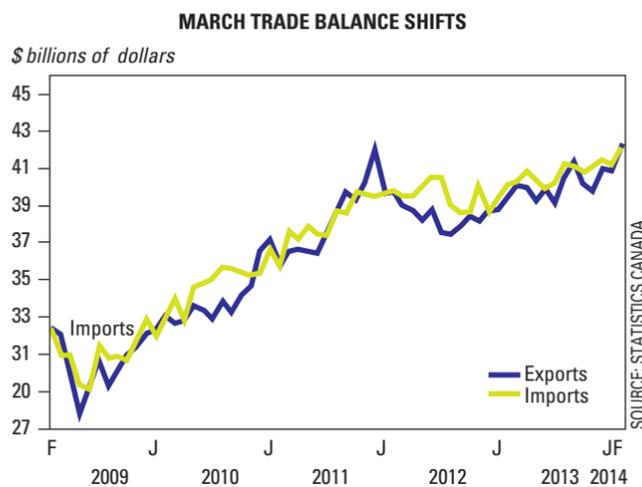
In 2012, 87.8% of businesses focused their long-term business strategies on positioning goods or services while 12.2% focused on low price and cost leadership.



Canada generated 60.3 million MWh of electricity in January, up 0.6% from the same month in 2013. Hydro power use increased the most at 0.6% from a year ago to 39.3 million MWh. Consumption was up 1% to 56.7 million MWh.



Manufacturing output rose 2% in January following a 1.9% decline in December. Significant gains were tallied in computer and electronic products, and machinery manufacturing. Non-durable goods increased 1.5%.



Exports increased 3.6% to \$42.3 billion and imports were up 2.1% to \$42.1 billion in February. As a result, Canada’s trade balance with the world went from a deficit of \$337 million in January to a surplus of \$290 million.



You owe \$243,476

A study by the Fraser Institute notes in addition to direct debt (\$1.2 trillion in 2011-12), by combining federal, provincial and local government liabilities, each Canadian taxpayer owes \$243,476. Total government liabilities in 2011-12 totalled \$4.1 trillion, up 20.9% from \$3.4 trillion in 2007/08. Unfunded liabilities add up to \$2.2 trillion in 2011, an 11.1% increase from 2007. Now, will that be cash, cheque or credit card...

Help wanted

There were about 296,000 full and part-time job vacancies in the fourth quarter of 2013 according to the Canadian Federation of Independent Business’s Help Wanted report. The rate is virtually unchanged from the previous quarter at 2.5%. Manufacturing’s rate is unchanged at 29,000 vacancies or 2%. The smallest businesses (between one and four employees) were hardest hit with a vacancy rate of 4.6%.



EXPORTS TO BUOY GROWTH IN 2014

Demand for Canada’s exports will pick up as the global economy recovers, fuelling real GDP growth over the next two years, according to the latest economic outlook from RBC Economics. It’s forecasting 2.5% growth this year and 2.7% in 2015.

International trade contributed 0.3% to growth in 2013, which represented the first positive contribution since 2001. Export volumes were 5% below their pre-recession peak at the end of 2013. Much of the underperformance is attributable to a subpar US recovery.

Competitiveness issues, such as the strong loonie, also affected growth.

RBC sees the loonie will trade at US\$0.87 by the end of the year and at \$0.85 by year-end 2015.

Historically, a 10% depreciation boosts export volumes by 3.3% in the following two years.

» Smart Systems

Exports, R&D and the number of cranes dotting city skylines will drive growth as the Ontario manufacturer revolutionizes the home automation market.

BY MATT POWELL, ASSISTANT EDITOR

There are lots of construction cranes dotting Toronto's skyline – 130 in 2013, according to Germany construction industry data provider Emporis (or 189 if you're Mayor Rob Ford). Hogtown topped the list of North American in-process developments with residential construction accounting for 92% of that, and for the Mircom Group, that's a very good thing.

You've likely come across some of the Vaughan, Ont.-based manufacturer's products before. Its red, wall-mounted alarms may be the most recognizable offering, but they only scratch the surface of what Mircom is doing and where it plans to go.

The company is no longer just a manufacturer of commercial fire alarm systems, but a high-technology powerhouse that's selling fire detection, security and building automation systems into more than 50 countries, revenues topping \$100 million.

"We've evolved into a technology company that's developing building envelopes for smart systems," says Mark Falbo, the company's president and one of three brothers – Jason and Rick are the other two – that make up the family-run company's leadership team helmed by father and CEO Tony.

And in booming condo markets like Toronto, the more cranes in the sky, the bigger the opportunity for Mircom.

Managing the dynamics of this thriving family business is something the brothers have grown to appreciate, taking on specific roles without stepping on each other's toes.

"I don't do things where Mark has an expertise, and vice-versa," says Jason, Mircom's vice-president of engineering. "Sharing the load has become an advantage for us because it allows us to dive deeper into issues and have a better way of attacking the various layers of the business."

The business needs to be treated like a family member as well, says the elder brother Mark.

"We're not here to satisfy the three or-four family members – the fact that we're family is almost ancillary to the business, and the employees recognize our strength in being able to make long-term commitments, stay the course and let us build the business."

Almost half of its 570 employees work out Mircom's Vaughan headquarters, just north of Toronto, home to key research and development and a vertically integrated manufacturing plant where everything is done in-house.

"The benefit of a vertically integrated manufacturing operation is that we have the flexibility to produce in both custom and volume ways to satisfy the diversity of our markets," says Mark.

"The economics, though, aren't necessarily an advantage," he adds with a chuckle.

The 85,000 square-foot plant handles printed circuit board assembly, metal fabrication, welding, silk-screening and a print shop, powered by both automated and manual equipment including integrated components

placement and intelligent surface-mount technology machines.

The ISO 9001-certified operation used to have an assembly line format, but it's now comprised of workcells that control the flow of material, says Michael Della Fortuna, Mircom's director of operations, who describes them as a combination of lean and flexible processes.

"I can essentially turn production on and off because I have everything I need in house. If I have to go back to the supplier with a change, that takes time and if I have 5,000 pieces in transit that I can't modify, those are costs that go by the wayside."

Workcells enhance flexibility because they handle multiple SKUs, adds Della Fortuna.

"We're also lean because we've developed a scheduling system using heijunka boxes so we know exactly what and how many we're building of any product at any given time."

A heijunka box is a visual scheduling tool that was originally created by Toyota to enhance production flow.

"We used to bring a pallet of product out and bring back whatever we didn't use. Now we're only bringing what we need to the workcells, so we're controlling volumes that way to save the whole operation a lot of time and material costs."

A collection of schedules divided into a grid of boxes representing specific periods of time, making it easy for workers to see the jobs queued for production and when they're scheduled.

"If it's 2 o'clock and you've got labels in your box for 1:30, you know you're behind," says Della Fortuna.

In its printed circuit board shop, two flying probe machines test each soldered joint automatically. Manually, the process used to take an hour, but the new automated process tests both sides of a circuit board in less than 10 minutes.

"That's been a big productivity improvement for us."

It also makes customization and testing new products easy for the company that has become very driven by R&D and innovation.

Mobile power

Mircom spends about 10% of its revenue on R&D, and its latest offering is an extension of its TX3 integrated and automated building operations and communications tool, which was released in 2010 and tailored for the condo market.

The freshly minted TX3 InSuite and Community platforms integrate physical and logical access control, home automation, internal building communications, emergency alerting and property management software in a mobile format that's powered by smartphones and tablets.

The TX3 InSuite is a PoE (power-over-ethernet) 10-inch tablet with ZigBee wireless capability. It provides safety and alarm annunciation, card access integration



Counti
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and two-way audio and video communication capability, functionalities that make highrises more secure. The unit's open and secure plug-in based architecture interfaces with third party software to control condo lighting, HVAC and energy. But the concept also had to be tied in with some kind of web and mobile interface. That's where the TX3 Community portal comes in. It introduces a unified social platform to enhance the building's occupant experience.

The HTML5-powered portal is interfaced by a mobile, iPhone and Android-compatible application that allows a resident to monitor the condo's energy consumption and its temperature, and to lock doors.

The system also connects residents with property management digitally to make various requests such as trade services, lost key replacements, amenity booking and parking spot reservations.

It eliminates paperwork for property managers by housing occupant details database and centralizing com-



Mircom's 85,000 square-foot manufacturing plant is certified to ISO 9001:2008 standards.



Printed circuit boards are manufactured in-house. Soldered joints are tested automatically with flying probe machines in under 10 minutes.



The shop floor is divided into a collection of workcells that each handle up to four SKUs, adding flexibility to the operation.



(L-R) Mircom's Mark Falbo, president; Jason Falbo, vice-president of engineering; Michael Della Fortuna, director of operations; and Rick Falbo, vice-president of marketing and business development, show off the mobile TX3 automated home monitoring platform.

PHOTOS: STEPHEN UHRANEY

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NES

MIRCOM AUTOMATES CONDOS OF THE FUTURE

munity documents, forms, FAQs and bulletin boards. The social media platform connects residents to do things like plan car pooling, find a gym buddy, or even something as mundane as ask for a cup of sugar.

The platform's genesis evolved from the company's perimeter entry systems in highrise towers – those metal boxes that give residents access to the building and communicate with the security desk and concierge.

"We hadn't looked beyond the front door," says Jason, adding that the company started with a touch-screen variant of its standard telephone entry system to improve graphics and usability, while providing property managers with a way to generate advertising revenues by promoting local companies through the screens.

"Touch screens were still on the fringe, but we did it anyway."

The next step involved bringing the screens into the interior of the building with an in-suite option that would communicate with the lobby unit.

"It became obvious that we needed to leverage some of the same functionalities and look at market trends, such as wireless and ZigBee-based technologies to penetrate even further and add to the existing functionality of the front-door product, enhancing it by meeting the requirements of wireless home control and home monitoring."

Meanwhile, condo developers wanted the system to include fire alarm integration to get emergency messages across more effectively with liability reduction capabilities such as wireless flood detection to bring building operation and resident maintenance costs down.

"[I think] we've designed a unique solution that addresses these challenges and makes the entire package for the smart condos of the future," says Jason.

Both the Insuite and Community products were launched at the International Security Conference & Exposition in Las Vegas at the beginning of April.

He has seen the R&D team triple in size over the past

five years, growing to almost 60 highly skilled engineers and programmers working to develop high-tech hardware, board layouts, firmware and software.

He also suggests the so-called skills shortage in Canada is ironic considering the country's lenient immigration policies.

"There's an abundance of qualified people with technical degrees and specialized skills that have the ability to contribute to the economy, and we're definitely a company that's open to providing those people with employment that matches their skill sets," he says.

R&D recruitment

The company actively tries to recruit people from foreign markets and leverage Canadian universities and their foreign visa partnerships to feed its R&D.

Manufacturing in Canada does push costs upwards, he admits, but Mircom has an advantage in R&D, recruitment and technical fulfillment sides of the business because the skills it needs are available at a lower cost than they would be in other jurisdictions, such as the US.

"It might sound counterintuitive, but there's a cost savings to doing that," says Jason. "You're getting a more advanced degree and a more experienced employee at a lower cost because there's less competition."

He sees the company's ability to leverage R&D and make investments as a competitive advantage over larger competitors, such as Honeywell Inc. and Tyco International.

"We pivot quickly and direct our development teams to where we see market opportunities based on trends. Because we're able to do that, we're not burdened with large investments over long periods of time," he says.

He points to a specific example in the Middle East where the company's fire alarm panels are popular because they have Underwriter Laboratory (UL) certification, and Mircom is one of the only companies in the industry that offers an Arabic language display.

Working within a space that's controlled by stiff safety regulations and standards also allows the company to focus innovation within the confines of those standards, and on its export market potential.

"We don't go to countries where we're going to be competing against local providers with local products for local approvals. We go to markets that want North American goods, and there's lots of them," says Mark.

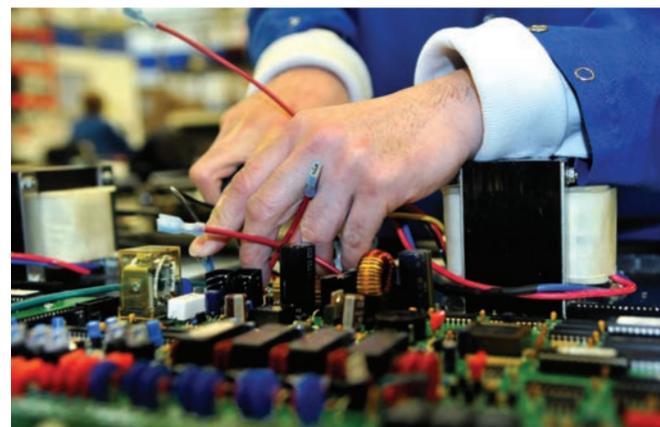
Mircom stays out of China and Russia because they have their own standards. He also recognizes that it's important to go where there's a real need for its products, and identify the competitive advantages. Because Mircom operates in a relatively expensive jurisdiction, it compensates by satisfying foreign market requirements for sophisticated technologies.

"It's not easy to get the approvals and certifications we have, and it's not easy to meet some of the codes for security and safety, but our products do."

