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Volume 8, No. 04 >> Supplement, PLANT >> November/December 2013

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PW 40065240



Dave Vensel,
Logistics Warehouse Manager

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“WE KNEW IT WOULD BE A NICE IMPROVEMENT AND SAVE SOME CASH, BUT THE OUTCOME IS TRULY OVER THE TOP.”

Like any competitive company, Helton Industries works hard to make their facilities more efficient. At their overhead door manufacturing plant in Abbotsford, replacing the aging, gloomy lighting was just a part of that.

What did they find out? That they would save \$30,000 in energy costs every year with newer, brighter, longer-lasting lighting. Plus, the improvements would net them a Power Smart incentive of over \$60,000.

With numbers like that, they called it a “no-brainer.” But we think it shows major smarts.



Open for business

There was gathering in Calgary in early November that brought together a few buyers but mostly potential suppliers from across Canada and farther afield who were all looking for a way into the multi-billion dollar bonanza that is Alberta’s oil sands. And no wonder. A Canadian Manufacturers & Exporters report shows how much the oil sands contributes to the world of business and commerce. Since 1997 to last year capital investment topped \$173 billion and MRO expenditures exceeded \$117.7 billion. That business sustains more than 400,000 jobs in Canada and it’s responsible for 1.5% of the economy. So it was only fitting Canada’s love/hate relationship with the extraction of bitumen should to be put on display at the National Supply Chain Forum.

It’s not enough for the growing chorus of critics to blame bitumen for being the dirtiest oil ever and contributing to the destruction of the climate. Now the oil sands stands accused of contributing to manufacturing’s suffering by driving up the value of the dollar, according to a report by the Pembina Institute and Equiterre. There is plenty of analysis and a discourse on Dutch Disease, but the highlights are: only 14% of employment opportunities will be in provinces other than Alberta; one-third of manufacturing’s decline is because of an expensive petro-dollar; and previous research shows a \$1 million investment in clean energy creates way more jobs. The report contends favouring oil and gas is putting the prosperity of Canadians at risk.

Coincidentally, Jayson Myers, president and CEO of Canadian Manufacturers & Exporters was at the NSCF that day to unveil CME’s oil sands/manufacturing analysis that took the opposite view. His response to the Pembina report?

“Bullshit,” said Myers who is an economist of some repute. While both sides agree that most of the benefits fall to Alberta, he points out manufacturers from across Canada also enjoy the bounty: Ontario gets about 14%, the Prairie provinces 9% and Quebec 6%.

Looking ahead, dollars from 2012 to 2030 will be between \$211 billion and \$387 billion. And benefits would be spread across a range of 234 product classifications.

That’s not to say there’s no room for improvement. Annually, about \$5 billion worth of goods destined for the oil sands come from overseas suppliers, and that amount could reach \$140 billion over the next 20 years, according to Michael Burt, the Conference Board of Canada’s director of industrial trends, who also presented a report at the forum.

Canadian manufacturers could get a larger share of this work, but they must have the capacity, deliver the quality and be innovative, all at a world-class level.

A discussion Myers had with a major oil company was illuminating. He saw a list of the company’s preferred suppliers and supply chains. “Did you know that for this global energy company, the Alberta supply chain is less efficient and less effective than how they rate their Nigerian supply chains?” he asked.

Not that the oil companies are blameless with their penchant for delays and changing of specs, while expecting manufacturers to stay within the cost lines.

The CME report makes a number of recommendations (look for the report at www.cme-mec.ca), chief among them improving the level of communication along all points of the supply chain to focus on bottlenecks and identify problems such as specific labour shortages. A comprehensive “how to” guide from oil companies and EPC firms for securing oil sands business would be helpful, as would common supply chain prequalification standards and a resource office to deal with procurement opportunities.

The oil sands have been good for manufacturing and Alberta’s energy industry offers great opportunities for Canadian companies. But there’s some hard work ahead to make those opportunities more accessible.

Joe Terrett, Editor

Comments? E-mail jterrett@plant.ca.

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» Pulse

Manufacturers prep for growth in 2014

Analysts have been predicting modest growth of 2.3% over the next five years and manufacturers appear eager to engage, according to the results of the **PLANT**'s 2014 Manufacturers' Outlook Survey. Here are some highlights from the 450 manufacturing executives who responded to the October poll:

- The group's average revenue for 2014 is projected to be \$91.3 million.
- Biggest challenges continue to be increasing sales for 61%, controlling and reducing costs (58%) and improving productivity (47%), which is a top investment priority for 44%.
- Priorities are investments in machinery and equipment (76%), which 62% are trying to improve productivity for growth, and more than half of the respondents intend to invest just short of \$1 million.
- Access to external financing continues to be the biggest growth constraint for 49%, while 71% intend to finance using internally generated cash flow.
- The top competitive advantage for 67% is the ability to engineer and customize, followed by leaner manufacturing and a focus on continuous improvement, and the use of innovative technologies (56%).
- Companies are currently making most of their sales in Canada (62%) and the US (27%) but business is creeping up in Western Europe (2.6%) and China (almost 2%).
- Over the next three years 40% plan to pursue new markets in the US, 39% in Canada, 16% in Mexico, 13% in Brazil and 13% in other South American countries.
- Leading the list of skills shortages is production for 53% of firms, general labour (35%), management (29%), engineering (28%), R&D (20%) and production support (19%).
- More than two-thirds of the companies are looking internally to meet their skills needs, 37% are using agencies, 30% are hiring from other companies, 29% are making use of apprenticeship and other programs and 23% are networking.
- Over the next three years 58% of companies are hiring, 43% are adding new lines of business, 36% are entering new geographic markets and 33% are expanding their plants.

Trade initiative to put SMEs on the global map

Global Markets Action Plan will focus on relevant emerging markets

OTTAWA: The federal government is giving SMEs a boost into world markets with a new trade initiative called the Global Markets Action Plan. It will focus on markets that are most promising for small and medium-sized businesses, including: emerging markets with broad Canadian interests; those with specific opportunities; and those with established markets and broad interests.

International trade minister Ed Fast unveiled the general details of the plan to the Economic Club in Ottawa. Key elements include: economic "diplomacy" focussing government resources in foreign markets; prioritizing of policy tools; leveraging Canada's access to the EU and US markets; and ensuring government priorities are in sync with the needs of business.

The intent is to increase SMEs' export presence abroad from 29% to 50% by 2018, which the government contends will almost double their footprint to 21,000 companies while creating more than 40,000 new jobs.

The government's efforts are timely. Most Canadian manufacturers are locked into the North American market. **PLANT**'s 2014 Manufacturers' Outlook Survey shows 62% of respondents' revenue comes from Canada, 27% from the US, 2.6% from the EU, almost 2% from China and less than that from all other markets. Looking ahead three years, North America is still the preference for market expansion (40% to the US and 39% to new markets in Canada), followed by Mexico (16%), Brazil (13%), other South American countries



Economic diplomacy will increase SMEs' presence in world markets.

PHOTO: THINKSTOCK

(13%), China (12%) and the UK (10%).

Canadian Manufacturers & Exporters (CME) is happy with the plan, which it says aligns the priorities of Canadian business to the services offered by government departments and agencies.

"We were clear that the government needs to be agile in setting priorities and aligning resources to help business needs," says CME president and CEO Jayson Myers who was a member of Fast's expert advisory panel. "The plan is based on measurable objectives. Its success will ultimately be judged by results – on the growth of Canadian exports and investment in international markets."

Download a copy of the plan at <http://international.gc.ca/global-markets-marches-mondiaux/plan.aspx>.

BioteQ puts Bisbee plant on hold

VANCOUVER: BioteQ Environmental Technologies Inc. has placed its idled copper recovery facility in Bisbee, Ariz. on indefinite furlough because of poor financial returns.

The Vancouver-based developer of industrial wastewater treatment technology and its 50/50 joint venture partner Freeport-McMoRan Copper & Gold have also agreed that the plant won't restart under the existing operating arrangement.

The plant, which uses BioteQ's BioSulphide process technology to remove copper from wastewater at a closed mine site, suspended operations in September after unusually high levels of rainfall in the area during July and August.

BioteQ said while the plant was in idle mode in August operational and process issues led to a gas being released.

An investigation revealed the release was caused by a partial blockage in a pipe and the concurrent failure of a seal mechanism.

