

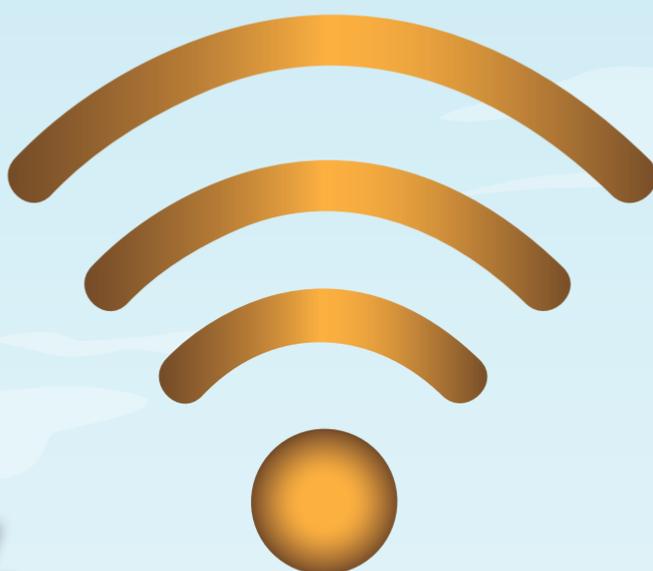
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PLANT WEST

ADVANCING CANADIAN MANUFACTURING

Volume 10, No. 02 >> Supplement, PLANT >> May/June 2015

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Double-double Tims trouble

Apparently Tim Hortons has added chicken to its offerings. The much beloved, American-owned iconic Canadian institution flew into some flak recently when it decided to pull Enbridge ads flashing by on its in-store TV screens.

The Vancouver office of an obscure US-based environmental group decided to focus one of its social media campaigns against Tims and managed to scare up 28,000 signatures on its online petition. The goal was to harvest 50,000 names (and as of this writing several days later, it had tallied 31,600) to scare Tims into un-accepting the Enbridge campaign.

There must have been much clucking going on behind closed doors at coffee and donut headquarters when the executives, fearing they were about to get plucked by a potential backlash from greenish customers, scuttled what was supposed to be a four-week run.

Enbridge was noble; said it enjoyed working with Tims and respected the corporation's decision.

But taking the easy way out didn't have the desired effect.

What Tims harvested instead of media quiet was the collective outrage of many Albertans and others who don't think a good corporate citizen that happens to be an energy company should be vilified for providing something that every North American needs and uses.

Energy sympathizers, employees and oil sands supporters, plus some Conservative MPs and other citizens piled on, some launching their own Twitter campaign (hashtag #BoycottTims), and many others making the symbolic gesture of heading for the nearest Starbucks or McDonald's for their coffee needs. All of this hoopla kept the controversy alive much longer than it deserved to be, and it was all so unnecessary.

Naturally, the pundits have weighed in, suggesting "brands" should be more particular about in-store advertisements. One marketing expert said Tims should have seen this trouble coming. "Anything that gets beyond a person handing you your coffee and you sitting down to enjoy it ... anything that gets into a political realm is something they don't want to touch with a barge pole," said Richard Bingham, a professor at Humber College in Toronto, in a Canadian Press story.

Or Tims could grow a backbone.

Some people are disturbed that Enbridge would like to move its energy to markets outside North America, which would require a pipeline to the east. They don't like the company's tactics. Fair enough. That's their opinion.

On the other hand, Enbridge is a respected company that employs more than 10,000 people who help generate, transport and distribute energy. It is also developing wind and solar technologies, so it does sport some legitimate green credentials.

Had Tims ignored the petitioners' demands, it's unlikely too many customers who happened to look up and even register that they saw an Enbridge ad cycling by on the in-store TV screens would be so outraged that they might choke on a TimBit.

Tims caved in over 28,000 names. We can only imagine how many names might have dwarfed this modest count had someone immediately mounted a pro-Enbridge social media campaign in Alberta, where energy sensitivities are rather high at the moment.

Let's put aside the fact that, despite those within the environmental lobby who view fossil fuels as evil, the energy this resource generates drives the world economy, powers the generation of electricity, keeps people warm, allows them to travel great distances and it will be with us for some time.

A Ryerson pundit suggests this Enbridge fiasco will serve as a case study (presumably what not to do) in crisis management. It also demonstrates that placating special interests is a risky business strategy. Stick to the double-doubles and leave the chicken to the sandwich wraps.

Joe Terrett, Editor

Comments? E-mail jterrett@plant.ca.



PHOTO: THINKSTOCK

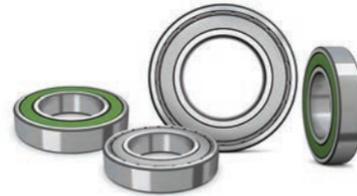
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» Pulse



A difficult year for Alberta exports, but BC is outpacing the national average. PHOTO: THINKSTOCK

Alberta exports bounce back in 2016

The dramatic drop in oil and gas prices will lead to a 17% fall in Alberta's export earnings in 2015, but partial price recovery and volume gains will help overall exports rebound in 2016 to the tune of 19% growth, according to Export Development Canada (EDC).

"This will be a difficult year for Alberta exports, but there is light at the end of the tunnel," said Peter Hall, the agency's chief economist.

There will be a 25% drop in energy exports and a 23% drop in natural gas exports this year – significant for an economy that depends on energy for nearly 75% of its export revenue.

The energy sector will bounce back with 27% growth in 2016. Natural gas will stage a significant yet less dramatic comeback with 9% growth, due largely in part to increased shale gas capacity in the US.

"The continued revival of the global economy, driven by US growth, and the anticipated rise in oil prices back to the \$70-per-barrel level will fuel the expected turn-around next year," added Hall.

Outside of energy, the export story is positive for Alberta. Exports from sectors such as agriculture, machinery and equipment, and chemicals and plastics will collectively see 7% growth in 2015, followed by 3% in 2016.

Need to diversify

"Energy receives all the headlines, but it's great to see positive growth in other sectors," said Hall. "Diversification is an important insulator, one that can protect an economy against seismic shifts in any one sector of the economy.

"Alberta will always be about oil and gas, but it helps to develop strength in other sectors that can fill in when commodity prices are down."

Meanwhile, BC is forecast to lead growth among all provinces in 2015, despite great uncertainty surrounding the province's LNG industry.

The Conference Board of Canada's *Provincial Outlook: Spring 2015* said a recession will be unavoidable in Alberta, where the economy will shrink by 0.7%, but BC can expect growth of 3.1% this year, followed by 2.7% in 2016 – outpacing the national economy.

Exports are up and should remain strong as the province's main trading partners continue to perform well.

But job creation has been muted and could hurt consumer confidence and the domestic economy if it persists.

Uncertainty surrounding the development of the province's LNG industry due to lower prices in Asian markets could be muted by a long-awaited decision by Petronas on whether to move forward with a \$36-billion LNG terminal project.

GHG research to cut emissions costs

U of Calgary team gets \$1.65M for carbon capture tech

CALGARY — A new federal grant for the University of Calgary will provide a comprehensive training opportunity for students working on cheaper, more efficient means of capturing greenhouse gas emissions.

Chemistry professor George Shimizu is the fourth University of Calgary professor to lead a CRE-ATE Grant from the Natural Sciences and Engineering Research Council of Canada (NSERC). His coalition of energy research partners across Canada will receive \$1.65 million over six years to train students to develop various carbon capture technologies for industrial use.

Key research partners in Calgary, Vancouver, Ottawa and Edmonton include scientists, engineers, political scientists and business analysts. They're collaborating on new carbon capture technologies across several themes such as pre-combustion capture, post combustion capture and biological capture.



Students will be trained to develop carbon capture technology for industrial use. PHOTO: THINKSTOCK

The post-combustion theme involves new carbon capture materials called metal-organic frameworks (MOFs), which work like a

"solid sponge" to trap excess emissions from a combusted gas stream.

They eliminate the currently employed aqueous solution systems, which require more regeneration energy. The technology could save power plants up to 50% of emissions capture costs.

Husky steams ahead at Rush Lake

Heavy oil thermal production to add 34,500 bbls/day

CALGARY — Husky Energy has started commercial steam operations at the 10,000 barrels per day (bbls/day) Rush Lake heavy oil thermal project in Saskatchewan.

Current production from thermal projects is approximately 44,000 bbls/day. Including Rush Lake, heavy oil thermal production is to add 34,500 bbls/day over the next 18 months.

The 10,000 bbls/day Edam East project is to come onstream in the third quarter of 2016. The 3,500 bbls/day Edam West project has been reconfigured to a capacity of 4,500 bbls/day and is set



A Husky Energy employee at work at the Rush Lake pilot project. PHOTO: HUSKY ENERGY

to begin production in the fourth quarter of 2016.

