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PLANT

ADVANCING CANADIAN MANUFACTURING

Volume 72, No. 08 November/December 2013

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Anchors AWAY

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PM 40069240

Editorial

It's not a petro-dollar

Alberta's oil sands can't catch a break. Environmentalists, petro-negative economists, politicians and foreign governments blame bitumen for being the dirtiest oil ever and contributing to the destruction of the planet via climate change. Now the oil sands are accused of contributing to manufacturing's suffering by driving up the value of the dollar, according to a report by the Pembina Institute and Equiterre.

There is plenty of analysis to wade through quoting umpteen sources and reports with charts and an expansive discourse on Dutch Disease, but here are a few of the highlights: only 14% of employment opportunities will be in provinces other than Alberta; one-third of manufacturing's decline is because of an expensive petro-dollar; and previous research shows a $1-million investment in clean energy creates 15 jobs, compared to two via the oil sands. The report contends favouring oil and gas over other sectors with longer-term growth potential is putting the prosperity of Canadians at risk.

What do manufacturers have to say?

"Bullshit," said Jayson Myers, president and CEO of Canadian Manufacturers & Exporters as he unveiled the results of a CME analysis (during the National Supply Chain Forum in Calgary, an oil sands/supply chain event) that pretty much said the opposite.

Myers, an economist, has some interesting numbers of his own. While both sides agree that most of the benefits fall to Alberta, he points out manufacturers from across Canada also enjoy the bounty: Ontario gets about 14%, the Prairie Provinces 9% and Quebec 6%.

But looking ahead, dollars between 2012 and 2030 will be between $211 billion and $387 billion; and based on the top end, manufacturing related to the oil sands would be equal to 75% of current annual industrial production. Further, the benefits would be spread across a range of 234 product classifications, including top categories such as agriculture, petroleum and coal production, steel products, machinery and architectural/structural metals.

As for the petro-dollar thing, Myers correctly reminds us the loonie would be high without the oil sands, thanks to a weak US dollar.

Of course, the critics will not be mollified by anything the CME has to say and will continue to talk smack about the oil sands, but it's energy wasted.

China is responsible for 23% of greenhouse gas emissions, the US 19%, the EU 13% and Canada 2%. Of that 2%, the oil sands accounts for 7% of Canada's total emissions and about 0.15% of global emissions. If Canada were to shut down the oil sands tomorrow and not extract or upgrade another particle of bitumen, there would be virtually no impact on global emissions.

Meanwhile, the hunger for cheap energy grows elsewhere in the world. The *US Energy Outlook*, which gauges demand through 2040, reports there will be very little change in the mix of energy sources, yet even with all the expensive wind turbines and solar panels, there will be a 46% increase in greenhouse gas emissions.

The International Energy Agency even downplays the oil sands' role in climate change. In fact, it suggests oil and gas will likely be a force for good. With the US relying more on its own ample supplies of fossil fuel energy, Canadian exports will be directed to Asia where demand is escalating. Oil sands production and natural gas will help to replace the use of coal, a generous contributor to global emissions.

Until a very clever innovator comes up with an alternative that renders fossil fuels obsolete in the way automobiles consigned horses to purely recreational pursuits, we would be wise to focus investment on ways of making petro-energy a much cleaner contributor to the economy.

Joe Terrett, Editor

Comments? E-mail JTerrett@plant.ca.

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» Bulletins

COM DEV International Ltd. has landed a contract worth more than $65 million, its largest, to an unnamed customer. The Cambridge, Ont. manufacturer of space hardware subsystems is to deliver C, Ku-band and Ka-band multiplexers, switches and microwave components for multiple satellites, which will be part of a global network.

BRP is taking its Sea-Doo production to Mexico. The Valcourt, Que. manufacturer of powersports vehicles has inaugurated a new plant in Querétaro's industrial park that represents a $100 million investment. It plans to manufacture its entire Sea-Doo watercraft line-up there by 2015.

Newalta Corp., an environmental technology company with facilities across Canada, and **DuPont Canada** have signed a development agreement to test an innovative water processing technology for Alberta's oil and gas industry. The collaboration will combine DuPont's scientific and technical expertise with Newalta's operating capabilities and customer relationships.

TransAlta Renewables Inc. plans to acquire an economic interest in a 144-megawatt wind farm in Wyoming from an affiliate of **NexEra Energy Resources LLC** for about US$102 million. The subsidiary of TransAlta owns 28 other wind and hydroelectric generation facilities.

Bombardier has sold its first 415 Superscooper aerial firefighting aircraft to a partnership led by **Tenax Aerospace, LLC** of Ridgeland, Miss. in a contract worth an estimated US$34.5 million. The aircraft is built to land on unpaved runways, lakes, rivers and seas for rapid initial attacks to extinguish and contain fires. It was assembled at Bombardier's North Bay, Ont. facility and will be under contract to the US Forest Service starting in December.

Seventy-five per cent of Ontario's small business owners have no plans to hire next year, according to a study by **Meridian**. The Ontario credit union's *Small Business Banking in Ontario* study reports 90% are not expanding their current locations; 91% are not planning to open another location; and 12% are planning to sell their business. Top challenges for 87% of the 250 respondents are cash flow (45%) and work/family balance (42%).

Bombardier wins 2013 AME lean award

Toronto plant scores high on improvement and empowerment

TORONTO: Bombardier Aerospace's Toronto facility where it manufactures the Dash-8 twin-engine turboprop airliners and Global Express business jets is the winner of a 2013 Manufacturing Excellence Award from the Association for Manufacturing Excellence (AME).

The award, presented by the not-for-profit organization that's focused on continuous improvement and enterprise excellence, recognizes companies that are implementing lean manufacturing and management processes.

Bombardier's Toronto plant sits on a 373-acre site with a 7,000-foot runway. AME's assessment team was impressed by the use of improvement tools, especially Standardized Problem Solving, and an empowerment system. The Xcell program formally recognizes and awards employees for personally coming up with, and successfully implementing solutions to challenges that arise in their day-to-day work. AME says combining these processes drive continuous improvement and workforce engagement to the shop floor.

A Global 5000 business jet, made at Bombardier's lean Toronto plant.

PHOTO: BOMBARDIER

"Equally impressive to the team was the level of accountability at Bombardier's Toronto Site and an understanding that the entire organization must change to meet evolving demands and new visions," said the AME in a release.

The Toronto site, which adopted its Achieving Excellence System in 2008, received the award at a ceremony during the 2013 AME "Excellence Inside" Conference on Oct. 22 in Toronto.

Other 2013 winners are: STIHL Inc., Virginia Beach, Va.; MillerCoors, Eden, NC; and IEC Electronics Corp., Albuquerque, NM.

Stella-Jones buys three US firms for $33M

MONTREAL: Stella-Jones Inc. will acquire most of the assets of Pacific Wood Preserving wood treating businesses in Oregon, Nevada and Arizona for US$33 million.

Stella-Jones, a Montreal-based producer of pressure-treated wood products, said the businesses being acquired from Pacific Wood Preserving of Bakersfield Inc. include Arizona Pacific Wood Preserving Inc., Nevada Wood Preserving Inc. and Pacific Wood Preserving of Oregon Inc. and its wood concentration yard in Texas.

The companies manufacture treated wood utility poles and railway ties, and other lumber related products. Their 2012 sales were approximately $52.4 million.

The purchase price is $33 million plus the sellers' net working capital at closing (approximately $24 million).

Memex goes public, will trade on TSX Venture Exchange

Completes reverse takeover of GPS Investment Corp., acquires 48 million common shares

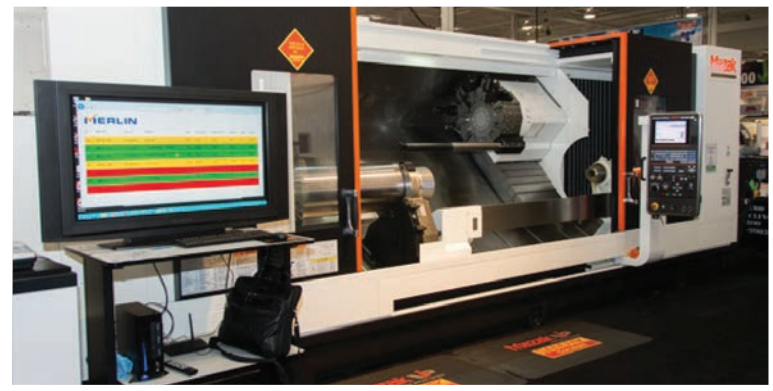
BURLINGTON, Ont.: Astrix Networks Inc., which operates under the trade name Memex Automation, has completed its reverse take-over of GPS Investment Corp., acquiring 48,132,080 common shares. It will commence trading publicly once the take-over is accepted by the Toronto Stock Exchange's (TSX) Venture Exchange.

A reverse merger takeover (reverse IPO) involves the acquisition of a public company by a private company to ensure the purchaser bypasses the lengthy process of going public.

"We can now access the working capital we need to further strategic partnerships and bring our products worldwide," said Dave McPhail, CEO of Memex Automation. "We're part of a worldwide market, and this opportunity puts us in a position to lead that market."

Memex develops real-time shop-floor-to-top-floor technologies. Its flagship product, MERLIN, offers overall equipment effectiveness (OEE) metrics in real-time to allow manufacturers to enhance their production through shop-floor data analysis. It earned the 2013 North American Frost & Sullivan award for Technology Innovation Leadership.

The company also has strategic partnerships with Microsoft and tool builder Mazak, which installed Memex's automation system at its Florence, Ky. plant.



Memex's MERLIN monitors a Mazak NEXUS big-bore turning centre at CMTS 2013 in Toronto.

PHOTO: MEMEX

McPhail says Memex will use some of the $854,000 raised from the IPO to add four employees, and to market its products.

Since it opened shop in 1992, Memex has partnered with 280 dealers and has worked with more than 12,000 customers globally. McPhail, along with a group of private investors, acquired the company in 2008.

KSB wins Montreal pump contract

38-tonne unit is a modern replica of pumps installed in 1975

MONTREAL: Montreal has contracted KSB Pumps Inc. to provide a new water transport pump for the Charles-J.-Des Baillets water treatment plant.

The plant draws water from the St. Lawrence River, purifies it by applying a combination of ozonization, filtration, ultraviolet water treatment and chlorination, and then delivers it to reservoirs that feed the city's distribution system more than one million cubic metres of water every day.

A high-capacity pump for Montreal's water system.

PHOTO: KSB PUMPS

The 38-tonne unit will operate in parallel with the five KSB large-capacity pumps installed at the plant in 1975.

The pump manufacturer, with global headquarters in The Netherlands (and offices in Mississauga, Montreal and Calgary), says the pump is an updated replica with up-to-date seals and gaskets of the original pumps supplied by KSB in 1975, which simplifies installation.

The pumps are installed on the lower level of the structure with the motors mounted on a higher floor where they are protected from flooding. A five-metre-long drive shaft connects the new pump to its 5,500-hp motor.

KSB is responsible for supplying the pump, the motor and the drive shaft, along with the supervision of the installation and commissioning of the equipment on-site.

Installation is to be completed in the first quarter of 2014.

Financial details were not provided.

NRC, industry launch $55M biomaterials program

Initiative will develop "green" automotive and construction technologies

OTTAWA: The National Research Council of Canada (NRC) and its industry partners have invested $55 million to launch the Industrial Biomaterials program for the development of more fuel-efficient vehicles and greener construction materials.

Funding was generated through an initial investment of $30 million by the NRC, and an additional $25 million through collaborative projects with industry, academic institutions and other government departments.

The program will create opportunities for Canadian firms to transform agricultural and forestry by-products into new materials and reduce the use of petroleum-based plastics. Bioresins, biofibres and biocomposites made from non-food biomass (such as wood, lignin, grain husks, flax and hemp stems) provide manufacturers with sustainable and durable green products to use in next-generation automobiles and building materials.

"These biomaterials promise to be as safe as the materials currently in use by industry, inexpensive to produce and the ideal lightweight technology for the automotive and construction sectors," said John McDougall, NRC's president.

P&WC invests $275M in its Quebec facility

Investment will be used to develop three new production lines

On hand for the $275 million announcement were (L-R): John Saabas, president, Pratt & Whitney Canada, Quebec premier Pauline Marois, Nicolas Marceau, minister of finance and economy, Marie Malavoy, minister of education, recreation and sports, Martine Ouellet, minister of natural resources and Benoit Beaudoin, vice-president, operations, Pratt & Whitney Canada. PHOTO: PRATT & WHITNEY

QUEBEC: Pratt & Whitney Canada will invest $275 million, which includes an $19 million contribution from the Quebec government, over the next five years to create a Centre of Excellence for Intelligent Manufacturing and to develop three new production lines at its Longeuil, Que. production facility.

The company says the three production lines will be dedicated to manufacturing highly complex key components for its new generation of PurePower aerospace engines.

Upgrading at the Longeuil plant will begin in the next few months, to be operational by 2015. The investments will also create 90 permanent jobs and maintain 166 existing jobs in Quebec.

Pratt & Whitney Canada, a wholly-owned subsidiary of United Technologies Corp., manufactures high-technology components for the aerospace and building systems industries.

BioteQ puts Bisbee plant on hold

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

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

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

BioteQ said while the plant was idle in August, operational and process issues led to a gas being released. An investigation revealed the release was caused by a partial blockage in a pipe and the concurrent failure of a seal mechanism.

The decision to cease operations was based on the Bisbee facility generating positive cash flow only once since 2009, and the volume of solution processed has declined steadily since 2008.

BioteQ said the plant is on furlough for an indefinite period until a decision is made about its future.

Toronto gets a SKF Solution Factory

TORONTO: SKF has opened a Solution Factory in Toronto that will provide Canada's industries with access to its products and services. It brings together the company's five technology platforms: bearings, seals, services, lubrication systems and mechatronics, plus extensive industry knowledge and application experience.

The Toronto factory is the second one for Canada; the other is in Edmonton.

Solution factories create customized solutions for customers that need help with specific machines or a lifecycle management program for operational assets.

The Toronto facility is the 24th Solution Factory globally, with others in China (Shanghai and Tianjin), Taiwan, India, South Africa, Sweden, Germany, Italy, Brazil, the US and France.

(L-R) Joao Ricciarelli, president of SKF Canada; Tom Johnstone, CEO of the SKF Group; Teppo Tauriainen, Sweden's ambassador to Canada; and Vartan Vartanian, SKF's president, industrial markets, officially open the company's Toronto Solution Factory. PHOTO: SKF

» Careers

Bombardier Aerospace has appointed **Éric Martel** as president of its business aircraft division. Martel succeeds **Steve Ridolfi**, who has been appointed senior vice-president of strategy and mergers and acquisitions. Both appointments are effective Jan. 1. Martel and Ridolfi will report to the transportation giant's CEO, **Pierre Beaudoin**. Martel has served as president of Bombardier's customer services and specialized and amphibious aircraft divisons since 2011. He'll be replaced by **Michel Ouellette**, also effective Jan. 1.

Enablence Technologies Inc., a supplier of optical components and subsystems for access, metro and long-haul markets, has promoted its COO **Jacob Sun** to CEO. He succeeds **Louis De Jong**, who has stepped down. The company has also appointed **Evan Chen**, a consultant to Irixi (a Tri-Comm affiliate) as chief strategy officer. Chen has experience in the photonics industry and will lead strategy planning, guidance and assistance in product development, resource planning and market development.

The Timken Company, a developer of power transmission technologies, has appointed **Luigi Papais** regional manager for central Canada. He's responsible for industrial distribution sales and original equipment sales for the off-highway sector and the process industries business segment. Prior to joining Timken, Papais served as sales manager for Eastern Canada and the US during 11 years with a manufacturer of power transmission components.

Kevin Dickson has resigned as director of Okotoks, Alta.-based RedWater Energy Corp. to explore other ventures. RedWater is an emerging oil and gas development company that's engaged in the acquisition, enhancement and exploration of contentional oil and gas projects in Western Canada.

Tembec, a Montreal-based manufacturer of forest products, has announced that **Dennis Rounsville**, executive vice-president of its forest products group, is retiring. **Chris Black**, executive vice-president of the Paper and Paper Pulp Group, will take on additional leadership responsibilities as executive vice-president, Forest Products, Paper and Paper Pulp Group.

CSA acquires UK manufacturing consultancy

FRANKFURT, Germany: CSA Group has acquired UK-based manufacturing consultancy Mi Technology Group for an undisclosed purchase price.

Mi Technology is an independent provider of analysis, research and development, testing and consultancy services for manufacturers and suppliers in global markets.

The company's test and development centre gauges vehicles for environmental impact, engine performance and emissions, powertrain, structural integrity, durability, and noise, vibration and harshness.

Key areas of focus include passenger cars, commercial vehicles, and off-highway machines, as well as aerospace, oil and gas, rail, power generation and industrial sectors for the UK and parts of Europe.

CSA plans to expand its facilities in the UK and Germany to meet growing demand in Europe and around the world.

Cummins Westport awarded SAFE energy security prize

VANCOUVER: Cummins Westport Inc. has been awarded the inaugural "Energy Security Prize" at the Advanced Technology Awards presented by Securing America's Future Energy (SAFE), which encourages technologies that reduce the use of petroleum-based fuels.

The Vancouver-based company has been recognized for its spark-ignited natural gas engine technology adopted by transit agencies, waste management companies and truck fleets. The engines use 100% compressed, liquefied or renewable natural gas.

The prize was awarded Oct. 16 during the National Summit on Energy Security in Washington, DC, which brought business and political leaders together to discuss energy security and the most promising ways to reduce North America's oil dependence.

Magellan installs first set of F-35A tail assemblies

Aerospace manufacturer expects sales of up to $2 billion from F-35 jet program

TORONTO: Magellan Aerospace has sucessfully installed the first complete set of F-35A Lightning II horizontal tail assemblies produced by its Winnipeg manufacturing division at Lockheed Martin's final assembly line in Fort Worth, Tex.

Magellan is under contract with BAE Systems, a principal member of the Lockheed Martin-led F-35 industry team, to produce horizontal tail assemblies for the conventional take off and landing (CTOL) F-35 variant. The aerospace assembly manufacturer will produce more than 1,000 sets of the components for the program over a 20-year period.