Pipelines pose fewer safety risks

Fewer spills compared to road and rail transport

CALGARY: Oil transport by pipeline presents significantly lower safety risks to workers than oil movement by road or rail, concludes a study published by the Fraser Institute.

The public policy think tank determined that the rate of injury requiring hospitalization was 30 times lower among oil pipeline workers compared to rail workers involved in the transport of oil, based on extensive data collected in the US.

Road transport fared even worse, with an injury rate 37 times higher than pipelines based on reports to the US Department of Transportation for the period 2005-2009.

Roads also have the highest chance of a spill with almost 20 incidents per billion ton-miles. Rail had slightly over two

incidents per billion ton-miles annually while pipelines had less than 0.6 per billion.

Intermodal Safety in the Transport of Oil also found the risk of spill incidents is lower for pipelines per billion ton-miles of oil movement compared to rail and road.

Canadian pipeline data reported by the National Energy Board shows similar risk patterns. The study found the 10-year average for the frequency of liquid leaks is approximately three leaks per 1,000 kilometres of pipeline, a "remarkably small" average considering Canada produces and transports 3.2 million barrels of oil each year, and 97% of Canadian petroleum and natural gas products move by pipeline.

The fatality rate among



Resistance to pipelines is putting more pressure on road and rail transport.

PHOTO: THINKSTOCK

Canadian oil pipeline workers averaged 0.2% per year from 2000 to 2009 while injuries to contractors and other workers averaged 3.8 per 200,000 work-hours over the same time span.

Rail-related fatalities totalled 71 in 2011, compared to the five-year average of 81. There were 63 dangerous goods leaks in

2012, representing 31% of all reported rail incidents. The Transportation Safety Board recorded 1,023 reportable rail accidents in 2011, a 15% decrease from the 2006-2010 average of 1,198.

Transport Canada received reports of 345 accidents involving trucks hauling dangerous goods with crude oil.

Aurora to supply Hanwha Q CELLS with inline photovoltaic systems

NORTH VANCOUVER, BC: ACT Aurora Control Technologies Corp.'s Decima CD inline measurement system for the photovoltaic industry has been qualified for use in Hanwha Q Cells' solar cell plants.

Hanwha has also installed a Decima system in its production facility in Thalheim, Germany, which is monitoring cell quality during manufacturing.

North Vancouver-based Aurora and Hanwha will continue partnering on the further advancement of Decima technology and its applications.

Hanwha Q CELLS is part of the South Korean Hanwha Group, a photovoltaic company that manufactures solar cell and solar power plant technologies.

It has a second production plant in Malaysia.

Suncor spending \$7.8B in 2014

Oil sands gets \$1.9B, production to increase by 10%

CALGARY: Suncor Energy plans to spend \$7.8 billion in 2014 and produce 565,000 to 610,000 barrels of oil equivalent per day.

The Calgary-based energy company said \$4.2 billion will go to growth projects, with \$1.9 billion of that earmarked for advancing oil sands projects, including the Fort Hills joint venture with Total E&P and Teck Resources Ltd., and near-term debottlenecking and expansion initiatives such as MacKay River 2.



Some of the investment will go to Suncor's MacKay River operation.

PHOTO: SUNCOR ENERGY

Canadian Press reported Fort Hills, shelved since the 2008 financial crisis, is to start producing oil in late 2017 (at the earliest), ramping up to its full capacity of 180,000 barrels per day within 12 months, and will to account for about 15% of Suncor's total capital budget on average per year.

Suncor said oil sands production is to increase by more than 14%, more than offsetting the reduced production from the North America onshore business as a result of the

natural gas divestiture this year. Total oil production year over year will increase by about 10%.

Investment will also be directed to Golden Eagle in the North Sea and development of East Coast assets such as Hebron. Refining and marketing growth capital of \$220 million will be deployed on projects to support the supply of inland crude to its Montreal refinery.

Steelworkers, Canfor reach tentative deal

BURNABY, BC: The United Steelworkers (USW) union has reached a tentative deal with Canadian Forest Products on a new collective agreement for forest workers in the BC Interior.

The tentative agreement was reached after Canfor and the USW resumed bargaining at the BC Labour Relations Board after five months of negotiations.

The five-year deal provides significant pay increases for all workers, as well as adjustments to trades rates, improvements to health and welfare benefits, improved collective agreement language and provisions to secure the USW members' pension plan.

The agreement provides a signing bonus and percentage wage increases, plus cash payments in the third, fourth and fifth years.

Canada and Japan co-operate on oil & gas

VANCOUVER: Canada and Japan have signed a "statement on oil and gas cooperation" to enhance their relationship on bilateral energy matters.

The agreement signed by Joe Oliver, Canada's minister of natural resources, and Toshimitsu Motegi, Japan's minister of economy, trade and industry, will establish a policy dialogue and annual high-level meeting between governments to encourage cooperation on trade and investment opportunities in oil and liquefied natural gas (LNG).

Infrastructure issues such as ports, pipelines, re-gasification plants and liquefaction terminals will be addressed, as well energy policies, supply potential, market outlooks, interprovincial pipeline issues, marine safety, and environmental regulation.



Toshimitsu Motegi and Joe Oliver demonstrate co-operation.

PHOTO: NRC

Careers

Xtreme Drilling and Coil Services, a Calgary-based designer, builder and operator of oil rigs and coiled tubing well service units has appointed **Richard Havinga** president and chief technology officer. **Charlie Proulx** moves up to vice-president of Coil Services – North America from general manager of US coil services.

The Business Development Bank of Canada (BDC) in Ottawa has a new chair. **Samuel Duboc** is the founder, president and managing partner of EdgeStone Capital Partners. The venture capital expert is completing his term as the Clifford Clark Visiting Economist at the Department of Finance Canada.

Michael Zuk joins Strategic Oil & Gas Ltd. in Calgary as vice-president, business development. Previously he was a publishing research analyst at **Stifel Nicolaus** covering small and large cap oil and gas producers. **Douglas Wright** adds engineering to his responsibilities and title as vice-president of corporate development. He is now responsible for engineering, reserves and developing corporate strategy.

ENTREC Corp., a provider of heavy lift and heavy haul services based in Spruce Grove, Alta., has appointed **Terris Chorney**, a strategic partner for the past eight years, as executive vice-president, business development. He was previously managing director, investment banking with Stifel Financial Corp.

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Williams Energy Canada intends to convert cheap propane into a plastic feedstock that's worth \$800 million annually.

BY MATT POWELL, ASSISTANT EDITOR

Despite the mountains of cash it already generates from its oil sands assets, Alberta wants to get more value out of its sticky black bitumen. The province has a dream, often voiced by its energy minister Ken Hughes, to ship value-added products around the world and generate even more jobs, wealth and of course more tax revenue.

Hughes is a lively character when media coverage involves anything related to the oil sands; most recently reiterating his commitment to seeing TransCanada Corp.'s Keystone XL pipeline make its way to the US Gulf Coast.

"It's not over 'til it's over," he told *The Canadian Press*.

But he's also zealously pushing the province's efforts to diversify its product portfolio, telling the *Edmonton Journal* in March that producing value-added byproducts is "exceedingly important for the industrial heartland and actually for all of Alberta."

One company is stepping up with an innovative plan.

Williams Energy Canada is investing \$1.1 billion to construct a new facility that will produce propylene, a petro-chemical feedstock, using propane derived from converted oil sands off-gas.

The idea is to take advantage of low cost feedstock due to an oversupply of propane in the Alberta market that's worth that's worth three times as much, betting that at least a portion of Alberta's value-added future lies in the production of plastics. At current and forecasted commodity prices, exporting polymer-grade propylene from its Redwater propane dehydrogenation (PDH) plant by rail to destinations along the US Gulf Coast would generate more than \$800 million annually.

If the new facility is able to entice plastics manufacturers to set up shop in Alberta, it would be a big win for the province as it seeks ways to diversify and enter new markets while easing the cyclical and sometimes volatile nature of the energy industry.

"Propylene has traditionally been produced as a refining byproduct however supply has been on the decline due to changing refinery feedstocks and various refinery and naptha cracker closures. We will offset this by taking an over-supply of propane in Alberta and capitalizing on the value of on-purpose produced propylene," says Neil Montgomery, the PDH plant's project director.

When it's completed by April 2017, he says the PDH plant located close to its existing Redwater olefins fractionator outside Edmonton will produce up to 1.1 billion pounds of propylene annually and that output could double with future expansion. Output could double with future expansion.