The 10,000 bbls/day Vawn project is to start up in the

fourth quarter of 2016.

Husky Energy, based in Calgary, is an integrated energy company.

Cleantech is falling behind globally

Decline costs Canada \$124 billion in exports

TORONTO — Canada's status among top exporters of clean technology dropped from 14th to 19th spot, according to a ranking of global exporters between 2005 and 2013.

This decline stands in sharp contrast to the growth of the clean technology industry in Canada, which added 9,000 jobs for a total of 50,000 among more than 800 companies.

The global market for clean technology has doubled from \$550 billion to \$1 trillion, according to Analytica Advisors' *2015 Canadian Clean Technology Industry Report*. Canada's international share is steadily declining, placing third after the UK and Japan for the greatest loss of market share (2.2% to 1.3%).

That represents \$124 billion in lost export revenues from 2005 to 2013.

The US is moving to a more coordinated approach to its clean technology industry and other countries, including China, South Korea, Germany and Mexico already have well developed public-private structures to grow their industries.

The report cited the US, Europe and China as the top three markets for Canada's clean technology exports. For the second year in a row, China remains the third priority country, up from eighth place in 2013.

Eguana taps Asteelflash to lower costs

CALGARY — Eguana Technologies Inc. will partner with Asteelflash to manufacture Bi-Direx power control and conversion system and iAC Batteries in Germany and California to lower costs.

Eguana, a power control manufacturer based in Calgary, has already shipped Bi-Direx energy storage products for more than 4,000 energy storage systems.

Asteelflash Group, headquartered in Paris, provides electronics manufacturing and integrated supply chain services.

The company expects to transition manufacturing in Germany later this summer to serve residential solar applications in Europe; and in California as it begins to ramp up production of AC Batteries for networked residential applications and the commercial market.

Fuel cell stacks enter Phase 2

VANCOUVER — Ballard Power Systems has received a purchase order (for an undisclosed amount) from Nisshinbo Holdings Inc. for the next phase of Technology Solutions work.

The project, underway for two years, is developing a breakthrough catalyst technology to reduce the manufacturing cost of proton exchange membrane (PEM) fuel cells.

Nisshinbo, an energy company providing low-carbon products across a range of businesses, has supplied Ballard with compression moulded bipolar flow field plates for the manufacture of PEM fuel cell membrane electrode assemblies (MEAs).

The MEA is formed by placing a catalyst-coated membrane between two flow field plates.

Combining fuel cells together to form multi-layer stacks increases the amount of electricity that can be produced.

The next phase will further reduce the cost of Ballard's air-cooled fuel cell stacks, which are used in telecom backup power and material handling applications.

Ballard, based in Vancouver, produces clean energy fuel cell products.

Pembina providing terminalling for Sturgeon refinery

Midstream services supplier will also build Karr pipeline lateral



Pembina's LeGlace full service terminal in Grand Prairie, Alta.

PHOTO: PEMBINA PIPELINE

CALGARY — Pembina Pipeline Corp. will provide terminalling services for the North West Redwater Partnership's planned Sturgeon refinery near Fort Saskatchewan, Alta.

The services will be provided under a 30-year fixed return agreement and a 10-year natural gas liquids (NGL) mix purchase and sale agreement related to the third fractionator Pembina is constructing at its Redwater site.

Pembina expects to invest \$180 million to construct the facility, which will include

truck and rail loading, storage, and handling and processing equipment. The refinery is to be in service by mid-2017.

The company also entered into agreements to construct a new pipeline lateral in the Karr area of Alberta to service growing production from the Montney resource play.

The project carries a \$55 million price tag and will produce up to 30,000 barrels per day.

Pembina, based in Calgary, provides transportation and midstream energy services.

EnWave, Ultima sign yogurt deal

VANCOUVER—EnWave Corp. has signed a technology evaluation and licence option agreement with Ultima Foods Inc. to develop dehydrated yogurt applications using EnWave's radiant energy vacuum (REV) technology.

EnWave, a Vancouver-based industrial technology company, will work closely with Ultima to optimize formulations.

Ultima, a joint venture of Canadian dairy giants Agropur and Agri-foods, is a major Canadian yogurt processor. At any point during the deal's (undisclosed) term, Ultima may exercise its exclusive option to license REV technology for the commercial production of yogurt products in Canada.

Terms of the agreement were not disclosed.

Canada Job Grants retooled

Employers get more input on training

REGINA—The federal and Saskatchewan governments are working to retool The Canada Job Grant training deal to better align it with market opportunities.

The new deal provides employers with more input on training to meet their needs and an amended accountability framework to ensure EI premium-payers are getting maximum value.

Approximately 770 workers in Saskatchewan are receiving training, and 145 employers have been approved for funding.



145 companies have been approved for funding in Saskatchewan.

PHOTO: THINKSTOCK

Gilead invests \$100M in Edmonton site, opens two new labs

EDMONTON — Gilead Alberta ULC has opened the first of two new laboratory buildings at its Edmonton campus, and announced an additional \$100 million investment to expand the site as the biopharmaceutical company broadens its treatments in areas of unmet medical need.

The two laboratory buildings will accommodate close to 170 additional scientists in Edmonton and enable Gilead Alberta to support the development and manufacture of investigational drugs, supply active pharmaceutical ingredients (API) for clinical research programs and contribute to new launches in hepatitis C, HIV/AIDS and oncology products.

A second laboratory is under construction and is to be com-

pleted by 2016.

The \$100 million investment includes the construction of a new process tower for additional manufacturing of APIs, a maintenance facility, and upgrades to the existing site. The process tower will expand the capabilities of the Edmonton operation for the handling of more potent compounds.

Edmonton is home to Gilead's largest operation in Canada, with more than 300 employees. In 2014, the company invested more than \$100 million in research and development in Canada, almost half of that in Alberta.

Gilead Sciences, based in Foster City, Calif., is a global biopharmaceutical manufacturer.

» Careers

Leah Lawrence has resigned from her post on the board of CO2 Solutions, a Quebec City-based developer of carbon capture technologies, following her appointment to Sustainable Technology Development Canada (STDC) as president and CEO. Lawrence had been a director of CO2 since February 2014.

Project development company Pacific Future Energy (PFEC) in Vancouver has appointed **Dave Coles** to its advisory board. Coles is the president emeritus and founding member of Unifor, Canada's largest private sector union, and previously the longest serving president of the Canadian Communications, Energy and Paperworkers union (CEP). PFEC is proposing a \$10 billion green refinery on BC's coast.

Husky Energy, an integrated energy company based in Calgary, has appointed **Jonathan McKenzie** CFO. He most recently served as chief commercial officer of Irving Oil Ltd., based in Saint John, NB, which he joined in 2011. Prior to that he held senior executive roles at Calgary-based Suncor Energy and also worked with Crestar Energy.

McCoy Global Inc. has named **Dale Tremblay** to its board. He has more than 25 years of experience in the Canada and US oilfield services industry. Previously Tremblay was founder and CEO of Western Energy Services Corp. Edmonton-based McCoy provides services to the global energy industry.

Four of Calgary-based Cenovus Energy Inc.'s executives have retired: **John Brannan**, executive vice-president and COO; **Kerry Dyte**, executive vice-president, general counsel and corporate secretary; **Sheila McIntosh**, executive vice-president, environment and corporate affairs; and **Hayward Walls**, executive vice-president, strategy and organization development. New executive appointments include: **Jacqui McGillivray** to executive vice-president of safety and organization effectiveness; **Al Reid**, executive vice-president of environment, corporate and legal affairs; **Drew Zieglsberger**, executive vice-president of oil sands manufacturing.

Debt – blame it on policy

...Not on natural resource price drops

CALGARY — Provincial governments in provinces that rely on natural resources for significant amounts of revenue will face unpredictable conditions for budgeting, according to a report from the University of Calgary's School of Public Policy.

But a big part of that challenge is the result of policy, which has been shown over the last 30 years in Canada's four resource-dependent provinces (Alberta, Saskatchewan, BC, and Newfoundland and Labrador).

The report shows provincial budgetary choices since 1980 reveal debt is accumulated from decisions to increase spending without corresponding tax increases; and that right-leaning political parties have been as much to blame as parties on the left.

Ron Kneebone, professor at the School of Public Policy, said policy is also the one factor over which those politicians actually have total control, and should be held totally accountable.



PHOTO: THINKSTOCK

Russel Metals acquires Western Fiberglass

BURLINGTON, Ont. — Russel Metals Inc. has acquired Western Fiberglass Pipe Sales for \$30 million.

