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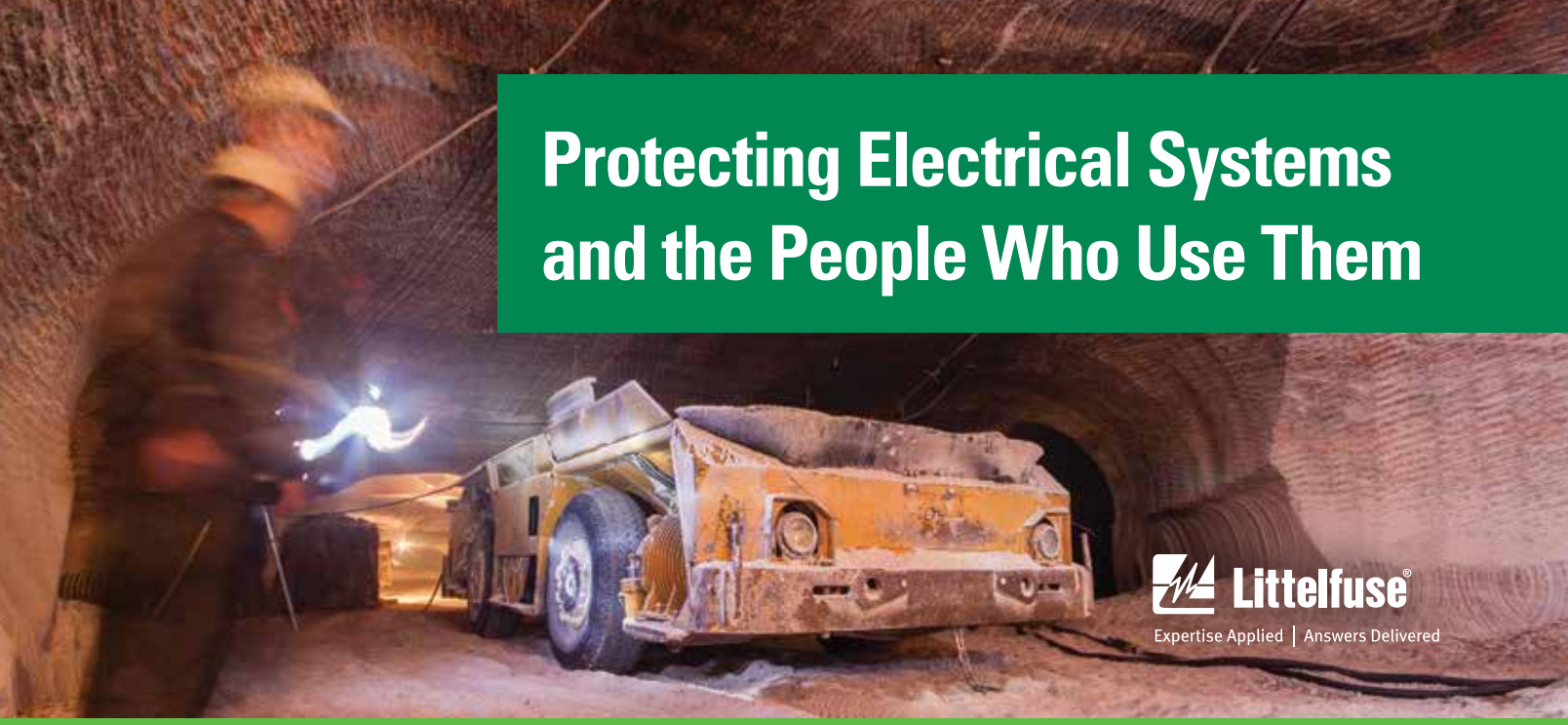

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MESSAGE FROM THE EDITOR
SHAYNA WIWIERSKI

The potash industry is accustomed to thinking long-term. Few sectors demand more patience, persistence, and planning—qualities that continue to define the people and projects shaping this essential resource. As 2025 ended, it was clear that the world's fertilizer supply chain is entering a period of profound realignment, with potash firmly recognized as a critical mineral and a cornerstone of agricultural resilience.

The U.S. Department of the Interior's 2025 update to the Critical Minerals List, which for the first time includes potash, underscores what producers, governments, and growers have long understood: fertilizer security is economic security. In an era marked by resource nationalism, volatile trade routes, and growing food demand, reliable potash supply has become as strategic as energy or technology metals.

In this issue of *PotashWorks* magazine, we take a look at the global reframing of fertilizer supply which has turned its attention toward new frontiers—none more intriguing than Central Africa's Atlantic coast. Once viewed as a speculative region, it is now shaping into a genuine growth corridor for future supply. On page 28, we read about Millennial Potash's Banio Project in Gabon, which sits near the heart of this transformation. Following a major expansion of its NI 43-101 Mineral Resource Estimate in late 2025, Banio is positioned to play a defining role in diversifying global production beyond traditional strongholds like Canada and Russia.