Magellan has produced the vane box assemblies and transition ducts for all of the F-35B short take off and landing variants flying.

Over the 20-year life of the F-35 program, Magellan expects to realize sales of up to $2 billion. Revenue to date exceeds $100 million.

Magellan will deliver 1,000 sets of horizontal tail assemblies.

PHOTO: LOCKHEED MARTIN

» Events

Sites & Spills Conference
HazMat Management/BIG
Feb. 19-20, Toronto
Produced by HazMat Management magazine and Business Information Group (BIG), publisher of PLANT. The event focuses on critical information and awareness of issues and technologies for hazardous materials management and site remediation. Visit www.sitesandspills.com.

2014 Manitoba Kaizen Conference
CME
Feb. 20, Winnipeg
Modelled on the Toyota Kaizen Conference, this event gives you an opportunity to present your Kaizen success and learn from others. Presenting teams will be judged by Lean Master Black Belts. Keynote address is by Tony Kerwin, COO, Acrylon Plastics. Visit www.cme-mec.ca, Events.

IFPE
Association of Equipment Manufacturers
March 4-8, Las Vegas
The International Expo for Power Transmission (IFPE) is an international show and conference for the integration of fluid power with other technologies for power transmission and motion control applications. Visit www.ifpe.com.

FABTECH Canada
SME, FMA, PMA, CCAI
March 18-20, Toronto
Presented by SME, FMA (The Fabricators & Manufacturers Association), AWS (The American Welding Society), PMA (Precision Metal Forming Association) and CCAI (Chemical Coaters Association). This metal forming, fabricating, welding, and finishing event features new products, tools and technologies, top speakers, networking hubs and educational sessions. Visit www.fabtechcanada.com.

Automatica 2014
Messe München International
May 20-23, Munich, Germany
How robots and machine tools make metalworking more efficient. Explore current trends in assembly and handling technology, robotics and industrial machine vision. Visit www.automatica-munich.com/en/Home.

EXAIR Blows Away The Competition!

Save Over $1,200 Per Year By Replacing One Outdated Air Nozzle!

We've all seen flat air nozzles. Some are yellow. Others are orange. The oldest ones are blue or metal. Those other manufacturers want you to believe you'll save money by conserving compressed air while protecting your workers from harmful noise levels. In reality, those colorful air nozzles that blow the air out of holes consume enormous amounts of air. The plastic ones often break off. Some might even get you an OSHA fine due to the dangerous dead ended pressures that exist if someone blocks the air exhaust.

EXAIR's award winning **2" Flat Super Air Nozzle™** has been engineered to replace those outdated flat nozzles. There are no dangerous holes. EXAIR's patented, award winning design is efficient, maintaining a precise amount of airflow through a thin slot. The result is a forceful stream of high velocity, laminar airflow with minimal air consumption and noise. You can increase or decrease the force of each flat air nozzle – using shims to tune it to the application so you'll never waste compressed air. EXAIR now offers a **1" Flat Super Air Nozzle** with the same laminar airflow to fit in tighter spaces.

Flat nozzles from other manufacturers can consume over 30 SCFM (a refrigerator sized compressor) and aren't adjustable. Some manufacturers offer different flow rates but you need to guess at which one will do the job since you can't adjust them once you've made the purchase. By default, most users feel bigger is better and go with the highest flow rate, wasting compressed air.

COMPARE	EXAIR's 2" Flat Super Air Nozzle	Theirs (Old Technology)
	• 2004 Product Of The Year Winner	• Can consume over 30 SCFM
	• Your choice of zinc/aluminum or Type 316 stainless steel	• Expensive – metal or plastic
	• Flexible Stay Set Hoses™, swivel fittings and magnetic bases are available	• No easy adjustment – wasted compressed air
	• Meets or exceeds OSHA standards	• May not be OSHA safe
	• Quietest flat nozzle available	• Significantly louder
	• Easy to change the force and flow	• Plastic is easily broken

Here's how:

- One popular flat nozzle consumes 31 SCFM @ 80 PSIG.
- EXAIR's 2" Flat Super Air Nozzle with .015" shim consumes 21.8 SCFM @ 80 PSIG.
- 31 SCFM (theirs) – 21.8 SCFM (EXAIR's) = 9.2 SCFM compressed air saved/min.

Most large plants know their cost per 1,000 standard cubic feet of compressed air. If you don't know your actual cost per 1,000 SCF, 25¢ is a reasonable average to use.

- SCFM saved x 60 minutes x cost/1,000 SCF = dollars saved per hour.
- In this case, 9.2 SCFM x 60 x .25/1,000 SCF= **13.8 *cents saved per hour.***
- 13.8 cents per hour x 24 hours = **$3.31 *saved per day.***
- $3.31 per day x 365 days = **$1,208.88 *saved in one year*** (in this 24/7 operation).

And, This Savings Is For One Nozzle!

Air Nozzle	Air Consumption @ 80 PSIG	Noise Level dBA	lbs. of Force @ 80 PSIG
Yellow	29 SCFM	83	1.7
Orange	28 SCFM	82	1.7
Blue	26 SCFM	78	1.5
Metal (machined)	29 SCFM	82	1.7
Metal (cast)	31 SCFM	80	1.9
EXAIR 2" Flat Super Air Nozzle	*7.3- 30 SCFM	62-81	0.5 – 1.9

*Air consumption dependent upon shim size.

EXAIR's 2" Flat Super Air Nozzle can pay for itself in less than 18 days.

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Winning with Ford's Oakville investment

BY JERRY DIAS

Creating jobs that keep the economy moving takes three to tango. It's not a dance competition, but Ford's $750 million investment into its plant in Oakville, Ont. is the result of some very smart moves by the union, the company and governments.

The hard-fought labour negotiations between Unifor (formerly the Canadian Auto Workers union) and Ford, plus the subsequent government funding – totalling $152.5 million between the federal and Ontario governments – will create billions of dollars in family income, exports and tax revenues, making the three stakeholders winners.

"The new funding will allow production of several new Ford models by next fall and expand shipments to even more countries…"

The investments secure some 2,800 jobs at the Oakville plant for at least the next decade, but the impact on employment goes way beyond that because every job in the plant supports another eight or nine along the value chain. That includes the potential for new work at the Windsor, Ont. plant, where there have been hundreds of layoffs.

Consider also the tax revenues generated from all of these jobs and subsequent spending that translates into key roles for the government delivering quality education and training, infrastructure, transportation and health care, all of which are essential to keeping industry moving. Health care alone is a key competitive advantage for automakers here, saving them up to $5 an hour.

Unifor president Jerry Dias welcomes investment announcements at Ford's Oakville Assembly Plant. PHOTO: JOE TERRETT

Boosting the auto sector

The Ford investment is also a great boost to the automotive sector. Right now, the Oakville plant makes the Ford Edge, Flex, Lincoln MKX and MKT, shipping to more than 80 countries. The new funding will allow production of several new Ford models by next fall and expand shipments to more countries.

But it all starts with the workers. Not one vehicle would roll off the line in Oakville without the sweat, brains and commitment of Unifor Local 707's proud members. They have worked hard to ensure that the facility is a profitable location in which to invest and build automobiles well into the future.

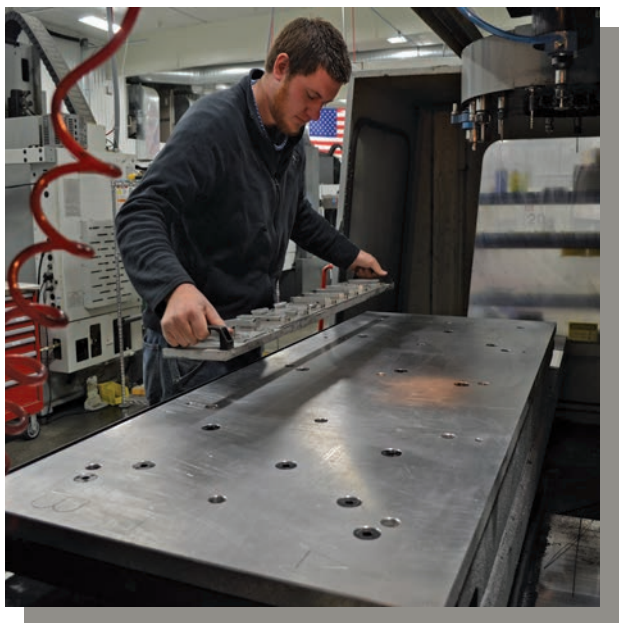
There's no question Canada is a great place to make vehicles. The automotive industry has created thousands of the kind of good jobs our economy needs. In fact, Canada is a good place to manufacture many quality products and provide valuable services, which are the foundation of a strong economy. It just takes commitment and cooperation from all parties involved. Unifor members work in 20 sectors of the economy, including all stages of the economic value chain from automotive, aerospace and transportation to telecommunications.

Securing 2,800 good jobs at the Ford Oakville plant is an example of what we can achieve when we work together with governments and business, and there's potential for lots more good news, although dance lessons may be in order.

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

Comments? E-mail jterrett@plant.ca.

New Carr Lock™ System Provides Fast Fixturing



The new Carr Lock™ System from Carr Lane Mfg. allows accurately locating and clamping at the same time, with just the twist of a hex wrench, for mounting quick-change tooling on a subplate.

The new system, which consists of a clamp, a liner bushing and a receiver bushing, is exclusively made in the USA. Carr Lock offers complete interchangeability with all components of the similar mounting system previously offered by Carr Lane, but at a lower price. Carr Lock can be ordered alone or in kits combined with mounting plates. Visit the Featured Product section at CarrLane.com for videos of the parts in action.

Machine Operator Tyler Vaughn, of the Flying S, places a carbon trim fixture. The Carr Lock™ receiver bushings allow for fixtures in various configurations.

This standard style has one serrated and one smooth side. Force is applied by the turn of a hex wrench.

PROBLEM:

"We are an aerospace prototype shop making the transition from prototype to production on an important UAV project. We've developed elaborate fixturing of all shapes and sizes. We found ourselves leaving our trim fixtures set up on a large gantry style table and then having to tear everything down when a large part came along to make way for it.

This tied up one of our most valuable spindles, and dust collection was nearly impossible. Change over and setup times were totally out of control."

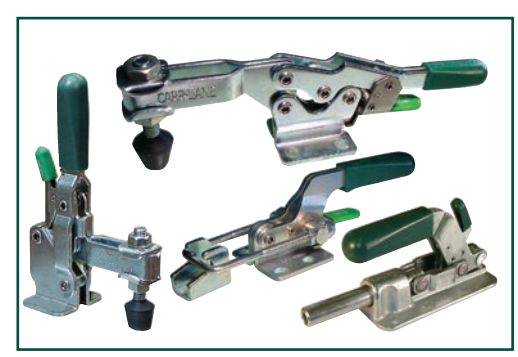
SOLUTION:

"I discovered that I could combine 80% of our trim fixtures into just one fixture plate using just two Carr Lock pins, with excellent locating ability and much better clamping than before.

Our setup times have gone from an average of about 25 minutes to literally 30 seconds, thus saving us hundreds of hours."

Peter Bowman
Production Manager/Mfg Engineer
Flying S Inc.

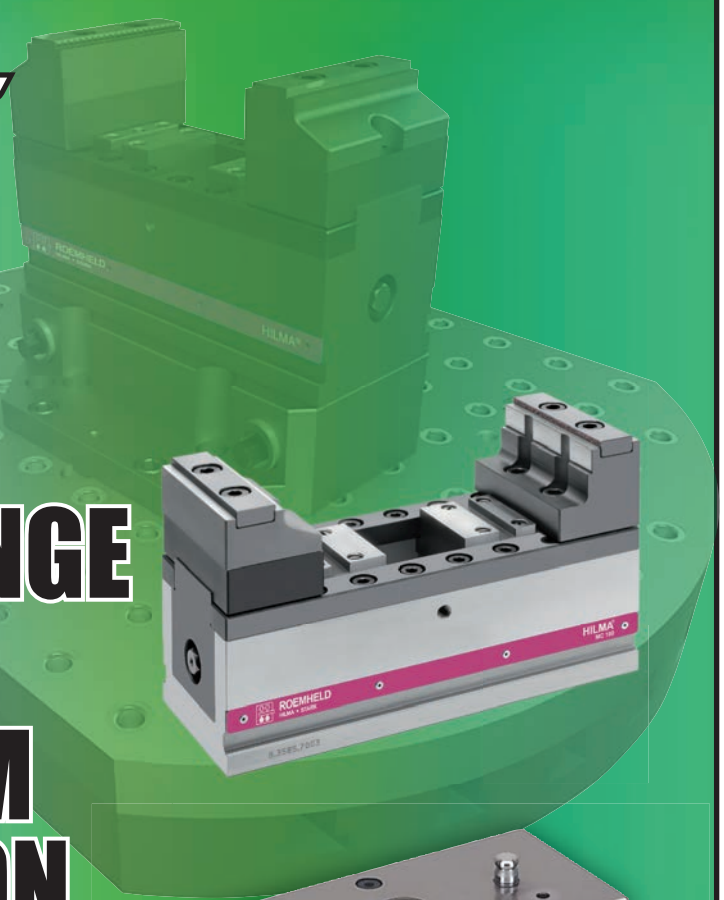
carrlane.com/carrlock

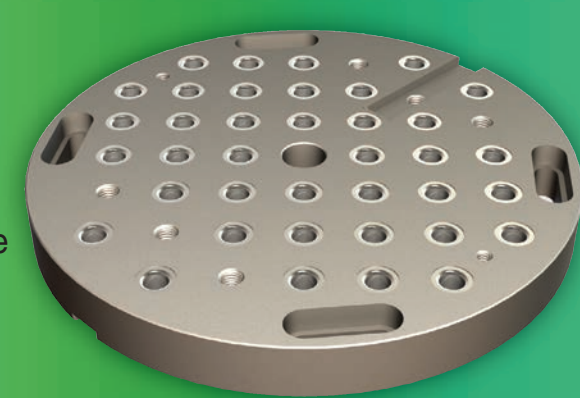


TOGGLE CLAMPS WITH SAFETY LOCKS
Carr Lane provides a variety of new toggle clamps with optional safety locks, including latch-action, vertical-handle, horizontal-handle, and push/pull types. Carr Lane toggle clamps have a comfortable handle grip, and are made of durable high-grade steel (many also available in stainless steel).
Carr Lane Mfg. Co., www.carrlane.com

CL5™

5-AXIS + QUICK CHANGE = MAXIMUM UTILIZATION





- Use Carr Lane's Quintus quick-change riser to mount vises, fixture plates, or your custom clamping device
- By design, the CL5 system accepts our German-built, extremely accurate vises on precision plates made in the USA
- Achieve 5-side part access and quick-change flexibility
- Numerous jaw types and sizes available

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PLANT PULSE

ECONOMIC DEVELOPMENTS AND TRENDS

Unemployment rate headed lower: CIBC

Absence of wage pressures means Bank of Canada will let the economy run

Demographic and policy changes mean Canada's unemployment rate has room to drop much further before we see pressure on wages that could trigger inflation above the Bank of Canada's 2% target, according to a CIBC World Markets Inc. report.

CIBC suggests factors putting downward pressure on CPI are reasons for the Bank of Canada to eschew rate hikes until early 2015.

"By that point, we expect Canada's unemployment rate to be in the vicinity of 6.2%, well below what had previously been the Bank of Canada's comfort zone," says Avery Shenfeld, CIBC's chief economist.

The report notes the 6.9% unemployment rate would already be generating wage and price pressures, as was the case in 1999 and 2005. The Bank of Canada declared the economy had exhausted economic slack and reached full employment at essentially the very same jobless rate. In both cases, interest rates were raised to cool the overheating economy.

"Demographic and public policy changes in recent years have lowered the non-inflationary rate of unemployment. That will allow the Bank of Canada to keep rates low for long, and press ahead towards further labour market improvements," says Shenfeld.

Unlike the US, where millions of discouraged workers have given up searching for work and no longer count among the unemployed, he says discouraged workers excluded from the jobless count represent only 0.1% of Canada's working-age population. Those saying they want work but aren't in the labour force represent the same 2% share that they did when the output gap was zero in 2005.

The dropping participation rate is solely due to shifting demographics, as a greater share of the population reaches retirement age, he says. If the population shares of each age cohort are held constant, the participation rate would have been rising since the recession, since each demographic group's participation rate (except youth) has been steady or rising.

"Underemployment is, however, a factor that has led to an understatement of labour market slack relative to the past cycle. There are close to 900,000 Canadians working part-time because that's all they can get, rather than by choice. That's a half-percentage-point larger as a share of the workforce than when the economy had full employment in 2005. The additional hours they could offer up provides a cushion against wage and price pressures."

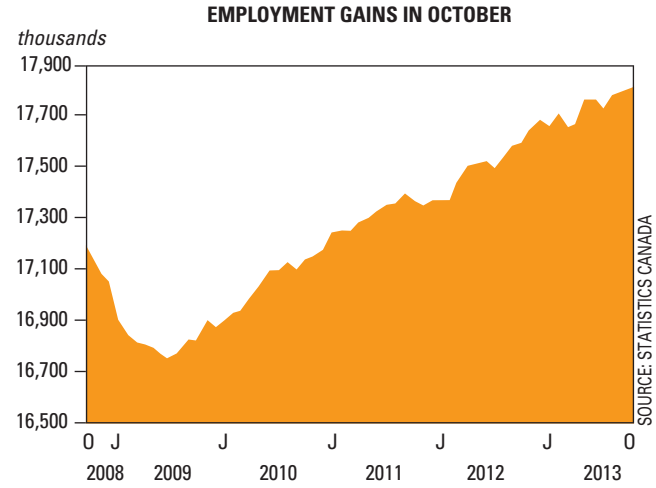
Canada's degree of frictional unemployment – those between jobs or looking for their first job – also contribute to a lower rate. This category has been in decline and the rate is already lower than at points in 1999 and 2005 when the output gap was zero.

Factors reducing the level of frictional unemployment include:

- New immigration rules focused on tilting the mix of new Canadians towards those with targeted skills and stronger language proficiency.
- Tighter rules for unemployment eligibility that now require Canadians to accept a wider range of employment offers. EI recipients now represent 37% of unemployed in Canada, down from 51% in 2009.