The distributor of fiberglass down hole tubing casing, facility pipe and line pipe for the oil and gas industry in Western Canada has offices in Estevan, Sask. and Red Deer, Alta.

It's now operating as Apex Western Fiberglass.

Russel Metals is a metals distributor based in Burlington, Ont.



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“CONNECTED” TECHNOLOGIES CUT COSTS AND IMPROVE PRODUCTIVITY

Low oil prices and looming skills shortages are challenging Canada’s energy sector, but internet-enabled industrial technologies offer a solution.

BY MATT POWELL, ASSOCIATE EDITOR

Brad Bechtold is highly enthused by the Digital Oilfield, the internet-enabled technology that’s gaining traction among global oil and gas producers.

He has, after all, dedicated more than 20 years of his career to assisting in the development of oil and gas computing and software technologies with the likes of oilfield services giant Halliburton. Now he’s the director of oil and gas transformation at the Canadian arm of IT-giant Cisco, a company that’s led the adoption of the phenomenon known as the Internet of Things (IoT).

“Connectivity is exploding,” says Bechtold. “LTE networks have come a long way, and they’re connecting people in more efficient ways, including industry. That’s imperative because at \$100 a barrel, we didn’t need to worry about costs as much, but at \$50 a barrel, oil and gas producers need to look at ways they can fundamentally change their operations. The digital oilfield is going to make that happen.”

Much like their manufacturing brethren to the east, energy producers in Canada’s natural resource sector are navigating a technology renaissance in the pursuit of greater efficiency to

increase productivity, improve worker safety and lower costs.

It’s a good time for oil and gas companies to get connected.

“The oil and gas sector is very willing to embrace technology, and the changing business cli-

mate will require better and fast decision making,” says Steve Reece, manager of business and information services at EnerPlus, a Calgary-based energy producer.

“Oil and gas can learn from manufacturing on technology repeatability.”

Energy is also feeling the impact of plunging prices, which began in mid-2014. The Conference Board of Canada estimates weaker oil prices will cut total sector capital investments from \$30 billion last year to \$25 billion this year – a 20% drop. And Enform, the Calgary-based safety association for Canada’s oil and gas industry, estimates the impact could be 185,000 energy-related jobs lost, with about a third of those outside of Alberta, mainly in BC and Ontario.

A recovery will require the development of the Digital Oilfield, a cloud-based computing model that will drive oil sands technology development, says Whitney Rockley, managing director at McRock Capital, a Toronto-based venture capital firm that focuses on Industrial Internet of Things (IIoT) projects.

The data it captures will develop predictive models that enable process

design and optimization, such as infield mobile technologies that identify maintenance needs, thus avoiding downtime.

Cisco, Rockley adds, estimates IIoT will bypass non-industrial IoT by 2017, with 76,000 new devices being connected every week.

But there’s a problem, says Ian Gates, head of chemical and petroleum engineering at the University of Calgary’s Schulich School of Engineering.

“There are data analytics technologies that provide us with ways to interpret data, but no one’s analyzing it.”

In fact, a 2012 Canadian Digital Media Network survey found 63% of respondents identified difficulties in data integration as their company’s biggest challenge. The same survey found Canadian energy companies spent \$850 million on research and development that year.

Waves of technology

However, the technological support producers need is changing.

Getting all the machinery and equipment to communicate with each other in real time is the real challenge.

Many current technologies are focused on fixed facilities, both field and head office, with proprietary applications and emphasis on data flow between them. That focus must change if the Digital Oilfield is to move forward. Field enablement focuses on taking the expert to the field without leaving the office.

Early incarnations of the Digital

Oilfield, dating back to 1999, focused on monitoring offshore rigs mainly because of safety issues. The technology has trickled into the oil sands because of its ability to integrate entire operations infield and remotely.

“We’re not talking just having the ability to monitor operations, but actually being able to take action,” says Bechtold. “Oil and gas is certainly high-tech, but soon enough, more operations are going to look like NASA control rooms.”

The major benefit is that Digital Oilfield technologies have the ability to make very-vertical operations more horizontal – a convergence that will enhance efficiency by migrating IP-based process control systems at a fraction of the cost to deploy and maintain.

“CONNECTED” TECHNOLOGY LANDSCAPE





Canadian companies, including oil and gas firms, will increase spending on IoT technologies.

PHOTO: THINKSTOCK

new hires will replace experienced industry professionals who are retiring. This puts pressure on labour costs.

“The labour resources are going to make a lot of these operations unfeasible,” says Bechtold. “We’re not graduating more petroleum engineers – the trend has reversed.”

The labour shortage means producers will need to do more with fewer people, and look for alternative ways to connect the limited expertise available to field operations to meet the growth demands of the industry.

There are significant productivity gains when companies collaborate beyond the field and the head office, Bechtold adds.

“By enabling remote field workers with collaboration beyond the field office, we are enabling the field engineer or maintenance person and increasing their productivity.”

Investment takes off

Global market intelligence firm IDC Canada expects Canadian companies to invest up to \$21 billion on IoT projects in 2018, up from \$5.6 billion in 2013 for a 375% increase.

Its market survey reveals that only 13% of Canadian businesses had deployed an IoT solution by the end of 2014. That number is expected to surge, with an additional 30% coming online over the next two years.

Meanwhile, San Jose, Calif.-based Cisco is working with its industry partners, including Rockwell Automation, General Electric, Emerson Industrial and Honeywell, to migrate IP-based process control systems, a technology convergence that Bechtold believes will be critical to the mass adoption and implementation of Digital Oilfield technologies.

Canadian telecommunications giant Telus Corp., based in Calgary, has committed to investing \$2.6 billion across Alberta through 2016 to build infrastructure, and expand urban and rural internet connectivity and capacity, including installing dozens of wireless sites along transportation routes.

It has also launched an IoT marketplace that includes connected solutions such as fleet management to improve driver safety and reduce fuel costs, and solutions for oil and gas producers to monitor and improve pipeline safety.

“There’s going to be a massive upswing in technology convergence over the next five-years, and that’s going to be a big change, but those collaborations and system standardization will enable the Digital Oilfield to continue growing,” says Bechtold.

“This is a journey: there’s no end to the Digital Oilfield because there’s no end to the capabilities of the internet.”

Comments? E-mail mpowell@plant.ca.

Trends » Data Breaches



Consider customized and scalable security options.

PHOTO: THINKSTOCK

Cybersecurity is an issue, not a priority

Canadian biz in the dark on what to do about vulnerabilities

We all know cyberattacks are an issue in today’s interconnected world, and it isn’t strictly a concern of large firms.

A recent PwC survey of Canadian private companies found that 88% of them agreed or strongly agreed that cybersecurity is important. But most are more in the dark about what they need to do, where their vulnerabilities lie and what to do about them.

Just because a company does not accept credit card payments or store personal information does not mean it will be immune to a cyberattack. Attacks also target health information, SINs and employee lists, as information brokers in the black market place increased value on personal data.

There are legal implications for a company that is used to gain access to information from another company. Companies need a well thought-out cybersecurity and privacy strategy, along with the right skills and resources to implement it to thrive in today’s rapidly changing risk environment.

Protect your business

The cost to a hacked business may be measured by loss of customers, lawsuit payouts, interruption to business or reputational damage. PwC says protecting against cyberattacks needs to be seen as a business imperative, not discretionary spending.

“Investing in cybersecurity will pale in comparison to the costs associated with being in the middle of a large scale breach,” said David Craig, leader of PwC’s risk assurance services cybersecurity and privacy practice.

Companies do not need to invest in off-the-shelf packages, but should instead consider customized and scalable options that address specific vulnerabilities and the protection of critical information.

PwC suggests taking the following steps:

- Understand your cyber ecosystem and where blind spots exist.
- Identify your most valuable data and who has access to it.
- Train employees as a first line of defence.
- Implement suitable controls over the most sensitive data from the most likely means of compromise.
- Have protocols in place that identify responsible parties in the event of a breach.

These steps are important to protect operations in Canada, but it may also be necessary to prove the right protocols are in place to do business with companies in the US. And it’s certainly necessary for a company looking to grow its business in international markets.

Download a copy of the report at www.pwc.com/ca/en/private-company/business-insights.jhtml.

That’s a big advantage, especially considering most vertical technologies such as hydraulic fracturing or steam-assisted gravity drainage (SAGD) are incredibly expensive and “fit for purpose,” with little or no economies of scale. Plus the infrastructure requires significant support and cost to maintain. Bechtold estimates oil sands projects have a 20- to 30-year return on investment, which is up to 10 times those of Saudi Arabia.

Oil and gas producers could enhance operations such as man down safety or be able to track where workers are within a plant or facility to identify if they are where they shouldn’t be. And ING Robotic Aviation, an Ottawa-based unmanned aerial vehicle manufacturer, is touting the abilities of its drones to remove the human equation from flare stack monitoring and inspection, as well as site mapping applications.