The strategic significance of projects like Banio extends well beyond geology. The region's access to deepwater ports along the Atlantic coast offers a vital logistical advantage that could shorten export routes to major fertilizer-consuming regions in South America and Asia. As demand continues to rise, especially across emerging agricultural markets, such developments are reshaping how the world thinks about potash geography.

For all the new activity abroad, Canada remains the industry's gold standard. Saskatchewan continues to anchor the global supply chain with world-class operations, deep technical expertise, and stable investment conditions. But maintaining that leadership comes with new urgency. As investing in trade-enabling infrastructure becomes a central national discussion, the potash sector provides a clear example of what's at stake.

Canada's potash production is wholly landlocked, relying on an intricate network of railways and ports to reach customers worldwide. This system has served the industry well for decades, yet it faces mounting challenges. Rail capacity constraints, coastal gateway congestion, and fluctuating labour agreements have all created uncertainty in recent years. Such issues are not unique to potash—they affect every major Canadian export—but their impact is especially pronounced in a commodity that must move efficiently to meet global planting cycles.

Ottawa's renewed focus on infrastructure funding and permitting reform offers an opportunity to address these chronic bottlenecks. Canada's geography already makes the movement of goods complex; our regulatory barriers need not make it harder. A more predictable and coordinated approach to infrastructure investment—one that balances environmental stewardship with economic urgency—will be essential to keep Canadian potash competitive in a rapidly evolving market.

As *PotashWorks* readers know, our sector thrives on collaboration. Producers, suppliers, engineers, and communities all play a part in developing and sustaining projects that often span generations. The stories in this issue highlight that wide lens—from Millennial Potash's milestone in Gabon to new innovations in transportation, safety, and sustainability within Saskatchewan's heartland.

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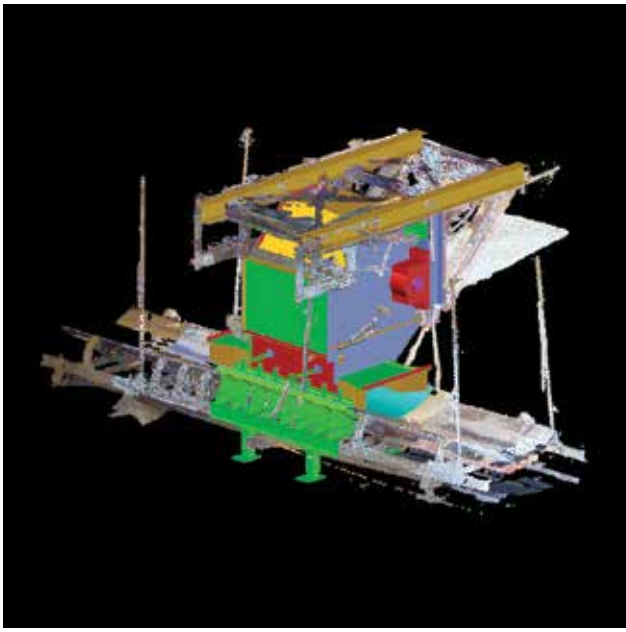

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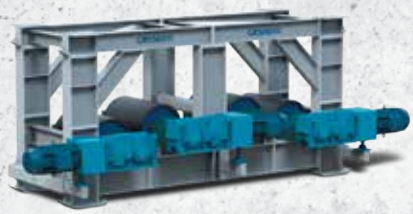

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They also remind us that the work of producing potash is not just about tonnes and grades—it's about enabling growth where it matters most. Every shipment that leaves a Saskatchewan mine or a Gabonese port contributes to the same global goal: supporting farmers, strengthening food systems, and sustaining economic stability.

As we look toward 2026, the conversation around critical minerals will only grow louder. Potash is now firmly part of that dialogue, standing alongside lithium, copper, and rare earths as a mineral essential to the world's future. The challenge—and opportunity—before us is to ensure that Canada continues to lead, innovate, and invest so that our industry remains as strong and dependable as the soil it helps nourish.

I hope you enjoy this issue and if you are looking for more potash news, make sure to check out our three-times-a-year digital publication, *The Potash Producer*. You can subscribe on our official site, potashworks.com.

Shayna Wiwierski
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MESSAGE FROM THE PREMIER OF SASKATCHEWAN
SCOTT MOE

Saskatchewan is known for providing reliable and sustainable food, fuel, fertilizer, and critical minerals for a growing world. Much of our strong reputation is based on our potash industry, which is important both locally and around the world.

In 2024, Saskatchewan's potash industry achieved a significant milestone with production hitting a record 24.7 million tonnes, an eight per cent increase from the previous year. This remarkable growth highlights Saskatchewan's well-earned reputation as the world's leading potash supplier, accounting for approximately one-third of global potash production. Driven by strong demand and ongoing mine development, our potash sector is set for long-term, sustainable growth.

