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ADVANCING CANADIAN MANUFACTURING

Volume 72, No. 07 October 2013

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Mike Bannon,
VP of Production, Tempo Plastics

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Protecting our best player

There is a perception among some analysts and so-called experts that manufacturing in Canada is on the downside; that it's being eclipsed by information-based services, Tim Hortons franchises and other up-and-comers that are becoming the chief economic drivers, much like agriculture was displaced by industrialization. Yes, manufacturing has lost a lot of jobs, starting before the economic downturn of 2008-09, and many of the jobs created since then are in other sectors (see Tims for more details). And companies that are succeeding face many challenges as they compete with aggressive global interlopers in their traditional markets.

Even so, the numbers suggest manufacturing does matter to the Canadian economy, which is the message Sandra Papatello conveyed during her keynote at the Canadian Manufacturing and Technology Show in Toronto recently.

She's a former Ontario Liberal cabinet minister who for several years was responsible for industry, trade, investment and business development. She grew up in Windsor, Ont., has represented the area as an MPP and was one of the province's most engaged cabinet ministers in matters involving manufacturing. Today she's the director of business development and global markets for PwC, and the CEO of the WindsorEssex Economic Development Corporation. Although her comments were a tad Ontario-centric, what she had to say should resonate with manufacturers across the country.

First, a bit of perspective. Manufacturing's share of GDP is 12%, just behind construction at 14% but ahead of mining, oil and gas extraction at 10%.

There are always "shiny new objects" as she put it, which get much of the attention from the public and governments. Dollars and cents, Alberta tallies a massive \$71 billion from energy, it's shiny object. But manufacturing – just in Ontario – accounts for almost \$79 billion. In BC, the big dollars are in real estate and construction, worth almost \$51 billion.

Guess where most of Canada's research and development comes from? Manufacturing (at 75%) and it contributes 30% of tax revenue to all levels of government.

So there's a reason countries such as China and regions like South Carolina and Mexico don't see manufacturing as passé and are keen to lure away investment and your customers. That's why we have to protect our best player, making manufacturing, according to her analogy, Wayne Gretsky – something industry and governments need to do together.

The federal and Ontario governments do recognize the important role Wayne plays in the economy and both have taken steps with various programs and initiatives to cut business taxes, help with capital costs, and boost investments in plants and jobs.

But companies also have to be more engaged with productivity improvement, which lags the US. Ontario averaged 0.4% growth from 2001 to 2011. That compares to 2.3% in the US rate. (She suggests putting someone on this task in each plant.)

Companies are also slow to invest in new machinery and equipment, and they are way behind US investments in information and communications technology (a shocking 40% difference), both proven productivity enhancers.

Is manufacturing in decline? Depends on how you jiggle the numbers, but a 2009 Statistics Canada study says "no."

Over a 45-year period the sector has dealt with oil shocks, recessions, trade liberalization, and a resource boom that has driven up the prices of inputs and outputs, plus the value of the loonie, yet it's still producing at relatively stable volumes.

Looking ahead, the experts that matter say to get ahead manufacturers must focus on making better products than the competition and venture into global markets. Doing so should ensure manufacturing will matter for another 50 years.

Joe Terrett, Editor

Comments? E-mail JTerrett@plant.ca.

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» Bulletins

The 2,700 Unifor members at the **General Motors** CAMI assembly plant in Ingersoll, Ont., ratified a contract agreement with the automaker that includes a \$3,000 signing bonus and annual lump sum payments of \$2,000 in each of 2014, 2015 and 2016. It also provides full-time jobs to about 300 temporary workers and a company demand that new employees join a defined contribution pension plan.

CRS Electronics Inc., a manufacturer of LED lighting products based in Welland, Ont., has achieved ENERGY STAR certification for most of its new family of LED lamps sold through commercial distribution channels under the QuantumLED brand. Energy Star is the US Environmental Protection Agency voluntary program that identifies energy efficient products

Bri-Chem Corp., a North American wholesale distributor and manufacturer of oil and gas drilling fluids and steel pipe based in Edmonton, has acquired the cement blending business assets of Sun Coast Materials Co. and some transportation assets from its affiliate Acme Trucking Inc. The blending and transportation company is based in Bakersfield, Calif. The \$6.5 million deal extends Bri-Chem's product offerings in the US market.

Mantra Energy Alternatives Ltd. will be working with an unnamed collaborator in the energy field to further develop Mantra's current electro-reduction of carbon dioxide (ERC) technology and new processes that converts carbon dioxide into other useful chemical products. Primary research activities will take place at Mantra's Burnaby, BC laboratory and the two companies will work closely on the design, construction and operation of an ERC pilot plant at the Lafarge cement operation in Richmond, BC.

Blue Giant Equipment Corp. has entered into a strategic partnership with MacroAir, a manufacturer of industrial fans based in San Bernardino, Calif. The Brampton, Ont. manufacturer of material handling and loading dock equipment will sell HVLS fans under the brand name MacroAir by Blue Giant. The fans are engineered to run in reverse during the winter months, forcing trapped air down from the ceiling and distributing it evenly. Blue Giant pegs typical heat savings at 20% or more.

Kinetics gets \$150,500 for expansion

Federal funding will help with capital investment, adding jobs

CAMBRIDGE, Ont.: Kinetics Noise Control Inc. has tapped into the Southwestern Ontario Economic Development Fund for a \$150,500 funding grant to support expansion.

The Cambridge, Ont. plant, the Canadian operations of the US-based manufacturer of noise and vibration control products, makes all the sheet metal products for Kinetics' worldwide customers.

The funding has helped with the purchase of capital equipment and to ramp up employment. Six new positions for welding, fitting, sheet metal working, production assistant, sales and marketing and administration will be added to the 27-person workforce.

The company has also installed a new water recirculation system for cooling off spot-welding



The new plasma feeder coil line replaces equipment that used standard-sized sheet metals, reducing the amount of wasted material.

PHOTO: KINETICS

machines, and reduced energy consumption with more efficient lighting.

The fund gives money to businesses, municipalities and not-for-profit organizations for economic development in the region.

Tembec secures \$27.8M for co-generation project

MONTREAL: Tembec has secured \$27.8 million in additional financing to fund a portion of its Temiscaming, Que. cellulose cogeneration project, bringing the total to \$132.8 million.

The project involves replacing three low-pressure boilers with a single new high-pressure boiler designed to burn waste sulphite liquor generated by the specialty cellulose manufacturing process and the installation of a 50-megawatt electrical turbine.

The boiler portion of the project is scheduled to be complete by April 2014. The turbine should be operational by September 2014.

The company expects the

project to improve annual adjusted EBITDA by \$48 million. The improvement includes approximately \$28 million of incremental electricity revenues, \$7 million of operating and maintenance cost reduction and \$13 million of productivity and margin enhancements associated with an annual production

increase of 15,000 tonnes of specialty cellulose pulp.

Tembec is a manufacturer of forest products including lumber, pulp, paper and specialty cellulose with principal operations in Canada and France.

The company employs 3,400 people and has annual sales of \$2 billion.

Quebec lithium plant back in action

TORONTO: Canada Lithium Corp. continues to commission its process plant for lithium carbonate from its mine, both near Val d'Or, Que., following a maintenance/upgrade program.

Upgrades to the hydrometallurgical plant included the installation of acid cleaning and bicarbonate recovery units, and increased pumping capacity.

Lithium carbonate is an ingredient in batteries used in consumer electronics and electric/hybrid vehicles.

The clean-tech mine developer says it continues to be encouraged by the strength of the supply/demand factors in the market.

The company expects battery-grade production will soon ramp up to full production of an annualized 20,000 tonnes of lithium carbonate.

It has a five-year off-take agreement for a minimum of 12,000 tonnes per year with Tewoo-ERDC, one of China's largest commodities traders. A second off-take for up to 5,000 tonnes per year was recently signed with Marubeni Corp., a major Japanese commodities trading company.

Siemens to supply Calgary with 60 LRTs

They'll replace some current U2 vehicles from the 1980s

OAKVILLE, Ont.: Siemens Canada has been awarded an order for 60 new S200 high-floor, light rail vehicles by the City of Calgary.

The new trains will replace a portion of the current fleet of Siemens U2 LRTs supplied to Calgary Transit in the 1980s.

The company said the LRTs have been designed to withstand Calgary's weather with increased thermal insulation in walls, triple-pane side windows with low solar transmittance, and electric floor heating combined with



Siemens' S200 LRTs destined for Calgary Transit.

PHOTO: SIEMENS

forced air heating and cooling.

The vehicles are also fitted with advanced corrosion protection coatings.

Maintenance is helped along with diagnostic data transmit-

Conifex restarts Mackenzie power project

VANCOUVER: Conifex Timber Inc.'s wholly owned subsidiary Conifex Power Ltd. partnership has received oral confirmation of a commitment for \$100 million in project financing for its planned 36-megawatt bioenergy power project in Mackenzie, BC.

Conifex and its subsidiaries' primary businesses include timber harvesting, reforestation, forest management, and the manufacture, sale and distribution of dimension lumber.

With completion of its bioenergy plant, Conifex's business sectors will be expanded to include bioenergy.

Second BioteQ pilot plant deal

VANCOUVER: BioteQ Environmental Technologies Inc. has secured a second contract for its mobile Sulf-IX pilot plant.

The Vancouver-based manufacturer of industrial wastewater technology said the contract is with the same (un-named) customer as the first contract.

Testing will be carried out at the same site in the US and will advance findings from the first test to remove sulphate from wastewater generated from the treatment of flue gas. The project should be completed by the fourth quarter.

The pilot plant, based on BioteQ's proprietary technology, is owned by Newalta Corp., which recycles industrial waste.

The Sulf-I process produces treated effluent with low residual sulphate concentrations for re-use or discharge. The only by-product is solid gypsum.

Data collected from pilot testing will generate design criteria for a full-scale facility.

More skilled labour to meet GHG targets

CMC report estimates as many as 27,000 graduates needed by 2030

CALGARY: If Canada is to achieve its greenhouse gas mitigation targets by 2050, many more trained professionals will be needed, says a report by Carbon Management Canada (CMC), a national network working with industry to develop commercially feasible ways to reduce greenhouse gas emissions.

The labour demand forecast, commissioned by CMC and conducted by Navius Research Inc., suggests as many as 27,000 additional university, college or technical institute graduates could be needed by 2030 to achieve a long term emissions reduction target of 60% to 70% from 2006 levels by 2050.

If Canada aims to achieve



Mining in Alberta's oil sands.

PHOTO: THINKSTOCK

just half of this level of abatement, additional skilled labour demand could be as high as 12,000 full-time positions by 2030.

“We’ll need engineers, geologists, geoscientists, technicians and technologists,” says Richard Adamson, CMC managing director. “That would be a big

challenge under the best of circumstances, but the bigger challenge is that many of the required skill sets are the same skill sets the energy industry is already short of under its present business as usual projections.”

The report focuses on labour requirements associated with investments in carbon capture and storage, which has been identified as a critical part of Canada’s GHG abatement strategy, and to a lesser extent on cogeneration in the oil sands.

A big concern is that any skills shortage could slow growth in the electricity production and fossil energy industries.

“Our research shows that emissions reduction efforts will drive significant investment by industry, and the availability of skilled labour could become a limiting factor,” said Jacqueline Sharp, managing partner of Navius Research.

\$2.8M Canadore innovation centre opens

NORTH BAY, Ont.: Canadore College has cut the ribbon on a new advanced manufacturing centre it says will help local businesses get new products to market.

The \$2.8-million Innovation Centre for Advanced Manufacturing (ICAMP) at the post-secondary institute located in North Bay, Ont., will provide conceptualization, design, prototyping and testing equipment for local small and medium-sized manufacturers.

ICAMP will be an incubator for industry to assist in technology transfer, act as a retention tool and stimulate business growth.

The Industry Canada FedNor program contributed \$1 million to the centre, and the Northern Ontario Heritage Fund Corp. chipped in another \$1 million.

The remaining \$800,000 was put up by the college and private industry, according to Canadore spokesperson Carrie Richmond.

CanadianManufacturing.com

Cascades expands tissue production in Oregon

KINGSEY FALLS, Que.: Cascades Inc. is installing a second paper machine at its plant in St. Helens, Ore.

The Kingsey Falls, Que. manufacturer of green packaging and tissue paper products is acquiring a specialty paper machine previously operated by Boise, which is located adjacent to Cascades existing tissue machine.

It will be reconfigured to produce 55,000 tons of tissue paper annually bringing the annual capacity of the St. Helens’ site to 120,000 tons.

Total cost of the project is \$35 million and start-up is planned for the fourth quarter of 2014.

“We have targeted the West Coast as an area of growth for us. This machine will manufacture hand towels and napkins for the away-from-home market. The retrofitting of an existing machine will allow us to bring the additional capacity to this market at a reduced capital cost and on a faster timeline than if we were to build a new machine,” said Suzanne

Blanchet, president and CEO of Cascades Tissue Group.

The company said having the existing labour force operating and maintaining the new machinery was a key reason for the decision to locate in St. Helens.

The new line is expected to add 29 new jobs over the coming year and help preserve 59 existing positions at the mill.



Light oil infrastructure worth up to \$145 million.

PHOTO: ATHABASCA

Gilden invests \$200M in new US plants

MONTREAL: Gildan Activewear Inc. is evaluating potential sites in the Southern US for the construction of two additional yarn-spinning plants to support its projected sales growth.

The Montreal manufacturer of t-shirts, fleece, sport shirts, socks and underwear manufactures its products at large-scale plants primarily located in Central America and the Caribbean Basin.

The company also has a ring-spun yarn manufacturing facility in Salisbury, NC and the refurbishment and modernization of open-end facilities in Clarkton, NC and Cedartown, Ga. on the go.

Total investment in US yarn-spinning facilities is expected to create more than 700 jobs.

Athabasca options Kaybob

More than 200,000 acres of Duvernay leases

CALGARY: Athabasca Oil Corp. has entered into an option agreement with a third party that will allow it to sell a 25% to 50% interest in its Kaybob, Alta. area light oil infrastructure for up to \$145 million.

The Calgary-based energy company said if it exercises its rights under the option agreement, the un-named buyer can acquire an equivalent interest in “certain infrastructure assets” in the Simenette area in northwestern Alberta for an additional \$15 million.

“This option, if exercised, provides us the flexibility to redeploy capital to advance our projects in 2014 without sacrificing production volumes or strategic optionality for the remainder of the year,” said Sveinung Svarte, AOC’s president and CEO.

Athabasca is one of the largest leaseholders in the area with more than 350,000 acres of prospective Duvernay leases, of which 200,000 acres have been high-graded.

Careers

Axine Water Technologies, a Vancouver-based developer of treatments for industrial wastewater, has appointed technology entrepreneur and executive **Greg Peet** to its board. He currently serves on a number of company boards, is co-chair of the BC Premier’s Technology Council and serves on the board of governors of the University of British Columbia.



Greg Peet

Wes Pringle is the new president of Fluke Corp., a manufacturer of electronic test tools with US headquarters in Everett, Wash. He succeeds Barbara Hult, president since 2004. Pringle, previously president of Fluke Industrial, is now responsible for all of Fluke’s global businesses, including Fluke Calibration, Fluke Biomedical and Fluke Automation. Fluke Electronics LP is based in Mississauga, Ont.



Wes Pringle

Heroux-Devtek Inc., a Longueuil, Que. manufacturer of landing gear and components for the aerospace industry, has appointed **Stephane Arsenault** CFO. He has been with the company since 1997, most recently as vice-president, control and information technology.

Dr. Esteban Chornet, Enerkem Inc.’s co-founder and chief technology officer, was presented with the 2013 Don Klass Award for Excellence in Thermochemical Conversion Science. The award recognizes his pioneering innovations in bioenergy. Enerkem is a waste-to-biofuels and renewable chemicals company based in Montreal with a plant in Edmonton.

Thomas Rippon joins Westport Innovations Inc., a developer and manufacturer of natural gas truck engines based in Vancouver, as vice-president, mining and rail. The long-time General Motors executive who has held positions in North America and Asia, was most recently vice-president engineering, vice-president, and PMO at CODA Automotive, a Los Angeles-based manufacturer of electric vehicles and lithium-iron phosphate battery systems. The company sought bankruptcy protection this year.

Subrata Das has joined Crestline Coach Ltd. as vice-president, operations and engineering. The Saskatoon-based manufacturer of ambulance and specialty vehicles, says Das brings global experience in operational leadership to his new role.

Steel plate dumping investigated

OTTAWA: The Canada Border Services Agency (CBSA) has initiated an investigation into alleged dumping of hot-rolled carbon steel plate and high-strength low-alloy steel plate from Brazil, Taipei, Denmark, Indonesia, Italy, Japan and the Republic of Korea.