Despite the challenges, Mark says exports account for more than 50% of the company's revenues.

"We're in a construction driven market, so anywhere there's population growth, infrastructure development, building, migration – those are ready-made markets for us to participate in."

For Mircom, as long as there are cranes in the sky, there's work to be done, and that makes the Falbos very happy.



Vertical integration makes it easy for technicians to test Mircom products on the fly.



Mircom actively recruits skilled people and leverages Canadian universities to feed its R&D.

Comments? E-mail mpowell@plant.ca.

» Automotive

Saving with eco-driving

AUTO21 simulator training project cuts fuel use and emissions

BY ANDREW JARDINE

Not all automotive research is focused on technology. With millions of commercial and personal vehicles on the road each day, greenhouse gas emissions are increasing. While technological advances over the last decade have yielded better fuel consumption, improved driver behaviour will further gains in the reduction of carbon emissions. Eco-driving can reduce fuel consumption by 10%, reduce CO2 emissions by an equivalent percentage and mitigate rising fuel costs for commercial fleets.

Through AUTO21, a Network of Centres of Excellence program, researchers are entering the third year of the Eco-Drive Training Project. A simulator designed for truck drivers provides training and immediate feedback on techniques such as driving at a consistent speed, anticipating traffic situations and avoiding unnecessary acceleration.

The project underway at centres in Ontario and Quebec builds on previous research in the US, UK and EU.

In Waterloo, Ont., researchers have partnered with the city's public works services to teach participants theory and techniques (working in conjunction with a control group) using the simulator platform. The scenarios provide fuel efficiency feedback through the Virage Simulation Eco-driving Training program. Drivers complete questionnaires that measure individual differences in driving experience to assess motivation and their intention to implement the new skills. The groups also have chip technology installed in their vehicles for three weeks before and after the training to record improved fuel consumption and other relevant driving parameters.



Andrew Jardine gets some eco-driving practice. PHOTO: AUTO21

Strengthening driving behaviours leads to fuel and subsequently carbon reductions. Drivers saw immediate results arising from practices such as smart acceleration and deceleration, with more than 80% of them indicating they would implement the techniques.

As its third year begins, the project has added a new partner. The Centre de formation du transport routier, Saint-Jérôme is joining the collaborative network that includes Waterloo, the Universities of Toronto and HEC, Montreal, and Virage Simulation. Its scope is also expanding to examine the impact of eco-driving on reducing lifecycle costs and vehicle maintenance.

While simulator-based training is currently limited to professional drivers, participation could eventually extend to the general population.

Andrew Jardine is a professor at the University of Toronto and director of the Centre for Maintenance Optimization and Reliability Engineering at the University of Toronto. He leads AUTO21's Eco Driving Training Project. Visit www.auto21.ca.

Comments? E-mail jterrett@plant.ca.

Sustainability

» Renewable Energy



OpenHydro's 16-metre tidal turbine being deployed off the coast of France.

PHOTO: OPENHYDRO

TWO NEW PLAYERS JOIN THE FUNDY FORCE

BY PLANT STAFF

The Nova Scotia government has committed \$4 million and added two more developers to the its Bay of Fundy tidal energy project. The money will fund projects that increase the electrical capacity at the Fundy Ocean Research Center for Energy (FORCE), accommodating up to 20 megawatts of connection.

The \$86.7 million project that hosts tidal energy technology developers provides the electrical infrastructure to deliver power to the grid and independently reviewed environmental monitoring. Up to four devices will be demonstrated at the site.

The funding will allow the next level of device deployments, including small arrays, to connect to the grid.

Tidal energy is a simple concept. An elevated turbine is submerged under water and moves with tidal cycles. The turning blades create the energy that powers an electric generator at the base. Power travels to a cable that runs to and connects with an offsite facility where it's added to the power grid.

The Nova Scotia government also announced the tidal energy developers who will deploy their technologies in the Bay of Fundy's Minas Passage.

One is OpenHydro, a designer and manufacturer of marine turbines based in Dublin, Ireland. It's heading a group with parent company DCNS Group of France, and maritime companies Emera, Atlantic Towing, Irving Shipbuilding and Irving Equipment.

The group views this initial demonstration project as the first phase of a commercial scale operation that could potentially grow to 300 megawatts.

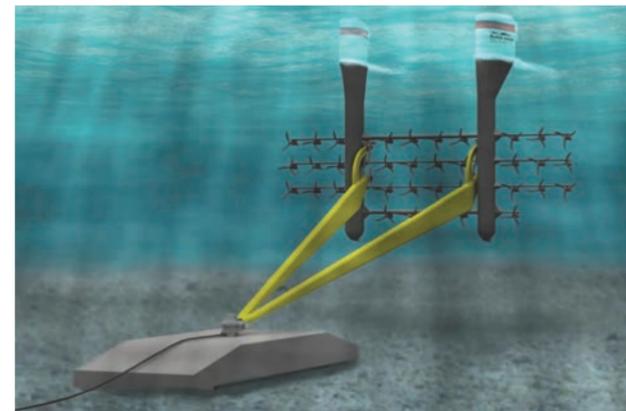
OpenHydro's "Open-Gate" turbines deploy directly on the seabed at a depth that doesn't present a navigational hazard.

OpenHydro is committing to establishing a local manufacturing hub in the Bay of Fundy area that will create about 950 direct and indirect jobs as the project moves to commercial scale.

The other player is Black Rock Tidal Power, a Halifax system-integrator that specializes in the development and implementation of TidalStream Triton platforms carrying Schottel tidal turbines.

Its European and Canadian partners include Schottel (Germany), Tidal Stream (UK) and Atlantic Towing, Allswater, Clearwater, Akoostix, Dynamic System Analysis and Seaforth Engineering of Nova Scotia.

The company says the first platform carrying 16 of 36 turbines will be fabricated, tested and deployed in 2015. Extending to full capacity of 2.5 megawatts and



A TidalStream Triton platform with Schottel tidal turbines.

ILLUSTRATION: BLACK ROCK TIDAL POWER

construction for the second platform will follow in 2016 after "a reasonable test period" in the Minas Passage.

Black Rock's web site offers a description of its technology. The TRITON S36 supports 36 lightweight horizontal axis Schottel STG turbines and electrical power conversion equipment to produce 2.5 megawatts of electrical power. The structure resembles an upended catamaran with two vertical spar buoys are connected by four crossarms.

Supplying household power

The turbines are connected in a grid pattern across the crossarms and the entire structure is tethered to a foundation with two rigid arms that attach to each of the spar buoys, meeting at a subsea hinge that allows pitching, rolling and self-alignment to the direction of flow.

The electrical power collected from each turbine is conditioned in the electrical room located in one of the spar buoys and transferred from the floating structure to a slip ring unit at the hinge, then to a dry mate.

Minas Energy, an existing berth holder, has also announced a new partnership with Bluewater to create an advanced floatation system to deploy Siemens turbines.

Bluewater, based in the Netherlands, installs flowlines, risers and subsea systems.

They will develop a two megawatt floating turbine, called SeaGen F that will produce enough energy to supply up to 1,800 Nova Scotian households.

FORCE has installed undersea cable, which brings the project closer to a full-scale demonstration, followed by deployment of commercial energy production.

The first devices are expected to be in place in 2015.

Comments? E-mail jterrett@plant.ca.

VSM Abrasives

Creating Real Efficiencies with ERP Software



VSM Abrasives Canada Inc. is a subsidiary of VSM AG, a global leader in the abrasives market, headquartered in Hannover, Germany. "Here in Canada," says Managing Director Richard Seibel, "we manufacture more than a million abrasive belts a year and we sell our product through a network of distributors to industrial end users, most of whom are in the metal-working market. We also manufacture and sell wood-working abrasives, but our real niche is metal fabrication and grinding." Up until 1991, VSM products were sold in Canada through a partner. In 1991, VSM Abrasives Canada Inc. was established, first as a warehouse, and then as a manufacturing presence, producing abrasive belts and rolls to customer specifications. Headquartered in Oakville, Ontario, the company currently employs approximately 25 people.

"In the past, we had two separate systems that weren't totally integrated. That caused a lot of duplicated effort and processes, and lots of possibility for error. With SYSPRO, that was all eliminated."

Richard Seibel, Managing Director, VSM Abrasives

In January, 2013, VSM went live with SYSPRO ERP. "Before SYSPRO," says Seibel, "we were using a combination of ACCPAC for the financial side and MISys for manufacturing. It made sense to use ACCPAC when we were only running a warehouse, but as we ventured into manufacturing we realized that we needed appropriate manufacturing software. Unfortunately, using ACCPAC and MYSis was not as harmonious as we had hoped, and when I began running VSM Canada in 2006 I quickly came to realize that we needed an integrated software solution."

After appropriate due diligence, VSM Canada chose SYSPRO ERP. "We had presentations from MS Dynamics, IQMS, Epicor, and a couple local companies with customized software. We were actually leaning towards another system, but when they came back for a last interview and demo the question of three dimensional calculations came up. They said that would be a problem, which was a huge deal breaker. I got on the phone to SYSPRO and asked: 'Can SYSPRO do this?' The answer was: 'Absolutely!' In the end, I was convinced by SYSPRO's customizability, upgradability, and the fact that they had an office in Mississauga, only fifteen minutes away."

"As a smaller company," admits Seibel, "we're not overly computer literate. Everyone just wants the programs they use to work for them. During the implementation we did all the data conversion, working closely with SYSPRO to enter it into the system. Our Go-Live was as you'd expect. There were some minor issues that had to be tweaked and

a bit of a learning curve, but eight months down the road I don't hear any complaints, and most of our employees like SYSPRO much better than the old system."

VSM's traditional business processes, says Seibel, were a good fit with SYSPRO's inherent business logic. "We wrapped SYSPRO around our business processes," says Seibel. "In the past, we had two separate systems that weren't totally integrated. That caused a lot of duplicated effort and processes, and lots of possibility for error. With SYSPRO that was all eliminated. In shipping, for example, the staff used to make numerous manual, duplicated entries. Now, with SYSPRO, our shipper fills out the shipping quantity on the computer, and the office simply processes the invoice, emailing and faxing the customer copy. It works very well. We've eliminated a good deal of the duplication and possibility for error, and we didn't have to modify our business procedures to create real efficiencies."

Today, with SYSPRO up-and-running, VSM has integrated the software across the entire business. "We bought all the basic SYSPRO modules," says Seibel, "including Inventory, Purchase Orders, Bill of Materials, etc. We still don't know all that SYSPRO is capable of and we're still working to integrate more of our business processes, but I'm already happy and comfortable with the system – it runs our daily business with no problems whatsoever. It probably needs one or two modifications over the next few months, and then it'll be tickety-boo."

The biggest current issue for VSM Canada is to integrate its complex quotation system into SYSPRO. "Ninety-five percent of what we sell goes through distribution," says Seibel, "but our sales people work at the end-user level. Imagine a distributor called XYZ, whom we grant special pricing on a specific abrasive belt, but only for an end user named ABC. That's difficult to track, because somewhere in the quote we need to specify that the special pricing is only for ABC. Fortunately, the software is very flexible and customizable, and we're working with SYSPRO right now to integrate "Special Price End-User" fields into the Quotations module. That will allow us to identify the end user and associate their name with that special price."

When Seibel is asked if he would recommend SYSPRO, he replies emphatically. "Absolutely – I've already recommended it to my parent company. I told them that SYSPRO works in multiple languages, and that it has great flexibility for many different processes. It does all the things we want it to, and it works for small or large companies. What we do at VSM seems simple to us – we buy container loads of large jumbo rolls from our parent company, cut them down into different length belts, sheets and discs, and ship them to our customers all across Canada. It's not that complicated, but we have to keep track of every detail down to the smallest scrap, and SYSPRO does that for us."

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» Exporting



SOUTH KOREA

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The world's fifteenth-largest economy is now open for your business.

BY MARK DRAKE

After the spectacular closing ceremony of the Olympics in Sochi, the next winter games in 2018 will be hosted by South Korea in – what was it called again? Oh yes – Pyeongchang (not to be confused with Pyongyang, the capital of the hermit kingdom to the north).

Most of us know even less about Pyeongchang than we did about Sochi, and likewise about the country, officially known as the Republic of Korea. In the 1960s it was an agricultural backwater with a per capita GDP of US\$79. Since then it has turned itself into an important manufacturing and trading nation exporting products around the world.

It's a small mountainous country with 50 million inhabitants and a 2012 GDP of US\$1.13 trillion or \$22,580 per capita. Inflation is a reasonable 2.19% and unemployment a desirable 3.22%. Canadian exports (2013) were \$3.4 billion and imports \$7.3 billion (all those cars and smart phones again). Although these are not dramatic bilateral trade numbers, the Korean market takes third place in Asia for our exports after China and Japan. Foreign direct investment (FDI) in Canada is \$5.8 billion compared to Canada's \$569 million in Korea (www.canadainternational.gc.ca/korea).

Canada's official recognition of Korea came in 1949, followed by formal diplomatic relations in 1963, and both countries participate in international and regional organizations from the WTO and UN to APEC and the G20. We also support Korea's efforts to improve relations with North Korea. Canada/Korean relations are good – there have been many diplomatic visits and exchanges. There are some 200,000 Canadians of Korean origin and 25,000 Canadians living in Korea, of whom about 5,000 are there to teach English, and a few to ensure their airline pilots are up to scratch.