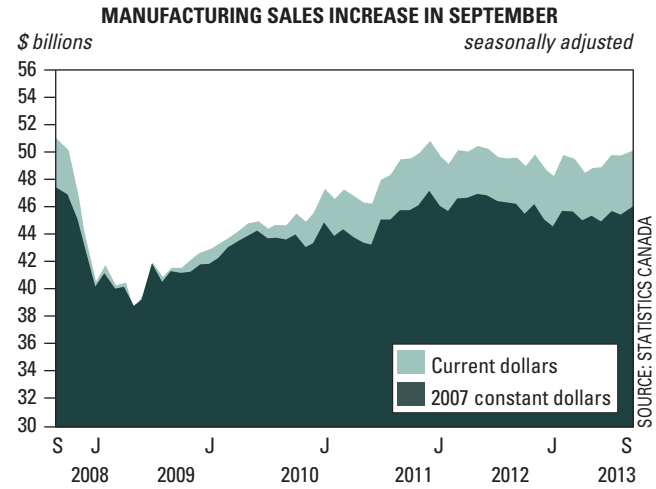
Shenfeld suspects declining unionization coverage could also be a modest factor by reducing worker bargaining power, particularly as Canadian workers now compete with "right to work" states south of the border. He notes this could reduce the wage inflation pace at any given level of unemployment.

EMPLOYMENT GAINS IN OCTOBER



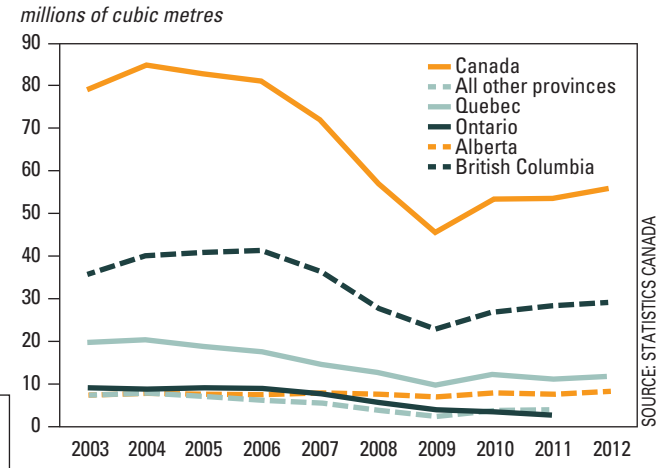
Employment changed little for the second consecutive month and the unemployment rate remained at 6.9% in October. Compared to a year ago, employment increased by 1.2% or 214,000 jobs, with gains in full-time and part-time work. The number of hours worked rose by 1.4%.

MANUFACTURING SALES INCREASE IN SEPTEMBER



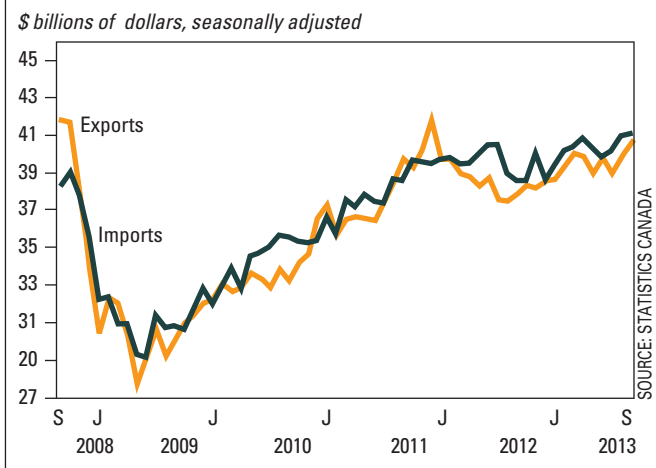
Higher sales in motor vehicle assembly and food were largely responsible for the 0.6% increase in September's manufacturing sales to $49.9 billion, the fourth increase in five months. It was the highest level since June 2012.

SAWMILL PRODUCTION 2003-20122



Canada produced 54.5 million cubic metres of softwood lumber in 2012, up 5% from 2011. Softwood lumber accounts for almost 98% of Canadian lumber production. Hardwood lumber production declined 13.2% to 1.3 million cubic metres.

EXPORTS AND IMPORTS: SEPTEMBER



Merchandise exports were up 1.8% to $40.6 billion, driven by energy products as well as aircraft and other transportation equipment and parts. Volumes were up 1.7%, and imports increased 0.2%. The trade deficit narrowed from $1.1 billion in August to $435 million.

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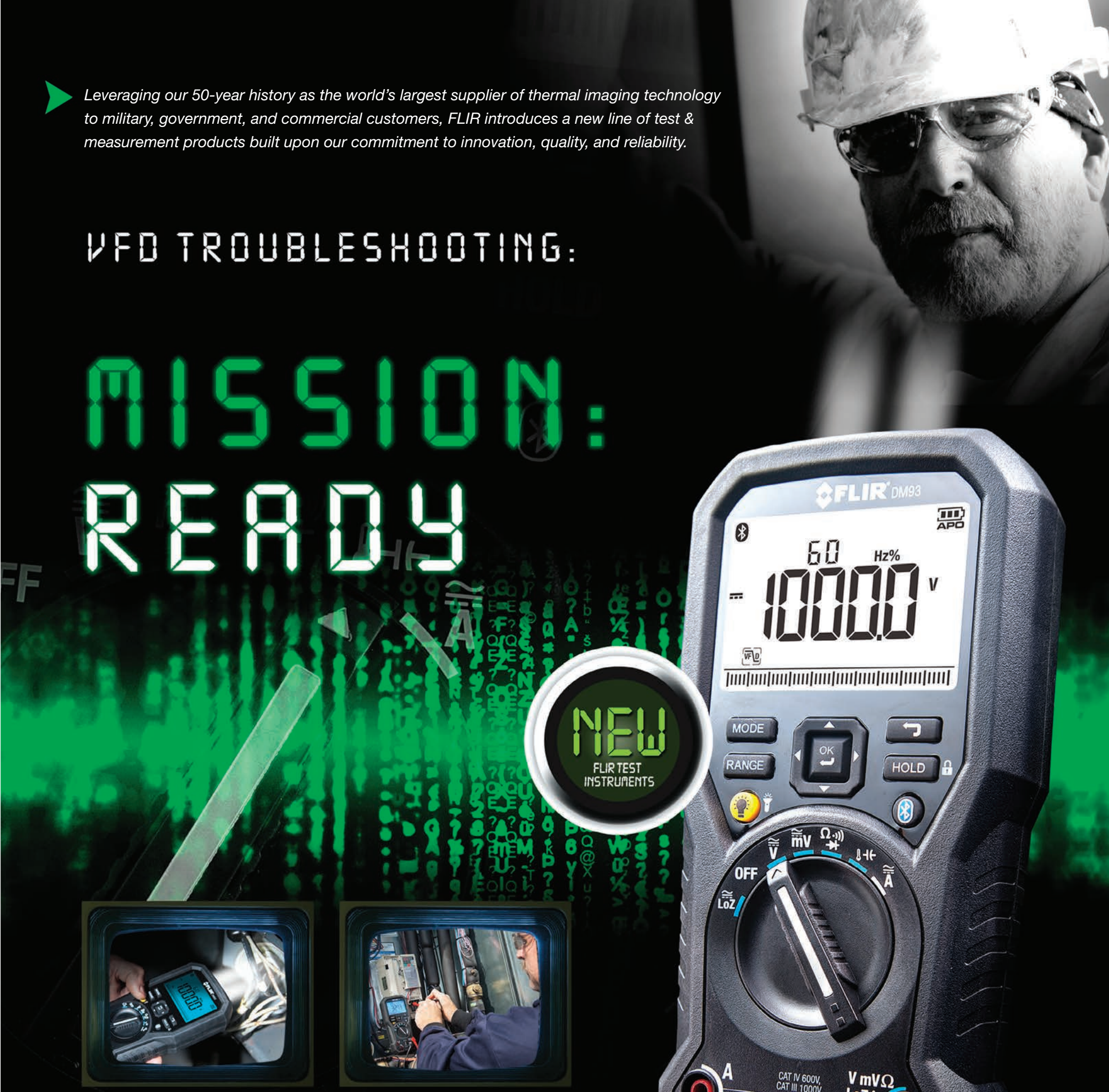

CATEGORY: ELECTRICAL DIAGNOSTICS//SUBJECT: FLIR DM93

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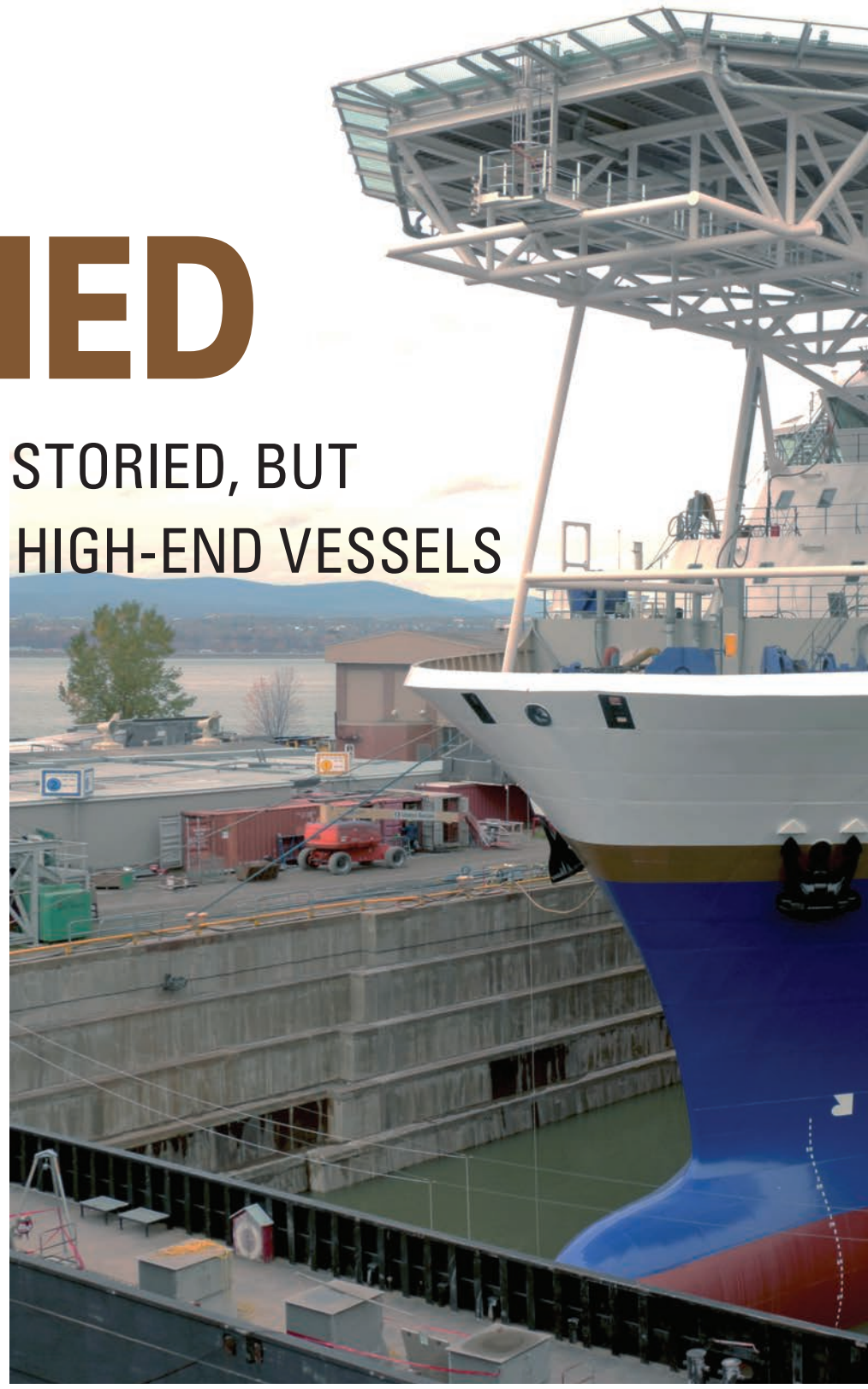
Davie shipyard RELAUNCHED

NEW OWNERSHIP RESUSCITATES STORIED, BUT ONCE-TROUBLED SHIPYARD WITH HIGH-END VESSELS



The Lévis, Que. shipbuilder has diversified with the Cecon Pride, a super high-tech subsea construction vessel that will be used for offshore oil and gas exploration in Europe's North Sea.

BY MATT POWELL, ASSISTANT EDITOR

At the Davie shipyard, there is no sweeter sound than the crashing of a champagne bottle into the bow to inaugurate the launch of a new ship. But it has been a while since the storied Lévis, Que.-based shipbuilder has had any reason to break out the bubbly – years in fact.

On Oct. 19 the company had every reason to celebrate after years of struggles caused by ownership changes and massive layoffs, and eventual closure, which was a major blow to the small Quebec town where it's based. Davie launched its 717th vessel on that overcast fall Saturday, the massive 130-metre long Cecon Pride.

The subsea multi-purpose construction ship, built for Norweigan offshore installation contractor Cecon ASA, is the first in a series of three ships Davie will construct to fulfil a contract that's valued at $245 million.

Davie says the Cecon Pride is the largest ship build in Canada in more than 20 years and will be sailed in Europe's often treacherous North Sea where it will be used for pipelaying, diving, well intervention and ROV support for the offshore oil and gas industry.

The ship is about 90% complete and will be delivered by February 2014 once sea trials are complete.

"It's is the most complex ship ever built in Canada," says Alex Vicefield, Davie's new chairman and CEO of The Inocea Group (previously Zafiro Marine), a British firm that manages and operates a fleet of specialized offshore vessels in topside and subsea construction.

It's also super high-tech – a good showing for the company's first ship build since 1997 – and provides Davie with an example of the direction it wants to go as its new owners diversify the customer base.

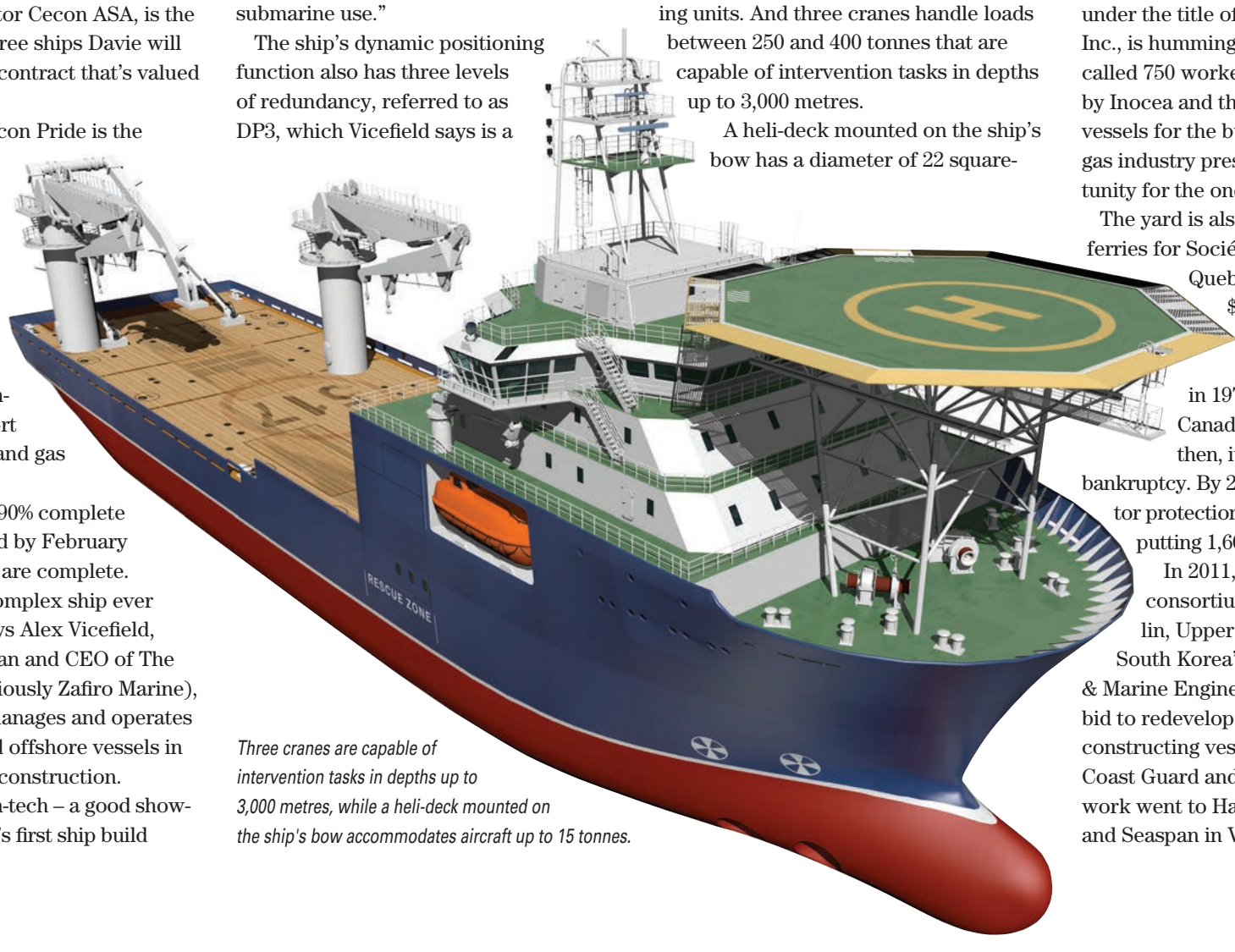
"We want to be in oil and gas, exploration, defence and also the maintenance and repair side," says Vicefield. "We've got the technology and ability to do that and the Cecon Pride is a very good example of the level of technology we're able to produce – this company hasn't just built ships in its lifetime, it has built dams and even nuclear power plants components."

The ship, which will accommodate up to 100 crew members, uses diesel-electric power generation to feed six electric thrusters, while a special computer-controlled technology called dynamic positioning automatically maintains the vessel's position using its propellers and thrusters, but without the use of anchors.