This success story did not happen overnight, it is the result of many years of hard work, significant investments, and a strong focus on innovation and sustainability. Companies such as Mosaic and Nutrien are upgrading their operations in Saskatchewan to meet the increasing global demand for Saskatchewan potash. Meanwhile, K+S is ramping up production at its Bethune mine, and BHP's Jansen Stage 1 and 2 projects are underway, with first production expected to begin in 2027. We are proud to have these world-class mining companies operating in Saskatchewan, continually strengthening our province's position as a global leader in the fertilizer market.

As the world's population continues to increase, the need for a reliable source of potash is more important than ever. Potash helps improve crop yields and quality, allowing farmers to grow more food on smaller areas of land. The efficient use of potash is crucial for sustainable farming and global food security.

Despite a decline in global prices, Saskatchewan's potash sector achieved impressive sales of $7.85 billion in 2024. This figure highlights our industry's resilience, strength, and competitive edge on the world stage, even amidst economic uncertainties. The potash sector not only stands as a vital pillar of Saskatchewan's economy but also delivers significant benefits to our communities. It creates thousands of good-paying jobs, provides more than $1 billion in taxes and royalties annually to support essential government services, and invests billions more in local businesses, fostering stronger communities and contributing to a prosperous, stable economy.

Looking ahead, Saskatchewan is exceptionally well-positioned to continue expanding its world-leading potash industry. Our government remains dedicated to supporting growth in the potash sector through a stable and competitive development framework.

As a province, we are committed to growing Saskatchewan's economy while also supporting global food security, one tonne of potash at a time. Our shared focus on innovation, sustainability, and community strength will continue to drive our province's success. Through the collaborative efforts of government, industry, and local communities, Saskatchewan will remain a leader in the global potash market, bringing prosperity to our people and food security to the world.

Scott Moe
Premier ▲

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MESSAGE FROM THE SASKATCHEWAN MINISTER OF TRADE AND EXPORT DEVELOPMENT **WARREN KAEDING**

Saskatchewan is fortunate to have the largest potash reserves on the planet and the ability to support global food security for centuries. While the province's potash sector will play a crucial role in ensuring global food security for generations to come, it is also helping Saskatchewan maintain the strongest economy in Canada.

Getting Saskatchewan's potash into the hands of food producers around the globe is crucial to our economic success. That is why the Government of Saskatchewan continues to support the industry's growth by fostering a competitive investment environment and sharing the potash story internationally.

This work is supported through our network of nine trade and investment offices in China, Germany, India, Japan, Mexico, Singapore, United Kingdom, United Arab Emirates, and Vietnam. These offices are vital to helping us find new markets, while strengthening existing relationships. They are also a key component to attracting investment, as well as creating jobs and opportunities for Saskatchewan citizens.

Here at home, we are exploring new opportunities to enhance the sector. Recently, our government proposed the Mineral Resources Amendment Act, which is aimed at allowing potash companies to mine underground minerals in cases where rights holders are unable to be located. This legislation could lead to around half a billion dollars of additional revenue for the province, with royalties going into a trust where mineral owners can claim their share once they have been identified.

Our potash industry's story is one of strength and resilience, and one I am proud to share across the province, the nation, and the globe. After all, a flourishing industry means we are able to provide Saskatchewan people with the services, programs, and infrastructure they rely on every day, making our province not only the best place to do business, but the best place to live, work, and raise a family. ▲

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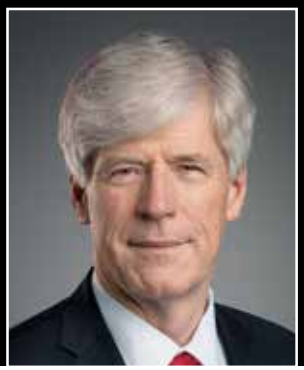

MESSAGE FROM THE MINISTER OF ENERGY AND NATURAL RESOURCES, THE HONOURABLE **TIM HODGSON**

Canada's potash sector: Strategic, sustainable, and ready for a new era of global leadership

For more than 50 years, Canadian potash has been central to global food security and economic prosperity. With the world's largest potash reserves, Canada accounts for around 33 per cent of global production—supplying not only the United States, but international markets throughout Asia, South America, and beyond.

Canada leads the world as the largest producer of potash, with the biggest reserves on the planet. In 2024, Canada's potash mines supplied the world one-and-a-half times more than the next largest producer—and 80 per cent of all potash used by U.S. farms.

Saskatchewan's potash mines also set the standard for sustainability, producing 50 per cent fewer greenhouse gas emissions per tonne compared to global competitors, a testament to the Canadian mining industry's expertise and commitment to environmental responsibility.

A powerful example of continued Canadian mineral leadership is the construction of BHP's Jansen mine, the single largest investment in Saskatchewan's history.

Located approximately 140 kilometres east of Saskatoon, production at Jansen is expected to begin in mid-2027. Once fully ramped up, Jansen will produce approximately 8.5 million tonnes of potash every year, making it one of the world's largest potash mines.