Korea, one of the Asian Tigers, has the fifteenth-largest economy in the world and is the sixth-largest exporter. It has a history of impressive growth and development from the time of the Korean War (1950-53) and is now an industrial powerhouse in the production of electronics (Samsung), household appliances (LG), and leads the world in shipbuilding and related heavy industry. Its

car industry, headed by the massive Hyundai/Kia group, is known now for its quality as much as for its price. Canada imports vehicles, machinery, plastics, appliances and electronics from Korea, our main sales to them being natural resources (minerals, mineral oil, and cereals).

Korea has free trade agreements with the US (2007), the EU (2009), Australia (2013) and on March 11, Canada secured a deal that is expected to be good for food manufacturers, forest products and others. Canada had been trying to negotiate an FTA with South Korea since 2008, and lack of completion left us with disadvantageous tariff barriers as high as 13%. An FTA would make Hyundai/Kia cars a little cheaper as our own 4.3% tariff would be gone. Predictably, the automotive industry critics that lobbied against it are disappointed.

In terms of the business environment, EDC (www.edc.ca) points out that the country has a "highly educated workforce, strong infrastructure, and increased standards of corporate governance." The main market opportunities for Canada are in agriculture, construc-

An agricultural backwater in the 1960s, Korea has demonstrated remarkable progress. PHOTO: THINKSTOCK

tion, infrastructure, mining and metals, oil and gas, power and telecom. Potential for services is also important: including management, computer, information technology, engineering and financial.

The World Bank in its "Ease of doing business" series rates Korea highly. Globally it's 34 out of 189 nations, and within Asia it's rated 7 (Singapore is first), and better than Australia (11), Japan (27), China (29), Brazil (116) and India (134). It continues to make things easier for start-ups, a procedure which takes 26 days in Singapore, 29 in Korea and 400 in Brazil (www.doingbusiness.com).

Astonishing development

It's worth remembering that family dynasties (chaebols) still play an important role in the country, with huge conglomerates controlled by powerful chairmen. Examples are Samsung, Hyundai/Kia, LG and SK. Some, including Daiwoo, disappeared due to overcapacity and excessive competition during the Asian financial crisis, but the others remain strong although suffering from lack of transparency with whiffs of corruption and fraud. The Federation of Korean Industries, a consortium of chaebols, is said to lead the resistance to change.

A retired Canadian pilot currently training Koreans and based at Incheon says that there is a real vibrancy about the place, perhaps best illustrated by the astonishing development at Songdo (www.songdo.com). This new city on 607 hectares (1,500 acres) of reclaimed land just 64 kilometres from Seoul is scheduled for completion in 2015. It's "eco-friendly" with 40% green space and includes a 64-storey tower, an 18-hole Jack Nicholas golf course, a convention centre, arts centre and a hospital. An array of international restaurants have come to the area and kimchee is no longer the main item on the menu! It even boasts a Costco.

So taking advantage of our lower dollar (and an FTA), companies might be wise not to wait until the 2018 Olympics to look for business there.

Mark Drake is former president of Electrovert Ltd. and the Canadian Exporters' Association. E-mail corsley@videotron.ca.

Comments? E-mail jterrett@plant.ca.

» Training

Getting started

Focus on business issues that need solutions

BY HUGH ALLEY

Training is not the objective. It's one way to address a business issue or problem. There's so much you could do with training, but time and money are always limited. Apply these practices to find solutions.

1. Category of the fix. Masaaki Imai, the legendary Japanese engineer, said that improvement efforts must always target in sequence: rework; capacity; information processes; physical flow; and new technology. When you have lots of rework it affects capacity, distorts your information, messes up the physical flow and looks like inadequate technology. One plant increased its capacity by 30% just by eliminating one consistent source of rework.

2. Focus on the customer. Know what must be improved. By doing so you change the perceived value of what you deliver.

3. Cost reduction. Look at where your costs are and focus improvements there.

By combining the first two strategies you get an elegant way to choose a place to start.

What your customers are complaining about? Understand the root cause of that performance issue, then use Imai's sequence to tackle the specific problem.

Take unreliable delivery. A company experienced significant variations in how the intermediate work was being done and lots of rework in the quality documentation. So it redesigned the quality documentation and trained operators on how to use the new forms. This made the documentation easier to complete properly. Then standard work was developed for the most variable procedures. This led to more consistent production times and more predictable deliveries.

When you ask, "Where do I start," the application of these tactics will help you make the best use of the available resources.

Hugh Alley is president of First Line Training Inc. in Burnaby, BC, which focuses on increasing productivity by improving the skills of front line managers and supervisors. E-mail halley@firstlinetraining.ca. Visit <http://firstlinetraining.ca>.

Comments? E-mail jterrett@plant.ca.

» Expanding Trade

How Canada's agreement with South Korea shapes up for manufacturers and exporters.

BY MATT POWELL, ASSISTANT EDITOR

Canada's first free trade foray in Asia is complete – a deal with South Korea that the Harper government touts as a major boost for exporters looking for a toehold in the lucrative region. It's claiming exports will increase by 32% and expand the economy by \$1.7 billion.

As with most free trade deals, there are winners but Ontario auto manufacturers see themselves as the clear losers. Other sectors see the benefits outweighing the burdens, and Jayson Myers, president and CEO of Canadian Manufacturers & Exporters, says the deal is important.

"The government sees this as setting a precedent for the type of deal they'd like to have with Japan and the other large Asian economies – this is the model they want for future agreements," he says.

The Canada-Korea Free Trade Agreement, announced March 11 after almost a decade of on-again, off-again talks, eliminates duties on 98% of all goods, although some agricultural tariffs could take more than a decade to phase out.

This agreement differs from the EU deal because it doesn't involve sub-national procurement. That means Ottawa doesn't require provincial approval.

It also lets Ottawa maintain the provisions of the Investment Canada Act, which screens takeovers by state-owned foreign companies, and leaves supply-managed agricultural industries, such as dairy and poultry production, untouched.

South Korea is Canada's seventh largest trading partner, and third largest from Asia after China and Japan, but the relationship has been decidedly lopsided. Korea's exports totalled \$6.3 billion in 2012 while Canadian shipments overseas totalled \$3.7 billion.

The federal government says the agreement will boost agriculture (particularly beef, pork and wheat), forestry and seafood exports, all of which have dealt with stiff tariffs. Pork and beef tariffs of up to 25% will loosen over 15 years, while a tariff on oats that's been as high as 554.8% will vanish.

Aerospace, aluminum and mining are also expected to benefit.

"Access to strategic markets and the free flow of goods is critical for Canada to compete on the world stage," says Pierre Gratton, president of the Mining Association of Canada, whose industry faced tariffs up to 8% for metals including iron, aluminum and nickel.

In total, 77% of tariff lines will be duty free upon implementation. The rest will be phased out within three years.

Jeff Jackson, markets manager at the Alberta Wheat Commission, says the deal is good for the wheat industry.

"We've lagged behind counterparts in the US and they were eroding our market share, but this deal gives our producers a chance to claw back."

ASIAN toe-hold

PROS AND CONS OF THE SOUTH KOREA DEAL



Exports under the deal should narrow the trade deficit with South Korea.

PHOTO: THINKSTOCK

Without the agreement, agricultural exporters have dealt with tariffs as high as 52.7% in 2012, he says.

But critics in the auto sector blast the elimination of a 6.1% duty on Hyundai and Kia vehicles over two years, which they say will make the already strong-selling brands even more competitive, taking a bite out of domestic sales and production.

Fair trade

Myers says he understands the industry's concerns. "[They] don't think Korea is prepared to play fair, and I get that. For automakers, the deal doesn't really improve on the [agreement] between the US and South Korea, and the tariff elimination schedule is pretty aggressive."

Ford of Canada CEO Dianne Craig has been the most vocal, suggesting South Korea's previous deals with the US and EU have failed to reverse what she calls a "one-sided automotive trade flow" caused by non-tariff barriers on imported vehicles and its intervention in currency markets to subsidize exports and protect its domestic market.

She says the US trade deficit with South Korea has worsened by more than 50% while the volume of goods has dropped by nearly \$2 billion since signing a deal more than two years ago.

"No Canadian manufacturer can compete with a market controlled by non-tariff barriers and currency manipulation," she declares.

The automakers have also criticized the absence retaliatory measures that match those negotiated by the US. The US-Korea free trade agreement (KORUS) includes a "snap-back" mechanism that allows Washington to re-impose a 2.5% duty if South Korea violates the deal.

Unifor, the union that represents Canadian autoworkers, is concerned about potential job losses.

"If Korean companies want to sell more in Canada, they should be required to make those cars here," it said in a release.

Jim Stanford, Unifor's chief economist, told *The Canadian Press* that the government has traded off "billions of dollars" in the auto sector to win over "tens of millions" in more pork and beef exports. "The government is willing to sacrifice

autos in order to make some gains in agriculture and that's all about the government's political base in the West."

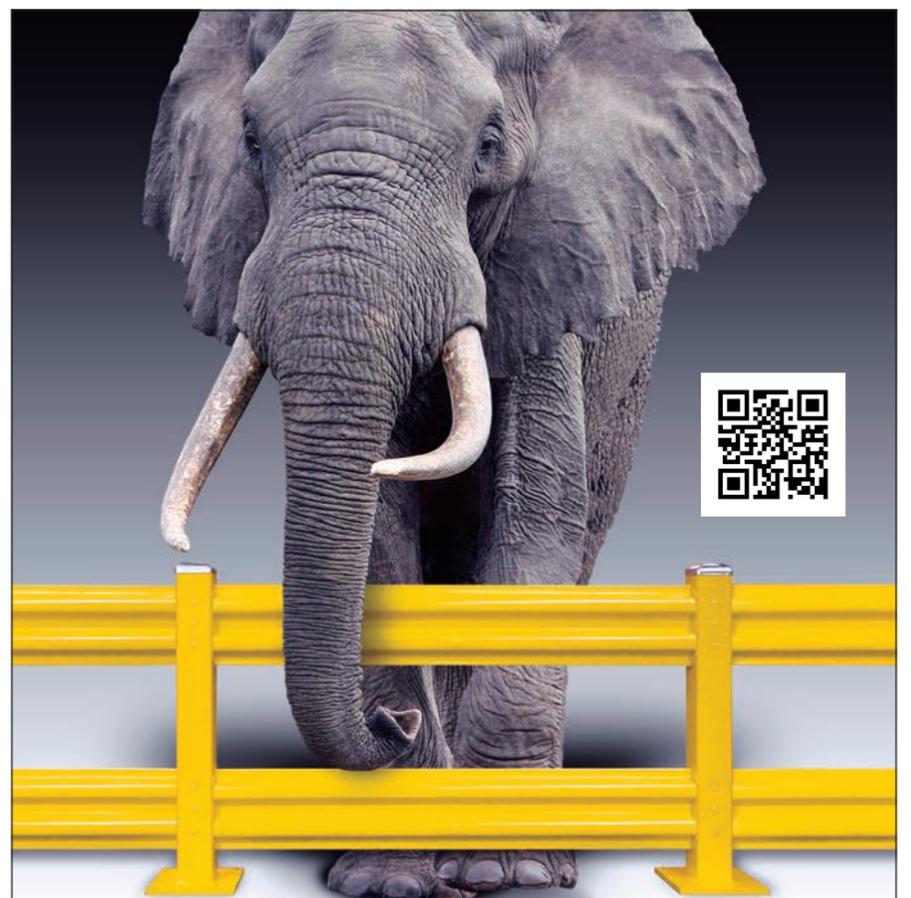
Steve Rodgers, president of the Automotive Parts Manufacturers' Association, suggests some of the automotive industry's concerns may be overblown.

"It's not going to have a major impact in the short term. The majority of Korean imports to Canada are already coming in duty-free from plants in Georgia and Alabama, so it's really only going to affect sales," he says, adding that the EU deal could eventually help offset any potential losses to South Korea.

Other industries say the car makers have seized an undue amount of the spotlight.

"Canada is bigger than the automotive industry," Joy Nott, president of the Canadian Association of Importers and Exporters told *The Globe and Mail*. "This deal really is a fantastic opportunity for Canada."

Comments? E-mail mpowell@plant.ca.



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» Feedback



Chrysler's Town & Country minivan, made at the Windsor, Ont.

PHOTO: CHRYSLER

Re: **Automotive reality check**, PLANT, March 2014

OFF THE MARK

In most instances I agree with your take on the manufacturing sector in Canada; however, regarding government support for the automotive industry, I feel you are off the mark. Governments don't have a good track record when it comes to picking successful business investments since that's not their mandate nor their area of expertise.

I believe some important questions are not being asked:

- Where was the \$700 million going to come from?
- If other programs were to be cut, which ones were they and who exactly would be affected
- Where else could this funding have a broader impact for all Ontarians?

If you were to poll your readers, I suspect most would not be in favour of subsidizing the private sector, unless they directly stand to benefit.