"It's basically equipped with a 19 megawatt power plant. Power goes to six thrusters, similar to those of a jet engine, to keep it in place," says Vicefield. "Its position is then linked to a series of reference systems such as GPS and sonar, which help the ship to accommodate a number of purposes on the oil and gas side for pipelaying, diving and mini submarine use."

The ship's dynamic positioning function also has three levels of redundancy, referred to as DP3, which Vicefield says is a critical onboard safety component. If an engine or two lose power, the others provide enough power to keep it in place. The technology is increasingly common onboard mobile offshore drilling units. And three cranes handle loads between 250 and 400 tonnes that are capable of intervention tasks in depths up to 3,000 metres.

A heli-deck mounted on the ship's bow has a diameter of 22 square-metres and accommodates helicopters weighing up to 15 tonnes.



Three cranes are capable of intervention tasks in depths up to 3,000 metres, while a heli-deck mounted on the ship's bow accommodates aircraft up to 15 tonnes.

Davie reborn

The shipyard, which is now operating under the title of Chantier Davie Canada Inc., is humming these days. It has recalled 750 workers since being acquired by Inocea and the potential of building vessels for the budding offshore oil and gas industry presents a significant opportunity for the once mothballed facility.

The yard is also building two car ferries for Sociéte des Traversiers du Quebec, a contract worth $120 million.

Trouble at Davie started all the way back in 1976 when it was sold by Canada Steamship Lines. Since then, it has been in and out of bankruptcy. By 2010, it was under creditor protection and ended operations, putting 1,600 people out of work.

In 2011, there was hope that a consortium involving SNC-Lavalin, Upper Lakes Group Inc. and South Korea's Deawoo Shipbuilding & Marine Engineering would structure a bid to redevelop the yard to secure work constructing vessels for the Canadian Coast Guard and Canadian Forces. That work went to Halifax's Irving Shipyards and Seaspan in Vancouver. The joint

The 130-metre Cecon Pride is the first of three subsea construction ships Davie will build for Cecon ASA.

PHOTOS: CHANTIER DAVIE INC.

venture fell apart, leaving Upper Lakes to clean up the mess as sole owner. Inocea's acquisition was approved by the Quebec government in November 2011.

Under the new ownership led by Vicefield, Davie has redirected its focus to complex projects, particularly in the oil and gas market. It's also vying for a piece (if not all) of the federal government's $2 billion shipbuilding program after missing out on the first round of contracts worth $33 billion.

"Davie has had its ups and downs, but it never failed on a project. It failed because it ran out of work," says Vicefield, who says the company has been reorganized to ensure work is continuous across every sector the company covers. "We've addressed that issue by breaking the company up into divisions so we're paying attention to different markets at all times."

Hometown advantage

He's also very aware of the importance and the history Davie brings to the community of Lévis, and the business potential it possesses.

"This is the largest shipyard in Canada by about four times. We have the highest capacity and the yard is located within a well-placed, large network of sub-contractors," he says. "The people of Lévis are incredibly proud of the shipyard – you'd be hard pressed to walk down the street in Lévis and meet someone who doesn't work at Davie or doesn't know someone who works there."

One of the first things Inocea did was restructure the way the yard worked. Vicefield says that was accomplished by implementing a modern, single-suite integrated shipyard management system.

"We've got all the best machinery – it's all state of the art – but we needed to change the way Davie worked," he says. "The software suite we've implemented allows us to do work in packages, instead of by disciplines, and we've seen fantastic progress since doing so."

Work packages are issued to each division supervisor.

"It's as simple as a worker walking through the gates and swiping his or her pass card – they're given work packages for the day, which helps us to measure a project's progress instead of focusing on man hours."

Vicefield says reopening the Quebec shipyard made sense financially because (ironically) shipbuilding labour costs in Canada are much cheaper than in Europe, where most of the world's 5,000 ships like the Cecon Pride are produced.

A tariff on imported vessels is also a competitive advantage for Canadian builders.

"When you build a ship, 60% of the cost goes to materials and the other 40% to labour. You're buying from the same international suppliers. So where shipyards become competitive is on low labour rates, and Quebec is much lower than most yards in Europe," he says, without discounting the quality of his workforce. He refers to the container ships built in Asia as 'bathtubs.'

"US and Asian shipyards don't compete with us when it comes to quality. They don't build for international clients because there aren't many there that can produce anything of substance."

Vicefield says the company is eligible for provincial incentives on labour costs for new designs, which it hopes to leverage.

Davie also recently hired senior managers from the winners of the $33-billion shipbuilding contracts – Halifax's Irving and Vancouver's Seaspan – and Vicefield is cautiously optimistic the yard's workforce will continue to grow to 1,500 by 2014. Up to another 500 jobs could be created if the shipbuilder wins any or all of the remaining federal contracts, which would require breaking out plenty of bubbly as Davie continues its high-tech voyage in calmer waters.

Comments? E-mail mpowell@plant.ca.

» Aerospace

Avro Arrow hits the road

Metcom delivers the replica to CMTS

The Avro CF 105 Arrow never made it into full production. Built in the late 1950s the twin-engined supersonic interceptor was brought down by budgets and politics. The six planes, parts and all the plans were destroyed in 1959 to keep them from falling into Soviet hands.

But a 26-metre replica put together by aerospace volunteers between 1998 and 2006 hit the road for the Canadian Manufacturing Technology Show (CMTS) where it was on display from Sept. 30 to Oct. 3.

The replica had been housed at the Canadian Air & Space Museum at Downsview Park but the museum was closed in 2011. The Arrow made its stop at the International Centre in Mississauga, Ont., where CMTS attendees got a closer look at the interceptor before it went into storage at a facility near Toronto Pearson International Airport.

Getting to the International Centre fell to The Matcom Group, an industrial solutions provider based in Vaughan, Ont. that includes among its services heavy lifting and the logistics that go with it.

The replica Arrow wasn't built to be moved, says Emma O'Dwyer, vice-president of market development for Matcom. "We were asked if we would help out as we had moved most of the other exhibit models from the museum over the past year and a half."

Preparing the Arrow for transport.

PHOTO: EMMA O'DWYER

Matcom worked on the logistics of the move for over a year, and donated its services including engineering and fabrication of the beam holding the landing gear frame for transport.

"We brought in Equipment Express for the actual transportation, and a special (Goldhofer) hydraulic truck bed system, which protected the plane from bending and vibration, and could lower for some of the tight bridge spaces."

Equipment Express and Matcom planned the route together. It took one and half days to take the wings and tail off the 20,000 pound model and load the pieces, two and half days to get the plane out of Downsview Park in a three-trailer convoy followed by two truckloads of equipment, and five hours to move the plane from Sheppard Ave. to the International Centre on Airport Road.

Putting the Arrow back together took another one and half days.

All together, it took two riggers, two millwrights and three drivers to do the job, which allowed CMTS attendees to get a last look at what could have been Canada's greatest aeronautics achievement.

Reliability's NEW FRONTIER

MINING DATA WITH NEW SOFTWARE AND ANALYSIS

Maintenance is no longer a cost centre. It's a profit centre that increases plant capacity by digging deep into data to optimize reliability.

BY STEVE GAHBAUER

Living CRM (LCRM) ensures "perfect" data is transcribed onto work orders for reliability analysis.

PHOTO: THINKSTOCK

When it comes to reliability, Murray Wiseman isn't selling software, he's selling "ideas." The president of OMDEC (Optimal Maintenance Decision) Inc., a Toronto company that develops and applies leading-edge maintenance solutions, outlined some of these ideas and how achieving reliability is changing during a maintenance conference workshop.

Wiseman says today's knowledge-based data collection systems handle the complexities of decisions, help to pinpoint elusive data items, and put it all into a form that optimizes decision-making to achieve maximum equipment performance and reliability at minimum cost.

The volume of data will continue to increase and so will the power of computers to filter, sort and analyze data. The quest to maximize the use of this information about equipment repair and replacement has only just begun. Capitalizing on the powers and options that computer systems and software provide will keep us on the track to continuous improvement in maintenance practices, says Wiseman.

Despite new ideas, the real story hasn't changed. Maintenance professionals still say that better-quality data would help them do a better job. More sophisticated and more capable software, improving analysis techniques, and emerging new maintenance concepts will achieve that.

One of these concepts is life cycle costing or LCC. The methodology – a process of achieving reliability from data – begins as an exercise in solving problems, making decisions among competing options, using data to determine the optimum approach, and then making the change. The decision itself is the result of thorough analysis, often handled by engineers and finance people working together.

Field level inputs can be limited to data and opinions as evidence is gathered to feed the analysis. Once those decisions are made, they must be put into place. Some changes are straight-forward and simple: replacing "like" with "like." Others are far more complicated: replacing "x" with "y."

Another concept is living RCM (LRCM) pioneered and developed by OMDEC over a four-year process led by Wiseman, who is often referred to as the father of LRCM. It's an extension methodology of basic reliability-centred maintenance to the day-to-day work order process that updates the RCM knowledge base, synchronizes the CMMS failure codes as changes to the RCM knowledge base, and ensures that "perfect" data is transcribed onto the work order for reliability analysis.

In that way, LRCM provides an audit trail of evolving knowledge that records the progress in an organization's understanding of each failure mode and its effects and consequences. Continuous knowledge refinement, as required by the LCRM process, improves the effectiveness of maintenance.

Exploring knowledge

But which data will support optimal decision making, how should one transform the relevant data into optimal maintenance policies, and how should one verify the performance of those policies to improve them continuously?

Living RCM methodology addresses these challenging questions by integrating with the natural maintenance environment regardless of which technology platforms are in use, by linking significant work orders to the RCM knowledge base, and by generating unbiased samples for reliability analysis.

LRCM focuses on condition-based maintenance and deals with ways to improve confidence in predictive maintenance. There's a five-step process to achieve this:

- report both failures and suspensions when closing work orders;
- continuously improve the RCM knowledge base when closing work orders;
- link work orders to RCM knowledge records;
- generate samples from the CMMS; and
- apply reliability analysis and modelling techniques.

Condition-based maintenance, or CBM, has gained traction in the last few years and is the core of LRCM. It's defined as the gathering, processing and analyzing of relevant data and observations to make good and timely decisions on whether to intervene immediately, to plan for maintenance at a specific time, or to continue operating the equipment until the next CBM inspection interval.

The criteria for the decision is the probability and the consequences of the failure. CBM is now the preferred method for proactive maintenance and a prerequisite for LRCM.

Modelling and simulation achieves availability improvements, cost reduction, optimized repair parts and maintenance resources and extended equipment life. This is accomplished by evaluating multiple scenarios and detailed recommendations, and analyzing availability, parts needs and timing, as well as maintenance capacity.

DESIGN Pro (or DES) is a model development platform based on discrete event simulation, an extension of the Monte Carlo method, which describes the motion of atomic particles in a nuclear explosion. It's of use only to nuclear power plants, but DESIGN Pro has spawned a more generally useful maintenance-oriented new methodology called DEMAND Pro.

It too is based on a model, such as a simplified representation of a system at some particular point in time, to assist the understanding of the real system, and on simulation. The latter is the manipulation of a model that compresses system operations over time to perceive interactions and behaviours that would not be apparent otherwise.

All of these improved knowledge-based information systems are a great aid to better maintenance. Use them to keep continuous improvement in focus.

Steve Gahbauer is an engineer and Toronto-based freelance writer, the former engineering editor of PLANT and a regular contributing editor. E-mail gahbauer@rogers.com.

Comments? E-mail jterrett@plant.ca.

» Tech Tip

When electric motors fail

Watch for signs of single-phasing, and overloading

Electric motor winding failures, such as single-phasing and overloading, leave specific visible failures that are definitive. An overloaded winding is fully blackened, and insulation may be brittle. This is not an instantaneous failure. Many motors operate for extended periods before failing under overloaded conditions.

Improper overload protection is the most common cause of electric motor winding failures. In a single-phased condition, alternating one or two groups of windings burn throughout the motor and result in a problem.

But single-phased and overloaded motor problems leading to motor winding failures can be avoided. Inexpensive devices, called electronic overloads, have been available for decades. They detect and protect motors from voltage unbalance, single-phasing, over- or under-voltage, and overload conditions.

Electronic overloads detect and protect motors. PHOTO: THINKSTOCK

Electronic overload devices are available from motor suppliers. Check them out to protect your investment in electric motors.

Source: Motor Diagnostics and Motor Health Newsletter, Success by Design Publishing.

FRIES with that?

WHAT MCDONALDS TEACHES US ABOUT ROBUST, LEAN PROCESSES

The global family restaurant chain serves up a consistent, predictable experience brilliantly, all managed by average people.

BY RICHARD KUNST

What's a significant difference between the Toyota Production System (TPS) and most others? Do we truly understand the root objective? Consider this thought: brilliant processes managed by average people versus average processes managed by brilliant people.

Many of the TPS tools focus on the identification and elimination of waste, but there is more to it. Toyota's robust processes allow it to expand quickly, while delivering predictable results.

McDonalds is another corporation that embraced this concept early in its evolution. It recognized the employee model would be high turnover, with lots of teenagers, most of whom would be employed for the first time. The global fast food company designed brilliant processes that could be managed by average and temporary employees, some of whom working just a few hours per week. Remember hearing all of the bells and buzzers going off? Is this not the ultimate of standard work combined with error proofing? Remember looking at the cleaning check-lists mounted in their washrooms? McDonalds presented us with a good operational model even before we were exposed to Toyota.

In almost every industry sector there is much concern about the aging workforce and how knowledge will be transferred uninterrupted without a detrimental impact on products or services. Apply the following key principals and tools to strengthen your processes:

Workplace organization (5S+1). A place for everything and everything in its place. Support training so an employee enters the work area and clearly understands the function and how it is to be performed.

Value stream mapping. One of the best tools to create eyes for flow and waste. It's a great vehicle for the identification and prioritization of projects that will achieve the perfect process. Have your team look at the maps to identify how to migrate to brilliant processes that average people can manage.

Error proofing (pokeyoke). This tool prevents errors from occurring, but the same process manages standard work and takt time. Just look at the buzzers McDonalds uses for its fryers and heating trays to deliver a consistent product to the customers.

Standard work. Establish the cadence of required tasks to create predictable and repeatable results.

Visual standard work instructions. This excellent methodology captures tribal knowledge that can be repeated and replicated by average employees. It's also an excellent opportunity to review processes and ensure simplicity has been integrated.

All those bells and buzzers ensure your fries don't burn, but they're also the ultimate in standard work and error proofing. PHOTO: McDONALDS CORP.

Automation. It's a good thing, but it also adds another level of complexity. Make sure the automation solution is designed correctly to ensure the brilliant process can be managed by average people.

Review the task lists of your leadership team. How much of the time is spent on: reactive versus proactive management; the development of people; and harvesting and implementation of new, simpler ideas?

A good KPI of a brilliant process is the activities of the maintenance department. How much time is spent reacting to urgent requests to repair broken processes versus conducting scheduled preventive maintenance?

Mc-lean your plant

No matter where you travel in the world, McDonalds serves up a consistent, predictable experience. Here are five lean preparation steps that will help you do the same:

1. Stability. Implement a quality management system to stabilize product quality. Standardize work to stabilize delivery lead-times. Manage suppliers for stable delivery. Ensure maximum machine availability.

2. Management alignment. Ensure that the whole management team is aligned with the lean strategy. Reorganize by product family. Remove anchor draggers. Leadership from the top is essential.

3. Union alignment. Ensure union buy-in by sharing the lean vision and give assurances not to retrench, if required. Train union members in lean principles. Create an all-inclusive steering committee.

4. Training and communication. Train all role players in lean principles and techniques, such as value stream mapping, and operator balance charts. Communicate the lean vision to the whole organization.

5. Measurement and incentives. Carefully choose new measurements for managers and operations. These measurements must support lean implementation, such as lead-time, set-up time and inventory reduction. Apply even more care to the design of new improvement incentives based on gain sharing.

Applying lean principles and tools help build the kind of robust processes that have made Toyota and McDonalds so successful, and all managed by average people. Brilliant.

Richard Kunst is president and CEO of Cambridge, Ont.-based Kunst Solutions Corp., which publishes the "Lean Thoughts" e-newsletter and helps companies become more agile, develop evolutionary management and implement lean solutions. Visit www.kunstsolutions.com. E-mail rkunst@kunstartofsolutions.com.

Comments? E-mail jterrett@plant.ca.

» CCOHS H&S Tips

Putting feet first

Steps to good health and injury prevention

Are your workers being good to their feet? Feet don't just get hurt while in motion – injury may occur from standing in one place for too long, causing joints to misalign and even become inflamed, which could lead to rheumatism and arthritis. The wrong footwear causes a variety of problems such as blisters, calluses, corns, arthritis, toe malformations, fallen arches and bunions.

However, there are things that reduce foot problems and injuries in the workplace. Start with these factors:

Job design. Tasks should incorporate varying body positions that use different muscles. Try job rotation, job expansion and teamwork, plus frequent short rest breaks.

Workplace design. A workstation should allow room to change body position. A foot-rail or footrest allows workers to shift from one leg to the other to reduce stress on the lower legs. A seat should be available for resting purposes if work can only be done while standing.

Standing surface. Stepping on an unyielding floor, such as concrete, has the impact of a hammer on the feet. Wood, cork, carpeting or rubber surfaces are preferable, or at least anti-fatigue matting, but it should be used with caution.

Footwear. The right footwear has the following:

- inner side of the shoe is straight from the heel to the end of the big toe;
- shoes that grip the heel firmly;
- room enough for the toes to move freely;
- a fastening across the instep to prevent the foot from slipping when walking;
- a low, wide-based heel (flat shoes are recommended);
- a proper fit as shoes may not stretch; and
- shock-absorbing insoles to cushion the foot from impact

Protective footwear certified by the Canadian Standards Association (CAN/CSA-Z195-09). Ensure it conforms with the appropriate standard for your jurisdiction. All working footwear, whether it's safety wear or not, should provide comfort without compromising protective value.