Visual Specation, based in Winnipeg, is providing wearable technologies

such as Google Glasses to field workers to inspect and assess oil production sites and voice-driven workflow, thus eliminating pen and paper and even mobile technologies such as tablets. The company is also looking at using wearables to gauge a field workers’ health by collecting data about his or her vitals in real time.

A skills shortage is also an immediate challenge that operators, pipeline and oilfield services companies are facing. It’s the next phase to be addressed by the Digital Oilfield.

According to a white paper authored by Bechtold for Cisco Canada, more than half (54%) of Canadian oil and gas employers cite skills shortages as a significant issue, and yet 73% expect to increase hiring, according to a 2013 report by the Petroleum Human Resources Council of Canada.

He estimates the industry will need to hire and develop 125,000 to 150,000 people in the next nine years. Of greater concern is 45,000 of those

\$15 trillion: The amount General Electric estimates internet-enabled machines could add to global GDP by boosting annual productivity growth by 1.5% in the US.

\$21 billion: How much IDC Canada estimates Canadian companies will spend on Internet of Things projects in 2018, up from \$5.6 billion in 2013 – a 375% increase.

\$3.9 trillion: Net profits in the global manufacturing sector driven by Internet of Things technologies in the next 10 years, according to Cisco.

\$100 billion: Canada’s share of global manufacturing net profits for Internet of Things adoption, according to Cisco.

76,000: The number of devices per week connected to the Industrial Internet of Things by 2017, according to Cisco.



PHOTO: THINKSTOCK

» Reliability

Maintenance teams are under pressure to deliver greater value despite shrinking budgets and limited resources.

BY STEVE GAHBAUER

Properly managed maintenance, reliability and assets deliver value, which – not coincidentally – was the theme of the MainTrain conference held in Niagara Falls, Ont.

The annual gathering of maintenance professionals convened by the Plant Engineering and Maintenance Association of Canada (PEMAC) in November provided information about the latest maintenance technologies and proven strategies from industry leaders, as it zeroed in on how to realize value, which isn't as straightforward as it appears.

Sridhar Ramakrishnan, reliability improvement manager at Suncor Energy in Calgary and the conference chair, said that depending on the context, value can be real, tangible, or be perceived as intangible. But clarity of vision, alignment of objectives, streamlined processes, effective communication and a collaborative approach with the use of appropriate tools, technology and methodologies helps to realize value.

In a case history about an award-winning pump rehabilitation project at a Calgary water treatment plant, maintenance planning leader Kendal Martens said realized values included extending the useful life of the pump station, reducing the risk of unexpected failure by predicting end-of-life time for equipment, and developing an appropriate repair versus replace decision strategy.

In a presentation titled "Getting to the bottom of things," Cliff Williams, the corporate maintenance manager of ERCO Worldwide, a Canadian chemical manufacturer with plants across North



Realizing VALUE

MAINTRAIN ZEROS IN ON WHAT IT TAKES

and South America, outlined how to go about adding value to an organization, based on strategic objectives: develop an asset registry; determine the asset condition, the asset's remaining life and its remaining economic value; understand the service level required; and check out whether the problem is a symptom or one caused by the system.

There were many nuggets of mainte-

nance wisdom gleaned through the four-day event. Here is a selection:

- Realizing value is about getting the best trade-off between cost, risk and performance over an asset's life. Assets should deliver value by performing on demand.
- In an industrial setting, physical plant systems are the primary revenue generators; the consequences of failure can be catastrophic.

Appropriate tools, technology and methodologies help realize value. PHOTO: THINKSTOCK

- The life cycle cost of an asset is established during the design and installation phase. This is the critical moment to assess, design and install assets in their ideal configuration to optimize the return on investment.

- More than 85% of all mechanical failures can be solved in the field with minimum complex testing. A proactive maintenance program establishes rigorous procedures that identify, correct and prevent similar failures in the future.

- Factors that drive reliability readiness include a pursuit of operational excellence, a sound strategy, capital markets sensitivity and adoption of ISO 55000 and API 691 standards.

- Operational and maintenance excellence is defined as identifying the right things to do, doing the right things and doing things right all the time.

- A strategic asset management master plan ensures all stakeholders buy in. Commitment from senior management is critical for a system to be successful.

- Maintenance, operations and engineering must work in partnership for reliability to improve effectively.

- Changing maintenance practices is almost always about altering people's behaviour, but they can't be more productive than the system processes allows them to be. Emerging technologies are helpful, but people won't adopt them if they're not easy to use.

The 2015 MainTrain conference will be held in Vancouver from Sept. 21-24. For details contact Nicolle Guillen, PEMAC's event planner, at events@pemac.org or call (877) 525-7255.

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

Comments? E-mail mpowell@plant.ca.

» Bearings

SKF E2s save energy

Protects against leaks and contaminants

Saving energy and reducing emissions continue to be key drivers for industry, so SKF has developed the Sealed Energy Efficient (E2) deep groove ball bearing, which reduces frictional movement while preventing lubricant leakage and the ingress of contaminants.

The Swedish bearing manufacturer says the longer-life E2 handles light to medium load applications in industrial plants, and harsh environments where friction, grease retention, resistance to water ingress and dust exclusion are important.

A new low-friction contact seal is made from acrylonitrile-butadiene rubber (NBR) and reinforced with a sheet steel insert.

This innovative sealing extends bearing life, cuts power requirements and reduces environmental impact. Friction is reduced by 30% or more compared to the equivalent sealed Explorer bearings and E2s run from 5 to 15 degrees C cooler, which ultimately extends service life.

In a speed test, the bearing was run for 10 hours at both 5,000 rpm and 8,000 rpm with a 50 N radial load to measure the frictional moment



Acrylonitrile-butadiene rubber is reinforced with a sheet steel insert. PHOTO: SKF

and grease leakage. A dust test ran for 168 hours using a fine-grade dust to assess the effectiveness of the seal. After the test, the grease was clear with no trace of dust. Dynamic and static water tests were conducted to confirm the seal's ability to repel water, and further testing confirmed the bearing's low friction performance.

E2s are available in 6- to 25-mm bore diameters.

Source: SKF's Evolution

CLOUD AND IoT CERTIFICATIONS

Operational and informational technologies are converging into a united industrial infrastructure. As these technologies evolve at a rapid pace, there's a growing skills gap, creating a need for individuals equipped to manage and operate the manufacturing facilities of the future.

Enterprise pros looking to develop the skills needed for the Internet of Things (IoT) can now get certification through San Jose, Calif.-based IT giant Cisco.

It's offering IoT and Cloud-focused career certifications: the Cisco Certified Network Associate (CCNA) and Cisco Certified Network Professional (CCNP), to connect the unconnected, automate and orchestrate services, and provide the infrastructure to enable real-time data analytics.

Visit www.cisco.com/web/learning/certifications/index.html.

» Design Engineering

Calgary's Raven Hockey fills a void in stick sizing, and the results have turned into a breakaway for growing hockey stars.

BY MATT POWELL, ASSOCIATE EDITOR

Sean Reily knew something was a little off with his eight year old son Jack's game when he hit the ice with a new composite hockey stick he cut down by about eight inches.

"It was like he was playing with a shovel," says the Calgary hockey dad and founder of Raven Hockey, which was established to fill a void for youngsters stuck in a hockey stick purgatory between youth-, junior- and senior-size.

"He couldn't shoot! The junior stick was just too stiff."

Reily admits he's not a hockey guy, having not played the game as a youngster but when his son started playing Canada's game, he became interested and discovered there was a void to fill in the insanely competitive hockey stick market.

"There was nothing available under 50-flex," he says.

What his 40-pound son really needed was a 20-flex.

"When you cut a 50-flex down eight inches, it turns into something that more's like 75-to-80 flex. That's what (Russian NHL superstar) Alex Ovechkin uses, and he weighs more than 200 pounds."

Raven Hockey wants to fill the void for eight- to 12-year-olds by manufacturing sticks with flexes relative to their weight and strength.

Flex refers to the degree that a stick will bend when pressure of force is applied. Once the puck is loaded onto the stick, the player needs to be able to move the puck forward and shoot it effectively.

It's also about "puck feel" relating to the qualitative touch that allows the stick to behave like an extension of the player's body, increasing precision and release the puck with greater speed, spin and accuracy.

For example, a 100-flex stick, suited for most 200-pound NHL players, needs about 100 pounds of force behind it to flex by one-inch. Reily's rule of thumb is to use a stick with flex that's a little less than half of a player's body weight.