That being the case, the fairer option is for the government to get out of the business (so to speak) of picking winners and losers. That is the job of the private sector operating in a free market economy – and it is doing its job quite well.

Andrew Friedel, President
Delta Elevator Co. Ltd.
Kitchener, Ont.

THERE'S MORE TO IT

Canada's competitiveness, which Chrysler will measure against the rest of the globe, is not only about subsidies to the manufacturers. It's also about energy costs, productivity and labour costs.

Those "lower-cost US states" and Mexico are coincidentally "right to work" jurisdictions. Chrysler wants big subsidies to stay in Ontario because it has to offset high labour and increasing energy costs. The \$700 million dollar hand-out request is the penalty Chrysler estimates it would pay to stay here over the life of the re-vamped facilities. In effect it's a subsidy that ultimately goes to Hydro One and Unifor, with some losses along the way to Chrysler's bank account.

If the current Liberal government in Ontario wants to, "match and effectively equal what the competition is offering" they are the party that has the wherewithal to do so.

For you to claim opposition leader Tim Hudak had the power to derail Chrysler's request is pure folly and political propaganda. The Liberals, propped-up by the NDP, could have approved that subsidy, but risked the wrath of Ontario's voters.

So much for the strength of their principles.

Greg Jackson, Principal
ACG/Envirocan
Woodbridge, Ont.

We'd like to hear from you. Send comments to j.terrett@plant.ca with your name, address and phone number. Submissions will be edited.

» Energy Summit 2014

Power your profits

Conference targets best management practices

Happy with your energy bill? If you are a Canadian manufacturer, particularly one from Ontario, the answer to that question will be no, with a side order of @#%\$*!!!

Well, expert help is at hand. The Excellence in Manufacturing Consortium (EMC) in partnership with Natural Resources Canada (NRCan) and the Canadian Industrial Program for Energy Conservation (CIPEC) is bringing together the country's leading energy experts to share best practices and the latest innovations at Energy Summit 2014.

The national event to be held May 14-15 in Niagara Falls, Ont. will focus on the theme, "Where Efficiency Meets Profitability" with the latest resources, tools and information that will help manufacturers maximize growth and improve profits, while reducing their environmental impact.

What makes this event different – with its four keynotes, 25 sessions and more than 50 subject matter experts – is nearly all of the workshops and panels are industry led, says Scott McNeil-Smith, EMC's director of strategic planning and communications. "It will be manufacturers learning from other manufacturers who have 'been there and done that'."

And everyone speaking at the event – all leaders in their industries – were vetted by NRCan (which is managing the program).



PHOTO: THINKSTOCK

McNeil-Smith says one of the main reasons manufacturers give for not pursuing energy efficiency/sustainability is the added cost.

"This event is building the business case for pursuing both while also creating business and economic opportunity."

You'll have your choice of many solutions-based workshops, panel sessions and plant tours, new products and services showcased at a trade show, and dynamic keynote presentations.

Confirmed keynote speakers include Andrew Cooper, a professional engineer and energy specialist with New Gold Inc.'s New Afton Mine in Kamloops, BC; Paul Rak, owner and certified energy manager at VeriForm Inc., a manufacturer and an energy management firm; and Simon Olivier, vice-president of growth, market strategy and business development for GE Canada.

Session topics include energy and water saving opportunities, energy procurement and management strategies, the ISO 50001 energy management system standard, life cycle analysis and advancing sustainability through lean. And NRCan's CIPEC Leadership Awards dinner will recognize Canadian successes and trailblazers. Greg Rickford, the new federal minister of natural resources, will deliver the keynote.

PLANT is one of the event media sponsors.

Visit www.emccanada.org/group_spaces/energy_summit for more information.

» Economic Action Plan

Check out these FedDev Ontario programs

SOPI, Advanced Manufacturing Fund boost business

Southern Ontario, Canada's most populous region (home to 12.3 million residents in 288 communities) is a key contributor to the country's economy. The good news for its manufacturers is the 2013 federal budget renewed the Federal Economic Development Agency for Southern Ontario (FedDev Ontario) and as of April 1, it will provide \$920 million over the next five years.

"All levels of government, innovators, businesses and entrepreneurs must work collectively to increase efforts in innovation, commercialization and partnerships [that will] create jobs, improve our productivity and ensure the economic prosperity of this country," says Gary Goodyear, Minister of State for FedDev Ontario. These FedDev programs have been set up to help businesses grow:

- The Southern Ontario Prosperity Initiatives (SOPI),



Gary Goodyear

which aim to retain, attract and grow businesses, will provide more than \$530 million over five years. Money will be invested in: business innovation; business growth and productivity; commercialization partnerships; and regional diversification.

- The recently launched \$200-million Advanced Manufacturing Fund in Ontario fosters collaboration between the private sector, research institutions and post-secondary institutions. Large-scale "transformative" manufacturing activities will: increase productivity;

lead to greater economic output; create cutting-edge companies driven by innovation; and establish clusters or supply chains.

For details visit www.FedDevOntario.gc.ca or call (866) 593-5505. For more general information on federal business-related services and programs visit Canada Business Ontario at www.cbo-eco.gc.ca.



SECURITY RISK

External IT security and privacy compliance check-ups are basic practices in every industry sector, yet at least 24% of companies have never conducted a risk assessment to prevent embarrassing data breaches. The reason? Fear of lost productivity accounts for two thirds of SMEs failing to do so, according to Toronto-based Informatica Security.

» Financing

Equity crowdfunding will enhance access to capital for Canadian startups and SMEs, but over regulation could hamper potential.

BY PLANT STAFF

Crowdfunding has enormous potential as a financing alternative for Canadian startups, micro-enterprises and small and medium-sized businesses. It connects entrepreneurs with the cash they need to fund ideas or products through the “crowd” while enhancing the country’s underdeveloped venture capital market, according to a report by TD Economics.

For manufacturers, growth in the Canadian crowdfunding market could enhance their ability to attract the investments they need for new equipment, R&D and even production of a new product at a time when too many regulatory barriers and a starved venture capital market have obstructed their routes to traditional financing.

Venture capital funds and investments in Canada have been declining, and seed-stage and startups are particularly hungry, having obtained just 16% of overall venture capital raised in 2007, says TD Economics economist Sonya Gulati.

Between 2000 and 2010, 25% of small businesses looked to external financing for operational expenses each year, most of which were young, innovative, growth-oriented and R&D intensive, according to an Industry Canada report. It concluded public policy action would improve access to financing and help these kinds of businesses reach their full potential.

According to professional services firm Deloitte, global investors put US\$3 billion towards crowdfunding projects in 2013. Massolution, an advisory and implementation firm that specializes in projects funded by the crowd, pegs that figure closer to US\$5.1 billion, which would amount to an 81% increase over 2012. It says the number of worldwide platforms increased by 54% in 2011 and by 60% in 2012.

Based on estimates by the International Economic Development Council, crowdfunding could create 60 million new angel investors in the US alone, an increase of 1,000% from current numbers.

Success stories include the Pebble e-paper watch in the US, which connects to smartphones via Bluetooth to alerts with a silent vibration. The project attracted 68,929 backers that pledged more than \$10.2 million to get the watches manufactured – way ahead of its initial \$100,000 funding goal.

In Canada, Colt Hockey and technology licensor Integran Technologies Inc. took to Kickstarter Canada to raise the money needed to manufacture its “unbreakable” hockey sticks in 2013. The stick, which had an initial funding goal of \$75,000, generated \$100,672.

“Crowdfunding powers business



UNDERSTANDING ALTERNATIVE FINANCING

growth and is a strong economic generator for start-ups and SMEs who need capital and investors to fuel to compete globally,” says Debra Chanda, president of funding portal Launch 120, and an advisor at the National Crowdfunding Association of Canada (NCFA).

There are now 92 portals and services providers in Canada, 65% of which reside in BC and Ontario, according to the NCFA.

It’s equity crowdfunding has piqued the interest of securities regulators, and will require rules to protect investors against rampant fraud. Advocates, however, argue over-regulation will hamper the growth of what they call the future of raising startup capital in Canada.

In Australia, where equity crowdfunding has been allowed for five years, its leading portal ASSOB (Australian Small Scale Offerings Board) has raised more than \$130 million in seed and growth capital for over 130 companies, of which 83% are still operating without a single incident of fraud.

Meanwhile, the Jumpstart Our Business Startups (JOBS) Act was signed into US law in April 2012 to boost job creation by improving access to capital for public and non-public companies, and now exempts crowdfunding participants from the registration requirements of the Securities Act of 1933. The legisla-

tion allows companies to offer up to US\$1 million in securities to the general public. Last October, the Securities Exchange Commission (SEC) lifted an 80-year ban on general solicitation, which gives American businesses permission to publicly advertise capital needs.

Raising capital

Canada has jumped onboard. On March 20, the Ontario Securities Commission (OSC) along with six other provincial regulators in BC, Manitoba, Quebec, Saskatchewan, New Brunswick and Nova Scotia, outlined proposed rules to regulate the raising of limited amounts of capital and selling of shares.

Rules differ between each province, but the OSC’s proposition would allow companies to raise a maximum of \$1.5 million in equity in any 12-month period. Individuals would be allowed to invest no more than \$2,500 into a single project, to a maximum of \$10,000 per year. In BC, companies would be allowed to raise only \$150,000 per offering, twice a year. Investors would be limited to a maximum of \$1,500 in a single offering.

Canadian crowdfunding sites or portals would have to be registered with securities commissions as “restricted dealers” and comply with minimum

capital and insurance requirements as well as various reporting rules. They will also be required to do background checks on companies and their directors and officers.

The OSC says it will be the responsibility of the portal to shut out issuers it believes to be fraudulent.

The rules are now subject to a 90-day comment period.

Canada’s crowdfunding industry has welcomed the proposals, but says the regulations need some fine tuning, such as the provision that would not allow portals registered under existing securities rules to take advantage of the new registration. They say the provision could make raising capital more expensive as companies would need to pay fees for both.

For regulation to be a net positive, regulatory and compliance costs must be lower than those of traditional financing channels, Gulati writes.

But regulators can’t drag their feet, she says. Over-regulation will hamper growth and force entrepreneurs to shift their focus to jurisdictions that embrace the model.

Although crowdfunding offers support for out-of-the-box ideas and innovation, how well it drives entrepreneurship and economic growth will depend on regulating it properly.

For more information on equity crowdfunding, including rules and regulations, visit the National Crowdfunding Association of Canada at www.ncfacanada.org.

Find Gulati’s report, *Crowdfunding: a kickstarter for start-ups*, at www.td.com/economics.

Comments? E-mail mpowell@plant.ca.

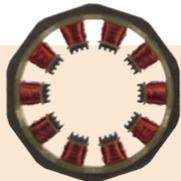
THINKING OF JOINING THE CROWD?

Benefits

- Crowds spur diversity of thought
- Ties to innovation and breakthroughs
- Cheaper access to capital
- Absence of geographical boundaries

Challenges

- Risk of fraud (limited crowd due diligence)
- “Crowding out” other forms of financing
- Crowds do not always know best
- The transaction is often one-time
- The intellectual property dilemma
- Shaky business foundations
- Limited follow-up mechanisms



» Tech Tip

Are motor windings safe?

Test them for low insulation resistance

There are legitimate questions about whether or not a winding is safe or requires a rewind based on a low insulation resistance (Megger) reading. Often the reading is taken within a few seconds.

Bear in mind that the primary purpose of the IEEE Std 43-2000 standard on insulation resistance testing is to evaluate whether or not higher voltage testing can be applied to determine the condition of the ground wall insulation.

The limits of a one megohm plus one megohm per kilovolt rating of the motor is for insulation systems prior to 1974. A five megohm limit for random-wound insulation systems below 1,000 volts, and 100 megohms for form-wound stators, is used to determine whether or not a high potential test and/or surge test can be performed. But this does not verify that the winding is good and no insulation resistance test will detect shorted windings. The only exception is a dead ground or a test result that shows zero megohm to ground.

The test must be performed for a full minute and then adjusted for temperature. If the reading is low but the winding is warm or hot, the result from applying the table will be much higher.

The polarization index and dielectric absorption tests are used to see whether the winding is dirty, or dry and brittle. Most often a low reading, including a low insulation resistance, is due to contamination that requires a cleaning.

Source: *Success By Design*. Visit www.motordoc.org.

» Inside Maintenance



Huge amounts of money are lost by not costing work orders properly.

PHOTO: THINKSTOCK

Controlling COSTS

CASH IN ON MISSED OPPORTUNITIES

There are costs attached to delivering capacity, but know-how and the right tools will get them under control.

BY STEVE GAHBAUER

Maintenance cost control is difficult to achieve. Its activities are often driven by the demands of others, and managers can be blissfully ignorant of opportunities to rein in costs

and control expenses.

Research shows fewer than 40% of work orders are done and posted correctly because too many managers don't know how to effectively close them out in accordance with proper accounting standards.

You may ask, "Are not EAM/CMMS software programs supposed to do this automatically by supplying comprehensive system support guidelines?"

Apparently for many, the answer is no, says Mark Goldstein, a long-time maintenance practitioner, author, lecturer

and principal of Manufacturing and Maintenance Associates Inc. in New Jersey.