The investigation follows a complaint filed by Essar Steel Algoma Inc., a steel producer in Sault Ste. Marie, Ont., that alleges dumping is harming Canadian production by causing suppressed/depressed prices, lost market share, lost sales, reduced profits, reduced use of production capacity and lost jobs.

Dumping occurs when goods are sold to importers in Canada at prices that are less than selling prices in the exporter's domestic market, or at unprofitable prices.

While the Canadian International Trade Tribunal (CITT) examines whether or not an injury has occurred, the CBSA will investigate whether the imports are being dumped, and will make a preliminary determination by Dec. 4.

Ballard signs \$11M China bus deal

Azure to buy licences and FCvelocity-HD7 power modules

SHANGHAI, China: Ballard Power Systems Inc. has signed multi-year definitive agreements to support Azure Hydrogen's zero emission fuel cell buses for the Chinese market.

Azure, a Beijing based international clean tech company, plans to partner with Chinese bus manufacturers in a phased development program using Ballard's fuel cell technology.

Ballard, based in Vancouver, will provide a licence, equipment and engineering services for the assembly of its FCvelocity-HD7 bus power modules by Azure in



Azure chairman Grand Mao (left) and John Sheridan, Ballard's president and CEO, sign an MOU in May to supply fuel cells for zero emission buses in China. PHOTO: BALLARD

China. Once this assembly capability is established, Azure will assemble modules with fuel cell stacks supplied exclusively by Ballard.

The value of the contract over the initial 12-months of the first phase will be \$11 million, but Ballard said if the bus program progresses as Azure plans, there will be more revenue generated by licences.

The FCvelocity-HD7 is the next-generation of Ballard's

fuel cell power module, designed specifically for integration into bus applications.

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Energy 2013

CME Ontario

Nov. 7, Mississauga, Ont.

Powering the Future of Manufacturing presented by Canadian Manufacturers & Exporters (CME) Ontario in partnership with Enersource, Toronto Hydro and Powerstream. Topics include growing your business through energy partnerships, and how to turn energy costs into opportunities, plus an update on Ontario's energy plans from the Ministry of Energy, and roundtables dealing with energy project financing, supply chain opportunities and best practices. Visit <http://on.cme-mec.ca>, Coming Events.

NBSF

Nov. 12-14, Calgary

JuneWarren-Nickle's Energy Group

The National Buyer Seller Forum (NBSF) brings together buyers and sellers along the oil sands supply chain, including international delegations, high-level producing companies, key suppliers and government representatives. Event partners include JuneWarren-Nickle's Energy Group, Glacier Media Group, Canadian Manufacturers & Exporters, and the Province of Alberta. Visit <http://www.nbsf.jwnevents.com>.

MainTrain Calgary 2013

PEMAC

Nov. 18-21, Calgary

The Plant Engineering and Maintenance Association of Canada (PEMAC) presents workshops, experience-based presentations and case studies focusing on maintenance, reliability and asset management. The conference theme is implementing change. Canadian astronaut Chris Hadfield will deliver a keynote address. Visit www.maintrain.ca.

The Truth About Compressed Air!

If you think compressed air is too expensive and noisy - read this. The facts will surprise you!

Compare these Blowoffs

There are a variety of ways to blow the water from the bottles shown in the photo below, but which method is best? To decide, we ran a comparison test on the same application using four different blowoff methods: drilled pipe, flat air nozzles, Super Air Knife (each using compressed air as a power source), and a blower supplied air knife (using an electric motor as a power source). Each system consisted of two twelve inch long air knives. The following comparison proves that the EXAIR Super Air Knife is the best choice for your blowoff, cooling or drying application.

The goal for each of the blowoff choices was to use the least amount of air possible to get the job done (lowest energy and noise level). The compressed air pressure required was 60 PSIG which provided adequate velocity to blow the water off. The blower used had a ten horsepower motor and was a centrifugal type blower at 18,000 RPM. The table at the bottom of the page summarizes the overall performance. Since your actual part may have an odd configuration, holes or sharp edges, we took sound level measurements in free air (no impinging surface).



Drilled Pipe

This common blowoff is very inexpensive and easy to make. For this test, we used (2) drilled pipes, each with (25) 1/16" diameter holes on 1/2" centers. As shown in the test results below, the drilled pipe performed poorly. The initial cost of the drilled pipe is overshadowed by its high energy use. The holes are easily blocked and the noise level is excessive - both of which violate OSHA requirements. Velocity across the entire length was very inconsistent with spikes of air and numerous dead spots.



Blower Air Knife

The blower proved to be an expensive, noisy option. As noted below, the purchase price is high. Operating cost was considerably lower than the drilled pipe and flat air nozzle, but was comparable to EXAIR's Super Air Knife. The large blower with its two 3" (8cm) diameter hoses requires significant mounting space compared to the others. Noise level was high at 90 dBA. There was no option for cycling it on and off to conserve energy like the other blowoffs. Costly bearing and filter maintenance along with downtime were also negative factors.



Flat Air Nozzles

As shown below, this inexpensive air nozzle was the worst performer. It is available in plastic, aluminum and stainless steel from several manufacturers. The flat air nozzle provides some entrainment, but suffers from many of the same problems as the drilled pipe. Operating cost and noise level are both high. Some manufacturers offer flat air nozzles where the holes can be blocked - an OSHA violation. Velocity was inconsistent with spikes of air.



EXAIR Super Air Knife

The Super Air Knife did an exceptional job of removing the moisture on one pass due to the uniformity of the laminar airflow. The sound level was extremely low. For this application, energy use was slightly higher than the blower but can be less than the blower if cycling on and off is possible. Safe operation is not an issue since the Super Air Knife can not be dead-ended. Maintenance costs are low since there are no moving parts to wear out.

Facts about Blowers

Energy conscious plants might think a blower to be a better choice due to its slightly lower electrical consumption compared to a compressor. In reality, a blower is an expensive capital expenditure that requires frequent downtime and costly maintenance of filters, belts and bearings. Here are some important facts:

Filters must be replaced every one to three months.

Belts must be replaced every three to six months.

Typical bearing replacement is at least once a year at a cost near \$1000.

- Blower bearings wear out quickly due to the high speeds (17-20,000 RPM) required to generate effective airflows.
- Poorly designed seals that allow dirt and moisture infiltration and environments above 125°F decrease the one year bearing life.
- Many bearings can not be replaced in the field, resulting in downtime to send the assembly back to the manufacturer.

Blowers take up a lot of space and often produce sound levels that exceed OSHA noise level exposure requirements. Air volume and velocity are often difficult to control since mechanical adjustments are required.

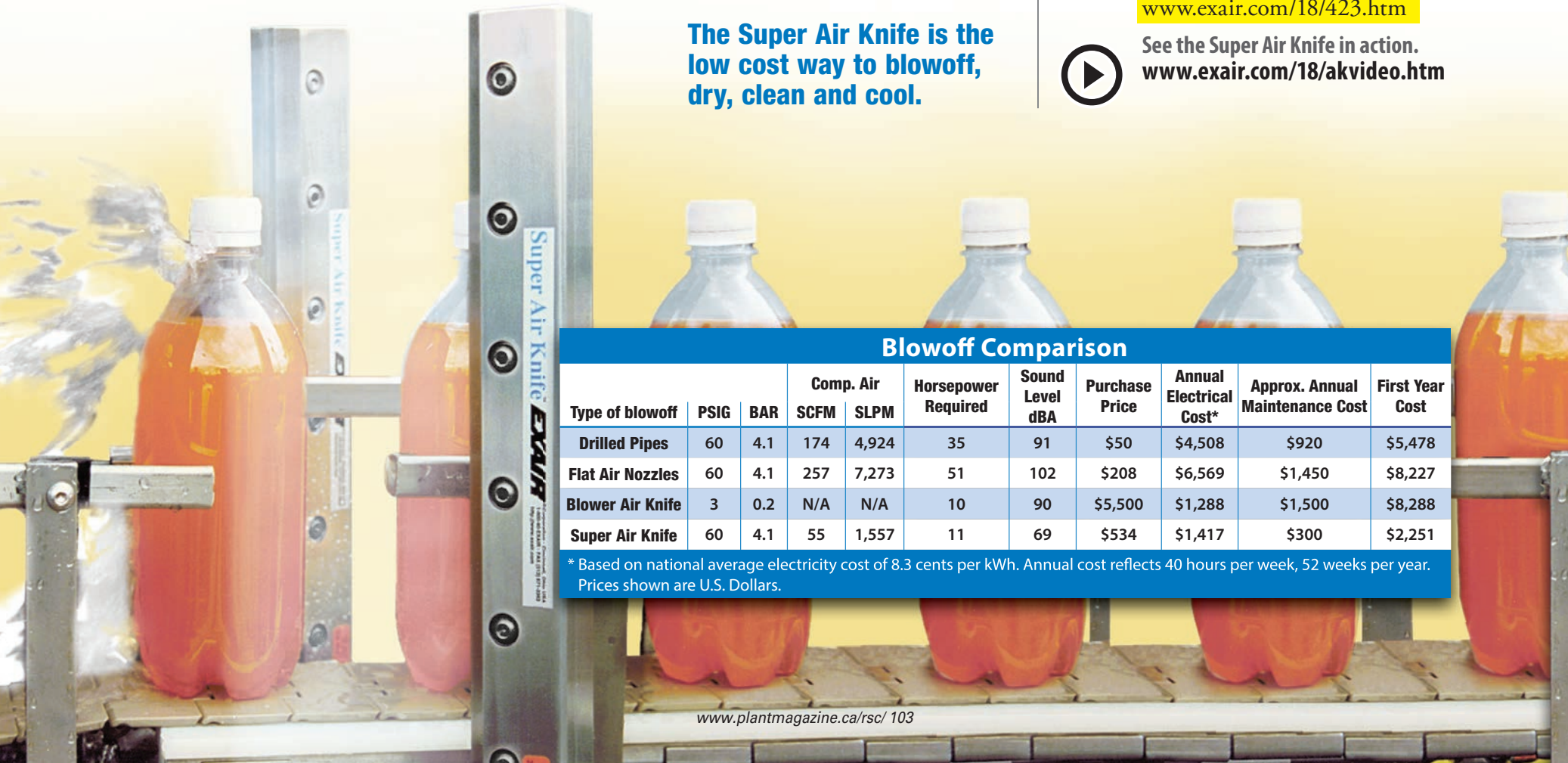
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Flat Air Nozzles	60	4.1	257	7,273	51	102	\$208	\$6,569	\$1,450	\$8,227
Blower Air Knife	3	0.2	N/A	N/A	10	90	\$5,500	\$1,288	\$1,500	\$8,288
Super Air Knife	60	4.1	55	1,557	11	69	\$534	\$1,417	\$300	\$2,251

* Based on national average electricity cost of 8.3 cents per kWh. Annual cost reflects 40 hours per week, 52 weeks per year. Prices shown are U.S. Dollars.



A fighting chance for low-wage workers

BY JERRY DIAS

Minimum wage jobs are not just for kids working after school for some spending money.

They're also a workforce entry point for immigrants, recent graduates and many others who can't find full-time work and need to hold down two or three jobs to survive.

Statistics Canada's August job numbers show 70% of the 44,000 new jobs created in Ontario were part-time and mostly filled by older workers. It's also

“Unlike the often failed trickle-down theory of wealth accumulation, when minimum wages are raised, there is a demonstrable trickle-up benefit...”

a safe bet most were paid the minimum wage.

Minimum wage ranges from \$9 an hour in Alberta to \$11 in Nunavut, but for most provinces it's set at \$10. Unifor's recent submission to Ontario's Minimum Wage Panel Review should be required reading for all of them. Consider the following:

- Ontario's minimum wage has been frozen for three-and-a-half years at \$10.25 per hour, while consumer prices have increased by more than 7%. The resulting decline in real incomes for low-wage workers is not just unfair, it has undermined household finances and consumer spending.
- Relative to average wages and hourly

productivity, the minimum wage is significantly lower today than it was in the 1970s.

• Even working full-time year-round, the existing minimum wage would leave a single worker (with no dependents) well below low-income cut-off (a measure of relative poverty) for a single resident.

• As it is, the minimum wage doesn't provide working people with a decent standard of living for themselves and their dependents.

A proposed \$14 per hour now being considered by the Ontario government won't lift the burden of poverty that weighs on low-end wage earners, but it will lighten the load somewhat.

Unifor supports the proposal as a first step of a broader strategy to ensure all workers enjoy decent living standards, but it should be combined with other measures such as employer-specific policies, training and placement initiatives, and other policy tools aimed at lifting their pay to what could genuinely be considered a “living wage.” Studies estimate that to be around \$18 per hour, a sufficient amount to allow a family of four in Ontario, with two wage earners, to pay for the basic necessities of family life.

Positive impact

By boosting purchasing power and consumer spending, and helping lower-income families reduce their debt loads, a higher minimum wage could have a net positive impact on jobs and on everyone's quality of life.

Unlike the often failed trickle-down theory of wealth accumulation, when the minimum wage is raised, there's a demonstrable trickle-up benefit for the entire working community. In addition to the personal and social benefits, stronger family incomes lead to increased demand for products and services, financially viable businesses and a more vibrant community.

Of course the opposite is true when young people can't afford to move out of their parents' basements; families rely on food banks to feed their children; or stressed-out, single parents juggle part-time jobs to stay out of poverty.

The Ontario government must do better for its lowest paid workers. Giving them a chance at a decent standard of living raises the bar for everyone.

Jerry Dias is the national president of Unifor, Canada's largest private sector union following the merger of the Canadian Auto Workers union and the Communications, Energy and Paperworkers Union. It represents more than 300,000 members working in at least 20 sectors of the economy, including resources, manufacturing, transportation and services.

Comments? E-mail jterrett@plant.ca.

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PLANT PULSE

ECONOMIC DEVELOPMENTS AND TRENDS

Small business optimism dips in September: CFIB

Manufacturers are down a bit, but still confident; resources surge

Small business optimism was down but still relatively strong in September, according to the Canadian Federation of Independent Business (CFIB).

Its Business Barometer index slipped 1.4 points from August's 65.9, but September's 64.5 score still counts as one of the better results for this year.

Manufacturing was down from August's 68.5 to 64.1, while natural resources jumped from 56.4 to 63.1.

"Newfoundland and Labrador, Alberta and Saskatchewan continue to lead the way in terms of small business confidence," said Ted Mallett, CFIB's chief economist and vice-president. "This seems to be one pattern we can depend on month after month."

Confidence in Ontario had surged in recent months, peaking in August at 67.8, but dropped sharply to 63.6 in September. Drops were also seen in New Brunswick (55.5) and PEI (47.6). Nova Scotia, Manitoba and BC saw modest gains (61.6, 60.7 and 67.9), while Quebec's score, stable at 59.2, remained well below the national average.

The strongest sectors were health and education, the arts and wholesale, while transportation remained a weak point.

"The good news is that overall, the other indicators are stable," added Mallett. "Hiring plans are typical for this time of year, 40% of small business owners report a generally good state of business, and orders and accounts receivables show gradual improvement. Price and wage expectations are stable, and there are no big shifts being reported in operating constraints or pricing pressures."

Sonny Scarfone, a research associate writing in a TD Economics bulletin, observed optimism has been in the 64.2 to 65.9 range over the summer, above the 59.4 to

62.4 range that prevailed during the second quarter.

"This increase supports our view that growth will pick up to 2.3% in Q3 versus 1.7% in the previous quarter, he said, noting positive full-time hiring plans should help alleviate some of the recent weakness in the labour market.

Measured on a scale of 0 to 100, above 50 means more businesses expect performance to be stronger in the next year than those expecting weaker performance.

The September findings are based on 1,126 responses and are statistically accurate to +/- 2.9%, 19 times in 20.

RBC FORECASTS 2.8% GROWTH IN 2014

Canada's economic performance was sluggish by the end of 2012, but RBC Economics expects the pace to pick up in 2013 and through 2014.

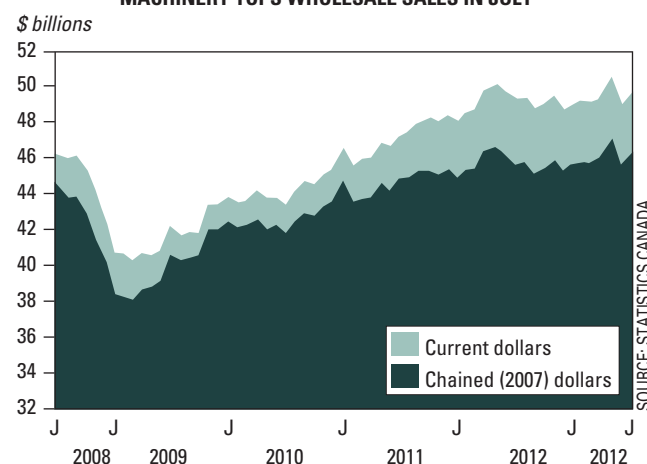
Its Financial Market Outlook projects a GDP of 1.8% this year and 2.8% next year fuelled by low interest rates and a strong demand for exports.