"This is a natural extension for us because we're taking a small part of our current business and making it into a much bigger one."

Williams Canada is a wholly owned subsidiary of Tulsa, Okla.-based Williams Cos., a giant in the North American pipeline and energy infrastructure industry with a market value of \$24 billion and more than 4,200 employees. It owns interests in or operates 24,000 kilometres of interstate gas pipelines; 1,600 kilometres of natural gas liquids (NGL) transportation pipelines; and more than 16,000 kilometres of oil and gas gathering pipelines.

The company's facilities have daily gas processing capacity of 6.6 billion cubic feet of natural gas and NGL production of more than 200,000 barrels per day.

It's also a player in Alberta's petrochemicals business, where Williams Canada has invested more than \$1.7 billion over the past decade to become the world's only processor of oil sands off-gas to extract products such



PDH's propylene POTENTIAL

DIVERSIFYING THE ENERGY VALUE STREAM

as propane, butane and condensate.

Williams operates the 420-kilometre Boreal Pipeline that transports off-gas liquids from its extraction plant near Fort McMurray to its Redwater fractionator.

It will be the only plant in Canada that uses propane dehydrogenation to produce polymer-grade propylene.

Propylene is a byproduct of oil and natural gas processing that's produced by exposing off-gas such as propane to catalysts that crack hydrocarbon molecules.

"We expose propane to a noble metal catalyst at high temperatures to liberate hydrogen from the propane molecules, which creates an environment for the previous propane molecule to create a double bond, converting it to propylene," says Montgomery.

A hydrogen byproduct will be sold into the local Alberta market or an alternative could be used as fuel within the propane dehydrogenation process.

Propylene railed south would be used by US petrochemical companies (and eventually those closer to home) to produce poly-propylene, a plastic in pellet

form that's used in the manufacture of various goods, including car parts and food packaging. The feedstock also produces propylene glycol, an environmentally-friendly anti-freeze used as a plane de-icer.

Industry shift

A shift to lighter steam cracker feedstocks with lower propane yields has created an imbalance in the supply and demand of propylene, and on-purpose production methods are increasingly prevalent. Williams hopes to capitalize on the that imbalance.

"We're hopeful the plant bring a poly-propylene producer into the province," says Montgomery.

At Redwater, the NGLs and olefin mixture is fractionated into propane, polymer-grade propylene, normal butane, alky-feed and olefinic condensate, which are all sold to petrochemical producers. It's currently being expanded to produce up to 5 million barrels of propane and 280 millions pounds of polymer-grade propylene annually from off-gas.



Williams Canada's Redwater fractionator produces a number of oil sands off-gas products including propane, propylene, butane, alky-feed and olefinic condensate. PHOTO: WILLIAMS ENERGY CANADA

as it consumes less energy and water than other PDH technologies that were evaluated.

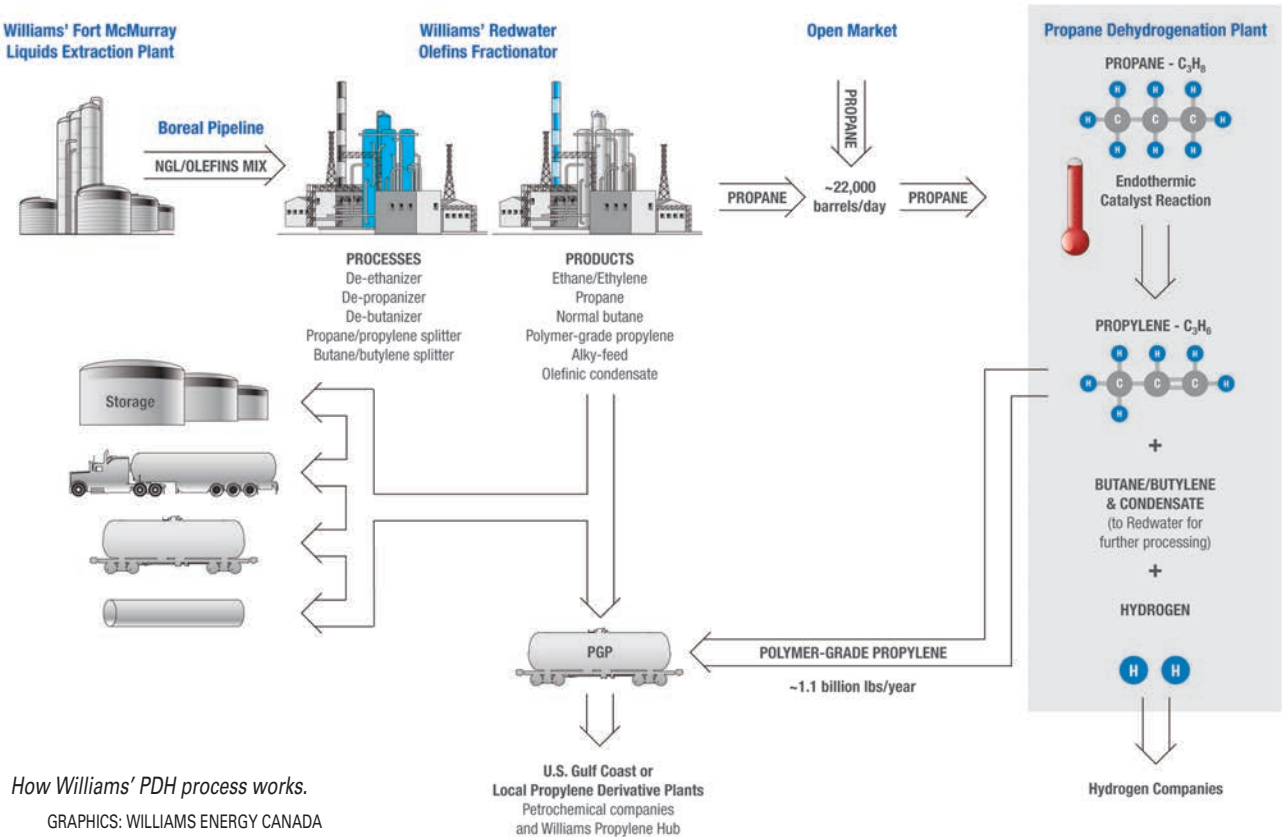
“This is a nice fit in a niche market that we’re already in, and it’s still a relatively small part of our business, but this new facility will turn propylene development into a much bigger part,” says Montgomery.

When oil sands producers convert bitumen into synthetic crude oil, the process generates an off-gas byproduct that includes a mixture of natural gas, NGLs and olefins. Williams extracts an olefinic NGL mixture from the off-gas at its Fort McMurray facility, which is located on-site at Suncor’s oil sands production facility, recovering up to 14,000 barrels per day of the NLG/olefins mixture. The mixture includes ethane, ethylene, propane, propylene, butane, butylenes and condensate. (Williams is also building a second liquid extraction plant at CNR’s Horizon Upgrader, which is scheduled to start up in 2015.) After the olefinic NGL mixture is extracted, the remaining off-gas is returned to the upgrader along with the clean-burning natural gas to be consumed as fuel within the upgrader operation, and the olefinic NGL mixture is transported to Redwater for further processing via the Boreal Pipeline.

The company says the off-gas processing reduces carbon dioxide emissions (CO2) in Alberta by approximately 200,000 tons per year and cuts emissions of sulphur dioxide (SO2), which contributes more than 1,700 tons of acid rain each year. Montgomery expects the off-gas expansions to further reduce both emissions.

Traditionally, off-gas is flared or stays in a loop at coker facilities and is used as fuel in the oil sands operations, releasing SO2, CO2 and other gases.

Once NGLs, olefins and sulphur impurities are removed, the remaining gas is sent back to fuel the oil sands plant.



How Williams' PDH process works. GRAPHICS: WILLIAMS ENERGY CANADA

On a yearly basis, Williams produces approximately 2 million barrels of propane, 150 million pounds of polymer-grade propylene, 727,000 barrels of normal butane, 672,000 barrels of alky-feed and 250,000 barrels of olefinic condensate.

Construction of the new facility awaits regulatory approval, but Montgomery expects early stage building to start in the first quarter of 2014.

Honeywell will provide the UOP Oleflex process technology for the dehydrogenation process, which Williams selected because it had a smaller environment footprint

“We’re doing everything we can to meet all the required environmental and regulatory standards, and that comes down to ensuring that we’ve chosen the right machinery and equipment to minimize our impact on the environment,” says Montgomery.