Goldstein says posting accurate maintenance work order costs to the right equipment reduces plant maintenance budgetary outlays by 15% to 40%. Real world cost control occurs when enterprise management objectives are supported by comprehensive decision-support guidelines, but many EAM/CMMS programs do not meet this expectation.

Christer Idhammar, who started his successful results-oriented reliability and maintenance consulting company IDCON Inc. 41 years ago in Sweden and brought it to North America in 1985, says people can't be more effective than the system allows them to be – which isn't much in most cases.

Take inventory control. Overstocks, understocks, costly interruptions of maintenance work due to "empty cupboards," expensive last-minute calls, air-express charges and paying outrageous premiums for parts are only the beginning of how outdated tactical methodology to manage maintenance, repair and overhaul (MRO) inventory costs you.

Another area is material shrinkage. Goldstein stresses the importance of having an answer for the ultimate MRO question: "who stocks what, where, and at what price to whom?" Knowing that delivers sizeable reductions in MRO inventory.

The CMMS work order process is capable of accumulating costs against each work order and roll up total cost to the equipment level, the system level, and the plant level. With small adjustments, the CMMS also tracks the cost of failure.

Tracking costs

To track exactly where maintenance costs were incurred, Ben Stevens, principal of DataTrak Systems Inc., a Godfrey, Ont. firm that specializes in CMMS and EAMs, recommends you include manpower and contractor rates in the set-up; do the same for materials, consumables and spare parts costs; and charge special tools to the work orders. Monthly cost reports should show the level of expenditure for major piece of equipment, system, plant or site with each type of maintenance activity. These monthly cost reports should cover the cost of repair, lost operating time, penalties and lost public image. Such reports show variances from the plan and can be used to set the next year's budget.

Adjusting the supplier invoice also saves money. Write a debit memo price adjustment; contact the supplier to prevent future discrepancies and communicate with purchasing and accounts payable to reduce the costs of "supplier errors."

Controlling costs may not be easy, but there are many ways to do so using the proper tools and with the understanding that it's everybody's business.

Steve Gahbauer is a Toronto-based business writer and a regular contributing editor. E-mail gahbauer@rogers.com.

Comments? E-mail jterrett@plant.ca.

» Lubricants

Advancing oil analysis

An overview of some of the best testing options

Oil analysis and monitoring both predictive and proactive, are probably the most cost-effective maintenance technique available. They encompass analysis, interpretation and training, with each element an integral part of the whole, an insight that's front and centre to WearCheck Canada Inc.'s approach to oil analysis and monitoring of industrial turbines and compressors.

Bill Quesnel, vice-president of the company based in Burlington, Ont., talked about advanced techniques during a recent technical presentation at the Hamilton section of the Society of Tribologists and Lubrication Engineers (STLE).

Quesnel outlined several useful methods for advanced oil monitoring such as the Karl Fischer method for moisture determination, particle counting for oil cleanliness, and water separability to ensure used oil still readily separates from water.

It's also necessary to check the oil for foaming characteristics and air release properties (oil foaming and/or entrained air can lead to cavitation), as well as checking for calcium, phosphorus and zinc to ensure foreign oil is not present.

ASTM D445 determines the kinematic viscosity of the oil, and ASTM D664 determines the acid number. Increases in either are associated with oxidation, but they can't be relied upon to truly



Check compressor oils for wear, contamination and fluid condition.

PHOTO: THINKSTOCK

determine when it will become an issue in large oil reservoirs. The rotating pressure vessel oxidation test and the ruler test both determine the remaining amounts of anti-oxidants present in the oil.

Membrane patch colorimetry determines the concentration of foreign substances and identifies the oil's potential for harmful varnish and sludge build-up. This is important as sediments and insolubles usually lead to increased wear.

Analytic ferrography identifies wear mode, alloys and root cause of failures.

Bottom line, there are now many methods of testing, and tools available to conduct them, which are key to influencing maintenance decisions and to keeping equipment functioning better and longer.

» Think Lean

Design workstations to fit within a minimum envelope to discourage the storage of parts, which defeats the purpose of lean manufacturing.

BY RICHARD KUNST

One of the goals of the lean workcell is to eliminate all non-value added movement; hence the preferred U-shape. With the worker in the interior of the U, minimum movement is required to shift the workpiece or assembly from one workstation to the next. When a process is finished, the worker simply turns around and is back at step one.

The workpiece may be carried from one value-added operation to the next; however, when it or the holding fixture are too heavy, they're transferred mechanically between workstations.

Very heavy parts are transported on belt conveyors, but manual push or gravity conveyors are ideal for moving other parts between workstations. They're easy to service, which minimizes downtime and end-to-end connections makes moving workstations within a workcell efficient. The curved "corners" of the U-shape can pose a problem. As potential dead space, they may act as a mini storage area that encourages a return to batch processing. A ball roller transfer should facilitate part movement through the corners.

It's important each workstation or machine is designed to fit within a minimal envelope. This eliminates excess flat space and avoids the storage of parts or sub-assemblies at the machine. Storing parts increases work in process and results in "batch" processing, which subsequently defeats the purpose of lean manufacturing. Smaller, minimal size workstations and machines eliminate unnecessary steps taken by the worker between subprocesses.

Significant floor space is saved by properly sizing the workstations and machines. Although tempting, standardizing for all processes should be avoided. Each should optimize assembly subprocesses, which in most cases will vary from workstation to workstation. This customization is achievable with virtually any structural material. To save on costs and minimize environmental impacts related to disposing of inflexible welded steel structures, preference should be given to material



Working with FLOW

SET UP WORKCELLS TO MINIMIZE MOVEMENT

that's reconfigurable and reusable. The modular characteristics of extruded aluminum bolt-together systems make them perfect for lean manufacturing.

Moreover, in a continuous improvement environment, all workstations and workcells must be easy to modify as process improvements are identified. In addition to their superior flexibility in layout and design, lightweight aluminum structures are easier to move when reconfiguration is necessary. Casters may be mounted to the stations to eliminate fork trucks or other lifting equipment.

Naturally, during the average work shift, additional parts will be required for the workcell. Traditional methods of resupplying workstations are not useful in a lean workcell. Work should proceed with the minimum number of interruptions. Therefore, all parts should be supplied from outside the workcell. The use of gravity feed conveyors or bins fits the simplified design of the lean workcell. Parts bins load from behind (outside the working area) allows the worker to continue production without interruption as gravity carries the parts to the reach area.

And reconfigurable, easily stackable bins provide flexibility.

Although bins are ideal for small parts, many assemblies require larger parts that are delivered in bins or boxes without entering the work space.

Keep the cell clear

Gravity feed conveyors serve this purpose well. An additional gravity feed conveyor mounted in the reverse direction handles scrap or containers that must be removed from the cell. Lift assist devices are recommended for heavy parts or boxes of parts that load onto a case lifter and raised to the proper work height with electric, pneumatic or hydraulic power.

Ready availability of work-critical information also adds to efficiency. Supplying the right information, such as assembly processes, work instructions, repair procedures, or even production targets, allows workers to make the right decisions and act on them on the spot, limiting the downtime spent chasing after a busy supervisor. You should never mirror a cell: most of all your standard equipment, fixtures, and assembly aids become difficult to use because they're designed for the standard right-to-left cell configuration.

Following these processes and going with the flow makes production more efficient, reduces costs, eliminates waste and accomplishes the lean mission.

Richard Kunst is president and CEO of Cambridge, Ont.-based Kunst Solutions Corp., which publishes the "Lean Thoughts" e-newsletter. Visit www.kunstsolutions.com. E-mail rkunst@kunstartofsolutions.com.

Comments? E-mail jterrett@plant.ca.

» Safety Tips

**CAUTION
WATCH
YOUR STEP**

How to prevent slips, trips and falls

If you've slipped on an oily patch of floor or tripped over a loose piece of carpeting you know how easy it is to fall, and you've joined more than 42,000 people who get injured each year in work-related tumbles. That's about 17% of the time-loss injuries across Canada.

Keeping that in mind, there are four factors that should be addressed to prevent falls:

- 1. Good housekeeping.** It's the most important factor in preventing falls. Be sure to do the following:
 - Clean all spills immediately, mark spills and wet areas.
 - Mop or sweep debris from floors.
 - Remove obstacles from walkways and always keep them free of clutter.
 - Secure mats, rugs and carpets that don't lay flat with tape and tacks.
 - Close file cabinet or storage drawers.
 - Cover cables that cross walkways.
 - Keep working areas and walkways well lit; replace used light bulbs and faulty switches.
- 2. Flooring.** Change or modify surfaces to provide sure footing. Recoat or replace floors, install mats, pressure-sensitive abrasive strips or abrasive-filled paint-on coating and metal or synthetic decking.
- 3. Footwear.** No anti-slip footwear is ideal for every condition in workplaces where floors may be oily, wet or where workers spend a lot of time outdoors. Consult with manufacturers for the best options. Wearing footwear that fits properly increases comfort and prevents foot fatigue.
- 4. Pace of walking.** The best way to keep workers on their feet is to encourage them to take their time, pay attention to where they're going and follow these recommendations:
 - Walk at a pace that's suitable for the floor and the tasks you are doing.
 - Point feet slightly outward.
 - Make wide turns at corners.

This article was provided by the Canadian Centre for Occupational Health and Safety (CCOHS), a not-for-profit federal corporation that promotes the physical, psychosocial and mental health of Canadian workers by providing information, training, education and management systems. Visit www.ccohs.ca.

Comments? E-mail jterrett@plant.ca.

LEAN ALERT

Don't decide which lean solution to use before consulting shop floor personnel and understanding the true nature of the problem. Lean implementations often look good to the manager but fail to improve the situation.

From Factory Physics: Foundations of Manufacturing Management (2008)



Productivity that sticks.

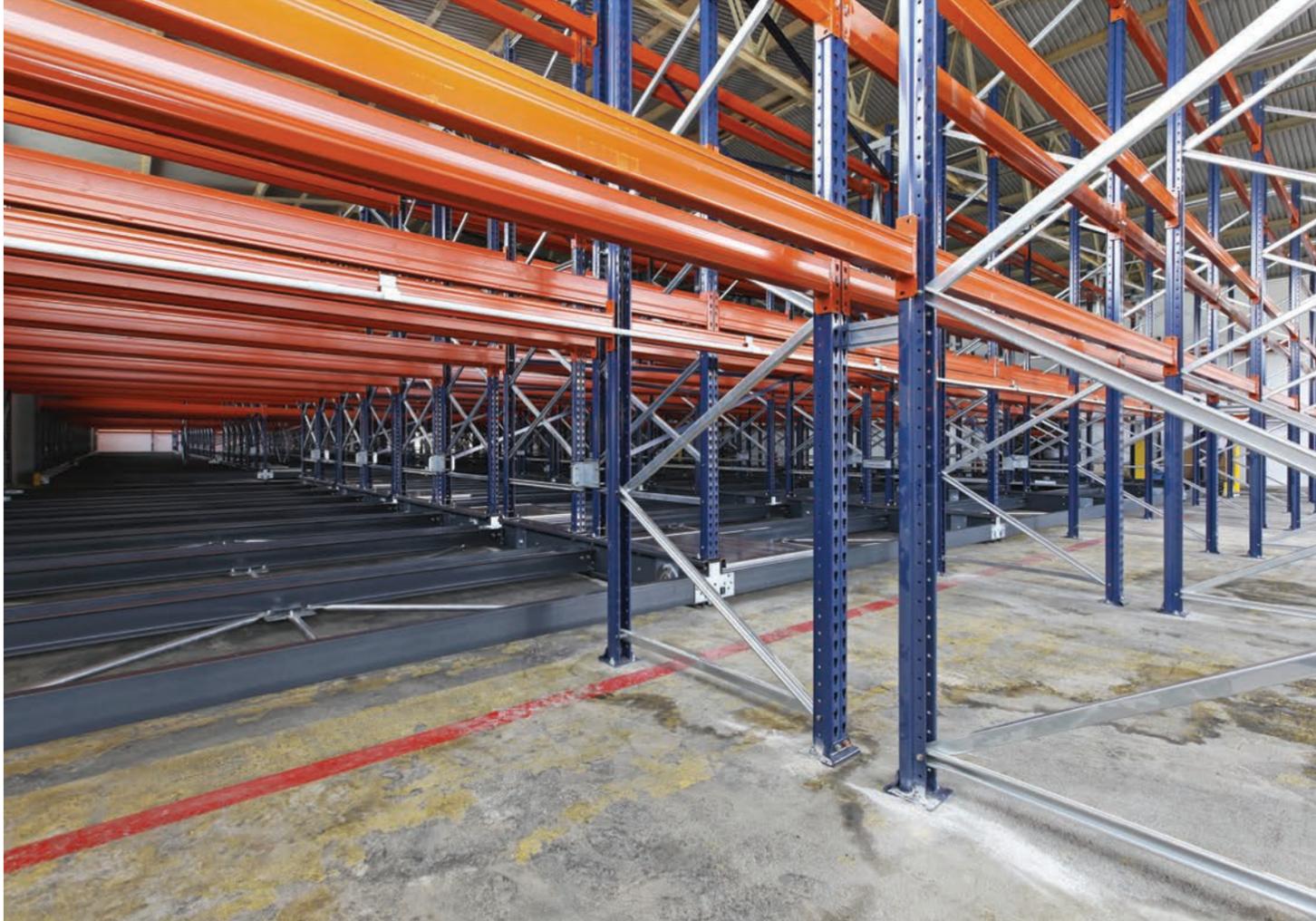
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CANADIAN INDUSTRIAL EQUIPMENT NEWS



Smart racking practices ensure a safer work environment and improve productivity.