BHP's $14 billion investment in Jansen will deliver a facility with around 50 per cent fewer operational greenhouse gas emissions than the average potash mine in Saskatchewan, and provide about $1 billion in contract opportunities for local and Indigenous businesses. Jansen represents a major addition to Canada's sustainable and reliable export capacity, with long-term expansion plans.

The Canadian potash industry relies heavily on rail transport to move its product from Saskatchewan mines to ports for export. Recent challenges, including rail capacity constraints and labour disruptions, have highlighted how essential reliable transportation is to maintaining Canada's reputation as a trusted supplier.

Recognizing the pivotal role of rail and port capacity in connecting Canadian resources to the world, the Government of Canada is investing in stronger and more adaptable transportation and supply chain systems.

Through the $5 billion Trade Diversification Corridors Fund announced in Budget 2025, new investments will enhance infrastructure across rail, ports, airports, and digital logistics, supporting efficient export of Canadian minerals like potash. By strengthening these networks and unlocking greater export capacity, this fund will help Canadian potash producers deliver reliably to overseas markets and reinforce Canada's standing as a leader in sustainable resource development.

Canada's potash sector continues to set an example to the world, showing that sustainability, security, and community partnership are mutually reinforcing. As Minister of Energy and Natural Resources, I will work closely with industry, Indigenous partners, labour groups, and international allies to build a clean, competitive, and resilient future.

To the workers, innovators, and communities who make Canadian potash possible: thank you for your leadership. Together, we are building a more secure and prosperous world. ▲

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FROM WHERE I SIT...

2025 – A YEAR IN REVIEW

BY STEVE HALABURA P.GEO., CEO, BUFFALO POTASH CORP.

I begin with a disclaimer – this article was not written by Chat GPT, so consider the innumerable mistakes I tend to make as a badge of authenticity.

A year ago, I was bemoaning the fact that President Donald Trump had levelled punitive tariffs against many Canadian products imported by America, and that this would create instability that would threaten Canadian workers, producers, and businesses. I also recall much doom speak regarding the havoc that would envelop our economy. Hope for the best, but brace for the worst, I wrote.

I was surprised – I did not expect as busy a year as it turned out to be. I found myself spending more time behind the keyboard than I had planned, and it was not just potash projects alone. Among other things, I found myself involved in the search for natural hydrogen, converting forest biomass into fuel pellets, and contributing to several economic development initiatives. The keyboard is a harsh master, and many days I found myself as tired as if I had spent the same amount of time splitting rocks with a mallet.

This work regimen left me with several burning questions:

1. Why are Teams/Zoom meetings even more draining than face-to-face meetings?
2. Has the AI/chip/data centre investment craze siphoned off even more capital from conventional capital markets than previous crazes (remember cannabis? And crypto?)
3. Has being doused with punitive tariffs become almost a badge of honour?
4. Why is potash not sexy?

Since this is a potash publication, I will leave the first three questions alone and return to number four later. But to begin with, I have several opinions on potash tariffs, to which I make two observations.

The first derives from news media reports concerning the most recent threat of "serious tariffs" to be placed on American imports of Canadian – i.e., Saskatchewan – potash, which, in the perfect phrasing of Saskatchewan Premier Scott Moe, should be "treated seriously, but not taken literally". It seems this is also the attitude of the province's biggest producers – Nutrien and Mosaic – whose share price did not tank during the news flow.

The second observation concerns why American intentions to replace Saskatchewan's potash imports may be wishful thinking. Much has been made in the media that America imports 90 per cent to 95 per cent of its requirement; however, no one has asked why this is so. Is it because the industry

is in a nascent phase, and the investment of additional capital will somehow vastly increase domestic production?

No, it is the opposite way around. There is not that much new potash to be had in the traditional production regions of America, like New Mexico, Utah, and Michigan. If fact, this is the reason there is a potash industry in Saskatchewan. After the Second World War, established producers from New Mexico came to Canada because their existing mines were depleted and new deposits needed to be developed. To anyone wishing to replace Saskatchewan production with new American production I can only say this: "good luck with that!".

But, what about the rest of the world?

A year ago, Nutrien forecasted a global shipment range of between 73 and 75 million tonnes for 2025, demand forecasted to increase sales to between 74 and 77 million tonnes for 2026, for an annual growth of about 1.4 per cent. U.S. demand remains stable, between 11 to 13 million tonnes of finished product. It's interesting to note that the positive financial outcomes for 2025 are due to "favourable affordability and limited global capacity additions due to 'announced project delays'". But more on that last bit further on in this piece.

From the viewpoint of Saskatchewan, what did 2025 look like?

From January to October 2025, Saskatchewan mines produced 12.5 million tonnes (K_2O) or 19.8 million tonnes (KCl) of potash, as compared to January to October 2025 production of roughly the same amount. In other words, it was flat production.

Sales during the same periods were $7.9 billion from January to October 2025, as compared to $6.8 billion for the corresponding period in 2024, which is an increase of 17.6 per cent.

