

# PotashWorks

Canada's premier publication dedicated to the promotion, production and distribution of potash.

2014



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# Message from the editor

## Shayna Wiwierski

No doubt the biggest news to hit the potash industry went down back in July of this year. Those in the potash industry woke up on July 30 to grim news that the world's largest potash producer, Uralkali, had decided to stop their export sales through Belarusian Potash Company and direct all export volumes through Uralkali Trading.

So what did that mean to the industry? Well, since Uralkali has a share of about 20 per cent of the global potash production, the decision no doubt weakened competitors' prices for potash.

One company affected by this decision was Canada's largest potash producer, PotashCorp. Prior to the July announcement, the company's stock was holding firmly between \$40 and \$45. After the announcement, it immediately plunged by over 25 per cent to barely \$30 a share.

Although this was grim news for those in the industry, there is still a lot to be excited about. This second edition of *Potash-*

*Works* magazine features updates from a few different potash mines currently proposed or in construction, including K+S's Legacy project and BHP's Jansen project, of which the company has invested a further \$2.6 billion, reflecting BHP's continued confidence in the long term for potash and the Jansen resource.

Aside from the big guns, we also take a look at the communities that have grown and prospered because of the mines that are in the vicinity. Towns like Yorkton and Esterhazy, and Sussex, New Brunswick. And let's not forget the many suppliers that have helped this industry flourish to what it currently is.

I truly hope you enjoy this edition of *PotashWorks*, and for more potash news, visit us online at [potashworks.com](http://potashworks.com).

As always, if you have any questions, concerns, or story ideas (or if you just want to say hi!), please send them my way.

Shayna Wiwierski  
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# Message from the Premier of Saskatchewan **The Honourable Brad Wall**



**O**n behalf of the Government of Saskatchewan, I am pleased to bring greetings to readers of the 2014 edition of *PotashWorks* magazine — the only publication dedicated to the promotion, production, and distribution of potash.

Saskatchewan is the largest potash producer in the world and accounts for about 30 per cent of the world potash production. This major industry directly employs over 5,100 people in our province, and contributes to the livelihood of thousands more. Saskatchewan's deposits of this valuable crop nutrient are substantial in scale. By conservative estimates, Saskatchewan could supply world demand at current levels for several hundred years.

There are many exciting potash developments happening across the province and most of Saskatchewan's current potash operations are expanding. Potash producers have committed \$13.9 billion to expand Saskatchewan's production capacity by over 90 per cent by the year 2023. K+S Potash announced it intends to spend up to \$4 billion to develop a solution mine in Saskatchewan. And, there are several other companies considering constructing new potash mines, including global mining giants BHP Billiton, Rio Tinto, and Vale. The expansion of the Saskatchewan potash industry has already resulted in billions of dollars of new investment.

Our province is a safe and stable supplier of potash to emerging and newly industrialized countries around the globe that are building higher standards of living for their people. Latin America and the large Asian offshore markets of China, India, Japan, Malaysia, Korea, and Indonesia currently make up more than half of Saskatchewan's potash exports. About 45 per cent of the exports go to the United States, where Saskatchewan potash fills approximately 70 per cent of the market demand.

In Saskatchewan, we are fortunate to be blessed with a diverse and resilient mining industry that continues to expand even during challenging economic times. The future prospects are excellent for Saskatchewan potash as higher population growth, combined with growing world income levels and increased bio-fuel consumption, will ensure the demand for potash will remain strong into the future.

A handwritten signature in black ink, appearing to read 'Brad Wall'.

Brad Wall  
Premier



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# Message from the Premier of New Brunswick

## **The Honourable David Alward**



**A** strong focus on innovation and responsible natural resource development are key foundations of our government's plan to grow the economy and create jobs in New Brunswick communities. Our economy has always been driven by natural resources, and we see even more opportunity for the future as our province takes its place as Canada's next energy powerhouse.

New Brunswickers owe much of our tremendous quality of life to our abundant natural resources and the men and women who have worked over generations to build strong industries such as forestry, mining, and oil and gas.

Our success in this area has been repeatedly acknowledged by the Fraser Institute in their annual Survey of Mining Companies report. In 2012-13, New Brunswick was ranked as the second best jurisdiction for investment in Canada and the fourth best in the world. As the report states, "Miners praise New Brunswick for its transparent, straightforward, and productive approach to mining policy."

Mineral exploration and development play a significant role in growing our economy and creating jobs in our communities. This is an exciting time for the mineral, natural gas, and petroleum sectors in our province.

New Brunswick is the second largest producer of potash after Saskatchewan, and we are proud to be a major global player in an industry that is so important to helping the world grow.

New Brunswick's mineral investment strategy resulted in the recent opening of a new \$2-billion potash mine near Sussex by PotashCorp, which represents the first new potash mining operation constructed in Canada in almost a quarter of a century. This is a prime example of the contribution being made by the mineral sector to the present and future economic prosperity of our great province. When this new mine opens this year and is fully operational, it will more than double production, increase exports, and create and sustain an additional 140 full-time jobs to complement the operation's existing 330 skilled workers.

The world potash market has been experiencing rapid growth over the last decade with increasing concerns over global food production, and continued upward pressure on potash demand appears to be a reality into the near future. In New Brunswick we are committed to working with industry partners to responsibly explore all avenues for growth in this important sector.

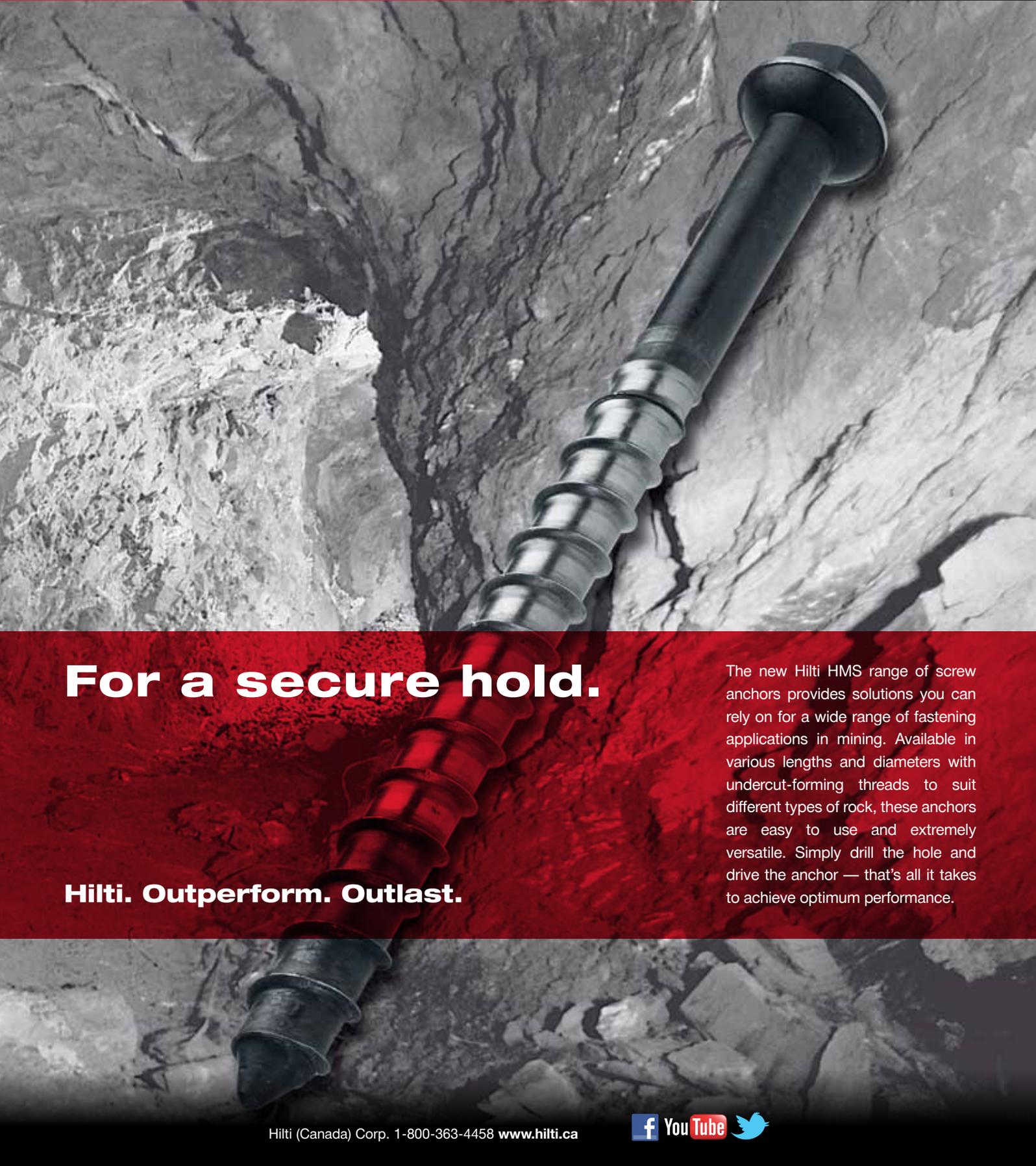
A strong focus on resource development that can drive job growth in our communities is a key part of our government's plan to rebuild New Brunswick's economy.

Together, we are building a better future, one step at a time, one innovation at a time, and one job at a time.

To learn more about potash and resource development projects happening in New Brunswick, I encourage you to visit: [www.gnb.ca/energy](http://www.gnb.ca/energy).

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# Message from the mayor of Esterhazy

## **Pauline Chewka**



**C**urrently, Esterhazy is experiencing the second largest expansion in the last half century. I'm sure our forefathers in the 1950's never envisioned such a massive growth, or the possibilities that such growth provides.

Some people love it, some don't, but change is inevitable. As a community, we are diligently trying to grow with the so-called "boom" to ensure that our infrastructure and housing is in place once the bulk of the permanent residents start rolling in in the next few years. It is important to the current council to keep the small town feel that we have been known for while expanding in ways like lodging, businesses, housing developments and infrastructure. Esterhazy works hard at becoming a regional hub for the over 10,000 individuals, especially public service including healthcare, education, and recreation.

A beautiful nine-hole golf course, swimming pool, ice and curling rinks, a museum and Canada's only Potash Interpretive Centre are all features that bring people to our community. The friendly, inviting people and businesses, not to mention the great job opportunities from the mines and supporting businesses, are what make people call "Potashville" home.

Although Esterhazy started out as a farming community, and that industry continues strong to this day, we have also become a mining community. It started in the early 1960s, and thanks to the expansion at Mosiac K2 and the new development of the K3 shaft, it has become the industry that has put us on the map and keeps us there.

As mayor, I am honoured to call Esterhazy home and invite anyone and everyone to come and check us out. We are worth the drive. Come visit soon.

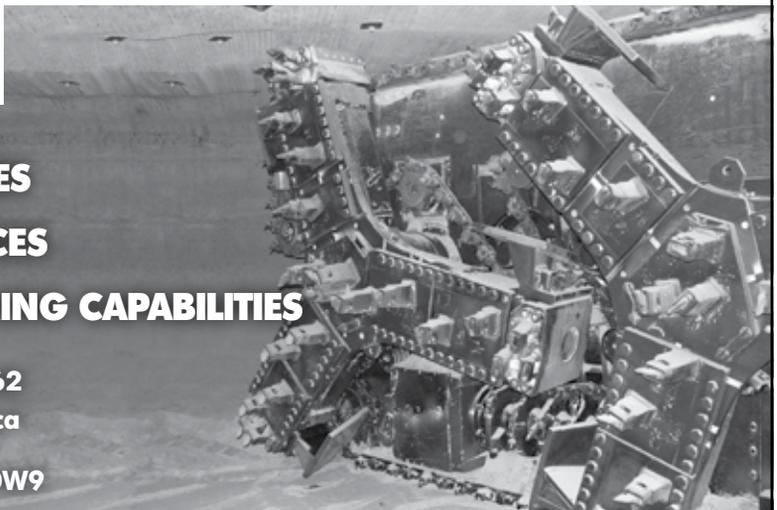


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**MOOSE JAW NEEDS WORKERS** Moose Jaw needs more workers to meet the growing labour demand being created by new and expanding businesses in the city, including the servicing of two potash mines in the area. More workers are needed to fill skilled and less skilled jobs within our mining, manufacturing and processing, agriculture, trucking, and tourism service sectors. SIAST Palliser Campus also offers engineering, technical and trades training.

**MOOSE JAW IS BOOMING** The value of the city's building permits in 2012 was six times those recorded in 2001! The Moose Jaw-Regina Industrial Corridor is helping drive that growth, and is home to world-class industries such as Mosaic Potash, Yara Belle Plaine Inc., Terra Grain Fuels and K+S Potash Legacy Project. A new \$100M hospital and \$27M Civic Centre Plaza are now under construction in the city.

*...at the Heart of the Boom!*

**For more information contact:**

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**Phone:** 306.693.7332

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[www.moosejaw.ca](http://www.moosejaw.ca)



# Greetings from the mayor of Rocanville

## **Daryl Fingas**



I would like to extend my greetings from the Town of Rocanville council, staff, and the public works department. Rocanville is a thriving community of approximately 1,000 people in the southeast corner of Saskatchewan near the Manitoba border. We are in the heart of potash and farming country and home to the largest oilcan in the world.

This past year of 2013 has been a great year for Rocanville. PotashCorp is winding down their \$1.6 billion expansion, which the town has benefited from greatly, as well as from all the extra employees in our area. Recreation has benefited from these people using the skating rink, swimming pool, and the local golf course. Restaurants and local businesses have seen their businesses thrive from this expansion.

Our town has just commissioned a new water well, which adds to the existing two wells. We have good quality water, which adds to our lagoon expansion and water plant two years ago. We have a new subdivision for housing developed with 20 lots for sale. Also in October, we have a developer building an apartment block, which will have 12 suites for rent. Across from our subdivision is also another developer with lower-priced new housing.

Something new this year was our celebration with the TSN and Kraft Canada Celebration Tour. Our community was picked to be in the top 20 towns in Canada to be eligible for an award of \$25,000 to 10 communities. We were paired up with the town of Esterhazy and whoever got the most online votes in a 24-hour period was the winner. We came out on top and won the \$25,000, which was designated to upgrades for our swimming pool. On August 23, 2013 we hosted TSN and had a live taping of Sports Centre in our community.

We have a great friendly community with schooling from kindergarten to Grade 12, and welcome anyone to visit our town.



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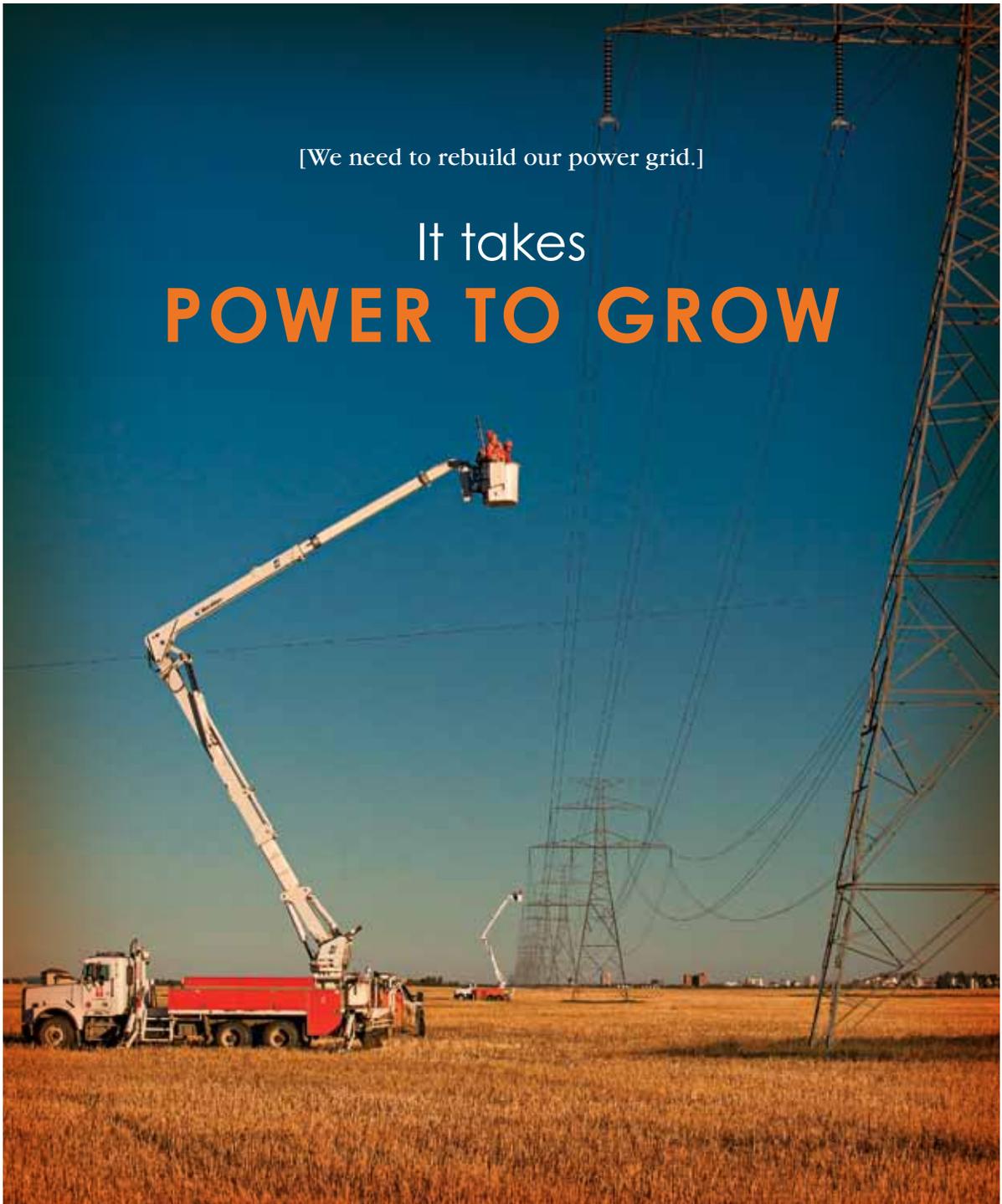
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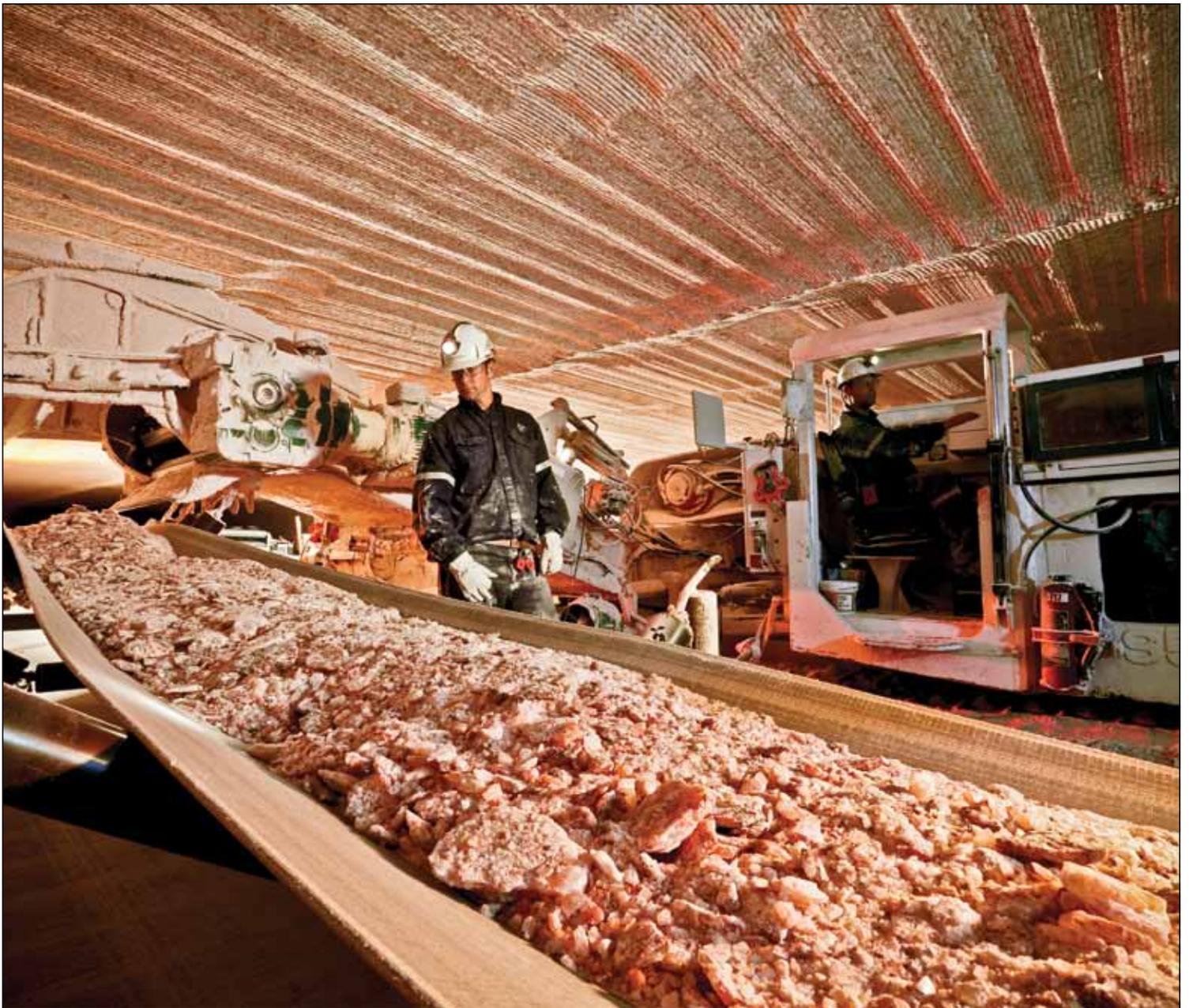
By Jillian Mitchell

ALL IMAGES COURTESY OF POTASHCORP.



**P**otash Corporation of Saskatchewan Inc. (PotashCorp) is a true Saskatchewan success story. Evolving from a Crown corporation until 1989 to a diversified industry leader listed on the TSX and NYSE today, PotashCorp has much to celebrate as a top employer in Saskatchewan and one of Canada's top 100 employers.

A recognized leader and innovator in agriculture and global food security, PotashCorp is the largest potash producer in the world, by capacity, and the third-largest producer of nitrogen and phosphate, operating five potash mines in Saskatchewan (Allan, Cory, Lanigan, Patience Lake, and Rocanville) and one in New Brunswick. Having recently invested \$6.1 billion into Saskatchewan mine expansions, the company of 5,700-plus employees in Canada, the U.S. and Trinidad is poised for future growth and thinks long-term in all areas.



## ***What if*** **the bridge to the future was actually** **3,000 feet underground?**

We believe it is. Over the past ten years, PotashCorp has continued with a \$6.1 billion expansion of our Saskatchewan mining operations to keep up with world food demand. As a result, we're helping create an estimated 36,000 jobs in this province — not just mining jobs, but jobs in construction, the trades, retail stores, and restaurants. It's proof that fertilizer grows more than just plants.



dents for careers in the province's growth economy.

As a responsible member of local communities, PotashCorp supports many projects and initiatives that well-reflect the company's goals and values. In 2012, the total value of PotashCorp's Corporate Philanthropy program was \$28 million company-wide with \$16 million of that in Saskatchewan.

A partnership was announced with international development organization Free The Children in 2012, a joint venture that has since thrived with initiatives in Canada and abroad. PotashCorp is also the founding partner of the new Agriculture and Food Security pillar of Free The Children's established Adopt a Village development model, and directly supports six communities (two in Kenya, two in India, and two in China) on agricultural initiatives. In conjunction with Free The Children, a group of community-minded PotashCorp employees visited Kenya in 2013 and a trip to India is planned for summer 2014.

"PotashCorp's priority areas for corporate philanthropy are food security, education and training, community building, health and wellness, environmental stewardship, and arts and culture," Knafelc says. "We strive to improve the quality of life in the communities where the company operates." ♦

"We want to provide a long-term career path for our employees, as evidenced by our low employee turnover rate [approximately four per cent]. And, our compensation and benefits programs are highly competitive across our peer group," says Lee Knafelc, PotashCorp's vice-president of human resources and administration.

The local company with global reach is particularly focused on anticipating workforce needs, says Knafelc, aiming to fill 75 per cent of senior staff openings with qualified internal candidates. A popular employee incentive, new engineering graduates are provided with valuable rotational experience at the company's potash facilities thanks to their Engineer-In-Training (EIT) program. A wide range of bursaries and scholarships are also available through the company, such as the Saskatchewan Institute of Applied Sci-

ence and Technology (SIAST) bursary for women in conjunction with the Women in Trades and Technology program.

In 2011, PotashCorp announced their commitment to strengthen relationships with aboriginal organizations and increase First Nations and Métis representation, both as employees and suppliers. And in March 2012, they announced a \$750,000 contribution to the Saskatchewan Indian Institute of Technologies (SIIT) Foundation to help students in their studies. The donation will transform SIIT's resource room into the PotashCorp Student Success Centre.

"Aboriginal people are the fastest growing demographic in Saskatchewan and PotashCorp has made First Nations and Métis recruitment a strong focus," says Knafelc, noting that the company offers 10 scholarships at SIIT to prepare stu-

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# K+S Potash Canada's Legacy Project forging ahead



*View of the tank farm facility for cavern development at the Legacy site near Bethune, Saskatchewan.*



*Installation of underground utilities at the Legacy site.*

Saskatchewan's potash mining industry has been a topic of great discussion for many years, and 2013 was no exception. It was a year where the global spotlight was cast on potash; and Saskatchewan, as one of the world's richest sources of potash, shared much of that glow.

The Legacy Project, the first greenfield potash mine in Saskatchewan in almost 40 years, also continued to make both headlines and progress. The mine, located near Bethune, is a solution potash project being built by K+S Potash Canada, the Canadian subsidiary of Germany's K+S Group. With a mine life of at least 50 years, and a planned annual output of 2.8 million tonnes per year, the Legacy Project continues to be of great interest to all.

2013 saw the project make continued significant progress, including the completion of basic engineering. In addition, the site's drilling program has shown excellent progress. The drilling for the first two pads has been completed, which includes 36 boreholes, and drilling continues on the next two pads. Piling and foundation work has started; also the first steel structures for the future tank farm started going up. The development of the first cavern has also been continuing to progress steadily. A long-term contract was struck with Canadian Pacific Railway to be the transportation partner for the ultimate output of the mine. Finally, the preparations for the temporary construction camp are well underway. Earthworks for temporary utilities have begun and the first of the camp modules have been delivered.

The capital expenditure budget for the Legacy Project was also increased in 2013 to \$4.1 billion. The adjustments to the previous budget better reflected the market conditions, as well as allowing for investments into K+S' infrastructure, modifications of plant components, and increased material and labour costs. In addition, the inclusion of the port facility, which the mine will make use of on Canada's west coast, allowed for a more accurate forecast of the cost of the project.

Recruitment continues to be another high priority for the Legacy Project human resources team, with approximately 225 roles to fill in the next two years. The majority of operations roles will become available in 2015; however, there will be up to 1,800 people working on the site at the peak of construction, taking into account operations, contractors, and partners. Most roles will be based at the mine site, equating to significant growth in the surrounding communities to the site, as well as Regina and Moose Jaw.

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*With a mine life of at least 50 years, and a planned annual output of 2.8 million tonnes per year, the Legacy Project continues to be of great interest to all.*



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What's important to me is important to k+s | Stephanie, HR Advisor



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*Early construction progress on the Legacy mine.*



The Legacy mine will be the main source of distribution for K+S to emerging markets such as Asia and South America, as well as North America. With the expected commissioning and first production of the plant in 2016, K+S Potash Canada projects reaching the two-million tonne per year mark of production capacity by the end of 2017. The gradual expansion of the annual capacity to 2.8 million tonnes will occur after 2017.

The project, once complete, will be one of the world's most advanced solution potash mines, and is a significant source of pride for the K+S Group, which has over 140 years experience mining the commodity. For the employees of K+S Potash Canada, there are nothing but exciting times ahead as they work to leave their legacy in what is already a remarkable part of Saskatchewan's growth and opportunity. ♦

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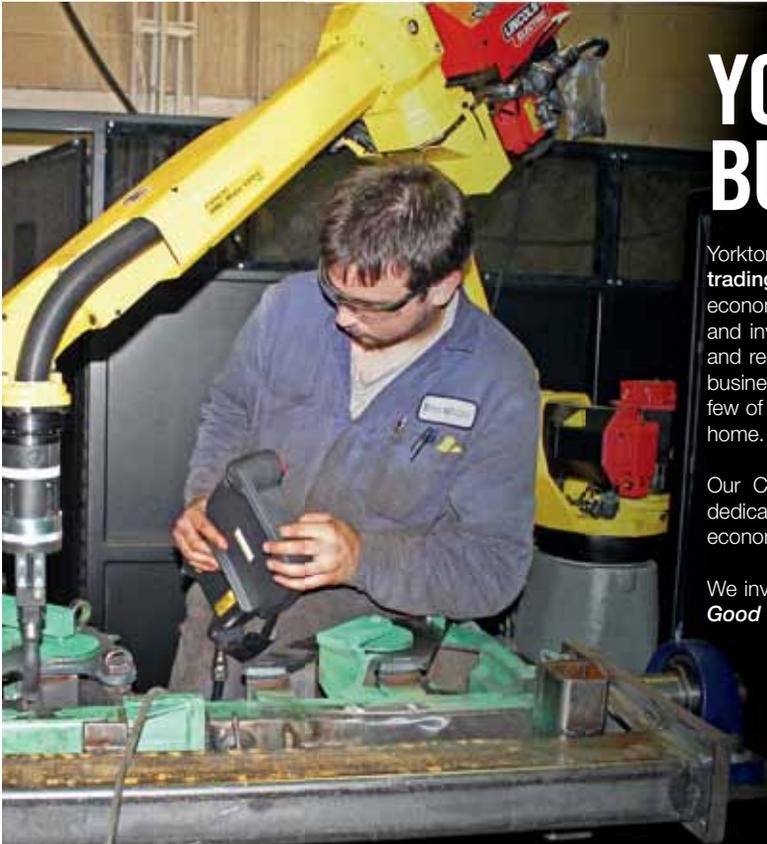


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# Jansen project takes shape

*BHP Billiton has invested a further \$2.6 billion in the Jansen Project, reflecting the company's continued confidence in the long term for potash and in the Jansen resource*

*Herrenknecht shaft boring machines are excavating the production and service shafts at the Jansen Potash project.*



**T**wo cranes recently lowered into place the final element of the permanent headframe on the service shaft of BHP Billiton's Jansen Potash Project, bringing to full height one of the tallest structures in Saskatchewan.