If Williams’ PDH plant lures plastics manufacturers to the province, Alberta will be a step closer to a broader product platform, which will certainly put a smile on Hughes’ face.

Comments? E-mail mpowell@plant.ca.



CAF research shows homegrown journey persons are more productive. PHOTO:THINKSTOCK

Why you should hire an apprentice

Five reasons internal training is a good investment

BY SARAH WATTS-RYNARD

Skills shortages are becoming a common challenge for employers and a corresponding shortage of apprenticeship training opportunities is a major contributing factor.

Research by the Canadian Apprenticeship Forum shows less than one-fifth of skilled trades employers are engaged in hiring and training the next-generation workforce. Until we tip that balance toward training, shortages will continue to make headlines.

Employers cite many reasons not to train ranging from a fear of poaching to concerns about cost. And there are risks involved hiring someone without certification in hand. Yet there is a solid business case for hiring and training an apprentice. Here are five points to consider:

1. For every dollar invested in an apprentice, employers see an average return of \$1.47 (based on testing across 21 trades). The size and location of the business had no significant impact on the economic return.
2. Apprentices absorb the company’s culture, technology and environment while they learn trade-specific skills. Once certified, they are specialists who know the business and customers. Even certified trades people new to a business take time to get acclimated to a workplace.
3. Inevitably, older, experienced employees are going to retire, taking corporate knowledge with them. Engaging your most talented trades people as mentors ensures their expertise is transferred to the next-generation workforce. Journeypersons often report a renewed sense of purpose when they train an enthusiastic apprentice.
4. Over a thousand skilled trades employers report homegrown journeypersons are more productive, make fewer mistakes and have better health and safety records than outside hires. Their investment also pays off in supporting lower turnover rates and success when it comes to recruitment. Employers engaged in training report poaching from competitors erodes loyalty.
5. Apprenticeship is cost-effective. Temporary foreign workers cost between \$5,000 and \$20,000 per person, while apprentices produce a positive net return in most trades by the second year. Federally, there are tax credits available for training apprentices in Red Seal trades and many jurisdictions also offer incentives and support for employers who train. These may include wage subsidies, tax credits or preferential access to government contracts.

Get started by having a conversation with your provincial or territorial apprenticeship authority to learn more about the regulations and assistance available to you.

Sarah Watts-Rynard is the executive director of the Canadian Apprenticeship Forum, a non-profit organization that connects Canada’s apprenticeship community. Visit www.apprenticeshippays.com. This article is distributed by Calgary-based Troy Media.

An innovative renewable catalytic process will provide cleaner fuel to for the transportation sector.

BY KIM LAUDRUM

Last October, the National Research Council of Canada flew the country's first civilian jet powered by 100% biofuel. Initial test results from the historic Falcon 20 flight across Ontario skies showed that the biofuel, which was derived from oilseed grown on Saskatchewan's prairies, is not only a cleaner alternative to conventional fossil-based aviation fuels, it's also as efficient.

Enter Enerkem, the Montreal-based biofuels and renewable chemicals developer that's currently developing a set of new catalytic processes with the University of Sherbrooke. The project, which will convert chemical-grade synthesis gas derived from household trash into renewable fuels and chemicals, got funding of \$1.1 million from Natural Resources Canada through the ecoEnergy Innovation Initiative.

"It's old shoes, old textiles, old carpets, a broken wood table, an old plastic toy, for example. You name it," says Marie-Hélène Labrie, vice-president of communications and government relations at Enerkem.

The company is also about to commission its Alberta Biofuels Facility in Edmonton, which will be the first full-scale commercial plant in North America to produce a chemical-grade synthesis gas from municipal waste. The gas serves as a key intermediate for the production of renewable chemicals and fuels such as methanol and ethanol. Labrie says the plant has the capacity to produce 40 million litres of bioethanol per year – enough to fuel 400,000 cars on a 5% ethanol gasoline blend.

The company's pilot plant and research centre in Sherbrooke tested more than 25 different types of feedstocks, including municipal solid waste, wood chips, treated wood, sludge, petcoke, spent plastics and wheat straw: and it's here where Enerkem will test different catalysts for the creation of drop-in biofuels.

Another plant in Westbury, Que. produces syngas, biomethanol and cellulosic ethanol; there's a commercial waste-to-biofuel plant under development in Pontotoc, Miss.; and a commercial waste-to-biofuel (cellulosic ethanol) plant under development in Varennes, Que.

Biofuels aren't new. Henry Ford first used a blend of ethanol, a plant-based biofuel, to power his Model T in 1908,

Bio-waste to BIOFUEL

ENERKEM'S EDMONTON PLANT GOES COMMERCIAL



Enerkem takes renewable fuels to the next level with a new kind of feedstock.

PHOTO: ENERKEM

until gasoline proved more readily available and affordable. Nowadays, Dutch airline KLM flies transatlantic flights powered by blended jet fuel, which includes a biodiesel made from spent cooking oils.

Reducing emissions

Development of these biofuels makes sense for the transportation sector, which now accounts for 25% of all greenhouse gas emissions (GHG) – a major contributor to global warming. Ethanol reduces GHG emissions from 48% to 68% relative to gasoline, according to Natural Resources Canada. And the Canadian government now mandates that local gas station pumps must contain at least a 5% blend of ethanol, or E5, under Canada's Renewable Fuel Standard (RFS). The US Environmental Protection Agency has also announced recently that 2013 RFS must be a 9.74% blend of ethanol in gasoline – almost double the previous regulation. In Brazil, flex-fuel cars run on an 85/15 ethanol to gasoline blend and internationally, there's a push for

higher percentages.

Certainly, growing environmental concerns, fears of lackluster energy security and job creation are spurring biofuels development, and by 2016 the global market is expected to reach \$147.26 billion, growing at a pace of 16% per year until 2018, according to data from Rui Resendes of Green Centre Canada.

But creating biofuels, such as ethanol, often requires sugar-rich feedstocks, such as corn or sugarcane, which raises questions about the appropriateness of using arable land resources for fuel development instead of food.

Enerkem CEO Vincent Chornet told *The Globe and Mail* that "it is now time that we moved towards second generation biofuels that are more benign environmentally, and take their carbon from residual feed stocks that would otherwise be landfill."

Luckily for Enerkem, it doesn't need arable land to develop its biofuels, and it has secured a 25-year agreement with Edmonton to increase the city's waste di-

version rate from 60% to 90%. That leaves all but 10% of the city's trash that can't be composted or recycled to Enerkem's gasification, sequential gas conditioning and catalytic technology facility, where the sorted waste, forest biomass and agricultural residues will be used as feedstock.

The waste-to-biofuels facility in Edmonton is the latest in Enerkem's \$132.5-million project that also includes a pilot project, and a demonstration plant that opened in 2011. The Edmonton plant is being built in partnership with the City of Edmonton, and Alberta Innovates, while Waste Management of Canada and EB Investments are also investors.

Future fuels

"Today biodiesel is blended with diesel. Ethanol is blended with gasoline. In the future you will also have other fuels, biobutanol, for example, or algae-based fuels. Drop-in fuels, instead of even being blended with either diesel or gasoline, could actually replace gasoline. It's the same. It's like synthetic gasoline or synthetic diesel or jet fuel," says Labrie.

The company's game-changing technology is the brainchild of Esteban Chornet, a chemical engineer and University of Sherbrooke professor. He is also the father of Vincent, Enerkem's co-founder and CEO. Founded in 2000, the company has grown to 125 employees in 13 years during which time ethanol has become a significant fuel commodity, with global production now topping 100 billion litres.

Because drop-in fuels are almost indistinguishable on a molecular level to hydrocarbon fuels, they fit into existing infrastructure. Almost half of all cars made in North America today, for example, are flex-fuel operating on a blend of 85% ethanol and 15% gasoline, or E85, notes John Wilkinson, former Ontario Minister of Research and Innovation and Minister of the Environment.

Enerkem's transformative technology puts the company in a positive strategic position to do business both downstream and upstream by offering improved waste management to municipalities looking to reduce landfill and GHG emissions, while equipping refiners with an alternative fuel that's increasingly specified by government regulation.

The saying, "One man's trash is another man's treasure" has never seemed so true.

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

Comments? E-mail jterrett@plant.ca.

ENERKEM'S GASIFICATION PROCESS

The thermo chemical gasification process heats carbon into a gas that is converted into methanol. Many gasification projects use the gas for energy.