Realized pricing was CDN$399 per tonne (KCl) in January 2025 as compared to CDN$343.43 per tonne (KCl) in 2024, which is an increase of 14 per cent from the previous year.

This rough analysis tells us that compared to a year ago, while production rate remained flat, price per tonne increased, which demonstrates to me that 1) price

is being driven upward, slightly shrinking availability in the marketplace; and 2) global supply is stable, which is where potash producers (and buyers) like it.

From the viewpoint of the established producers, what did the year look like? Let's look at integrated fertilizer giant Nutrien, which I take to be a bellwether of the industry.

For Nutrien, sales price (FOB mine site) for the nine months ended September 30, was US$250/t, up from US$220/t during the same period in 2024, with growth shown by a Finished Product (MOP) Sales volume in Q3 2025 of 4.0 MMt, slightly up from 3.9MMt in Q3 2024.

Overall, while production volumes were slightly down from 2024, prices were up from the previous year, again supporting the thesis of stability in the marketplace without any disruption by geopolitical or supply forces.

If producers and buyers in the global potash sector crave stability, what possible factors could upend these tranquil waters?

Geopolitically, some form of rapprochement between Russia and Ukraine seems likely in 2026, which may mean that "sanctions" affecting Russian sales and shipments of goods may be restored to pre-war levels. I don't think this will introduce much instability into supply and pricing, because people with much better connections than me are certain that Russian and Belarusian potash is entering the marketplace. Will new production ramp up, thus placing more product into the market? This depends upon the current state of Russian mine assets, and whether they have been able to maintain maintenance and production levels. Again, an assessment that is above my pay grade.

What about significant increases in supply? By this, I mean the soon-to-be-online Jansen mine, owned and built by BHP. Its construction has dominated the news over the past several years, and it is intended to make BHP the dominant force in the sector.

As reported by Mining.com in an article published on July 18, 2025, the company reported that Jansen's first stage will cost up to 30 per cent more and come online a year later than originally

planned. BHP announced it now plans to spend between $7 billion and $7.4 billion on Phase 1, up from the original USD$5.7 billion estimate. Completion was also pushed back a year to 2027.

The second stage of the project was also pushed back two years, to 2031. It temporarily paused its intended USD$4.9 billion investment in Phase 2, pending further design and cost estimation review.

Jansen is a conventional shaft and tunnel mine and is like the mines that its competitors Nutrien and Mosaic operate along the Highway 16 Potash Corridor. Such mines have always presented significant challenges in the form of shaft sinking through the notorious Blairmore formation, known for its high-capacity water flow, ground control, and mine layout once operations are at the mining level.

What is interesting is that several weeks after the Jansen news, Rio Tinto announced that it too remains a player in Saskatchewan potash; however, it was following the ways of some of the smaller potash juniors and was studying mining methods that overcome the almost impregnable barrier to entry created by a conventional shaft and tunnel mine.

Rio has quietly operated a permit north of the K+S Bethune mine for the past several years, quietly drilling resource estimation wells, and several wells designed to test what Rio calls an "unorthodox approach to extraction" at its "Texas" project.

Unlike BHP, Rio is planning to build a solution mine, which uses wells drilled from surface to penetrate the potash beds, then use a solvent fluid to dissolve the potash and bring it surface, where the potash is removed and the solvent is re-injected to dissolve more potash.

Rio was experimenting with what they call selective solution mining using oil well directional drilling and "clever science around what you use to dissolve the mineral and how you manage the flows".

The above is directly out of the playbook of several junior potash companies (like my own enterprise, Buffalo Potash Corp.) that have been socializing this method of mining for several years, as it could very well be sufficiently revolutionary to doom any future considerations of traditional shaft mines.

Rio was careful to point out that more work is required to demonstrate the technology, and that feasibility and pilot testing remains to be done. However, the prize is significant – new selective solution mines would be a fraction of the cost of a conventional tunnel mine and could be deployed anywhere new deposits need to be developed.

I take the above to mean this: a) there will be several years of stability on the supply side of the potash equation, as no new, big tonnages are likely to appear in the marketplace; b) "announced production delays" open a runway for the nimbler, cheaper solution miners to seize market share, assuming they successfully navigate the pilot and implementation stages; and c) by 2028, the world will need probably need another 2.3 million tonnes of product, which may be fillable by existing producers, and solution miners who get their operations up and running.

In summary – look toward 2026 to be a year of steady, stable sales, with upward pressure on pricing.

In closing, I can probably go back to sleep now, and let the potash bus drive itself; however, given the past few years, maybe these are famous last words!