The completion of the permanent headframe, which stands 97 metres above the ground, is included in the scope of work covered by BHP Billiton's investment of a further \$2.6 billion in the Jansen Project. The investment will also enable the completion of the excavation and lining of the production and service shafts, and the installation of essential surface infrastructure and utilities.

Continued spend in the project reflects BHP Billiton's confidence in the quality of the resource at Jansen and in the strong long-term fundamentals of the potash market. The two shafts will provide access to the world's best undeveloped ore body — the Jansen resource is capable of supporting a 10-million-tonne-a-year mine which, once fully devel-

*Cranes lower the last element of the permanent headframe structure on the service shaft of BHP Billiton's Jansen Potash project into place. The headframe has reached its full height of 97 metres.*



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The most recent milestone in our journey came when the Jansen site Service Shaft headframe reached its full height of 97 metres (318 feet). This structure is now 32 storeys tall, the equivalent of 7 city buses stacked end-to-end.

We are pleased to share each chapter of the Jansen story with the communities we call home.

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*BHP Billiton employees and contractors at the Jansen Potash project joined their colleagues in Saskatchewan and Toronto to “Paint Saskatchewan Pink” to raise over \$300,000 for breast cancer research in September 2013.*

oped, would be one of the industry’s lowest cost producers with an operating life more than 50 years.

Beneath the prairie surface, two advanced Herrenknecht tunneling machines are boring the shafts towards their ultimate depth of about one kilometres. This tunneling technology is expected to complete the shaft excavation in 2016. The freeze plant, which circulates frozen brine through 80 holes around the shafts to freeze the ground past the Blairmore aquifer some 500 metres below the surface, has been running since September 2011. This freezing process prevents any water inflow into the shafts while they are being excavated and lined.

Completion of the two shafts will create substantial flexibility and enable BHP Billiton to time its entrance into the market to meet potash demand. Following the completion of the approved scope of work, BHP Billiton will need to construct the surface processing and port facilities to bring Jansen to production. This work can be approved and completed as quickly or slowly as needed to maximize returns and meet demand.

“We are proud to be growing in Saskatchewan and for our project and people to be such an integral part of the Saskatchewan landscape,” said Alex Archila, BHP Billiton Potash president. “Once the Jansen Project is approved and completed, it will be a real contributor to the economy and social fabric of the province.”

BHP Billiton has now committed \$3.8 billion in Jansen and holds substantial exploration licences across the province, and is actively exploring these areas with the intention of building a significant new business.

“Potash and Jansen represent a significant opportunity for BHP Billiton,” said Archila. Saskatchewan has attractive geology and stable political and fiscal environments, making it the best place in the world to develop a potash business.”

BHP Billiton believes the longer-term outlook for potash is strong. As the world’s population grows and incomes in emerging economies improve, agricultural demand is expected to rise. This will increase the need for potash and require the construction of new mines.

About 380 people are working on the Jansen Project, both on the shafts and associated infrastructure, and on the Discovery Lodge construction camp. The 562-bed first phase of Discovery Lodge is complete and has its first occupants. The camp will house the people who will build Jansen and will ultimately also include a 1,200-person diner and kitchen, two private dining rooms, security facilities, a clinic and recreation room. Foundation work is underway for a 14,000-square-foot gym complex, which will contain steam rooms, two squash courts, two golf simulators, free weight and cardio workout areas, an elevated running track, and a full-size gymnasium for basketball, volleyball, badminton, and other general activities.

BHP Billiton’s employees and contractors are proud to be members of the community in Saskatchewan and their efforts recently raised over \$300,000 for breast cancer research.

“One of our core values is that sustainability — health, safety, the environment and community — underpins everything we do. Our people here in Saskatchewan live that value and it is an honour for us to support the communities we call home,” said Archila. ♦



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# ENCANTO POTASH: Final steps toward production

**E**ncanto Potash (TSX-V: EPO) was formed specifically to partner with Canada's First Nations communities to help them benefit by developing the potash resources that lay beneath their vast land holdings.

Currently, Encanto is focusing on their flagship joint-ventured Muskowekwan (MFN) and Ochapowace/Chacachas properties in Southeastern Saskatchewan. These properties are large, each over 60,000 acres. The properties are located in the very heart of what's known as the "Prairie Evaporite", prime potash develop-

ment country, and in the direct vicinity of some of the largest producing potash mines in the world.

Encanto has a 100 per cent interest in these properties and a strategic advantage in that the mineral rights are contained in predominantly continuous land packages — a little understood, but great advantage that will potentially speed up the time to production without having to negotiate with a large number of mineral rights owners. Encanto First Nations partners have voted to consolidate and enlarge the applicable land packages, which

resulted in their mutual interests being fully aligned towards production, royalties, training, and employment.

Encanto plans their first project to be a solution mine, which means a faster start-up and lower cost of initial development than other older-style underground mines. The plant site location has been successfully finalized and Encanto's water license was granted on March 4, 2013 by the Saskatchewan Water Security Agency. Access to mature infrastructure is close by, including a major railroad that runs directly through the property.



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As released in a positive Pre-Feasibility Study (PFS) and followed up with an increased resource update on June 4, 2013, Encanto and its Muskowekwan First Nation partners have already developed a large recoverable KCl potash resource/reserves of 161.97 MMT Proven and Probable, 197.37 MMT Measured and Indicated, and a further 165.8 MMT in the Inferred category.

At a planned extraction rate of 2.8 million tonnes per year in full production, the proven, probable, measured, and indicated numbers alone will allow for a mine life in excess of 70 years.

"The merits of putting this project into production keep getting stronger with each milestone and we're excited to see that ultimate goal coming closer each month," said Jim Walchuck, Encanto CEO and president.

A drilling program to test for grade will also be commencing on the second (Ochapowace) property in Q4/13 with anticipated results requiring a full-drilling program in order to establish a second viable resource under the company banner with a resultant potential for multiple mines; a first ever for a junior potash company. So there is obviously a lot to look forward to in the near term!

A highly anticipated final feasibility study is scheduled to be finished in early Q1/14 which should allow for an even greater degree of confidence in the already favourable OPEX and CAPEX numbers.

The management team counts for as much as the resource and property these days. In Encanto's case, it is both deep and experienced.

James Walchuck, president & CEO, has over 36 years in the mining industry, including a diverse background in operations, feasibility, construction, and finance in such varied areas as North America, Slovakia, the UK, Ghana, and Tanzania.

Gordon Keep, chairman, brings an extensive background in corporate finance and investment banking, and creating public natural resource companies. Keep is currently the executive vice-president of Fiore Financial Corporation, a private merchant banking firm, and has extensive business experience in investment banking and creating public natural resource companies. Prior to joining Fiore Financial, he was managing director of corporate finance at Endeavour Financial from January 2001 to July 2007.

Dr. Simon Desjardins, vice-president of technical services and project management, has critical experience, including bridge engineering and infrastructure planning necessary for production. Dr. Desjardins previously worked at Alderon Iron Ore Corp. ("Alderon"), where he was responsible for port terminal management and procurement of long lead-time production items and had prior positions with Rio Tinto Alcan with responsibilities including utilities design and transport modeling/logistics. He was also with Rio



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Tinto IOC as a study manager for both rail and port facilities. Dr. Desjardins was also heavily involved with an African potash project, responsible for the procurement of field equipment, transport logistics and constructability reviews.

Darren Svedahl, manager of lands and government relations, joined the project team with 20 years of experience working with the Canadian federal government in the departments of Natural Resources Canada (NRCan) and Aboriginal Af-

fairs and Northern Development Canada (AANDC), with his most recent position being manager of Lands and Environment for AANDC's Saskatchewan Region.

Rod Hope, consultant of Saskatchewan First Nations Business Development, has very significant legal and relationship experience with Canadian First Nations.

Ross Moulton, vice-president of exploration, brings 43 years of experience with various private and public exploration and production companies.

Encanto also makes tremendous use of several consulting firms with decades of relevant potash experience in Canada and around the world.

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**North Rim Exploration**

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Once again, we see evidence indicating how this is a company full-bent on becoming a producer as quickly as possible, and one of Canada's first new potash mines in the last 50 years.

To that end, Encanto is currently negotiating both advanced domestic and international strategic partnerships for the financing, development, and sale of potash production from its Muskowekwan JV property and beyond, to be followed by project financing.

Keep an eye on them! ♦



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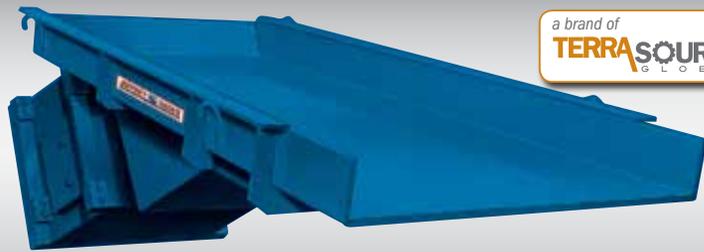
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# The Mosaic Company is a community partner



Mosaic Place

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**T**hese days, it can be hard to find business news that evokes hope, so when a corporation goes beyond providing a paycheck and invests in a community as a true partner, it's worth taking note.

One of Saskatchewan's largest employers in the potash industry has done just that. The Mosaic Company has a history of community engagement in Saskatchewan, actively supporting the province's economy and its people. With mining facilities in Esterhazy, Belle Plaine, and Colonsay — as well as its Regina

offices — Mosaic commits financial resources, innovative spirit and expertise through partnerships and investments.

"As a global leader in crop nutrition, we understand that the health of our business and our communities are directly linked. Not many companies can claim that their core business helps fulfill people's basic needs and improve lives all over the world," said Walt Precourt, Mosaic senior vice-president of potash. "We take our mission to help the world grow the food it needs seriously. And we take it further by strategically partnering with our neighbours to improve our communities."

Mosaic invests in communities through cash grants, product donations, expertise, workplace giving, and the volunteer time and talent of its 2,300 Saskatchewan employees. In fiscal 2013, Mosaic awarded \$3.75 million in grants to philanthropic and civic organizations in Saskatchewan, focusing on local community enrichment programs, food security, agricultural research and development, water conservation and stewardship.

The company also understands that quality healthcare is vital to any community's wellbeing.

Mosaic healthcare investment projects that are helping increase community access to medical services include: The Mosaic Heart Centre, the Children's Hospital Foundation of Sas-



*Top left: Mosaic employees volunteer at Habitat for Humanity.*



*Top right: Mosaic employees volunteer at Souls Harbour Mission.*

*Right: Mosaic REACH donation.*



katchewan, Shock Trauma Air Rescue Society (STARS), and St. Anthony's Hospital Foundation fundraising campaign.

***It's Mosaic's nature to give back.***

When it comes to community investments, Mosaic does more than write cheques. Company employees, family, and friends also contribute their time, skills and brawn through Habitat for Humanity home builds. Just in the past year, 120 individual employees have logged over 1,250 hours on Habitat projects. Since partnering with the organization in 2008, Mosaic volunteers have built 37 homes for families across the province, helping break the cycle of poverty.

Mosaic has helped support the cultural fabric of Southern Saskatchewan through a title sponsorship of the Regina Symphony Orchestra's Mosaic Masterworks Concert Series. The company also sponsors Mosaic Stadium — proud home of the Saskatchewan Roughriders and Mosaic Place, Moose Jaw's multi-use

facility for community events, conventions, trade shows, curling, concerts, and of course, hockey with the Warriors.

Linked to the issue of food security, Mosaic actively supports initiatives that are aimed at helping those in the community most vulnerable to hunger. In 2013, Mosaic established new partnerships with Regina Education and Action on Child Hunger (REACH) and the Regina Salvation Army, each introducing programs that improve access to nutritious food for at-risk children and families. In addition, Mosaic employees regularly volunteer at child nutrition programs such as Hunger in Moose Jaw, and help prepare meals at local rescue missions.

"Civic engagement is a rich part of Saskatchewan's history and success as a community," Precourt said. "Mosaic works hard to play a supporting role — providing jobs to families, assisting with our neighbours' social needs, and developing Saskatchewan as a positive place to work, live, and raise our children." ♦

# Mosaic Esterhazy welcomes GM Bruce Bodine

By Jaime Rieger



Bruce Bodine, GM of Mosaic.

Esterhazy operations taken this past winter, early 2013.

IMAGE BY JAIME RIEGER.

Florida can be a pretty nice place to live, especially when comparing it to the deep-freeze conditions of a prairie winter. But to Florida-raised Bruce Bodine, the newest general manager (GM) of Mosaic operations, the weather was hardly a deciding factor when he made the choice to move to Saskatchewan.

Mosaic Esterhazy had to say farewell to its outgoing GM, Kelvin Dereski, in the fall of 2012. In turn, Bodine arrived to take his place and to enjoy the supper on the evening of Esterhazy's large fundraising event called the Charity Golf Classic. It was a perfect time to arrive, and Bodine got a good glimpse at what Esterhazy was all about.

"There are some people within the company who know this place, and all they

kept talking about, which you can't appreciate until you arrive, is how great the community is, how welcoming they are. You say 'okay, yeah yeah,' but that first night was quite overwhelming. Within 10 to 15 minutes, someone was knocking at my door wanting to know if I wanted to go to the dinner, and I said, 'Sure! Is this okay to wear?' I'm just blown away at the whole momentum of

how the mine drives the activities of the community. You can't appreciate that enough until you live it. It's really quite amazing in a great way."

Bodine comes from what he considers a "small town" of 100,000 people in Lakeland, Fla. Lakeland is known for its lakes (go figure — a whole 38 in total that have names) and a number of other bodies of water that are unnamed, mostly phosphate mine pits that have eventually filled with water. It is with these geological landmarks that Bodine got his start in phosphates, and moved up the ranks to be the GM of two of the largest mines in the world, one of them being the Mosaic operation in Esterhazy, and the other being the Four Corners Mine in Florida.

"I went to the University of Florida, and graduated with a Bachelor's of Environ-

mental Engineering. Out of school, I hired into a small engineering consulting company that worked primarily for the phosphate industry in central Florida. Never did I realize I was going to be in that industry when I was going to school. I can remember as a kid, we would travel to the coast for vacationing and we would pass these large drag lines, which is way different from how we mine here [in Esterhazy], because it's all surface mining [in Florida], and these are the largest pieces of equipment on the planet. So they have big cranes with buckets on them that would scoop up ore from the ground ... and I was fascinated. How many could I see on the trip? Fast-forward 30 years, and I was operating one of the largest mines in the world."

Bodine started his career with a small consulting company and eventually moved on to working with IMC Agrico (at that time) as an engineer. Mosaic has two businesses, potash and phosphate. Within the phosphate division, there is the fertilizer side, and the mining side, and over the course of a few years, Bodine ended up working both sides of the phosphate industry. He worked with IMC throughout the merger with Cargill and was there to celebrate the birth of Mosaic in 2004. "It has been 18 years

in the crop nutrition industry. All of my career, except for the last three months, have been on the phosphate side. Then I just progressed up to be the GM of our Four Corners mine in Florida, which is the largest phosphate mine in the world."

Eventually Bodine was presented with the opportunity to come to Esterhazy to operate on the potash side of the industry and stray away from the phosphates. Bodine was flattered at the offer.

"In fairness, wow what a change. It was very flattering because Esterhazy is the jewel of Mosaic's portfolio. In a lot of regards, the board of directors and senior leadership really care about what's going on with Esterhazy, so having said that, I got presented with the opportunity and it was quite flattering."

Bodine was up for the challenges of operating not only K1 and K2, but for being part of significant growth with the construction of K3. "The company does a good job with communicating business strategy, and I knew that we were putting \$5-6 billion into the potash industry, and a big chunk of that was in Esterhazy to expand capacity. Numerous internal videos had been done with what goes on with our business on the potash side. But you don't fully appreciate it until you get here, and you can see the magnitude."

And what a magnitude it is. Having never been underground at Mosaic, it was one of the first things on his to-do list once he arrived. He took the required safety course, sitting amongst the mechanics and miner operators that were upgrading their own safety essentials, and finally took the ride down in the cage to see the underground tunnels.

"I've been in underground 'type' operations in other parts of the world. One was in Mexico, a phosphate operation where they mined into a mountain, but they did underground practices because they are almost the same, but very low ceilings, you have to hunch over, even me. It was narrow there, so I didn't know what to expect here. When you come out here it's

higher than a ceiling. In the maintenance bays, they are just huge!"

Safety is still a priority when it comes to working with Mosaic. Bodine explained that it doesn't matter at which Mosaic mine you work within the world, the requirements remain the same. "Mosaic has adopted the practice of being a great company of not relying on meeting minimum requirements. Usually what is the most stringent we are going to standardize across all operations." This has posed a bit of a challenge when it comes to dealing with contract workers coming in to build K3, but Bodine is confident that Mosaic has adopted the right mindset when it comes to letting contract workers on site. "Anytime you bring in that amount of people [contract workers], you're dealing with different reference points, cultural differences, and you have to find a way to get a common language and a common approach. There's people rotating in and out and they may be coming in from different parts of Canada or North America, depending on the expertise that they have. The first thing you have to do is acclimate them to the Mosaic way, and that can be tough to do. Today, it doesn't matter who you are, you step foot on our property, we employ you, through payment, through another

company or directly, we are one family. We share one mentality. Your safety incidents are ours: Mosaic's."

Bodine also has a life outside of Mosaic. He has a wife of 15 years, which he says, "has been wonderful", and together they have three young daughters, the eldest being in her teens. Bodine manages to fill almost every spare minute with getting to know not only Esterhazy, but Saskatchewan and Canada with all of its crazy quirks. "We've been avid snow skiers our whole life, so I'm looking forward to doing some of that. I think it was my first or second weekend here, we went quadding down to Tantalton. I thoroughly enjoyed that and look forward to more of that. Curling is also something I've caught onto. I watched the Canada Cup in Moose Jaw [December 2012]. When I flip through the channels, I see these Mosaic things, so I stop and watch. That's why I ended up watching a lot of the curling. It was fascinating. I've also had no choice but to be recruited into the Saskatchewan Roughrider fan club, which is interesting. So yeah, I've been busy getting to know the people and the local customs."

Previously published in *The Miner-Journal* in January 2013. ♦

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# Disruption in the potash world

By Leonard Melman

**P**otash is big business. As a primary ingredient in crop fertilization, potash is consumed in vast quantities and the mining of the mineral has become a \$20 billion dollar per year business.

That business received a brutal jolt this past July when producers and consumers alike found the potash market in turmoil thanks to one man, Vladislav Baumgartner. As chief executive of the world's largest potash producer, OAO Uralkali, without prior warning he suddenly an-

nounced that he was removing his firm from one of the potash world's major price support cartels which his company had maintained with another Russian firm, Belarusian Potash Company.

For his troubles, Baumgartner has been ridiculed, reviled and imprisoned; the world of potash production and distribution has been thrown into major turmoil and a trade war between his home nation of Russia and neighbouring Belarus may very well have broken out.

The underlying reason he provided for the action was the growing imbalance between potash production and demand. It had been assumed that the world's relentlessly growing population, plus steadily increasing levels of prosperity in some of the globe's most populous countries, would lead to increasing demand for fertilizer-intensive agriculture products — and for many years they appeared to be correct.

Thanks to steadily increasing demand, combined with relatively static potash

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*Given the combination of soaring potash prices, plus compelling arguments in favour of relentlessly rising demand into the future, potash production took off, setting the stage for over-production and a resultant decline in prices which fell to under US\$400 by 2010.*

production, prices began to soar, rising from just over US\$100 per tonne in the early years of this century to over US\$200 by 2007, and then exploding upward, rising almost vertically to over US\$800 per tonne by early 2009.

Given the combination of soaring potash prices, plus compelling arguments in favour of relentlessly rising demand into the future, potash production took off, setting the stage for over-production and a resultant decline in prices which fell to under US\$400 by 2010.

Baumgartner explained his action was based on market forces which led to a steady rise in above-ground potash stocks and he believed the only way to work off those stocks was to stimulate demand by forcing prices lower. Naturally, consumers rejoiced somewhat, but for many potash producers, the decline in prices to US\$325 per tonne by late October 2013 was a real profit-buster.

One company which has felt the brunt of this decline is PotashCorp of Saskatchewan (POT), Canada's largest producer and owners of some of the world's largest mineable potash ore bodies. The company's stock has been on a roller-coaster ride ever since the original price boom began, but appeared to be holding firmly between \$40 and \$45 until the July announcement, upon which it immediately plunged by over 25 per cent to barely \$30 per share.

Part of POT's problem stems from their decision to dramatically increase production from the present figure of about 9,000,000 tonnes per year to a whopping capacity of 17.1 million tonnes by 2015.

POT's chief executive Bill Doyle used an online question-and-answer session to reassure investors and consumers that the market disturbances were likely to be short term in nature, stating, "...I would

just urge people to take a deep breath, relax and everything's going to be just fine..." He added that this was just a short-term disagreement between Belarusian and Russian companies and would be settled soon.

However, he did have one parting shot for Baumgartner personally when he referred to the Uralkali leader's actions as, "probably the single dumbest thing" he has witnessed during his years in the world of potash production.

As noted, Baumgartner was indeed arrested when he flew to the Belarus of Minsk in late August to consult with government leaders, eventually spending one month in jail before being released to house arrest. In addition, Russia and Belarus have engaged in trade disputes since the action with Russia reducing oil supply shipments to Belarus, and that country responding with tax increases on various Russian products.

One interesting note was that China moved swiftly to take advantage of the situation and purchased a huge block of Uralkali stock, thereby acquiring a 12.5 per cent ownership position and thereby gained market leverage in order to assure China of adequate potash supplies going forward.

While the potash world has indeed been dramatically disturbed by these actions, many observers note that the fundamentals still include rising global population combined with a generally rising level of prosperity, which should result in a return to better times for the industry.

The vital question is "when?" ♦

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# Saskatchewan Potash Council - Five years later

By Darrin Kruger

As the Saskatchewan Potash Council celebrates five years of existence, many changes have been observed in the industry during that time. The main catalyst that sparked the formation of this diverse group of workers back in 2008 was the strike at three of Potash Corporation of Saskatchewan's mines with the United Steelworkers. Contract negotiations had hit the wall at all three sites and union members voted overwhelmingly in support of job action. As the days turned to weeks, it was apparent to many that the potential for a long, drawn out labour dispute was all too real. Working people from not only Saskatchewan, but all across the globe had shown support for the striking members of USW Locals 189, 7458, and 7689. Whether it was words of support from workers on the east coast, or demonstrations of solidarity in the UK, it was quite obvious to these striking work-

ers that their brothers and sisters in the labour movement had their backs. Financial support from across the country flowed in for these striking workers to help them take care of their bills while they were out of work. It is the actions and determination of like-minded people who are capable of achieving anything when they put their efforts together. During a few meetings between workers from the eight different potash mines in the province, it quickly became apparent that the time had come for everyone to finally get together as one cohesive group. The time for individual site competition had passed, and the time for unity was here. Thus, the Saskatchewan Potash Council was born.

On September 10, 2008 in Prince Albert, Saskatchewan, the newly formed group, initially referred to as the Potash Industry Worker's Council, collectively signed the Potash Mining Initia-

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*Today, just five years later, the group now known officially as the Saskatchewan Potash Council has enjoyed much success in the advancement of the collective good of our members.*

tive Charter. The charter outlined the overarching goals and principles that the group agreed upon. Today, just five years later, the group now known officially as the Saskatchewan Potash Council has enjoyed much success in the advancement of the collective good of our members. The group is governed by a constitution and bylaws and run by an elected executive board. Due to early success and unprecedented support, it wasn't long before the group decided to establish an occupational health and safety wing of the council. Today, OH&S co-chairs from all eight of the mines meet on a regular basis to discuss and work on issues relating to health, safety and the environment that are common to all workers in this industry. Regular meetings with WCB and OH&S ministries, as well as the training of members in harassment and bullying prevention are just a few examples of a proactive approach to safety that this group has taken. Recently, at the United Steelworkers International Health, Safety & Environment Conference in Pittsburgh, PA, the Saskatchewan

Potash Council was awarded the Karen Silkwood Award for Union Building and Solidarity through Health, Safety & Environment!

The seven fatalities in our industry since 2008 are simply unacceptable. We must continue to work each and every day to make the workplace safer. This can't be accomplished alone. We will continue to work with industry stakeholders in a collaborative fashion when and where it is appropriate to do so.

As both provincial and federal governments continue to make changes to legislation that negatively affects working people, the efforts of the Saskatchewan Potash Council will continue towards our goal of safer workplaces for all working people.

*"An injury to one is an injury to all!"*

*Darrin Kruger is the secretary/treasurer for the Saskatchewan Potash Council. ♦*



The Sask Potash Council is an umbrella organization representing approximately 3500 unionized potash workers from the currently producing potash mines in Saskatchewan. The Council's membership includes members from the United Steelworkers (USW), Communication, Energy & Paperworkers (CEP), and from the Rocanville Potash Employee's Association (RPEA).

Our guiding principle is to build cooperation between our constituent unions; act as a communications vehicle enabling the bargaining of improved collective agreements and strengthening our collective capacity representing the health and economic well being of members working in the potash mining sector.

It is important as a Council that we work together to face the challenges before us today and develop strategic plans that address the needs of our members and the communities in which they live, building a better tomorrow for our families.

Working together to strengthen advocacy and improve legislation concerning workplace Health & Safety and Worker's Compensation are key to dealing with these challenges. Collectively we are making a difference for our members and the communities in which they live.

***Sask Potash Council – ONE VOICE FOR ALL POTASH WORKERS***

# Worldwide population growth drives bright potash mining future for New Brunswick

By Leonard Melman

**I**t is all so amazingly simple. People have to eat and as it happens, that basic concept has resulted in an industry which has already made great contributions to New Brunswick's economy, but as the famous musical line put things, just perhaps "You ain't seen nuthin' yet!"

The industry involved is potash, and while the Province of Saskatchewan is the best-known area for potash production in Canada and perhaps the world, the Province of New Brunswick is also blessed with abundant reserves of this material, which is now so essential in worldwide food production. The future looks bright indeed if this globe's population growth continues its historic pattern. Global population was approximately 2.8 billion in 1950; rose to 4.1 billion by 1975, is presently near seven billion, and America's Central Intelligence Agency predicts it will reach eight billion by 2025. Additional studies predict a total population of nine billion by 2050.

All of these people will have to eat, meaning the agriculture production industry will need to operate at maximum efficiency, and therein lays the anticipated enormous growth in potash demand for years to come.

Potash bodies in Atlantic Canada are associated with early carboniferous sedimentary rocks deposited in a marine basin known as the Maritimes Basin, which is divided into six major rock groups. Regarding potash deposits, the most important geologic formation is evaporates of the Windsor Group. The Windsors have a long history of potash exploration and have been found to host the thickest and most widespread evaporate deposits in eastern North America.

Along with potash, these deposits can also be mined for halite, sulfate and carbonate, but potash remains the dominant mineral asset. In certain places, potash beds in New Brunswick can reach a thickness of 30 metres and occur at depths as deep as 1,000 metres, although most deposits have been found between 400 and 700 metres.

Although geologists had suspected economic deposits of potash existed in the province as early as the 1840s, it was not until the early 1970s that serious development began, eventually leading to the creation of two productive and profitable mines

near Sussex, NB. These properties became the Penobsquis and Cassidy Lake deposits.

Following creation of the Penobsquis Mine under the auspices of Potash Corporation of America (PCA), the Port of Saint John potash shipping terminal was constructed and potash was first shipped from New Brunswick in 1983. The Penobsquis Mine continues in operation to the present time under the ownership of the world's largest potash company, Potash Corporation of Saskatchewan (now also known as PotashCorp), which acquired the project from PCA in 1993 and now produces potash at a rate of over 700,000 tonnes per year.

Cassidy Lake was brought into production in 1985 by Denison Mines Ltd. and Potash Company of Canada and actually out-produced the Penobsquis Mine, attaining an annual production rate of around one million tonnes of potash per year. However, massive underground flooding caused the permanent closure of the mine in 1997 and it now serves only as a source of water supply for other mining ventures.

In 2002, drillers for natural gas "accidentally" came across another major potash deposit near Penobsquis, presently known as the Picadilly Deposit. PotashCorp has aggressively explored and developed Picadilly to the point where a major mine is under development with production beginning in 2014. It is anticipated that combined potash production between Penobsquis and Picadilly will reach around two million tonnes per year. As a result of this enhanced production, PotashCorp is expanding their Port of Saint John facilities.

In the meantime, a third area known as "Millstream" was discovered. The project was awarded to Atlantic Potash Corp. by the Province of New Brunswick, whereby the company signed a lease agreement for three years to explore and determine whether an economic deposit existed.

In addition to their mining operation, Atlantic Potash is planning to use advantageous financing prospects from China to construct a \$350 million potash processing facility in Saint John.

Looking into the future, the long-term potash mining picture for New Brunswick appears to hold truly bright prospects. ♦



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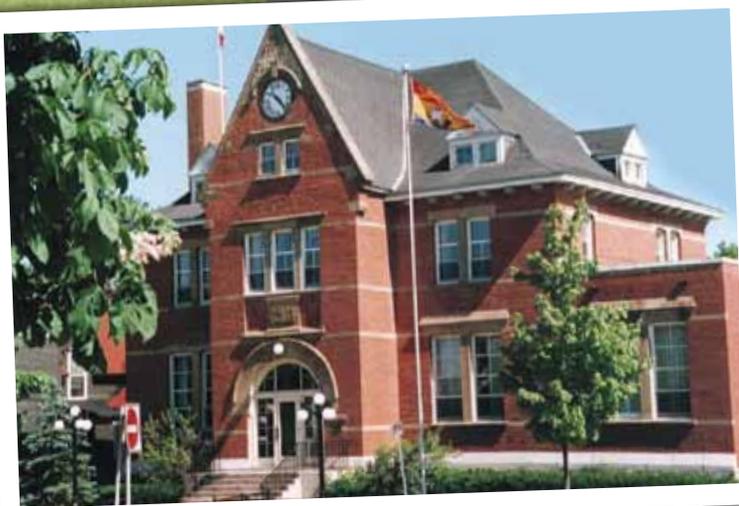
# Potash development, the economic engine of the Sussex region



By S.M. Hatcher, P. Eng.