Exports in the first quarter increased at their fastest pace since late 2011 and continued to grow in the second quarter. RBC predicts exports will be even stronger as the global economy perks up.

As of August, 12,100 jobs per month were gained over the previous six months.

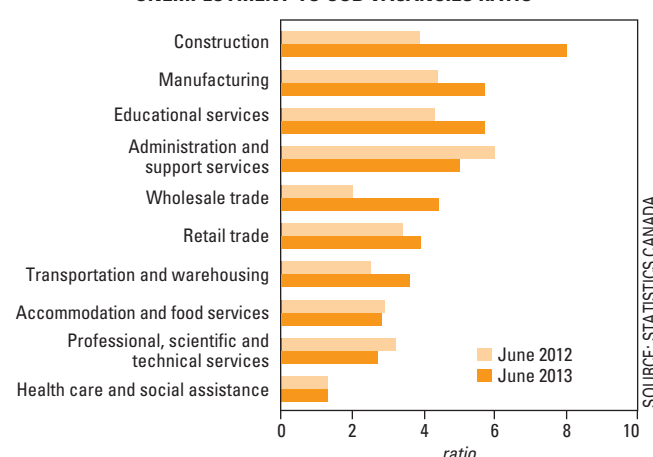
Unemployment has stuck to between 7% and 7.2% since last November, registering a 7.1% in August. RBC expects a gradual narrowing of the output gap will be accompanied by a decline in the unemployment rate to 6.6% by the end of 2014.

MACHINERY TOPS WHOLESALE SALES IN JULY



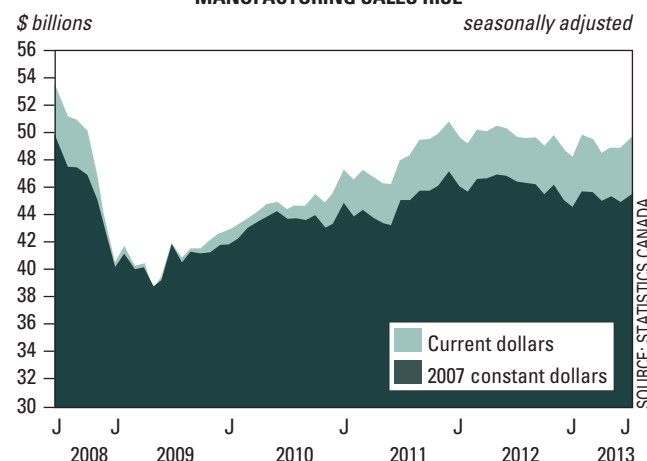
Wholesale sales increased 1.5% to \$49.5 billion in July, with the largest increase in dollars in machinery, equipment and supplies, where sales rose 3.2% to \$10.6 billion, more than offsetting the decline in June.

UNEMPLOYMENT-TO-JOB VACANCIES RATIO



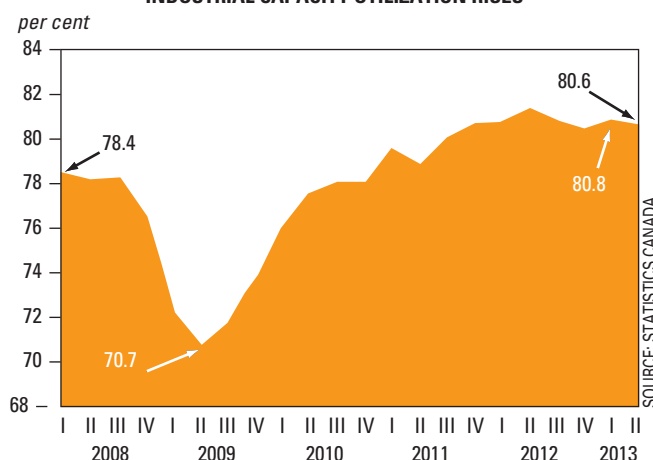
The number of regular employment insurance beneficiaries fell 10,900 (2.1%) in July to 503,900, which is at a level similar to before the 2008 downturn. The processing, manufacturing and utilities subsector was down 0.9% from June and 11.9% from July 2012.

MANUFACTURING SALES RISE



Manufacturing sales rose in 15 of 21 industries by 1.7% to \$49.5 billion in July. Durable goods sales were up 2.1% to \$24.8 billion, driven by miscellaneous manufacturing, fabricated metal products and wood products. Non-durable goods sales were up 1.2% to \$24.6 billion.

INDUSTRIAL CAPACITY UTILIZATION RISES



Canadian industries operated at 80.6% of their production capacity in Q2, down slightly from 80.8% in Q1. Declines in oil and gas and primary metals more than offset advances in transportation equipment and chemical product manufacturing.

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The investment puts the assembly plant on an advanced global footing and “solidifies” 2,800 jobs.

BY JOE TERRETT, EDITOR

Canada’s automotive sector may be missing out on investment in North America, but Ford Motor Co. has enough confidence in the maple leaf to put \$700 million into its Oakville Assembly plant, which celebrates its 60th anniversary this year, and that will expand its ability to produce vehicles for the global market.

The announcement on Sept. 19 also included \$71.6 million from the federal government and \$70.9 million from Ontario. Naturally, it attracted several politicians to the almost 5.5 million square-foot facility, including Ontario premier Kathleen Wynne, all eager to get in on one of the few bits of good news Canadians will be hearing about the automotive industry this year.

Joe Hinrichs, president of Ford’s Americas operations, told the gathered media, special guests and Ford workers that putting \$1 billion into the plant to make it a flexible manufacturing operation in 2004 has paved the way for the new investment.

“Today we’re building on this foundation by transforming Oakville Assembly into one of the most competitive and advanced global manufacturing plants, not just in Canada, but in Ford’s system around the world.”

With the complete retooling of the plant, he said Ford will bring several new global models to Oakville to meet demand in North America and around the world. The plant currently makes the Edge, Flex, Lincoln MKX and MKT.

Ford has nine global platforms using common components, designs and build processes to manufacture 85% of its vehicles.

There’s good news for auto parts suppliers too. The \$3.8 million currently spent on Canadian suppliers will increase to \$4 billion annually.

The investment also includes an R&D component. The automaker will be increasing sustainability and fuel-efficiency efforts at its powertrain research facility in Windsor, Ont., which will include studies in light-weighting the reduction of plant emissions, and research into advanced engine development

The media event was an opportunity to remind stakeholders Ford has invested \$2 billion over the past decade, including \$590 million spent on the Essex Engine Plant in Windsor.

“Ford’s investment demonstrates Canada can be competitive in the global market through strategic partnerships,” said Dianne Craig, Ford of Canada president and CEO. “Working closely with government and labour, we have secured a bright future for our employees at Oakville Assembly.”

Indeed, Wynne noted the investment “protects” the plant’s 2,800 jobs, a point



Ford of Canada CEO Diane Craig joins in a round of applause with workers and guests during the announcement of a \$700-million investment at Ford’s Oakville Assembly Plant.

PHOTO: JOE TERRETT

\$700M for FORD Oakville

GOVERNMENTS SWEETEN THE POT WITH ALMOST \$142 MILLION

that was emphasized by newly installed Unifor president Jerry Dias.

Addressing his “brothers and sisters” with evangelical enthusiasm, Dias proclaimed Ford’s announcement “solidifies our future here for well over a decade and the thousands of great-paying jobs that go along with it,” pointing out every job at the plant supports another “six or seven” in Canada, plus billions of dollars worth of exports, family incomes and tax revenues.

Solidifying jobs rather than adding them is still a positive considering more than 355,000 manufacturing jobs have been lost since 2006, with 80,000 disappearing over the past year.

Across the entire industry, investment levels have dropped by more than 50%, according to a report by Richmond Hill, Ont.-based DesRosiers Automotive Consultants, and production is down as vehicle sales are rising.

Statistics Canada data shows automakers invested just \$767 million in Canada last year, 9% of the their investment between US and Canadian operations, and it’s the first time that number has been in the single digits since 1990. As recently as 2007, investment stood at 40%.

Slow but steady

Toyota is the only other automaker to expand capacity in Canada. It has invested \$134 million in its Cambridge, Ont. plant to produce 200,000 vehicles this year from 178,000 in 2012. GM has committed \$250 million to retool its CAMI assembly plant in Ingersoll, Ont. where it produces the Chevrolet Equinox and GMC Terrain SUVs, but it’s closing the Oshawa 2 plant where it makes the Camaro. Production will move to Michigan when it introduces an updated model in 2015. Some of its Impala and Equinox production is also moving south.

Unlike GM and Chrysler, Ford did not to take a bailout package during the 2008-2009 recession. (The federal government has recently sold a block of 30 million GM shares valued at \$1.1 billion from a total bailout of \$10.6 billion.)

And prospects are good for the Oakville plant. Craig noted that going on almost four years, Canadian consumers have purchased more Fords than any other automotive brand. Sales of the Edge have passed the one million mark and the US market is on track to beat the 2007 record of 130,000 vehicles this year.

The federal government recently announced it’s extending the \$250 million, five-year Automotive Innovation Fund that it anticipates will lead to investments of \$2.3 billion in the sector. Ford’s Oakville Assembly Plant announcement puts that target almost a third of the way closer.

Files from assistant editor Matt Powell

» Oil

Pipeline bottlenecks costs Canada billions

Fraser Institute report calls for streamlined infrastructure

Canada’s economy loses tens of millions of dollars daily because pipeline bottlenecks choke access to more lucrative markets for Western Canadian conventional heavy crude oil and oil sands bitumen, says a study by the Fraser Institute.

The Canadian public policy think-tank notes in *The Canadian Oil Transport Conundrum* report that most Western crude sells at a discount in the US midcontinent region, where oil pipelines are generally operating at or close to full capacity.

From 2011 through May 2013, Western Canadian Select (WCS) heavy crude oil was sold in the mid-continent region at an average US\$36 below the price for North Sea sweet light crude, a world benchmark.

Mexican Mayan crude oil, similar to Western Canadian conventional heavy crude, sold in the US Gulf region at a “modest discount” to the world price.

The Brent price marker discount to North Sea light crude was only US\$14 a barrel during the 2008-2010 period. Since then, WCS has not increased in price at the same pace as Brent. For example, in the fourth quarter of 2012, Canada exported conventional heavy crude and bitumen blends at a combined production rate of 1.27 million barrels a day. At an average US\$37 per barrel discount to the Brent price, Canada was losing \$47 million a day, implying \$17 billion a year.

The Fraser Institute says even the proposed Keystone XL pipeline won’t resolve the problem because Canadian producers would still



Heavy oil pipeline in Alberta. PHOTO: CNRL

have to compete for capacity in the line with surging US shale oil production from North Dakota and a number of other states.

Study author Gerry Angevine, senior fellow in the Fraser Institute’s Centre for Natural Resource Studies, warned the situation will become more acute as investment in the oil sands continues.

The National Energy Board projects Canadian oil production will nearly double by 2030 with most of the increase coming from Alberta.

The Fraser Institute, calling for urgent action, recommends a “proactive policy approach” including streamlined pipeline construction regulations and federal efforts to achieve Aboriginal acceptance of increased pipeline capacity.

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

ACTUALIZE your workforce

UNLEASH THE INNOVATION THAT LIES WITHIN

Workforce management systems create an environment that allows employees to feel secure, then become more productive and engaged.

BY GREGG GORDON

Manufacturers are facing challenging business conditions. Costs are increasing and capacity utilization rates are dropping. It's becoming more difficult to find and keep people who possess the right skills, raise productivity levels, strengthen regulatory compliance, while responding to markets and the investment community. It's easy to see the need to identify and adopt solutions that address these issues, but don't miss out on the pool of ideas and potential innovations that reside within your workforce.

Whether it's structured programs or informal peer-to-peer contributions, smart organizations engage their people and, as a result, develop a greater ability to identify new market opportunities, increase productivity, strengthen safety and compliance, improve product/service quality and implement better cost controls.

It starts with an "actualized workforce." The trick is to align each person's energies and aptitudes to tap the innovation that lies within. For that to happen, the employee must be secure, productive and engaged.

Automating and streamlining workforce management creates these conditions by measuring optimized labour expenses, increased productivity and reduced compliance exposure.

Instead of resorting to simplistic (and often shortsighted) wage-cutting practices that frequently backfire, streamline back-office functions such as timekeeping and payroll that are sometimes vulnerable to fraud and abuse (such as buddy punching). Tightening these functions eliminates manual work and enables managing by exception, improves back-office productivity and lowers costs, all without any material impact on the production floor.

Equipping department managers and other plant leaders stuck at a desk with smart phones or tablets allows them to manage the workforce on the shop floor where they are most effective.

Bigger picture, aggregated data presents a clearer view of trends and opportunities to improve safety and lower costs. For instance, comprehensive reviews of safety incidents, lost time and workers' compensation claims uncover areas meriting greater attention. These kinds of insights helped the Aker Philadelphia Shipyard, a commercial shipyard in Philadelphia, save more than \$2 million in medical insurance premiums without affecting wages.

Managing in real time

Manufacturers create and sustain higher levels of productivity by enhancing worker performance and increasing the use of existing capacity. Disparities in worker output may point to a need for training on tools, machines and processes. Or materials may be inferior.

And let's not forget the eight-hour workday that doesn't translate into eight actual hours of work. Some studies show as much as 40% to 50% of a worker's day is devoted to non-production tasks, from machine setup and maintenance to material delays, repairs and other bits of lost time. Identifying these subtle trends improves overall labour effectiveness. Conversely, when capacity must be strategically reduced, it



Equip leaders with tablets to manage operations from the plant floor.

PHOTO: THINKSTOCK

can be done with surgical precision, rather than by applying across-the-board cuts.

Many workforce management solutions provide insights in real time, on the manager's mobile device. You see the status of the shop floor, who needs help and who's available. The ability to shift workers on the fly throughout the day means corrective action is taken while it still matters, which experts believe will improve labour utilization by as much as 7%.

The experience and knowledge of your workforce will also help your company conform to the growing range of regulatory frameworks. Success starts with ensuring compensation is accurate and leave-benefits are calculated and delivered properly. It's not uncommon for a major manufacturer to deal with several separate labour agreements and union contracts, creating a significant administrative burden. For example, there are dozens of ways to calculate overtime pay. Different supervisors might use their own interpretations, leaving the company vulnerable to fines, sanctions and make-good payments.

Workforce automation eliminates unwanted variability to ensure the payment process is consistent and accurate. When new contracts, rules and policies emerge, they are encoded in the software, eliminating the need to retrain supervisors on changing policies.

There's a lot of untapped talent in your plant. With an effective workforce management system in place, employees feel secure, productive and engaged enough to leverage their creativity for greater business success.

Gregg Gordon is a senior director, manufacturing practice group, for Kronos Inc., a workforce management firm. E-mail Gordon, who is based in Chelmsford, Mass. at gregg.gordon@kronos.com. Kronos Canadian Systems Inc. is based in Mississauga, Ont.

Comments? E-mail jterrett@plant.ca.

» Training Coaching by numbers

Use performance data to identify improvements

BY HUGH ALLEY

Whatever the sport, our favourite teams all have one thing in common. They each have a coach who uses data to improve performance.

The same is true in manufacturing. Good managers use performance feedback to help improve the effectiveness of their team members. Here are five ways you can use data to do so.

1. Keep performance information public and current. Everyone needs to know how the department is doing. The information has to be current. People need to connect the events of the day with the impact on performance. Use measures such as profit, revenue, productivity, quality, delivery and safety. Too many measures make the process too complex, eventually rendering the results irrelevant. Use more detailed measures when you're investigating the reasons for performance issues, but only track them for a short time. And don't try to adjust for all the operational variables. Instead, look at measures from the perspective of the customer.

2. Make teams responsible for their department information. Looking after their own information brings them closer to the work. It has more meaning, but it's also a cheaper way to collect data and post it faster (think white boards).

3. Use performance changes as a prompt for investigation, not blame. A change in performance should prompt curiosity. What else changed? Why did we get the new result? What can we do to either repeat it or prevent it? If the change is negative, look at the procedures that are in place and what training is needed.

4. Do lots of small experiments and measure the results on a regular basis. This shows how changes impact processes and procedures. Figure out how you expect the measures to change and watch the results (Plan, Do, Check, Act). This approach supports continuous improvement and provides a context for experimenting with new ways of doing things.