PHOTO: THINKSTOCK

» Storage

RACKING failures

FIVE KEY PRACTICES THAT WILL HELP PREVENT THEM

Code compliance with regular inspections, maintenance and repairs are the best ways to avoid unsafe work conditions and costly racking failures.

BY RALPH BALBAA

Storage racks are used extensively in industry. An important part of an employer's responsibility is ensuring that these structures are safe. Rack failure can lead to serious injuries – even fatalities – damage to property and products, expensive repairs and impaired productivity.

During a November 2011 industrial inspection blitz of industrial storage racks in Ontario, the Ministry of Labour issued 3,063 orders, including 118 stop work orders.

To avoid failures ensure racks are code compliant and regularly inspected, maintained and repaired; and implement these practices:

- 1. Keep engineered specifications on the premise.** As per CSA A344.2, manufacturers are required to maintain records. The provincial labour ministry may ask to see these documents during a facility inspection. Obtain documentation from the manufacturer that indicates the rack was designed and installed in accordance with current applicable standards and specifications, or have a Pre-Start Health and Safety Review (PSR). A PSR is also required if there were alterations to the specifications, if the rack has undergone major repairs or if it was relocated and there are changes to the design parameters.

- 2. Plan formal reporting procedures and inspections to enforce high standards, maintenance and inspec-**

tion. The Ontario Occupational Health & Safety Act (OH&SA) clause 25(1) (b) requires the employer to ensure equipment is maintained in good condition. CSA A344.1 recommends owners have an in-house systematic inspection program in place performed by a competent person, and that the owner should keep a record of each inspection.

An inspection protocol should focus on the following:

- Excessive deflection in the beams due to overloading.
- Out of plumb, damaged, or corroded posts.
- Damaged or missing horizontal and/or diagonal braces.
- Sheared or missing anchors.
- Damaged or permanently deflected beams, or incorrect beam engagement.
- Missing or improper safety pins, row or wall spacers.

Continued on page 22

» Supply Lines



An Aventics valve.

PHOTO: AVENTICS

INTRODUCING AVENTICS

A new standalone company has been created out of Bosch Rexroth's former pneumatics business unit.

The unit was sold last year to Triton, a German-Scandinavian investment firm.

With the change in ownership, the pneumatics specialist will be operating under the name Aventics.

Its global headquarters will be in Laatzen, Germany, its US headquarters in Lexington, Ky. and Canadian headquarters in Burlington, Ont.

LAUNDRY BUSINESS EXPANDS

Canadian Linen and Uniform Services has acquired a portion of Independent Linen's laundry business in Mont-Tremblant, Que.

Its Linge branch in Montreal is now servicing the new customer accounts.

Family-owned Canadian Linen, based in Toronto, operates more than 35 production facilities and service centres supplying uniforms and linen products for industry throughout Canada.

NETWORK FOR ASSET PROS

SKF has launched an online network to connect maintenance professionals around the world.

The website features discussion rooms where pros can exchange experiences and opinions about current topics, or ask questions, and take advantage of available expertise.

Visit www.mapro.skf.com/maintenance-network.

NEW 3D TECH AT HYPHEN

Hyphen has upgraded the rapid prototyping and testing capabilities at its Kitchener, Ont. facility with the purchase of a Stratasys Fortus 900mc 3D Production System from Cimatrix, a provider of additive manufacturing services in Oshawa, Ont.

"The 900mc offers us groundbreaking technology to help designers and manufacturers bring their ideas to life faster and more accurately than ever before," said Mark Barfoot, managing director of Hyphen.

Using fused deposition modelling, the system builds durable, accurate, repeatable parts as large as 36 x 24 x 36 inches, with a selection of 10 material options, including FDM Nylon 12, to create building fixture, factory tooling and end-use parts that are close to finished products.

Racking up safe practices

Continued from page 21

- Misplaced, missing, or damaged safety bars.
- Improper overhang of goods over pallets or pallets over beams.
- Use of damaged pallets.
- Overload conditions.
- Substandard rack repairs.
- Unsafe material handling equipment operation.

3. Prioritize damage control. Preventing, recognizing and repairing damage is crucial to maintaining rack safety. Many racks are damaged by mechanical loading equipment or by the material being placed on the shelves. Damage significantly lowers the capacity of the rack structure and can lead to a catastrophic failure.

Operators of forklifts or other mechanical equipment must be well trained and regularly refreshed so they know how to effectively and safely manoeuvre around racking systems. Owners should:

- Post load rating signage in visible locations on the racks and train workers to not overload them.
- Train all material handling equipment operators in accordance with CSA B335.
- Design material handling practices to minimize impact loads on the racks.
- Create a damage reporting procedure and train workers to address damage immediately, and recognize damage that's not reported immediately.

4. Avoid common pitfalls. There are some things that should never be done. Avoiding pitfalls will make your plant safer. Keep these points top of mind:

- Don't move racks around the plant without a review of the manufacturer's requirements regarding the anchoring or protection of bases.
- Capacity and/or safety of racks can be affected if they are cut down, welded or spliced, reconfigured or moved. Such modifications should only be carried out with the approval of the manufacturer or a professional engineer.
- Removing or repositioning beams may create an overload condition. Get approval from a professional engineer, vendor or manufacturer except when reconfiguration is in accordance with a supplier's predetermined specifications.
- If you choose to install secondhand racks or have them custom built, get a professional engineer to confirm they're safe to use.

5. Take racking seriously. Racking safety in plants seems clear enough and easy to do, but errors and oversights are common where there are many moving pieces and human-machine interactions. Make sure aisles are properly lit for easier material placement, pallets are maintained in a good condition, and aisles are free of obstructions and hazards.

Operating a safe storage facility is the law, but adhering to smart racking practices will also improve productivity.

Ralph Balbaa is the president of HITE Engineering, a Mississauga, Ont.-based consulting firm specializing in industrial and construction safety. He has more than 40 years of engineering experience and is a former Ontario Ministry of Labour consultant. Visit www.hite.ca.

Comments? E-mail jterrett@plant.ca.

Lubricants

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QualiChem's Xtreme Cut 292 cutting fluid reduces the cost of working with difficult alloys such as titanium, Inconel and stainless steel by improving cycle times and extending tool life.

This fluid's low drag-out rates also reduce coolant use and extended sump life improves productivity while reducing disposal cost.

The Salem, Va. fluids manufacturer says this new technology provides better lubricity than traditional heavy-duty soluble oils, eliminating foaming, staining and residues.

Tests also show that Xtreme Cut 292 can replace straight oils where other water-dilutable products have failed.

Xtreme Cut 251C, a formaldehyde-free, premium semi-synthetic cutting and grinding fluid formulated for ferrous and non-ferrous machining applications, contains extreme-pressure and high-performance additives for improved tool life and part quality.

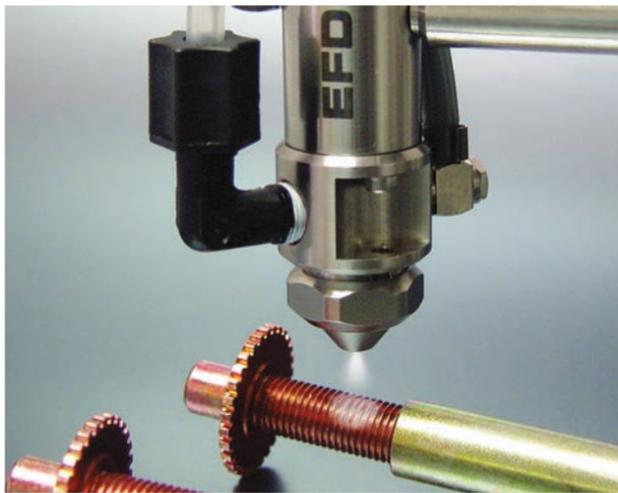
A tight emulsion promotes tramp oil rejection and it's non-foaming, making it suitable for high-pressure



Eliminates foaming.

use through tool feed systems. The raw materials used in 251C prevent the rotten egg odours associated with most soluble oils and semi-synthetic fluids.

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Nordson EFD is a manufacturer of fluid dispensing systems based in Westlake, Ohio.

www.nordsonefd.com

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Shell's Omala synthetic and conventional long-life lubricants protect industrial gears from wear.

The G range covers enclosed spur and bevel gear applications from standard to high load and extended duty. G Specialty is used when extra shock protection is needed or particulate contamination occurs. And the W products are made for industrial worm drive applications from standard to high-load and extended-duty.

The product line includes the following:

- S1 W for factory machine applications and worm gears.
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- S2 G for enclosed gears and factory machine applications. Extends intervals for up to 200% for some applications.
- S3 GP for extreme loads, shock loads, enclosed gears and factory machine applications.
- S4 GX synthetic for enclosed gears, factory machine applications, high temperature and extreme loads. Up to 40% less thickening based on ANSI/AGMA requirements.

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Purity FG2 with MICROL MAX spray grease resists water washout in highly demanding conditions. It's used in a wide range of food processing applications for bearings, slides and guides.

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Petro-Canada Lubricants is a Suncor Energy business based in Mississauga, Ont.

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Imperial Oil's Spartan EP-C extreme pressure industrial gear lubricants have been formulated to protect industrial gears while delivering long oil life.

The oils contain a sulphur/phosphorus additive system that provides a high load carrying capability and enhanced wear protection.

Their thermal stability reduces sludge formation and keeps internal surfaces clean while protecting against corrosion of alloys containing steel and copper.

The integrated energy company, a subsidiary of Exxon Mobil Corp., says the lubricants' demulsibility allows water to separate rapidly from the oil, simplifying drain off from gear cases and system reservoirs.

These oils are used in splash or circulating systems, wherever industrial gear oil is recommended, and are suitable for a variety of applications in industrial gear drives including spur, helical, double helical (herringbone), spiral bevel and others. They are also used for the lubrication of plain and anti-friction bearings and worm gears, where specified.

Applications include drives for conveyors, agitators, dryers, fans, mixers, presses, pulpers, pumps, screens, extruders, oil pumps and journal and rolling contact bearings, especially operating at low speeds and high loads.

Imperial Oil's Petroleum and Chemicals Division, Lubricants and Specialties, is based in Calgary.

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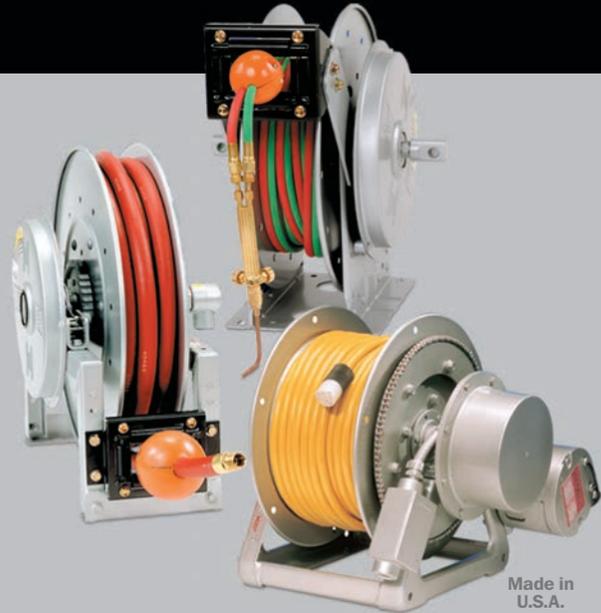
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» Conference

RAPID comes to Canada

New AMExpo pavilion to highlight 3D printing

BY PLANT STAFF

With growing interest in 3D printing and additive manufacturing, SME is bringing the RAPID conference and expo to Canada in September as part of the AMExpo Show (Advanced Manufacturing Expo).

RAPID, launched in 1994 by the Society of Manufacturing Engineers (SME) to serve the global marketplace, will be held in Detroit June 9-12, but it will also come to Canada in response to industry demand.

The market for additive manufacturing and 3D printing is expected to double by 2015, says Nick Samain, SME group manager. "Some people are calling 3D printing the third industrial revolution. Forecasts show that 3D printers will increasingly be used to directly manufacture production parts and finished goods."

The technology is used for both prototyping and distributed manufacturing with applications in many fields, including architecture, construction, industrial design, automotive, aerospace, military, engineering, civil engineering, dental and medical industries, biotech (human tissue replacement), fashion, footwear, jewellery, eyewear, education, geographic information systems and food.

A report by industry consulting firm Wohlers Associates notes the 3D printing industry took 20 years to reach \$1 billion, but generated its second \$1 billion five years later. The firm expects the market to reach \$4 billion in 2015 and forecasts the sale of 3D printing products and services will approach \$6 billion worldwide by 2017. By 2021, it expects sales to reach \$10.8 billion.