*Top: Sussex train station.*

*Left: Sussex town hall.*



**T**he municipality of Sussex, situated in beautiful Kings County, and located in south-central New Brunswick, Canada, is strategically located between the province's three largest cities: Saint John, Moncton, and Fredericton. With tree-lined streets, gracious older homes, and an abundance of small-town charm, Sussex combines a thriving business culture, recreational possibilities, and an outstanding array of community services. To understand what we have today, it is necessary to look back at our history.

In 1857, the European and North American Railway was opened, connecting the farming communities of the Kennebecasis River Valley with Saint John and Moncton. Sussex was incorporated in 1895 but was only officially established as a town on April

30, 1904. The settlers were for the most part British Loyalists who had fled the American Revolution in 1776, with many Irish refugees of the potato famine from the mid-19<sup>th</sup> century settling in the nearby farming communities.

In 1885, the Sussex Military was established on the eastern edge of the town. The facility was closed following the Second World War and the Town purchased the land to expand the municipal boundaries. Today, the agricultural exhibition and some areas remain as open land on the former site of Camp Sussex.

Sussex underwent several changes in the post-war period. In the early 1960s, several local roads were upgraded as part of the Trans-Canada Highway project, which saw Route 2 pass immediately north of the town between Fredericton and Moncton. At the same time, a series of local roads in the Kennebecasis River Valley were designated as Route 1, running from an interchange with the Trans-Canada at Sussex, southwest to Saint John.

Sussex is still considered the best strategically located town, being in the centre of what has been called New Brunswick's "Golden Triangle".

Potash was subsequently discovered in large quantities in the area surrounding Sussex, with the deposit being the second largest in the world after an area in Saskatchewan. Two mines



Trails.

were built near the town, one at Penobsquis, eight kilometres to our east, and another at Cassidy Lake (no longer operational), 10 kilometres to our southwest. CN Rail built track to serve both mines, which employed hundreds from the surrounding area. Since 2003, natural gas has been produced from the McCully field near Sussex.

In recent years, this development in potash extraction has been considered the leading economic driver to our region's economic activity. While many will say this industry is truly located outside the municipal boundaries, while true, the town welcomes all activity within our region, and, even if in some small way, if the town's industrial partners can provide support services

to the industry, as well as many of the employees call Sussex home, then it is all to our benefit. We have a history in mining potash and the industry is now part of our fabric and we are good at it!

The town entered economic difficulty during the late 1990s after the Cassidy Lake potash mine flooded, resulting in hundreds of layoffs. Another less significant blow came in October 2002 with a realignment of the Trans-Canada Highway (Route 2) between Fredericton and Moncton, which no longer passed through Sussex, instead carrying the province's east-west inter-provincial traffic 30 kilometres north of the town.

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Balloon launch with PotashCorp in the background.

*Southern New Brunswick, and we believe specifically Sussex, is poised to enjoy growth and the positive spinoffs from that growth in our near future.*

Today, Sussex is primarily a regional service centre for the surrounding agricultural communities of the upper Kennebecasis River valley, as well as a highway service centre on Route 1, the primary highway between Moncton and Saint

John, as well as being the most heavily travelled route in the Maritimes to the United States.

At the same time, Sussex is experiencing an expansion of its base economy;

an investment in excess of \$1.4 billion is anticipated by PotashCorp New Brunswick, with more than 600 construction jobs to be created during the project and an anticipated approximately 60 to 80 full-time positions will remain post construction when production is set to begin. At the same time, there has been significant growth in the natural gas sector. This industrial growth will contribute substantial investment in our region, create jobs, and further growth of the local economy. It doesn't get any better than that! Southern New Brunswick, and we believe specifically Sussex, is poised to enjoy growth and the positive spinoffs from that growth in our near future.

As a community, we would be remiss by not acknowledging PotashCorp New Brunswick as a significant contributor to not only the town's economic growth and its position as the most community-minded corporate partner to many, many causes in our region, even areas beyond the Sussex Region. Their contribution should never go unnoticed. We are truly blessed to have the community-minded corporate partner just a few kilometres away not only providing employment and economic activity in Sussex, but leading the way in building a better community for all residents in our region.

Our citizens, our community, and our region values what PotashCorp NB has brought to our region and the position leading to our future has never looked brighter.

*S.M. Hatcher is the chief administrative officer for the Town of Sussex. ♦*

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# Mine Rescue Team triumphs at provincial competition



*Mine rescue training exercise at the mine site before the provincial competition.*

By Jaime Rieger

there must be a minimum requirement of three teams of five people before entering into any underground emergency situation. All of these rescue workers receive at least 70 hours of training each year. In Rocanville, only the team that moves on to the provincial competition will see an additional 200 hours of training each spring. At the 45<sup>th</sup> Annual Emergency Response Skills Competition held on June 1, 2013 in Saskatoon, the PotashCorp Rocanville Mine Rescue team clinched a few coveted trophies in some tough categories, including Underground Overall Runner-up.

**B**eing trapped underground in an emergency situation can be a scary ordeal. Any number of things could go wrong which would escalate the situation to a harmful degree. Personnel working underground at PotashCorp's Rocanville mine site must put trust in their mine rescue workers in the case of such an emergency. But being an underground mine rescue worker isn't for everyone. It takes hours of hands-on training, hours of at-home studying, and a bit of common sense to do the job required to save a person's life. PotashCorp's Rocanville mine rescue team does all of that, and even has the trophies to prove it.

There are over 30 trained underground mine rescue workers on Rocanville's site. The provincial Mines Regulation states that

So, what exactly does an underground mine rescuer do? Essentially, they have the job of a first-responder, except in an underground setting where elements such as weather and traffic are easier to control. In an emergency situation, above-ground paramedics and firefighters are not allowed underground to help out. They do not necessarily know the layout of the mine or how the ventilation system works. They could be putting themselves in danger if they do not know about a gas leak, or how to ventilate the air properly. Also, underground fires are not necessarily extinguished in the same conventional manner as an above-ground fire. For these reasons and more is why every mine has their own mine rescue team. Once on surface, regular paramedics are able to take over and transport casualties to hospitals for further care. In this sense, mine rescue workers must be certified in first aid,



as well as be trained for all kinds of potential industrial-type accidents that can occur on a mine site.

There are five main components in a mine rescue competition. First there are the self-explanatory first aid and firefighting categories. Then there is a proficiency portion, which is a written exam based on general and specific rescuing knowledge, as well as a gas test which tests basic scientific knowledge of gases used or produced underground. There is also a practical skills portion which tests rescue workers to use their knowledge of securing a hazardous work site, as well as rescue the casualties, and administer advanced first aid. The mine problem is the biggest portion of a mine rescue competition. In these mock scenarios, rescue workers are only given basic information and must do their best to navigate and rescue casualties without bringing harm to themselves, and get out of the mock mine in the allotted time.

Rocanville's mine rescue team placed first in the firefighting category at the provincial competition, proving that working together as a team and thinking safety first will win out every time. The team also won runner-up in the proficiency category, and gained enough points throughout the entire competition to win the coveted runner-up overall category which placed them second in the province, putting them just behind the team at Cameco MacArthur River. ♦



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# Mining green through a sea of pink

By Jaime Rieger



Dave Esslinger, mine training co-ordinator, in a PapaBravo Innovations vehicle at PotashCorp Rocanville.

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*Underground mining practices require specific safety standards on their vehicles that must be met or surpassed before they can ride underground. PapaBravo has met that challenge and carries an entire fleet of vehicles, each with its own task capabilities.*

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Keeping up in an environmentally friendly world can be tough for some mining companies to do. It's hard to find "green" machinery that can do the job required when working in an industrial situation. Yet, for some potash mines in Saskatchewan, things just got a little easier underground. When PotashCorp's Rocanville mine was introduced to six electric mining vehicles in February of 2013, it was met with nods of approval. These were machines of the future, and they were able to get the job done.

PapaBravo Innovations is a company based out of Saskatoon, Sask. and they are the ones who created these machines. The company was developed in 2010 to help create a zero-emission electric mining vehicle. The vehicle that was created looks a lot like a traditional underground diesel truck, but comes with a few variations. Underground mining practices require specific safety standards on their vehicles that must be met or surpassed before they can ride underground. PapaBravo has met that challenge and carries an entire fleet of vehicles, each with its own task capabilities.

At first glance, one can see that the PapaBravo machine is not like an ordinary work truck. For one, it has no windshield, which is common in underground situations when there are no bugs, weather, or highway speeds for the driver to worry about. The vehicles are programmed at the factory to drive a maximum

speed set by the mining company. The machine is also enclosed with a certified rollover protection system, and every seat in the vehicle has a seatbelt which employees must wear at all times. The doors to the vehicle open the wrong way or have "suicide doors", which were installed specifically so the doors don't have to open as far to let the workers in and out when travelling in first pass or tight travel ways; this makes it easier to gain admittance in a cramped situation. Also, the vehicle is not equipped with signal lights, which may seem odd, but it is not a necessary feature when driving along underground tunnels at slow speeds.

Getting behind the wheel of the truck offers a different perspective on driving. It is a little unusual seeing a large screened back-up camera, which runs continuously while the vehicle is on, even when driving forward. But as all vehicle enthusiasts will agree, it's really about what's under the hood that counts and this is where PapaBravo trucks shine the most.

First of all, when one looks under the hood of the truck, it appears as if the engine is missing, as well as all the lubes, oils, and fluids that come with it. In its place is a collection of clean boxes, which contain different battery components used to run the truck. The battery itself is stored at the back of the truck in a sealed, covered box, which protects it from the dust and grit of industrial work. Being that beneath the hood is set up in compo-



nents, if one of the parts break down, it is easily removed (like a box) and replaced with a new one. The old part can be sent away for repair and the vehicle can be back on the road with hardly any lost time.

Since the vehicle has to rely on battery power instead of diesel, the innovators at PapaBravo equipped the trucks with several unique features. For example, there is a regenerative braking system on the vehicle. When the driver lets off the accelerator, the vehicle slows itself down using the electric motors, which in turn acts as an alternator, charging the batteries. When novice operators first start driving these vehicles, they realize to not press the brakes as much and let the vehicle do it on its own, which in turn will help to keep the battery charged.

Another unique feature on the battery is the “limp-home” mode. The vehicle is equipped with a safety feature, which shuts the vehicle down once the battery gets too low. If this happens, the operator is still able to get to a power outlet simply by “limping” the vehicle along. The battery has the ability to charge itself in the limp mode, which means that both the driver and vehicle are not stranded and having to wait for a secondary vehicle to help out.

Before any worker gets stranded though, the vehicle comes with an obvious gauge on the dash which lets the driver know how much charge is left. Ironically, it says “fuel level” but actually refers to the charge on the battery. If the battery gets low, a warning light will come on to remind the driver of the depleted power supply. At this point, the driver will have to get to a charging station to plug the vehicle in, if only for a short while. A completely dead battery takes up to one and a half hours to restore it to full life. The smart thing about the batteries is that they do not carry a memory, so they can be plugged in, or unplugged at any time without affecting the lifetime of the battery. Approximately every half hour of being plugged in will result in about a quarter



tank of charge. Depending on the job, a truck could drive for up to four hours before a battery re-charge is needed.

PotashCorp’s Rocanville underground mine site is set up with truck-charging stations in all the different underground shops, as well as at the main shaft. These were put in place specifically for the PapaBravo machines. There are also different power-sleds throughout the mine that have outlets for the trucks, so charging can take place at any of these locations. The electricians also made “pig-tails” for the trucks so that if a worker is stranded away from a regular charging outlet, then the truck plug can hook together and plug into the “old” 600-volt system.

According to Dave Esslinger, a mine training co-ordinator who works underground at Rocanville, using these trucks on a daily basis has meant that the workers have had to be a bit more conscientious about their ride.

“For the most part, it has mostly just been a shift in the worker’s thinking. We can no longer start a shift by jumping in the truck, fueling up for the day, and going on to do our jobs. Now, we have to unplug the truck, check the battery gauge, drive to our work location and plug it in while we are working. Why not have a full battery by the time we are finished our duties, just in case?”

Aside from all of these bonuses of driving an electric vehicle, the best thing of all is the noise and pollution factor: there are none. Each vehicle is strangely quiet, riding silently along in the dark. Having to breathe diesel fumes is now a thing of the past for people who work around these machines. The underground ventilation system can be controlled a lot easier without having to deal with the excessive output of a regular diesel truck. It’s smart. It’s efficient. And it’s emission free.

Rocanville mine currently has 14 PapaBravo machines on site with four more expected to arrive by the end of the year. ♦

# SRC provides world-class potash services

By the Saskatchewan Research Council

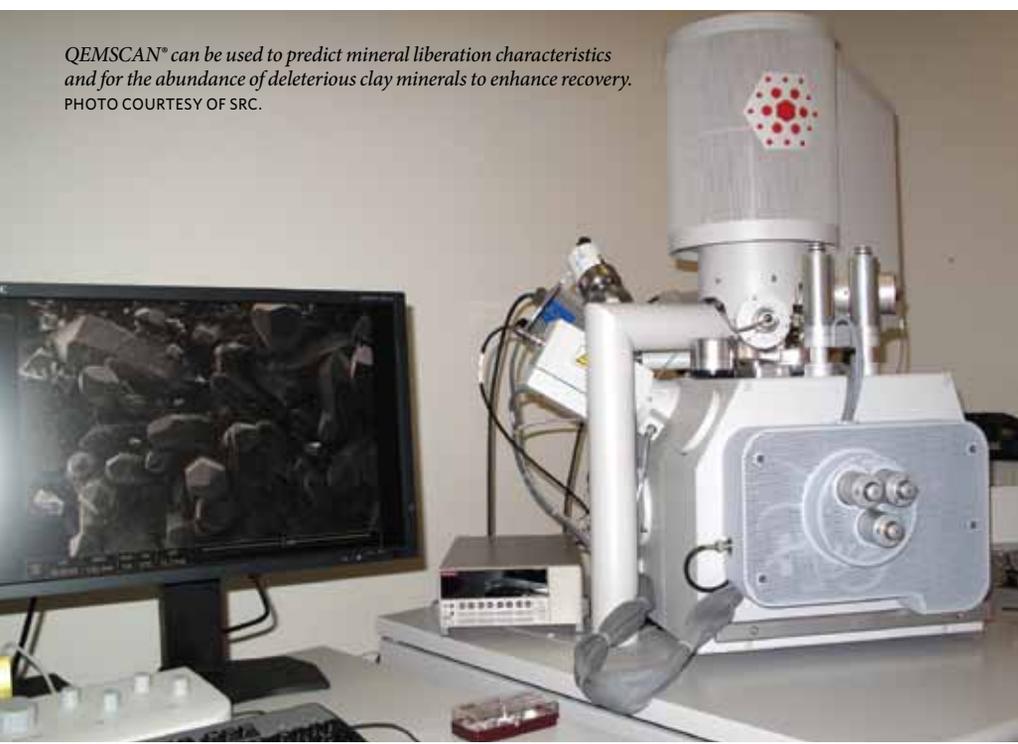


*Potash preparation and analysis laboratory offers a Potash Exploration Assay Package.*  
PHOTO COURTESY OF SRC.

Potash is an important mineral to Saskatchewan and the world. With the province now being the second largest potash producer in the world, innovative processes and methods are in high demand to meet new challenges that the potash industry faces.

The Saskatchewan Research Council (SRC) has more than 66 years of experience in research, development, demonstration, and analytical support for the mining industry. Its world-renowned experience and research background allows for continual improvement in the reliability of processes and analyses, helping to ensure its clients' success. SRC currently supports the global mining industry in potash, uranium, diamonds, gold, rare earth elements, and other commodities.

*QEMSCAN® can be used to predict mineral liberation characteristics and for the abundance of deleterious clay minerals to enhance recovery.*  
PHOTO COURTESY OF SRC.



## **Mineral Processing and Metallurgical Testing**

Mineral processing is a technology that is quickly emerging as a critical service need in potash mining. SRC is pleased to offer this service as one of many in a long list of superior services provided to the mining and minerals industry.

SRC provides custom tests from lab scale to pilot scale for pre-feasibility, feasibility and engineering studies involving potash. In addition, these capabilities can be applied for uranium, rare earth metals, gold, diamonds and base metals, as well as tailings, waste water and waste rock.

## Geoanalytical Services

Since 1972, SRC's Geoanalytical Laboratories have been providing quality analysis in potash, uranium, gold, base metal and rare earth element analysis, as well as kimberlite indicator processing and macro/micro diamond processing and recovery services to the exploration and mining industries.

The facilities include a potash preparation and analysis laboratory which offers an ISO 17025 accredited Potash Exploration Assay Package. Along with the accreditation, SRC Geoanalytical Laboratories have also developed potash analytical standards that are used by the exploration industry around the world. SRC has done test work on ores from Russia, numerous places across North America, Africa and South America, including Argentina, Chile, and most recently, Brazil.

## Advanced Microanalysis Centre™

SRC's Advanced Microanalysis Centre™, along with SRC's Geoanalytical Laboratories, supplies all of the necessary analytical tools for mineral exploration for everything from sample preparation right through to trace-element analysis - all in one convenient location.

With an expansion completed in 2012 and a QEMSCAN® service added to the portfolio in 2013, the centre has become a one-stop shop for clients both in the province and across the country.

QEMSCAN® can provide critical mineralogy information, such as mineral identification, size and distribution to aid in prioritizing exploration targets and providing essential information for designing mineral processing most effectively. QEMSCAN® technology can be applied to potash resources for predicting mineral liberation characteristics and for identifying and quantifying the abundance of deleterious clay minerals to improve potash

flotation and enhance recovery.

## Pipe Flow Technology Centre™

SRC's Pipe Flow Technology Centre™ has historically performed work for the potash industry to better understand slurry transport of a variety of potash streams, as well as studying paste-backfill disposal of industrial tailings. In addition to extensive experience with slurry transport and tailings management, the centre also

provides test work in the areas of pipeline wear, instrumentation, and pilot process trials.

The experience of the minerals group, combined with SRC's broad base of specialists, enables the organization to develop unique and comprehensive solutions for industry in Saskatchewan and around the world. For a complete list of service offerings, visit [www.src.sk.ca](http://www.src.sk.ca) or email [info@src.sk.ca](mailto:info@src.sk.ca). ♦



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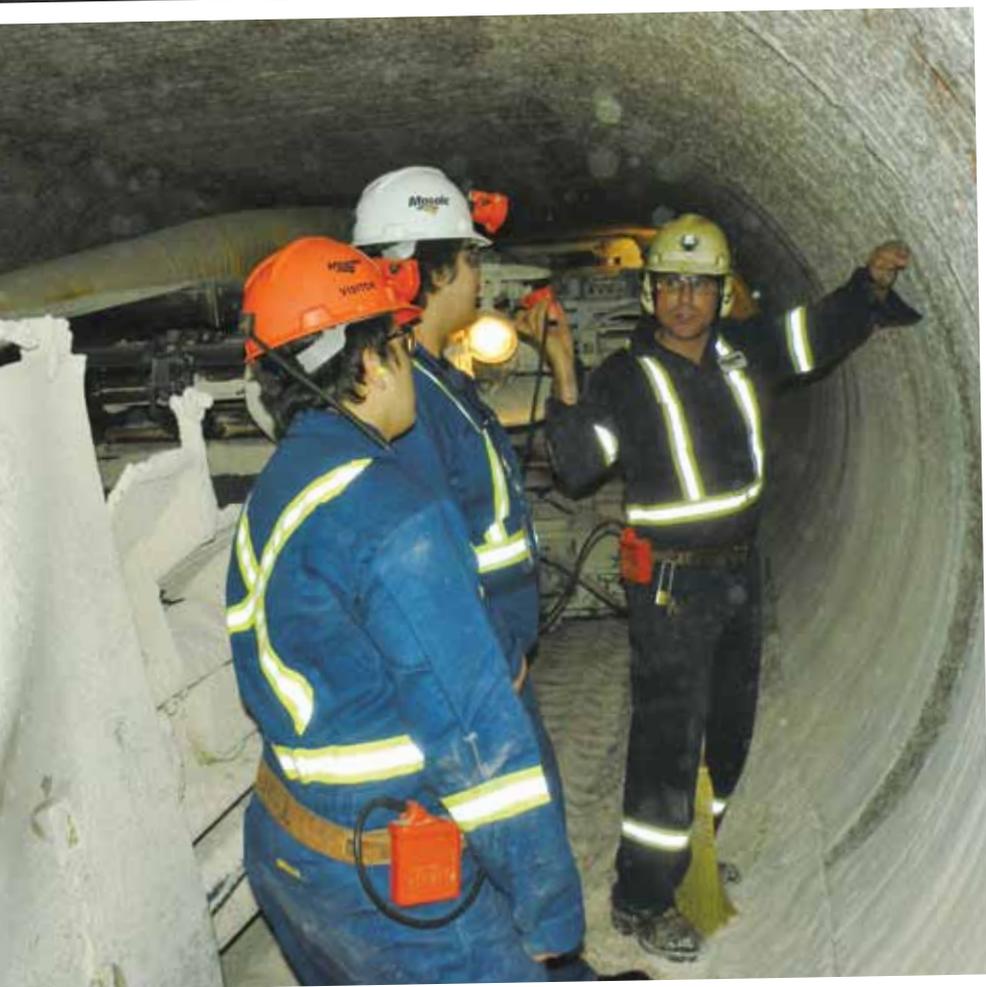
# Mining essentials

*Industry and community partnership leads to training success*

By Ziad Saab

**F**or some employers, the challenges encountered when building and training a local aboriginal workforce has resulted in their informal and formal agreement goals not being met. Mining Essentials, a pre-employment training program for Aboriginal peoples, aims to increase the success of training outcomes by first establishing a partnership between the community, educators, and the employer. The program partnership and training is designed to support local hiring requirements in a way that is inclusive of culture and the local employer's needs. Mining Essentials is co-owned by the Assembly of First Nations and was created under the guidance of employers, educators, and representatives of aboriginal communities. The program teaches the work-readiness skills that the mining industry requires for an entry-level position.

Mining Essentials recently had its first Saskatchewan delivery at Southeast



*Companies can also benefit from these site visits, as it provides them with the opportunity to emphasize safety in the workplace and the importance of team communication.*



Regional College (SRC) in Whitewood thanks to a partnership between SRC, Mosaic, Southeast Regional College, and the Kahkewistahaw and the Ochapowace First Nations. With 14 graduates, the program was a great success. Learners were able to gain knowledge and experience pertaining to all cycles of the mining industry, while delving deeper into the wide variety of occupations available. Through a combination of classroom work and hands-on practicum, which included mine site visits and industry guest speakers, a balanced approach provides a strong foundation for this program. Benjamin Williamson, a qualified Mining Essentials trainer, explains that “Mining Essentials learners benefit from the program by getting a lot of industry-specific knowledge that would be applicable to the workplace.”

Rebecca Thompson, a recent graduate of the delivery at Southeast Regional College, emphasized the importance of

the site visits. With one year of electrician training under her belt, she hopes to begin her career in the mining industry soon. Thompson was given the opportunity to shadow a Mosaic employee at PotashCorp in Esterhazy, SK, which she felt gave her a real insight into the industry: “it helped teach the importance of responsibility and accountability when working in the mining industry.” By visiting the mine site, she was able to gain an understanding of the role that electricians played, while also learning how potash was mined, processed and used.

Companies can also benefit from these site visits, as it provides them with the opportunity to emphasize safety in the workplace and the importance of team communication.

“The site visits are very valuable because even in that short period of time it allows us to perhaps evaluate candidates, and to observe their attitude and awareness of safety protocols,” says Todd Standing,

manager, aboriginal engagement at the Mosaic Company.

Industry participation of the Mining Essentials program continues to grow nationally with deliveries completed in Saskatchewan, Ontario, British Columbia, and the Northwest Territories. Since program inception, approximately 70 per cent of Mining Essentials graduates have secured employment or furthered their mining education within the first six months of graduation. While gaining employment is one ideal scenario, some graduates choose to continue their education or training after they complete the program, enabling them to pursue their preferred careers in the sector.

If you are an employer, training organization, or community member and would like more information on Mining Essentials, please visit [www.aboriginalmining.ca](http://www.aboriginalmining.ca), or contact Pascale Larouche at [miningessentials@mih.ca](mailto:miningessentials@mih.ca). ♦

# Safety first

## PotashCorp's Roy Howell continues his legacy in the mining industry

By Jillian Mitchell

**A**fter being ordered down the pit in the wake of the Mufulira copper mine flood of 1970 that, overnight, took the lives of 89 colleagues, Robert (Roy) Howell recognized that safety was to play an important role in the rest of his life — as was speaking up for his beliefs.

"It was a non-debate; I was told I had to go [down the pit]," recalls Howell, a Welsh electrician who lived in Africa with his family for six years. "I was a young guy with a family then, and I'm afraid yours' truly got a little bit agitated. Zambia is where safety became a huge issue for me."

After a timely relocation back to Wales and a brief stint in Saudi Arabia, Howell moved his family to the Canadian prairies in February 1977, after recruiters from APM Operators Ltd. (today's PotashCorp) met with him in Wales. Before long, Howell, wife Lynda, and their soon-to-be six children (two born in Wales, two in Africa, two in Canada) would create a respectable life in Saskatchewan.

As Howell recalls, his journey into the safety sector was solidified by friend and mentor Bob Sass, a man Howell coins as "very prominent" and "an inspiration to the workers".



Roy and Lynda Howell.

"There was a big change going on at the time I met Bob — the basic 3 R's [the right to know, the right to participate, and the right to refuse unsafe work], he was an exponent of that and it was quite radical at that time," he says. "Bob actually initiated in me what I already had and was very influential in that area. We had common beginnings and I find him a very articulate individual, not afraid to speak up."

Since achieving his electrician's apprenticeship from the Steel Company of Wales at the age of 18, Howell has facilitated a very impressive 51-year career in the steel, copper, and potash sectors, respectively. And though Howell worked diligently over his 36-plus years in the potash industry, he relinquished the proverbial corporate ladder for one of safety.

Finding his way to Occupational Health and Safety (OH&S) in 1979, Howell became a significant voice of industry development, even taking a position as OH&S co-chair in 1980. In 1998, he worked as a rep for the OH&S-District 3 potash mines, and eventually was elected the district co-chair. It was a role, he says, that would "encourage commonality of practices between each of the province's mines."

A longtime committee member of the National Committee for

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*“In those days, there wasn’t much interest of people wanting to do [safety]. So I said, ‘If they’re not doing it, I’ll do it.’”*

Steelworkers of America, he would occasionally assist in safety teachings, which he enjoyed doing. In addition, Howell was also a member of the Saskatchewan Federation of Labour (SFL) Safety Committee for a number of years. Eventually, he moved his way up to the Saskatchewan Advisory Committee to the minister, where he assisted in two reviews of the occupation health and safety act and was on the review committee where he worked with the team to “assess mining regulation”. Howell is also an integral member of the Saskatchewan Potash Council Safety Committee.

“The motivation (to participate in safety committees) was to try to get an equal playing field for the workers,” says Howell, who was also a very active member of the union pension committee.

“In those days, there wasn’t much interest of people wanting to do [safety]. So I said, ‘If they’re not doing it, I’ll do it.’

“There were some walls, obviously. Although we had the rules, the execution wasn’t quite there in some instances. However, in the present time, we’re seeing a change coming in the safety of Saskatchewan — there are some 4,500 safety committees in the province.”



Today, the 69-year-old Howell has no plans to retire, though in his downtime he thoroughly enjoys spending time with his wife and their six children, 19 grandchildren, and one great-grandchild.

“I do enjoy the everyday battle,” he says of his desire to work into his ‘70s. “What I’ve found is that when people pack in work, they seem to go downhill pretty fast. I can keep working because in my mind, I am retired.” ♦



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# It's Yorkton time



By Jillian Mitchell

*Construction of a commercial subdivision.*

**Y**orkton, in east-central Saskatchewan, is the place where good things happen. In the last few years, the city has become known as an “industry and recreational hub” and one of the best places in Canada to call home.

Yorkton’s founders, the York Farmers’ Colonization Company of Toronto were chartered in 1882 to colonize eight townships in this region. They brought experienced farmers from Ontario and the British Isles, and erected York City, which was renamed Yorkton in 1884. Together, the founders and early settlers are responsible for setting the direction for the prosperity of this community.

Today, the vibrant economic centre strategically located on a network of highways is also the third largest trading area in the province, covering a diversified trading area of 1,400 square-miles and serving 150,000-plus people — with excellent potential for future growth. As the City’s economic department reports, “manufacturing, food processing, construction, professional & technical services, retail trade, educational, healthcare, and administrative sectors are the current strengths of Yorkton’s economy.”

The City of Yorkton is a “community on the rise” — as it was recently dubbed by *Alberta Venture* magazine’s Best Communities for Business for 2012. Contributing to this designation is the city’s “excellent level of educational, healthcare and leisure services, expanding and affordable housing sector, and competitive business environment,” says Faisal Anwar, City of Yorkton economic development officer. All of these together make Yorkton a choice

place to invest.

Located in the middle of the largest and richest potash field in the province, Yorkton continually attracts workers in the resource sector and their families, as several current and potential mines are within 120 kilometres of the city. Growth in the mining sector is a welcome addition to the city’s current 18,500-and-growing residents. The need for additional residential lots has sparked York Colony (Phase I & II), a new subdivision. This new development located on the city’s northeast side, which is east of the Saskatchewan Government Insurance property and north of York Road, will generate two commercial lots, plus 42 single-family lots and 11 multi-family residential lots. Phase 1 (20 entry-level single-family lots) has been completed. Phase II will be completed in 2014.

The city is working on several projects to provide sanitary sewer to subdivisions on the east side. In the works since 2004, the City’s Water Development Plan included construction of the \$33-million Queen Street Water Treatment Plant, which has earned the reputation as the “largest municipal project in Yorkton history.” The 31,133-square-foot facility opened in 2012 and can produce up to 22-million litres of water per day with a capacity to hold 18-million litres of water in the reservoir.