This article was written by the Canadian Centre for Occupational Health and Safety (CCOHS), a not-for-profit federal corporation that promotes the health of Canadian workers. Visit www.ccohs.ca.

Comments? E-mail jterrett@plant.ca.

The CETA deal with the European Union highlights how free trade can be a large and unambiguous net gain for society.

In favor of FREE TRADE

"A SPLENDID EXCHANGE" AND SOCIETY GAIN

BY MARK DRAKE

Remember the Luddites? They were the group of British industrial workers in the early 1880s led by Ned Ludd who, fearing for their jobs, demonstrated against the introduction of new machinery in the textile industry. There were some job losses of course, but the increase in productivity gave rise to phenomenal growth in that sector.

Protectionism (withdrawal behind tariff and related barriers) was, and indeed still is, another example of active resistance to change. Eichengreen/Irwin writing in 2009 described it as "destructive and counter-productive" and we saw an example of this in the 1930s depression, which would have been less severe with freer trade. Even now governments, particularly after the 2008 financial crisis, are putting up barriers in what *The Economist* refers to as the "Gated Globe," noting in a Global Trade Alert that "400 protectionist measures have been introduced each year since 2008, and the trend is increasing." While this practice is worse in emerging markets such as Brazil, India and Russia, even Canada is not guiltless, with restrictions on certain foreign investments and, of course, supply management.

Why should we be concerned? As manufacturers and in many cases exporters, we live or die by greater globalization, or to use a less contentious expression, by the liberalization of trade. However, while almost always beneficial in the long run, this does not come without some short-term pain, and it is therefore resisted with luddite intensity by those who believe they will be directly affected. Consider the fight that the Brian Mulroney government had in 1988 to introduce the free trade agreement with the US (FTA), and its subsequent extension to Mexico (NAFTA). The Ontario wine industry thought it would be wiped out; instead, it upped its quality and productivity and prospered like never before, winning many international awards. In fact, it's reckoned that the volume of Canadian goods sold to the US grew by 6% a year following these agreements, two-way trade in services (very important to Canada) virtually doubled and millions of new jobs were created.

In 2009 William Bernstein published a fascinating book called, *A Splendid Exchange: How Trade shaped the World*. In it he traces international trade through the ages including the voyages to the Middle and Far East in search of spices, and he outlines conditions on the silk roads, and on the sea routes that were established following Marco Polo's visit to China and Vasco da Gama's voyage around South Africa. The British penetration and ultimate governance of India were started by the East India (trading) Co., and following access there and to China, the Spice Islands and Jamaica, salt, spices, silks, amber, cotton, sugar and tea flowed into the western world.

The CETA deal opens up a market of 500-million consumers.
PHOTO:THINKSTOCK

A net gain

Although it can create winners and losers, the broad consensus among economists is that free trade represents a large and unambiguous net gain for society, and this potential benefit has been highlighted very recently by the signing of Canada's Comprehensive Economic and Trade Agreement (CETA) with the European Union (EU). It's an agreement in principle and the details will only be finalized over the next two years, but all the provinces and main political parties appear to be on side. Perhaps this is not so surprising when we consider that the deal is with the world's largest developed market. It has more than 500 million consumers and an economy worth US$17 trillion. What a target for Canada's manufacturers and service providers!

While the weak may go to the wall and should be given help as they adjust to a new environment, the strong will be able (like the Ontario wine industry) to upgrade their quality and productivity, and compete effectively with the best in the world, without the crippling disadvantages of tariff and non-tariff barriers.

Consumers too will have much to gain from more open markets: prices should drop due to international competition, and the range of goods will be increased. Ninety-eight per cent of EU tariffs are being eliminated on the passage of goods and services (even telecoms, finance, transport) in both directions, and two-way investments are made easier by higher net-benefit evaluation levels. There will be improved cross acceptance of professional qualifications, and even easier movement of labour. On the downside, it appears patent protection will be extended by two years, delaying the arrival of cheaper generic drugs, and our anachronistic supply management in dairy and related industries will continue largely unchanged.

Economists estimate that under CETA there will be a two-way 20% increase in trade taking it from US$89 billion to more than $100 billion, and will add 80,000 jobs, which may even be underestimated. Andrew Coyne points out in the *National Post* that CETA should also "give impetus to negotiations in the Transpacific Partnership (TPP) and bilaterals with Japan, Korea and others."

Given FTAs with two of the largest consumer markets (US and EU) we should put aside Luddism, protectionism and the fear of globalization, and take full advantage of these open doors.

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

Comments? E-mail jterrett@plant.ca.

» Training

Eight gifts for plant teams

Tips for improving their performance

BY HUGH ALLEY

Looking for something to give your plant team members in the spirit of the festive season? Here are eight gifts that will improve their and the company's performance.

1. Clear objectives. The biggest reason for poor performance is unclear objectives. What is really more important: being on time, or finish quality? Clarity also avoids a whole lot of wasted time.

2. Curiosity. When someone brings you a problem, have a look where it's happening. Your team member will feel respected because you are taking his/her concerns seriously, and you can help solve the problem.

3. Insistence. Push supervisors to prepare for the training they deliver. They'll spend less time fixing mistakes and the team will work at full production rates much faster, which lowers your costs and increases productivity.

4. Organize work instructions. Arrange them into important steps, key points and reasons. They're easier to teach, learning will be faster and the work will be done correctly.

5. Time. Demonstrate the task several times, each time providing more information, then perform it with your team until each member is sure of the important steps, the key points and the reasons.

6. Someone to go to. Make sure learners go to the right people with questions, not the sloppiest or slowest worker, or the person that's most resistant to change.

7. Credit. Acknowledge what people have achieved. Thank your crew at the end of each day for their work and for any special effort they made.

8. Smiles. Before you go into any challenging conversation, find 10 seconds in private to put on a smile. You'll go into the conversation calmer, confident and ready to listen.

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.

Prepare for tax reform measures: an OECD-G20 project will attempt over the next two years to produce 15 international tax reforms, four of which address transfer pricing. PHOTO:THINKSTOCK

Taking care of business CROSS-BORDER

HOW OECD'S NEW GUIDELINES WILL IMPACT BASE EROSION AND PROFIT SPLITTING

New developments in transfer pricing and international tax planning have increased tax authorities' scrutiny in Canada and foreign jurisdictions.

BY ANGELINE ZIOULAS AND JOYCE CHEUNG

A significant volume of today's global trade involves international transfers of goods and services, capital and intangibles within multinational enterprise (MNE) groups. But plans by the Organisation for Economic Cooperation and Development (OECD) to revise the attribution of profits to different countries will have a significant impact on transfer pricing, international tax planning and business restructuring on a cross-border basis for years to come.

Evidence shows such "intra-group" trade is growing steadily and accounts for more than 30% of all international transactions, according to United Nations Practical Manual on Transfer Pricing for Developing Countries. Given that the structure of transactions within an MNE group is determined by a combination of market and intra-group forces that can differ from the market conditions operating between independent entities, it's important to establish the appropriate transfer price for intra-group, cross-border transactions.

Transfer prices serve to determine the income of both parties involved in a cross-border transaction and such internal pricing also forms the tax base for the countries involved. Base Erosion and Profit Shifting (BEPS) issues have resulted from the need for austerity measures by tax authorities in light of the global economic crisis and increased scrutiny by the public, non-governmental organizations and media.

One factor that poses significant challenges for the international tax regime is the digital economy. An initial report from the OECD explained that a holistic approach was necessary to properly address the BEPS issue. Key pressure areas include:

- Mismatches in entity and instrument characterization, typically referring to hybrid mismatch arrangements (transactions that take advantage of different tax treatments among jurisdictions) of financial instruments, entities or transfers. They generally arise in double deduction transactions, deduction/no inclusion transactions, or foreign tax credit generator transactions.
- Application of tax treaty concepts to profits derived from the delivery of digital goods and services.
- Tax treatment of related-party debt-financing, captive insurance, and other intra-group financing.
- Transfer pricing, particularly related to the shifting of risk and intangibles, and the artificial splitting of ownership of assets.
- The effectiveness of anti-avoidance measures such as General Anti-Avoidance Rules (GAAR), Controlled Foreign Corporation (CFC) regimes, thin capitalization rules, and rules to prevent tax treaty abuse.
- The availability of harmful preferential tax regimes.

A joint OECD-G20 project calls for greater disclosure of aggressive tax planning arrangements and treaty changes to neutralize hybrid mismatches. The OECD has proposed a plan to revise the basis for attribution of profits to different countries for businesses with high value intangible assets, and those with supply chains that deliver goods and services across multiple jurisdictions. Over the next two years, the project will attempt to produce 15 major international tax reforms, four of which address transfer pricing. Any of the following circumstances may trigger possible business impacts:

- High value intangible assets and transactions with overseas markets.
- Business in the digital economy.
- Distribution channels that include remote delivery of goods or services.
- Distribution structures that include local distributors with limited substance including commissionaires.
- Local headquarter executive teams with larger overseas operations.

Information exchanges between tax authorities around the world are increasing to a degree never seen before, creating new challenges relating to ensuring transparency and consistency across country lines. An important consideration of the OECD is the significance of a 'big picture' analysis of the corporate value chain and where profits are reported globally compared to where employees, assets or sales are located. This foreshadows the introduction of country-by-country reporting requirements to combat BEPS.

Although each country's approach to documentation varies significantly, the number of those requiring preparation of transfer pricing documentation increases every year. The proliferation documentation requirements, combined with a dramatic increase in the volume and complexity of international intra-group trade and the heightened scrutiny of transfer pricing issues by tax authorities, makes transfer pricing documentation a top tax compliance priority for tax authorities and businesses.

Dispute resolution

When there are international tax disputes and cases of double taxation, bilateral tax conventions generally include a mutual agreement procedure (MAP) article as a form of dispute resolution mechanism. Residents in either country may formally request assistance from the "competent authority" to resolve a particular tax issue. The MAP reporting framework requires co-operation from taxpayers and regular communication between the tax administrations to resolve these cases.

According to OECD statistics released in September, member countries reported 4,061 open cases at the end of 2012 – the highest number in any year on record and a 5.8% increase over the 3,838 cases recorded for 2011. The average completion time for a MAP case last year was 23 months.

With increased enforcement by tax authorities, more companies are reviewing their transfer pricing plans. Effective planning and administration also reveals previously unknown information, including opportunities for driving value through transfer pricing, and where current weaknesses lie.

For supply chain and distribution businesses, transfer pricing moves cash between affiliates in different countries and minimizes cash taxes, maintains liquidity and manages cash more efficiently. Updating transfer pricing policies potentially increases profits and cash flow in desired locations.

Canadian manufacturers looking at or are currently managing an extended supply chain involving activities carried out in foreign jurisdictions need to understand more clearly the new developments in international tax planning and transfer pricing that are evolving to avoid putting the financial integrity of their cross-border activities at risk.

MNP is a chartered accountancy and business advisory firm with offices across Canada. Angeline Zioulas is a partner and national transfer pricing leader based in MNP's Vancouver office. Joyce Cheung, is a senior associate, National Transfer Pricing Services. E-mail angeline.zioulas@mnp.ca or joyce.cheung@mnp.ca. Visit www.mnp.ca.

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Executives from across Canada reveal their thoughts on challenges, their operations and the future in PLANT's 2014 Manufacturers' Outlook Survey.

BY JOE TERRETT, EDITOR

Taking growth to a higher level. PHOTO: THINKSTOCK

Poised for GROWTH

CONFIDENT MANUFACTURERS ARE TAKING IT TO A HIGHER LEVEL

The entrepreneurial fire continues to burn brightly among Canadian manufacturers. This year may conclude in a somewhat less than stellar fashion but analysts have been predicting modest growth of 2.3% over the next five years, manufacturers appear eager to engage. The challenge will be to take growth to a higher level, and the results of this year's **PLANT** Manufacturers' Outlook Survey suggest that they are preparing to do so.

The survey, conducted by Bramm Research for **PLANT** in partnership with sponsor Grant Thornton LLP, is based on 450 completed replies from senior manufacturing executives, and has a margin of error of +/- 4.5%, 18 times out of 20.

Most of the companies fall into the small to medium category (five to 499 employees) and 13% account for the rest (500 employees plus). Averaging their annual sales for 2013 shows an increase from last year's sample of $68.6 million to $86.8 million with anticipated sales of $91.3 million in 2014.

Sixty-four per cent expect orders to increase as will the dollar value of sales for 62%, 44% are expecting higher profits and 32% anticipate higher pricing.

Biggest challenges for 61% continue to be increasing sales (compared to last year's sample of 57%), controlling and reducing costs (58%) and improving productivity (47%), which is a top investment priority for 44%.

Jim Menzies, national leader of manufacturing and distribution with Grant Thornton LLP, observes an upward trend in manufacturers' level of sophistication. They're no longer in survival mode and operating in a very reactive way.

"Many more companies are now taking a longer-term approach to managing their businesses by setting formal strategies, assessing and managing their most significant business risks, putting in place comprehensive tax and succession planning structures, and other longer term initiatives. This shift will have a positive effect on their potential to grow moving forward."

Companies are currently getting most of their revenue from Canada (62%) and the US (27%) but business is going up by nano steps in other areas such as Western Europe (2.6%) and China (almost 2%). Over the next three years 40% plan to pursue new markets in the US, 39% in Canada, 16% in Mexico, 13% in Brazil and 13% in other South American countries.

Menzies was surprised by the reluctance of manufacturers to expand or sell outside of North America, given the "significant" opportunities some Canadian companies have enjoyed in emerging markets.

"Understandably there are challenges and constraints when considering expansion/selling outside of North America; however, there are now a number of Canadian companies that have a track record of success. As a result, manufacturers do have access to the insight they've gained."

He also noted the response to external financing. Access continues to be the biggest growth constraint, according to 49% of the executives, while 71% intend to finance using internally generated cash flow.

"In a country that has come through a worldwide economic recession in relatively good shape with a stable financial system, it surprises me that the extension of credit is still a such a significant hurdle in fostering growth to so many manufacturers."

This year's survey featured more detailed questions related to skills. Respondents identified areas where they are experiencing shortages and leading the list for 53% is production, followed by general labour (35%), management (29%), engineering (28%), R&D (20%) and production support (19%).

Investment priorites

More than two-thirds of the companies are looking internally to meet their skills needs, 37% are using agencies, 30% are hiring from other companies, 29% are making use of apprenticeship and other programs and 23% are networking. Sixty-nine per cent will deliver training through coaching and mentoring, and 68% will run inhouse workshops. Much further down the list for 36% is training from third-party providers.

More companies anticipate hiring over the next three years (58% compared to 54% in 2013), add new lines of business (43% from 39%) and 33% intend to expand their plants.

Priorities over the next three years are investments in machinery and equipment (76%), which 62% are tying to improving productivity for growth, and the average investment for more than half of the respondents is just short of $1 million.

On the innovation front, 32% of companies intend to spend 1% to 3% on R&D, but 27% aren't sure what they would spend, and 47% plan to take advantage of the SR&ED tax credit.

For Menzies, growth starts with understanding what the customer needs and wants, but innovating is key, although how manufacturers do so will vary.

"Whether it's pure product development, improved or unique packaging solutions, creative marketing initiatives, or everything in between, innovation in all forms will have a profound effect on a company's success," he says.

Watch for the 2014 manufacturers' outlook and roundtable report at **www.plant.ca.**

Comments? E-mail jterrett@plant.ca.

The Fraser Institute says Ontario and BC need worker choice legislation to put them on par with their closest regional rivals. Labour says it's destructive.

BY MATT POWELL, ASSISTANT EDITOR

RTW laws are putting pressure on Ontario's ability to compete. PHOTO: THINKSTOCK

RIGHT-to-WORK

WILL IT BOOST MANUFACTURING?

It's a curious time for labour relations. Canada's two biggest unions have merged, forming a super entity that encompasses many segments of the labour force at a time when industry is attempting to distance itself from organized worker groups.

Prior to last year, Canadian interest in so-called right-to-work (RTW) laws was minimal, but industry shifts, the overvalued dollar and more competitive, cheaper labour in the US, Mexico and in developing economies have ignited the conversation. Indeed, a recent study by the Fraser Institute says Canada's manufacturing centres should adopt worker choice legislation to boost output and create jobs.

RTW has become popular in the US. Twenty-four states have adopted it, including Indiana and Michigan, which are considered to be major regional competitors to Ontario because they lie along the I-75 corridor. Ohio, too, is said to be contemplating a move to worker choice legislation as soon as 2015.

Naturally, Canada's unions are weighing in, including Unifor's economist Jim Stanford, to cool the prospects of RTW making its way into Ontario's labour structure.

"All they're doing is looking through the tea leaves. Cutting wages and labour security in Ontario is no way to boost its competitiveness. All RTW does is provide companies with a subsidy to carry on the status quo," says Stanford.

Jason Clemens, the Fraser Institute's executive vice-president and co-author of *The Implications of US Worker Choice Laws for British Columbia and Ontario*, concludes that Ontario, and too a lesser extent BC, must consider worker choice laws as a key driver of competitiveness.

"These laws are putting increased pressure on Ontario's ability to compete, especially now that Michigan and Indiana have flipped and because Ohio will likely follow," he writes.

Given the option, Clemens argues, workers are less likely to choose unions, resulting in a lower rate of unionization that stimulates economic and employment growth.

In the US, workers are allowed to opt-out of dues not related to representation. In Canada, if you work in a union shop, you pay dues.

RTW laws, as defined in the institute's analysis, prohibit collective bargaining agreements from forcing workers to be represented by a union as a condition of employment.

"Worker choice laws don't prevent unionization – they give workers a choice. And when workers have a choice, they choose unions less often," said Clemens. His report suggests that states with worker's choice laws experience a 1.8% increase in GDP and 1% increase in employment.

RTW and increased output

The report projects laws would increase total economic output in Ontario by $11.8 billion (about $874 per capita) and increase employment by almost 57,000 jobs. Private sector unionization in 2012 was at 15.3%. RTW policy would increase manufacturing output by up to $4 billion, and 13% over a 25-year period.

Clemens argues these laws have created attractive environments for manufacturers in RTW states, but have produced significant obstacles for provinces such as Ontario to attract new investment and enhance its overall competitiveness.