5. Give credit where it is due. Acknowledge good or great results with either a quiet "thank you" or some form of public recognition. People respond well when they are given the credit they deserve.

Good data will help your team improve performance. Using it to inspire curiosity and gauge the impact of changes focuses improvement efforts, which will help you do a better job of guiding training.

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

Comments? E-mail jterrett@plant.ca.

Antique record-pressing machines are bringing new life to an old audio medium

BY MATT POWELL, ASSISTANT EDITOR

Apparently the vinyl LP is not dead. These days most music is enjoyed digitally, downloaded onto an iPod-like device, as CDs edge closer to the endangered list. Yet vinyl, boomers' media of record, is enjoying a resurgence thanks to audio purists who prefer an LP's warm sound and unique cover artwork to MP3s or other digital formats.

According to 2012 figures from music industry sales tracker Nielsen SoundScan, vinyl record sales jumped in the US by 17.7% to 4.5 million units, and the analytics firm expects 2013 to be the eighth consecutive year sales reach record levels since it started tracking data in 1991.

That represents just 1.44% of overall US album sales. Digital downloads continue to grow at a healthy rate and now represent 37.2% of all music sales. (Download stores, such as iTunes, have overtaken brick-and-mortar retail stores in sales, accounting for 111.7 million units.) But not bad for a medium that was given up for lost with the introduction of CDs.

As vinyl lovers drive up the price of old LPs there is one company in Montreal pressing new music onto the old format.

Interestingly, it's the digitization of music that's leading a renewal of vinyl, according to Phillipe Dubuc, president and co-owner of RIP-V, Canada's only vinyl record maker. He, like vinyl aficionados, is adamant the cheap ear-bud headphones included with your iPod just can't deliver the warm, rich sounds of a freshly pressed LP. And vinyl lovers aren't restricted to nostalgic boomers. There's a 15 to 25 year-old "hipster" demographic, which Dubuc says was a key factor in his decision to get into the record pressing business.

"Music is about the physical experience of listening – the quality of a recording, the artwork, the liner notes – that stuff just can't be translated effectively on an iPod," says Dubuc, 43, who has seen the company's production grow five-fold since the doors opened in 2009 when 12,000 copies of the Tragically Hip's "We Are the Same" album were pressed. "It also allows musicians to sell their music as a complete package."

RIP-V is now pressing 2,000 LPs a day for music heavyweights including Montreal's Grammy winning Arcade Fire, American blues singer Tom Waits, indie rock duo She and Him (led by actress Zooey Deschanel) and legendary punk-rock band Rancid.

It all started in 2007 when Dubuc, a former National Bank Financial investment

banker, lost his job and traded his suit and tie for jeans and sneakers, jumping into the resurging world of vinyl after considering a business proposition from friend and neighbour, Ian Walker, who owns an independent music distribution company headquartered on Montreal's south shore. Dubuc was offered the opportunity to co-own and manage record manufacturing in the same facility where Walker and his wife Renee run FAB Distribution.

(RIP-V actually stands for Renee, Iain and Phillipe; the V for vinyl. RIP is also a feeble jab at the LP's supposed demise.)

"A lot of record labels were struggling to manufacture music in time and in large-enough quantities," says Dubuc. "So [Walker] figured it would be a good time to get into the music manufacturing business to compliment his distribution operation."

Dubuc took six months to let the offer ruminate, spending some time to research the business's prospects. He says the LP industry is growing by about 25% a year.

Vinyl greenhorns

Most of his clients are Canadian indie-labels such as Dare to Care and Montreal's Secret City Records, but about 80% of his production is shipped to three customers in the US that include the famed Epitaph Records, the punk-rock label founded by Bad Religion guitarist Brett Gurewitz, and Merge Records.

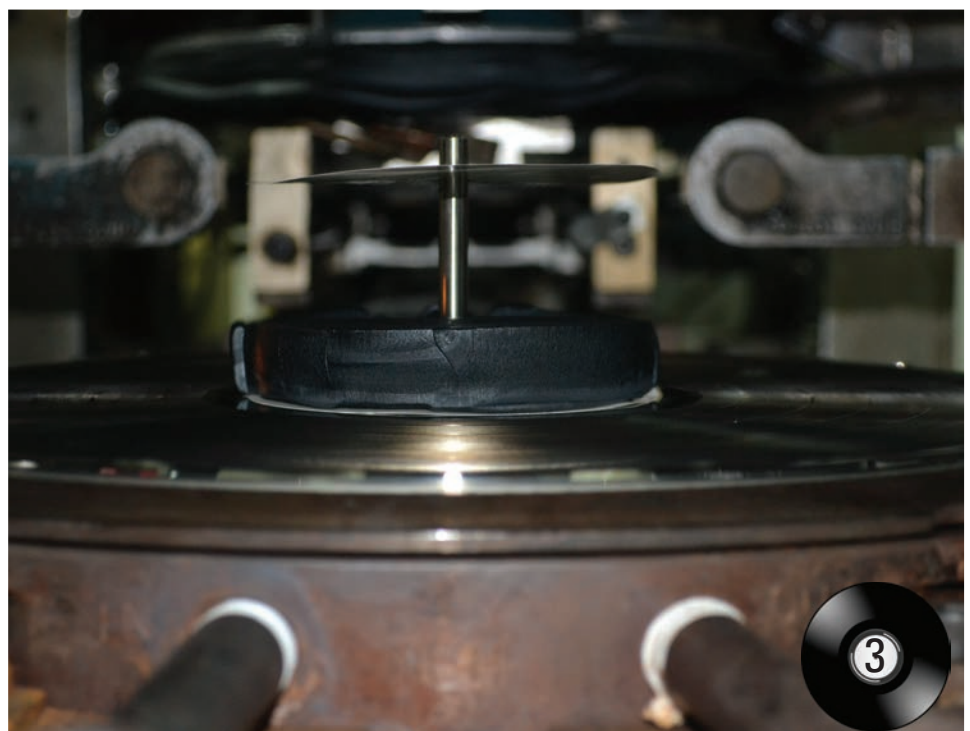
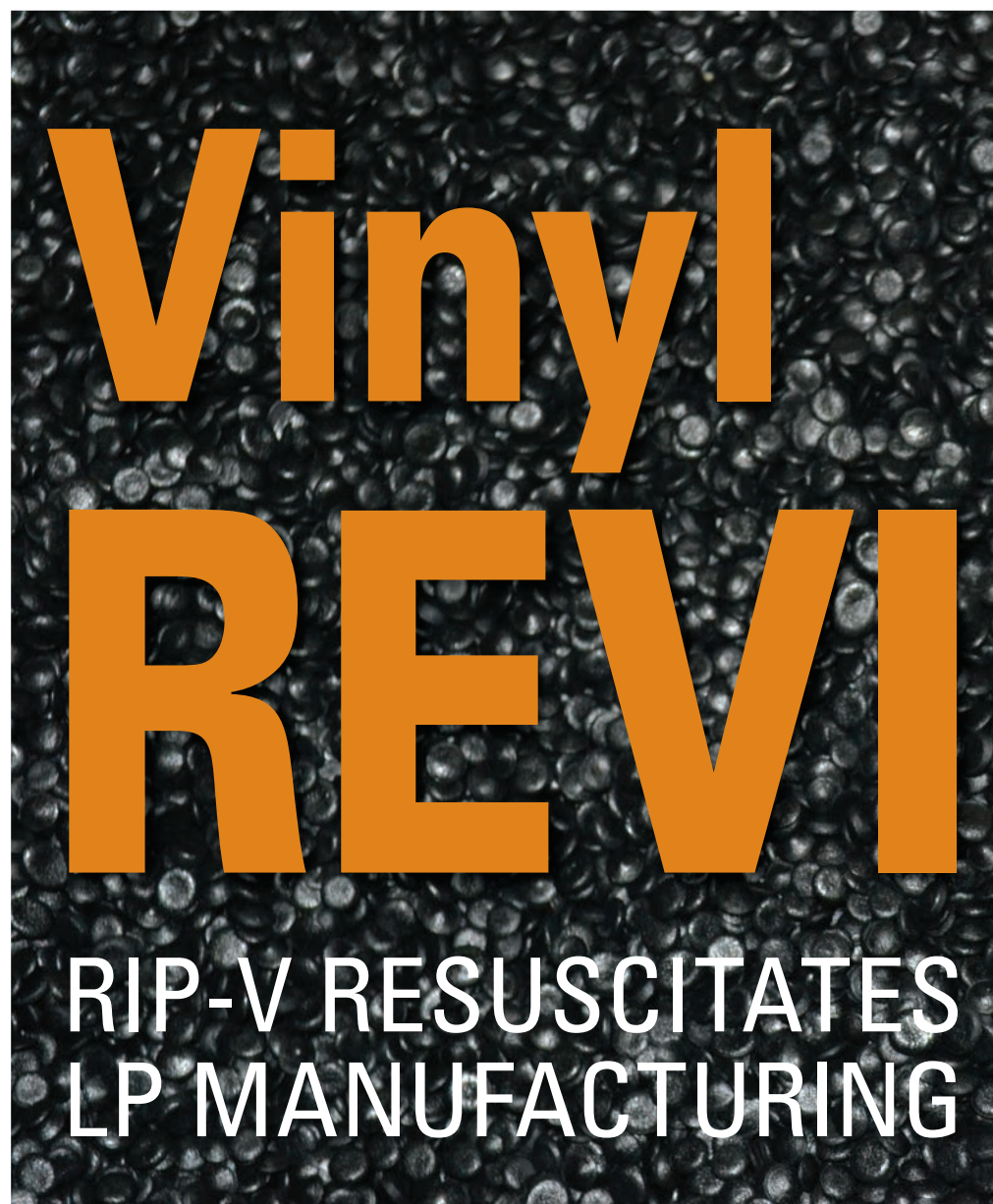
He and the Walkers put up their own money to get things going, a sum a ballpark Dubuc describes as \$500,000 to \$1 million.

Walker had purchased 14 antique presses from a former vinyl record manufacturing plant in New Jersey for \$100,000. The company is now using six of them, while the others wait in storage, but those are often pillaged for spare parts when one of the machines goes down.

"There are not many vinyl presses anymore – all the companies that made them went out of business, so supply is a bit of an issue and that's why a lot of my time is spent maintaining them," says Dubuc. Little wonder, after going to a German specialty manufacturer that quoted a single vinyl press for the same price RIP-V purchased its 14 antique models.

The plant manager in New Jersey agreed to travel to Montreal and help the vinyl greenhorns set up the plant and provided Dubuc with a crash-course on machine maintenance.

"I still called him almost everyday for a year when he left," he jokes. "It's a steep learning curve and coming from a completely different background, when





something broke it took a long time to fix and that's not good for production – pretty much everything has broken once, so I've done it all now.”

Simple manufacturing process

The 2,000-square foot manufacturing facility employs eight people. Dubuc and his technician Richard Quiron work the pressing machines and perform quality control, while the other employees handle inspection, and the intricate packaging that often includes posters, download coupons and boxing.

The manufacturing process is simple (as Dubuc says, they're just melting and pressing plastic), but it's very detail oriented, especially the heating and cooling of the vinyl after it's pressed.

Dubuc and Quiron start out with tiny black PVC pellets fed into a funnel, then to a stream-heated extruder that melts the plastic at 150 degrees C into a black disk called a biscuit. The biscuit is brought forward to the press where it's sandwiched between the A- and B-side labels and pressed to form the 12-inch, 180-gram record. The music is now on the vinyl, and the record is cooled for 10 to 15 seconds while it's still in the stampers.

Excess vinyl is squeezed out of the press and removed by an automated blade.

The finished records are then stacked on a spindle, ready to play, but the RIP-V team lets them cool for 24 hours before they're sent to the packaging team, a factor that ensures the LP has the purest sound possible.

“The trick to a nice sounding record is the heating and cooling. If you cool them too much when the press opens, there's going to be too much pressure on the material and you will be left with a record that makes a lot of unwanted noise,” he says.

The time of day and temperature of the water used, which is kept in a rooftop tank, are variables that he must keep an eye on.

“It took me a year to get everything how I want it,” he says.

As the resurgence of LPs grows, Dubuc notes there's another reason behind vinyl's popularity: “It's a lot more interesting to have a collection of vinyl records than it is to have a huge collection on iTunes.”

And it's sure to drive up sales of the plastic milk crates that were the storage medium of choice when vinyl ruled.

1. PVC pellets are fed into an extruder.
2. The steam-heated extruder melts the plastic at 150 degrees C.
3. A “biscuit” is squashed between the A- and B-side labels to form the 12-inch, 180-gram record.
4. The process is heavily automated, but Dubuc keeps a close eye on the heating and cooling of finished LPs.
5. LPs cool for 24 hours to ensure their sound is clear.
6. Packaging often includes posters and download coupons, all packed by hand.

PHOTOS: RIP-V

Comments? E-mail mpowell@plant.ca.

» Engagement

Give lean a lift

11 tips for rejuvenating the culture

BY SAMANTHA WAYTOWICH

Once lean is part of your manufacturing culture, the time may come when employees seem less engaged and some momentum is lost. Here are 11 tips for giving your company's lean efforts a lift.

1. Do a pulse check. Ask employees what's working and what isn't. Consider your external customers too. Lean opportunities will be revealed by their replies.

2. Recommit executive presence. This reinforces lean as a culture and is key to achieving company strategy and goals. Executives can help recruit new lean leaders, launch projects, communicate results and help make lean more fun.

3. Retrain your lean team. Offer lean veterans an opportunity to brush up. Role-specific training and custom on-site courses will be helpful once standard lean courses are complete.

4. Revamp your rewards and recognition. Link lean to each employee's performance, management included. Post progress somewhere visible. Changing up the rewards mix is important too.

5. Find your natural leaders. From plant floor to customer service and sales, they rally and engage others, enabling change and their motivation is far more powerful than a paycheck or other reward. Consider connecting a lean role to promotion.

6. Dare to be quick and crude. Over the long term lean can appear weighty and overwhelming. Keep projects strategically aligned but allow lean leaders to be more nimble in meetings and with their documentation.

7. Use new media. Your lean charter could be captured on video or even in a photograph of Post-it notes on a wall or table. As long as the essence is correct and key elements present, it's still documentation.

8. Cross-populate your lean teams. Move strong players from one function or team to another. Chances are they'll ask different questions and offer different ideas.

9. Make it fun. Many manufacturers plan offsite events and their own mini-conferences around lean, including presentations, food and appearances from the GM or CEO.

10. Get outside your front door. This could involve doing a lean project at a supplier's site. Field trips are a good idea too. It doesn't have to be a business like yours. Visit a hospital or retailer to see what they're doing.

11. Make your lean green. Launching lean around saving energy and reducing water use or fuel consumption shows how efficiencies and improvement benefit customers, employees and the planet.

Samantha Waytowich is a 10-year Lean Sigma Black Belt and consultant with Leading Edge Group (www.leadingedgegroup.com), an international consultancy and services company with offices in Canada, Ireland and the UK. E-mail swaytowich@leadingedgegroup.com.



Use process improvements to optimize your employees' potential.

PHOTO: THINKSTOCK

Planning for NEXT year?

TAKE PROCESS IMPROVEMENTS TO THE NEXT LEVEL

Methodologies that apply to all types of operations will harvest lasting benefits.

BY RICHARD KUNST

As fall approaches many manufacturers begin the planning process for the coming year, which typically involves process improvements. Here are some methodologies and typical benefits that will follow their implementation.

Enterprise value stream mapping. Hit the pause button on your operation and conduct a value stream mapping exercise. In addition to identifying and prioritizing opportunities, identify the cadence of your business operations – hourly, daily, weekly – and define a new cadence to improve velocity.

Use “outside eyes” to highlight additional opportunities and drill into the response, “we have always done it that way.”

This is not a boardroom exercise. Complete it by walking the flow of your value stream while collecting data and developing a map.

Opportunities will range from tens of thousand to millions of dollars.

Shift exchange, shift start and daily report-out. Start meetings on time, have an agenda, end on time with a call to action.

Based on precision speaking and generous listening, these stand-up meetings can be completed within three minutes and cover health, safety and environmental, quality, production and continuous improvement.

In addition to a typical 20% to 30% productivity improvement, companies report quicker resolution of 30% to 40% nagging and internal e-mail traffic. This methodology enhances employee engagement, improves communication and increases accountability.

TPM. Initially the intent of total productive management (TPM) was to increase the emotional attachment of the operator to a machine and provide early detection of potential problems. In labour intensive operations this tool ensures operating supplies are maintained at appropriate levels.

Watch for a dramatic reduction in unscheduled downtime whether through equipment breakdowns or employees searching for supplies.