Reily, a salesman who currently works for a Calgary manufacturer of hearing aids, went home and asked himself, "Do I have something here?" Raven's goal is to build hockey sticks that provide performance demanded by the pros for players under 80 pounds.

Turns out Alberta Innovates thought Reily was on to something and provided a \$15,000 technology grant to develop prototypes in a rigorous testing process at the University of Calgary.

Guillermo Salazar, a fellow hockey dad and now a member of the Raven team, works as an analytics consultant and had a connection to the biomechanical research department at the University of

Raven shoots and SCORES

HOCKEY DADS PERFECT STICKS FOR GROWING JUNIOR PLAYERS



Raven sticks outsold market heavyweights at one of Calgary's largest sports stores.

PHOTO: RAVEN

Calgary, which has a history of developing research for top sports manufacturers including Nike, Adidas and Taylor-made-Adidas.

There, a series of prototype tests with a group of six- to eight-year-olds outfitted with a mixed bag of electrodes and sensors, measured swing speed, pressure and forces applied to the sticks. They found the key to proper kid-sized sticks was finding a sweet spot between height and flex.

Manufacturing challenges

"The kids were actually shooting properly – loading up, able to put their weight into the stick, and firing through," says Reily.

Raven has developed a fitting chart, to provide parents with a resource they can use in store to determine what suits the player best, similar to what golf club makers such as Ping do to fit particularly picky golfers.

The next step was sourcing the high-quality fibre and fibreglass weave to build the layers that make up the stick's lightweight foundation.

Getting the sticks made was a bit of a challenge in the beginning. First Raven went to China, working with a small contract manufacturer that provided them with moulds for 20- and 40-flex models. But Reily ran into problems when he wanted to further customize the moulds.

"They kept sending me the same stuff – none of the changes we wanted were being made," he says, and shipping the prototypes back and forth was costing him an arm and a leg.

So they looked elsewhere and landed in Mexico, teaming up with a small manufacturer known in hockey circles as the guy picky pros go to when they're looking for a piece of hockey-stick art.

This hockey "legend" likes his anonymity, so Reily and the rest of the Raven team signed a confidentiality agreement promising they wouldn't disclose his name.

The manufacturer is producing 300 sticks a week from 20-flex to 40-flex. A fourth model, a 50-flex, hit the market in May. The sticks cost \$99 for a 20-flex and increase in \$20 increments.

He approached one of Calgary's largest sports stores offering first crack at the sticks. A first run of 100 sticks sold in three days. Raven became the top-selling junior stick in the store, selling more units than all other brands – even Bauer, CCM and Reebok combined.

Reily now has Raven sticks in 19 stores across Canada, and has his sights set on increasing the company's retail presence targeting "mom and pop" franchises such as Source for Sports.

"There are 700 stores we could be in across Canada," he says. "Getting into 350 of those would be absolutely awesome."

In the meantime, the team is working on updating the look of its current models and on materials-related R&D Reily expects to hit the market within two years.

"We have to make sure things don't get old and stale," he says. "Kids are fickle."

In the words of famous Canadian hockey broadcaster Foster Hewitt: "He shoots, he scores!"

Comments? E-mail mpowell@plant.ca.

» Employment



Progressive workplace.

PHOTO: THINKSTOCK

'Were you fired?' Most say, 'Nope!'

Workplace norms evolving faster than ever

Is honesty the best policy for professionals who have been fired from a job?

Canadian workers generally think not so much, according to the results of LinkedIn's New Norms @Work study. Over half (56%) of respondents reported they wouldn't be completely honest about being fired, with 62% of Millennials ages 25-34 least likely to be honest.

The global LinkedIn study illustrates how Canadian full-time working professionals shape their professional brands for the modern workplace, both online and on the job. It also highlights a light on Canadians' changing work values, with 50% of respondents stating all companies should offer flexible work schedules.

"Yes" employees – those who do as they're told and are more apt not to question authority – vary from generation to generation. Seventy per cent of Millennials 18-24 are most likely to characterize themselves this way.

Flexible schedules

Canadians want progressive workplaces that offer more than the standard benefits package. We're over the 9-5 work day, the study said, with more than 50% of those surveyed stating all companies should offer flexible work schedules.

Maternity leave top-up was also a priority, particularly in Quebec, where almost 30% of respondents said the practice should be mandatory. Ontarians were less adamant, with only 17% in agreement.

A global comparison of the 19 participating countries finds that the value placed on one's professional brand is similar from country to country with some differences across markets:

- Globally, more than a quarter of professionals reported feeling motivated when their colleagues discuss workplace successes.
- Across markets, 25% of all respondents agreed that women get judged more for what they wear at work.
- More than 50% reported that they would challenge their boss by voicing their opinion and challenging ideas.

The LinkedIn study, completed in April with Censuswide, surveyed more than 15,000 full-time professionals around the world.

LinkedIn, the social network for professionals, has more than 347 million members.

» Skills

Training is seen as low hanging fruit ripe for cutting, but doing so will have longer term consequences.

There may not be a shortage of skilled workers nationally, according to a federal government labour assessment released last year, but there's certainly one in the West, especially in certain sectors.

A 2014 survey on the skills shortage conducted by the Canadian Council of Chief Executives among its membership reported 40% of western companies cited skills as a major concern for their industries, and Alberta as most prone to shortages.

Areas of major or moderate concern on the industrial side include energy, utilities, mining, construction and manufacturing.

Which fields are of greatest concern? Engineering, technologists and technicians, information technology (including web stuff and cyber security) and journey people with Red Seal credentials (which respondents expect will be even more troublesome over the next five years).

But another issue has come to light. A new report by the Canada West Foundation, a nonprofit that conducts public policy research, finds that missing job



Training subsidies are available through Canada Alberta Job Grants.

PHOTO: THINKSTOCK

Trimming the TRAINING budget?

THINK AGAIN, IT WILL WIDEN YOUR SKILLS GAP

skills across the board are sapping western Canada's productivity.

The study, which uses data from the

Organisation for Economic Co-operation and Development (OECD) and a Statistics Canada analysis from 2011, shows essential skills such as math, reading and writing are lacking among 40% of employees across occupations and job types in all sectors.

The report says shortages are evident among: half the people who didn't finish high school; nearly one-third of 16- to 25-year-olds; 30% of university graduates; Aboriginals on or off reserves; and immigrants.

Why are employees missing the essentials? Education systems haven't kept up with an increased demand for skills; and employees who aren't using them are losing them.

Top priority

Employers can help boost the quality of these skills, which do matter: higher essential skills mean higher employee retention rates, lower absenteeism, better health and safety records, increased customer satisfaction, reduced need for supervision, increased production quality and increased productivity.

Canada West cites one recent study that found a 23% rate of return on a training investment of \$2,500 per employee in the first year.

Yet training and development is often seen by employers as low hanging fruit ripe for cutting, and they may be running up their costs by doing so.

This is especially true when skilled employees leave.

A report by the Human Resources Institute of Alberta (HRIA) in Calgary notes employee turnover costs range from \$13,000 to \$20,000 per staff member, depending on the size of the organization. Hiring and training costs average \$16,090.

HRIA emphasizes the importance of retaining skilled employees in the right

jobs, and SAIT Polytechnic in Calgary reports employers are increasing applied management training.

Indeed, Rod Miller, associate vice-president of corporate training solutions at SAIT, says there has been a 163% increase over the past five years. "The fluctuating economy means ... companies are looking to be more efficient and effective and their business and training plays an important role in that."

SAIT identifies Enbridge Inc., the Calgary-based energy company, as a believer in training and development. Employees have access to a range of training options through Enbridge University with a focus on practical skills such as project management, leadership, and communications that have a direct impact on productivity.

Make the most of your training budgets by doing the following:

- Focusing on essential industry skills and leadership development.
- Explore different training methods, such as online learning.
- Look for new funding options from sources such as Canada Alberta Job Grants (visit www.sait.ca).

The Global Human Capital Trends survey by Deloitte University, the consulting company's learning centre in Westlake Tex., found 85% of corporate respondents cited learning as "important" or "very important." That's up 21% from last year, but there's an enormous capability gap between the importance of the issue and the ability to respond.

Companies can close the gap by looking into new approaches such as MOOCs (massive open online courses), digital learning tools, video offerings and new cloud-based training systems.

— PLANT STAFF

Comments? E-mail jterrett@plant.ca.



IT'S OUR FIRST DV SYSTEMS AIR COMPRESSOR, BUT IT WON'T BE OUR LAST!

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When we asked **Albert Hoogendoorn, President of Triple H Concrete Products**, a 30,000 Sq. Ft. State-of-the-Art Facility just outside of London, Ontario what he thought about his DV Systems air compressor, he was happy to say that it delivers all the air they need to power their plant efficiently & reliably 24/7.