The project’s corresponding Logan Green Water Management System utilizes an innovative green practice to handle backwash water generated from flushing the plant filters. Through the introduction of this process, an estimated \$3 million was saved on infrastructure alone, and the City expects additional savings of



*Above: Water treatment plant.  
Right: Yorkton downtown core.*



\$6.3 million in treatment cost over the life of the plant. The water management project consists of settling ponds for backwash water treatment, wetlands for advanced treatment and wildlife habitat, storm water management, aquifer recharge, multi-use sports fields, and cycling and walking paths.

Together, the two projects earned the City of Yorkton a Federation of Canadian Municipalities (FCM) Sustainable Communities Award in the water category; The Canadian Association of Municipal Administration (CAMA) Award for Innovation; and the Association of Professional Engineers & Geoscientists of Saskatchewan (APEGS) Award for Environmental Excellence.

Yorkton is known as a centre deeply involved in food processing – with two canola crushing plants, plus oats and meat processing that together employs over 500 local workers. Both Richardson International and Louis Dreyfus Canada Ltd. have committed to an industrial expansion at their plants. It is expected that Grain Millers Drive will become an agriculturally value-added corridor in the next 25 years. The City is presently working with investors on 136 acres of private land adjacent to Highway 9 and Grain Millers Drive. The City also owns over 900 acres of light-to-heavy industrial land within the North Industrial Servicing Area encompassing Grain Millers Drive. With rail, road and air transportation network connections to Western Canada, the continental U.S. and international markets, Yorkton can provide access to the world.

A most exciting development in the educational sector, the construction of Parkland College's new Trades & Technology Centre will be a welcome complement to the region's labour force needs — as approximately 90 per cent of apprenticeship trades in the Yorkton-Melville area are experiencing a shortage of skilled labour. In September 2012, the City donated a \$3.48-million 20-acre package located between Highway 9 and Dracup Avenue

to the college that is to be used as the future site for the centre. Construction on the 24,550-square-foot facility will begin in 2014 and is anticipated to wrap September 2015. The provincial government allocated \$1 million for the continued planning and design phases of a Trades & Technology Centre in Yorkton. This investment signifies approval for the facility's development and enables Parkland College to move forward with finalized designs and to begin construction.

With the capacity to deliver 350 full-time spots annually, the new trades campus will feature expanded service and program options not currently available in the Parkland region and will include an 8,000-square-foot multi-trades shop, science lab, technology lab, and power engineering lab, as well as six classrooms and multiple study rooms. In addition, Parkland College has set a goal to bring in \$4.9 million in donations from dozens of local and regional businesses and community organizations, as well as international corporations — and the community is responding, wholeheartedly.

Last but not least, an equally anticipated project is the upgrade to the Yorkton Municipal Airport, located three kilometres north of the city. In the last three years, over \$1 million has been invested in the airport with contributions from senior governments and the City. Encompassing approximately 720 acres, the airport offers both commercial and business flights and consists of two intersecting runways, a joining taxiway system, a public apron and a private apron that operate 24/7. The grant enabled much-needed upgrades to existing airport infrastructure, such as the runway and taxiway, fencing, and apron expansion, as well as drainage rehabilitation, and a taxiway expansion. These improvements will be advantageous for businesses and communities province-wide.

Come see why many call Yorkton home. Visit [www.yorkton.ca](http://www.yorkton.ca). ♦

# Renewing rock mechanics programs for evaporite ground control

By Tim Coleman

**A**lthough the mining of potash dates back to the 1300s, it was first established on a large scale in Germany in the late 19<sup>th</sup> century. Forty-five years ago, a few mines started production outside of Eastern Europe and used mining plans based on conventional room and pillar mining techniques. Counter-intuitively, the combination of strong pillars and small rooms led to recurring excavation back failures of a type more commonly associated with conventional soft rock mining environments. To solve the resulting safety and productivity problems, each new potash operation established comprehensive rock mechanics programs. These programs focused on the time-dependent creep deformation of the evaporites, as measured in the laboratory and underground.

The stress control/relief mining methods and extraction ratios established during this period of intense study have barely changed in four and a half decades. Slight revisions to accommodate mining equipment improvements have achieved small increases in extraction ratios. However, as reserves have been extracted and mine depths and production rates have increased, so too have induced stresses escalated. As a result, the poor back conditions encountered in the 1970s are presenting challenges to current potash and salt mining operations.

Production rooms and panels are generally not impacted by the long-term creep deformation of the evaporite orebody, because these excavations are mined and completed in a few months. Permanent mine infrastructure and development entries are, however, impacted by long-term, mining-induced stress redistribution. In time, the increased loading on the infrastructure causes excavation damage and failure.

Many of the theories upon which potash mining is based assume continuous, homogeneous deposits. However, in reality, potash deposits are complex entities. They comprise beds of evaporites and conventional sedimentary rocks

with contrasting characteristics, for example, carnallite, salt horses, clay bands and leach zones. These variations can be highly significant as they can substantially affect excavation performance, disrupting production and impairing the safety of underground personnel.

With the resurfacing of challenges encountered during the early days of potash mining, successful methodologies from that time need to be reviewed. The safe extraction of conventional salt and potash deposits around the world depends on the resumption of comprehensive rock mechanics programs and the development of associated expertise. A wealth of experience has been gained in other aspects of mining such as stress management, ground reinforcement and support, instrumentation, software analytical tools, and ground-control monitoring. Considerable benefits could be achieved by applying this knowledge to the salt and potash mining industry.

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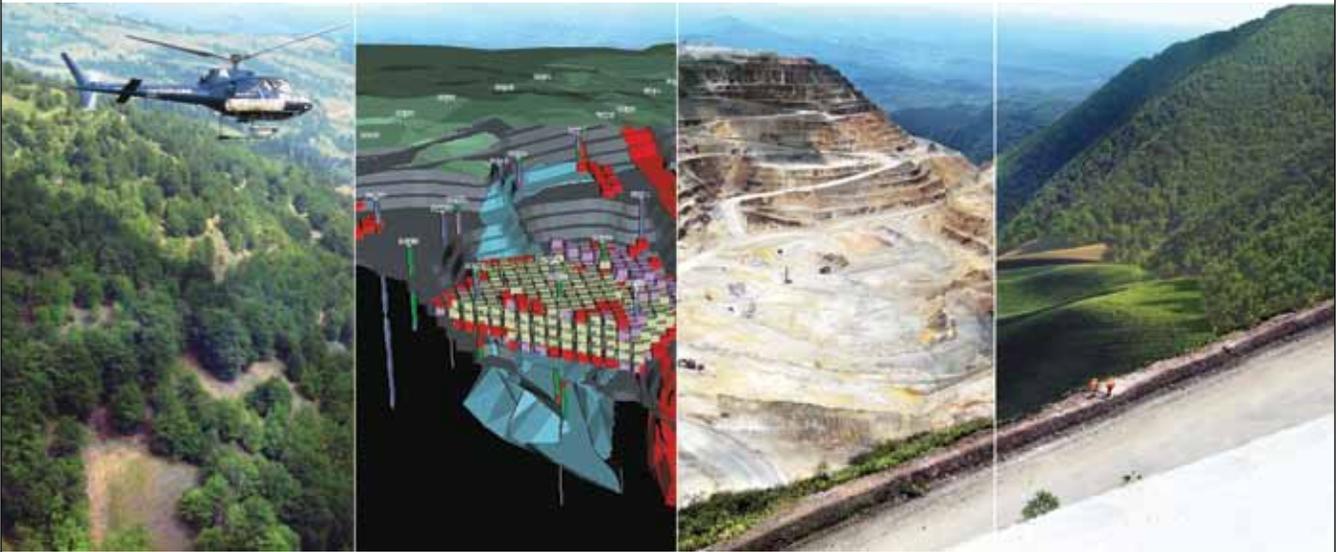
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# Potash mining a high-tech business

By Jaime Rieger



*Mosaic's Esterhazy K2 operation with canola in full bloom.*

**W**hen it comes to advances in the potash industry, one thing is for certain: size matters. Fifty years ago when Mosaic's Esterhazy K1 and K2 operations were being built, no one could guess that the demand for the crop nutrient would more than quadruple in half a century. Nor could anyone guess that the infrastructure used to mine this mineral was going to see the longevity that it did. Esterhazy's potash operations were the first of its kind to successfully withstand long-term mining, but this didn't come without adaptation to technological upgrades as the years wore on.

Before Mosaic's Esterhazy mines were built, conventional mining practices were foiled by one major element: water. Underground flooding was posing a huge problem for mining companies and was turning underground potash mines into solution mines. When the International Minerals and Chemical Corporation (IMC Co.) wanted to sink a conventional mine near Esterhazy in

the 1950s, they looked to German engineering. These engineers had created a freezing process for shaft sinking which meant that underground water sources could be kept at bay while grout was poured and tubing and bolts were installed. According to John Nightingale, a retired mechanical engineer who spent six years as general manager of Mosaic (formerly IMC Co.) from 1979 to 1985, the practices used 50 years ago to sink the Esterhazy shafts are still the practices used today. In fact, the building of the new K3 shaft already has the large freezing plant in place that will be used to harden the layers going down underground.

But as much as the shaft-sinking process has stayed the same, virtually everything else about potash mining has been advanced. As it turns out, the world demand for soil nutrients is what has led the industry forward in means of technology and production. Potash mining has had to keep up with the demand by creating bigger and more efficient machinery. The information highway has opened doors to fast-paced computer networking systems,



*The original donut cut of potash, as well as the "hole" of the donut.*



*The bits on the rotor miner, which were spaced differently as time went on to make mining more efficient.*



*The tubing and bolts, which were installed around the Blairmore Ring.*



"Before" photo of potash mining computer systems.



"After" photo of potash mining computer systems.

and Saskatchewan has become a world-leader in conventional potash mining capabilities. Creating improved operational efficiencies has meant fewer accidents and less lag time during production times. Mosaic's Esterhazy potash mines have increased their production capacity from about three million tonnes per year (TPY) in 1967 to 5.3 million TPY today. With the expansion projects underway, Mosaic is projecting an additional capacity increase of 800,000 TPY at the K2 mine site, as well as adding 900,000 TPY when K3 is completed. However, the way in which

Mosaic will achieve these goals has changed in the last 50 years.

Behind every great company there is a story and a start, and Mosaic's Esterhazy mines have come a long way from when production started in 1962. When underground exploration discovered that southern Saskatchewan was sitting on a bed of potash, there were not a lot of mining principles derived specifically for this mineral. Since the Esterhazy mines were the first of their kind to be built, they are unique in their construction. Being one of the first successfully operating underground potash mines in the

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*John Nightingale stands in front of a picture of the Blairmore Foundation, in what ended up being a definitive time in potash mining.*



*John Nightingale stands in front of the Potash Interpretive Centre in Esterhazy, Sask.*

province, they were constructed using insufficient knowledge of longevity in the field. Their unusual feature is that they get their workers underground by means of a cage in the production shaft. Every other mine in the province has both a service shaft built strictly for employees, as well as a production shaft built only for product. The Esterhazy mines were the only ones constructed without both shafts, but then again, they are also the only mines that have an underground tunnelling system joining K1 to K2. By doing this, the mines not only share underground entrance and exit points, which are needed in emergency situations, but they also share a ventilation system. The building of Mosaic's K3 operations will see both service and production shafts built, as well as assume its own ventilation. It will not be joined underground to its sister mine tunnels at K1 and K2.

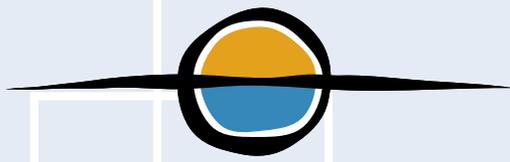
When potash mining began, coal mining practices were taken largely into account and were the go-to method of production. The two rotor miners used at the time created large chunks of potash, some were donut shaped. In the 1970s, the bits and the spacing of the bits on the rotor miners were changed to create a more efficient practice of extracting the potash. This created smaller, more workable chunks of potash and also less dust. Minimizing dust is not only beneficial during mining, but in the milling process as well. All things considered, it was cost-effective for the mining machines to be changed. These bits are still used to this day. The miners were also upgraded to having four rotors instead of two, which meant more potash could be extracted in one pass.

Mosaic also evolved their mining machines with state-of-the-art technology. Originally, workers would have administered each pass of the machine by sitting in the miners and literally controlling and driving the machine by hand. Now the mining machines can be computer operated with the machine operators using electric/hydraulic joysticks to move the machines around. Work-

ers are still there, but the machines can run independently, relying on computer readouts for direction.

The conveyor system has also undergone innovation. During its inception phase, after the potash was mined, workers would use a loader to scoop up the potash and load it onto a shuttle car. The shuttle car would then zip back and forth to the conveyor belt and dump the potash onto the belt to be carried to the skip which would then hoist it to the surface. Today, the shuttle car system is obsolete, and the potash is transported by means of an extensible conveyor system which is attached to each mining machine. This change took place in the 1970s and helped make the operation continuous. The conveyor belts were also widened for increased capabilities and the skips used to hoist the product to surface were broadened. The hoists are now able to pull heavier loads, and the entire production process runs at a more efficient pace. According to Nightingale, the original K2 shaft was built for 27 tonne skips. Now it has nearly doubled its capacity and operates with 50 tonne skips.

Despite all the advances in the operations of these mines, one thing has remained consistent and clear: all of Mosaic's Esterhazy 1,170 employees must make it home safe at the end of the day. In the beginning, it was almost an acculturation to a lot of the employees who had grown up on farms and had seen their families through the Great War. Safety was not a priority in their lives, and missing fingers and deceased family members due to farming accidents were considered commonplace. Working at a mine where safety was of utmost importance helped keep employees on the job, as well as attracted new workers to the site. They were instructed to not only be safe at work, but to make it part of their daily lives at home. To this day, Mosaic is a world leader in safety procedures, and in its wake has created an environment of healthy families and safer communities. ♦



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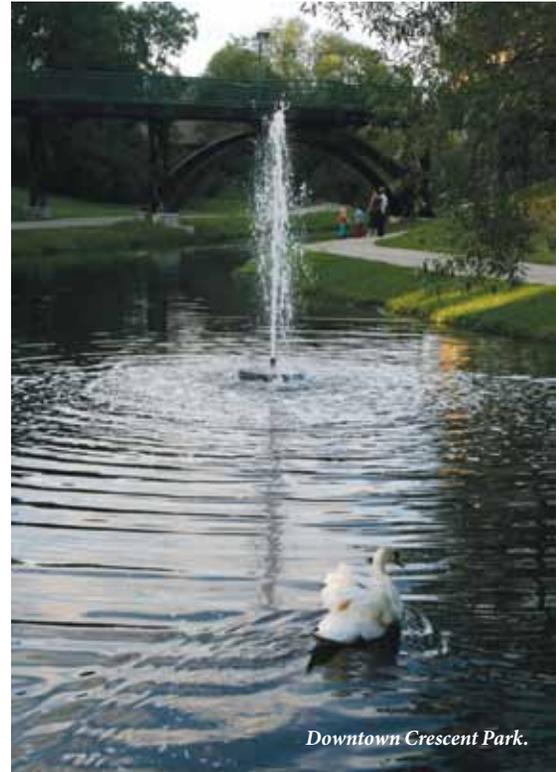
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# The Moose Jaw advantage - the right place to live, work and play!

By Ron Walter



*Canoe on Moose Jaw River.*



*Downtown Crescent Park.*

**T**he first Saskatchewan potash mine in nearly 40 years is under construction just a 30-minute drive northwest of Moose Jaw, and that is an opportunity the growing city wants to capitalize on.

When the feasibility study for the Legacy potash mine came in with a positive opinion, City of Moose Jaw officials virtually salivated at the prospect. With the benefits of a nearby potash mine demonstrated since the early 1960s, Moose Jaw wanted to expand on that opportunity.

"We did whatever we could to assist the mine in locating local suppliers and expanding our business base," says Deb Thorn, Moose Jaw director of economic development. "We know from past ex-

periences that about half the employees from the Mosaic mine at Belle Plaine choose to live in Moose Jaw and commute to work."

Initial indications are that one-third to one-half of the K + S Legacy mine employees will live in Moose Jaw. The city, with a population of 35,508, offers plenty of solutions to the mines needs from local service businesses, fabricators, cement plants, and educational institutions.

"We have a range of service businesses interested in working with the mine," says Thorn, adding that the city agency hopes to keep Moose Jaw business operators aware of the opportunities and how to take advantage of them.

A skilled labour shortage has been identified as one of the most significant issues facing the development of a mine, both in the construction phase and when the mine is commissioned in 2016. The Saskatchewan Institute of Applied Science and Technology (SIAST), with its Palliser Campus in Moose Jaw, is providing part of the solution to skilled labour shortages. The Palliser Campus provides classroom training for the building trades apprenticeship programs. SIAST is prepared to develop special programs for industry needs, such as underground mining programs now offered in Saskatoon. The local campus graduates a steady stream of potential employees in engineering technology instrumentation, electrical engineering, environmental sciences, as well as business and infor-

mation technology. Housing needs for a growing local workforce are under development. Three housing subdivisions are creating brand-new neighbourhoods in the city, one an upper-scale project on the north side, another focused on 400 units of attainable workforce housing on the south side. Ground has just been broken on the first phase of a 400-unit housing development on the city's south side.

Moose Jaw has all the amenities of a big city, but has that small-town feel a place where neighbours know and look out for each other, says Thorn. Moose Jaw is a very family-oriented community with great schools.

"I think it is children's sports and recreational programs that make it such a great place to raise family. The range of recreation facilities runs from minor hockey rinks, soccer fields, baseball fields, tennis courts to an indoor swimming pool, all complemented by sports programs," says Thorn.

Recent additions are the Yara Centre, an indoor soccer field with walking track and gymnasium, and the 4,400-seat Mosaic Place. Mosaic Place arena is home to the Moose Jaw Warriors Western Hockey League team and has offered numerous



*New housing development.*



*Mosaic Place, seats 4,400.*

concerts from John Mellencamp to Terri Clark and the Moscow ballet.

"People are travelling to Moose Jaw from all over the world to visit our tourist attractions, such as the Temple Gardens

Mineral Spa, the Tunnels of Moose Jaw, the Yvette Moore Gallery, and the historical Mae Wilson Theatre," she said. "And then there are those of us so fortunate to call Moose Jaw home. And we want to welcome others to do the same." ♦

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# Saskatoon Tribal Council - Opening doors to industry for aboriginal workers



Tribal Chief Felix Thomas.

Whether it's potash, oil/gas, uranium, or any other industry sector, Saskatchewan is rich in a variety of natural resources, which is moving our province into the forefront of economic growth and development. At the centre of that growth is the mining industry. In 2011, the estimated value of the province's mineral production was approximately \$9.2 billion, making the Saskatchewan mining industry the second largest in Canada in terms of value of mineral sales.

With the increased economic and industrial growth that has taken place in the province comes an increased need for a strong and sustainable workforce. A recent report from the Saskatchewan Mining Association (SMA) and the Mining Industry Human Resources Council (MI-HRC) indicates that the mining industry will require as much as 15,000 additional workers by 2022 in 120 career options.

## **Saskatoon Tribal Council - building progressive partnerships for the future in Saskatchewan**

The Saskatoon Tribal Council (STC) is a First Nations organization dedicated to improving the quality of life for First Nations through economic development, health, education, and safety initiatives. STC represents the seven First Nation communities of Kinistin, Mistawasis, Muskeg Lake, Muskoday, One Arrow, Whitecap Dakota and Yellow Quill.

In the past three years the organization has been successful in engaging the potash industry in working together on aboriginal recruitment and retention. Dennis Esperance, STC's business partnership manager, attributes the organization's success to Tribal Chief Felix Thomas' vision to build capacity in the aboriginal community by creating the opportunities for success. With the destination set, STC was able to develop a strategy to address the demand for workers in the potash industry, while creating employment opportunities for aboriginal people.

"Our objective is to increase the level of aboriginal participation in the potash industry," explained Esperance. "To do this, we needed to promote STC as a viable partner. We knew we needed to engage partners in the industry who share this common goal. With four-out-of-five PotashCorp mines located within an hour drive of Saskatoon, it made sense to approach them as a potential partner."

After numerous meetings and deliberation throughout 2010 and 2011, a formal-

Tribal Chief Felix Thomas and Garth Moore, president, potash division, PotashCorp signing the historical first-ever partnership between a First Nation and PotashCorp in the province of Saskatchewan.



ized partnership agreement was signed in October 2011 at the STC fall legislative assembly, witnessed by the STC member First Nations chiefs and councils. A traditional pipe ceremony marked the beginning of this new historic partnership.

As part of the agreement, STC now assists PotashCorp with recruitment, short-listing and participation in first level interviews — a process that is out of the norm for PotashCorp’s human resources department, but has proven successful.

“We don’t use employment-equity quotas. Aboriginal applicants are hired based on their own merit and credentials,” said Esperance, adding that being part of the hiring process from recruitment to recommendation ensures success for both the applicant and PotashCorp. As part of the agreement, STC also supports the PotashCorp procurement strategy through facilitating aboriginal contractors.

With the establishment of a long-term relationship with PotashCorp, STC continues to entertain similar relationships with partners in other industries to continue building capacity in the aboriginal community.

One advantage of the STC model is that it can be adopted by any industry to meet recruitment needs. The success of the STC-PotashCorp partnership model has caught the attention of other potential industry partners.

Communication has been key to sustaining a strong partnership, according to Esperance. Continuous dialogue with partners is crucial in ensuring goals are being met.

Through this progressive partnership model, the Saskatoon Tribal Council is treading a path in Saskatchewan to address the challenges faced by the mining industry in attracting and retaining a strong workforce. By meeting in the middle, PotashCorp and other industry partners are helping create opportunities for aboriginal people to participate in the province’s flourishing economy. ♦



*Tribal Chief Thomas presenting a miniature canoe to PotashCorp's Garth Moore signifying that the partnership signing between STC and PotashCorp will be infinite, like the canoe can go down the river forever.*



Saskatoon Tribal Council is a catalyst for success

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# Serving Saskatchewan's Métis



By Jillian Mitchell

**T**here's no doubt about it — Saskatchewan is a booming economy. And, the plus side is that there's an opportunity for everyone.

Working diligently to ensure the province's Métis entrepreneurs and communities capitalize on the opportunities created in this vibrant economy is the Clarence Campeau Development Fund (CCDF). The fund was established in 1997 through an agreement between the Métis Society of Saskatchewan Inc. and the Province of Saskatchewan in an effort to create an economically independent and self-sustaining Métis community, while contributing to the greater economic environment.

"CCDF is committed to assisting Métis people to take advantage of the window of opportunity that exists for jobs and wealth creation in the province," says Roland Duplessis, chief executive officer of CCDF.

Since its founding, the CCDF has played a lead role in the creation and expansion of Métis-owned and operated businesses in the province, and its success is clearly evident in the numbers. In excess of \$42 million in funding has been allocated in the last 15 years to 768 businesses. This funding has leveraged an additional \$115 million in conventional financing and \$20 million in client equity, resulting in well over 7,200 direct and indirect jobs.

In the resource sector alone, the stats are equally encouraging. The organization's Métis Energy and Resource Program (MERP) reports approving equity contributions of \$4.5 million in the past three years, leveraging client equity of \$2.5 million and resulting in 287 direct and indirect jobs and a socioeconomic impact benefit of over \$28 million for the province of Saskatchewan. The \$8 million program was jointly funded by the federal government and CCDF.

As Steve Danners, the director of the MERP program reports, recent meetings with the potash industry have proven to be "very encouraging". According to Danners, both parties agree that "more needs to be done in reaching out to Métis entrepreneurs and Métis communities to ensure fair and equal access to contracts."

Danners also recognizes the importance of CCDF in assisting Métis communities to become business-ready and to assist Métis entrepreneurs so that they may reach the levels necessary to compete through procurement and ever-increasing competition through new trade agreements.

"Responsibility is a two-way street," states Danners. "We as Métis have a responsibility to ensure our businesses are to the stan-





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dards required by the sector. Industry has a responsibility to provide fair and equal access to the opportunity for Métis.

“MERP, through meaningful and transparent partnerships with industry, as well as various levels of government, will continue to advocate and promote Métis inclusion in the potash sector and the Saskatchewan economy.”

The fund provides programs such as the Business Plan Assistance Program, Loan/Equity Contribution Program, Mé-

tis Women and Youth Equity Programs, Community Development Program, Large-Scale and Joint Venture Program, Métis Energy and Resource Program and support for Aftercare Program. Funding through the organization is designed to complement, not replace, funding from conventional lending organizations, such as banks and credit unions.

“The programs really address the lack of equity capital available to Métis in the province. By providing seed capital, CCDF helps to bridge the gap between a client’s own equity and long-term conventional financing,” says Danners. “CCDF has really been able to assist small- to medium-size businesses at the grassroots level and watch them grow over the years into larger companies that have been extremely successful.”

CCDF also houses the Métis Economic Development Sector, an initiative that acts as a conduit of information between industry, government and entrepreneurs, while assisting in the creation of viable Métis-owned businesses. It has created and maintains the first-ever Saskatchewan Métis Business Directory, which advocates on behalf of Métis-owned businesses to industry, government, and private-sector businesses. Fostering business opportunities is the primary goal of the Métis Economic Development Sector.

As the Métis Development Fund was legislated under the Gaming Corporations Act in 2001, CCDF has a major role to play in economic growth in the province. With an equity base of \$30 million, client receivables in excess of \$13 million, and annual approvals in excess of \$5 million, the fund has proven to be highly successful in meeting its goals.

“We are excited over the relationships we have built with our stakeholders and expect our growth and the growth of Métis business in the province to continue,” concludes Duplessis. “Thanks to the determination of Saskatchewan’s Métis entrepreneurs and the passion of the staff, CCDF has become Canada’s leading Métis Financial Institute.” ♦



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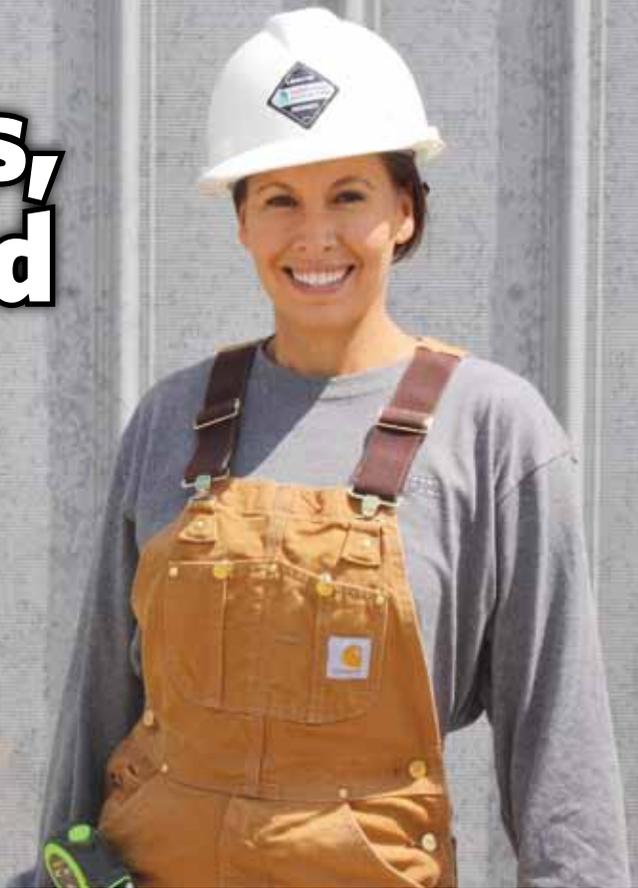
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# Partnerships, diversity, and inclusivity: keys to success



By Kent E. Peterson

**I**t has been a period of transition for the Saskatchewan Building Trades Council. New labour laws, several years of sustained economic growth, and a shifting population demographic have made modernizing a necessity for the council of 13 affiliated construction trade unions.

“The last few years have presented many challenges,” said Terry Parker, business manager for the Saskatchewan Building Trades, “but we turned those challenges into opportunities, and we are stronger because of it.”

One such challenge was amendments made to the Construction Labour Relations Act in 2010. The amendments included a number of detriments to industry competitiveness, as well as worker safety and representation.

“We did not like what the amendments did to the industry,” said Parker, “but once the amendments were passed, we knew we had to change how we operated if we wanted to continue our legacy of excellent representation for members, good jobs, great training, and safe workplaces.”

Another challenge was that of sustained economic growth and the corresponding expansion of the construction sector in Saskatchewan.

“Virtually over night our affiliated unions had many more jobs to fill than they had members,” Parker said, “If we wanted to remain on jobsites and in partnerships with contractors, we knew we had to find a solution to this increased demand,” he added.

In tandem with economic growth came population growth. The

demographics of Saskatchewan were changing, and the Saskatchewan Building Trades saw it as part of the solution.

“People were, and are, coming to the province from all over the world, not to mention Saskatchewan’s large, young, and vibrant First Nations population here at home,” he said adding, “these realities forced us to modernize how we operate. It has been challenging, but rewarding.”

To respond to the above challenges, the council used one of its many structured advantages to ensure that the demand for workers was being met.

“In the unionized construction trades we have a unique ability to bring skilled unionized workers into Saskatchewan from other parts of the country. This helps us ensure demand is met, while at the same time guaranteeing that those workers are fairly paid and treated respectfully.”

The Saskatchewan Building Trades also forged partnerships with government and industry, as well as built its own capacity, to ensure that proper training and apprenticeship opportunities existed for skilled workers. Also, in addition to working with our partners, several affiliated unions built their own multi-million dollar, state-of-the-art training facilities.

“Unionized construction workers are the best in the industry, and we work hard to maintain that competitive advantage.”

Finally, the council has re-envisioned what it means to be a skilled trades worker. As influenced by demand for skilled workers, changing demographics, and their own desire to always do bet-

ter, the council reached out to groups of people who have traditionally been underrepresented in the skilled trades industry.

“People have in their mind what a typical construction worker looks like,” said Parker, “well that typical definition does not work and we need to make our industry welcoming to all groups of people.”

To date, the Saskatchewan Building Trades have undertaken partnerships with First Nations leaders and communities, as well as shifted their communication and organizing efforts to reach a broader group of potential apprentices and journeypersons.

“If we, as construction unions, are not welcoming to women, aboriginal people, LGBTQ workers, new Canadians, and any group of marginalized people, then we are dead in the water,” he said, “reaching out and being inclusive is not only good business, it’s simply the right thing to do.” ♦



# Saskatchewan Building Trades

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# Building on the past to **expand** for the future

By Lance Hiltz

**S**askatchewan's potash industry came into being in the 1960s. New mines that were being developed required water and the Government of Saskatchewan established a Crown corporation, the Saskatchewan Water Supply Board, which is known today as SaskWater, to meet that need. A mutually beneficial relationship was born.