Most employees want a clear and clean work area at the conclusion of their shift, which only defers the start-up of the next shift. When the process is left “wet” you'll see product produced by the incoming shift immediately, eliminating wandering and initial idle time.

Unscheduled downtime could be reduced 20% to 30% with a 10% productivity improvement.

Set-up reduction. Customers will not pay for set-ups. Plan to cut the time spent conducting them by half, then look at the capacity you have created for additional business. Seek out hidden set-ups. Every time a person switches tasks they're doing a set-up. Even within a task there are several set-ups. An employee entering an order may have to navigate through many screen changes to do so.

Hourly run boards. This is a great pre-cursor to implementing an overall equipment effectiveness (OEE) metric. It

establishes hourly expectations providing immediate feedback to employees and quickly reveals any disturbances to flow. Look for a productivity improvement of about 20%.

Visual attendance. Do you know what your casual absenteeism rate is as a percentage? This is the silent cancer of productivity. Determine your rate and then calculate it as a percentage of your payroll costs. What would reducing it by half provide in savings?

Making it visual creates peer pressure for correction, and it reinforces that management is looking closely at attendance. As attendance improves shift labour shuffle diminishes, which increases start of shift production.

A minimum expectation is a 50% improvement within three months, which will increase your productivity by 10% with annual payroll savings of 2% to 4%.

KPIs. How are your employees supposed to contribute? Ensure KPIs are controllable by the team members. Instead of asking for a 10% productivity improvement convert that into a unit improvement. For example, a study revealed that if a doctor were to see one additional patient per day annual income could increase by more than \$60,000.

Cells, single-piece flow. Converting into a cellular operation typically improves throughput by 50% to 100%. Move from task to task with the material or have the material flow from task to task in a single-piece flow.

Cells also work in office and administration environments to improve velocity. Typically an order being processed in the back office consumes close to 80% of the quoted process lead time and this activity is non-value add.

Implementing cells can be challenging but the rewards remarkable. At La-Z-Boy adoption of cellular manufacturing reduced process lead time of 14 to 16 weeks to a consistent four hours.

Workplace organization, 5s+1. At times 5S can be difficult to quantify because lost time is poorly documented due to searching, wasted walk patterns and repetitive reaching.

Set your standards high. A clean and well-organized plant communicates there is little waste, quality is high and there are strong efficiencies.

Lean leader training. Complement the implementation of initiatives with training to increase the intellectual quotient of your organization. In one example, employees who were just expected to increase their awareness ended up increasing throughput by 300%.

You may be already using some of these methodologies or you may need to optimize their potential, but the pay-off is hard to argue with.

Richard Kunst is president and CEO of Cambridge, Ont.-based Kunst Solutions Corp., which helps companies become more agile, develop evolutionary management and implement lean solutions. Visit www.kunstofsolutions.com. E-mail rkunst@kunstofsolutions.com.

Comments? E-mail jterrett@plant.ca.

KICK-starting the stick of STEEL

COLT HOCKEY'S ON A BREAKAWAY WITH NANO-TECH AND CROWD FUNDING

Colt Hockey's super-strong stick is coated in a metallic nano-cladding developed by its technology partner Integran to prevent breakage.

BY MATT POWELL, ASSISTANT EDITOR

A team of Toronto hockey enthusiasts led by a 22-year old construction engineering graduate and partner Integran Technologies is ready to wield a stick with the strength of steel that performs like other elite composites, and they're leveraging social media and crowdsourcing to get it on the ice.

"Good equipment is hard to come by if you're on a budget, and when an expensive stick fails, it's devastating for any player," says Daniel Lucchesi, the George Brown College graduate who's leading Colt Hockey's charge to develop the world's strongest carbon-fibre composite hockey stick. "Materials have grown lighter and more flexible, but they're breaking more. This is a perfect opportunity to improve a product that's purely Canadian."

Indeed, hockey stick technologies have come a long way in the last decade. The majority of players from house league to the NHL prefer the super-light, high-end composite twigs from manufacturers such as Bauer, Reebok and Easton. But there's a major issue with these sticks, which carry price tags topping \$300.

They break...a lot.

Material strength has suffered to the point that it's unlikely an NHL game goes 60-minutes without a stick exploding into a hail of graphite shrapnel.



The stick's strength comes from the metal cladding's atom arrangement, which is made up of crystals just 20 nanometres in size.

PHOTOS: DANIEL SBIZZI

The team is also leveraging the super popular crowdfunding website Kickstarter to generate the money it requires to produce the Colt once prototyping is complete.

Socially funded

The website, founded in 2009, provides tools to raise funds for creative projects and business ideas via crowdfunding and was launched in Canada in early September, with more than 50 projects underway. More than 4.9 million people have pledged almost \$8 million to 49,000 projects worldwide, including the Pebble

SmartWatch – a customizable, web-enabled wristpiece powered by your smartphone – that raised more than \$10 million from 68,000 backers (its original funding goal was \$100,000.)

The Colt stick is a joint effort between Colt Hockey and PowerMetal Technologies, a division of Toronto's Integran Technologies, which is a developer of metallurgical nano-technologies. The company's super-strength metal cladding has been used by other sporting goods companies, such as golf-club manufacturer Ping and bike-maker Cervelo.

PowerMetal has also been used in

nuclear power plants and aerospace components.

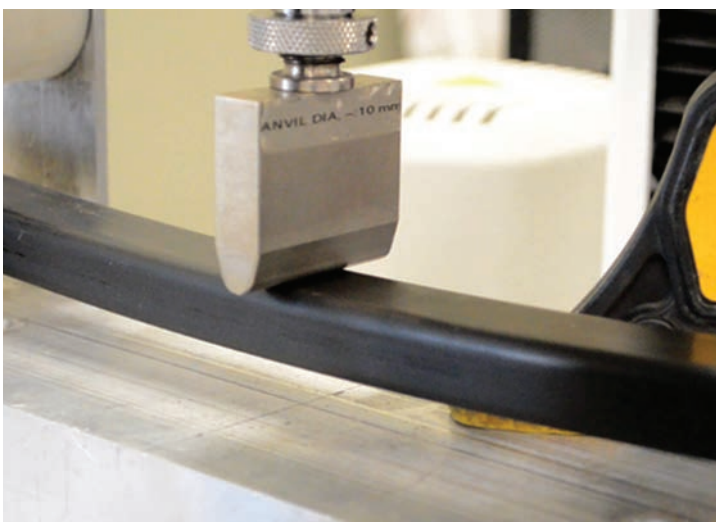
Integran earned a 2012 JEC Composites Show innovation award for its work on an ultra-lightweight, durable composite bike fork with structural electroplating it developed with Cervelo for a high-end \$12,000 racing bicycle.

Lucchesi first learned about Integran and PowerMetal after reading a *National Post* article about a ping-pong ball coated in the company's nano composite substrate that withstood 200-pounds of pressure.

"I knew this was an opportunity to take the hockey stick to the next level, but I needed to figure out if it would work, and that's when our partnership with Integran got off the ground – things have snowballed from there," he says.

Iain Brooks, unit manager of new products at Integran who was involved in the Cervelo project now oversees the engineering and technical development of the Colt Hockey stick. An initial prototype took just over a month to produce, he says.

"Carbon fibre composites are great for creating lightweight, flexible products, although they have an Achilles heel, but we've solved that," he says. "We're pro-



A typical composite hockey stick (left) snaps after a load of 264 pounds and deflection of half an inch. In testing, the Colt (right) has withstood 400 pounds of force.

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Keeping the stick close to home

Continued from page 17

ducing a product that's not only super high-tech, it's also super Canadian."

The nano-material's strength is derived from its metal atom arrangement. In normal metal structures, atoms form crystals or grains that are about 20 microns in size. PowerMetal is so strong because its grains are 1,000 times smaller at just 20 nanometres.

The Colt will be coated in Power-metal's Nanovate metal cladding, a nanocrystalline metal composite layer that's like coating the stick in a thin layer of flexible steel to add fatigue resistance after impacts such as shots and slashes. It makes the Colt a lot less susceptible to the natural wear and tear that typically diminishes a carbon fibre stick over time, without hindering its ability to flex – a factor that's crucial to performance.

"The hockey stick is a really interesting example of what we've been able to do with Powermetal in terms of defining the product's value proposition," says Brooks. "We've produced a stick that meets the parameters of most consumer sticks in terms of flex and performance, but weighs less and it's much stronger."

If you were to apply a load of about 400 pounds to the midpoint of a two-foot section of stick, the shaft would deflect between two thirds to three quarters of an inch and break, Colt explains on its Kickstarter page. If a conventional shaft is first impacted, failure will likely occur at a lower load and a reduced bend deflection. The load to failure and bend deflection will continue to decrease with repeated slashes. A conventional composite shaft now fails at a load of only 264 pounds and at a deflection of only about half an inch.

After the same impact loading, the Colt shaft withstands 400 pounds with a two thirds of an inch deflection, which is consistent with an unimpacted conventional composite stick.

Colt expects its sticks to retail for about \$300 once manufacturing commences, which is competitive with high-end sticks already on the market.

Kickstarter takes 5% of the fund's raised and requires a project to meet a minimum funding goal, but it does not take a stake in the company or allow pledgers to do so either, gathering money instead from the public via individual web pages that outline the project's goal, marketing plan and usually a nifty promotional video. It also allows pledgers to communicate with the project's leaders to collaborate on ways the product could be improved.

"[Kickstarter] is the perfect vehicle to launch our expansion," says Lucchesi. "It has allowed us to get in touch with our customer base, give us an idea of the product's demand and how we can improve the stick before we go into production."

Although unconventional and uniquely modern, the crowdfunding phenomenon



is giving companies a new way to access funding without the help of governments and research grants, or sacrificing a small stake in the company to venture capitalists or pay interest on loans from the bank. Instead, the fate of the project is in the hands of the people that would eventually consume it.

Made in Canada

"It's a people's movement. It creates a market where people take part in developing products they actually want. The power of social media is still underestimated, especially when you're trying to get noticed, and on a person to person basis," says Lucchesi. "Kickstarter and the social media campaigns we're doing have put us on the same level as the people we're trying to serve, and that's really important to us."

To maintain its focus as a funding

platform, Kickstarter requires creators of hardware and design projects to have a physical prototype and a manufacturing plan, and also bans the use of photorealistic renderings or simulations. It says these requirements are in place to reinforce its position that people are backing projects and not placing orders for a product. Creators must also identify the project's risks and challenges involved producing it to underscore the notion that company and pledger are making things together.

"This was the perfect time to start the campaign because Kickstarter was launching in Canada and we're trying to produce a truly Canadian product," says Lucchesi. "The financial benefits were also enticing in that we keep a 100% ownership stake in the company while connecting with the community in development."

(Top) Colt plans to manufacture 1,000 sticks for ice or ball hockey players and have them delivered by Christmas. (Left) A ping pong ball coated in nanovate metal cladding that withstood 200 pounds of force peaked Lucchesi's interest in pursuing a partnership with Integran.

Integran encouraged Lucchesi and his team to pursue Kickstarter.

"We had initial prototypes that generated positive test results, but we needed a means to complete final engineering and Kickstarter is a support tool that allows us to do that," says Brooks, adding that engineers are still perfecting the materials required to adhere the nanocrystalline substrates to the stick's carbon fibre composite structure.

"That's a significant part of the puzzle. We're enhancing an existing technology and there's a lot of design and engineering work that's application specific. We're not just slapping metal onto a hockey stick," he says.

When the campaign is complete, Colt and Integran intend to manufacture the sticks in Toronto and they're on track to have an initial production run of 1,000 sticks delivered by Christmas, a factor that was critically important to both Lucchesi and Brooks.

"That's part of the reason we also went with Kickstarter – to make sure people knew that we want to keep this project in Canada; to make it here," says Lucchesi, adding that Colt will introduce new models at community outreach sessions where hockey players will be able to try the sticks and suggest new blade patterns and shaft stiffnesses.

"We really want to control our own destiny," says Brooks. "That's why we're keeping manufacturing at home."

Colt Hockey and Integran are taking a shot at a new way of manufacturing by combining uber-advanced nanomaterials and a business plan that leverages a social platform. Now it's up to the people to decide if the partners scored a winning goal.

Comments? E-mail mpowell@plant.ca.

University students hone their engineering design skills working with industry on authentic automotive challenges.

BY STEVE LAMBERT

Much has been made of the need for Canadian industry to be more innovative, which requires applied research and the transfer of findings into practice. The AUTO21 Network of Centres of Excellence has always recognized this, and stresses close partnerships between Canadian industry and university researchers, to more effectively translate research findings into processes and products.

An important pathway for this research knowledge is the training of students and their subsequent employment. Students working in the AUTO21 design theme focus on the development of their skills, which is achieved through multidisciplinary projects. These range from the development of intelligent systems that inspect automotive components to hybrid electric vehicles.

Students work in teams to solve complex, realistic engineering challenges, in close collaboration with participants across several universities and industry, and develop the judgment and skills that industry demands along the way.

They work on an authentic problem that includes realistic constraints on the process, helping them to develop good project management skills. Industry engagement ensures there are real deadlines and practical guidance is provided, which motivates them to find better and more effective solutions.

Relying on reality

These experiences have led to a new master of engineering design certificate program in mechanical engineering at the University of Waterloo. Students complete a design methods course to build their understanding of the process, and continue with a two-course project.

Candidates are interviewed to assess their aptitude for the project, then matched with potential industry partners. Projects proceed once intellectual property and non-disclosure agreements are in place.

The course relies heavily on real-life case studies to walk students through the process, with emphasis on the early stages of design. Experience suggests these early stages are critical to innovation, but are often short-circuited as a result of pressures to quickly produce a solution.

The first half of the project focuses on these early stages. Students present and defend their problem definition in front of both academic and industry advisors. At the end of the project's first half, three conceptually different solutions are presented and one is recommended. The review panel reserves the right to challenge this recommendation, to ensure that students work hard to develop three equally viable alternatives. Sometimes, industry chooses to develop one of the

Making the R&D connection

FUTURE ENGINEERS LEARN TO TURN IDEAS INTO PRODUCTS

concepts independently, allowing the student to further develop a more innovative option. The deliverable at the end of the second course is a verified solution.

Students come with varied work experience, from recent graduates, to those

with foreign experience and those working full time with a Canadian company while earning the degree part-time.

In one of the program's more successful cases, two students working with an auto parts manufacturer chose a project

to develop more flexible manufacturing processes. This led to an opportunity to apply some of the ideas from the design project that helped secure several multi-year, multi-million dollar contracts.

Many Canadian universities have similar industry-based design programs. Success is the result of strong relationships with companies that provide authentic challenges while mentoring the students, and perhaps offering them employment.

Steve Lambert is a professor at the University of Waterloo and coordinates the Design Processes theme for the AUTO21 Network of Centres of Excellence. Visit www.auto21.ca.

Comments? E-mail jterrett@plant.ca.

spray.ca/proof.' Below this text is the Spraying Systems Canada Ltd. logo, which consists of a stylized blue and white mountain-like shape. To the right of the logo is the text 'Spraying Systems Canada Ltd. We know the territory'. At the bottom right of the image, there is a row of four small icons: a spray nozzle, a spray gun, a spray analysis tool, and a spray fabrication tool. Below these icons is the text 'VANCOUVER | TORONTO | MONTRÉAL'."/>

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DCSG R&D to make SAGD greener

ENVIRONMENTAL BOOST SAVES ENERGY, WATER, CUTS CO2

Thermal-efficient technology for heavy oil extraction could transform oil sands operations.

A project involving the CanmetENERGY Ottawa Research Centre and Canada's Oil Sands Innovation Alliance (COSIA) is developing a high-pressure, oxygen-fired direct contact steam generation (DCSG) technology that's intended to replace conventional steam production.

"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, a combustion technologies research scientist with CanmetENERGY in Ottawa.

With DCSG technology, a fuel is com-

busted with pure oxygen at high pressure. Wastewater contaminated with hydrocarbons and dissolved or suspended solids, such as the type produced from steam-assisted gravity drainage (SAGD) and present in tailings ponds, can be used with this system to create the final product – a flue gas stream consisting mainly of steam at 90% and carbon dioxide (CO2) at 10%. Trials have shown the process to have a thermal efficiency of nearly 100%.

This new method of producing steam for heavy oil extraction pumps the flue gas stream underground, at which point CO2 is sequestered, saving energy and diverting emissions.

Clements notes firing has been successful so far and will pave the way for the construction of a DCSG pilot plant capable of going up to 100 bar in a few years.



Suncor employs SAGD at its Firebag in-situ project in Alberta.

PHOTO: SUNCOR

The pilot plant will use process water with high solids and hydrocarbon contamination directly fired with natural gas. Clements expects that other waste fuels, such as petroleum coke and asphaltene, could eventually be combusted, and a demonstration DCSG plant might eventually be feasible.