'Nuff said. ▲

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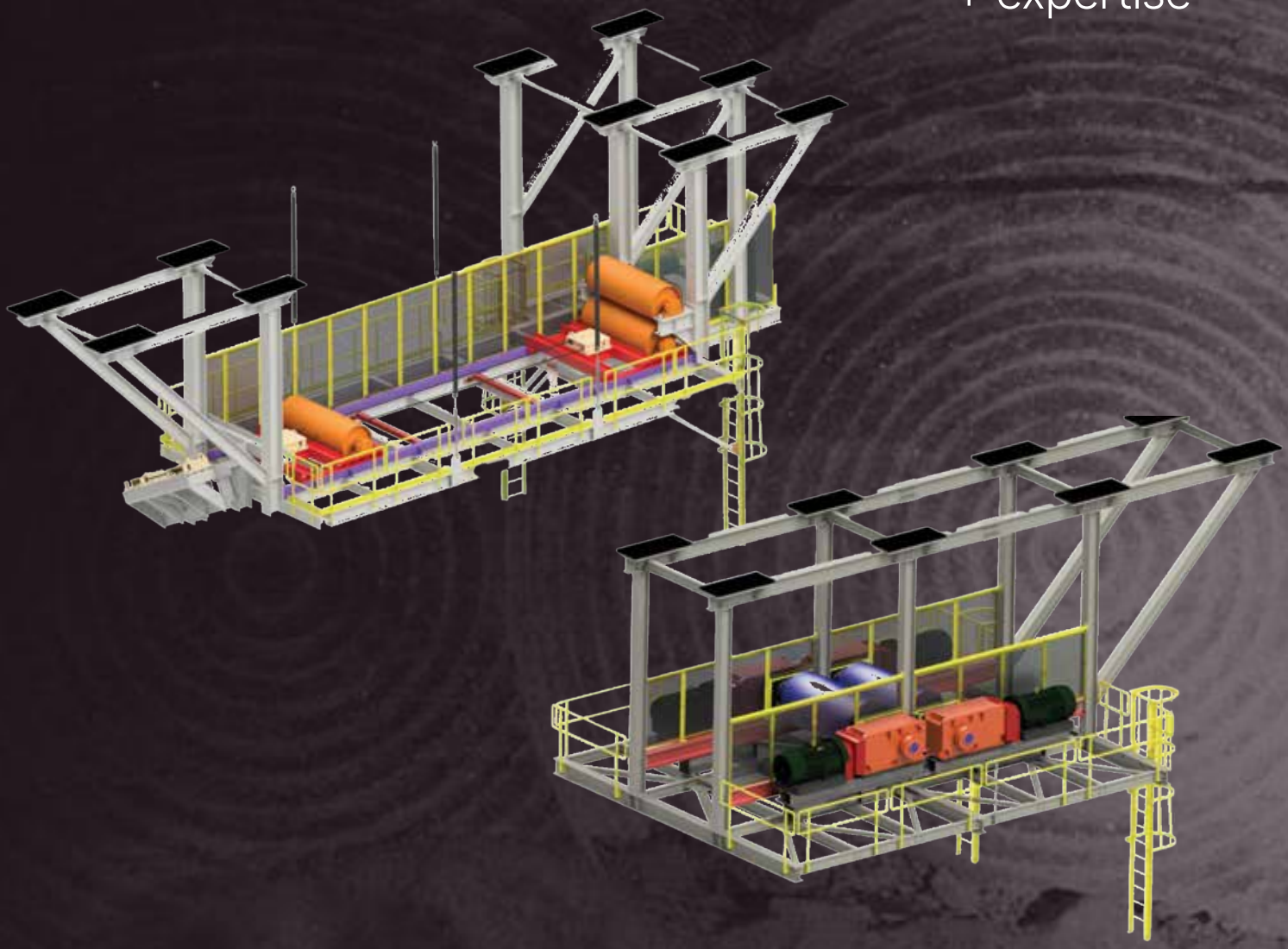

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From borers to BEVs: Advancing mining with Nutrien's electric vehicle fleet

BEVs are much quieter than diesel engines and the reduction of noise pollution creates a more comfortable work environment.

Electric-powered machinery has been used in our mines for more than six decades, and we're continuously seeking innovative uses for electric vehicles to expand our fleet

Borers were some of the first electrically driven machines used in Nutrien's mines, and now, approximately 75 per cent of their underground horsepower is electric.

For more than 60 years, electric-powered machinery has been used in Nutrien's underground potash mines. Borers were some of the first electrically driven machines used in our mines, and now, approximately 75 per cent of our underground horsepower is electric.

We are continuously seeking opportunities to expand our electric vehicle fleet. Most recently, we introduced battery electric vehicles (BEVs), which are powered by rechargeable lithium-ion batteries and electric motors.

"In 2011, the first BEV was built and trialed underground at our

Replacing diesel-powered vehicles with BEVs in their mines has air quality and safety benefits.

Cory potash mine," says Joel Thon, senior electrical engineer, Nutrien. "The development of the first BEV at Cory is what really spurred innovation in the use of BEVs in Nutrien's mines. Many of our sites are extremely interested in increasing their electric vehicle fleet in the coming years, and we're looking into adding more personnel carriers and larger options of BEVs like scoops, haulers, bolters, skid steers, and forklifts."