Enerkem's synthetic gas is uniquely conditioned for manufacturing products such as cellulosic ethanol and other biofuels and biochemicals. These higher-end value-added products make current waste management practices sustainable and economical.

Here's how it works: residues are sorted, recycled, dried and shredded. Gasification converts the carbon-rich residues into syngas, which is scrubbed and conditioned. Then a catalytic conversion process turns the synthesized gas into liquid alcohol, such as methanol, ethanol, butanol (and others).

The process transforms one tonne of raw materials (dry base) into 340 to 360 litres of cellulosic ethanol, which has several benefits. It's clean burning and fully biodegradable because the feedstocks are fibrous materials. They include

biomass, such as corncobs, corn residue, wood chips, trees, municipal solid waste and some residues from the pulp and paper industries.

It helps to solve waste management issues by decreasing both landfill and GHG emissions produced by methane and it produces as much as eight times more energy than it consumes.

Source: GreenField Ethanol Inc.



Suncor Energy prefers Canadian-based suppliers, but it's subject to cost pressures. PHOTO: SUNCOR ENERGY

Oil sands BUYERS

TAKING THEIR BUSINESS ELSEWHERE

Manufacturers are missing out on orders worth billions of dollars that are currently imported from overseas.

BY LISA WICHMANN

The oil sands support more than 400,000 jobs in Canada and 1.5% of the economy, but domestic manufacturers could be getting more of the business that's going to companies overseas.

Every year, about \$5 billion worth of goods come into the oil sands from overseas, and that number will grow to \$140 billion over the next 20 years, said Michael Burt, director of industrial trends with the Conference Board of Canada, who presented a report examining the issue at the National Supply Chain Forum in Calgary.

"It's primarily manufactured goods that we're importing. Things like heating and ventilation equipment that are produced locally and could be sourced from companies here in Canada," Burt said.

Steel products are coming in from offshore, along with transportation equipment, electronics and other field components.

A big part of the problem is weak linkages between Alberta and provinces further east, he said.

"There's actually twice as many metal valve companies in Ontario than there are in Alberta and almost none of them are currently linked to the supply chain in Alberta, so how do we change that?"

Energy companies are pondering the same question, citing a shortage of skilled labour and tight manufacturing capacity in Alberta as major impediments to growth.

"It's our preference to deal with Canadian-based suppliers whenever we can," said Gary Hart, senior vice-president of supply chain and field logistics with Suncor Energy. "Our business is a commodity business though and there's a lot of pressure on costs."

Suncor spends about \$12 billion per year, 90% falling to Canadian companies, mostly in Alberta, 5% in the US and 2% to 3% overseas. But the domestic market, at least in Alberta, is challenged, he said.

"We've seen significant price escalation and we've

seen some quality issues...and when I think of what's at the root of it...number one is labour constraints," he said. "Our growth has taken us far past what the [Alberta] populace can handle."

Yet manufacturers point to project management shortfalls caused by energy companies and their sub-contractors.

"What [manufacturers] are trying to do is provide the products and services and technologies that are in demand in an environment, frankly, where specifications are changing on a fairly constant basis and in a way where some of the solutions they bring to the table are not taken into account," said Jayson Myers, president and CEO of Ottawa-based Canadian Manufacturers &

Exporters (CME), adding he's left "scratching his head" at the inefficiencies.

"Why is it that we constantly face time delays? Why is it that we're struggling to make an ROI that is competitive and why is it that we're losing international investment in some of the major projects that this economy in Alberta and across the country depend on?"

Offshoring isn't the answer

Myers called for better working relationships between energy project owners and manufacturers, beyond the current approach focused on getting the cheapest price.

"What woke me up was a discussion with one of the major oil companies that showed me their list of preferred suppliers and preferred supply chains. Did you know that for this global energy company, the Alberta supply chain is less efficient and less effective than how they rate their Nigerian supply chains? That's the situation we face."

There's no doubt problems exist, but offshoring isn't the solution, added Paul Zubick, senior vice-president and chief operating officer with Supreme Group, an Edmonton-based steel fabrication and construction company serving the energy sector.

"Every time we outsource products or services we dilute the need for local workforce development in the form of bringing new people into the trades."

Plus, products from overseas can have dubious quality, he added. Fabricated metal products from domestic suppliers have an average rework rate in the field of 1%. Offshore products are ranging from 8% to 22%, throwing work schedules and budgets into turmoil.

Domestic fabricators provide pre-assembled products that don't have to fit into a shipping container, to save time and labour in the field, said Zubick.

At the end of the day, innovation will prevail, concluded Burt. The Conference Board report identified common pain points for energy companies: enhancing the extraction process; environmental remediation; and reducing project development and operational costs.

He said suppliers with solutions to those challenges will have a stronger chance of winning contracts and building the domestic energy supply chain.

Lisa Wichmann is the editorial director of Canadian Manufacturing Online, part of the Business Information Group. E-mail lwichmann@canadianmanufacturing.com.

Comments? E-mail jterrett@plant.ca.

» Innovation

Transformative steam tech

DCSG to replace conventional generation

The CanmetENERGY research centre in Ottawa and Canada's Oil Sands Innovation Alliance (COSIA) are working on a direct contact steam generation (DCSG) technology intended to replace conventional generation.

Large amounts of fresh and saline groundwater are used to create steam for the steam-assisted gravity drainage (SAGD) process.

"The innovative technology will not only significantly reduce fresh water consumption but also decrease greenhouse gas emissions (GHG) as well as water and air pollution," says Bruce Clements, research scientist, Combustion Technologies, CanmetENERGY.

Clements says the project was chosen for its potential as a transformative technology that addresses oil sands environmental issues.

The technology combusts fuel with pure oxygen at high pressure. Wastewater contaminated with hydrocarbons and dissolved or suspended solids, such as the type produced from SAGD and present in tailings ponds, creates a flue gas stream that's 90% steam and 10% carbon dioxide (CO2). Trials have shown the process to have a thermal efficiency of nearly 100%.

The technology represents a new method of producing steam for heavy oil extraction that involves pumping the flue gas stream underground where CO2 is sequestered. In addition to energy savings, atmospheric CO2 emissions are diverted making this technology transformative in terms of the carbon intensity of oil sands-derived fuels.

Clements says to date, firing has been successful and will pave the way for the construction of a DCSG pilot plant capable of going up to 100 bar. It will use process water with high solids and hydrocarbon contamination directly fired with natural gas. He expects that other waste fuels, such as petroleum coke and asphaltene, could be combusted, and eventually, a demonstration DCSG plant might be feasible.

Clements notes the process also produces an inert, vitreous slag, a by-product potentially usable in the construction industry. And its high-pressure, direct-contact design means the steam generator has a much smaller environmental footprint.

Source: Natural Resources Canada



Texas leads the world for oil and gas investment.

PHOTO: THINKSTOCK

ALBERTA IS THIRD, BUT SASK. HAS THE BEST POLICIES

BY PLANT STAFF

Saskatchewan has the best policies in Canada for attracting oil and gas investment but the Fraser Institute's annual Global Petroleum Survey shows Alberta continues to lead with proven reserves and is number three in the world.

The survey uses the opinions of 864 petroleum executives and managers to rank jurisdictions for their relative attractiveness for investment and segments jurisdictions into tiers based on proven oil and gas reserves.

Texas is the top spot for investment globally with the largest proven reserves (92.1%). Qatar ranks second.

Among the second tier of jurisdictions, Oklahoma has 6.8% of total proven reserves, followed by Arkansas then North Dakota.

The third tier representing just 1.1% was topped by Mississippi, followed by Saskatchewan, Kansas, Alabama, Manitoba and The Netherlands/North Sea.

Looking strictly at survey responses without accounting for proven reserves, Saskatchewan is first in Canada and third out of 157 jurisdictions worldwide. Manitoba is second and ninth, followed by Alberta in 19th place.

Political uncertainty in BC, particularly around proposals for two pipelines carrying oil from Alberta to the BC coast for export, was a negative for Alberta although geological and technological know-how was a positive.

Newfoundland and Labrador ranked 24th compared with 47th one year ago thanks to improved scores for labour regulations and employment agreements.

Pursuing LNG

BC, which is pursuing export opportunities for liquefied natural gas (LNG), dropped from 39th (of 147) in 2012 to 47th because of uncertainty concerning environmental regulations, political stability, taxation in general and the province's carbon tax in particular.