In 1966, the Saskatchewan Water Supply Board began construction on the Saskatoon Southeast Water Supply System (SSEWS) canal. It was the first water supply system built by the newly-established Crown, and officially opened in 1968.

"Developing infrastructure to supply water for Saskatchewan's burgeoning potash industry has been a key ingredient in building the strong, diverse and growing economy we enjoy today," says Ken

Cheveldayoff, Minister of Environment and Minister Responsible for SaskWater. "SaskWater has always maintained strong ties with the potash industry in order to ensure reliable service to meet changing demands."

Today, SaskWater's Saskatoon Southeast Water Supply System is a multi-purpose non-potable water supply system. It includes 137 kilometres of canals, six reservoirs, and associated pipelines. It supplies untreated water from Lake Diefenbaker to potash mines and municipalities, as well as irrigation, recreation, and wildlife projects.

Saskatchewan has many other canals, but they are used exclusively for irrigation. The SSEWS is unique because it is the only canal in Saskatchewan that supplies water to communities and industry. It is

also the longest canal in the province.

Water from the Eastside Pump station at Gardiner Dam on Lake Diefenbaker travels north on the M1 Canal and is deposited in the Broderick Reservoir, where the SSEWS canal begins. From here, the water travels east on the canal through reservoirs at Brightwater, Blackstrap, Bradwell, Zelma and finally Dellwood. From these reservoirs, the water is pumped through pipelines to various customers. The reservoirs along the SSEWS are owned by the Water Security Agency, and SaskWater owns the canal and handles operations for the system.

Major industrial customers supplied by the SSEWS include Potash Corporation of Saskatchewan (PCS) Lanigan, PCS Allan, and Mosaic Potash Colonsay ULC.



Installation of the Zelma East project pipeline from Zelma Reservoir to the BHP Billiton Jansen mine site.

PHOTOS BY DAN WALL.

“The potash industry greatly improves the economics of this system,” says Ken Cheveldayoff.

Municipal customers along the SSEWS include the communities of Shields, Viscount, Guernsey, Lanigan, and Broderick. SaskWater also operates water works that supply irrigation districts totaling 8,200 hectares, individual irrigators, recreation – including Blackstrap Lake – and wildlife projects along the SSEWS system.

The SSEWS system is an important mile-

stone in SaskWater’s history, and continues to play a crucial role in the corporation’s growth and vision for the future. SaskWater is currently undertaking an expansion of the SSEWS system to supply non-potable water to the BHP Jansen mine.

The new water system will consist of a pump station/intake, 94 kilometres of pipeline, and a booster station, sourcing water from the Zelma Reservoir on the SSEWS. SaskWater is upgrading the dam

at Zelma and several kilometres of canal to handle the increased volume and maximize canal flow.

In addition, SaskWater has begun major refurbishments along the entire length of the canal to ensure the safety and reliability of the system. By increasing the capacity of this system and ensuring the smooth flow of operations, SaskWater is able to meet the water needs of the growing potash industry and prepare for future opportunities that may arise in the area. ♦

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# Intrepid Potash expands with the opening of its sixth facility

Intrepid Potash is a U.S.-based company that produces potash and langbeinite minerals in support of the agricultural and industrial markets. As Intrepid's facilities are very proximal to the end users, most of its product is sold into the North American market. Intrepid operates five potash production facilities which are located in New Mexico and in Utah, and is currently completing construction of its sixth facility — the HB solar solution mine, also in New Mexico.

The majority of Intrepid's production and subsequent sales come from its New Mexico facilities which utilize convention-

al room and pillar mining to extract potash ores. The ores are then processed either by flotation, hot leach, and crystallization, or dense media separation to produce potash and langbeinite.

Solar solution mining, another method of extracting and recovering potash, has been at the heart of Intrepid's business model since it started the company with the acquisition of its Moab property more than 10 years ago. By introducing horizontal drilling technology, Intrepid stabilized the declining production volumes and newly developed caverns, coupled with solar evaporation, provided a formula for

stable, long-term, low-cost potash production. Solar solution mining is also utilized at Intrepid's Wendover facility, where brines are extracted from the Bonneville Salt Flats, evaporated from solar ponds and processed to produce potash.

Favourably located in climatic areas where solar evaporation can be a preferred option, Intrepid is once again embracing this method of extraction and recovery as it develops and prepares to operate the HB solar solution mine in New Mexico. Nearing commissioning, this project will provide additional long-term, lower-cost production to Intrepid's portfolio. ♦



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# CanNorth: Making an environmental difference for the potash industry

**W**hile potash is known for its distinctive pink colour, one company is adding plenty of green to the mix. CanNorth (Canada North Environmental Services) is a private environmental consulting company that provides high-quality, cost-effective services with a well-known specialization in mining developments.

“CanNorth has so much to offer to any company in the mining industry,” says Samantha Pham, a senior aquatic biologist at CanNorth. “First, we have extensive experience with regulatory issues, which is very important. Also, from project design right through to construction, operation, and decommissioning phases, we assist companies in both preventing and mediating environmental issues and concerns.”

Through its newly expanded Aquatic, Terrestrial, Heritage/Archaeology, Hydrology, and Geomatics divisions, CanNorth offers over a dozen areas of expertise. Some of its many services include Environmental Impact Assessments (EIAs), environmental baseline assessments and monitoring, aquatic and fish studies, aquatic toxicology, water-quality investigations, hydrology, species-at-risk assessments, wildlife and vegetation assessments, habitat evaluation and restoration, Heritage Resources Impact Assessments, and mapping services. With the company’s consistently delivered, high-quality products, mining companies are taking note. Indeed, CanNorth’s clients include some of the largest Canadian and international mining companies. And while 2013 has been a marked year of growth

for CanNorth, the company’s expertise and accumulated experience is served by its rich, 30-plus year history.

While CanNorth was incorporated in 1997, it was created through its predecessors in 1981. CanNorth is 100 per cent aboriginal-owned by Kitsaki Management Limited Partnership, the business arm of the Lac La Ronge Indian Band. As a First Nations company, CanNorth makes every effort to maximize aboriginal involvement in projects, including education and employment. Coupled with the company’s aboriginal ownership, CanNorth’s high standards of quality, environmental, and health and safety management that exceed international standard requirements, make CanNorth truly unique.

In fact, CanNorth is the only First Nation-owned consulting company in North America to have earned ISO 9001 certification for quality management, ISO 14001 certification for environmental management and stewardship, and, recently, OHSAS 18001 certification for occupational health and safety. CanNorth’s general manager Peter Vanriel set the mandate when it comes to health and safety.

“CanNorth is committed to providing occupational health and safety standards to the highest achievable level to all employees to ensure the safety of both personnel and property. This includes occupational health and safety improvements by the company and staff in both field operations and office setting,” says Vanriel, adding that to emphasize the importance of health and safety for the company, CanNorth is also a member of IS-Networld.

*CanNorth is committed to providing occupational health and safety standards to the highest achievable level to all employees to ensure the safety of both personnel and property.*



And, recently, with the dust of construction still clinging to the bottoms of shoes, CanNorth's nearly 50 employees have just settled into their new building in Saskatoon, an exciting development to be sure. The 20,661-square-foot building on Wheeler Street boasts a litany of green initiatives, such as the use of LED lighting and recycled building materials. CanNorth's new building is reflective of the company's growth on every level. Along with its expanded departments from one — Aquatics — at its origin, the number of staff, too, has grown remarkably in the past few years and is nearing 50, up from 22

just three years ago. And, there is no slowdown on the horizon; anyone who strolls through the bustling new building will notice a number of empty offices. The empty offices, says Pham, "reflect our trajectory for growth."

With its strong, 30-year history, its internationally accredited management systems, and now the space, CanNorth has the foundation and trajectory in place to grow not only into new mining sectors here at home, but also into international markets. ♦



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# Contracting safety

## Considerations for keeping worksites safe

By Ryan Shebelski, lawyer, McKercher LLP Saskatoon



According to a 2010 survey of data collected by the Association of Workers' Compensation Boards of Canada, on average in Canada, 14.7 workers out of 1,000 suffered a workplace-related injury. For Saskatchewan, where the largest percentage of Canada's potash operations exist, that number jumps to 23.5 out of 1,000, second only to Manitoba. Employers are responsible to maintain a safe workplace, and this becomes particularly important within industries, such as the potash industry, where an employee may be required to work in a safety-sensitive position. One method employers use to maintain a safe workplace, when safety-sensitive positions are at issue, is drug and alcohol testing of employees. But the potash industry does not operate within a vacuum of its own employees; it also requires the skills and experience of external contractors and their workers. The contractor's employees may be fulfilling safety-sensitive positions within the potash facility, and as a result, the option of having the contractor's employees submit to drug and alcohol testing should be explored.

When negotiating a contract for services with a contractor to fulfill safety-sensitive positions in your facility, it is important to be aware to what extent the contractor can require alcohol and drug testing from its employees. The recent Supreme Court of Canada case, *Communications, Energy and Paperworkers Union of Canada, Local 30 v. Irving Pulp & Paper, Ltd.* ("Irving"), has stated, with respect to unionized employees, that random or blanket drug and alcohol testing should only be done in "extreme circumstances" or where there is a general workplace substance-abuse problem. It is left to be seen whether or not the courts will generalize this decision to non-unionized employees.

The terms of drug and alcohol testing of a contractor's employees should be clearly set out in the contract for services you negotiate with the contractor. This should include a covenant by the contractor that it will give its employees, who will occupy safety-sensitive positions at the facility, advanced warning that the employees will be subject to a drug and alcohol test before entrance to

the potash facility will be granted in order that the employee has sufficient time for a "clean-out" phase prior to the test. The contractor should also be required to advise its employees that a positive result will be reported to their employer and required to prevent that employee from being sent to the worksite. As a further consideration, a contractor's employees may be part of a labour union, and the contractor may, in accordance with the terms of the applicable collective bargaining agreement, be subject to express obligations or limitations regarding drug testing over and above those set out in the Irving case as referred to previously. The contracting party should inquire with the contractor to determine if any such collective bargaining restrictions apply.

When a contractor's employee fails to pass an alcohol and drug test, such a result may support the action of removing from, or disallowing entry to, the potash facility for that employee, but the contractor needs to be aware that the same cannot automatically result in termination of that employee. If the employee's failure to pass an alcohol and drug test is as a result of a disability (i.e. drug addiction), then the contractor will be required by law to accommodate that employee to the point of undue hardship.

Drug and alcohol testing can be an effective way to increase safety in a hazardous workplace. However, it must be undertaken with due attention to the law and pursuant to express and clear policy. ♦



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# Working with hearing loss

## Hearing impairment, noise, and job safety

By Arlene Jorgenson

### Dear safety nurse,

We're having a bit of an argument at work. I wear hearing aids from having worked in loud noise all of my working years. We didn't have hearing protection 20 years ago. Now I'm supposed to wear hearing protection all the time. I prefer the muffs so I can wear my hearing aids under them on low. I feel I can hear conversation better that way. The safety officer is bugging me that I can't do that, but my aids fit in my ear so that's also a bit of protection, right?

*Signed, Harry Millwork in Potash, Sask.*

### Dear Harry,

You have brought up a very good question. And one that I believe is confusing for many people! Let me try to explain what's going on. Hearing aids work by amplifying sounds like conversation and warning signals, but they also amplify harmful loud noise in the workplace. Noise amplified by hearing aids can easily exceed the Occupational Health & Safety Regulations eight-hour permissible limit of 85 decibels (dBA) as shown by laboratory testing and site visits. We want to carefully protect the hearing that you have left, Harry, not make it worse!

You suggest that since your hearing aids sit close in your ear, they're working as hearing protection. Hearing aids are not hearing protectors! Hearing aids are not designed as hearing protectors and do not work as hearing protectors.

Consequently, it is not acceptable to wear your hearing aids in noise hazard areas. You must wear approved hearing protection!

I want to assure you that your safety and the prevention of further hearing loss is your safety officer's primary concern. In your workplace where the noise is loud and everyone is wearing

hearing protection, the main means of communication is with visual cues, hand signs, and warning signals. You are already relying on this.

Here are some extra tips and tools that can help hearing-impaired workers function safely and effectively in the workplace without further risk:

- Use the ear bud on your cellphone for maximum clarity
- Choose a ringtone on your phone that is low pitch (you lose the higher pitches first)
- Use noise-reducing ear plugs or muffs with radio and cellphone plug-ins
- Electronic earmuffs enhance hearing of environmental sounds, as well as provide direct radio communication input
- Attenuated ear plugs or muffs with equal sound reduction at all pitches may provide a more natural and accurate hearing experience
- Use eye contact, body language, and unobstructed face-to-face contact to enhance communication
- Stand with your best ear towards the speaker, step closer
- In a group, tell the person beside you, you may need their help in repeating key messages

These new personal protective devices are amazing and so comfortable. You need a set for work and a set for home. The electronic muffs amplify signals, voice, and sirens while instantaneously suppressing dangerous noises. You can even choose the home set to have AM/FM radio in the headset. You can find these at any safety supplier in your area. Ask for a demonstration!

---

If you would like a two-page workplace hearing poster, please visit [www2.worksafebc.com/pdfs/hearing/WorkingWithHearingLoss.pdf](http://www2.worksafebc.com/pdfs/hearing/WorkingWithHearingLoss.pdf)

*Arlene Jorgenson is an occupational health nurse with a thing for ears and preventing hearing loss.*

*She is the CEO of HEALTHSERV (Sask), a division of WellPoint Health Services with clinics in Ontario, Saskatchewan, Alberta, and B.C. eager to look after all of your hearing conservation needs. Visit them at [www.healthservsask.com](http://www.healthservsask.com). ♦*



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# POTASH:

## A global industry, impacted by mega trends in society

By Derek Meates, CA, KPMG, audit partner

### **Global industry**

Potash is truly a global industry. You need look no further than Saskatchewan to see the presence of several multinational companies including PotashCorp, Mosaic, Agrium, K+S, BHP Billiton, and Rio Tinto.

Given the nature of the potash market, these producers are global players. Significant production takes place in North America, Russia, and Belarus, whereas demand is driven out of North America, Latin America and Asia, in particular, India and China.

According to the US Geological Service, Saskatchewan holds close to half the world's potash reserves and 35 per cent of global production capacity. This makes our province well positioned to continue reaping the economic rewards potash provides - especially given the global trends expected to play out into the long term.

### **Mega trends**

Recently, there has been significant focus on the balance of supply and demand in the market, due to the July 2013 announcement of the break up of Belarusian Potash Co. (BPC). *Mining Weekly* reported that this had the effect of wiping out \$18 billion in market capitalization of the major potash players. Concerns arose about the potential for potash price cuts, leading to declining profits for the industry as a whole.

The industry has significant barriers to entry. Billions of dollars in upfront investment are required to build a mine, and our current capital-constrained global markets add yet another challenge. Despite these constraints, new potash mines are being considered around the world, including Canada, the U.S., Brazil, the UK, and Ethiopia. The BPC announcement will likely hurt junior players the most, as only the most promising projects will likely attract the funding needed to jumpstart their projects.

Therefore, when considering the fundamentals of supply and demand, the longer-term, global social drivers – known as mega trends – take precedence. These trends are the forefront of the significant capital investment decisions being made today in terms of expanding capacity and developing new mines. Longer-term mega trends that drive consumption of food are key to predicting the future of the potash industry. These social drivers include: the expected growth in the world's population from seven billion to nine billion by 2050, the unprecedented migration from rural settings to urban centres, and the increased food demands from the growth of middle-class consumers.

It's hard to ignore comparisons such as the current spending on food – which varies significantly between developed and developing countries. For example, according to the US Department of Agriculture, China's annual food expenditure per capita is US\$338, compared with US\$2,087 in the United States. As this gap closes, more potash will be required to produce foodstuffs.

### **Other factors critical to food supply**

Potash is an integral part of the food supply chain. A variety

of global factors continue to impact the demand for crops and foodstuffs.

It's no surprise that the availability of affordable, quality-certified foodstuffs is a matter of national interest, whether it is from a perspective of national security or health. Hence, politics continue to play a significant role. The political influence shows itself in disputes such as the BPC break up, restrictions on foreign investment, and government subsidies.

Other global factors that will continue to impact foodstuffs – and consequently, drive potash demand – include the debate over the best use of diminishing arable land, the trend towards urban migration, and climate change considerations, such as water use.

KPMG member firms offer global connectivity through our 14 dedicated mining centres in key locations around the world, working as one global network. They are a direct response to the rapidly evolving mining sector and the resultant challenges industry players face. KPMG's experienced team of mining professionals assist clients throughout the entire mining asset lifecycle. Our people are deeply experienced in the industry and are knowledgeable of local laws, customs, and practices. ♦



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For today's mining companies, dealing with uncertainty has become a way of life. Globalization, commodity price volatility, environmental regulations, and access to capital are just some of the issues that introduce new layers of complexity into business decisions.

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For more information on how KPMG's Mining professionals can assist your business, please contact us at 306-934-6200.

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# The Infinity Development Corporation: engaging industry

**T**he Infinity Development Corporation (IDC) is a Métis company supplying goods and services through partnerships to industry, including but certainly not limited to: personal protective equipment, electrical, ground support and maintenance, repair and operations requirements to services that include civil and mechanical construction, health, security and safety, plus many more goods and services.

IDC is owned by Eastern Region II, Métis Nation-Saskatchewan, with the mandate to expand the economic opportunities for its shareholders and the Métis citizens of Eastern Region II. Helene Johnson has been regional director for Eastern Region II for the past 17 years and has worked with IDC from concept to incorporation.

“Eastern Region II (ERII) has been in operation for over 40 years. During this time we have achieved vast management experience, which has allowed us to focus on strategic investment and

partnership opportunities. Our economic development corporation offers a professional community-based vehicle to identify and manage various economic ventures,” says Johnson.

Since its inception in 1968, Eastern Region II, Métis Nation-Saskatchewan (ERII) has strived for self-sufficiency through business development. In 2010, ERII signed an agreement with the Business Ready Investment Development Gateway (BRIDG) to assist in the creation of a development corporation. In 2012, IDC was created to become the arms-length economic development affiliate of ERII. IDC’s primary focus is on the provision of goods and services to industry through joint ventures and partnership agreements with established and reputable companies. ERII is committed to the separation of its political/governance affairs from its business operations. Within this context, the intent of the corporation is to operate based on its own corporate bylaws, resolutions, and policies. Corporately responsible, IDC will pay dividends into a community development foundation for the citizens of ERII, thus improving the socio-economic conditions of the Métis people of ERII.

IDC is committed to fulfilling their vision and mission through business and partnership development with a strong focus on the mining industry within their territory. The unique geographical location has afforded them the opportunity to identify many resource sector-specific opportunities to enter into discussions regarding the procurement of goods and services in both the construction phase, as well as mill/mine operations. IDC currently has entered into 14 partnership agreements to meet construction, maintenance, and operational requirements of industry.

“We are extremely proud of the partnerships we have formed over the past 18 months. One of which is a Fortune 500 company, and we look forward to moving forward with our partners as we build upon this foundation,” says Ryan Calder, chairman/CEO of the Infinity Development Corporation.

Within a strong Saskatchewan economy, the Infinity Development Corporation has positioned itself to ensure the Métis community of Eastern Region II is fully engaged and participating in the economic fabric of Saskatchewan.

For further information on the Infinity Development Corporation and its partners, see their display advertisement on this page. ♦



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**Infinity Development Corporation is an Aboriginal Company located in Saskatchewan that supplies industry with goods and services through partnerships and preferred access to contracts.**



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PDAC 2013:

# Where the world's mineral industry meets

Always in Toronto, always in March; a lot to do, a lot to see — the world's largest mineral exploration convention, as hosted by the Prospectors & Developers Association of Canada (PDAC), can be akin to “the Oscars” of industry, a definite not-to-miss event!

“The PDAC convention has become the showcase for mineral exploration and development around the world,” shares Ross Gallinger, executive director for the PDAC. “It has become the must-attend event for everyone who has or wishes to connect with the exploration and mining community. It truly is the world's gathering place and remains an important showcase of the industry.”

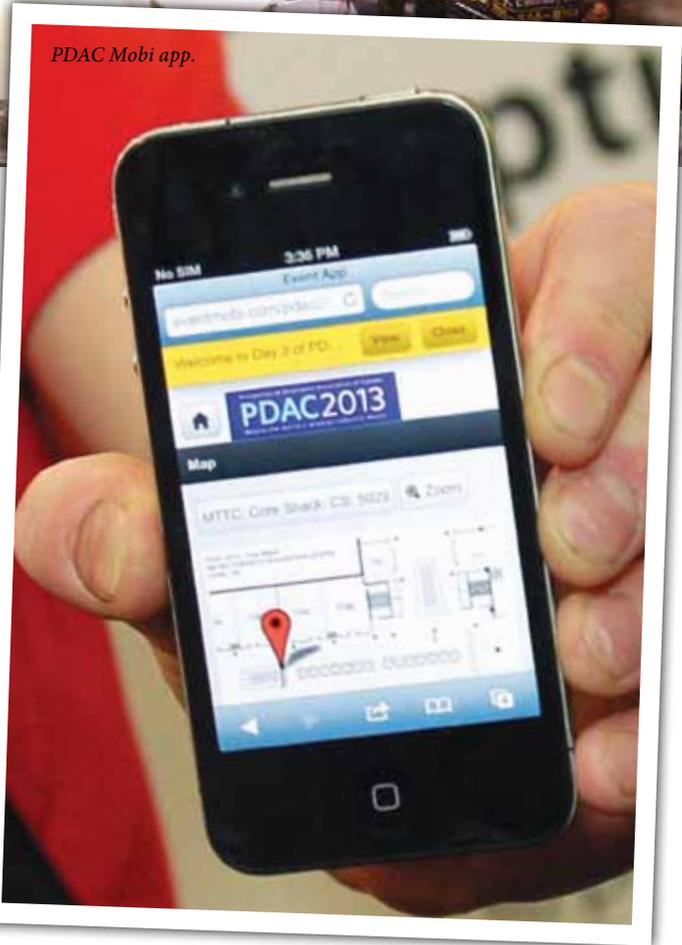
Each year, over 30,000 attendees from 125 countries congregate in Toronto for the four-day convention. Close to 200 educational opportunities were offered at this year's event, which kicked off March 3<sup>rd</sup> at the Metro Toronto Convention Centre (South Building), with over 500 speakers and 1,200-plus booths present between the Investors Exchange and Trade Show. Social and networking events rounded out this exceptional conference.

An added perk to the 2013 PDAC festivities was Mobi, the official mobile convention guide. Launched in 2012, Mobi was designed to offer attendees a richer convention experience, says Gallinger, by enabling participants to download everything from program schedules to exhibits and technical sessions, as well as the online interactive floor plan, in real time.

“We've had tremendously positive feedback on our mobile convention guide,” he boasts. “Our delegates tend to live on their smartphones, so we designed a mobile offering to help improve their experience by making it more convenient than searching through the printed convention program.”

The core foundations of the convention — which include professional development, networking, information exchange, identifying good practice, innovation, and sourcing new ideas — have been well maintained at the Toronto staple since its inaugural kickoff in 1932. New to this year, however, was the PDAC's recent rebranding, which Gallinger describes as “multi-faceted, geographical, flexible and modern,” a “perfect reflection of our organization and the role we play within the industry.”

PHOTOS COURTESY OF THE PDAC.



*PDAC Mobi app.*

For over 80 years, the City of Toronto has been the heart of the annual PDAC convention. In turn, the event has proven to be an important revenue generator for the city. A 2011 study conducted by the Ontario Ministry of Tourism estimated that the event contributed nearly \$72 million to the local economy (27,700 people attended the convention that year). Overall, as the PDAC executive director suggests, hosting more than 30,000 people for the second year in a row, especially in a down market, is a “major success.”

“People don’t often think of Toronto as a ‘mining town’ but it really is,” says Gallinger, highlighting the city as the global financial capital for the exploration and mining sector (with 60 per cent of all public mining companies listed on the TSX and TSX-V). “Toronto is a world-class city and provides a fantastic backdrop to the PDAC Convention.”

This year, the PDAC event hosted more than 600 self-identified aboriginal delegates. The Corporate Social Responsibility (CSR) Series also experienced growth, providing an exceptional opportunity for important dialogue among stakeholders. Politically, more than 50 members of parliament (MP’s), including six cabinet ministers, as well as senators, premiers, provincial cabinet ministers, and a number of other elected officials attended the 2013 event. International delegates maintained a strong interest, with more than 7,500 attendees representing 126 countries, including 60 exhibiting governments.

“The success of this convention really can really be attributed to the people that put the event together,” he concludes. “The PDAC convention team, the committees and volunteers who

help ensure that the event goes off perfectly are at the heart of success. Together they design and execute a program that no other industry event in the world can rival in terms of educational offerings, companies and countries present, and overall, the number of delegates attending.”

For more information, please visit the PDAC’s website at [www.pdac.ca](http://www.pdac.ca). ♦

# Athabasca Catering's recipe for success

By Kevin Danchuk, business development & marketing manager



**A**thabasca Catering is a 100 per cent Northern Saskatchewan First Nation-owned and operated company, with over 20 years of proven service to the mining industry. The five equal partners are English River, Hatchet Lake, Black Lake, and Fond du Lac Denesuline First Nations and Lac La Ronge Indian Band (Kitsaki). We operate in remote industrial camp settings ranging from 20 to 950 workers at nine or 10 different locations in Saskatchewan. They include Cameco's Key Lake, McArthur River, Rabbit Lake, and Cigar Lake. We service Areva at McClean Lake, and Golden Band Resources at two locations, Jolu Mill and Komis, where we supply the camp and catering. We provide camp and catering services to SaskPower at their Island Falls Power Station, and our most recent projects include two con-

struction camps for Valard Construction in the Brabant Lake and Key Lake region and regions. Past-completed projects include Shore Gold's Diamond Mining camp in the Forte a la Corne forest, and Woodland Cree Logging's logging camp.

We believe that remote-site catering by a local and established company can be a rewarding experience for our clients and employees. Our managing partner Kitsaki Management Limited Partnership, with their 30-plus years of business experience, gives us the support and managerial oversight we need to succeed. We specialize in local, First Nation, and aboriginal hiring, and understand the need in today's remote industrial setting to develop and invest in training, which allows relatively new entry-level workers to safely gain skills and experience in the service indus-

try. Many of our employees move on to management positions within our company, and these long-term employees are a testament to our ability to develop our staff. We believe that providing high-quality customized service is an expectation of today's clients. We have senior managers on site available to our clients to ensure we are problem solvers, and our 20-plus years of industry experience backs that up.

Athabasca Catering recently renewed our safety commitment by engaging two full-time safety advisors. To safely and effectively work with new unskilled employees, you have to have proactive training and safety procedures in place. We are committed to our employees' health and safety and convert that commitment to daily safety performance. This is reinforced by our COR certification and verified by our ISNetwork grading by our clients.

Athabasca purposely excels at local hiring, specifically of aboriginal employees to reflect the general demographics of the project we are working at, as well as supporting First Nation and aboriginal employment. This is supported and mandated by the land lease agreements that our clients are bound by. Local hiring helps satisfy the client's criteria to desire for local involvement through employment and work opportunities. This model proved very successful in support of Shore Gold's camp by hiring almost exclusively from the James Smith Cree Nations.

We presently have 650-plus full-time permanent employees working at our various locations and another 75 casual staff. Work schedules are mostly week

*We believe that remote-site catering by a local and established company can be a rewarding experience for our clients and employees.*

in, week out. This balance of personal and professional time make working for Athabasca Catering more of a career than a job. We have thrived in the remote site catering industry for several reasons, among them is high client satisfaction, high-quality food and service, qualified and skilled management at all levels, and a willingness to do what it takes to get the job done safely, professionally and skillfully.

Our experience gives you the advantage your workforce deserves. ♦



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# Scott Land & Lease Ltd.

## provides land services for the potash industry



**S**cott Land & Lease Ltd. (Scott Land) is the largest and most experienced land company in Saskatchewan and the largest land buyer for clients in Western Canada over the past 20 years. With full-service offices in Lloydminster, Saskatoon, and Regina, and a team of 50 experienced, local professionals comprised of land agents, administrators, and project managers, the company has the resources, skills, relationships, and experience to ensure the success of our clients' potash projects.

In fact, the company president Gregg Scott grew up in Plunkett, Sask., not far from two potash mines in Colonsay and Guernsey.

"I remember when those first mines were built. My dad ran the hardware store in Plunkett and the construction of those mines was good for business, as well as for the community. It's wonderful to now be assisting those potash companies as they expand their operations, as well as the new players with plans to build new mines in Saskatchewan," said Scott.

Scott Land has been assisting the potash industry in a number of capacities. With land expertise in mineral rights acquisition, surface access and public consultation, Scott Land has been able to seamlessly transfer the skill sets and

knowledge acquired in its oil and gas business to the potash industry.

When permits or projects have a freehold mineral rights component, it is critical to be able to secure those rights in a timely and efficient manner. Scott Land has the expertise and experience to be able to negotiate and secure these vital interests that will allow your company to move their plans forward. Scott Land has leased over 250,000 acres of potash rights, with over 2,500 different freehold mineral owners for various clients over the last few years. Scott Land handles all interest registration and title curity issues, enabling clients to be rest assured that they have solid, legally binding potash leases. They also administer mineral agreements as they relate to rental payments and royalty payments, leaving client resources available for other tasks.

Scott Land has been leasing mineral rights for a variety of clients in a number of industries. They have unrivaled experience dealing with all leasing issues, including estate matters and hard-to-locate landowners. They understand both solution and conventional mining requirements and how they affect landowners. Scott Land is able to speak to Crown royalty structures with landowners and have a deep understanding of mineral owner motivations. This enables them to work independently and knowledgeably, which is vital to starting mineral owner relations off on the right foot. You never get a second chance at a first impression. Experience can make the difference to the success of your mineral acquisition program and they have plenty of it.

When it comes time to explore those Crown permits and freehold leases, Scott Land also leads the way in knowledge, experience, and results. From scouting locations, compliance with all regulatory requirements, land-owner negotiations, priority interest registration, acquisition of required third-party consents to environmental requirements; Scott Land does it all, delivered to you with guaranteed accuracy.