"If Ohio flips in 2015, Ontario would be the only non-RTW jurisdiction along the I-75 corridor and that's a major problem," he says. "If Ontario is not interested in labour flexibility as a competitive advantage, it has to come up with something else, because right now it has no calling card."

Citing Ontario's oft-shamed energy policy, Clemens says the province is setting itself up to be uncompetitive.

"Michigan has the infrastructure to handle manufacturing growth and it doesn't have to deal with the border. That's a major competitive advantage and makes it way more attractive to investors," he says.

The Fraser Institute's analysis compares Ontario to Oklahoma's RTW experience. Based on the report's findings, the state's rate of growth in the manufacturing sector was 17.6% higher after it implemented RTW legislation. Applying Oklahoma's experience to Ontario, the institute suggests growth in manufacturing output would amount to 9%, which would yield annual growth of 5.8% instead of the 5.3% observed from 2009 to 2012.

"We have to recognize that we're in a period of global change for the manufacturing sector, and it's playing out. We're well into the second decade of that rebalancing," says Clemens.

Stanford says a potential 9% increase in manufacturing output is fantasy, stating Michigan and Ohio are in a race to the bottom.

"It's like saying, 'Well, I don't know what else to do, so I'll go RTW and it might work because we'll steal a few jobs from our neighbours.' But if everyone does that, no one's better off," he says, adding that RTW laws have cut manufacturing wages in the US by 20%.

Meanwhile, Ontario's Progressive Conservative leader Tim Hudak is strongly backing RTW legislation, claiming it would modernize the province's labour laws.

Interestingly, five Canadian provinces are among the top 20 North American labour markets (Ontario ranked 16th; BC is 7th) from 2007 to 2011 in a 2012 labour study by…the Fraser Institute.

However, there are specific cases where RTW in the US was likely responsible for lost Canadian jobs.

Caterpillar put 450 employees out of work when it shuttered its London, Ont. Electromotive plant in February 2012 and is now happily manufacturing locomotives in Illinois…you guessed it…an RTW state.

More recently, US Steel closed its iron and steel making plant in Hamilton. Purchased from Stelco in 2007, it was shut down by 2010 when labour negotiations were never resolved and it only opened again after a showdown that included political intervention in 2011.

The steel-giant has production facilities in Indiana, Michigan and Ohio.

And now GM joins the list. It will stop producing its Chevrolet Camaro sports car in Oshawa in 2015, moving production to its Lansing assembly facility in Michigan, citing lower capital investment needs and improved efficiencies.

"When Tim Hudak or the Fraser Institute hold up the relocation of London's Caterpillar plant to Muncie, Ind. as evidence that good wages are a barrier to good business, they are really telling the families of Canadian workers that they deserve to live on less while corporations scour the globe for the greatest profits," said OFL president Sid Ryan in response to the think-tank's report.

Clemens concedes labour law reform is not the sole solution to becoming competitive, and that dynamics such as energy policy, corporate and personal taxes, regulation and infrastructure go into any decision to invest in Ontario.

Stanford says Ontario needs to take a closer look at countries such as Germany and South Korea, the former having the world's highest manufacturing wages.

"Germany continues to grow because it invests in capital and technology, it emphasizes productivity and it developed an aggressive export structure. We need to learn those kinds of high value, capital intensive strategies," he says.

The World Bank notes in a 2012 global study that "well functioning labour markets are essential to solid economic performance, future growth and the well-being of workers and their families… Unions do raise wages, but they get better productivity."

Ontario needs a solid growth plan for its manufacturing sector. Whether or not RTW is part of that plan, Ontario and Canada's other manufacturing centres have to address the competitive threats now posed by their US neighbours if global rebalancing is to play out in their favour.

Comments? E-mail mpowell@plant.ca.

SHOOTING for gold with "GREEN" jerseys

Nike insists Petro-Canada's branding was not part of the design process. PHOTO: NIKE

NIKE ADDS RECYCLED WATER BOTTLES TO ITS OLYMPIC HOCKEY UNIFORMS

The jerseys weigh just 448 grams, 15% lighter than the 2010 version thanks to the new material.

PLANT STAFF

Team Canada's hockey jerseys for the 2014 Winter Olympics in Sochi, Russia may not be green in colour but the way they're made certainly is.

The uniforms, released on Oct. 8, are a set of three in red, white and black with gold accenting and will be worn in competition by the men's, women's and sledge hockey teams. They're manufactured by sportswear-giant Nike and weigh just 448 grams, which is 15% lighter than the team's 2010 version thanks to a new polyester that's produced from recycled plastic bottles.

The jerseys and socks are made from 73% recycled polyester; an initiative that's part of Nike's effort to reduce its environmental impact. Each jersey accounts for up to 17 recycled plastic water bottles, while a set of socks uses up to five.

The bottles are chopped into flakes, melted down and spun into yarn, which Nike says reduces energy consumption by up to 30% compared to manufacturing virgin polyester. Since 2010 the process has diverted more than 1.1 billion plastic bottles from landfill.

Nike's collaboration with Hockey Canada took inspiration from the iconic designs of vintage Canadian jerseys – most notably the 1972 version worn in Canada's heated Summit Series with the Soviet Union, which ended with an epic Team Canada victory.

Inside the collar, 12 gold maple leaves represent Canada's Olympic and Paralympic gold medals – eight in men's hockey, three in women's and one in sledge.

So far the jerseys have garnered mixed reviews from critics, and have been the brunt of numerous jabs online. The simplicity of the logo on the red and white versions has been compared to Petro-Canada branding, and one Tweeter described the red armband on the black jersey as "vaguely German." One blogger asked if leaked photos of the uniforms were an April Fool's joke six-months late.

For the record, Nike's lead designer told the *National Post* "Petro-Canada was not part of any of Nike's design research." And in Team Canada's defence, Olympic rules prohibit teams from wearing anything that bears the logo of its national sports federation. It will, however, be the only team to wear three uniforms at the Sochi Winter Games.

Nike, which is based near Beaverton, Ore., will also produce Olympic hockey team jerseys and socks for Slovakia, the Czech Republic, Russia and Team USA.

Comments? E-mail mpowell@plant.ca.

» Green Manufacturing

Setting energy targets

Three ways to reduce use and improve performance

BY BRETT WILLS

Setting goals and targets provides the direction for improvement. Without a goal, efforts wander and eventually de-rail. That's why many manufacturers are making it standard practice to set short- and long-term energy reduction targets as part of a comprehensive strategy.

But there's more than one way to approach this challenge. Here are three suggestions:

Opportunity based. A reduction target depends on the opportunities. Develop an inventory of them and sum up the total reduction available in a common unit (kWh, GJ). This target can be expressed in terms of a percentage reduction versus a baseline in normalized or absolute terms.

Internal best practices. Companies with multiple facilities set a reduction target based on the delta between the lowest and highest performing facilities. Baseline each facility in normalized and/or absolute terms using a standardized approach. Targets will challenge the lowest to match the highest performing facilities. Summing up the total achievable reductions provide the overall target.

Industry best practices. With more companies reporting energy performance in both absolute and normalized terms, it's much easier to use industry best practices to set reduction targets. Research the performance of similar organizations and set reduction targets to match based on the best ones.

Companies at the beginning of the journey should start with opportunity-based or internal best practices and work up to industry best practices. More advanced companies should adopt industry best practices to stretch performance.

Although these approaches focus on setting energy targets, they'll also work in other areas such as water reduction, carbon reduction and waste diversion. In all cases, setting goals is a critical initial step to improving performance.

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.

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CIEN
CANADIAN INDUSTRIAL EQUIPMENT NEWS

The 1730's colour-touch screen simplifies analysis in the field. PHOTO: FLUKE

Need to cut ELECTRICITY costs?

ENERGY LOGGING UNCOVERS HIDDEN SAVINGS

Fluke's 1730 energy logger paints a complete picture of your plant's energy use…and where it's wasted.

BY MATT POWELL, ASSISTANT EDITOR

There's not a lot you can do about the high price of electricity, but a good place to start aside from operating outside peak hours, is to use less of it.

Fluke Corp., a manufacturer of industrial instrumentation based in Everett, Wash., says its 1730 three-phase energy logger will help your plant do that, and a few other important things besides. Some of the benefits were detailed during its September Tech Talk webinar series. Chief among them are easier identification of waste, plus more accurate profiling of consumption, all of which will contribute to savings derived from programs offered by utilities that reward reduced energy use.

The session, featuring Fluke USA's public relations manager and host Leah Friberg with guests Frank Healy, a power quality specialist at Fluke and Tony Simon, an energy systems engineer from Washington State University's Energy Extension program, ran through the 1730's capabilities.

For example, it discovers when and where energy is consumed at specific points, comparing multiple data points over time to build a complete energy profile and the potential for savings.

Voltage, current, power and power fac-

Continued on page 22

» Supply Lines

CREAFORM SOLD TO AMETEK

Novacap Technologies III LP and Desjardins Venture Capital Inc. have completed the US$120 million sale of Creaform Inc. to AMETEK Inc., a global manufacturer of electronic instruments and electromechanical devices.

Creaform, based in Levis, Que., manufactures 3D portable measurement technologies.

Novacap, a private equity firm, and Desjardins Venture Capital say the company has grown "significantly" since they made their original investment in 2009.

Creaform operates innovation centres in Levis and Grenoble, France, and has direct sales operations in the US, France, Germany, China, Japan and India.

It joins Berwyn, Pa.-based AMETEK as part of its Electronic Instruments Group.

NEW OFFICE FOR NORDEX

Nordex Explosives Ltd. has opened a new sales office in Sudbury, Ont. where it will service nearby mines as well as several large construction and quarry operations.

The explosives manufacturer based in Kirkland Lake, Ont. says the new location was chosen specifically because of the potential for new business opportunities.

Particularly promising are potential sales of the Buttbuster line of perimeter control products for which it has the exclusive Canadian manufacturing and distribution rights.

CREE LEDS FOR CRS

CRS Electronics Inc. is using LEDs from Cree Inc., a Durham, NC technology developer, for its new QuantumLED commercial lamp brand.

The Welland, Ont. manufacturer of LED lighting products will employ Cree's XLamp XP-G2 LED technology.

The initial product offering includes PAR lamps, MR16 lamps in three lumen packages, plus BR reflectorized lamps.

Directional lamps will be available in multiple beam angles.

CRS says QuantumLED will also feature an "extremely hard-to-find" 2200 Kelvin colour temperature option.

REALIGNMENT FOR FLIR

FLIR Systems Inc. is realigning a number of its production and engineering organizations and streamlining global operations.

The Portland, Ore. manufacturer of thermal imaging technology (with a Canadian office in Burlington, Ont.) says the move better positions FLIR to develop, produce and market products faster and more cost-effectively.

Up to six not-to-scale sites in the US and Europe will be closed and their operations transferred to larger facilities.

FLIR expects savings to exceed $20 million per year.

Energy logger uncovers savings

Continued from page 21

tor are measured to optimize energy savings strategies, a colour touch screen simplifies in-the-field analysis and data checks, and comprehensive logging stores more than 20 separate sessions.

All measured values are logged and reviewed automatically. Common setup errors are rectified, through re-engineered cables, digital check and auto-correct of all connections.

The software analyzes energy or load profiles, including zoom-in and zoom-out on details; adds comments, pictures and other information to data; overlays different logging sessions; creates reports; and exports measurement results.

The unit is secured safely inside electrical panels, its four-hour operating time powered by a lithium-ion battery. Two USB ports, one for a PC connection and another for fast downloads to standard thumb drives, are included. And an advanced auto-correct feature eliminates costly errors because of improper connections.

As for safety, optimized current and voltage accessories minimize the time a user spends inside live electrical panels.

Monitoring opportunities

A Fluke study identifies four "opportunities" resulting from energy monitoring.

For instance, when evaluating a panel, technicians consider its size and compare the number and size of the circuit breakers to the number of empty spaces, and estimate the level of power used. But there are times when a panel that appears to be lightly loaded with empty circuit breakers is actually overloaded because of the size of the individual loads. Alternatively, a panel that appears to be heavily loaded may be only partially so and has ample spare capacity.

Power loads vary widely, depending on the facility. A chart of use patterns over time shows when and how energy is used, which helps to determine where there's room for improvement. It also identifies which monitoring activities create opportunities to reduce energy use by turning off loads or adjusting their schedule of operation.

The energy logger checks electrical equipment for dangerous safety conditions that may have evolved over time and addresses them before they become harmful to workers and detrimental to the plant. It also documents any hazardous issues and reports them.

Fluke says load studies are often conducted only when there's a specific need for additional power supply. Setting up an energy logger to conduct this kind of survey monitors power use and documents locations for a new panel, identifies potential installation issues and how long the project will take to complete, and the materials necessary to complete it.

Even well run facilities experience energy waste and there's not a lot you can do about the price of electricity, but logging provides plants with a way to effectively manage rising costs.

Comments? E-mail mpowell@plant.ca.

Enclosures and components

Secure access.

SE8 PROTECTS PCS

Rittal Systems' SE8 non-modular PC enclosure protects against unauthorized access.

The system accommodates all computer equipment such as a monitor, computer system, printer, keyboard and mouse. They're protected by integrated one-piece side panels and roof, an internally glazed monitor door and a lockable keyboard drawer.

A full-size rear door and lower front door access optional internal mounting panels, shelves or printer trays.

The SE8 is also compatible with Rittal's accessories with optional glazed doors, keyboard drawers, desk sections and small to large mounting compartments.

Rittal Systems Ltd., the Canadian subsidiary of enclosure manufacturer Rittal GmbH & Co. KG, says the system provides IP 55 protection, and replaces the unit based on TS 8.

www.rittal.ca

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ADHESIVE VENT RAISES RELIABILITY

Manufacturers of outdoor electronic enclosures used in the solar, telecommunications, exterior lighting and smart meter industries can now design them with normal seals and gaskets without upgrading to more costly ruggedized materials.

W. L. Gore & Associates' Series VE9 adhesive vent increases the reliability of outdoor electronic enclosures that are commonly exposed to changing weather and environmental conditions.

All-ePTFE construction.

Made of ePTFE with durable adhesive, it mounts on either the interior or exterior of the housing, depending on protection rating needs.

Combined with Gore's UL-listed ePTFE membrane, the VE9 delivers 1,150 ml/min/cm2 airflow for fast equalization of pressure caused by sudden temperature changes, while still meeting industry standards. It also withstands water, dust, dirt, rain and other harmful liquids, which often cause problems for non-vented outdoor enclosures.

Gore is a manufacturer industrial manufacturing components based in Newark, Del.

www.gore.com

www.plantmagazine.ca/rsc/ 2

Easily installed.

KEEP COMPONENTS COOL

Heat inside an enclosure reduces life expectancy in controlling units such as PLCs, HMIs, and AC drives, while excessive heat causes nuisance faults from electrical and electronic components, circuit breakers and fuses. AutomationDirect has added 480 V models to its Stratus line of enclosure air conditioners to alleviate these problems.

The closed-loop cooling systems are made for harsh environments or washdown conditions, and where heavy dust and debris, or airborne chemicals are present.

The air conditioners range from 2,000 to 8,000 Btu/H, each with a freestanding rigid chassis for easy installation and maintenance.

Units for NEMA 12 and 4 rated enclosures are constructed of 16-gauge cold rolled steel; and units for NEMA 4X rated enclosures are made of 16-gauge 304 stainless steel.

All units contain an active condensate management system and protective-coated condenser coils.

They fit enclosures as shallow as 12 in. Each unit features a digital LED temperature controller with visible alarm and is pre-wired for external alarm monitoring.

Energy-efficient compressors are charged with CFC-free refrigerant and equipped with anti short-cycle protection.

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

www.automationdirect.com

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HJ H PROTECTS AGAINST DUST, WATER

Hammond Manufacturing's HJ H Series hinged-cover, metal enclosures protect electrical and electronic equipment from dust and water in industrial environments.

Environmentally sealed to NEMA Type 3R, 4 (IP66), 12 and 13, and designed for wall or bulkhead mounting, the enclosures house instruments, electrical, hydraulic or pneumatic controls, and work as an electrical junction box or terminal wiring enclosure.

Sizes range from 4 x 4 x 3 in. (100 x 100 x 75 mm) to 16 x 14 x 10 in. (400 x 350 x 250 mm).

The body of the unit is fabricated from 16- or 14-gauge steel and the covers from 14-gauge, powder-coated in ANSI 61 gray. All seams are continuously welded and smooth finished; there are no cutouts, knockouts or holes.

The external stainless steel hinge and hinge pin, and two stainless steel clamps (one if the height is 6 in./150 mm or less) pull the cover evenly down on to the seamless poured-in-place gasket.

The stainless steel hardware is good for installing the units outdoors and hosing them down. All sizes have top and bottom mounting flanges on industry-standard centres. The door is fitted with a bonding stud. The body with a grounding stud and removable inner panels, either painted white or with a galvanized finish, are optional.

Made with 16- or 14-gauge steel.

Accessories, such as terminal straps and brackets, breather kits, filter fans and louvered ventilation plates, are either supplied separately or factory fitted.

Hammond Manufacturing Co. Ltd. is an encloser manufacturer based in Guelph, Ont.

www.hammondmfg.com

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COOLERS RESIST HEAT AND CORROSION


Keeps out moisture.

EXAIR's Dual 316 stainless steel cabinet cooler systems keep electrical enclosures cool with 20 degree F (-7 degree C) air while guarding against heat and corrosion that could adversely affect the internal components.

The coolers circulate air throughout the enclosure to prevent high temperature malfunctions. They mount through a standard electrical knockout while maintaining the NEMA 12, 4 or 4X rating of the enclosure.

An automatic drain filter separator prevents moisture from passing to the inside of the electrical enclosure and an optional thermostat control minimizes compressed air use while keeping the enclosure within ± 2 degrees F (-18/-17 degrees C) of the temperature setting.

A high cooling capacity of up to 5,600 Btu/hr. handles large electrical enclosures and high heat loads. Models with lower cooling capacities for NEMA 12, 4 and 4X enclosures are also available. Other cooling capacities are 4,000 and 4,800 Btu/hr.