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BUILT BETTER

» Natural Gas

International Energy Agency predicts global demand rises by 2%, compared to 2.3% in its 2014 forecast.

BY PLANT STAFF

Lower prices will feed a pick-up in global natural gas demand over the next five years following a marked slowdown in 2013 and 2014, but growth in demand will fall short of previous forecasts, the International Energy Agency has concluded in its annual Medium-Term Gas Market Report.

The report, which analyzes five-year projections of natural gas demand, supply and trade developments, sees global demand rising by 2% per year by the end of the forecast period, compared with 2.3% projected in last year's outlook.

The downturn will be led by weaker demand in Asia, where persistently high gas prices have caused consumers to switch to other options, such as cheaper coal and more affordable renewable sources.

Asian gas prices are indexed, or linked, to those for oil. As oil prices hovered over USD \$100/barrel, Asian consumers were paying a hefty premium for their gas compared with other buyers. The oil price rout that began in mid-2014 has spilled over to natural gas markets in Asia and allowed the Asian premium to narrow substantially. Demand may not recover as quickly as the drop in prices.

Gas demand will benefit from plunging prices in the short term, but the long-term outlook has become more uncertain, especially in Asia, where a few countries will move ahead with plans to expand coal-fired power generation over gas-fired options.

LNG exports PROSPECTS darken

AFFORDABLE RENEWABLES WEIGH ON GROWTH



It's unlikely BC's anticipated LNG exports will be online by 2020.

PHOTO: THINKSTOCK

Investment intensive

On the supply side, lower oil prices will have a major impact on gas upstream and infrastructure investment. Companies are cutting capital expenditures and refocusing on core assets with fast returns, which will lead to slower production growth over the medium term.

Due to their capital-intensive nature and long lead times, liquefied natural gas

(LNG) projects are soft targets for investment reductions and several of them are likely to be delayed or even cancelled. If current low prices persist, LNG markets could start tightening substantially by 2020, with demand gradually absorbing the large supply upswing expected over the next three years.

In the short term, gas markets will need to cope with a flood of new LNG

supplies. The report projects global LNG export capacity to increase by more than 40% by 2020, with 90% of the additions coming from Australia and the US.

Europe, however, will become an important outlet, where LNG imports will double between 2014 and 2020. Despite the increase, there won't be a meaningful reduction in European imports from Russia, which will remain locked in the 150 to 160 bcm range. In OECD-Europe, domestic gas production is projected to continue to fall and to stand 25% below its 2010 level by 2020. European gas import requirements will increase by almost one-third between 2014 and 2020.

In Canada, it's unlikely BC will have any of its anticipated LNG export projects online by 2020, the report said, contrary to the province's goal of having three LNG plants in operation by then – plans based on strong export demand from Asia.

The BC government expects more than \$100 billion in tax revenue and a GDP boost of more than \$1 trillion over the next 30 years if it can get five projects online.

IEA said projects in BC cost more because of the number of projects that would have to be built from scratch in remote locations, with massive distances between proposed terminals and gas fields.

Comments? E-mail mpowell@plant.ca.

» Transportation

Cummins Westport achieves near zero CNG engine reduces NOx emissions by 90%

Cummins Westport (CWI) will begin field tests this year in California of transit buses with a spark ignited natural gas engine it says produces near zero emissions that meet the California Near Zero NOx schedule for Low NOx vehicles – well before the 2023 deadline.

The Vancouver-based joint venture between Cummins Inc. and Westport Innovations manufactures six- to 12-litre, spark-ignited natural gas engines for commercial transportation vehicles. It says the proprietary stoichiometric EGR spark ignited (SESI) engine technology used on its ISL G and ISX12 G engines provides an economic and efficient solution to California air quality improvement initiatives.

Funding came from the South Coast Air Quality Management District, SoCal Gas and the California Energy Commission for the development of the SESI platform and a Near Zero NOx technology pathway to 0.02 grams per brake-horsepower hour NOx.

The technology will be field tested in a transit bus with the Cummins Westport Near Zero NOx ISL G. It's expected to reduce NOx emissions by 90% from the current EPA limit of 0.2 g/bhp-hr to 0.02 g/bhp-hr NOx, while also meeting 2017 EPA greenhouse gas emission requirements.

The technology utilizes maintenance-free three-way catalyst aftertreatments, which are packaged as part of the muffler. Active aftertreatment, such as a diesel particulate filter (DPF) or selective catalytic reduction (SCR), are not needed.

Since it was introduced in 2007, the ISL G 8.9 litre engine has become a popular choice among natural gas engine transit bus and refuse truck fleets, which represent a significant portion of on-highway and urban power in California.

Commercial availability is to be announced.



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There when you need it,
growing when you don't.

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Business Savings Account

Bundle it with an operating account and get even more benefit. Find your nearest branch at cwbank.com and start earning today.

*Rate is subject to change without notice. Interest is calculated on the daily closing balance based on the portion within each tier and paid monthly. Interest is paid as follows: 1.30% on deposits up to \$250,000, 1.35% on deposits between \$250,000.01 to \$15 million and 0.25% on deposits above \$15 million. Available in-branch only.



C I E N

CANADIAN INDUSTRIAL EQUIPMENT NEWS

» Plantware

SOFTWARE SIMPLIFIES LADDER LOGIC

AutomationDirect's DirectSOFT6 PLC software provides faster status updates to make ladder logic programming easier.



32-bit Windows certified.

The 32-bit Windows certified programming software for DirectLOGIC PLCs includes more than 40 additional "IBoxes."

The packetized fill-in-the-blank style instructions make writing simple to complex ladder logic for functions such as Memory, Discrete Helper, Analog Helper, Math, Communications and CTRIO, faster and easier.

Additional features include graphic ladder view, ladder box leg labels, and graphic stage view. Configurable toolbars enhance flexibility, while the new Trend View debugging tool monitors the values of controller data elements over time as well as readable numeric or bit locations.

AutomationDirect is a supplier of automation technologies based in Cumming, Ga. www.automationdirect.com



Mobile device identifies labels.

STEWARD APP ORGANIZES BATTERY CARE

Flow-Rite's cloud-based Battery Steward organizes the battery care schedule, sends alerts when tasks are due, records maintenance and asset data, and allows the data to be analyzed over time.

The free app, available from the Apple App Store and Google Play, uses a mobile device and identifies labels to create easy-to-follow battery care task lists.

Scanning the battery's identifying label checks off tasks. Batteries with overdue maintenance tasks are highlighted and elevated, minimizing misses.

Battery maintenance data is analyzed through the online portal (www.BatterySteward.com) to identify neglected, misused or abused batteries.

A set of identifying labels will come free with Flow-Rite's Millennium single-point battery watering kits.

Flow-Rite Controls Ltd., based in Byron Center, Mich., manufactures and markets fluid control devices for lead acid batteries. www.BatterySteward.com

WORKHOLDING

TB2 CHUCK DECREASES CYCLE TIMES

Schunk's TB2 chuck's faster actuation comes from an innovative exhaust system that allows for quick venting to decrease cycle times in pipe threading applications.

A wear-resistant coating prevents corrosion and sealed base jaws eliminate contamination.



Bore diameters up to 560 mm.

An advanced system delivers rapid and even lubrication of the entire chuck through an intelligent channel system. The chucks are sized from 470 to 1,000 mm with bore diameters from 185 to 560 mm.

Several pressure and stroke monitoring features work through external monitoring and dynamic wireless systems; and an integrated sound absorber system reduces noise.

Schunk is a manufacturer of workholding tools based in Lauffen, Germany with Canadian operations in Mississauga, Ont. www.schunk.com

MACHINING



Handles complex shapes.

3D BENDING MADE EASY

BLM Group USA's E-Flex CNC bending machine is equipped with two clockwise and counter clockwise bending turrets to make easy work of three dimensional bending within the same machining cycle.

Coil-fed wire is straightened in both a vertical and horizontal orientation for various size and types of wire as well as automatic operation, which allows repeatability in most operations.

The E-Flex bends wire with complex shapes and allows for short runs, as well as high-volume production. The machine automatically corrects the program by searching for prior bends that could

interfere with the bending sequence, thus eliminating manual adjustments.

Chamfers are added for burr-free cuts. The unit incorporates VGP3D, a 3D visual graphic program for constant machine monitoring.

Operators generate a single machining program by entering geometric part data, automatically simulate the bending operation, change running sequence in simulation mode and calculate real cycle time.

BLM Group is a manufacturer of tube processing equipment based in Cantu, Italy.

www.blmgroup.com

PILOT DRILLS ENHANCE PRODUCTIVITY

Walter's Titex X-treme Pilot 180 solid carbide pilot drill improves the productivity and reliability of deep hole drilling in metalworking applications, and mould and die making.