Replacing diesel-powered vehicles with BEVs in our mines has air quality and safety benefits. BEVs produce zero tailpipe greenhouse gas emissions. This reduces direct harmful pollutants like nitrogen oxides and particulate matter, which improves local air quality and reduces respiratory health risks for mine workers. Additionally, BEVs are much quieter than diesel engines and the reduction of noise pollution creates a more comfortable work environment. BEVs also do not carry the risk of diesel spills and have no associated flammable fuel storage.

Since 2013, Thon has been supporting the Electrical Integrity program within Nutrien's potash business unit. This includes developing and leading electrical safety, maintenance, and training programs, overseeing our electric vehicle policy, and consulting on new initiatives.

When it comes to electric vehicles, Thon is plugged in. He is currently advancing an electric vehicle specification document, developing a feasibility study for a full underground electric fleet, and working with the Canadian Standards Association on a national standard for electrically driven machines in underground mines.

"My favourite part of my job is being involved in most of the electrical projects across the potash business unit," says Thon. "Being part of innovative projects is an amazing experience, and I'm proud to be working in Saskatchewan for a company that has a deep-rooted history with the province and its people." ▲

Banio steps forward: Millennial Potash expands its resource and positions Gabon as a new fertilizer supply hub

BY FARHAD ABASOV, CHAIRMAN, MILLENNIAL POTASH CORP.

Banio's location on a coastal lagoon—unusual in this industry—means no reliance on long rail hauls or inland transport.

Banio's coastal access, low operating cost profile, and strategic alignment with U.S. and African food-security priorities position it as one of the most consequential new potash developments in the world.

Central Africa's Atlantic coast is no longer a speculative dot on the global fertilizer map. It's emerging as a strategically significant supply corridor at a moment when potash has been added to the U.S. Critical Minerals List and fertilizer security is being treated as economic infrastructure. Millennial Potash's Banio Project in Gabon sits at the centre of that shift, and a major expansion of our NI 43-101 Mineral Resource Estimate in late 2025 marks a defining step in its development.

A larger, stronger resource base

Banio's newest resource update reflects two years of drilling that confirmed the thickness and continuity of evaporite cycles across the North Target.

Updated resource highlights

- Measured & Indicated: 2.45 billion tonnes at 15.6 per cent KCl (up ~275 per cent)
- Inferred: 3.56 billion tonnes at 15.6 per cent KCl (up ~210 per cent)
- Represents only a portion of the project area
- Thick, laterally consistent carnallite-halite sequences suitable for solution mining

Recent results published in *World Fertilizer* underscored this momentum. Drillhole BA-004 intersected 101.45 metres of cumulative high-grade carnallitite averaging 16.8 per cent KCl, reinforcing the scale of high-quality mineralization and the project's

potential to keep expanding its already large resource base.

Low-cost path to production

The preliminary economic assessment completed by Micon International and Agapito Associates outlined the foundation:

- 800,000 t/y granular MOP via solution mining
- After-tax NPV (10 per cent): USD $1.07B
- IRR: 32.6 per cent
- Initial CAPEX: USD $480 million
- OPEX: USD $61/t, placing Banio on the lowest end of the global cost curve
- Shipping cost to Brazil: ≤ $22/t thanks to direct Atlantic access

Solution mining, proven in Canada and Germany, lowers surface impact and enables scalable cavern development. Banio's location on a coastal lagoon—unusual in this industry—means no reliance on long rail hauls or inland transport. As *Argus Media* reported, "we don't need roads, and we definitely don't need rail to bring product to port", an advantage that materially differentiates Banio from inland African projects and most global competitors.

A project aligned with global fertilizer needs

Potash's new critical-mineral status in the U.S. reflects what farmers have understood for decades: fertilizer supply decides yield, price stability, and food security. In late 2025, Devex published my op-ed explaining the shift: as sanctions tightened supply from Russia and Belarus and inventories in China and India fell, fertilizer became a transmitter of geopolitical tension into household food costs.

That structural vulnerability is pushing development lenders to prioritize fertilizer minerals the way they once prioritized energy independence. Banio is part of that new calculus.

DFC's strategic support

The U.S. International Development Finance Corporation (DFC) approved up to $3 million to fund Banio's Feasibility Study—non-dilutive, interest-free, and repayable only if construction financing is secured. It's the first DFC-backed early-stage potash project, and it places Banio within a select group of globally strategic mineral developments.

In its November 2025 coverage, the *Financial Times* highlighted that the DFC is backing only a handful of mining projects worldwide, including rare earth projects in Brazil and Aclara's ionic clay development. Banio's inclusion in that list signals long-term U.S. interest in diversifying fertilizer supply outside traditional regions and strengthening Atlantic-facing production.

Infrastructure that changes the equation

Southern Gabon is undergoing a tangible buildout:

- Phase 1 of the new Mayumba port is complete, with Phase 2 advancing toward deep-water capability.
- A 21 MW gas-fired power plant, expandable to 50 MW, began phased commissioning in 2025.
- A natural gas pipeline and logistics corridors now link directly into the project area.