EXAIR Corp. is a Cincinnati-based manufacturer of compressed air-operated products.

www.exair.com

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DRIP PAN CHANNELS OUT MOISTURE


Captures condensate.

Whether of not condensate occurs within an electronics enclosure depends on the ambient temperature and humidity. Drip pans from EIC Solutions Inc. keep electronics and other enclosure contents safe by collecting moisture and channelling it outside via an external drain.

The thermoelectric cooling units mount on the side panels of standard enclosures. Specially contoured vertical drip pans are installed to capture condensate and channel it to the drain fitting located in the bottom of the pan.

Where the cooling units are mounted on the top of the enclosure, a horizontal drip pan with drain fitting is integrated into the air conditioner, and the tube carries the condensate out of the enclosure in the same way as the standard model.

A small hole is drilled for the drain tube to pass through. The opening is weatherproofed with durable rubber grommet and waterproof sealant. If drilling is not possible, the most common alternative is a replaceable desiccant.

EIC Solutions Inc. is a Warminster, Pa.-based manufacturer of cooling and protection solutions for electronics and equipment.

www.eicsolutions.com

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COMPOSITE RESISTS ENCLOSURE CORROSION

All oil and gas platforms have hazardous areas where the atmosphere is potentially flammable and electrical equipment must be made explosion proof. Intertec's GRP (glass reinforced polyester) composite resists the corrosive forces of the offshore environment, and can be used to make pressurized, explosion-proof enclosures of any size.

Intertec's Ex p or Ex e enclosures use a composite sandwich material with high-performance GRP sheets enclosing internal insulation, while environmental protection comes from a gel-coat surface layer. The material is almost as strong as stainless steel but 75% lighter. It doesn't rust or degrade, allowing maintenance-free lifecycles of 30 years. And it demonstrates very high thermal resistance.

Enclosures withstand extremely high pressures such as offshore winds (240 kmh/150 mph) or the blast pressure of an explosion. Walls also protect against rapid temperature-rise hydrocarbon pool or jet fires resulting from the continuous escape of pressurized flammable media.

Intertec is a Sarnia, Ont. manufacturer of enclosures, cabinets and shelters.

www.intertec.info

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PUMPS

GRINDER PROTECTS DOWNSTREAM PUMPS

The Moyno Max-Flow Annihilator grinder system replaces bar rakes and screens as well as drum screen grinders to enhance performance. It's a custom engineered headworks debris handling system that protects downstream pumps, valves and process equipment in water treatment plants and lift stations.

The Max-Flow system contains two or more Annihilator grinders mounted side-by-side in a stainless steel retrieval frame in the headworks of a waste treatment system and install in an in-line, staggered or offset design to accommodate a variety of channel widths.

Replaces bar rakes and screens.

The frame, engineered-to-order and pre-fabricated, includes guide rails to allow the independent retrieval of each grinder for easy maintenance. Steel panels are also inserted in place of a grinder to divert the flow to the remaining grinders during maintenance, eliminating costly diversion or by-pass channels. Stainless steel or FRP control panels to control the operation of each grinder independently using manual or automated control systems.

Moyno Inc. is a pump manufacturer based in Dayton, Ohio.

www.moyno.com

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PUMPS HANDLE VOLATILE FLUIDS

French manufacturer Mouvex has upgraded it's A Series eccentric disc pumps, doubling its maximum differential pressure from 5 bar (72 psi) to 10 bar (145 psi) and the implementation

Self priming with run-dry feature.

of PN16/ANSI 150 flanges for use in the safe transfer of viscous, non-lubricating, volatile or delicate fluids.

They're built from ductile iron, an update from cast iron. The positive displacement pumps transfer product up to 250 degrees C at maximum speeds to 750 rpm, maximum flow rates to 242 gpm, and suction and discharge ports from 1 through 4 in. Eccentric disc technology enables self-priming and run-dry capabilities while maintaining constant flow rate regardless of changes in viscosity and pressure. And they're ATEX-certified for use in potentially dangerous environments with the ability to run-dry for up to three minutes.

Mouvex, part of the Dover Corp.'s Pump Solutions Group, is a positive displacement pump manufacturer based in Auxerre, France.

www.mouvex.com

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SENSORS

TE-SNW TRACKS HOT AND COLD WATER LOOPS

Dwyer Instruments Inc.'s TE-SNW surface sensor non-intrusively measures process temperature in hot and cold water loops.

An adjustable metal strap fits tightly around 2 to 6 in. diameter pipes allowing the surface area of the sensor's copper plate (adjustable to six RTD and thermistor curve settings) to make good contact. A quarter turn twist-off cap chained to the housing prevents the unit from getting lost.

Dwyer Instruments is a manufacturer of industrial controls and instrumentation based in Michigan City, Ind.

www.dwyer-inst.com

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HIGH ACCURACY FOR FOOD PROCESSING

Baumer's OADR 20 laser sensors are highly accurate with resolutions from 5 µm.

They're encased in a stainless steel housing that features Baumer's proTect+ to comply with IP68/IP69K, even after repeated temperature cycles in washdown applications.

Complies with IP68/IP69K.

The photoelectric sensors, which detect food items or packages on conveyor belts, come in standard models and in a SmartReflect version with a light barrier that operates without a reflector and has a sensing distance of 800 mm.

PEEK plastic sensor tips that protrude only 18 mm into the container or tube avoid flow blockage and handle temperatures between -40 to 115 degrees C.

The Baumer Group is a sensor manufacturer with operations in Burlington, Ont.

www.baumer.com

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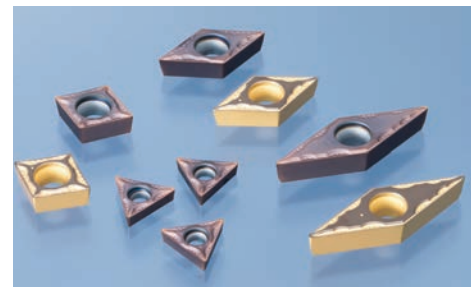
CUTTING TOOLS

MACHINE WITH HIGH PRECISION

Sumitomo Electric Carbide Inc.'s MESI Chipbreaker for Swiss turning and small parts machining provides a low cutting force and performs with high wear-resistance in applications using titanium such as medical and high precision parts machining.



Maintains chip control.

A wavy cutting edge maintains better chip control (for bar feeder machines), while dimples reduce cutting temperatures. Available geometries include CCGT, DCGT and VCGT; grades include AC510U/ 520U/530U/AC610M/630M.

Sumitomo Electric Carbide is a manufacturer of advanced cutting tools based in Mount Prospect, Ill.

www.sumicarbide.com

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COUPLINGS

Chemically resistant.

SHAFT MOUNT COMPONENTS TAKE THE HEAT

Stafford Manufacturing Co.'s thermoplastic shaft collars, couplings and flange mounts withstand frequent washdowns and exposure to chemicals.

Developed for processing equipment and conveyors, the shaft mount components are machined from Teflon, Delrin, nylon and other thermoplastics and supplied with stainless steel clamping screws. They include one- and two-piece shaft collars, set-screw collars, hinged shaft collars, one- and two-piece couplings and flange mounts.

Stafford Manufacturing is a manufacturer of shaft collars and couplings based in Wilmington, Mass.

www.staffordmfg.com

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POWER SUPPLY

No retrofitting necessary.

POWER UP

SolaHD's SDN 40-24-100C power supply ranges from 5 to 40 A in both single-phase and three-phase designs to meet growing bulk power supply requirements in applications such as industrial machine and process control and semiconductor fabrication equipment.

The power supply has a small footprint and delivers 40 A in facilities with only single-phase power for running large industrial loads such as sorting, conveying and packaging equipment. The unit also allows new equipment to be powered from within existing structures without retrofitting.

SolaHD, a developer of power supply and conversion technologies (part of Emerson Industrial Automation based in Rosemont, Ill.), says the 40 A power supply's visual diagnostic LEDs indicate I/O status at a glance.

It's equipped with standard screw terminal connections and a rugged, industrial-grade metal outer case that dissipates heat to deliver full power in temperatures ranging from -25 to 60 degrees C.

www.solahd.com.

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FITTINGS

SELF-BONDING TAPE MEANS BUSINESS

MOCAP's self-bonding silicone rubber X-Treme Tape stretch wraps to conform to irregular shapes without adhesive, which means there is no secondary clean-up after high-temperature processing.

The tape protects and masks during plating and conformal coating as well as high-temperature powder coating, resisting temperatures up to 260 degrees C.

Conforms to irregular shapes.

Originally developed for US military applications, it withstands extremes in temperature, pressure, voltage, moisture, corrosion and contaminants.

Mocap is a manufacturer of plastic and rubber protection products based in St. Louis.

www.xtremetape.com

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MATERIAL HANDLING

CABLE PULLER SETS UP QUICKLY

The Greenlee G3 Tugger cable puller has a 25% stronger continuous load, pulls cable 20% faster, and sets up three times quicker than other devices thanks to a specifically designed motor.

Circuit breaker protects motor.

A circuit breaker protects the motor against excessive amperage draw from high loads.

Quick disconnect pins easily change tail length, pull direction and angle of pulls with ease, making set up faster. The unit also attaches to a truck hitch for outdoor pulls.

It handles continuous loads up to 1,200 lb. and is UL and cUL rated for pulls up to 2,000 lb. (intermittent). With no load, it pulls at 97 ft./min. (high speed) or 41 ft./min. (low speed).

And a right-angle sheave safety feature places operators out of the direct line of cable pulls.

Greenlee is a manufacturer of professional tools based in Rockford, Ill.

www.greenlee.com

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LIFTER ELIMINATES BENDING, STRETCHING

Combining the vertical lifting of a small powered stacker with the versatility and simplicity of a two-wheel hand truck, the LNB-350 from Lift'n Buddy transports and repositions items quickly and safely.

Smooth lifting.

Its powered platform positions loads at a comfortable height to eliminate bending and stretching. A linear actuator ensures smooth lifting and lowering with zero drift.

Lift'n Buddy, a manufacturer of material handling equipment based in Fargo, ND builds the LNB-350 on a lightweight, durable aluminum frame that handles loads of up to 350 lb. and lifts them 36 in. Heavy-duty 10-in. polyurethane tires roll effortlessly over uneven floors, pavement, thresholds, and carpeting without going flat or leaving skid marks.

The lift is powered by an on-board 12 V battery that's maintenance-free and has a built-in charger. A stationary base plate keeps it upright and freestanding, even when the lifting platform is raised and under load. The platform has 10 slots in case the load needs to be secured with bungee cords or straps.

Options and accessories include multiple handle styles, custom platforms and finishes, an attachment for lifting 5-g pails, a kick-stand and a cylinder-handling kit.

www.liftnbuddy.com

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TACHOMETERS

TACHOMETERS IDEAL FOR FIELD USE

CheckLine's hand-held HTM mechanical tachometers use a pointer and dial to display rpm and surface speed quickly and accurately at speeds up to 50,000 rpm and surface speeds up to 25,000 ft./min. without batteries, making the units suitable for field use.

Speeds up to 50,000 rpm.

Four different models include an oversized 3-in. diameter dial with separate colour scales to ease reading rpm and surface speed.

Range and variation of frequency of the measurements is noted by watching the speed and span of the pointer movement in addition to reading speeds on the dial. A Peak-Hold (memory) button freezes the pointer in "last" position until reset.

Accurate to ±0.5% over the full scale, the unit's three-position range selector switch (1-, 10-, 100-X) provides the highest possible resolution for each application.

A rubber shell on the housing ensures extra protection and easy gripping. Gauges are CE-certified with optional NIST-traceable calibration.

All models are supplied as a complete kit in a foam-fitted carrying case including cone tip and funnel tip adapters, shaft extension and instruction manual.

Checkline is a manufacturer of industrial measurement tools based in Cedarhurst, NY.

www.checkline.com

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LIGHTING

90% less electricity used.

LEDS OUTPERFORM TRADITIONAL ENERGY SAVING LIGHTING

American Sales Development LLC's LED lighting units for under-shelf and workstation installations use 90% less electricity than incandescent and fluorescent lighting. Their lifespan is 133 times greater and use 25 times less heat with greater brightness without flickering or toxic materials such as mercury, gasses or glass.

These solid-state lighting devices use semiconductor material instead of a filament or neon gas. An LED light is a tiny chip encapsulated in an epoxy resin enclosure, making it sturdier than traditional incandescent light bulbs or fluorescent tubes.

There are no fragile components such as glass and filaments, so they withstand shock, vibration and extreme temperatures.

ASD's LED lights range from 9-30 W, 810- 2700 lm and 600-6,500 K. The units plug into a standard 110 V outlet, have a side mounted on/off switch and require no transformer or ballast. The lights daisy chain to connect up to eight units or 32 ft. of lighting with a single power source and a dual connector. An extension connects up to 18 in. from one unit to the next.

Standard fastener hardware is included. An optional universal workbench adaptor kit includes hardware to attach to many popular industrial workstation types. The units come in 24-, 36- and 48-in. lengths with either a single or double row of LEDs and/or standard or magnetic base configurations for portable mounting to metal surfaces.

American Sales Development, based in Fairfield, Conn., supplies safety and material handling products.

www.americansalesdevelopment.net

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COATED LEDS RESIST SHOCK AND VIBRATION

Light up machines and visual inspection stations with Banner Engineering's WLA polyurethane encapsulated solid-state LED area lights.

Coated in optically clear polyurethane to enhance chemical compatibility and increase resistance to shock and vibrations. The IP69K sealed lights are also resistant to fuels, oils, grease and many solvents.

They're housed in polycarbonate and

Withstands high-pressure washdowns

available in four sizes. Maintenance-free, they withstand high-temperature washdowns.

Installation is easy thanks to a simple angle bracket and magnetic mount.

The lights are available in quick disconnect or cable versions.

Banner is a manufacturer of lighting and vision technologies based in Minneapolis.

www.bannerengineering.com

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DETECTION

50% more sensitivity.

VALUE-BASED X-RAY DETECTION

Thermo Fisher Scientific Inc.'s Next-Guard X-ray detection platform delivers up to 50% more detection sensitivity than previous value-based X-ray systems.

With multiple contaminant algorithms, detection parameters can be modified, tested and changed on the fly. A QA check mode automates operator audits and record keeping, a wraparound detector reduces "blindspots" and an easily removable conveyor facilitates quick cleaning and service.

A built-in internet remote supports the unit's hardware and software while detector diagnostics warn when preventative maintenance is required.

Thermo Fisher Scientific Inc. is a supplier of process control technologies based in Minneapolis.

www.thermoscientific.com

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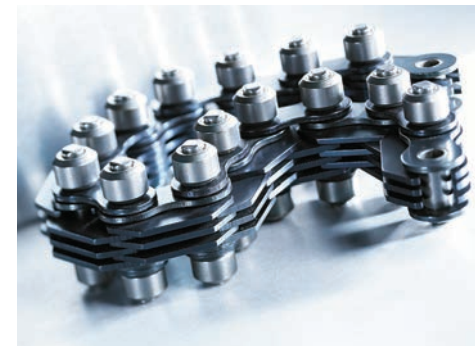
CONVEYORS



Handles modular transfer systems.

SIDE PLATE CHAINS STABILIZE CONVEYING

iwis side-plate chains for material handling systems convey products up inclines, horizontally and in modular transfer systems in production and assembly lines where exact positioning is vital.

They're useful in transfer systems based on power and free conveyor chains, but are more stable on a flat surface. A wider conveying surface than traditional straight side-plated roller chains move work pieces with or without a carrier, reducing the risk of product marking.

iwis Group, a manufacturer of precision chain systems based in Munich, Germany, says the side plates ensure an even load distribution across the guide, while there is no relative movement between chain and conveyed goods. However accumulation is also possible depending on the application.

www.iwis.com

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CONTROLS

Energy savings of up to 30%

OPTIMIZE CHILLER PLANTS

Armstrong Fluid Technology's Opti-visor control interface harnesses energy savings of up to 30% in chiller plants by optimizing automated settings for equipment such as water-cooled and variable flow chillers, compressors, cooling towers, and condensed water pumps.

The unit retrofits in buildings with chiller plants less than five years old, but it's also suitable for new construction applications involving variable primary flow chiller plants with more than 3 million ton-hr. of operation per year, and advanced building automation systems (BAS).

The system adapts to building conditions, load and plant conditions via BMS data. Using advanced patented control methodology (Hartman Loop) it integrates variable speed devices to optimize energy efficiency and determine optimal operating parameters, which are communicated back to the BMS for the plant's automation module to implement.

Armstrong, a manufacturer of fluid flow equipment based in Toronto, says the control interface improves annual average power consumption to better than 0.5 kW per ton (or COP greater than 7) because Hartman Loop technology maximizes variable speed potential.

Plug and play installation requires only minor modification to existing BAS plant automation modules. The unit attaches to existing chiller plants, requires a simple VFD on each condenser water pump and power cable from the MCC to the condenser water pump.

www.armstrongfluidtechnology.com

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METAL PROCESSING

TUBE PROCESSOR CUTS OPERATING COSTS

BLM Group's LT5 Fiber Laser and ELECT XL tube benders for entry level automated tube processing reduces hourly operating costs by as much as 50%.

Eliminates routine maintenance.

Matched with that are savings from the elimination of routine laser maintenance and optical beam alignments.

The all-electric 12-axis machine bends large diameter (up to 150 mm) tube for automotive, machinery, motorcycle, hydraulic, railway and shipyard applications.

The multi-stack bender holds up to eight tool sets permitting rapid processing of complex parts and faster changeover.

BLM Group is a manufacturer of tube processing equipment based in Cantu, Italy. The company has a Canadian distribution facility in Kitchener, Ont.

www.blmgroup.com

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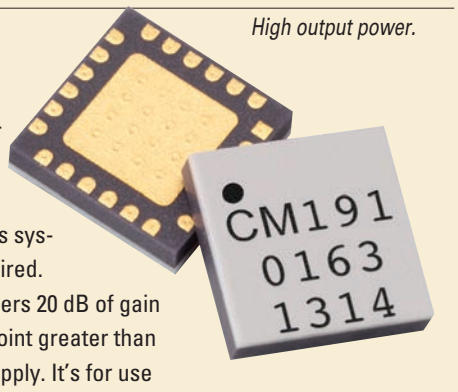
AMPLIFIERS

MANAGE COMPLEX COMMUNICATIONS SYSTEMS



High output power.