The Northwest Territories was 61st and New Brunswick 81st, a move up from 102nd last year that is attributed to improved performance on regulatory enforcement.

At the other end of the scale, the survey shows Quebec falling from 101st last year to 141st this year and stands out as the Canadian jurisdiction with the greatest barriers to investment, ranking in a grouping that includes Syria and Libya.

Quebec's poor results are attributed to the cost of regulatory compliance, taxation in general, uncertainty concerning protected areas and policies discouraging investment in hydraulic fracturing.

Most respondents (62%) indicated that their assessment of Western Canada and the Northwest Territories as investment venues would deteriorate if pipeline bottlenecks continue to constrain movement of oil to Eastern Canada, export markets overseas and US refiners. One respondent described midstream or pipeline constraints as "the biggest risk to the industry today in Western Canada."

The exploration and development budgets of participating companies account for more than 50% of the \$619 billion spent in 2012 on petroleum exploration and production among international oil companies.

Visit www.fraserinstitute.org for a copy of the report.

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Our Calgary warehouse is now open!



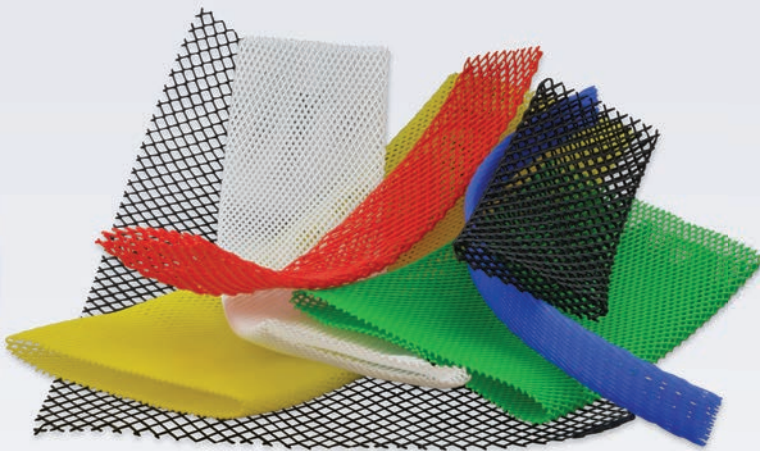
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Caps'n Plugs will be initially stocking a full line of **pipe caps, pipe flange protectors, hydraulic component protectors, sleeve mesh, tube finishing plugs, hi-temp paint masking** and our **tapered cap/plug line** at our **Calgary warehouse**.

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C I E N

CANADIAN INDUSTRIAL EQUIPMENT NEWS



Synthetic lubricants generally perform beyond the limits of mineral oils.

PHOTO: THINKSTOCK

Selecting SYNTHETIC LUBES

BE AWARE OF DIFFERENCES TO MINERAL LUBES

Synthetic lubricants are gaining traction as an alternative to mineral oils for machine lubrication because they're perceived to be better, but be aware of the differences in the chemistries, the price and what you hope trying to achieve by using them.

Dean Belovari, the regional sales manager for Canada at Klüber Lubrication North America LP in Ancaster, Ont., presented selection criteria at the Hamilton Section of the Society of Tribologists and Lubrication Engineers (STLE) technical meeting.

He suggests four imperatives for selecting lubricants: define the tribological system; know what you want to achieve; match the performance range; and work with the lubricant suppliers.

Here are some highlights from the session:

- The cost of synthetics is generally four times that of mineral oils so decide which type best satisfies the basic requirements of a machine lubricant – minimizing friction, improving heat dissipation, binding wear particles and protecting against corrosion. Aging characteristics must also be considered.
- The major inherent properties of synthetic lubes are low pour point, high flash point, thermal stability and oxidation stability. They also have a longer service life than comparable mineral oils. Watch for compatibility. Don't mix mineral and synthetic oils, and check out compatibility with thickeners.
- Points to consider when selecting

a lubricant are the range of operating temperatures, machine speeds, extreme pressure applications, fretting, and maintenance and relubrication intervals. Also consider specific load requirements, the type of motion (sliding or rolling) and the environmental conditions in which the lubricant must operate – moisture, vacuum, dust, vapours and chemicals.

- Special requirements exist for sintered bearings, selected seal materials and special applications, such as biodegradability in the food and beverage industries, pharmaceutical industry and kosher production lines.

- Equipment design types to evaluate include geometry and material.

So which is better, mineral or synthetic? In general, synthetic lubricants perform beyond the limits of mineral oils, operate with a higher efficiency, allow for specific formulations, and offer a greater range of selection.

» Lubricants



Purifies
hydraulic oils.

VAC CONTINUOUSLY CLEANS OIL

The STAUFF Mini Water Vac purifies hydraulic system oil, eliminating water, gas and particulate matter without removing or altering oil additives.

The water removal process is based on pure vacuum evaporation inside a vacuum chamber at a maximum temperature of 65 degrees C. Solid particle removal is achieved through a field-proven STAUFF Systems Micro Filter.

Oil temperature is set using the integrated heater thermostat, while the dehydration and filtering process is fully automatic and is controlled via the PLC.

The vacuum also reduces the environmental footprint by limiting oil consumption and disposal.

Stauff is a manufacturer of industrial hydraulic accessories based in Toronto.

www.ca.stauff.com

SYNTHETIC IS A UNIVERSAL LUBE

Ultrachem's Chemlube Plus high-performance synthetic lubricants are designed for universal use in a variety of rotary screw and rotary vane compressors. They're compatible with most OEM rotary screw compressor oils for topping off or replacing existing fluids.

They're made with a stable polyol ester (POE) blend with high-end properties but are economical when combined with less expensive synthetics.

Formulated to form less varnish under high temperature applications, they're also more resistant to acidic intake air than polyalkylene glycol (PAG) coolants. Expect up to 11,000 hours of service life.

Performance characteristics include: thermal and oxidative stability; extended drain intervals for reduced oil disposal; wide operating temperature range; anti-wear protection; compatibility with most compressor oils; and a high flash point.

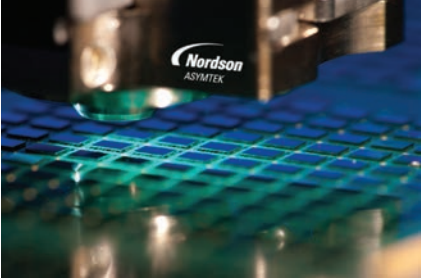
Typically, Chemlube Plus synthetics would be used to lubricate rotary screw compressors, rotary vane compressors, centrifugal compressors and vacuum pumps.

The line is available in ISO grades 32, 46 and 68.

Ultrachem, based in New Castle, Del., is a manufacturer of specialty synthetic lubricants.

ultracheminc.com

» Plantware



Maintains continuous speed.

SOFTWARE OPTIMIZES DISPENSE HEAD MOTION

Nordson ASYMTEK has developed Continuous Path Motion Control software for jetting underfill for flip chips that optimizes dispense head motion as it increases units per hour (UPH).

Instead of stopping to move between die, backtracking, ramping to speed, dispensing and decelerating, the dispense head maintains a continuous speed and direction throughout the process.

When cycle time test data of 20 strips with 70 die on each was evaluated using the software, there was about a 27% improvement over conventional underfill methods that use backtracking. This was due to a 40% dispensing cycle time-savings at a 15 mg/sec. flow rate and 95 mm/sec. speed. (This doesn't include loading and unloading.)

The software saves 23% dispensing cycle time at a 9 mg/sec. flow rate depending on actual die layout, dispensing conditions, flow rate and other factors.

Nordson ASYMTEK is a Nordson company, a supplier of dispensing, coating and jetting technologies based in Westlake, Ohio. www.NordsonASYMTEK.com

PICTURE PERFECT MACHINE HEALTH

Get a complete picture of machinery health with V 5.6 of Emerson Process Management's asset management software. AMS Machinery Manager supports the new CSI 2140 Machinery Health Analyzer, a portable tool for analyzing vibration that detects potential problems before they lead to unplanned downtime, and it performs more advanced data analysis.



Four-channel data collection.

The four-channel data collection and diagnostic test results integrate seamlessly into an existing AMS Machinery Manager database, with data from earlier versions of the series.

Data also integrates from the new Spectro Q1100 FluidScan route-based oil analyzer device, which establishes a more complete picture of machinery health by importing data to the same database as your vibration data.