They're used for cross holes, spot-facing inclined or convex surfaces and counterboring drilled holes to recess bolt heads or protect threads.

3- to 20-mm diameters.



The versatile, solid carbide drill for depths from approximately 2 x D is equipped with internal cooling from either emulsion or oil, and is used with coolant pressures as low as 145 psi.

The drills come in diameters from 3 to 20 mm with a corner protection chamfer to maximize reliability. Four margins optimize alignment and a TFT coating protects against wear.

Walter is a manufacturer of metalworking tools based in Waukesha, Wis. www.walter-tools.com

NO INTERFERENCE PRECISION WITH ID CLAMPING

Carr Lane Manufacturing's self-centring ID clamps simultaneously locate and clamp from the inside of an existing hole or slot in the part, leaving the entire outer surface clear for machining.

Tightening the tapered centre screw with a hex wrench pushes the clamping segments outward to securely hold the internal bore. Available in seven sizes,



Self-centres.

the clamps are accessible from five sides without any interference for multiple-part machining on vertical and horizontal machining centres.

Carr Lane Manufacturing is a manufacturer of tooling components based in St. Louis, Mo.

www.carrlane.com

PACKAGING



Up to 30 cycles per minute.

PACKER PROVIDES A TIGHT SEAL

Standard-Knapp's 333 Vanguard Wrap-Around Packer produces a tight, square, cost-saving wrap-around tray or full case shipper at speeds up to 30 cycles per minute.

It handles a range of products, such as cans, cartons, and bottles (glass or plastic), as well as multi-packs, tubs, and aseptic packs, fits most shop floors and operates 24/7.

Snap-in parts and quick-handle adjustments simplifies changeovers.

Pneumatically-controlled top and side actuation controls compression to protect delicate products. Product comes in directly over the tray blank to eliminate side push and unnecessary impact.

A welded tube frame and interlocked doors provide a steady platform and improve worker safety, while walk-by maintenance is easy thanks to clear Lexan safety guards.

The unit's electrical panel is equipped with program controls, servo drives, pneumatic controllers, and safety-system monitoring. Both the electrical and operator panels can be remote-mounted.

Standard-Knapp is a manufacturer of packaging machinery based in Portland, Conn.

www.standard-knapp.com

MOTION CONTROL

ACTUATORS ARE PROGRAMMABLE

Nook Industries Series 500 programmable actuators incorporate a direct or toothed-belt drive for quiet running, high mechanical efficiency.

These ball screw-driven actuators made with high-strength materials come in parallel and in-line models and use either a servomotor or stepper motor.

The screw shaft is constructed with medium-carbon, induction-hardened, alloy steel and the ball nuts are manufactured from high-grade bearing steel. Both

Parallel and in-line models.



ball screw and nut are heat-treated to a surface hardness of 56 HRC.

Acme screw-driven units are made from 4140 alloy steel with a black-oxide finish and 2C thread form. They come in parallel and in-line models with either a servo or stepper motor. The nut material was selected for low friction, minimum wear, long life and clean operations.

Nook Industries, based in Cleveland, is a supplier of motion control technology. <http://nookindustries.com>

SHAFT COLLARS

RELIAMARK COLLARS HANDLE CORROSIVE WASHDOWNS

Kaman Industrial Technologies Corp.'s ReliaMark stainless steel shaft collars made of T304 stainless steel are for washdown applications and corrosive environments.

They come in bore sizes from 1/8 to 3 in. and handle both hard and soft shafts. Solid set-screw collars, and one-piece



Bore sizes from 1/8 to 3 in.

(single-split) and two-piece (double-split) collars with socket head cap screws are included in the kit.

Bore tolerances range from +.004/+.000 for bores up to 3 in.

Kaman Industrial Technologies is a distributor of power transmission and fluid power products based in Mississauga, Ont.

www.kaman.com.

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The field-attachable lights use a Binder M12 male connector and are hardwired with an inline power converter or an optional 24 VAC power converter moulded to a Binder M12 female connector.

BinderUSA is a manufacturer of circular connectors and cordsets based in Camarillo, Calif.

www.binder-usa.com

» Events

MainTrain 2015
PEMAC

Sept. 21-24, Vancouver

"I cubed" (Inspire, Innovate and Improve Maintenance) is the theme of this year's conference for Canadian maintenance professionals, hosted by the Plant Engineering and Maintenance Association of Canada (PEMAC). Join the leading experts, practitioners and professionals for knowledge transfer, technical training and networking. Visit www.maintrain.ca.

CMTS 2015
SME

September 28 – Oct. 1, Mississauga, Ont.

The Canadian Manufacturing Technology Show (CMTS) 2015 will feature the latest advancements in machine tool, tooling, metal forming and fabricating, automation, 3D printing/additive manufacturing, design engineering and plant management segments from more than 700 suppliers. Visit www.cmts.ca.

Industry Summit
PTDA

Oct. 21-24, Chicago

The Power Transmission Distributors Association (PTDA) hosts this event, which features networking and business solution sharing. Visit <https://www.ptda.org>.

CESCF 2015
JuneWarren-Nickle's Energy Group

Oct. 27-29, Calgary

The Canadian Energy Supply Chain Forum (CESCF) brings together buyers and sellers along Canada's energy supply chain. Visit www.supplychainforum.ca.

Calgary Pump Symposium 2015
Western pump industry stakeholders

Nov. 5-6, Calgary

This independent, not-for-profit bi-annual event provides education and training for the pump industry consisting of technical presentations, short courses, discussion groups and vendor exhibits. It features a number of half-day and full-day training courses and presentations in the topic areas Projects, End-User, and Pump Design. There are also discussion groups. Visit www.calgarypumpsymposium.ca.



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Worry about a decline in start-ups

BY JASON CLEMENS AND NIELS VELDHUIS

A number of prominent Canadians, including Bank of Canada Governor Stephen Poloz, have raised concerns about the state of business start-ups and entrepreneurship in Canada. There is no question that entrepreneurship is critical to a well-functioning, prosperous economy. New firms are the lifeblood of innovation, creativity and economic progress.

And while the decline in business start-ups is a worrying sign for future economic dynamism and progress, the concern has not been met with practical solutions. Capital gains tax reform is one practical possibility.

Consider first the worrying trend in Canada that the

“Younger people are less risk averse and more prone to question the status quo and experiment...”

rate of business start-ups, a key measure of entrepreneurship, is declining. Since peaking in 2004, the rate of business start-ups as a share of existing firms has declined by 16.2%. Specifically, in 2004 there were 17.9 business start-ups (all sizes) per 100 existing firms. The rate has since declined to 15 business start-ups per 100 existing firms.

The rate of decline is more pronounced for larger firms (measured by employment). For instance, the rate of decline in business start-ups between 2004 and 2012 for firms with 50 to 100 employees was 68%.

Declines are also being observed in other industrialized countries. For instance, the US experienced an 8% decline from 2003 to 2012.

One likely and so far ignored explanation is the relationship between demographics and entrepreneurship. Younger people are less risk averse and more prone to question the status quo and experiment. Such characteristics are key to the entrepreneurial process. There are proportionately fewer young workers with these characteristics but they're typically not in positions of influence within firms.

Canada's population, like all industrialized countries, is aging with a growing share (increasing by 74.1% between 2008 and 2035 according to Statistics Canada) over the age of 65.

Given the importance of entrepreneurship to the economy and the absence of any serious policy options to deal with the demographics, it's critical governments enact policies supportive of entrepreneurship.

Leverage with capital gains

One such policy lever is capital gains tax reform. Capital gains taxes are applied to the sale of an asset when its sales price is nominally (not adjusted for inflation) above its original purchase price. The sale price is based on the present value expected by the purchaser from the future stream of income received by the asset. However, that stream of income is subject to annual taxes. Applying the tax after selling the asset is a type of double taxation that creates disincentives for entrepreneurs and firms that finance entrepreneurs.

Currently, Canada has the 14th highest capital gains tax rate among the OECD countries despite the two reductions in the tax rate implemented by the Chretien Liberals. A number of options for reform exist but one that holds great policy and practical promise is the replication of a Clinton-era US reform.

The Clinton Administration created a rollover provision whereby the proceeds of a sale of an asset are exempt from capital gains if they are re-invested within a specific time period, perhaps six months. Such a reform frees up capital today that could boost entrepreneurship while deferring the eventual capital gains taxes.

Improving the incentives would help mitigate the demographic issues, which have clear and serious implications for the economy. Capital gains tax relief offers an opportunity to super-charge entrepreneurship.

Jason Clemens and Niels Veldhuis are economists with the Fraser Institute and co-authors of Entrepreneurship, Demographics and Capital Gains Tax Relief, available at www.fraserinstitute.org. Distributed by Troy Media.