Custom MMIC's CMD191C4 GaAs driver amplifier is housed in a leadless, RoHs complicant 4 x 4 mm surface mount, delivering high output power and low current consumption for communications systems where small size and high linearity are required.

The device operates from 4 to 10 GHz and delivers 20 dB of gain with a corresponding output 1 dB compression point greater than 21 dBm, biased with a single 5 V positive drain supply. It's for use in WiLAN, C and X brand communications.

Its 50 ohm matched design eliminates external DC blocks and RF port matching.

Custom MMIC is a developer of monolithic microwave integrated circuits based in Westford, Mass.

www.custommmic.com

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PACKAGING

Reduces material loss.

AUTOMATE LIQUID REMOVAL

National Bulk Equipment's ProductSaver recovery systems automates and controls removal of free-flowing liquids or flow-resistant wet contents from packaging. They recover up to 99.95% of most unwanted wet material in package materials including coated paperboard, polypropylene containers, aluminum cans, PET bottles, poloy-based tubes and foil laminate pouches.

Processing and packaging operations must often dispose of or destroy off-spec, mis-labeled, overrun, or otherwise unsaleable wet product and its packaging.

The recovery system, engineered to integrate with legacy processing and packaging operations, reclaims contents for residual re-sale, reuse, or efficient disposal; and packaging material for recycling, or disposal.

ProductSaver combines package infeed, package opening, and contents and package separation processes into a single-stream recovery sequence.

Opening occurs within the compression screw press where precision-formed, specially pitched, 304-2b stainless steel screw flights draw packages from the infeed chute into the compression sequence.

Two large-bore pneumatic cylinders power two compactor gates for final-stage material release. Sensors at the compactor gates gradually release compactor pressure and open the gates to discharge recovered packaging.

National Bulk Equipment Inc. is a manufacturer of material handling equipment based in Holland, Mich.

www.nbe-inc.com

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CONNECTORS

Meet IEEE 802.3 specs.

EASE DATA CENTRE CONFIGURATION

Pulse Electronics Corp.'s 10GBASE-T press-fit integrated connector module (ICM)10 gb press-fit RJ45 ICMs meet IEEE 802.3 specifications. They come in 2 x 2, 2 x 4, 2 x 6 and 2 x 8 configurations to ease implementation in enterprise and cloud data centres. This allows system designers to eliminate extensive qualifications and accelerate time-to-market.

A press-fit pin provides a pressure contact with the printed circuit board, eliminating the need for wave soldering.

Pulse Electronics is a manufacturer of electronic components based in San Diego, Calif.

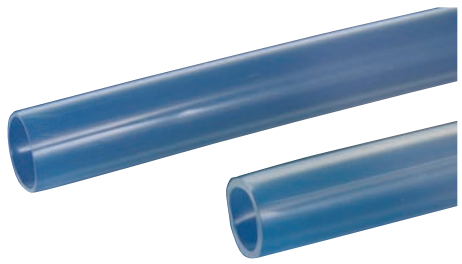
www.pulseelectronics.com

www.plantmagazine.ca/rsc/ 27

HOSES AND TUBING

A FLEXIBLE ALTERNATIVE TO STAINLESS TUBING

Parker Hannifin's PFA tubing provides a flexible alternative to stainless steel. It's odourless, tasteless, non-leeching or absorptive and handles high purity applications where high temperatures and corrosive environments may cause outgases from plastics.



Absorption less than 0.3%.

Absorption is less than 0.03% to ensure the passing media stays in the tube and doesn't leech into the tubing wall This speeds up cleaning and sanitizing.

The 0.10 to 4 in. tubing wraps around sharp corners without kinking and will not crack, degrade or discolour while handling temperatures up to 260 degrees C. A low refractive index allows operators to visually inspect for contaminants, flow interruptions and to detect leaks. The tubing is reinforced with high performance braiding for higher pressures.

Parker Hannifin is a manufacturer of motion control systems based in Fort Worth, Tex.

www.phstock.com

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CONNECTIVITY

Scales high bandwidths.

MAXIMIZE AVAILABILITY IN HARD-TO-WIRE LOCATIONS

Moxa's AWK-6232 wireless access point/bridge/client allows outdoor networks to scale high bandwidths to ensure maximum availability in hard-to-wire locations.

It delivers a net data rate up to 300 Mbps and supports IEEE 802.11n technology to eliminate interruptions in WLAN transmissions thanks to dual 2.4 GHz RF modules that transmit independent wireless connections over different frequencies. Zero wireless packet loss is possible and qualifies the unit for deployments where it must meet stringent EMC and noise immunity requirements.

Because industrial and outdoor applications expose network devices to extreme heat and cold, moisture, corrosive liquids and shock, the bridge is housed in an IP68-rated metal enclosure with waterproof/dustproof M12 connectors, a feature compliant with sections of EN 50155, covering operating temperature, power input voltage, surge, ESD and vibration resistance.

Moxa is a manufacturer of industrial connectivity and automation products based in Brea, Calif.

www.moxa.com

www.plantmagazine.ca/rsc/ 29

TAKE CONTROL OF PROCESS VARIABLES

Precision Digital's SuperSnooper PD6080 and PD6081 Modbus scanners set up as RTU Masters to monitor multiple Modbus devices for up to 16 process variables, including interface level, density and temperature.

The meters also feed two independently programmed analogue inputs and a number of math functions for sum, difference, average and ratio calculations.

The scanners are NEMA 4X 1/8 DIN panel indicators with bright, easy to read digits and include dual analogue inputs, plus an RS-485 serial communications module that integrates existing 4-20 mA transmitters and Modbus devices on the same display.

They're housed in explosion-proof enclosures for use in hazardous areas, and SafeTouch through-glass buttons are accessed without removing the enclosure cover. The entire product carries FM, CSA, ATEX, and IECEX approvals.

Integrates with existing transmitters.

Remote displays are added without making changes to other Modbus devices. In Master mode, the unit polls slave devices to uncover process variables, while Snooper mode displays any process variable being polled on the bus. All variables are labelled with a custom tag and unit.

Each scanner comes with RS-485 Modbus RTU serial communications and options that include up to four relays, a 4-20 mA analogue output, and dual 24 VDC power supplies. Expansion modules for the 1/8 DIN models add an additional four relays, two 4-20 mA outputs and eight digital I/O.

Precision Digital is a manufacturer of control instrumentation based in Holliston, Mass.

www.predig.com

www.plantmagazine.ca/rsc/ 30

WATER TREATMENT

SPRAY WITH MINIMAL WASTE

AutoJet 1550 modular spray systems from Spraying Systems Co. are self-contained and compact to automatically control spray nozzles and ensure uniform and accurate placement of solutions with minimal waste.

Adjust flow rates easily.

Spraying Systems, a manufacturer of spraying technologies based in Wheaton, Ill., recommends AutoJet 1550 for coating, marking and lubricating operations. When it's used with the company's hydraulic PulsaJet automatic nozzles, Pulse Width Modulated (PWM) flow control is possible.

Automatic adjustment of flow rate is based on line speed. Instantaneous adjustment of flow rate and the ability to maintain low flow rates with larger spray orifices reduces clogging.

An easy-to-use touch screen, new timing modes and a food-contact version are options.

www.spray.com

www.plantmagazine.ca/rsc/ 31

LUBRICANTS

VAC CONTINUOUSLY CLEANS OIL

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

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

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

Purifies hydraulic oils.

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

Stauff is a manufacturer of industrial hydraulic accessories based in Scarborough, Ont.

www.ca.stauff.com

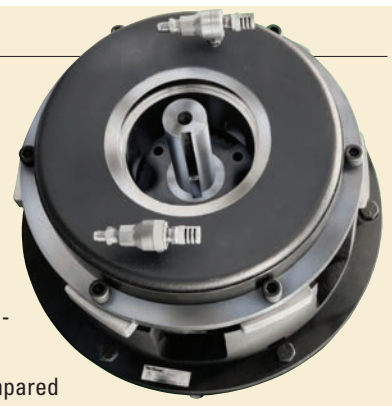
www.plantmagazine.ca/rsc/ 32

MACHINERY

BRAKES HANDLE BIG-TIME TORQUE

Nexen's dual faced brakes (DFB) and quad faced brakes (QFB) handle torque capacities ranging from 9,000 to 164,800 in.-lb. in heavy industrial power-off applications that require high torque and low inertia.

The high-capacity, spring-engaged brakes install in conveyors, punch presses, shears, mills, and rock crushers. A piston and cylinder actuator is sealed with easily serviceable O-rings that reduce maintenance costs compared to actuators that incorporate large air bladders.



Minimize load deceleration.

Segmented, non-asbestos friction facings make replacement easy, while low-inertia friction discs minimize load deceleration time.

Torque is transmitted through friction discs and splined pressure plates, which maintain alignment and low frictional resistance – two contributors to fast engagement and disengagement. A housing is flange-mounted to machinery, while the hub is keyed to the shaft. Fins and air passages cool o-rings and interfaces.

Cylinder inlet ports provide direct air supply.

Nexen Group Inc. is a manufacturer of motion control products based in Vadnais Heights, Minn.

www.nexengroup.com

www.plantmagazine.ca/rsc/ 33

» Plantware

MGUARD GOES MOBILE

Communicate worldwide securely.

Innominate's mGuard rs2000/rs4000 3G VPN security router with 3G mobile interface security appliances are going mobile.

A combined mobile engine for 4 GSM and 5 UMTS/HSPA frequencies and the US CDMA2000 EV-DO standard devices provide nearly global coverage.

Provider redundancy with 2 SIM cards is supported and location information for mobile applications and global time synchronization for stationary systems is provided via GPS/GLONASS.

Using the integrated COM server, serial devices also communicate worldwide securely over ethernet and VPN connections without an additional protocol converter. Setup of secure local network structures is supported by the integrated managed switch and dedicated DMZ port.

Innominate Security Technologies AG is a Berlin-based manufacturer of industrial network security appliances.

www.innominate.com

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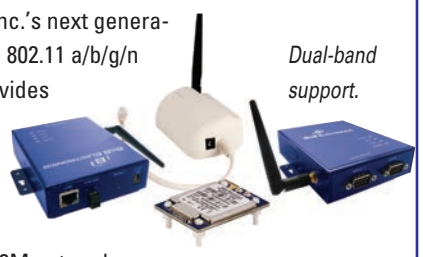
NEXT-GENERATION M2M CONNECTION



Dual-band support.

B&B Electronics Inc.'s next generation AirborneM2M 802.11 a/b/g/n Wi-Fi platform provides secure, dual-band (2.4 and 5 GHz) connectivity to rugged and mission-critical M2M networks.

Dual-band support and robust, enterprise-class security options reduce the risk of obsolescence as enterprises upgrade their security policies and migrate their Wi-Fi infrastructure to the 5 GHz band.

The technology, used for rugged, mission-critical applications that need ethernet connectivity and wireless mobility (such as forklifts in warehouse shipping/receiving) is available in industrial APXN and ABDN, and includes ethernet bridges, routers and serial servers.

Power options include 5-36 VDC and 802.3af Power over Ethernet (PoE).

B&B Electronics Manufacturing Co. Inc. based in Ottawa, Ill. provides mission-critical network connectivity solutions for wireless and wired networks.

www.bb-elec.com

www.plantmagazine.ca/rsc/ 35

FRAME GRABBER DELIVERS FASTER DATA TRANSFER

Video capture speeds up to 6.25 Gb./sec.

BitFlow Inc.'s Cyton CXP4 four-channel frame grabber doubles the data rate of the Gen 1.0 bus thanks to a Gen 2.0 x8 PCI Express bus interface on the back-end for high speed access to host memory in multi-camera systems using the same compact footprint and connectors.

By supporting the CoaXPress (CXP) standard on its front end, the Cyton CXP4 delivers video capture speeds of up to 6.25 Gb./sec. in applications deploying one to four CXP-6 cameras.

CXP also allows control commands, triggers and power to be sent to and from cameras over the same 75 Ohm coaxial cable, greatly reducing installation costs.

It supports simple triggering modes and complicated, application-specific triggering and control interactions within any hardware environment. And it aggregates in support of even higher data rates; for example, four links delivering 25 Gb./sec. of data.

BitFlow, located in Woburn, Ma., is a developer of high-performance frame grabbers for imaging applications.

www.bitflow.com

www.plantmagazine.ca/rsc/ 36

VARIABLE SPEED, QUIET AND EFFICIENT

THE H50 ALGONQUIN Variable Speed Air Compressor by DV Systems is fully engineered from the ground up as a quiet, efficient and reliable package integrating variable speed technology throughout the entire unit.
www.dvsystems.ca

DV Systems

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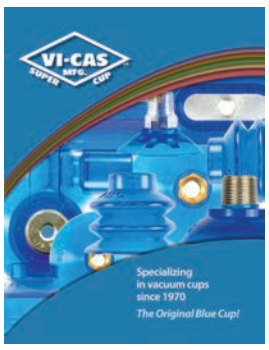
MOST POPULAR VACUUM CUPE



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

Vi-Cas Manufacturing

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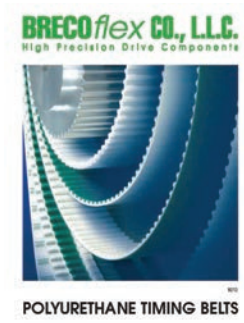
THE MOST COMPREHENSIVE CATALOG IN THE TIMING BELT INDUSTRY!



BRECOflex CO., L.L.C. is proud to offer its184 page, B212 polyurethane timing belt catalog. This catalog focuses on the wide range of belting products and gives detailed, technical information. For a free copy of the B212 or other catalogs, samples, and technical support call (732) 460-9500 or visit www.brecoflex.com today!

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REFERENCE FOR ROTATING UNIONS

An updated catalogue for designers and users of coolant unions for machine tool, machining center, and transfer line applications. This comprehensive reference guide offers detailed information for rotating union selection, installation, and maintenance, along with expanded product information.
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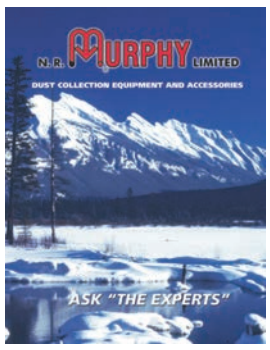
DUST COLLECTORS NEW - FULL LINE LITERATURE GUIDE



This NEW guide outlines dozens of N.R. Murphy dust collectors, installations, capacities, styles and models. N.R. Murphy Limited has been in business over 70 years and has thousands of satisfied customers. "Dust Collectors are all we do; so get it done right the first time.
Just Ask the Experts." www. nrmurphy.com

N.R. Murphy

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POWERFUL STATIC ELIMINATORS

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EXAIR Corporation

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Index of Advertisers

Tax the rich! Oh, wait, we already do

BY JOCK FINLAYSON

The last federal budget offered a reminder of something many Canadians may not realize: a surprisingly big slice of the federal government's overall revenues comes from a single source, personal income tax (PIT).

Ottawa's PIT revenues will reach $131.5 billion in the current fiscal year, which is half of all of the money collected by the national government. The next biggest revenue generator is the corporate income tax, followed by the GST. PIT is also the number one revenue source for the provinces, although it makes up a smaller portion of their tax bases than of Ottawa's.

> "There were 25.5 million Canadian tax filers in 2011 and of these, the richest 20% coughed up 75% of the income tax collected…"

Who pays the personal income tax? Most households except those with low incomes contribute something. And at a time when the issue of inequality is attracting lots of public attention, it's useful to remember that Canada maintains a "progressive" income tax system, meaning that people typically face higher tax rates as their incomes rise. Sometimes commentators concerned by inequality ignore this point, implying the "rich" are paying too little tax. While such judgments are necessarily influenced by subjective values and philosophical dispositions, according to data from the Canadian Revenue Agency, the PIT burden falls preponderantly on a small number of relatively affluent individuals and families.

Consider the statistics.

There were 25.5 million Canadian tax filers in 2011 and of these, the richest 20% coughed up 75% of the income tax collected by the federal and provincial governments. The remaining 80% paid the rest.

The richest 1% of tax filers had taxable incomes of at least $201,400 in 2011. This small group accounted for 11% of total personal income and provided 20% of the PIT revenues flowing to the federal and provincial government coffers.

Put differently, 1% of all Canadians who file tax returns are responsible for a share of personal income tax that is 20 times greater than the share of the taxpaying population.

Taxing the rich

That said, the past three years have seen several provinces take steps to hike tax rates on the fortunate few.

Nova Scotia did so in 2010 by establishing a new high-income tax bracket.

Ontario followed suit last year with its new "tax on the rich" that applies to 25,000 high-income earners. As a result, Ontario's combined federal-provincial top marginal income tax rate is now just shy of 50%, almost back to where it stood a decade ago.

In Quebec, top earners face combined federal-provincial tax rates above 50%.

Even in BC, an avowedly "pro-business" government recently legislated a new tax bracket for incomes above $150,000 a year, a step that will lift the top combined federal-provincial tax rate in that province to approximately 46% (well above the 39% to marginal rate in next-door Alberta).

As governments struggle to reduce deficits and put their finances on a sustainable footing before the coming onslaught of retiring baby-boomers, the prospect of higher taxes looms. After 15 years of tax reductions, the prevailing trend is now pointing in the other direction, at least at the provincial level.

But as policy makers reflect on the options available to boost government revenues, they would be wise to recognize that Canada already relies heavily on the personal income tax and that the most economically successful 1% and 5% of households are shouldering a large portion of the current PIT burden.

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

Comments? E-mail jterrett@plant.ca.

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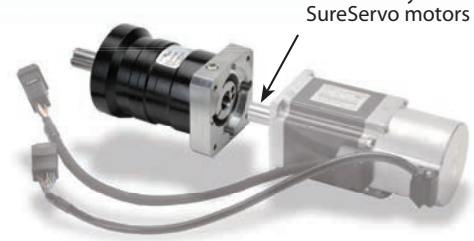
- **5-year warranty**
- **Starting at: $398.00** *(70mm Frame - PGA070 05A1)*



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