Emerson Process Management based in Knoxville, Tenn. is a supplier of automation technology. www.assetweb.com

POWER DISTRIBUTION

KEEP ELECTRICAL ENGINEERS SAFE

Safety is a major priority for the electrical engineer when looking at the design or maintenance of power distribution panels and applications. Exposed busbars are a hazard to personnel and require insulation or protection from inadvertent or accidental contact. Rittal's busbar cover sections are critical to the protection of the people working in and around control panels.

The covers, in four sizes ranging from 12 x 5 to 60 x 10 mm, are made from thermally modified hard PVC with protection corresponding to UL 94-V0.



Full contact hazard protection.

The shaped profiles of the PLS system make the best use of space on the busbar system and have a smaller footprint than previous models. The PLS covers insert into a base tray and cover all three phases of the system.

Rittal is a manufacturer of power distribution products with Canadian operations in Mississauga, Ont. www.rittal.ca

POWER SUPPLY



No disposable batteries.

RELIABLE LONG-TERM BACKUP POWER

You don't need to replace dead batteries with Fanuc CNC's rechargeable battery kit, which provides reliable long-term backup power for CNC machines.

The charging circuit monitors battery voltage, charging it when voltage is low, giving the battery an average lifespan of more than 10 years.

Fanuc CNC is a subsidiary of Fanuc FA America, a manufacturer of factory automation equipment, based in Hoffman Estates, Ill. www.fanucfa.com

COILS

NO COIL CREASING

Kastalon's polyurethane mandrel sleeves, filler rings and filler plates handle coils with larger IDs and address damage from creasing, scratching and marring at mills, service centres, toll processors and fabricators.

Damage is costly, especially when metal is prepainted or must maintain optimum cosmetic surface integrity.

Kastalon's sleeves, filler rings or plates



Eliminate damage.

ensure coils are protected from metal to metal contact. The sleeves are built with engineered surface hardnesses and grooved or smooth finishes, depending on applications. Full sleeves are usually recommended for the recoilers, while filler rings and plates are more often utilized for uncoilers.

Polyurethane withstands stress caused by the weight of the coil, then reforms when the mandrel is collapsed back to the rest position.

Kastalon says its sleeves last up to 10 times longer than rubber, fibre or other commodity type polyurethane products.

The sleeves are non-marring, cut-resistant, abrasion-resistant and offered for friction fit, requiring a separate "keeper", or bolt-on installation. They come in a variety of grooved or soft surface finished to meet specific tension and pressure requirements of a processor's uncoil/recoil apparatus. Special dual-durometer sleeves are also available for mills and processors where "head-in" damage is often encountered.

Kastalon Inc. is a supplier of engineered polyurethane products based in Alsip, Ill. www.kastalon.com

AMPLIFIERS

AMPLIFY WAVEFORMS WITHOUT DISTORTION

Saelig Co.'s A10150 wideband signal amplifier high frequency module has a bandwidth of more than 150 MHz and output up to 20 V p-p into 50 ohms. Transition



No compromising signal integrity.

times are less than 1.8 ns to amplify high frequencies with low waveform distortion.

This "snap-on" accessory for the Tabor WaveXciter WS8351/2 with a maximum amplitude of 4 V p-p boosts the WS RF signal generators' abilities in situations that require up to 32 V p-p output into high impedance loads, without compromising signal integrity.

With an output current internally limited to 250 mA, the unit is fully protected against ground shorting. Target applications include ethernet testing, plus the characterization and verification of ASICs, FPGAs, and DACs.

At standard configuration, maximum output voltage is 16 Vp-p into 50 ohms with a gain of x5. An alternate version with x10 fixed gain and maximum voltage of 20 V p-p into 50 ohms is also available.

The unit comes with a power supply that accepts voltages from 100 to 240 VAC.

Saelig Co. is a distributor of industrial electronics based in Fairport, NY. www.saelig.com

PUMPS



Flow rates up to 50 gpm.

PUMPS HANDLE A VARIETY OF FLUIDS

Mono's general utility pumps cover a range of applications including water sampling, chemicals, oily water, slurries, drainage and drum transfers for wastewater treatment and chemical processing.

Mono, a pump manufacturer based in Springfield, Ohio, says the compact pumps are accurate, repeatable and minimize maintenance, and the associated downtime and costs. Motorized and non-motorized versions have a non-pulsating low shear flow.

Housings are available in cast iron, stainless steel or engineered co-polymer to handle water-like, abrasive and corrosive liquids at 50 gpm and 600 psi.

Packing or mechanical seals are available to control leakage. www.mono-pumps.com



DIN-rail, panel mountable.

CONNECTORS

SPEEDY TERMINATION WIRING

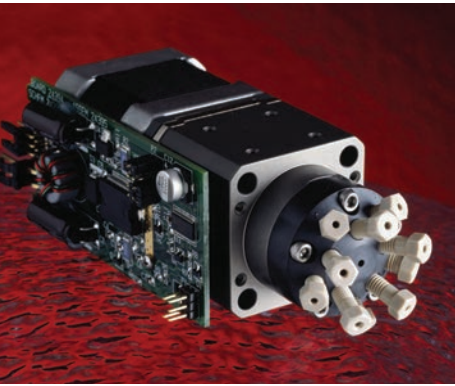
AutomationDirect's GH15 electric contactors now cover frame sizes between 79 to 145 mm and models up to 315 A that have a self-lifting pressure plate to speed up termination wiring in motors up to 250 hp.

Actuator coils available in 110/220 V and 220/240 V, 60 Hz models accommodate most applications, while the contactors are 35 mm DIN-rail and panel mountable to ease installation.

Terminals are IP20 rated to protect fingers against electrical shock.

Automation Direct is a supplier of industrial automation products based in Cumming, Ga. www.automationdirect.com

INJECTORS



Handle pressures to 5,000 psi.

INJECTORS BUILD DIRECTLY INTO OEM SYSTEMS

Vici Valco’s Cheminert C52 injectors are manufactured with integrated motor/valve assemblies and build directly into OEM systems. Control is relegated to a single contact closure, while the injector’s position is determined by whether the closure is held high or low.

They come in 4-, 6-, 8- and 10-port configurations, bore size of .25, .40 and .75 mm in stainless or PAEK, and they handle maximum operating pressures of 5,000 psi, and temperatures up to 50 degrees C.

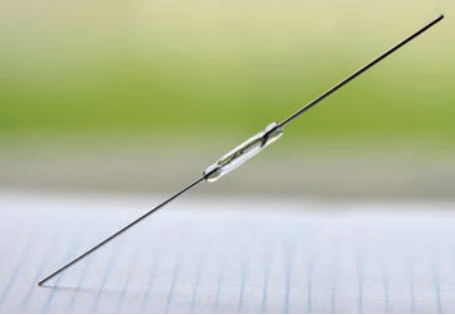
In default mode, a contact closure moves the injector from load to inject, where it remains until the contact is broken and it reverts to the load position. A jumper change shifts the mode to dual contact closure.

Vici Valco is a manufacturer of analytical products based in Houston.
www.vici.com

SWITCHES

A RANGE OF DETECTION APPLICATIONS

GR400 miniature reed switches from Standex-Meder handle applications



Power from 0 to 10 W.

including counting, end limit detection, low power devices, movement or position detection, and presence proximity, rotation or speed sensing.

The switches have a power rating from 0 to 10 W, a switching voltage of 0 to 180 V VDC/VAC, maximum switching current of 0.5 A, and a maximum carry current of 0.8 A. Their operating sensitivity is 7-30 A turns with temperature range of -40 to 125 degrees C. Breakdown voltage across the contacts is 230 VDC with a maximum contact resistance of 150 mohms.

The switches are RoHS and REACH compliant, and UL recognized.

Standex-Meder Electronics is a manufacturer of magnetics and reed switches based in Cincinnati.

www.standexmeder.com



There’s an audible “click.”

COUPLINGS MAKE SECURE CONNECTIONS

Parker Hannifin’s PPA, PPM and PPL push-button thermoplastic couplings are streamlined, compact and lightweight to speed throughput and productivity in chemical processing.

The quick operation of the couplings’ push-button latch, with audible and tactile feedback, lets you know the connection is secure.

Parker Hannifin, a manufacturer of motion and control products based in Cleveland, says the coupling combine the advantages of thermoplastic material with the traditional flow functions found in metal couplings.