In addition to the environmental

benefits of DCSG, Clements notes the process will produce an inert, vitreous slag, a by-product potentially suitable for use in the construction industry. Another benefit of the high-pressure, direct-contact design is a steam generator with a much smaller environmental footprint.

Source: Natural Resources Canada

» GHDPE

Sweet on green hardhat

V-Gard is made of sugarcane ethanol

Workers who wear hardhats should consider a sweet little number from MSA called the V-Gard GREEN.

The US-based safety products manufacturer with a Canadian office in Toronto has developed a hardhat made from sugarcane instead of high-density polyethylene (HDPE), using nonrenewable petrochemicals performance standards.

The green HDPE is sourced entirely from sugarcane ethanol, which reduces the overall carbon footprint associated with the production of hardhats, and it meets ANSI Z89.1 and CSA Z94.1.

A 2007 eco-efficiency study conducted by Fundacao Espaco Eco reports that for every ton of green HDPE produced, approximately 2.5 tons of carbon dioxide are captured from the atmosphere and environment.

The company says production of 200,000 tons of GHDPE reduces carbon dioxide by some 920,000 tons annually.

MSA developed the hardhat in Brazil, where the sugarcane used to produce ethanol is grown on less than 1% of the country's arable land.

The GHDPE is supplied by Braskem, a Brazilian chemical and petrochemical company that's one of the world's largest producers of thermoplastic resins.

MSA's headgear will be manufactured in the US and made available to the North American market in the fall.



Protects your head and environment. PHOTO: MSA

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» Green Manufacturing

Analyzing the risks

Look at trends and their impact on sustainability

BY BRETT WILLS

Integrating sustainability into the core strategy has become a common practice for many manufacturers but for some, the traditional motivators such as revenue generation or cost savings, simply do not provide enough incentive. What they should be looking at are the risks of not engaging in a sustainability strategy. Here's a simple approach, based on two broad questions that's comprehensive and powerful.

1. What are the company's key impacts on sustainability? Does your company use small amounts of water but large amounts of energy or vice versa? How about large quantities of materials but less energy and water? Socially, are employees working in less than desirable conditions or are operations negatively impacting the community through noise, undesirable smells or polluting of rivers and lakes?

2. What impacts could key sustainability trends have on the company? Here are some reference points: climate change; resource scarcity; water scarcity; increasing commod-

ity and resource costs; increasing stakeholder expectations; louder community and stakeholder voices; and social media.

Based on water scarcity and increasing costs, companies with water as a key impact are at risk. Those who cite material consumption could be at risk because of resource scarcity or increasing commodity prices.

The next step is to determine the extent of the risk. If the cost of water doubles over the next seven to 10 years, how would this impact manufacturing costs? What if competitors are actively focusing on water conservation: would this give them a pricing advantage?

Performing this exercise will help identify material risks and lead to plans for managing and mitigating them.

Brett Wills is the director of the Green Enterprise Movement and a senior consultant with High Performance Solutions in Cambridge, Ont. E-mail bwills@hpsinc.ca.

Comments? E-mail jterrett@plant.ca.

C I E N

CANADIAN INDUSTRIAL EQUIPMENT NEWS



Managing air quality is key to productivity and safety.

PHOTO: ROBOVENT

How is your AIR quality?

FIVE THINGS YOU SHOULD KNOW WHEN CHOOSING A DUST AND FUME COLLECTOR

There are plenty of variables to consider when you put together a ventilation system, from the type of dust and fumes to the air flow dynamics that carry particulates and pollutants throughout a plant.

When buying industrial ventilation equipment, evaluating a dust collector's capabilities isn't all that straightforward. Manufacturing's needs have changed over the past 20 years and air quality is key to improving plant safety and productivity. But there is a range of variables to be considered.

Here are five important buying tips:

1. Rough and ready. A well-designed dust collector integrates every component needed to make it operational – cabinet, motor, blower, control panel, safety features, filters – into a single, cohesive design. The only things that should be required on-site are simple electrical and compressed air connections. Too often buyers have to spec a cabinet and the mechanical components separately, followed by hours or days of labour expenses to wire and connect them. Units assembled prior to shipping can be properly inspected and tested (including a leak test of the cabinet) before they leave the manufacturer.

2. Get wired. The best way to improve the performance of a dust and fume collector used to be mounting a suitable control panel to the cabinet and automating certain functions. This often required contracting an electrician to handle wiring and installation. Sounds a little like buying a motherboard and CPU to assemble your own computer. Will it work? Not without a keyboard. But now some companies are designing ventilation equipment with an intuitive electronic control panel that automates the entire process without adding or installing an auxiliary control system.

When you're evaluating control systems, look for those that start and stop as a welder or machine operator works.

The best control systems monitor the collector's performance continuously, including the blower and the filter differential pressure; have built-in diagnostic features; and track maintenance history. A collector with an integrated control panel that has a digital touch screen interface is clean, sleek and far more effective.

3. Beware of suction loss. What does it take to keep a dust collector performing at peak efficiency? Clean filters. Regularly shake them clean of particulates and you will extend their lives. Most cartridge collectors include some form of pulse cleaning technology intended to jar the dirt loose from the filter so it can fall into a containment bin. But shooting a pulse of air through a filter to dislodge the surface dust won't necessarily do so. The natural tendency is for the air transporting the particulate to re-deposit the particulate on adjacent filters rather than into the containment unit.

More advanced pulse cleaning applies airflow science. Each filter should have a dedicated electronic pulse mechanism or valve that's programmed in sequence. A sequential, double-pulse action will neutralize the tendency of the particulate to re-deposit on nearby filters. Even distribution of the pulse pressure through a cone or similar device helps

Continued on page 22

» Supply Lines



Official chain cutting to open Walter's new Bio-Circle complex.

PHOTO: WALTER

NEW DIGS FOR WALTER

Walter Surface Technologies' \$30 million international campus is now complete with a new Bio-Circle facility for its environmental business

The 92,000 square-foot campus at the company's Montreal site is the international headquarters and houses corporate management, R&D, laboratories, product management, test centres, marketing, sales, warehousing, distribution and after sales service.

The Bio-Circle complex increases production capabilities tenfold. Key components include automated bottling systems, massive mixing and storage tanks, sophisticated pumping and packaging systems.

The company makes high productivity abrasives, power tools, tooling, chemical tools and BIO-CIRCLE environmental solutions for the metal working industry.

BIN DEAL FOR WESTEEL

Westeel has expanded its line of Smooth-wall bins.

The Winnipeg-based manufacturer of storage products has entered into an agreement with Norstar Industries, a manufacturer of grain handling products based in Morris, Man., to build the new bins.

The Magnum GN and FN models will be used for grain, seed and feed storage but the FN will also be used for fertilizer. "The new additions not only expand our product line but also allow us to offer cost-effective Smoothwall bins to new regions," says André Granger, Westeel's president and general manager.

The Magnum GN has a storage capacity of 3,236 to 5,720 bushels. The FN ranges from 118 to 209 tons (107 to 189 metric tonnes).

The new bins are available in Manitoba, North Dakota, South Dakota and Minnesota.

Westeel, a division of Vicwest Inc., operates five production facilities in Western Canada.

Consider all the variables

Continued from page 21

clean the entire filter. Filter orientation is also important. Vertical positions provide much less exposed surface area for re-deposits.

4. Gaze into the future. Keeping a lid on growing operational costs is an on-going challenge. Filters are one of those costs. Dust collectors should have high-quality media. But how long are the filters projected to last? Three months? Six? A year? Are they easy to replace? The correct size and design of a system is crucial. If a collector is too small for the application, it will rapidly consume filters.

Also consider the power a ventilation system consumes. The best collectors minimize energy use when they start and stop automatically with a machine operator, and actively adjust the operating speed and power to match the level of activity as well as the condition and resistance of the filters. How can you predict a collector's performance? Guarantees are an important indication of reliability. How long will your purchase be covered by the manufacturer?

5. Smart collectors put up a fight. Welding and cutting metal is not without risks. A certain amount of caution is required to maintain a safe environment and protect your equipment investment. Dust and fume collectors perform a crucial function. An unrecognized risk is the potential for air leaks during a collector's operation. Cabinet construction is important. Are seams and joints fully welded and engineered to create a perfect seal? The next line of defence should be a sensor that detects a leak, then instantly shuts down the operation to prevent exposure to potentially harmful fumes and particulates.

A fire suppression system is also key. It instantly activates if particulates are accidentally ignited during welding or other operations. Some collectors offer a system that detects both the presence of smoke and heat. Typically, when smoke is detected a damper is closed to eliminate oxygen and smother the fire. If heat is detected, FM-200 fire suppressant gas is deployed.

Making the right choice in ventilation equipment pays dividends into the future. Look closely at all the options and ask questions. When the dust settles, you'll be glad you did.

This article was provided by RoboVent Products Group Inc., a manufacturer of air filtration products based in Sterling Heights, Mich.

Comments? E-mail jterrett@plant.ca.

Dust, fumes, fans



Capacity to 23,000 cfm.

QUIETLY DELIVERED AIR QUALITY

Continental Fan's APK direct drive panel fans keep it quiet in industrial sites while they circulate the air.

They come in diameters from 12 to 36 in. with capacities up to 23,000 cfm.

An aluminum airfoil adjustable pitch impeller delivers precise performance matching with pressure development created by a deep-drawn venturi.

Fan blades are made of pressure-cast aluminum or glass-reinforced polypropylene.

Continental Fan Manufacturing Inc. is based in Buffalo, NY. Continental Fan Canada Inc. is based in Mississauga, Ont.

www.continentalfan.com

www.plantmagazine.ca/rsc/1

LET THERE BE LED LIGHT

The Big Ass Fan Co. has designed an industrial ceiling fan that also delivers energy-efficient lighting.

Its Powerfoil X LED, touted by the Lexington, Ky. fan manufacturer as "the world's first" LED fan, delivers as much light as a 400 W metal halide, covering the entire diameter of the fan while using less than 175 W. And it minimizes glare thanks to a tempered glass lens.

The light is easily installed and ties directly into an existing grid for simple control.

The company says the fan generates huge volumes of gentle air movement using 1- to 2-hp motors, making it an energy-efficient way to cool large areas.

Integrating the LED eliminates rearranging lighting grids to avoid a shadowing effect that may occur with eight to 24-ft.



Glass-smooth chamber.

TRACK PARTICULATES FOR LONG PERIODS

Casella CEL's Dust Detective environmental enclosure system works with a Microdust Pro for measurement applications where particulate concentrations must be monitored for eight-hours or more.

The IP65-rated waterproof, self-contained kit has been optimized for field use. A Casella Tuff sampling pump runs continuously for up to 12 hours, logging real-time data (as fast as once per second) and recording overall/maximum concentration levels. For added security the case can be padlocked at the sampling location.

Operation is simple. Ambient air is drawn into the case through the inlet tube fixed to the lid and passes through size selective foam filters for PM2.5 or PM10 sampling, or a cyclone for respirable fraction.

Alternatively, a standard 37-mm filter cassette captures gravimetric samples of total suspended particulate to be captured for analysis. The filters determine the exact composition of the particulate for source identification or risk assessment.

The Microdust Pro monitor measures and records levels continuously at user selected intervals and then downloads the information using Casella Insight



Ready for field use.

software at the end of the sampling period. Graphs and summary data reports show changing dust concentration levels over the measurement period, which correlate with local site activities or process variables that may occur during the recording.

Casella CEL Inc., a subsidiary of IDEAL Industries Inc., is based in Buffalo, NY.

www.casellausa.com.

www.plantmagazine.ca/rsc/2



Uses less than 175 W.

diameter ceiling fans, and directs the light where people are working.

www.bigassfans.com

www.plantmagazine.ca/rsc/3

EXTRACT LABORATORY FUMES

HEMCO Corp.'s LE laboratory fume hood incorporates a unitized superstructure, with non-metallic dual wall construction to resist chemicals and rust.

This UL 1805-classified hood comes in 3- to 8-in. widths.

An integral one-piece fume chamber is glass smooth with all coved corners. A VaraFlow baffle system directs the air through the chamber and the exhaust outlet with minimum turbulence and maximum airflow efficiency.

HEMCO is a manufacturer of laboratory equipment for the sciences and R&D technology sectors based in Independence, Mo.

www.HEMCOcorp.com

www.plantmagazine.ca/rsc/4

ELIMINATE DUST AT THE SOURCE

Dust Control Canada's DC 2900c dust extractor is portable, but powerful enough for stationary source extraction and effective vacuum cleaning.

It comes with a hose, wand, floor-tool and HEPA filter that's cleaned with a reverse air pulse for longer life.

Dust Control Canada is a Barrie, Ont.-based supplier of industrial dust extraction systems and vacuums.

www.dustcontrol.ca
www.plantmagazine.ca/rsc/5



Stationary or portable.

SKID PACKAGE SIMPLIFIES DUST COLLECTION

Farr Gold Series dust collection systems from Camfil Air Pollution Control (APC) now come in a skid package that speeds and simplifies installation for industrial users.

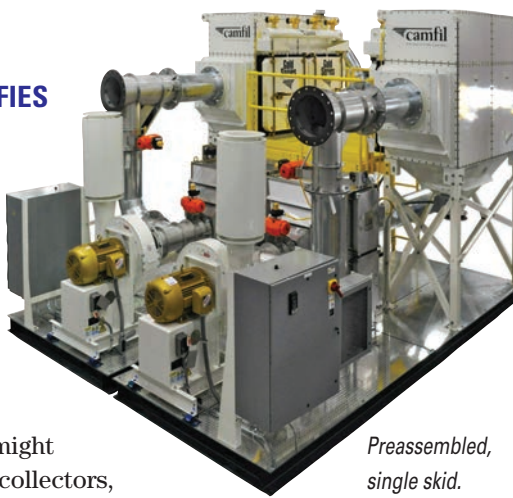
A typical skid package might include one or more dust collectors, active and/or passive explosion protection devices, doors for bag-in/bag-out filter change-out, BIBO HEPA filters, continuous liner discharge, fans, controls and interconnecting ductwork.

Pre-assembled components shipped on a single skid are moved easily by forklift or crane and are equipped with removable electrical and pipe connections. Even large units typically ship in a container, eliminating the time and cost to build special crating.

The packages come in small to large sizes to suit requirements.

Camfil is a manufacturer of air pollution control equipment based in Jonesboro, Ark. with a Canadian office in Concord, Ont.

www.camfilapc.com
www.plantmagazine.ca/rsc/7



Preassembled, single skid.

DUCTWORK ADDS POROUS FABRIC

DuctSox Corp. has added a porous fabric and a silver colour option to its SimpleSox fabric ductwork system for smaller, non-plan/specification ventilation applications.

The UL-classified SimpleSox covers simple design-build heating/cooling/ventilating projects of 6,000-cfm or less.

The corrosion-resistant ductwork breathes a small portion of supply air through the fabric to create a thin layered buffer zone of tempered air, preventing condensation on the cooler duct surface by the room's warmer, humid ambient air.

Porous SimpleSox also has high-throw airflow capabilities. Its two-foot-long, four-orifice AAO (Adjustable Air Outlet) component zippers anywhere into the duct run and has a range of throw distances, volume and direction that the company says surpasses metal duct/register system capabilities.

An intermediate 10-ft. long section complements its existing round 15-, 5- and 1.5-ft. modular lengths of porous or non-porous polyester-woven fabric ranging in five diameters of 12, 16, 20, 24 and 28 in. that accommodate up to 6,000-cfm per run.

DuctSox is a Dubuque, Iowa manufacturer of textile HVAC air dispersion systems.

www.simple-sox.com
www.plantmagazine.ca/rsc/6

KEEP CONTAMINANTS AWAY FROM WORKERS

Extreme Air Downdraft Tables from Micro Air Clean Air Systems do not require external exhaust hoses. Flexible and portable, they don't require ducting, either.

They're made for welding, grinding, soldering, sanding, painting, pouring and other industrial applications to draw contaminants away from worker vision and breathing zones.

HEPA filters make the tables 99.99% efficient.

They come with a built-in tool tray, an energy-efficient EPACT motor, a Roto-Pulse cartridge cleaning system and they far exceed OSHA noise standards. And an optional backdraft hood is available.

Micro Air Clean Air Systems, based in Wichita, Kan., makes clean air systems for commercial and industrial applications.

www.microaironline.com
www.plantmagazine.ca/rsc/8



No external exhaust hoses.

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Sealeze strip brush provides an effective barrier to flying chips and debris from routers, saws and planers. Ez-Flex® flexible strip brush conforms to the irregular shapes of routers and is available in a variety of sizes to meet any application need.