The RAPID Canada conference and exhibition will be presented as a pavilion during the Sept. 23-24 AMExpo at The International Centre in Mississauga, Ont. and will target both users and novices looking to enter the 3D printing market. They'll learn about model making, compression and injection moulding, moulds, tool and die design, CAD/CAE/CAM, castings and pattern making.

Canadian manufacturers have some work to do to catch up with this technology. Compared to US companies, they are "way, way, way behind," says Vesna Cota,



Man (seated) bears a striking resemblance to these life-size chess pieces manufactured with 3D printing technology.

PHOTO: SME

design and development specialist, automotive, with Tyco Electronics Canada, a manufacturer of electronic and optic interconnection devices in Markham, Ont.

She stressed RAPID Canada's main goal is educate and provide insight with real cases that demonstrate how the technology is used to advantage.

Cota, a member of SME's Toronto Chapter and a printed materials technical advisor for the RAPID event in the US, said Canada is on the frontline inventing outstanding and unique products. She noted as an example PolyWorks 3D scanning software from InnovMetric Software Inc., a Canadian company based in Quebec City. It markets and supports industrial 3D metrology technology worldwide based on its PolyWorks platform. "Then we have manufacturers who are unaware and not taking advantage of the technology."

AMExpo, which features advanced manufacturing technologies, will also feature the Medical Manufacturing Innovations (MMI) Series for manufacturers involved in medical device manufacturing processes and technologies.

www.amexpo.ca

<http://rapid.sme.org/2014/public/enter.aspx>

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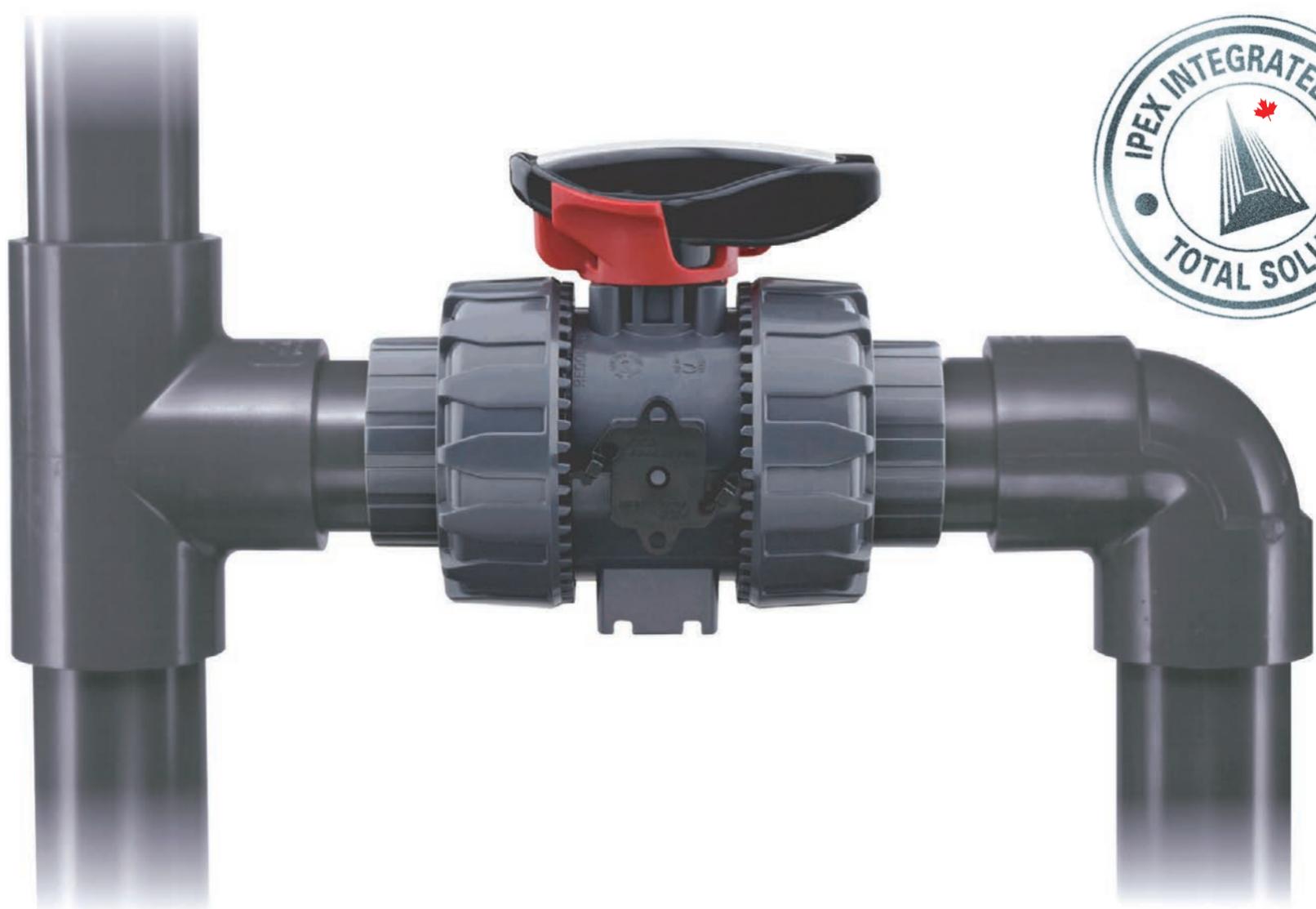
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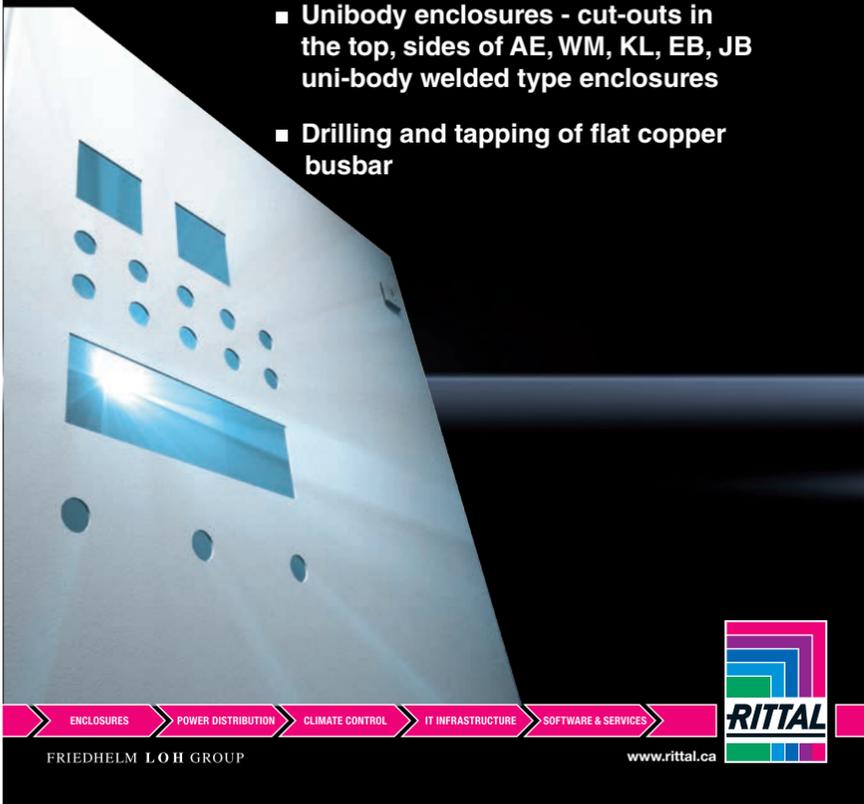
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They're cooled by free-air convection making them suitable for a range of applications.

MicroPower Direct is a supplier of power conversion products based in Stoughton, Mass.

www.micropowerelect.com



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Appleton Electric's Areamaster weatherproof floodlights are made of high grade, corrosion resistant 316 stainless steel that makes them impervious to saltwater and harsh chemicals in industrial and marine environments.

The energy efficient lights comply with NEMA 4X requirements and are UL-Listed for Class I, Division 2 hazardous industrial locations, such as oil rigs, chemical plants

and sewage treatment centres.

Compact and easy to install, the floodlights come in a variety of efficient high-power ballast and voltage configurations. All models include thermal-shock and tempered impact-resistant glass, along with a built-in double segment reflector that boosts photometric efficiency.

Firmly-seated silicone rubber gaskets prevent the ingress of moisture, chemicals or saltwater and a hinged door means no lost or damaged parts during servicing, while the door's latches allow relamping without tools.

Appleton Electric, a brand of Emerson Industrial Automation based in Rosemont, Ill., is a manufacturer of industrial explosion-proof lighting.

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Use AutomationDirect's SureGear PGCN stepper gearboxes for motion control applications such as material handling, pick and place, automation, and packaging that require a NEMA-size input/output interface.

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The maintenance-free gearboxes require no additional lubrication for the life of the unit and hardware is included for mounting. Optional shaft bushings are available for mounting to other motors.

AutomationDirect is a distributor of industrial automation products based in Cumming, Ga.

www.automationdirect.com

SENSORS

LASER SENSORS RESIST DAMAGE

Ophir Photonics has added a damage resistant coating to its high power 300 to 1,500 W laser sensors that the company says provides a threshold two times higher than competitive models.

The L300W-LP, FL400A-LP, 1000W-LP and L1500W-LP sensors now include the LP1 absorber, meant for continuous power and long pulses more than 1 ms.

The manufacturer of industrial instrumentation says that while traditional surface absorbers have a much lower damage threshold at >1,000 W, the denser coating used on its sensors improves heat resistance to high power lasers and long pulses reaching thresholds of more than 200 J/cm² for 10 ms pulses.

Ophir Photonics is based in North Logan, Utah.

www.ophiropt.com



For long pulses.



Seamless integration.

LINEAR STAGES KEEP DEBRIS OUT

Thanks to a unique lip design, ballscrew and linear-motor SLS sealed motion stages from Bell-Everman Inc. keep debris, particulate and liquid contaminants from gumming up the internal drive and bearing components in laser, welding, semiconductor, machining and precision motion applications.

Made from a ruggedized polyurethane elastomer, the seal integrates seamlessly with the stage's anodized aluminum housing. Polyurethane is resistant to chemicals, temperature extremes and mechanical wear. In most cases, the seal is field replaceable without disassembling the stage or removing the payload.

Linear motor configurations achieve accuracies of $\pm 4 \mu\text{m}$ per metre of travel and bi-directional repeatability of $\pm 2 \mu\text{m}$. Ballscrew configurations achieve accuracies of $\pm 10 \mu\text{m}$ per metre and bi-directional repeatability of $\pm 5 \mu\text{m}$.

The stages handle standard travel lengths from 100 to 1,000 mm and custom lengths to 2,000 mm. Speeds to 4 m/sec for linear motor drives and 0.4 m/sec are achievable for ballscrew drives, as well as a continuous linear force to 300 and 1,540 N.

Bell-Everman is a manufacturer of motion control devices based in Goleta, Calif. www.bell-everman.com/sls

TEST AND MEASUREMENT

ENHANCED FLUID FLOW CONTROL

A restrictor valve with an integrated micrometer in Supercritical Fluid Technologies' bench top SFT-110 extractor makes flow control more precise for research and process development applications.

A removable oven lid and large side panel ease access to the high pressure vessel, while an indicator light on the SFT-10 pump module alerts the user to proper operation of the Peltier pre-cooler to ensure CO₂ is maintained in a liquid state.

An outlet from the restrictor prevents accidental damage to the outlet tube as it's inserted into the collection container.

Supercritical Fluid Technologies makes separation and material processing products in Newark, Del. www.supercriticalfluids.com

METERS REDUCE HUMAN ERROR

Replace out-dated analogue meters with Dwyer Instruments Inc.'s durable BGM bar graph meters, which are equipped

with a 4-digit display that reduces the potential for human error.

A keypad eases access without complex menu structures and an LED bar graph adds a visual indicator of the measured value so visual analysis prevents accidents or system failures.

The meters have vertical or horizontal orientations with 0 to 10 VDC or 4 to 20 mA signal inputs.



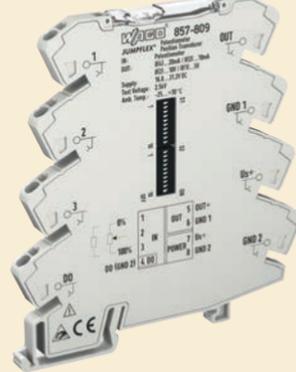
Vertical or horizontal orientations.

Dwyer is a manufacturer of controls and instrumentation based in Michigan City, Ind. www.dwyer-inst.com

SIGNAL CONDITIONING

CONVERT POTENTIOMETER TO ANALOGUE SIGNALS

WAGO's JUMPFLEX potentiometer signal conditioner converts signals from each DIN-rail device to a variety of standard analogue types for hydraulic lift/stage, robotic controls, position control and rotary positioning applications.



Compatible with Android devices.

Configurable input signals between 10 to 100 k Ω are available via DIP-switches, teach-in switches, software or the JUMPFLEX To-Go app for Android mobile devices. They cover the complete bandwidth of temperature coefficients from PT100 sensors up to KTY and Ni sensors.