PPA 1/4-in. flow couplings are fitted with a plastic latch for push-button release, and are connectable with other similar, plastic latch, push-button couplings. PPM 1/8-in. flow couplings have a metal latch for push-button release,

SENSORS

MEASURE CONTINUOUS FLUID LEVELS

The ULSL ultrasonic level sensor from Dwyer Instruments Inc. delivers non-contact, continuous fluids level measurement for applications up to 18 ft. Ultrasonic technology paired with automatic temperature compensation provides accurate and reliable measurements in almost all conditions.

The unit, housed in a NEMA 6P, IP68 submersible enclosure, has a blind zone of no more than 8 in. and a beam width of no more than 3 in., making it useful for small tank and container applications. Failsafe logic is easily configured to custom applications via free software, eliminating the need for target calibration and programming of output signals. The software also allows the adjustment of four relays to perfect control applications.

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



Useful for small applications.

and connect to other similar, metal latch, push-button couplings. All PPA, PPM and PPL couplings are made of DuPont Delrin acetal and are available valved or unvalved. The standard seal material is Nitrile. Springs are made of stainless steel.

www.parker.com

CUTTING TOOLS

RFID ENHANCES LASER CUTTING ACCURACY

TRUMPF has enhanced its LensLine sensor system for 2D laser cutting machines by combining it with an RFID (radio frequency identification) lens for greater accuracy, process reliability and user friendliness.

The LensLine condition monitoring function improves the reliability of cutting processes, reduces lens cleaning frequency and cuts cleaning times by up to 40%.



Cuts lens cleaning by 40%.

Dirt particles accumulate on the focusing lens in the laser cutting head when sheet metal is cut with high-power lasers, requiring regular checks, cleaning or replacement. Transparent deposits are not easy to detect by visual inspections.

An RFID chip attached to the lens records condition monitoring data and when the lens has been cleaned. Condition monitoring is also carried out automatically at predefined intervals to indicate when the lens needs to be cleaned.

A schematic display provides a complete overview of the cycle so the operator must only intervene when absolutely necessary. RFID technology also increases the reliability of the cutting process by ensuring only lenses with the correct focal length are installed in the machine.

TRUMPF is a German manufacturer of industrial production technologies with North American operations based in Farmington, Conn.

www.us.trumpf.com

» Events

Sites & Spills Conference HazMat Management/BIG Feb. 19-20, Toronto

Produced by **HazMat Management** magazine and Business Information Group (BIG), publisher of **PLANT**. Event focuses on critical information and awareness of issues and technologies for hazardous materials management and site remediation. Visit www.sitesandspills.com.

2014 Manitoba Kaizen Conference CME Feb. 20, Winnipeg

Modelled on the Toyota Kaizen Conference, this seventh annual conference gives you an opportunity to present your Kaizen success and learn from others. Presenting teams will be evaluated by a judging panel of Lean Master Black Belts. Keynote address by Tony Kerwin, COO, Acrylon Plastics. You can also attend as an observer. Visit www.cme-mec.ca, Events.

IFPE Association of Equipment Manufacturers March 4-8, Las Vegas

The International Expo for Power Transmission (IFPE) is an international show and conference for the integration of fluid power with other technologies for power transmission and motion control applications. Visit www.ifpe.com.

FABTECH Canada SME, FMA, PMA, CCAI March 18-20, Toronto

Presented by SME, FMA (The Fabricators & Manufacturers Association), AWS (The American Welding Society), PMA (Precision Metal Forming Association) and CCAI (Chemical Coaters Association). This metal forming, fabricating, welding, and finishing event will feature new products, tools and cutting edge technologies, top speakers, multiple networking hubs and interactive educational sessions. Visit www.fabtech-canada.com.

Automatica 2014 Messe München International May 20-23, Munich, Germany

How robots and machine tools make metalworking more efficient. Current trends in assembly and handling technology, robotics and industrial machine vision will be addressed. Visit www.automatica-munich.com/en/Home.

» Tech Tips Lubricant planning Three things you should know

Tribological maintenance can be preventive (contamination control, lubricants storage, PM intervals) or predictive (monitoring, test methods and nondestructive testing techniques). Navdeep Swach has worked in the automotive, metals and nuclear industries before joining ArcelorMittal Dofasco as a tribology coordinator, where his responsibilities include providing technical expertise in tribological areas throughout the steel facility related to gearing, bearings and lubrication practices.

Here are three of his lube tips for maintenance pros:

- Viscosity is the single-most important factor in lubricant selection and lubrication plan development.
- Wear modes are determined by conducting a failure mode and effect analysis (FEMA). It’s important to differentiate between incipient, misuse and catastrophic failures. Modes of wear include adhesive, abrasive, surface fatigue, delamination, corrosion or fretting.
- Failure phases occur in three specific time windows: during wear-in (at start-up); random (usually at mid-life); and wear-out (caused by fatigue or planned obsolescence).



Thank resources for rising wealth

BY GWYN MORGAN

A recent Credit Suisse report revealed a startling reversal of the historic relationship between American and Canadian personal wealth. Since the 2008 economic crisis, American median personal wealth has fallen to US\$44,900, while Canadian median personal wealth has risen to \$90,300. Part of that shift is explained by Canada's relatively untroubled housing market, but the fundamental factor is our more robust post-2008 economic performance.

“The largest growth opportunity lies in the oil and gas sector, but progress has stalled over the crucial issue of market access...”

So how did Canada achieve this?

The answer lies in our rich endowment of natural resources. While both countries lost manufacturing jobs to China, new Canadian jobs were being created to supply China's rapidly growing appetite for energy, metals and lumber.

A report prepared by Natural Resources Canada for last fall's Mines Ministers' conference in Charlottetown summarizes the economic importance of resources.

In 2011, direct and indirect employment was more than 1.6 million and \$233 billion in export revenues were generated. Canada is the world's sixth largest oil producer, third largest natural gas producer and third largest producer of hydroelectricity. In mining, our country is the top potash producer, second largest uranium producer, third largest aluminum producer and ranks as one of the world's top five producers of other

key minerals and metals.

Those resources underpin a staggering \$650 billion companies plan to invest in the hundreds of Canadian resource development projects over the next decade. A study conducted by economic research firm Informetrica estimates that the cumulative 10 year impact of these projects would add a staggering \$1.4 trillion to Canada's GDP and create an average of 600,000 new jobs per year.

The projects are aimed at fast growing Asian economies, and the report warns, “Canada has a significant opportunity to capture these new markets . . . but we face stiff opposition.”

So, one year after that call to action, what progress has been made?

The largest growth opportunity lies in the oil and gas sector, but progress has stalled over the crucial issue of market access. Most of the focus over the past year has been on the continuing uncertainty surrounding American approval of the Keystone XL oil pipeline. But the real lesson of Keystone applies to both oil and natural gas: the urgent need to diversify away from dependency upon an increasingly energy independent customer.

Gateway controversy

The most willing customers for Canada's oil and gas are energy hungry Asian economies. Projects to pipe gas to liquefied natural gas (LNG) terminals on BC's northern coast seem destined for success, but the Northern Gateway oil pipeline project to that same coast is mired in controversy. Even if it's approved the project faces strident opposition from First Nations.

Native activism also plagues other resource sectors. A recent Fraser Institute survey of mining executives identified uncertainty due to land claims as the “primary deterrent” to investing in BC. And First Nations opposition is also problematic for mining projects in Ontario, Quebec and almost every other province.

The bottom line is that companies cannot justify risking hundreds of millions of dollars identifying a resource, designing facilities and promulgating regulatory processes if a project approved under the laws of our country can be stymied because one or more of our 600 First Nations hold a de facto veto. Finding ways to remove this huge deterrent to investment should be the top priority for governments as they “collaborate and put in place the most effective measures to enable investment and responsible resource development.”

Failure to do so will surely derail the resource investments that we are generating the export revenues and jobs underpinning those superior personal wealth statistics.

Gwyn Morgan is a retired Canadian business leader who has been a director of five global corporations. This column is distributed by Troy Media in Calgary. Visit www.troymedia.com.

Comments? E-mail jterrett@plant.ca.

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A high-angle photograph of an industrial facility. In the foreground, two men are standing on a concrete floor, looking down at a set of plans held by the man on the right. The man on the left is wearing a black long-sleeved shirt, blue jeans, and a black hard hat with several white labels. The man on the right is wearing a blue button-down shirt under a black blazer and blue jeans. In the background, there is a complex network of industrial pipes, valves, and flanges, some of which are labeled with handwritten text like "11-2114 AHN". The scene is lit with industrial overhead lights.

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