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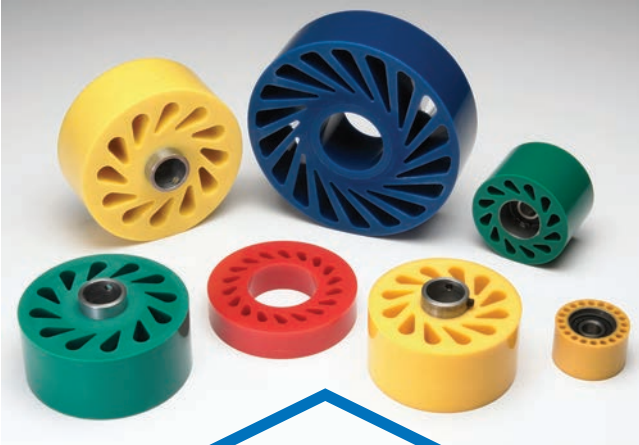


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CIEN

THERMAL IMAGING

THERMAL CAMERA PREVENTS EQUIPMENT FAILURES

Dwyer Instruments' TIC thermal imaging camera allows technicians to see heat contrasts to prevent plant equipment failures and detect air leaks in buildings.

Infrared radiation is given off by objects according to how warm they are and the camera translates the measured levels into visual light on the bright 2.5-in. LCD with 160 x 120 resolution. For increased differentiation among temperatures, the camera automatically adjusts the colour band to narrow the camera's temperature range (-20 to 250 degrees C).

Up to nine movable temperature spots give specific measurements of objects on the display. The camera also performs isothermal, area or profile analysis. All cameras include a Li-Ion battery, battery charger, docking station, SD memory card, SD memory card reader, sun shield, lens cap, video cable, standard reporting software and a calibration report. A Bluetooth earphone and USB cable are also included in TIC-30 units for making voice annotations and real-time recording. Dwyer Instruments is a manufacturer of controls and instrumentation based in Michigan City, Ind.

www.dwyer-inst.com
www.plantmagazine.ca/rsc/ 9



Automatically adjusts colour.

position and two intermediate stops. Feedback range automatically adjusts to new end position settings. The programmable actuator is used in material handling and packaging conveyor applications where flexibility is important such as when product and packaging changes are made to production lines which require resetting diverter arm opening widths and stops. In these fast-paced, high-changeover production environments, or any other general-duty application that requires frequent positioning changes, the actuator reduces set-up time. Enhanced control allows for 12 or 24 VDC switched power operation by turning power off to the motor automatically when the internal end limits are reached. An integral MP150 Metri-Pack 8-pin moulded connector allows several standard input and output features to monitor the operation of the actuator (including motor thermal and current overload protection).



Feedback range adjusts end position settings.

They feature a <56dB noise level, 700-lb. maximum dynamic and static load rating, 0.25 in./sec. (1 in. no load) speed rating, and a 16-in. maximum stroke length with end-of-stroke limits. An array of actuator controls is also available from switch box controls for basic extend/retract function to state-of-the-art, microprocessor-based digital electronic controls using SMT design and manufacturing processes. Warner Linear is a manufacturer of electromechanical actuators based in Belvidere, Ill. www.warnerlinear.com
www.plantmagazine.ca/rsc/ 10

ACTUATORS

ACTUATOR SUITS MATERIAL HANDLING APPLICATIONS

Warner Linear's S-Track linear actuators now include a programmable model that comes with an integrated keypad to allow operators to set and reset end of travel

» Health & Safety

Busting dust hazards

Be aware of explosive conditions

Sugar, coal, wood and flour seem harmless, yet in certain conditions, dust from these and other substances have the potential to fuel deadly explosions, and such potential hazards often go unrecognized. Investigations of fatalities have shown that material safety data sheets (MSDSs), regulated by the Workplace Hazardous Materials Information System (WHMIS), did not adequately describe dust hazards for the substances involved in these explosions. Although there is currently no combustible dust hazard class under WHMIS, suppliers are required – see Controlled Products Regulations 12(11) – to declare all product hazards on a MSDS as a condition of sale and importation. Information on appropriate engineering controls to prevent explosions must also be disclosed. But hazards are not always declared, potentially putting workers at risk of injury or death. Dust hazards occur in a variety of industries, including metal processing, wood product, chemical, food and pharmaceutical, grain storage, rubber and plastic, and coal-fired power plants. Combustible materials come from coal, chemicals, wood, rubber, grain, sugar, flour and metals. Indeed, most natural and synthetic organic materials, as well as some metals, form combustible dust if they're processed in powdered form. Five conditions must be present for an explosion to occur: combustible dust; an ignition source; oxygen in the air; dispersion of dust into the air; and confinement of the dust cloud in a building or by the ceiling. A dust cloud ignited within a confined or semi-confined vessel, area, or building, burns very rapidly and may explode. This could cause fires, additional explosions, flying debris and the collapse of parts or all of the building. An initial explosion that occurs in processing equipment or in an area where there's an additional accumulation of dust may shake more of it loose, or damage a containment system (such as a duct or vessel). If there is an additional release and it's ignited, there could be one or more secondary explosions that are even more destructive. Suppliers can help prevent explosions and injuries by ensuring MSDSs contain complete hazard information for substances and materials that could potentially combust and/or explode.

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

Comments? E-mail jterrett@plant.ca.

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ADHESIVES



Bonds small components.

LEDS CURE ADHESIVES QUICK

DELO Industrial Adhesives has added two LED curing lamps to its product line.

The DELOLUX 202/400 LED curing lamp, based on the DELOLUX 20/400, offers a longer irradiation line with intensities of more than 200 mW/cm², a key precondition for process-reliable adhesive curing.

With a light exit area of 48.1 mm, it's used for bonding small components in linear production systems, including the manufacturing of small switches. The double length of the light exit area allows reliable adhesive curing even at elevated belt speeds. The lamp heads array seamlessly in both x- and y-directions for a variety of irradiation geometries.

The DELOLUX 50 x4 spot lamp incorporates four LEDs into a lamp head with a 15-mm diameter. The irradiated area is significantly larger than the DELOLUX 50 xl and the intensity is higher.

Use it for small area jobs, such as lens bonding or fixing of ferrites in magnet coils. It's available in two primary lenses (5 and 10 mm), which can be screwed to specific lamp heads.

DELO, based in Windach, Germany, is a manufacturer of industrial adhesives. www.delo.de

www.plantmagazine.ca/rsc/11

POWER TRANSMISSION



Corrosion resistant.

MRC BEARINGS GET IN THE GROOVE

SKF turns up the corrosion resistance with its MRC brand of deep groove ball bearings for harsh operating conditions encountered in a variety of food and beverage processing applications.

The rings are manufactured from high nitrogen steel (HNCR) for superior corrosion resistance, hardness, and fatigue life that exceeds the capabilities of standard 52100 or 440C stainless steel bearings. Ceramic balls, stainless steel cages, and stainless steel-backed rubber seals add to the protection of all external and internal surfaces.

There's also a green benefit to HNCR with virtually no trace of sulphides,

aluminates, silicates or globular oxides, which also adds to longer bearing life.

The bearings come in either open or closed designs and in a wide range of bore sizes to equip rotating machinery.

SKF is a global supplier of bearings, seals, mechatronics, lubrication systems, and services. SKF Canada Ltd. is based in Toronto.

<http://www.skf.com/ca>

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SINAMICS S120: NOW A NA VERSION

Siemens has a North American version of its Sinamics S120 Cabinet Module drive packages with optional UL/cUL listing.

It makes configuration of complex common DC bus line-ups for multi-motor coordinated drive systems and high horsepower stand-alone drives easy with pre-designed, fully type-tested modules, including line side components, line infeeds (bus supplies) and motor inverters, all with a broad range of standard options.



Easy configuration.

Individual cabinet modules have a standardized power and control interface. The optional DC bus current rating and enclosure type, tailors selections to best meet jobsite and environmental conditions. For line side converters, there is a choice of non-regenerative Basic Line Module (diode rectifier) or fully regenerative Smart (more basic six-pulse unit) and Active (low harmonics exceeding the demands of IEEE 519) Line Modules.

Unity or a controllable power factor and DC bus voltage control delivers stable operation of motors even on irregular power supply systems. Basic and Smart Line Modules also configure in 12-, 18- or 24-pulse systems for low harmonic operation. All these configurations are now compliant with the National Electrical Code (NFPA 70) and Short Circuit Current Ratings per UL508A supplement SB, up to 100 kA.

Siemens Drive Technologies Division in Atlanta is a supplier of drive train, electrical and mechanical components.

www.usa.siemens.com/lv-drives

www.plantmagazine.ca/rsc/ 13

VACUUM

KEEPS DUSTY ENVIRONMENTS CLEAN

EXAIR's Heavy Duty HEPA Vac attaches to an ordinary 55 g open-top drum to create a powerful, HEPA quality, industrial vacuum cleaner that moves more material with less wear, and filters contaminants to HEPA requirements in dusty environments that require frequent cleaning, all at a quiet 82 dBA.



99.97% filtration.

An easily maintained pre-filter stops larger particles, while the HEPA filter handles smaller matter. All filters are

tested for minimum 99.97% filtration at the 0.3 micron level in accordance with IEST-RP-CC-007.

The vacuum system comes with the a lever lock drum lid, shutoff valve, pre-filter, HEPA filter, 3 m static resistant hose, hose hanger, a 1/2 NPT quick connect coupling, 6 m compressed air hose, pressure gauge and aluminum chip wand.

Exair is a manufacturer of compressed air products based in Cincinnati.

www.exair.com

www.plantmagazine.ca/rsc/ 14

MACHINING

MULTI-AXIS MACHINING ENHANCES PRODUCTIVITY

The Nanoform X multi-axis ultra precision machining system from Precitech increases productivity and ease of use in diamond turning and the grinding of optical lenses, mould inserts, mirrors, and precision mechanical components.

It's configurable from two to four axes for producing spherical, aspherical and freeform surfaces of up to 440 mm in diameter.

The machining system minimizes the time required to perform non-value-added activities, such as machine and tool setup, maintenance and cleanup.

Precitech, a manufacturer of precision machining solutions based in Keen, NH, has also made design changes that reduce clean-up time while containing waste and debris from metalworking operations.

www.precitech.com

www.plantmagazine.ca/rsc/ 15



Produces spherical and aspherical surfaces.

Need to do More with Less? VAC-U-MAX Model 1020. The Most Powerful Continuous Duty Electric Vacuum Cleaner.



Model 1020 15 HP with 2 cubic yard self dump hopper.



- * POWER! 50% more vacuum.
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- * User-Friendly: Quiet, Quick Disconnect Hoses, Ergonomic Cleaning Tools, Rolls through a 34" doorway.
- * Reliable Equipment that is proudly made in America.

VAC-U-MAX is a premier manufacturer of industrial vacuum cleaning systems for production lines and other dust-intensive areas. Put our field-proven industrial vacuum cleaning systems to work for you, and watch dust and other particulate contamination disappear.

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Belleville, New Jersey

www.vac-u-max.com/vacuum
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SWITCHES



Handles rapid temperature changes.

RELIABLE FLOW DETECTION

AutomationDirect's ProSense FSD flow switches monitor liquid media and provide reliable flow detection for flow applications.

The sensing principle ensures an extremely fast response time and allows for a more precise setpoint setting.

Use the switches for applications with rapid temperature changes or where fast response time is required, such as

machine tool coolant flow, HVAC cooling water flow and injection moulding cooling water flow.

Two 24 VDC models are available in 0.26 to 26.4 gpm or 1.32 to 26.4 gpm sensing ranges and feature a fast response time of 10 ms.

Valve bodies are constructed of nickel-plated brass fitted with a 4-pin M12 quick disconnect and have LED output status indication.

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

www.automationdirect.com.

www.plantmagazine.ca/rsc/16

WIRELESS SWITCHES INSTALL ANYWHERE

Battery-operated limitless switches from Honeywell S&C with a non-contact technology actuate based on the presence or absence of magnets installed on a device.

Users choose either top or side sensing, flexibility that, combined with proven harsh-duty packaging, increases efficiency and reduces installation and maintenance costs.



Increases flexibility.

Wireless capability also increases flexibility and easy reconfiguration in remote or temporary installations

Instead of a lever, button or wobble stick, the switch is actuated with a magnet to simplify use in tight areas often found in machine tools, packaging

machinery, lifts, construction equipment and industrial machines, or in applications where mechanical actuators are not feasible. The switch's zinc head and body are phosphate treated and epoxy finished to deliver sealing to IP67 and NEMA 1,4,12,13.

Honeywell Sensing & Control is a manufacturer of pressure switches and airflow sensors based in Golden Valley, Minn.

www.honeywell.com

www.plantmagazine.ca/rsc/17

SWITCHES STAY CONNECTED

EtherNet/IP and PROFINET-enabled EDS-405A/408A EIP and RN switches from Moxa are engineered to enhance the efficiency of industrial networks.

They're pre-configured for plug and play simplicity and deliver a cost-effective way of integrating legacy networks without additional configurations and modifications.

Ready-to-use Turbo Ring and Turbo Chain network redundancy deliver fast network recovery under 20 ms (with 250 switch loads) if a connection failure occurs. Booting time of less than 10 sec. ensures system availability and minimizes factory floor maintenance costs.

The Ethernet/IP switches are visible with custom faceplates in FactoryTalk View industrial management software to increase operational and network visibility in factory automation HMIs. AOIs and EDS Files are available for all Moxa



Ethernet/IP and PROFINET enabled.

switch models to fully integrated switch installation.

PROFINET switches are easily integrated into the Simatic Step 7 engineering tool. It's more convenient for automation engineers to configure through Step 7 and monitor with automation HMIs.

The switches are available in five- or eight-port DIN-rail mount designs and both handle rugged environments. They also support a variety of useful management functions to accommodate just about any application that requires an ethernet switch, such as IGMP snooping, IEEE 802.1Q VLAN, QoS, port mirroring, SNMP, bandwidth management, and warning by e-mail or relay.

Moxa is a manufacturer of industrial automation switches based in Brea, Calif.

www.moxa.com

www.plantmagazine.ca/rsc/18

BEARINGS

URETHANE FOR NON-MARRING OPERATION

Fixtureworks' Fairline urethane-covered bearings deliver quiet and non-marring operation that's abrasion resistant and durable.

Fixtureworks, a manufacturer of modular fixturing and workholding components based in Fraser, Mich., offers the bearings in single and double configurations. Single bearing set ups come in sizes from 0.750 to 3 in. and from 20 to



Imperial and metric sizing.

70 mm. Widths range from 0.196 to 0.563 in. and 5 to 12 mm.

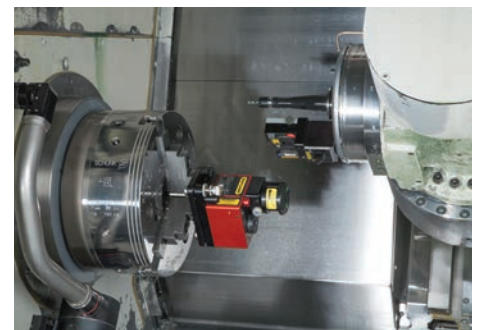
Double bearing styles come in diameters from 0.750 to 3 in. and 20 to 70 mm, with widths from 0.392 to 1.125 in and 10 to 24 mm. Durometers are available from 35 to 95 in both inch and metric sizes.

The stud mount version is assembled with a button head cap screw, spacer and locknut. Stud mounts are also available in metric sizes.

www.fixtureworks.net

www.plantmagazine.ca/rsc/19

TEST AND MEASUREMENT



Data transfers wirelessly.

ALIGN MACHINE TOOLS WITH HYPER-PRECISION

Damalini's Easy-Laser E940 measures and aligns machine tools using HyperPSD technology with a displayed resolution of 0.0001 mm, and transfers data from the detector to the display unit wirelessly via Bluetooth.

The system measures straightness, flatness, level, squareness, the pointing direction of spindles and bearing condition, but it's also possible to measure most types of machines.

The system carries out work quickly, documenting results and comparing them with standards such as ISO10791-1 and 10791-2.

The operator can also check the machine more frequently and check against the documentation before starting it again because the unit is lighter and easier to use. This prevents costly production of parts that don't meet required tolerance while extending the life of the machine tool.

Damalini is a manufacturer of measurement technologies based in Molndal, Sweden.

www.damalini.com

www.plantmagazine.ca/rsc/20



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CONNECTORS

FIELD-READY CONNECTORS

Binder-USA's angled M8 field-attachable connectors with screw clamp termination, most commonly used for sensors and actuators in automation and industrial applications, eliminate the need for special tools.

The Series 768 field-attachable connectors are available with three and four gold-plated contacts. They withstand a maximum of 60-30 V and up to 4 A per contact.