They take your exploration land needs from cradle to grave. Starting with seasoned and sound advice, to the final abandonment and reclamation process, Scott Land will keep your company apprised through the entire surface acquisition process with timely and accurate reporting, sound and knowledgeable guidance, all done at competitive rates.

When exploration is complete and its time to start planning your new mine and associated facilities, Scott Land's public consultation and community engagement team is there to see you over the final hurdles. They can negotiate fee simple purchases or long-term leases of your required land, assist your company's public relations and stakeholder messaging group, organize open houses, assist in dispute resolution, obtain municipal approvals, facilitate agreements and discussion with Crown corporations - all done professionally and cost effectively.

From green field projects to expansions at existing mines, Scott Land can assist and guide companies through all land-related requirements. Their relationships with landowners and key stakeholders generate time savings and project efficiencies. Competitive rates combined

*They have unrivaled experience dealing with all leasing issues, including estate matters and hard-to-locate landowners. They understand both solution and conventional mining requirements and how they affect landowners.*

with experienced people who live and work close to your project add up to reduced cost and great value.

Scott Land is the leader in the potash business. Benefit from Scott Land & Lease's experience, reputation, and in-depth knowledge.

For more information, phone Chad Morris at (306) 359-9000 or Greg Meidinger at (403) 261-6503 to learn how Scott Land can assist you with your potash projects. ♦



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# Serving potash for 45 years

## *Commercial Sand Blasting and Painting*

**A**n industry leader since 1968, Commercial Sand Blasting and Painting (CSBP) is recognized throughout Western Canada as a leader in surface preparation and the application of corrosion protection coatings and linings. The firm has worked on every potash mine construction/expansion project in the province of Saskatchewan since the early 1970s.

Their staff brings over 45 years of experience in the application of industrial coating and linings to customers for the protection of process equipment and other assets. With journeyman and apprentice tradesmen, technicians, NACE and SSPC-certified professionals, technologists and engineers, as well as strategic partners, they are here to provide you with service and technical expertise for all of your coating and lining needs.

CSBP offers the largest custom-built shop facilities in the province, along with the largest fleet of mobile equipment in the industry, all designed and maintained to achieve the highest possible performance standards for the industry. Providing year-round field services for mining, oil and gas, chemical, pulp and paper, and industrial companies throughout Western Canada, their services include:

- Industrial media blasting of all types
- Epoxy systems
- Latex systems
- 100 per cent solid-coating systems
- Installation of environmental containment systems
- Tank linings
- Fiberglass inspection and maintenance
- Abrasion-resistant linings, including ceramic tile and beaded systems, rubber, urethane, and epoxy-based systems
- Fireproof coatings both cement-based and epoxy/water-based intumescent
- Floor coatings
- Concrete surface repairs
- Industrial inspection services

Certified by industrial 100 per cent solids coating and linings suppliers, Commercial Sand Blasting and Painting specializes in this highly effective coating technology for corrosion control and containment systems.

Commercial has supplied coated structural steel to every industry within Saskatchewan, from single, to multi-coat systems, as well as fireproofing. They are certified for the application of fireproofing materials from several material suppliers.

The firm works with steel fabricators within the province, Canada, and the United States, as well as European suppliers to abrasive blast, coat and line special service equipment. With on-site cranes and specialty lifting equipment for the handling of items up to 300 tons at our shop facilities in Saskatoon, projects of all sizes can be handled easily.

The petrochemical industry in Saskatchewan, Manitoba, and Alberta require high-end coating and lining products to protect both their storage tanks and process equipment. This firm both coats and lines oil storage tanks, and oil and gas pipeline systems.

Commercial has provided industry with tiling and wear-resistant lining services since the early 1970's. From butted tile, to hex matt systems, to engineered tile placement, to even high-end beaded epoxy mortars. The firm has applied systems to every configuration of equipment and pipe spool system in the province.

Many operating facilities use fiberglass piping, tanks and process units for the delivery of liquid cargos throughout their plants. From the installation of new equipment to the maintenance of existing assets, their fiberglass technicians will help plan and execute your project.

With their large shops and 40 acres of fenced land, their forklifts and cranes, no project is too large to handle.

Their experienced staff is available for a complete list of inspection services for: structural steel, tanks and vessels, carbon, and stainless steels and structural fiberglass. We will assess the integrity of your coating and lining systems using both visual and destructive testing as required. Our NACE and SSPC-trained staff; engineers and technologists will provide inspections on industry-standard practices.

You will find Commercial Sand Blasting and Painting's headquarters and production facilities located just north of Saskatoon in the Corman Industrial Park.

Please visit their website at [www.csbp.ca](http://www.csbp.ca). ♦

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# buildsask

## access to opportunity

By Jillian Mitchell

**b**uildsask is a state-of-the-art Internet-based hub centralizing all five construction information services from the conception phase to bid result. Since its inception in 2011, buildsask has been classified as the “heartbeat of the province’s construction industry” earning the reputation among industry as the place to go for all ICI (Industrial, Commercial, Institutional) construction information.

In effect, this comprehensive, easy-to-use and simple-to-navigate hub is the largest ICI provider in the province, serving over 1,000 users from owners, general contractors, sub-contractors, design professionals, manufacturers, and suppliers.

“With such a large subscriber base, buildsask is the logical option for construction information opportunities through all stages of the bid process,” says Brenda Braaten, executive director of the buildsask partnership. “buildsask is the number-one choice for industry stakeholders to post up-to-date and accurate project information in the province of Saskatchewan.”

buildsask offers exclusive availability of information to stakeholders, explains Braaten. Once logged into the buildsask hub, users have access to five products and services:

**Pre-bid report** — a compilation of information starting from the conception phases of the bid process.

**online plansroom** — a province-wide collaboration hosting 1,000-plus construction bid opportunities annually via a secure web application.

**restricted-access plansroom** — This plansroom is for companies who wish to restrict exposure to their bid opportunities to invited firms.

**lows and awards report** — results of the top-three bidders on awarded projects.

**Link2Build** — the gateway to a rich database of 20,000-plus national construction bid opportunities that are aggregated from Canada’s local construction associations.

“The ability to market projects through one easy hub not only mitigates risk of error, but saves both time and money by having projects managed by the professional staff at the local associations,” says Braaten. “Members can also obtain a quick real-time report of what active projects exist in the planrooms by region.”

The online platform is a result of a partnership between four industry partners:

- Prince Albert Construction Association (PACA)
- Regina Construction Association (RCA)
- Saskatoon Construction Association (SCA)
- Saskatchewan Construction Association

“The name buildsask reflects exactly what the construction industry does and also speaks to the incredible growth Saskatchewan is experiencing,” says Braaten. “Each word of the tagline — access to opportunity — was specifically chosen to describe the purpose of buildsask: to provide access to construction project information and, in turn, support the investment climate of the province.”

Take the tour at [buildsask.ca](http://buildsask.ca)! ♦



## access to opportunity



buildsask connects the construction community — owners, design group, general and sub-contractors, manufacturers and suppliers — it is the heartbeat of the industry! access to opportunity is the tagline of buildsask and describes exactly what it is to the industry — opportunity to access procurement information in one convenient place.



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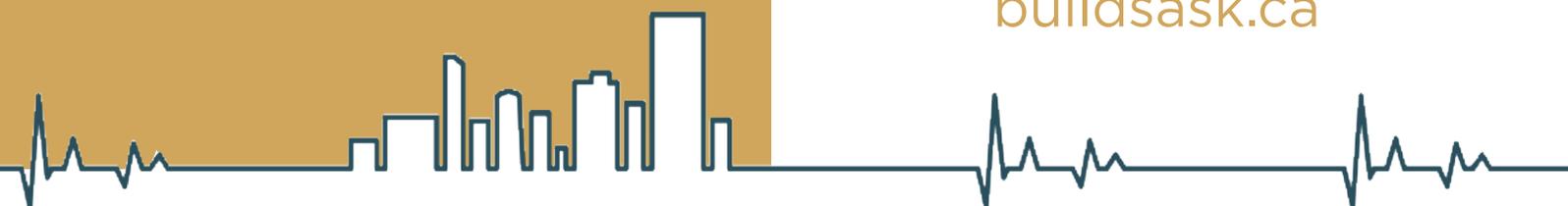
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[buildsask.ca](http://buildsask.ca)



# West River Conveyors furnishes reliable conveyor equipment to Mosaic

**W**est River Conveyors & Machinery Company is a leader in custom-built, custom-designed belt drives and conveyor systems. West River also stocks thousands of new and used conveyor equipment and parts ready to sell in a pinch.

In business for more than 30 years, West River Conveyors understands reliability of conveyor equipment in the mining industry. Since 2009, West River has supplied Mosaic with conveyor systems for their underground mining operation in Carlsbad, New Mexico. Upon initial conversations with mine engineers at Mosaic, West River realized their need for a reliable conveyor supplier to assist them with moving the mined minerals to the surface.

By collaboration between West River engineers and Mosaic mine engineers, a few different conveyor system designs were considered for use in their potash mine. The most innovative conveyor package chosen was one designed to be back-mounted, meaning that it would bolt to the roof of the mine instead of the floor, using heavy-duty steel. The alignment-free drive package was designed to work with a 54-inch belt and was VFD rated, indicating that it could function with the popular computerized Variable Frequency Drive belt starter. This particular drive package included a roof-mounted belt drive, remote discharge boom, take-up unit, winch, and tail section. The drive was designed using heavy-duty structural steel, a heavier steel than many of our competitors use.

Coley Burgess, mine engineer for Mosaic Carlsbad, said, "West River's conveyor systems have given us a great level of reliability. In the years that we have been using them as our supplier, we have not had a single breakdown, no quality issues, and no under-design problems." Burgess also noted, "West River's dedication to excellence in customer service



*West River sells VFD starters. VFD starters can be used in conjunction with West River VFD-rated belt drives.*

is exceptional; all phone calls and emails are replied to in a timely manner and deadlines are always met, even when they may seem unachievable."

West River understands the unique requirements of each individual mine and is committed to total customer satisfaction. Joe Street, co-owner of West River Conveyors said, "It is important that our phones are always answered. You will always speak to a friendly voice who can assist you with your needs immediately. Conditions are different in each individual operation and special attention is given to each and every conveyor project that comes our way."

West River's experienced professionals can make recommendations for packages that will minimize spare parts needed.

"West River has done a great job in helping us standardize our equipment underground so that the list of spare components we need to inventory is minimized," said Burgess.

West River has been able to supply Mosaic with competitive prices and quality products – the best value you can get in capital equipment purchases. All West River products are manufactured onsite in their almost 100,000-square-foot facility. ♦

EXCELLENCE IN BUILDING QUALITY PRODUCTS AND SERVING OUR CUSTOMERS FOR 30 + YEARS

This project was designed specifically for a **potash mine** to be **“back” mounted-bolting to the roof of the mine instead of the floor** — using heavy-duty structural steel >>



60" Triple 500HP VFD Belt Drive



Triple 500HP AC Belt Controller



60" Triple 500HP VFD Alignment Free Belt Drive



**West River Conveyors** builds all equipment from **heavy-duty steel**, made to withstand the most demanding, rugged operations.

**PROUDLY SERVING THE POTASH INDUSTRY**

For more information call **800.332.2781** today!

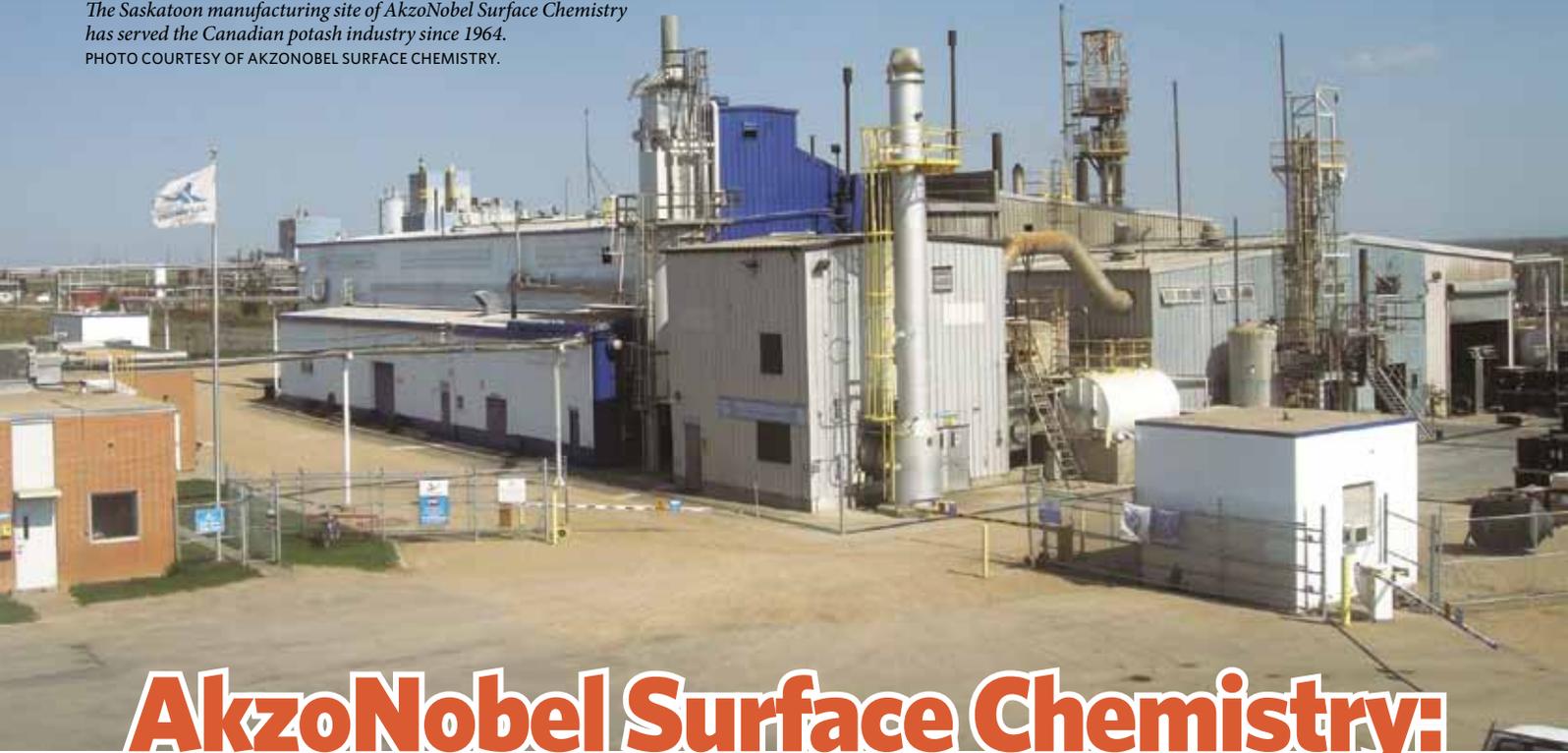
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The Saskatoon manufacturing site of AkzoNobel Surface Chemistry has served the Canadian potash industry since 1964.

PHOTO COURTESY OF AKZONOBEL SURFACE CHEMISTRY.



# AkzoNobel Surface Chemistry: Partnering with the potash industry for nearly 50 years

**A**kzoNobel Surface Chemistry has served the Canadian potash mining industry for nearly half a century. Since 1964, it has supplied quality industrial chemicals and specialty chemicals used primarily in the potash and other mining industries from its manufacturing site in Saskatoon, Saskatchewan.

For the potash industry, AkzoNobel supplies fatty amines and derivatives for the flotation processes essential to the enrichment of potash ores and for anticaking and de-dusting of potash minerals for storage and transportation. In addition to mining and minerals processing, industrial applications for the specialty chemicals manufactured at the Saskatoon site include uranium extraction, oilfield production, highway construction, and fuel additives.

## ***A fully collaborative relationship***

Over the past five decades, Canada has been the top potash-producing country in the world while increasing

production to meet global demand. Potash is used as a fertilizer source for potassium, one of the three primary plant nutrients. AkzoNobel Surface Chemistry has supported that growth every step of the way. As a business unit of AkzoNobel, a global leader in the production and supply of specialty chemicals for major industries worldwide, AkzoNobel Surface Chemistry has drawn from the company's global research and development capabilities to improve the quality of its products over the years while tailoring them to suit the special needs of potash customers.

AkzoNobel is one of the world's leading suppliers of flotation collectors. Moreover, it is at the forefront of advanced polymer and surface chemistry upon which successful flotation depends. For the direct flotation of potash, AkzoNobel Surface Chemistry can deliver either standard primary amines produced from different types of fatty acids or specialty amine formulations. It can also offer collectors for reverse flotation of salt from the potash ore.

## What will the next 50 years bring?

AkzoNobel is the leading supplier of collectors to the potash industry. We have grown with the Saskatchewan potash industry and been a reliable partner for fifty years. We are poised to continue to support the Canadian potash industry and the mining and minerals industry world-wide.

Look to AkzoNobel for high quality reagents for mineral extraction, recovery and anti-caking applications. We manufacture Armeen® and Lilaflo® flotation collectors, as well as, Armeen and Armoflo® anti-caking agents. In addition to potash, we supply reagents for the processing of phosphate, iron ore, calcite, feldspar, and uranium.

[www.sc.akzonobel.com/en/mining](http://www.sc.akzonobel.com/en/mining)



*Advanced computer technology assists plant operators in the monitoring and control of AkzoNobel Saskatoon plant process units.*  
PHOTO COURTESY OF AKZONOBEL SURFACE CHEMISTRY.

*In April 2012, AkzoNobel announced plans to invest in the growth and continued operational excellence of its Saskatoon site, primarily to support the substantial growth of its potash-producing customers in North America.*

In addition to ensuring the highest product quality, AkzoNobel Surface Chemistry has always provided customer service that is second to none. This includes expert technical counsel and assistance not available from typical bulk product suppliers. Value-added services also include knowledgeable product handling, usage and storage training drawn from AkzoNobel's global resources in health, safety and environmental management.

The Saskatoon manufacturing site of AkzoNobel Surface Chemistry is ideally suited to service the Canadian potash industry, particularly the Prairie Evaporite formation in Saskatchewan, one of the largest permit areas for potash exploration in the world. Since 1994, the plant site has been ISO 9001 certified to ensure that its products consistently meet the strict quality standards of its customers. In addition, in keeping with the AkzoNobel overall policy to develop sustainable solutions for its customers worldwide, the products at Saskatoon are manufactured mostly from naturally occurring fats and oils, which are supplied from local sources and, should the need arise, supplemented by sister plants within the company's global structure.

### **Investing in a bright future for potash**

Sustainable is also the watchword for the total commitment that AkzoNobel Surface Chemistry continues to make to the potash industry. In April 2012, AkzoNobel announced plans to invest in the growth and continued operational excellence of its Saskatoon site, primarily to support the substantial growth of its potash-producing customers in North America. A major expansion project is underway to ensure that the plant is equipped with state-of-the-art process control systems and infrastructure required to support its customers' growing development needs and that they continue to enjoy the benefits they have long relied upon: consistent product quality, responsiveness, and on-time deliveries.

AkzoNobel Surface Chemistry is proud of the partnership it has forged over the past five decades with the potash mining industry, a deep relationship defined by the great respect and trust it has earned at every level from all the major potash-producing customers in North America. Fulfilling and exceeding the expectations of all its customers is the cornerstone of AkzoNobel's ongoing commitment to the potash industry. ♦

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# IMM growing with Saskatchewan

**I**ndustrial Machine & Mfg. Inc. (IMM) has been involved in the development of Saskatchewan industry since before potash mining was even considered. Opening its humble doors in 1956, IMM has become a major player in the industry with a plant size of 50,000 square feet and employing over 80 staff.

In the very early stages of potash mining in Saskatchewan, the industry found itself reaching out to facilities as far as Boston to rebuild their potash centrifuges. IMM stepped in and not only saved the transportation cost for the rebuild, but through the introduction of more advanced wear products, increased the life span between rebuilds and with that, solidified itself as a major player in the centrifuge industry. This trend continues to this day where the industry-operating standard of centrifuges has gone from as little as six weeks to now having units in use for well over two years.

IMM is not just a repair shop, but an OEM for their own Accelerator-branded centrifuge that has pushed the envelope once again by providing customers with improved throughput and dewatering numbers. Along with its progressive approach to the potash industry, IMM has also designed a new replaceable screen, commonly referred to as a “soap dish”, utilizing a completely new approach to design, quality control, and innovative metallurgy. With that, IMM has raised the bar once again.

IMM takes the same “move-forward” approach to other areas of a mine. Its coatings division places coatings on compactor rolls that allow the mines to reclaim seal contact surfaces by applying ceramic where a worn surface used to be. IMM’s latest project,

a new approach to miner rotor arms, is just another example of innovation.

IMM’s continual and steady growth has prompted expansion once again. Its purchase of a new facility adjacent to the production facility now houses the Process Solutions Division, once again stepping up and investing in Saskatchewan’s mining future.

IMM’s modern facility includes full machining capabilities. With a recent purchase of two new five-metre boring mills and expansion of CNC capacity in all areas of the plant, IMM can now further support large fabrications with a weld department that is certified to weld not only mild steels, but exotic alloys as well. This ISO 9001-certified facility reports to customers with quality reports supported by their Faro Laser Tracking technology. All shop work is supported by the CAM and CAD department, utilizing state-of-the-art 3D modeling software capable of interacting with the customer’s own design capabilities.

The technically qualified sales personnel are available to make on-site visits. Shop tours of IMM facilities are encouraged and audits invited.

IMM will continue to invest in facilities and people. As the province grows, IMM will bring Saskatchewan continuous potash processing improvement.

IMM is a Saskatchewan family owned and operated company located in Saskatoon at 3315 Miners Avenue. They can be reached by phone at 306-242-8400 or fax 306-933-0649. Please visit their website at [www.indmac.ca](http://www.indmac.ca). ♦

# IMM O.E.M. Centrifuges

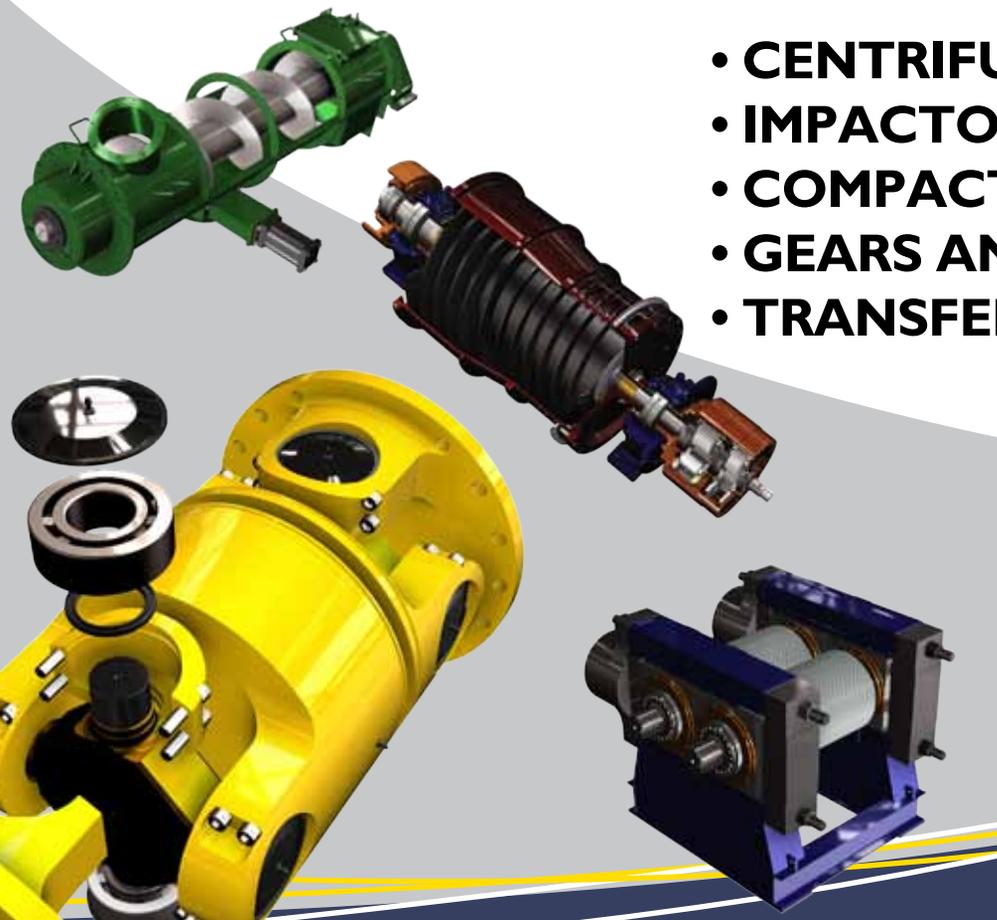
Since 1956 IMM has been producing quality parts for the Potash Industry

# IMM

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# Park Derochie



## Proven partner for the potash industry

*A fine ore bin for PotashCorp.*

By Michelle Ward

**F**ounded in 1956, Park Derochie has experienced continued growth and diversification of services to become one of Canada's premier specialty-trade industrial contractors in all forms of industrial and large commercial coatings, fireproofing, mechanical insulation and spray foam insulation, as well as scaffolding, abrasive blasting, containment, and maintenance programs designed to meet our customers' needs.

With owners Jeff Granberg and Mark Walker at the helm, the company announced in April 2010 the opening of a new division in Saskatchewan.

"Park Derochie is proud to be 100 per cent Canadian owned, and an abundance of our employees — from workers and management to owners — are originally from Saskatchewan," said Granberg. "Purchasing the assets and equipment of two existing, well-established companies allows us to come home. We are confident that as industry in Saskatchewan grows, we

will be well poised to offer employment, as well as the same outstanding workmanship, quality, and safety standards that have enabled us to maintain an excellent reputation for client satisfaction throughout the years."

Park Derochie has worked with and applied product from several of the large coatings manufacturers, and believe our expertise allows us to provide accurate recommendations regarding products to be utilized for numerous and varied applications.

Aside from offering clients 50-plus years of expertise in our other services, Park Derochie Coatings (Saskatchewan) Inc. vice-president and general manager Doug Barker is proud of our association with renowned global corporation BASF The Chemical Company, and having attained certification as an approved applicator of BASF Spray Foam products, as well as associations with International, Devoe, HDIM & Carboline coatings products, to name a few.



*A module gallery for PCS Rocanville. Park Derochie painted it and then spray foamed and coated the underside.*

*Park Derochie has worked with and applied product from several of the large coatings manufacturers, and believe our expertise allows us to provide accurate recommendations regarding products to be utilized for numerous and varied applications.*

Since establishing our operation in Saskatchewan in April 2010, Park Derochie has developed a strong relationship within the potash industry with various shop coating, field coating and spray foam insulation projects at Mosiac, PotashCorp of Saskatchewan, Agrium, and now K+S Legacy project facilities throughout Saskatchewan. The work varies from new construction to regular maintenance work. Our goal is to provide our clients with a budget and then supply highly skilled crews to ensure quality, safety, and budgets are met on each and every job.

### **Why choose Park Derochie as your contractor?**

#### **SAFETY**

Park Derochie is proud to be an industry leader in safety, and our WCB experience ratio, which is consistently lower than the industry average, speaks to our dedication to protect people and the environment.

For client convenience, Park Derochie is a member of prequalification management companies, such as ISNetworld, PICS, and CanQual.

#### **QUALITY**

Providing uncompromising, quality workmanship to clients

is a strong component within the company's core principles of business ethics. Adhering to the stringent standards set out by the Society of Protective Coatings (SSPC), the BASF Raising Performance to New Heights® program, and guided by ISO 9001-2000, their quality management system is designed to meet the specific requirements of the client.

#### **LOYALTY**

Park Derochie was built on the principles of strong work ethic, commitment to customer satisfaction, developing a skilled, dedicated workforce, and a belief that loyalty begets loyalty. Those principles hold true today.

#### **EQUAL OPPORTUNITY EMPLOYERS**

Park Derochie is an equal opportunity employer and encourages hiring and training of any qualified individual, regardless of gender or ethnicity. Preference is given to candidates who most closely meet the knowledge, skills, and competencies required. We are proud, for example, to have several long-term superintendents, general foremen, and foremen of aboriginal descent (including women) as part of our diverse workforce. As a company, we promote, encourage, and financially support continuous learning for all employees, at all levels, and provide mentors for trainees in numerous trades. ♦



# The air down under

## *Canada's largest compressor distributor making waves in the mines*

By Jillian Mitchell

**T**he team at Comairco knows about air. Since 1972, the compressed-air specialists have continually been regarded as market leaders in the industry. Their secret? Consistently identifying and catering to the needs of their diverse clientele.

The Canadian company specializes in the rental and sale of cost-efficient compressors and compressed-air equipment, both stationary and portable, for a variety of industrial applications, and carries many of the industry's top brand names, including Sullair, Cameron Compression Systems, Hitachi, Parker/Airtek, DV Systems, Dekker Vacuum, Hankison and Vanair.

But perhaps most sought-after is Comairco's new AWA Package, a portable, self-contained compression system that has, as sales manager Bill Lutz suggests, "revolutionized the marketplace."

"It's exciting because it's a different way to approach the market," says Lutz of the compressed-air package. "Everybody's been doing the same thing for the last 40 years — you either have a diesel portable or an electric



inside of a building. This product allows us to combine the two, so to speak, and provide any kind of air requirement the customer needs in a portable or self-contained package."

The AWA enclosure has been designed to make transporting, installing, and operating the air compressors quick and easy. The safe and reliable solution combines tried-and-true technology with modern accessibility, not to mention durability able to service the most extreme Canadian climates. The system's noise-reduced application only confirms it as the premier choice for many intricate industrial sectors.

Compressed air has long been used in the mining industry as the major source of motive energy. It is Lutz's hope that the AWA system will further complement the sector.

"In the past, when a mining company needed 1,000 cubic-feet of air for a particular application, they would either buy a diesel-driven portable or build a building to house an electric," he says. "So what we're trying to do is come up with an electric product without having to build a building. The AWA Package uses the same compressor but with a different approach to make it easier for the mining industry to use these products."

The experts at Comairco also offer 24-7 services for their clients, a most complementary addition to their product offerings. As Lutz adds, field service reps offer responsive, knowledgeable service, including on-site and factory-based technical assistance.

With over 41 successful years of service and a service area spanning Saskatchewan to Quebec, Comairco is well-poised for a successful future. What lies ahead, says Lutz, is a continuation of what the company does best.