Comments? E-mail mpowell@plant.ca.

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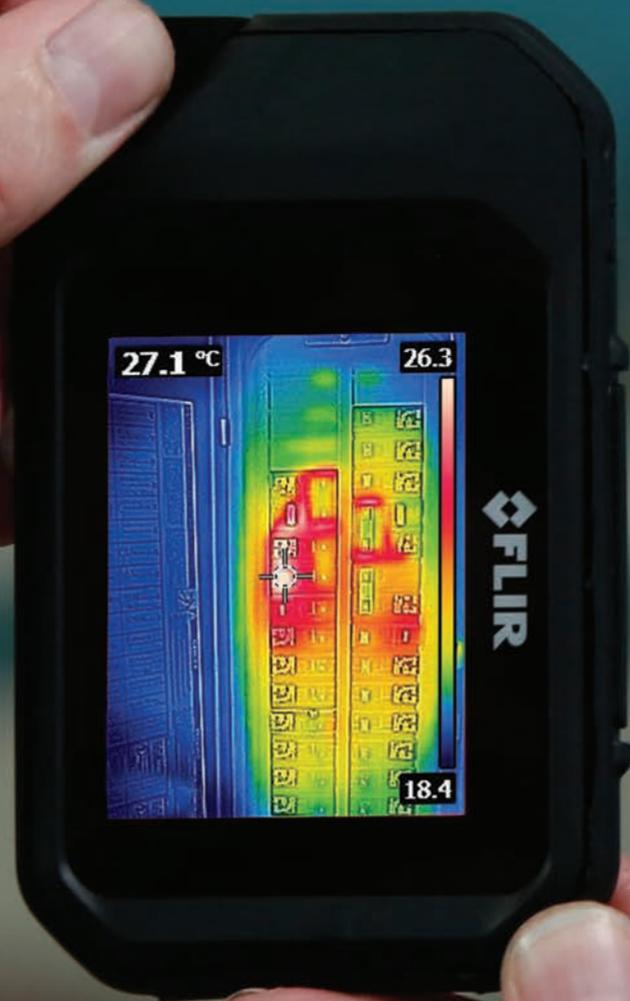
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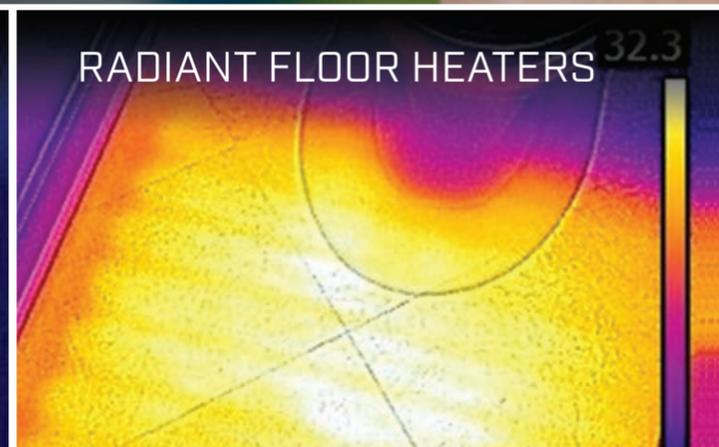
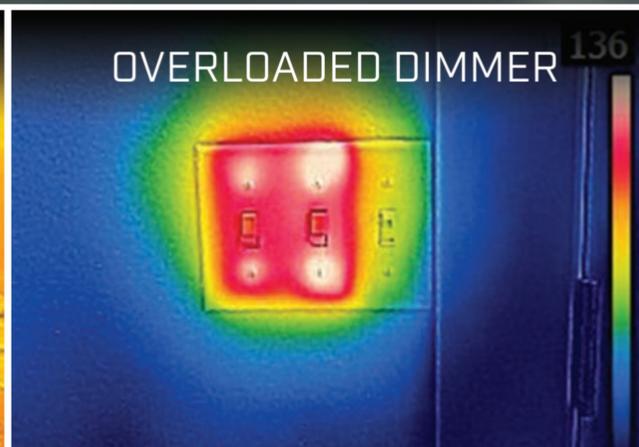
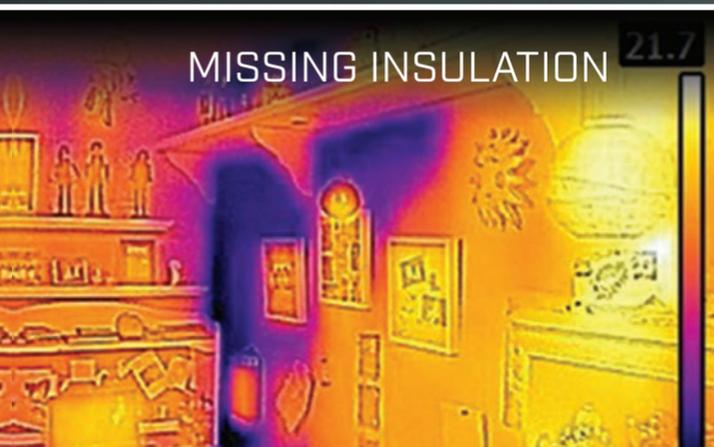
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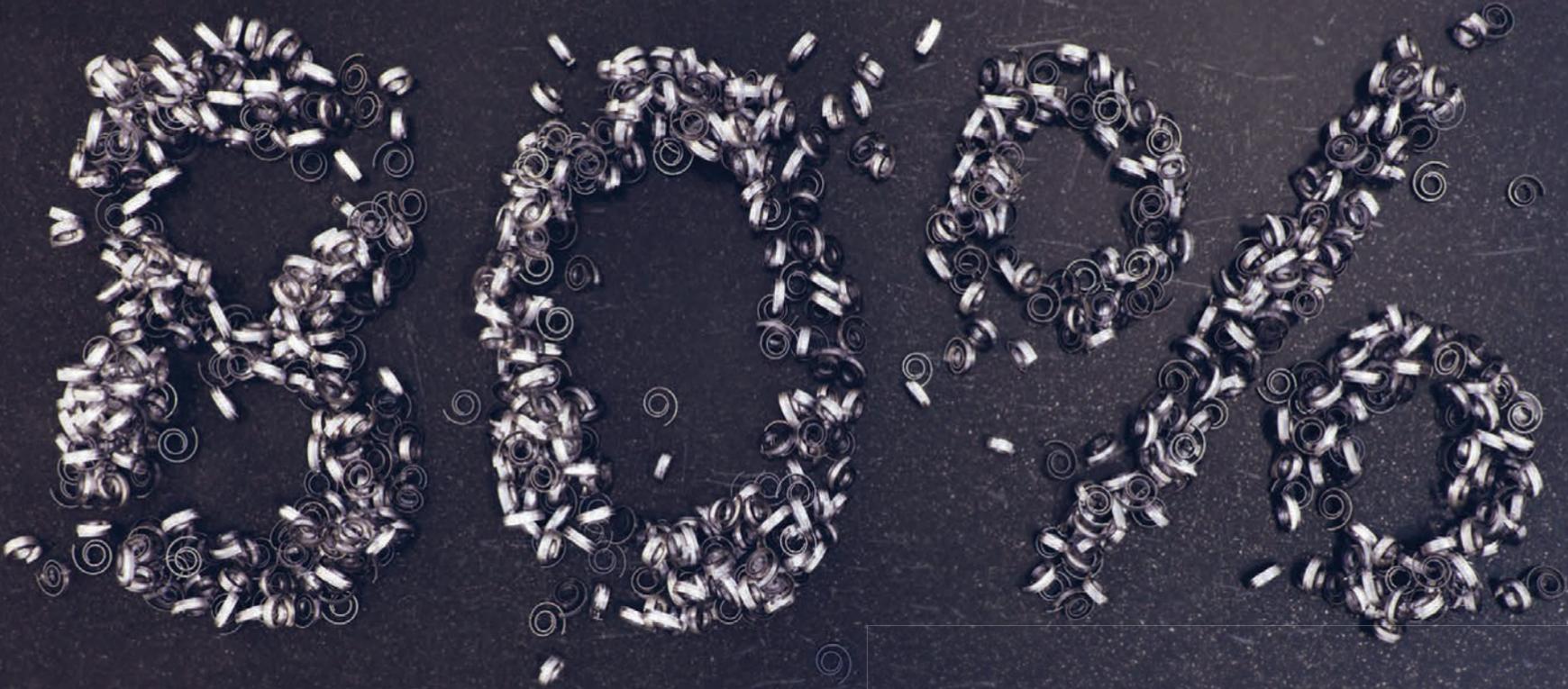
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