The 6-mm wide unit has a temperature range of -25 to 70 degrees C and provides safety and reliability via 2.5-kV, three-way isolation with signal transmission accuracy of less than 0.1% full scale.

WAGO is developer of spring pressure connection technologies based in Germantown, Wis. www.wago.us

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CONNECTORS



Ensure reliable terminations.

FIND THE RIGHT TORQUE

Harting's three Han Torque Tool sets and screwdriver set make field termination easy in both screw and axial screw configurations.

The German manufacturer of industrial connectivity products with a Canadian office in St-Laurent, Que. says the axial screw termination is an alternative to crimp connections for larger gauge wires that provides durable, vibration-proof connections and handles conductor cross-sections to 100 mm.

The torque and screwdriver sets eliminate any guesswork about which to use for each axial screw or screw termination job.

Variably adjustable torque screwdrivers work in the 5-14 and 1-5 Nm range.

The kit includes two pre-set, tightening torque screwdrivers with a fixed value of 0.5 Nm and 1.2 Nm for screw contacts and fixing screws.

www.harting.ca

CUTTING TOOLS

COLD SAW CUTS CLEAN

Behringer's HCS-180 automatic carbide circular cold saw cuts ferrous materials such as high-alloyed heat-resistant steels at angles up to 90 degrees thanks to a 34.8 hp frequency controlled blade drive. It produces 20 to 250 rpm to accommodate most wet or dry sawing applications.

A blade diameter ranging from 16.5 to 20.5 in. ensures fast and precise cuts of round stock up to 7 in. in diameter.

A PLC controller programs the number of pieces to be cut, length, discharge handling and other parameters. Two non-contact light barriers detect the leading and tail edge of the material, then send start and end data to the PLC.

Vibration absorbers mounted between the machine base and the sawing unit conserve blade life with help from



Includes PLC controller.

sensor-driven cutting pressure monitoring that has a worn saw blade interrupt feature.

The NC controlled sawing head with ball-screw spindle is driven by a servomotor and integrated encoder for precision movement. The head is mounted on pre-tensioned linear ways angled at 25 degrees to ensure quality cuts.

The gripper feed unit is powered by a servo-driven ball screw spindle to provide an infinitely variable feed or reverse feed rate of up to 39.3 in. per second. Single stroke capacity is 0.314 to 39.3 in. and multiple stroke is up to 32.8 in.

A pneumatically controlled micro-spraying cooling system continually mists the carbide blade to prevent heat build up.

Behringer Saws Inc. is a developer of cutting tools based in Morgantown, Pa. www.behringersaws.com

MATERIAL HANDLING

PALLETIZERS MAXIMIZE LOADING EFFICIENCY

Intelligrated's Alvey 950F and 750 hybrid palletizers maximize efficiency and flexibility thanks to integrated robotic arms that provide flexible and accurate product handling and layer forming.

The units gently handle product to create stable single-SKU or mixed-SKU pallet loads for applications with reduced primary or secondary packaging.

The floor-level model connects with higher-speed production lines to maximize existing manpower with packaging line personnel supervising operations and eliminating the need for long overhead conveyor runs.

Throughput speeds up to 50 cases per minute are achievable, while an optional in-hoist stretch bender or wrapper enhances load stability, improves cost savings and reduces floor space requirements.



Single or mixed-SKU loads.

Intelligrated is a developer of automated material handling products based in Mason, Ohio.

www.intelligrated.com



Lifts up to 2,200 lb.

MOVE HEAVY LOADS EASILY

Presto Lifts' PowerStak makes lifting loads up to 2,200 lb. easy thanks to a turtle speed setting that reduces drive speed by 50% for more precise positioning.

Steel straddle legs provide additional rigidity and eliminate deflection, even under maximum loads.

Power is delivered by two sealed, maintenance-free AGM batteries, with a heavy-duty built-in charger, fuse protection and a rugged casing. A new component arrangement dissipates heat more effectively and provides easier maintenance access.

Short but stable wheelbases enhance manoeuvrability, even in tight quarters.

An ergonomic handle puts all controls within easy reach to maximize operator comfort and convenience. Forward-and-reverse-drive thumb switches are located on both sides of the handle to accommodate left- or right-hand operation.

The unit's narrow mast and offset control handle ensures a clear forward view without blind spots. An auto-reversing belly switch protects operators from potential injury when walking the unit backwards, and an automatic brake halts travel when the drive/steering handle is released.

Presto Lifts is a manufacturer of hydraulic handling equipment based in Norton, Mass.

www.prestolifts.com

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HEATING

HEATERS HANDLE DEEP FREEZES

Hazloc Heaters has added a 35 kW model to its line of XEU1 electric forced-air explosion proof products that enhance freeze protection for industrial applications in hazardous locations.

The heaters meet CSA and UL certification standards to Class I & II, Div. 1 & 2, Groups C, D, F, & G and Class 1, Zones 1 & 2, Groups IIA & IIB.



29 voltage and heat output combinations.

They come in three cabinet sizes and 29 voltage and heat output combinations.

A sturdy 14 g steel cabinet with an epoxy/polyester powder-coating improves corrosion resistance, and includes a vent relief device and control enclosure with an extra port that eases external thermostat wiring. Moisture ingress is minimized by enclosure o-rings.

Hazloc Heaters is a manufacturer of explosion-proof industrial heaters based in Calgary.

www.HazlocHeaters.com

» Plantware



Better performance and stability.

MORE SUPPORT FOR INTEL ATOM

Axiomtek's NA361, a 1U-type compact network appliance platform, supports the new Intel Atom dual-core processor C2358 (1M Cache, 1.70 GHz), providing better performance and stability, and lower power consumption than previous multi-chip Atom solutions.

The Intel QuickAssist Technology hardware acceleration engine supports up to 16 GB of DDR3 1,600 MHz UDIMM non-ECC or ECC memory, and features one 2.5-in. SATA HDD for storage.

The unit integrates 6-GB ethernet ports using Intel i347 and i210 chipsets with two-pair LAN bypass function. One PCI Express Mini Card interface is available for wireless network connection.

Use this network platform for VPN, content filtering, UTM, network security gateway, and SOHO firewall segment.

Axiomtek is a Taiwan-based designer and manufacturer of industrial computing and embedded products.

www.axiomtek.com

DATAMAN CAPABILITIES EXPANDED

Cognex Corp. has expanded the tuning and scripting capability of DataMan 5.2 software and implemented a new test mode for its DataMan 300 and 503 series of barcode readers.

The Natick, Ma. manufacturer of machine vision technology says the new

software significantly increases read rates by decoding lower resolution 1-D codes and extends intelligent tuning capabilities to all symbologies, including Aztec, MaxiCode and PDF417.

DataMan 5.2 extends the 2-D intelligent tuning capability introduced by the DataMan 300 series, which decreased set up time while increasing read rates for Direct Part Mark (DPM) code reading applications. The software extends this advanced capability to other symbologies, such as 1-D barcodes, MaxiCode and QR codes. It also adds capabilities to the scripting feature of the DataMan 300 for advanced logic and decision making in the reader, and 1-D barcode quality metrics for users to optimize their processes.

www.cognex.com



Significant increase in read rates.

ELECTRONIC FLOW GETS AN UPDATE

Version 5.14 of Software Toolbox's TOP Server has an updated electronic flow measurement (EFM) suite with support for exporting OMNI Flow and Fisher ROC Plus EFM liquids data to the Flow-Cal CFX format.

There are also performance improvements for the Allen-Bradley ControlLogix Ethernet driver, automatic tag generation support and an added S7-1500 model for the Siemens S7 ethernet driver, plus enhancements and fixes for other communications drivers.

Support for data exporting.

Powered by Kepware, TOP Server has more than 130 different device drivers and plug-ins. The OMNI Flow and Fisher ROC Plus drivers have been updated to include new device models capable of collecting liquid EFM data for export. And the EFM Simulator driver was updated to generate simulated liquids data.

Software Toolbox, based in Charlotte, NC, is a provider of industrial automation software.

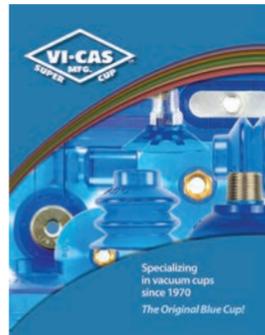
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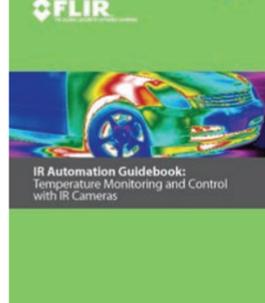
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Vi-Cas Manufacturing's new 16-page, full colour brochure details the company's most popular vacuum cups. In addition to dimensional information (including lip diameter, height and mounting holes), the new literature shows photos of each cup to guarantee accuracy. Vacuum cups and accessories are used extensively in all types of packaging and labeling operations. www.vi-cas.com
Vi-Cas Manufacturing

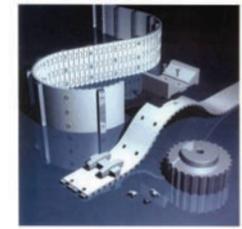
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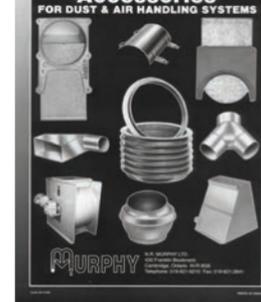


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BRECOflex, Co., L.L.C. has developed a patented timing belt concept that allows the attachment of profiles or product nests while the belt is installed. ATN technology creates a field connection option using simple hand tools. BRECOflex also offers pulleys, clamps, tensioners and slider beds. For your FREE copy, samples and technical support, visit www.brecoflex.com or call 732-460-9500.

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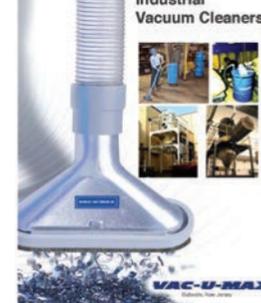
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Watch these external economics factors

BY JOCK FINLAYSON

What happens beyond Canada's borders is often more important to economic prospects than what transpires at home. With this in mind, here are three things that Canadian forecasters and market analysts will be carefully tracking in 2014.

1. US monetary policy: the end of quantitative easing. Since the start of the 2008-09 recession, the US Federal Reserve has taken unprecedented steps to support the American economy and pro-

“Winding down quantitative easing means financial and currency markets may be unusually volatile this year...”

vide liquidity to a malfunctioning financial system. Not only has the US central bank kept its short-term policy interest rate pinned near zero for five years, it has also engaged in massive purchases of financial assets, notably government bonds and mortgage-backed securities, which has pushed up bond prices, lowered bond yields and put downward pressure on interest rates. As a result, the Federal Reserve's balance sheet quadrupled between

2007 and 2013.

In recent months, US policymakers have been moving to dial back quantitative easing by reducing the scale of asset purchases. This process of “tapering” is expected to continue through 2014. It may end a year from now, setting the stage for a further normalization of US monetary conditions in 2015 when the Federal Reserve is likely to begin raising its short-term policy interest rate.

Anticipation of higher American interest rates together with stronger US growth has triggered a sharp drop in equity markets in many emerging economies as well as a sell-off of their currencies. The Canadian dollar has also lost ground as investors judge that interest rates will climb faster in the US than here. Winding down quantitative easing means financial and currency markets may be unusually volatile this year – creating an added source of uncertainty to the economic outlook.

2. Europe returns to growth. After eight consecutive quarters that saw either outright declines in GDP or essentially zero growth, the 18 Eurozone countries finally emerged from recession in the third quarter of 2013. While far from fully resolved, the sovereign debt crisis that has dogged the region since 2011 has eased, with borrowing costs falling for the most financially-distressed countries (Greece, Spain, Portugal, Italy and Ireland).

Eurozone progress

Some progress is being made in forging a proper “banking union” for the Eurozone. The European Central Bank is providing a credible backstop for the member countries' bond markets and the UK economy – which is not part of the Eurozone – is also rebounding. Fiscal austerity, poorly functioning banking systems and high unemployment continue to weigh on economic activity across much of the region, and inflation is hovering at an alarmingly low level – all of which suggests any acceleration in economic growth will be muted in the near-term.

3. Japan struggles to revive its economic engine. The government led by Prime Minister Shinzo Abe is engaged in a multi-pronged effort to reinvigorate the world's third-largest economy.

Japan's central bank has commenced a massive campaign of monetary stimulus to break an entrenched pattern of falling prices and reverse the stagnation long-fueled by deflationary pressures.

The government is also rolling out a significant reform agenda to open up Japan's cosseted agricultural and services markets, boost new business and draw more women into the aging workforce.

Although Japan faces daunting long-term, the International Monetary Fund sees its GDP increasing by 1.7% in 2014, similar to last year. The government's reform agenda could stall or even fail, but for now brisker growth is helping the global economy.

Canadian policymakers, investors and business decision-makers need to keep a close eye on developments in these key advanced economies.

Jock Finlayson is executive vice-president of the Business Council of British Columbia. This column is distributed by Troy Media in Calgary. Visit www.troymedia.com.

Comments? E-mail jterrett@plant.ca.

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