Cables with an overall diameter of 3.5 to 5 mm and wires between 26 and 20 AWG are required. When fully mated, an IP67 rating is retained to ensure protection from liquids and debris.

Binder-USA, based in Camarillo, Calif., is a subsidiary of Franz Binder GmbH & Co., a manufacturer of circular connectors headquartered in Germany.

www.binder-usa.com

www.plantmagazine.ca/rsc/21



Eliminates special tools.



Mission critical analysis.

ANALYZERS MAKE ERRATIC READINGS CONSISTENT

The Condumax II hydrocarbon dew-point analyzer from Michell provides faster and more accurate measurements in industrial environments such as natural gas storage plants where fast response is critical when emergency supply is required to meet peak demand.

The analyzer is currently employed by a European natural gas storage facility where hydrocarbon dew point readings were erratic and water dew point readings were unresponsive using other analyzers.

Using a rented unit to provide measurements in parallel with the operator's existing analyzers, the Condumax II checked the accuracy and responsiveness of the equipment.

During the test period, the Condumax II provided consistent hydrocarbon dew-point readings, and showed better levels of response at lower dew points than the previous analyzers. Readings responded significantly faster to changes in the process.

Michell Instrument is a manufacturer of moisture and humidity measurement technologies based in Ely, UK with Canadian distributors in Edmonton and Mississauga, Ont.

www.michell.com

www.plantmagazine.ca/rsc/ 22

MATERIAL HANDLING



Enhances image formation.

DECODE BARCODES QUICKLY

Cognex Corp. has upgraded its line of DataMan 8000 handheld barcode readers with the company's 1DMax+ Hotbars image-analysis technology and 2DMax+ algorithm to decode 2D printed and DPM matrix codes.

The units also include a rapid dual-focus image acquisition routine for decoding barcode sizes.

With 1DMax+ and Hotbars onboard, the device reads challenging 1D barcodes quickly and easily even when they're damaged, blurred or at extreme perspective.

The 2DMax+ algorithm is effective even on codes with perspective distortion, low contrast, or finder and clocking pattern

damage. Users select the type of code to be read (from easy to extremely challenging). This is useful for increasing reading speeds when only printed or high-contrast codes are being read or when facing the most challenging DPM codes that cannot be read with standard settings.

Two base models use patented auto-exposure algorithms to enhance image acquisition and a liquid lens boosts performance.

Incorporated UltraLight technology enhances image formation on any code type and surface, especially in dark, bright field, and diffuse lighting.

Cognex Corp., based in Natick, Mass., manufactures machine vision and industrial ID systems.

www.cognex.com

www.plantmagazine.ca/rsc/ 23

MOTION CONTROL

MOUNT BIG COMPONENTS IN SMALL SPACES

ETP Hydropress shaft bushings from Zero-Max quickly and precisely fasten components in tight spaces on large shafts with diameters from 80 to 200 mm, locking into position gears, sprockets, pulleys and similar components in a machine's power transmission system.

The stainless steel bushings handle torque ranges from 21,000 to 200,000 ft.-lb., and come in custom sizes. They apply hydraulic pressure contained in a double-walled sleeve to lock components into position on a shaft. Radial and axial connection is made easily using a grease pump for mounting.

Once mounted and pressurized, the conical angle of the outer sleeve locks the device into position forming a very tight, continuous connection between the shaft and mounted component. The bushings are reconfigurable without losing concentricity.

Zero-Max is a manufacturer of servo motion control products based in Plymouth, Minn.

www.zero-max.com

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ENCLOSURES



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VENT KEEPS CONTAMINANTS OUT

The GAW113 acoustic vent from WL Gore & Associates' provides dust and splash protection for acoustic openings

in portable electronic devices such as scanners, two-way radios, tablet and laptop PCs, and other devices where reliable performance is essential.

To ensure portable electronics function properly, they require acoustic openings that enable sound to enter and exit the system. When these opening are not adequately protected, contaminants such as dust, dirt and liquids are able to enter the enclosure and compromise acoustic performance. Portable electronic vents provide a barrier while equalizing pressure and minimizing transmission loss and attenuation.

GAW113 vents are made of a proprietary non-woven composite material that adheres to the acoustic openings,

providing a water spray efficiency of 90% and captures particulates as small as 5 µm. Dark grey and only 0.4 mm thick, it compliments most device designs.

Gore is a manufacturer of high performance fabrics based in Newark, Del.

www.gore.com

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CONTROLLERS

SECURE WIRELESS COMMUNICATIONS

IXXAT's CANblue 11 universal bridge, gateway, and PC interface keeps wirelessly networked CAN components and systems secure while communications adapt data optimally to specific applications in terms of latency, data throughput, and fault tolerance, even in systems running at 1 MBit/sec and 100% bus load.

A typical application is the wireless connection of CAN segments via Bluetooth access using a notebook or handheld unit. Areas where an extremely reliable connection is required, such as the networking of rotating or mobile system parts, is also doable.

Bluetooth's FHSS process changes the frequency messages are transmitted about 1,600 times a second. If one of the 79 channels experiences interference, the fault is detected and the message is resent in another frequency range. The available bandwidth is used sparingly so multiple Bluetooth systems work in parallel without interfering with one another.



Connects CAN segments via Bluetooth.

Even WLAN systems overlapping with Bluetooth only interfere with the network operation to a negligible extent, since only a few of the 79 channels overlap the WLAN frequency band.

Used as a bridge, CANblue II transmits data transparently over the secure Bluetooth connection and permits applications to be implemented using higher protocols (CANopen, DeviceNet, SAE J1939).

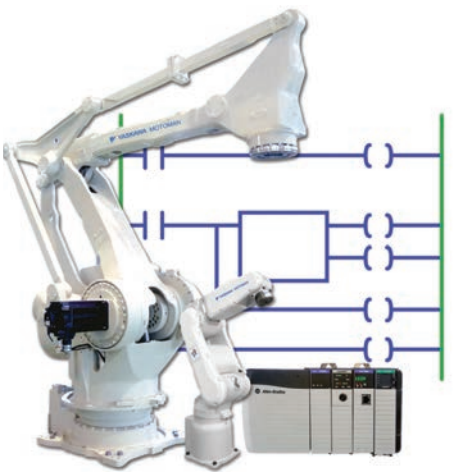
Its broad power supply voltage range of 9 to 30 VDC, compact construction, and fastening holes in the housing simplify integration of the device into existing systems. The CAN interface is implemented in compliance with ISO 11898-2 and has a DSub 9 connector that meets the requirements of CiA 303-1.

An internal or external screw-on antenna supports transmission distances of up to 300 metres, depending on spatial conditions. The radio signal quality is read out using Bluetooth to monitor the connection quality.

IXXAT is a supplier of data communications tools for the automation and automotive industries based in Weingarten, Germany.

www.ixxat.com

www.plantmagazine.ca/rsc/ 27



Faster application development.

GATEWAY SIMPLIFIES DUAL-ROBOT CONTROL

Yaskawa Motoman has enhanced the functionality of dual-robot control with its MLX100 Robot Gateway, which controls and programs the unit entirely within the ControlLogix platform, eliminating the need for additional controllers or languages for robotic application development.

Robots are programmed through the same PLC ladder logic code widely used for controlling peripheral equipment such as filling machines, packaging machines and conveyors.

The system makes a number of applications possible, including those that require vision guidance and line tracking such as assembly, part transfer, picking, sorting, kitting, case packing, palletizing and de-palletizing.

Yaskawa Motoman is a Japanese manufacturer of robotics technologies with North American operations based in Waukegan, Ill.

www.motoman.com

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SPRINGS

SPRING-TEMPERED WIRE HANDLES THE LOAD

Linear springs from The Smalley Steel Ring Co. made from spring-tempered material are shaped into waves along the length of the wire and act as load bearing devices with the same characteristics as wave springs, but they fit in a circular cavity.



Load bearing device.

The carbon and stainless steel springs, available in more than 200 sizes, may be located in an axial direction but still provide a radial force.

They're also available in custom sizes, made of exotic alloys.

The Smalley Steel Ring Co., based in Lake Zurich, Ill., manufactures retaining, snap and wave rings.

www.smalley.com

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REELS

DUAL PEDESTAL BASE EASES HANDLING

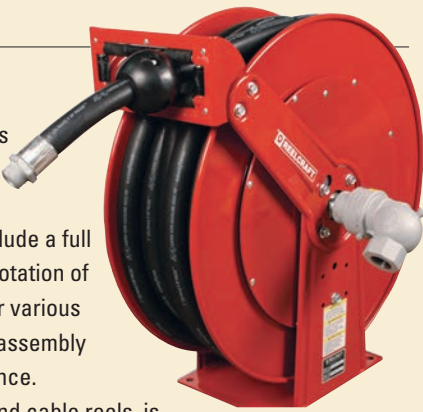
Reelcraft's 800 spring-driven liquid propane hose reels incorporate a dual pedestal base and guide arm designed to enhance structural strength.

The reels, available in stainless or carbon steel, include a full circle swivel and two sealed ball bearings to ensure rotation of the main shaft is smooth. A guide arm is adjustable for various track mounting positions. And a containerized spring assembly boosts safety, while easing handling during maintenance.

Reelcraft, a manufacturer of industrial hose, cord and cable reels, is based in Columbia City, Ind.

www.reelcraft.com

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Spring assembly boosts safety.



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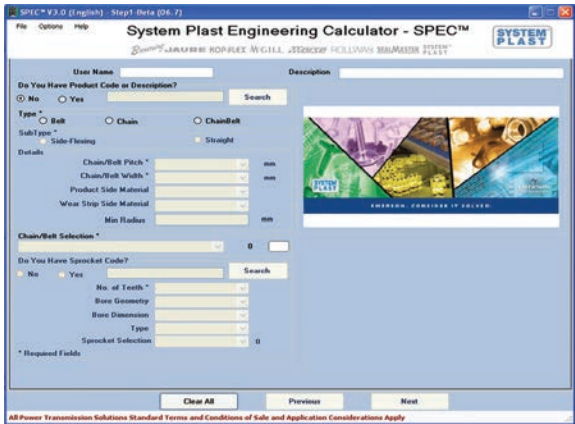
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Built-in intelligence.

SPEC EVALUATES CONVEYOR APPS

Emerson Industrial Automation’s SPEC (System Plast Engineering Calculator) uses built-in intelligence to evaluate applications for steel or plastic chain and modular belt conveyors by validating detailed user specifications with a red, yellow, or green rating.

Where possible, the software also presents an alternative optimum solution that may reduce energy or lubrication requirements with System Plast’s Nolu-S wear material.

The process involves three steps: definition of conveying requirements, application requirements with product specifications, and system layout.

Developed by Emerson’s Power Transmission Solutions business, SPEC reports results that include required chain pull, motor speed, torque, shaft power and maximum line back pressure.

The software issues alerts for incompatible parameter inputs during the process to help the user achieve successful results. Applications include carbon steel, stainless steel, several types of LF acetal for high-speed/reduced lubrication, and New Generation chain designed for high-speed dry running applications. Wear strip options include stainless steel, UHMW PE, and Nolu-S self-lubricating UHMW for low-noise, energy-efficient dry running.

The software is based on Emerson’s original SysCalc program, but with major upgrades and enhancements. It includes an up-to-date database of System Plast chain/belt and sprockets, and accepts most common product materials or user-defined ones. The software uses System Plast product codes, or it automatically determines the correct code based on selected specifications.

SPEC is free and available in nine languages: Chinese, English, French, German, Italian, Portuguese, Russian, Spanish and Turkish.

Emerson is an industrial technology company based in St. Louis, Mo.

www.powertransmissionsolutions.com

SIMULATION EXTENDED WITH 3-D

Simulation provides insight into what changes or improvements are necessary prior to project implementation.

A plant or warehouse, for example, could determine exactly how many forklifts or how many feet of accumulator conveyor are needed in a facility before building it or purchasing the equipment.

Arena simulation software v14.5 does that more efficiently by extending its 3-D animation capabilities to include material-handling components, such as conveyors and transporters.

Implemented within the Arena Visual Designer framework, the 3-D components are easily dragged and dropped into the simulation environment without programming or coding.

Users also import content from popular 3-D modelling programs, such as SketchUp, AutoDesk or Blender. Like the previous version, v14.5’s Visual Designer tool runs on the Microsoft .NET framework to provide common functionality with Windows applications and provides access to charts and graphics to create dashboards for business presentations.

Rockwell Automation Inc. is an industrial automation company based in Milwaukee, Wis.

www.arenasimulation.com

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www.plantmagazine.ca/rsc/121

Carr Lane's catalogue has expanded by 100 pages, now including 5-Axis tooling, in addition to clamps, pins, knobs, hoist rings, threaded inserts, spring-loaded devices and much more.
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BRECOflex CO., L.L.C.’s new pulley catalogue “B216” features made-to-order and stock pulleys. “CNC” state of the art pulley manufacture allows for very precise machining standards, leading to superior product quality and quick product availability. Made-to-order pulleys are available with

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This fully illustrated, 8-page catalogue features a wide variety of accessories including: stamped and rolled angle rings, blast gates, galvanized spiral duct, diverters, clean outs, nozzles, duct silencers, rotary air locks and exhaust fans.

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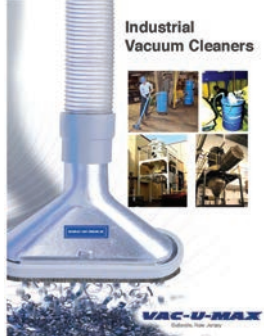
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Corporate welfare is wasted money

BY MARK MILKE

You might be surprised to find how myths crop up about government expenditures. Exhibit A is a Institute for Research on Public Policy (IRPP) report that claims Canada needs even more “industrial policy,” academic lingo for subsidies to business, as if governments had not already long practised such policy, and at a considerable cost to taxpayers.

Industrial policy (more colloquially known as corporate welfare) suggests smart people in government successfully

“With the exception of Alberta ...most Canadian governments are too eager to send tax dollars to corporations...”

targeting this or that sector for growth. Let me instead point out that peer-reviewed, academic research on business subsidies cast doubt on the many claims made in defence of the practice.

A comprehensive analysis of studies that support industrial policy from Terry Buss, a professor in Australia and formerly with the World Bank found most were sponsored by industry and/or never peer-reviewed, and thus lacked scientific

rigour. That led to correlation-causation errors and faulty claims of increased investment and employment.

He concludes such reports “cloaked in the legitimacy of what appears to be scientific and economical [rationale], provide politicians and practitioners with justification to award political favors without appearing to be political.”

In Canada, with the exception of Alberta, most governments are too eager

to send tax dollars to corporations. (My 2009 report found Canadian governments provided more than \$200-billion in capital and operating subsidies to business in a 14-year period.)

But they are much less eager to be frank about the cost, including a chronic failure to collect on past loans. This is particularly true of the federal Conservative government. For instance, Cliff Oldridge, a retired civil servant who once worked for what is now Industry Canada, filed an Access to Information request for the repayment forecasts of five department programs that authorized \$5.3 billion in taxpayer cash to corporations from 1996 to 2011. His request was denied, even though such estimates would not reveal confidential commercial information. There is a reason: the department’s own history and internal reports reveal its repayment forecasts are routinely revised downward.

Repayment writedowns

Consider a 2005 analysis prepared for Industry Canada by a consultant who noted “repayments are typically less than originally forecasted.” The consultant informed Industry Canada its original repayment estimates “totalled about \$4.3 billion, while the current repayment estimates total about \$2.4 billion, or 55% of the original aggregated estimates.” In other words, the federal government wrote down expected repayments by \$1.9 billion.

In another example of non-transparency, since 2008 cabinet ministers and MPs from the Harper government have announced \$550 million in funding from Industry Canada’s Strategic Aerospace Defence Initiative. Media releases claimed the money given to companies such as Pratt & Whitney, Heroux Devtek, Bristol Aerospace and others, were in the form of “repayable contributions.” This language suggests to the public that it’s guaranteed such loans will be repaid one day. In fact, more than a half-billion dollars disbursed were – in the accurate legal language – “conditionally repayable contributions.”

Companies that receive these contributions don’t necessarily have to pay them back. Repayments depend on a variety of factors, known only to departments and recipients; however, we do know that repayments are poor.

If the Harper government included the “conditional” word in its public statements, it might flag how billions in taxpayer dollars are sent out with only a chance of a partial return.

Canada’s governments have never taken a breather in “industrial policy” and the call for more of it is ill-advised.

Mark Milke is a senior fellow at the Fraser Institute and author of five reports on corporate welfare. Visit www.fraserinstitute.org. This column is distributed by Troy Media (www.troymedia.com).

Comments? E-mail jterrett@plant.ca.



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