"We'll continue to try and lead the industry," he concludes. "We're the largest compressor distributor in Canada. The variety of products we have ... we have a product for virtually any compressor or vacuum application." ♦

*With over 41 successful years of service and a service area spanning Saskatchewan to Quebec, Comairco is well-poised for a successful future. What lies ahead, says Lutz, is a continuation of what the company does best.*

# **COMAIRCO**

## **Compressed Air Specialists**



- **Air Compressors**
- **Air Treatment**
- **Blowers**
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# Ruukki Raex wear-resistant steel for the toughest applications: for equipment where steel needs to have high wear-resistance



*Thicker Raex wear-resistant steels can be used, for example, to manufacture parts in heavy plant and equipment for the extraction, loading, transport and crushing of ore in the mining industry.*

steels have a hard-steel surface and strong microstructure. The method improves the properties of wear-resistant steels and makes them consistent in quality. The consistent quality and impact strength of a product further improves its engineerability. Hot-rolled steel is quenched to room temperature from around 900°C immediately after rolling. This saves energy because the heating stage after hot rolling is eliminated.

## **Durability brings efficiency**

The mining industry often operates in remote conditions where it is difficult and challenging to service equipment. When mining equipment breaks down, operations may be disrupted for a considerable time. High-strength Raex steels are a safe, durable production material that can significantly reduce the shutdowns and costs ensuing from component wear and breakage.

The use of wear-resistant steels in components susceptible to wear in mining vehicles, for example, can prolong their lifetime, reduce the time spent on maintenance, and in turn, bring direct savings to the user.

## **Good workability**

Despite their high strength, Raex steels can be formed using traditional machining tools. Raex also boasts excellent flange-

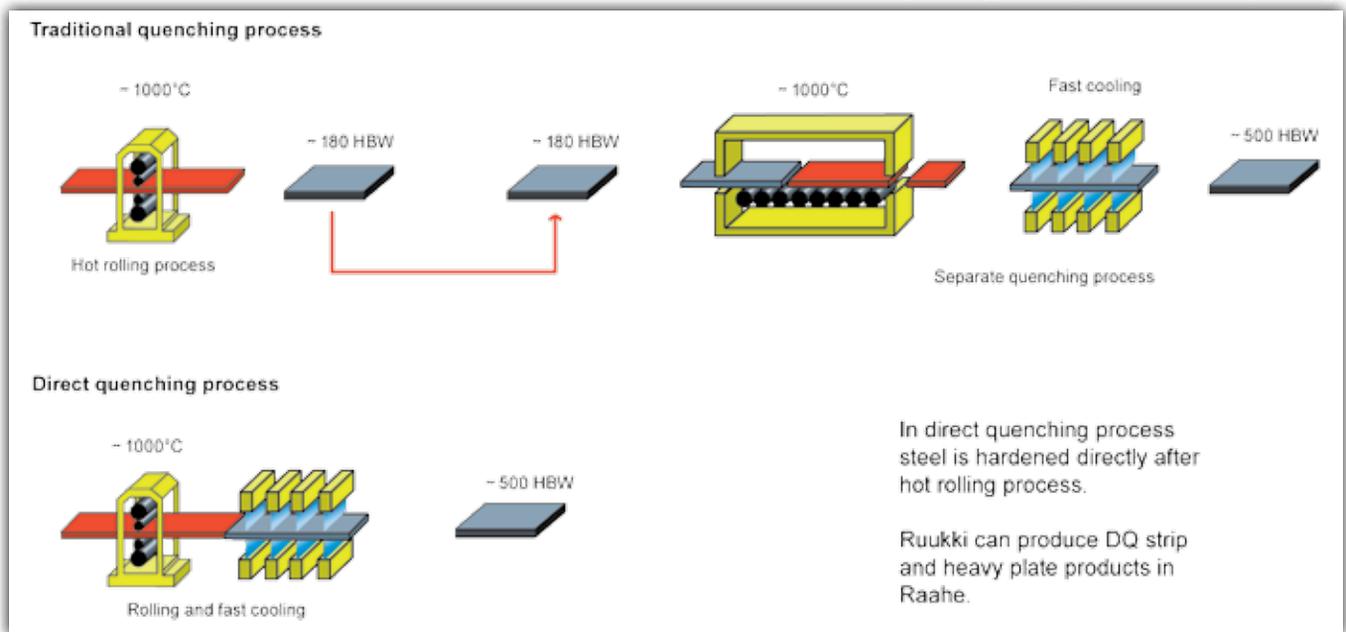
**R**uukki Raex wear-resistant steels have been designed to withstand the toughest conditions. This makes them a safe, cost-effective choice for the needs of the mining, demolition, clearing, and recycling industries. Despite their high strength and hardness, Raex steels boast good welding and formability properties. The use of Raex significantly reduces the wear and breaking of the structural parts of equipment and thus saves costs.

Ore is extracted, crushed, and transported both in underground and opencast mines alike. This means the equipment used in the mining industry must be capable of withstanding major wear and tear. Ruukki Raex wear-resistant steels are ideal for lining the interior of crushers or feed hoppers and other wearing parts of mobile machines, as well as impact surfaces, transport equipment and conveyor belts.

The dimensional range of Ruukki Raex 400, Raex 450 and Raex 500 wear-resistant steels has been enlarged. These steels are now available as plates in thicknesses up to 80 millimetres. Ruukki has already long been supplying customers with thinner grades of Raex wear-resistant steel starting from a two-millimetre thick strip – for use in the transportation equipment industry, for example.

The new thicker Raex wear-resistant steels up to 80 millimetres can be used, among other things, to manufacture parts for heavy plant and equipment designed for excavation, loading, transporting and crushing ore in mines. Such parts include the buckets for excavators and front-end loaders, tipper bodies for heavy earth-moving machinery, mine-conveyor systems, crushers, silos, and hoppers.

Made using a direct quenching method developed by Ruukki, Raex wear-resistant



ability. The spring-back effect can also be even more easily controlled than with some softer structural steel grades. Consistent steel quality adds considerably to the useful life of machinery and equipment made from it. This brings cost benefits and competitiveness to end users. Consistent quality means, for example, quality welds.

Ruukki's steel service centres also offer ready-bent, laser-welded components, also ready processed into prefabricated parts or products. We supply customized wear-resistant pieces and lip plates, for example. Prefabricated components with excellent directional accuracy have brought customers considerable cost savings and more efficient production. Ruukki can also deliver plates sandblasted or colour-coated to customer requirements.

Raex wear-resistant steels have been developed together with Ruukki customers. It pays customers to contact Ruukki's specialists as early as possible in the design process of a product to enable materials and manufacturing competence to be matched with the equipment manufacturer's needs. The aim is to identify new uses for special steel components and provide customers with added value for their products.

### Global supply

Ruukki is an internationally operating company, which offers special steels on a global basis. Ruukki is able to provide manufacturers worldwide with the same quality products and services. Products are available from Ruukki's steel service centres located around Europe and from the stocks of certified partners worldwide.

Ruukki's effective logistics have helped many globally operating manufacturers in the mining industry to improve their operational and production efficiency.

"It's not enough for a product to be good, it also has to be available everywhere. The supply chain has to work. In addition, we can provide technical support in the local

language," says Thomas Hörnfeldt, SVP, special steels and international sales, at Ruukki.

Ruukki is committed to continuously improving the energy efficiency of its production processes and the company's carbon dioxide efficiency in steel production already ranks among the best in the world. In addition to this, Ruukki's use of coking coal in steel production at Ruukki is almost at the minimum possible using existing process technology.

For more information, please contact: Peter Tuomi, sales manager Canada, Ruukki Canada Inc. Tel. +1 905 361 2788 sales.canada@ruukki.com www.ruukki.com ♦



*Now that Ruukki has added to its dimensional range of Raex, it can provide its customers in the mining industry, for example, with all the wear-resistant steels they need.*

ISO 9001 & 14001 and OHSAS 18001 Certified Company

***Fortis has earned the rare distinction of simultaneously being certified for three different management system standards, which includes ISO 9001, ISO 14001 & OHSAS 18001***

**F**ortis is a privately owned company based out of Saskatoon, Saskatchewan. Fortis evolved from its parent company, Northern Strands Co. Ltd., in 2006, which had been in the mining industry since the 1970s as a distributor of mine hoisting ropes. As the customer base grew, along with the mining industry in Saskatchewan, the company started to distribute and then manufacture hoist rope attachments and fittings. In conjunction with these changing market demands, the company recognized the need for supplying services to the customers. These services included rope changes, skip changes, accident remediation, de-rope, re-rope, problem solving, specialized equipment, and custom manufacturing. With continued growth, delivering these services was best met through the development of a separate company. As a result, Fortis Engineering & Manufacturing Inc. was created.

It was in 2006 that Fortis took on many of the projects that were previously done by Northern Strands, and they began to grow their manufacturing capacity by producing more attachments and fittings. In order to fabricate more products in-house, a machine shop was added in 2010. Due to increasing fabrication demands, in the summer of 2012 Fortis chose to maximize manufacturing production and efficiency by creating a night-shift for this division.

The evolution of Fortis went hand-in-hand with the growth of

the mining industry in Saskatchewan. The increasing demand was easily noticed and quickly realized by the leadership of Fortis. The company met that opportunity by recruiting multi-skilled, highly trained and experienced employees to create a strong, united, and efficient workforce.

Fortis has successfully forged relationships with a number of customers including PotashCorp, Agrium, Mosaic, Cameco, Nyrstar, Rio Tinto, and Agnico Eagle, along with several other mining service companies. Fortis delivers specialized consulting and project services to its customers, from engineering to construction, and from maintenance to decommissioning and emergency situations.

Fortis believes that its determination in creating an injury-free work environment through the ISO policies and procedures is evidence of its commitment to safety.

***June 2013 - ISO and safety culture***

Fortis recently passed the certification audit conducted by QAS International in June 2013. After certification, Fortis has earned the rare distinction of simultaneously being certified for three different management system standards, which includes ISO 9001, ISO 14001 & OHSAS 18001.

We are exceedingly proud of the commitment and teamwork of

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***The evolution of Fortis went hand-in-hand with the growth of the mining industry in Saskatchewan. The increasing demand was easily noticed and quickly realized by the leadership of Fortis.***

our employees in achieving these standards. Fortis has a QA & ISO Compliance Department, which is committed to continuous improvement of products and services provided by Fortis. Fortis plans to continue on its strategic positioning as a provider of high-quality services and products operating under approved and standardized practices with the aim of achieving continual improvement. Each department in Fortis is monitoring its KPI (Key Performance Indicators) to make sure that the objectives are achieved continuously. Fortis also periodically conducts probabilistic hazard analysis and environmental aspect/ impact analysis to identify the significant H&S and environmental hazards.

The ownership and management team at Fortis believes in the importance of safety in the workplace. Over the past several years, Fortis has gained a tremendous amount of knowledge from its experience in its collaboration with local and international mine sites and companies. The company has been compiling safety knowledge and is adopting and integrating that knowledge into its safety management systems. Fortis believes that its determination in creating an injury-free work environment through the ISO policies and procedures is evidence of its commitment to safety.

Today, Fortis works continuously in mining-related service work and custom manufacturing for a diverse customer base. The company is positioned to identify customer requirements and is uniquely prepared to address those requirements by leveraging its internal talent. Fortis has the experience and knowledge to undertake the delivery of professional services and quality products.

Learn more about Fortis at [www.fortiscorporation.com](http://www.fortiscorporation.com). ♦

*What does fortis mean in Latin?  
Literally, fortis means “strong”,  
and is often used to mean “brave”.*

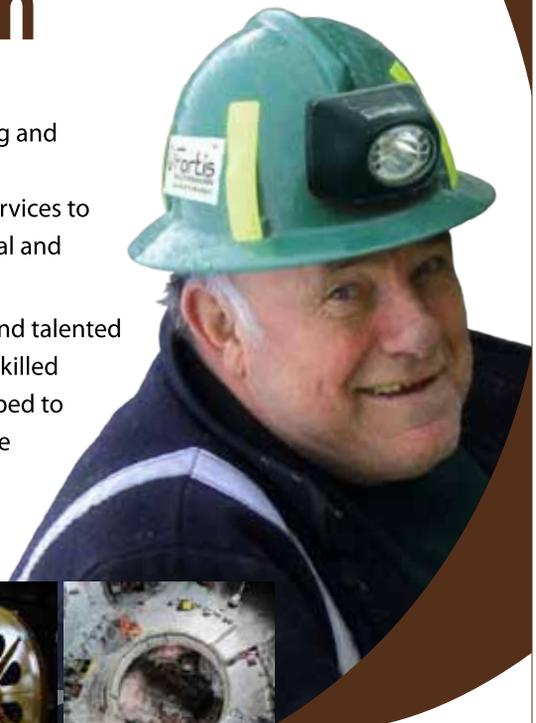
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## Success Through Innovation

Based in Saskatoon, Fortis provides Mining, Engineering and Manufacturing services.

The company offers these services to a wide range of local, national and international customers.

Fortis’ experienced leaders and talented employees creates a highly skilled workforce that is well-equipped to service customer needs while meeting quality and safety requirements.



 **Fortis** | Mining  
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# QuikDeck™ saves time and money in potash mine



**W**ant to reduce downtime and save money? Recently, access was required to the roof of a local potash mine, 66 feet from ground level. Safway, a leader in access and industrial services throughout North America, engineered a solution using its patented and proprietary QuikDeck™ Suspended Access System as an alternative to a traditional build-up of scaffold from the ground.

By attaching four-beam clamp jaws to the roof trusses, steel cables were lowered to the floor where a 16-foot-by-16-foot starter platform was built. Once this was complete, the working platform was positioned at the required elevation by turfers. The platform was then secured with chains and modular components were simply added in all directions until a hanging deck 25-feet-by-70-feet was in place. QuikDeck's flat, level surface provided a safe, open work environment, while the ground area beneath was clear to continue normal day-to-day activities.

This QuikDeck solution provided a number of cost-saving benefits to the owner when compared to ground-built scaffold. First, Safway was able to reduce downtime by 16 days. Historically, traditional scaffolding in this application would have taken 21 days to erect, but by using QuikDeck, only five days were needed to erect the platform. Second, from a safety aspect, by minimizing downtime, exposure hours for workers were reduced significantly. Third, the owner saved over 60 per cent by using QuikDeck.

Safway's QuikDeck Suspended Access System has been called a "game changer" for turnaround schedules. QuikDeck has many applications within a potash mine and it offers the advantage of safely working on an open, modular platform. With basic components and a flexible composition, QuikDeck's patented configuration can adapt to fit almost any shape or size.

Since 1936, Safway Services has been a leader in scaffolding services and access solutions. Safway creates sustainable value on an ongoing basis by assuming the management of on-site productivity and inventory while eliminating wait time, rework, and nonproductive activities. In addition, Safway has undertaken a number of initiatives to drive productivity and efficiency, without sacrificing safety or service. Our rigorous and focused approach to continuous improvements through product innovation also helps drive down total overall installed cost.

Safway has the expertise needed to perform in all major markets, including mining, petrochemical, power, bridge, and commercial. With our extensive industrial experience and successful project performance, Safway safely delivers world-class service, while driving down total installed cost.

Please contact the Safway Saskatoon branch at 306-934-7240 for more information. ♦

*Safway creates sustainable value on an ongoing basis by assuming the management of on-site productivity and inventory while eliminating wait time, rework, and nonproductive activities.*



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# Hitachi grows along with Saskatchewan's mining industry

*FARO Arm machining.*



**H**itachi Power Systems Canada Ltd. (HPSCA) has a large custom machining and fabrication plant in Saskatoon. Constructed in 1988 to manufacture power generation components for steam and gas turbines, the plant has diversified over the years to manufacture new products, including wind towers and pressure vessels. HPSCA is the headquarters for Hitachi in Canada, and in addition to the Saskatoon plant, has a sales and project management office in Calgary, Alta. In 2010, with the perfect geographic location in the heart of Saskatchewan's mining industry, HPSCA diversified its product offerings to include solutions for the mining sector.

HPSCA's decision to enter the mining industry was inspired by

the company's core beliefs, known in Japanese as "kaitakusha-seishin", which translates in English to "pioneering spirit". With the founding philosophy of their parent company in mind, Hitachi drew on their past experience and their expertise in custom precision machining, welding, and fabrication to develop a business strategy to manufacture custom components for the mining industry.

HPSCA began to develop strategic partnerships with mining companies to fully understand their needs and develop custom solutions to serve the industry. In 2013, Hitachi invested heavily, replacing old equipment and procuring new machines to provide state-of-the-art solutions. New purchases include state-of-the-

*With the founding philosophy of their parent company in mind, Hitachi drew on their past experience and their expertise in custom precision machining, welding, and fabrication to develop a business strategy to manufacture custom components for the mining industry.*



art custom precision machines and special processes, such as new welding technology. The Saskatoon plant is now even better equipped to serve the needs of Saskatchewan's mining industry.

HPSCA's plant features the largest custom-machining equipment in Western Canada. Its large horizontal and vertical boring mills can handle weights of up to 80 tons and up to a 6.5-metre diameter. For the mining industry, HPSCA has machined large components, such as sheaves in the Saskatoon facility.

HPSCA's experience manufacturing large fabricated products such as pressure vessels and wind towers allowed the company to explore opportunities for mining, such as large mineshaft liners. In 2011, HPSCA manufactured its first steel mineshaft liner, which is now being utilized in Saskatchewan. Because HPSCA owned all the necessary rolls, welding, and other equipment required to do the work, manufacturing the mineshaft liner was a natural fit.

One of the unique capabilities Hitachi has is the ability to provide services both in their Saskatchewan manufacturing facility, as well as at the customer's site. HPSCA possesses a large fleet of portable welding and machining equipment, and their highly skilled team of welders, machinists, and engineers can be dispatched to the customer's site to perform repair work.

In 2012, HPSCA expanded their non-destructive testing services (NDT) to provide these solutions not only in their Saskatoon plant, but also to customers around the province. HPSCA's highly dedicated team of skilled NDT technicians provide testing services to a variety of customers, including those in the mining industry.

In addition to providing NDT services, HPSCA offers specialized, high-tech reverse engineering services using portable coordinate measuring machines. The portable machines use lasers and high-tech software to measure parts that are difficult to measure using conventional methods. For the mining industry, HPSCA has traveled underground to inspect gears on miners that have broken down, saving time and money as the parts did not need to be sent away for inspection.

Hitachi Power Systems Canada Ltd. is proud to be a part of the Hitachi brand name, a name associated with high quality. The company's commitment to quality, safety and environment is evident by their comprehensive quality assurance program, which includes ISO certification for Quality (ISO 9001), Environment (ISO 14001), and Occupation Health and Safety. With a state-of-the-art facility and central location, Hitachi Power Systems Canada is well-positioned to serve and grow with the Saskatchewan mining industry. ♦

# Employee retention in a competitive market

## *The NRT advantage*

By Sarah Jensen

*The NRT Training Division instructors with one of their training vehicles. Left to right: Allan Dery, Tom Williams, Randy Mihilewicz, Ed Donaghy, Marvin Jordheim, and Brian Grimard.*



For many companies, employee retention and cost of training are major challenges. This is particularly true in Saskatchewan, where demand for quality workers is very high and the market is competitive. If a company invests in training new hires, there is always a risk that these employees will take their newly earned skills and use them to land a

higher paying job with a competitor, or in a different sector all together. Often, employers will require potential trainees to sign an employment contract that guarantees a return on their investment.

Not so at Northern Resource Trucking (NRT).

NRT is a limited partnership between 11 First Nations and Métis communi-

*Randy Mihilewicz, NRT's Training Division supervisor, demonstrates another classroom training tool.*

*A tool for students to learn the brake and airline systems on their trucks, unique to the NRT Training School.*

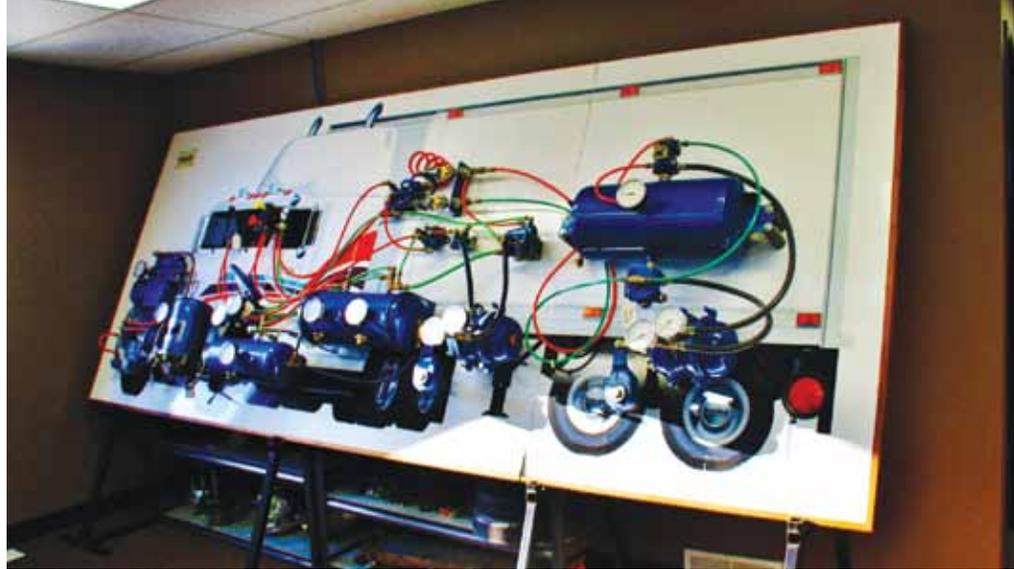
ties in Northern Saskatchewan and Tramac Transportation Services Ltd. This unique partnership provides NRT with a much more flexible view on the value of training than other trucking companies can afford to hold.

In the beginning, NRT devoted one per cent of annual revenues to training its' own employees. They turned out lots of 1A-licensed drivers, but many of them did not stay with NRT for long. For any other company this would have been considered a waste of resources. However, a follow-up survey found that over 95 per cent of these graduates were using their training in their new jobs — driving school buses, sewage, water, and gravel trucks in their communities, or working for mining companies. For NRT's partners, the education and employment of their community members is far more important than which company they are employed by. So, for NRT and its partners, the training program remained a valuable tool for community development.

"When our partners consider it a win," explains Dave McIlmoyl, NRT vice-president, "it's a win for NRT, too."

Since its inception, the NRT Training School has evolved to include Class 5, school bus, and 3A licenses, as well as 1A. While NRT still uses it to train its own drivers, and anyone sponsored by their northern communities, the school is also available to outside companies as a fee-for-service model, which helps to recapture some of the operating costs.

Because there is a North America-wide driver shortage, companies are trying very hard to attract and retain drivers. However, certification is not enough. An inexperienced driver is virtually un-



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Perfectly orchestrated teamwork, like a finely tuned machine. NRT is keeping the wheels of Saskatchewan mining turning.

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Students perform vehicle inspections under the supervision of SGI examiners.

insurable, and most companies require at least two years' work experience on top of a valid class 1A license. Students of the NRT Training School have an edge over their peers because of the school's uniquely in-depth 12-week program. Students gain experience in basic maintenance and repair, night driving, gravel

roads, and extreme weather conditions that most programs do not offer.

NRT has very low driver turnover by industry standards, so open positions don't come up very often. But when they do, NRT has the opportunity to cherry-pick some of the most promising stu-

dents from the training school and will pay them as trainees and junior drivers until they have the necessary experience to drive for the company. Whether students end up working at NRT, or in the oil patch or at a potash mine, it is a success for the whole community. That's the NRT advantage! ♦

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# Littelfuse Startco expands facility to meet increased demand for custom-engineered electrical equipment

*40 years of experience with over  
5,000 custom electrical units completed*



*Littelfuse Startco's manufacturing facility offers over 34,000 square feet of capacity to meet tight deadlines.*

this past spring, the company revealed a major expansion of its custom electrical products manufacturing facility in Saskatoon. Littelfuse Startco underwent this major expansion to meet increasing demands of both current potash customers and new customers in other mining industries.

Littelfuse Startco has a deep history in the potash industry and enjoys a strong reputation of quality and reliability with the world's leading mining companies. Over the last 40 years, the company has partnered with its long-term customers to help them solve problems with mining electrical systems in harsh environments. As such, they have become a market leader in the engineering and manufacturing of high-quality custom power-distribution equipment designed to be used in these rugged conditions. In addition to custom-built power-distribution centres, the company manufactures control panels, power centres, mining machine controls, e-houses, ground-fault-protection equipment, and other custom-engineered modules for protection and control.



*This Littelfuse Startco Custom Power Centre commissioned 32 years ago is still in operation.*

**F**or the past 40 years, Littelfuse Startco has been known for its rugged protection relays and custom-engineered power centres for the potash industry. During this time, the company has designed and manufactured over 5,000 custom electrical units. While this is an amazing statistic by industry standards, they will not be slowing down anytime soon. In fact,

“Littelfuse Startco has always supported the mining industry through the development of new products, by being an active participant on electrical standards committees through the research and authoring of technical papers, and by supporting the local mining associations and related events,” says Tyler Klassen, engineering manager of the custom products division.

At the heart of this expansion are the needs of the customer. What they can expect is a no-hassle approach to design, engineer, manufacture, and commission their project. This expansion will also assure the customer receives custom-built gear that stands the test of time and provides safe and reliable equipment. Taking into consideration time sensitivity of the industry, customers can also expect quick turnaround and equipment that arrives on time.

Dan Stanek, vice-president and general manager of the Littelfuse Protection Relays and Custom Electrical Products division adds, “In mining operations, the focus today is on safety, reliability, and durability. Our custom power centres are designed to provide power and operate without failure in dusty, rugged mining environments as much as 4,000 feet underground. The portable power centres are engineered to meet each custom-

er’s unique specifications. They are designed to withstand large electrical loads from ventilation systems and other equipment to keep employees and facilities safe.”

By adding an additional 20,000 square feet of space, production capacity has almost tripled. Other benefits of the expansion include additional space for testing, a new 40-ton crane to allow the manufacturing of higher-voltage and larger-scale equipment, and the increased floor space to carry a deeper inventory of components.

“The facility expansion will enable us to meet the increased demand for our custom products in potash mining and will also allow us to expand our presence into other geographic locations and other types of mining, such as the Canadian oil sands, above-ground mining and petrochemical mining,” says Gordon Hunter, president, chairman and chief executive officer of Littelfuse.

With its manufacturing resources, engineering expertise, experienced associates, and sales offices in Saskatoon and Calgary, Littelfuse Startco is well positioned to continue to meet the electrical equipment needs of the world’s leading mining companies. ♦

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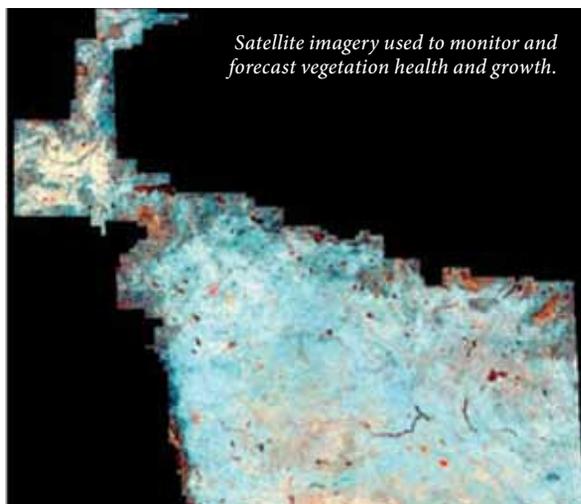




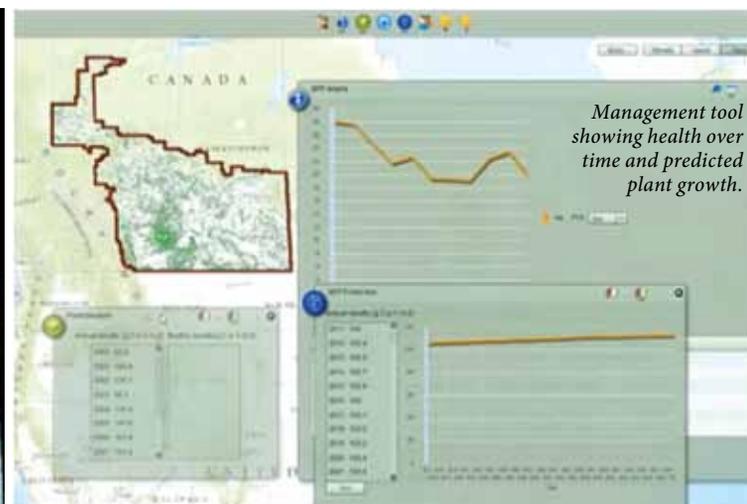
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# Seeing the big picture

## Using remote sensing for reclamation monitoring



Satellite imagery used to monitor and forecast vegetation health and growth.



Management tool showing health over time and predicted plant growth.

Although it is often viewed as one of the last stages of a mines operation, reclamation activities are planned and executed long before ground is broken. Often, stakeholders, including governments, communities and oversight groups, consider reclamation activities a barometer for the overall environmental impact of a project. Because of this scrutiny, accurate monitoring and reporting on the progress of reclamation activities is an important link between the mine operator and these stakeholders.

But environmental and social responsibility aren't the only issues at stake for reclamation activities. Like anything, there is a huge financial stake in reclamation monitoring. The Alberta Government reports that there are currently over \$912 million in reclamation security bonds held from the oil sands alone. Given the importance of all of these issues, it becomes clear that accurate, easy-to-understand information is essential to reclamation monitoring.

But getting the big picture of the progress of a reclamation area can be very difficult. Often plant and soil tests are carried out as part of an environmental assessment.

However, spot tests are not indicative of an entire area, and on large projects, there can be a significant difference in health across a reclamation area.

But as technology progresses, so does our ability to use it to solve problems. With the proper tools, training, and experience, satellite imagery can provide answers. Satellite imagery is optimized for vegetation and with more than 20 years experience analyzing satellite imagery, Western Heritage has developed a management tool that uses remote sensing to accurately measure vegetation change in an environmental footprint. Being able to accurately measure the health and growth of biomass in a reclamation area using satellite imagery means faster, more accurate monitoring and reporting.

One of the most desirable aspects of satellite footprint monitoring is that it provides a visual reference, so that interested parties can actually see the big picture of the progression of reclamation efforts. In addition to demonstrating the effectiveness of current reclamation activities, satellite monitoring has the ability to look back in time. With imagery available dating back to the early 1980's, it is possible

to track footprint changes pre, during, and post-project. With reclamation judged on equivalent land capability, and many efforts lasting several decades, it can also look at vegetation growth patterns to establish a more accurate baseline for goals.

With Western Heritage's custom model, it is also possible to forecast the growth and health of a reclamation area. This information can be used to help set realistic goals, or to act as a measurement for ongoing activities.

Embracing new technology for monitoring is valuable as it provides more information and better answers. But using it also demonstrates a commitment to sustainable resource development, it shows that an organization takes its reclamation commitments seriously and will employ cutting-edge technology to reach them. As the world changes, so do the ways we are able to see it. Satellite imagery allows us to see the big picture, while focusing on the information we need.

For more information about remote sensing and other valuable geomatics services, contact Western Heritage at [info@westernheritage.ca](mailto:info@westernheritage.ca) or 1-306-975-3860. ♦

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# Realistic training scenarios



**N**o matter what training you may be planning, one very important aspect is ensuring that the scenarios are as life-like and realistic as possible. Using a bit of imagination and the correct equipment for the task at hand will enable you to set up your training scene in a safe and authentic manner. The following are some tips on scene setup that will help you prepare for real rescues.

## ***Manipulate your vehicles***

Too often we find departments “cutting up square cars”. It is rare, at an actual extrication, that the vehicle you’re working on has not been damaged. The way a car’s structure reacts to extrication techniques and equipment will greatly change depending on the damage it has sustained in the accident. We find using a track hoe to manipulate the vehicle to reflect real-life damage is one of the best tools available, they also work very well to place multiple vehicles into realistic positions.

## ***Use real people***

While manikins definitely have a place in certain scenarios, it is very important, whenever possible and safe, to try using people instead of manikins when training. It will give you a whole new perspective to what the patient is experiencing during a rescue, plus you can get real feedback and interaction from the patient that will be important when dealing with a real life rescue. When you are using a manikin, be sure to make it as life-like as possible, by adding coveralls, boots, etc. you will increase the manikins effectiveness. Also, try to purchase a manikin that has moving arms and legs; many of the newer-style of manikins “feel” quite realistic in the way they move.

## ***Use real terrain***

Training indoors for outdoor rescues is unrealistic and not recommended. While we realize that sometimes due to weather we must train indoors, we generally insist upon at least performing a portion of the hands-on training in a terrain that is as realistic as possible. For instance, performing ice rescue in a swimming pool, or trench rescue in a concrete bunker, would not be nearly as effective as it could be. Training in foul weather can be challenging, but it will also test your skills and will increase your rescuer’s effectiveness when a real rescue situation comes along.

## ***Expect the unexpected***

Try adding unexpected situations; such as, uncooperative patients, or even having someone pretend to be a bothersome on-looker or aggressive media person that can make your rescuers really think on their feet. Also, as we all know, equipment can fail; so try training where midway through a rescue the piece of equipment you are using quits working. Training this way will have your rescuers prepared to deal with unexpected scenarios that could cause serious delays in a real-life rescue.

Trans-Care Rescue Ltd. has been providing professional training to fire departments and industry in Western Canada since 1981.

For more information, please contact us at:

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**Trans-Care Rescue Ltd.** has been providing professional training, equipment and standby rescue services to the potash industry in Western Canada since 1981.



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# Replacing underground electrical equipment?

## There may be another option



*Above: Sled refurbishment – before photo.  
Left: Sled refurbishment – after photo.*

Replacement of major electrical equipment is an expensive inevitability for anyone responsible for the maintenance or expansion of industrial electrical systems. Sometimes purchasing new equipment is the only option, but refurbishment of old equipment provides distinct advantages, such as faster delivery, reduced cost, higher quality, and reduced environmental footprint.

One example of a successful underground portable electrical substation refurbishment project was completed by Team Power Solutions in Saskatoon. Prior to refurbishment, the “sled” was completely unusable, covered in rust, and written-off for salvage steel. Working with the customer’s performance specification, Team Power Solutions built a 3D computer model to develop a final design which incorporated innovative solutions to dramatically improve the unit’s reliability, functionality, and safety. In fact, innovations to improve inherent safety, such as worker position during high-risk operations, have become standard design features for all Team Power Solutions portable substations, both new and refurbished.

In this example, the customer’s primary reason for choosing refurbishment was to meet a defined project schedule while improving the capacity and performance features. Expected delivery for a new replacement unit was as long as 100 weeks and Team Power Solutions was able to complete the design and refurbishment within a fraction of that time. Delivery schedule is not the only reason why a customer may examine refurbishment as an alternative to buying new; total project cost, customization requirements, and environmental impact may provide additional options and flexibility to meet specific project needs.

Not unexpectedly, the cost advantage of refurbishment can be significantly affected by the risks relating to the unknown condition of the original equipment and project coordination. The environment within a potash mine is especially harsh on steel, so a thorough condition assessment is an absolute requirement. Logistical factors will also contribute to project cost as refurbishment requires an extra trip up the shaft (this may not be a concern depending on asset salvage policies) and more underground coordination. However, if engaged at the evaluation stage, a ven-



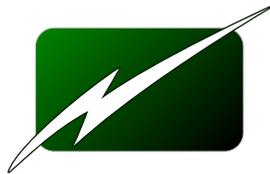
dor with a high-level of refurbishment expertise and experience can identify these risks and make suggestions for effective mitigation.

In terms of customization and features refurbishment of an old sled presents both opportunities and challenges. With the customized design process required to refurbish an existing piece of equipment, a customer can apply operational experience to incorporate unique or site-specific features, which may not be standard features of new units. However, customization must be carefully balanced with practicality and project budget. Regardless of design features or customization, refurbishment should

never be considered if it cannot be made as safe as a replacement unit.

Increased scrutiny on the emissions of mining operations has caused a shift in the asset disposal strategies of many potash producers. In many underground potash mines in Saskatchewan there are stockpiles of decommissioned equipment which, in some cases, will be brought to surface and sent either to the landfill or to salvage. Refurbishing old equipment is a very effective way of reducing the accumulation of salvage inventory. As an added benefit, the refurbishment costs for equipment which has not been fully depreciated can often be completely written off as an expense (consult with an accounting professional).

With many successful equipment refurbishment and replacement projects to its credit, Team Power Solutions offers a complete solution package tailored to the specific requirements of each project. Providing true service through *innovation, quality, and safety* is the fundamental basis for which Team Power Solutions has built so many relationships with passionate repeat customers in the Saskatchewan potash mining industry. ♦



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# Powder coating: The evolution of corrosion-resistant coatings

Saskatoon Custom Powder Coating (SCPC) was established 12 years ago by three partners in Saskatoon to meet the growing demand for a top-quality corrosion-resistant finish with exceptional durability. With the combined experience of all three partners, exceptional staff, and the co-operation of their powder suppliers, SCPC came alive with an initiative to see powder coatings as a standard paint specification within the mining sector.

Since their inception in 2001, SCPC has been able to provide outstanding service to the mining industry by continually expanding their process equipment and production area. This internal growth created the opportunity to handle larger mining parts, equipment, and structural pieces for mine expansions in the province, and in being available as an integral partner with new mines being built in Saskatchewan.

While many people believe that powder coating is “new” technology, it has actually been in existence since the 1950’s. The quality, durability, and diversity of powder coatings has continually evolved and improved. Many industries, particularly automotive and agricultural equipment manufacturers, have adopted powder coating as their preferred coating process. Some in the mining industry are now recognizing the advantages and value in this technology as well.

Another misconception is that the paint specifications used in the mining industry cannot be equaled by powder coatings. The fact is that powder coatings, when used as specified by the manufacturer, are as outstanding as the “legacy coatings” that have been used in the mining industry for the past several decades. SCPC has developed a solid relationship with Akzo Nobel Coatings to ensure that the powder coating systems we offer will provide the

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- ❖ Indoor Sandblasting, Temperature and Humidity Controlled



### Mining Parts Commonly Coated:

- ❖ Junction Boxes
- ❖ Structural Steel, Railings, Gratings
- ❖ Electrical Panels
- ❖ Conveyor Frames, Stands & Stringers
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*The fact is that powder coatings, when used as specified by the manufacturer, are as outstanding as the “legacy coatings” that have been used in the mining industry for the past several decades.*

same or improved performance to the existing coatings, which the mining industry has relied upon in the past.

Akzo Nobel Coatings is a worldwide supplier of both wet coatings and powder coatings, particularly here in the Saskatchewan mining industry, with brands such as ICI Devoe and International Paints. The Interpon Powder Coating products supplied by Akzo Nobel include zinc-rich epoxies, chemical-resistant epoxies, polyurethanes, high-temperature coatings, and anti-skid coatings. While the liquid coating technologies continue to provide outstanding corrosion resistance, powder coatings are emerging as an advantageous option for many different projects. Our customers can be rest assured that if Akzo Nobel Coatings manufactures the products, the finished product will meet or exceed their existing wet paint specifications.

We speak from experience. Saskatoon Custom Powder Coating has sandblasted and powdered many projects for the Saskatchewan mining industry. There are powder-coated products in every potash and uranium mine in the province. Projects such as trans-

formers, electrical skids, conveyors, structural steel, motor bases, belt guards, gratings, stairs, and safety railings just to name a few, have been powder-coated and are currently in service. Powder coatings are making an impact and the mining industry is responding positively to what it is seeing due to the advantages being realized, such as cost savings and increased durability during shipping and handling.

Just as mining equipment and mining techniques have evolved and improved over the years, so too should the corrosion-resistant coatings. Powder coatings represent the evolution of corrosion-resistant coatings. Powder coating your next project will allow it to last longer, reduce downtime, and ultimately save your company money.

More information about our company and the powder coating process is available on our website. We welcome you to contact us for more information and to see if powder coating is an option for your next project. Please visit us either at [www.custompowder.com](http://www.custompowder.com) or on Facebook. ♦

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# A greener, more efficient marine transportation

By Marc Gagnon, director, government affairs and regulatory compliance, Fednav International Ltd.

**W**hat is the difference between a tonne of goods transported by road and a ton of goods transported by ship? The short answer: 533 per cent more greenhouse gas emissions.

Traditionally identified with the movement of bulk commodities over long distances, shipping is recognized as the mode having the least impact on the environment. While one ship can replace nearly 1,000 trucks, it is clear that in terms of air emissions, noise, congestion, and safety, maritime transportation is the clear winner.

Like any human activity, however, it carries its share of risks and impacts to the environment. Countless organizations, companies, and dedicated people work daily to lessen this

impact in order to prove that maritime transportation is the most environmentally friendly mode.

The International Maritime Organization, the UN agency that regulates and supervises the shipping industry, is now moving ahead with compulsory measures to improve the energy efficiency of ships and reduce their environmental footprint. Whether the reduction of GHG or those of sulphur oxide and nitrogen oxide, IMO has clear and ambitious goals for the next year.

To counter the introduction of aquatic invasive species in ports and marine estuaries, the IMO has developed and put forward the convention on ballast water, which should soon be ratified. These rules will require ships to treat their ballast water, thereby eliminating the risk of introducing harm-

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ful organisms outside of their natural environments.

Many environmental programs exist for the marine industry, the most notable being Green Marine, a strict, voluntary, and transparent program that helps its members to achieve excellence in environmental protection by going further than current regulations and standards.

Meanwhile, Fednav, the largest international bulk shipowner in Canada, continues to apply its own stringent environmental policy. Fednav was the first company in the maritime sector in Canada to make its environmental policy public. This policy covers seven major issues, including GHG emissions, ballast water, and spill prevention.

And it works! Since 1990, Fednav reduced its GHG emissions by more than 45 per cent per tonne/nautical mile. Sulphur emissions decreased by 15 per cent between 2008 and 2012. The vessels that will be entering the Fednav fleet in 2015 will emit 5,000 tons of emissions per year, less than similar vessels built in the late '90s. Fednav has been steadily investing in new technologies for treating ballast water since the early 2000s.

Obviously, there are still obstacles to overcome in the quest for a greener and more efficient maritime industry. However, Fednav's experience goes beyond regulations — we are steadily progressing to reduce the environmental impact of transportation. ♦



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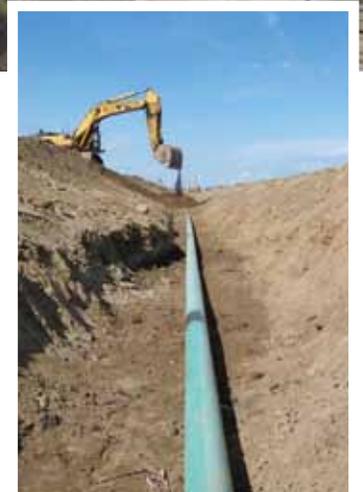
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# Your cost-effective solution

## Tartan Canada Corporation



Since 1953, Tartan Canada Corporation (“Tartan”) has been providing safe, high-quality, cost-effective industrial energy services within Western Canada to the energy, utilities, and processing sectors. Our services include plant and field maintenance, shutdowns, construction, and fabrication. Tartan is able to provide open-shop services through our operating entities Tartan Industrial Contractors Ltd. and Arc Line Construction Ltd. We also have the ability to provide union building trades to our customers through our operating entity LML Industrial Contractors Ltd.

LML Industrial Contractors Ltd. (“LML”) provides quality, cost-effective union solutions for plant maintenance, shutdowns, and construction projects. LML has been proudly serving the refining, power and potash sectors in Alberta and Saskatchewan since 1991. LML’s service offering includes:

### **Plant maintenance**

- Plant and field supervision and personnel
- Plant and field equipment
- Operational support
- Planning, scheduling and cost personnel
- Administration/document control
- SAP support
- Materials, equipment and procurement management
- Subcontractor management
- Quality assurance/control
- Safety management

### **Shutdown services**

- General contractor
- Turnaround management
- Planning and scheduling

- Supervision and labour supply
- Materials, equipment and procurement management
- Third-party services
- Fabrication
- Quality assurance/control
- Safety management

### **Construction**

- Plant and field construction
- Project management
- Estimating, planning & scheduling
- Cost control
- Change management systems
- Quality control /assurance
- Safety management

Whenever possible, LML promotes direct and in-direct employment opportunities for local residents, First Nations, and subcontractor businesses. LML has a longstanding tradition and ongoing commitment to support a variety of charitable causes and non-profit community service groups in Saskatchewan. Our charitable donations program has benefitted a number of organizations throughout Alberta and in Lloydminster, Estevan and Coronach, Saskatchewan.

### **LML advantage**

- Consistent and dedicated approach to safety excellence
- Deliver high-quality cost-effective services
- Customer focused – flexible and adaptable
- Ability to deliver experienced union building trades and supervision. ♦



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The mining equipment and components for underground operation need to be reliable and support your production goals. Rexnord's rugged gear drives and couplings deliver the torque needed to power your mining equipments.

The processing mill is the central operation where the continuous crushing, grinding, desliming, floating, drying and sizing of the potash ore occurs, which is vital to achieving your mine's production goals. Offering a comprehensive power transmission product line to help move your material, Rexnord understands how important this is to your bottom line and strives every day to make mineral processing more efficient.

Rexnord's experience in bulk material handling applications spans more than a century and Rexnord provides a one-stop-shop for all bulk material handling needs. From ore to compaction and rail car loading, Rexnord provides heavy-duty bucket elevators, drag conveyors, and apron feeders to ensure you're covered to handle the harshest potash requirements.

Rexnord's broad offering of high-quality, mission-critical industrial products and solutions perform under the most rigorous demands in potash mining applications, including the Falk V-Class™ gear drive that's engineered to deliver power, durability, and reliability under the harshest conditions. Planetgear® speed

reducers and Rexnord Bucket Elevators include a robust design featuring a one- and two-chain pitch per bucket.

The Falk V-Class gear drive provides long seal life, solid thermal performance, increased operating life, as well as shorter lead times, convenient serviceability, and faster, easy-access support. With its cooler operating temperature, optimal power and advanced technology, the Falk V-Class Gear Drive outperforms and outlasts the competition.

Shaft-mounted Planetgear (SMP) Speed Reducers include tac-onite duty seals and custom solutions to meet exact application requirements (including right angle input, C-face input, and hollow output shaft sizes).

Bulk handling elevator applications demand critical components. Rexnord designs and manufactures head and boot sections for easy inspection, maintenance and cleanout, service buckets to assure high strength for extreme conditions, segmental traction wheel and sprockets with ease of installation and replacement without body, chain or shaft disassembly, unique Ni-Hard bearings and chain assembly tools with improved arm design to reduce breakage and double power.

Additional Rexnord potash solutions include: couplings, bearings, drag and flight conveyors, torque limiters, backstops and brakes, industrial chain and idlers, rebuild and asset management services, and environmental protection components.

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# Meeting the future demand for energy distribution

**P**artner Technologies Incorporated (PTI) manufactures liquid-filled distribution and small and medium power transformers up to 40MVA at 138kV, 650kV BIL. PTI designs and manufactures transformers to meet industrial requirements and utility specifications under:

- CSA, ANSI, or IEC standards;
- CSA & DOE losses & efficiencies;
- Transformers can be designed to meet a variety of load type configurations such as VFD - variable frequency drives, zig-zag, and neutral grounding applications.

Based in Regina, Saskatchewan, PTI is the largest Canadian-owned manufacturer of power transformers, and employs over 130 people. Operating with the flexibility and resourcefulness of a small company, customers appreciate being able to call and speak directly to someone with the knowledge about transformers. Responses are always prompt, and often the solutions are innovative.

Facing the enormous challenge of replacing and upgrading infrastructure, and providing new support for the demands of a growing province, SaskPower is looking for innovative cost-effective solutions to meet the challenges ahead.

Typical substations can take upwards of two years to develop, design, purchase materials, construct, and commission. Partner Technologies looked at this opportunity and developed a portable outdoor distribution station, or PODS, for SaskPower. PODS not only saves significant costs versus conventional station designs, but can also be manufactured, shipped and installed in less than 24 weeks after receipt of order.

The unique design offers customers a completely tamper-resistant dead-front substation. The emphasis is on improved operator and public safety. It ships and can be easily moved by standard trucking methods.

The product provides a much smaller footprint, thus reducing the size of the ground grid. The small footprint requires less land, which adds to the cost savings.

PODS are designed to be maintenance free. Reliability is

improved because the station has no live parts exposed to the environment or wildlife. This greatly improves the aesthetics and public acceptance, eliminating unsightly fencing and overhead structures. Protective monitoring equipment is supplied on the PODS for local inspection.

SaskPower, like other utilities, are pursuing initiatives to build a modern electricity system. The future of distributing energy demands two-way characteristics. Electricity and information need to flow both ways. This involves monitoring equipment, computers, automation and communications to improve the reliability, safety, and efficiency of the electrical grid. PTI developed PODS with the ability to seamlessly link to customer communication needs. Important equipment on board the PODS is designed so that SaskPower can remotely supervise the station via cellular communications. The data collected can also be easily added to an existing SCADA system. PODS are equipped with a visual T&D that offers a highly reliable HMI. For example, all a SaskPower district operator has to do is contact the PODS over a secure Internet connection and it is like they are standing in front of the relays and controls themselves.

At the time of writing this article, two 72kV to 25kV PODS at 10MVA have been successfully deployed, and are currently providing energy to many customers on SaskPower's electrical system in the province of Saskatchewan. Several more have been ordered, including two 10 MVA designs at 138kV.

Mines in general are not unlike a utility. They have electrical distribution requirements to install and operate. PTI has successfully worked with many companies in the mining industry already. We thank all our customers for your business and support and hope we will have the opportunity to continue working together. Please inquire at PTI, and let's talk about a transformer solution for you!

For more information, contact them at:

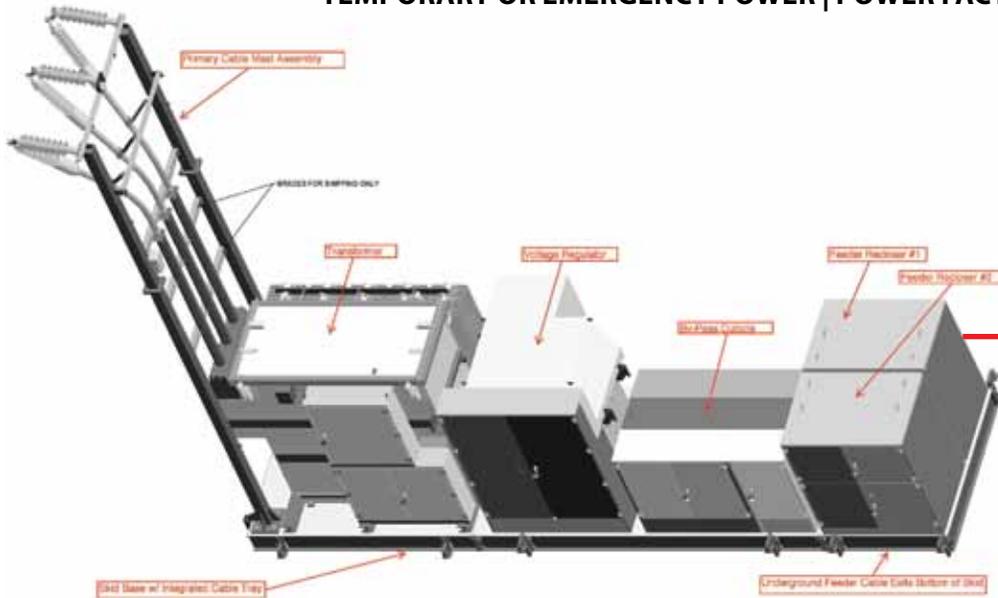
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# Having a quality management system in place is the key to success

By Scott Boker

Many companies have formal ISO 9001 - 2008 registered quality management systems (QMS), and many more use the ISO 9001 standards as their primary quality tool. Often, these same companies are also using advanced tools, such as lean, or Six SIGMA, and yet they are struggling with their QMS.

When asked how much value their QMS provides to the company, senior manage-

ment and company owners often answer "very little". After asking a few specific questions about the owner's quality system, the answer to this question becomes obvious.

## What types of questions does a quality auditor ask?

Does the company have a quality policy? Does it have clearly stated and measurable objectives? Are the objectives measured and regularly reviewed? Does the

company have key performance indicators (KPI's) that are designed to match the company's quality objectives? Does the company's non-conformance definition revolve around "non-conforming product"? How many NCRs were written last year? How much money was lost the previous year, month, etc., due to poor quality? What is the company's customer satisfaction rating, and what are the most commonly identified areas for improvement?

If many of these questions are answered in the negative, and there are no records available regarding cost of poor quality (COPQ), it can be expected that senior management or company owners would say that the quality system provides little value to their company.

## So why is this?

**Principle #1:** Manage using data - What we measure, we manage. Company owners and managers need data, and if the quality system is not providing data, based on measurable objectives and KPI's, and metrics from their NCR/continual improvement and customer satisfac-



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*Some of the best quality management systems are found where company management understands that quantifiable data is needed to better manage the business.*

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tion processes, what value can it provide to management?

Some of the best quality management systems are found where company management understands that quantifiable data is needed to better manage the business. Usually these companies would have ample safety statistics and financial data from production, sales, as well as a lot of data from their quality management system.

**Principle #2:** Manage the business - A high-functioning QMS results in great business management. Companies that are measuring quality, setting measurable objectives and KPI's, and are mining data

from customer satisfaction will be providing a multitude of data for management and owners to make informed business decisions, reduce business risk, and better manage the company. They understand that the unlocked value from their QMS comes from understanding that a QMS should be considered a "business management system", not just something for the quality group to implement on the shop floor, the assembly line, or in the field.

**Principle #3:** Manage the basics - Get the simple things such as customer satisfaction, non-conformances and COPQ, and corrective/preventive actions for continual improvement working to their full

potential before implementing advanced tools and spending money on such items as Lean or Six SIGMA.

Bottom line then is if you have a quality management system in place that is not providing you the value it could be, or if you are considering implementing a new quality management system, the key to success is to remember those three important principles: what we measure, we manage; treat the QMS as your business management system; and manage the simple things proficiently before using any advanced quality tools.

*Scott Boker is a quality management consultant at Lexcom. ♦*



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# CAT-TEK's smart cathodic protection for well casing

## The issues

Corrosion of well casings is a serious concern. When well casings are exposed to surrounding soil, electrochemical cells form which leads to active corrosion sites and eventually to penetration of the external casing, leading to expensive repairs, environmental damages, and production downtime.

For example, if a steel bulkhead were discharging 875 mA over a period of four years, the below calculation will calculate the amount of metal that will be lost. With Faraday's Law/Formula & Appalachian Underground Corrosion Charts, we can calculate this equation:

$9.1 \text{ kg/A-yr} \times 0.875 \text{ A} \times 4 \text{ years} = 31.9 \text{ kg} = 70.3 \text{ lb}$  of lost steel

*70.3 pounds of steel will be corroded over a four-year period. High levels of this corrosion will be most critical in pitted or imperfed areas of the steel.*

NACE International (National Association of Corrosion Engineers) states the following:

"Corrosion is one of the most important problems encountered by the owners shareholders, and operators of underground, offshore, submerged, and other metallic structures exposed to an electrolyte. If corrosion is not controlled, it can lead to large costs in repairs or facility replacement. Even greater costs can be incurred from environmental damage, injuries and fatalities."

## Solution for your corrosion protection needs

### Cat-Tek provides a total end-to-end solution

#### The answer

CAT-TEK's cost-effective well casing cathodic protection program is a fraction of the cost of the work-over of a well casing and/or flow line leak into the environment and loss of production. We base our CP systems on your needs and your environment.

- Number of wells, geometry, and location of well casings to protect
- Ground conditions and PH levels
- Formation resistivity

- Electrical grounding
- Hazardous conditions – AC availability
- Pipelines and flow lines and whether or not to isolate
- Soil resistivity
- Future development

One call... we do it all

CAT-TEK Cathodic Services was established to meet the demand of the oil and gas industry for cathodic protection. Today, CAT-TEK offers a complete cathodic protection package from initial investigative survey through engineering design, site installation, and commissioning of systems with subsequent planned operational inspection and maintenance.

## Quality, control & reliability

### We offer superior service to our clients' needs

#### Site assessment

Preliminary and follow-up corrosion engineering and design

With over 50 years of combined experience in the oil field, our engineering team works with the client to develop design specifications for each project. We start by creating drawings of the project and installation details. The plans cover materials of construction, cathodic protection designs, and corrosion monitoring systems. Once approved, we send our specialized crew to the project to ensure that all work being performed adheres to sound engineering practices.

#### Construction/installation

### Complete, professional, safe and efficient installation

We install all types of cathodic protection systems throughout Canada.

- Deep drill anode systems
- Vertical and horizontal systems
- Distributed impressed current systems
- Sacrificial systems

Our construction crews are trained not only in the physical application, but also on the theory of how the systems work. This practical, hands-on knowledge of cathodic protection systems allows us to provide the quality of work our clients expect.



## CAT-TEK'S SMART CATHODIC PROTECTION



**Important Update**  
Corrosion is one of the most important problems encountered by the owners, shareholders, and operators of underground, offshore, submerged and other metallic structures exposed to an electrolyte.  
If corrosion is not controlled, it can lead to large costs in repairs or facility replacement. Even greater costs can be incurred from environmental damage, injuries and fatalities.  
- NACE International

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## PROTECT YOUR INVESTMENT...AVOID RUST, CORROSION AND DETERIORATION OF YOUR ASSETS



### THE ISSUES

Corrosion of steel is a serious concern. When steel is exposed to surrounding soil, electrochemical cells form which leads to active corrosion sites and eventually to penetration of the external steel, leading to expensive repairs, environmental damages and production downtime.

### THE ANSWER

CAT-TEK's cost effective cathodic protection program is a fraction of the cost of the work-over of a well casing and/or flow line leak into the environment and loss of production. We base our CP systems on your needs and your environment.

### CALL US TODAY FOR A FREE ESTIMATE

CAT-TEK Cathodic Services | 601-6th Street, Estevan, SK S4A 1A5  
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Quality, Control & Reliability With over 50 years of combined experience in the Oil Field...We offer superior service to our clients' needs.

Committed to Health, Safety and our Environment CAT-TEK Cathodic Service is committed to health and safety and minimizing the impact of our activities on the environment.

CAT-TEK provides a "one-stop shop" for provision of construction CAT-TEK Cathodic Services is headquartered in an integrated workshop and office facility in booming oil community of Estevan, Saskatchewan, Canada

Competitive Rates Many of our clients consider us lower than the competition, because of our efficiency, experience and our world-class equipment.

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## Reporting & charting

### Maintenance contracts

Our maintenance contracts ensure that our clients' cathodic protection systems continue to provide the highest levels of performance and protection. This service also includes our extensive audits and computerized records management, including reports and graphs, so you're always up to date.

- Annual test point survey
- Periodic rectifier maintenance inspections
- Interference surveys
- Plant and refinery surveys
- Advanced recordkeeping and management

### Accredited

CAT-TEK is NACE accredited and has extensive experience in the development of cathodic protection systems for the following applications:

- Pipelines
- Tank bases
- Well casings
- Process plants buried piping/equipment
- Above-ground storage tanks

- Commercial gas stations

## Committed to health, safety, and our environment

CAT-TEK Cathodic Services is committed to health and safety, and minimizing the impact of our activities on the environment.

## CAT-TEK provides a "one-stop shop" for the provision of cathodic protection

- We are cathodic protection engineers - our experienced team can assist clients in the design and implementation of cathodic protection projects from site survey through system design and supply to commissioning and operational support.
- We supply cathodic protection materials - we stock a comprehensive range of cathodic protection materials and maintain alliances with a number of manufacturers allowing us to provide a high-quality responsive material supply service.
- CAT-TEK cathodic services is headquartered in an integrated workshop and office facility in the booming oil community of Estevan, Saskatchewan, Canada. We are available to travel in any parts of Canada to meet your needs.



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- Vertical and horizontal systems
- Distributed impressed current systems
- Sacrificial systems - mag anodes protect pipelines, steel couplings, and flanges
  
- Maintenance contracts
  - Annual test point survey
  - Periodic rectifier maintenance inspections
  - Interference surveys
  - Plant and refinery surveys
  - Closed interval potential surveys
- Reporting & charting
  - Advanced recordkeeping and management
  - 24/7 online web access

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