These upgrades, supported by Gabon's government and private operators, give Banio something most new potash jurisdictions lack: infrastructure that exists on the ground, not only in development plans.

Looking ahead

Through 2026, Millennial Potash will advance its updated resource, complete processing and marketing studies, and move toward a full feasibility study. Banio's coastal access, low operating cost profile, and strategic alignment with U.S. and African food-security priorities position it as one of the most consequential new potash developments in the world.

The result? A project that not only strengthens fertilizer supply but helps redraw the global map of where that supply comes from. In a tight, politically exposed potash market, that shift matters.

Farhad Abasov is the chairman of Millennial Potash, advancing the Banio Potash Project in Gabon. He is a veteran mining executive who has built and sold multiple resource companies including potash and lithium firms. ▲


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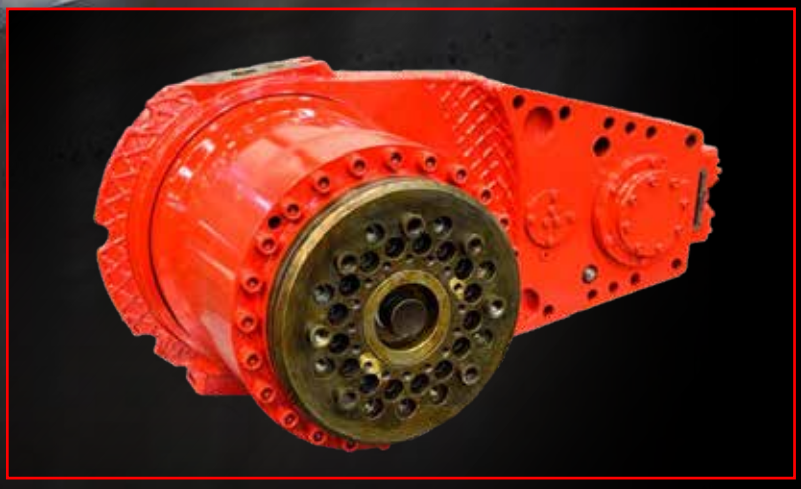

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Building a reliable route to market

Securing Canada's potash supply chain

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With production landlocked in Saskatchewan, Canadian potash must travel by rail to reach ports before moving to customers around the world.

BY MICHAEL BOURQUE, PRESIDENT AND CEO OF FERTILIZER CANADA

Investing in trade-enabling infrastructure has become a central discussion in Ottawa, and for good reason. Canada's geography makes moving goods to and from global markets inherently difficult, and our regulatory environment often compounds the problem. Prolonged permitting timelines, inconsistent processes, and a cycle of expiring labour agreements have created uncertainty and delayed the projects our economy depends on. Addressing these issues is essential for a country highly dependent on trade.

For the potash industry, the stakes are particularly high. With production landlocked in Saskatchewan, Canadian potash must travel by rail to reach ports before moving to customers around the world. Canada's rail network and coastal gateways are critical assets, but both face capacity constraints and operational risks that threaten long-term competitiveness.

The industry is preparing for substantial growth, with potash production and exports set to increase significantly in the coming years. Global demand is strong, and there is clear appetite for more Canadian product. But supply chains must keep pace.

The Vancouver corridor is significant for Canadian potash exports. As the primary route for exports to Central and South America, it plays an outsized role in maintaining Canada's position as a dependable supplier. Yet the corridor is strained. Replacing or expanding the Second Narrows rail bridge would reduce congestion, improve reliability, and eliminate a single point of failure. Additional rail staging capacity near the terminal would also create meaningful efficiency gains and support higher export volumes.

Modernizing infrastructure is only part of the solution. Canada's regulatory frameworks remain fragmented, duplicative, and slow. This isn't about lowering standards. It is about creating clear, efficient, and predictable approval processes so businesses can invest with confidence. When uncertainty persists, projects stall, capital moves elsewhere, and Canada's competitiveness erodes.

Labour disruptions create another

systemic risk. The 2023 Port of Vancouver strike alone cost the fertilizer industry nearly $127 million and disrupted global supply chains at a critical time. Strengthening collective bargaining legislation to reduce the frequency and severity of work stoppages would enhance stability while continuing to protect workers' rights. A more modern labour framework is essential for ensuring the reliability that global customers expect from Canada.

Canada's potash producers are prepared to meet growing global demand, but the country must match that ambition with modern infrastructure, coherent regulation, and stable labour conditions. Addressing these structural issues is not optional. It is a prerequisite for safeguarding Canada's reputation as a reliable supplier and for ensuring the potash sector continues to drive economic growth at home. With coordinated action, Canada can strengthen its supply chains and safeguard its position as a global leader in fertilizer. ▲

Canada's potash producers are prepared to meet growing global demand, but the country must match that ambition with modern infrastructure, coherent regulation, and stable labour conditions.

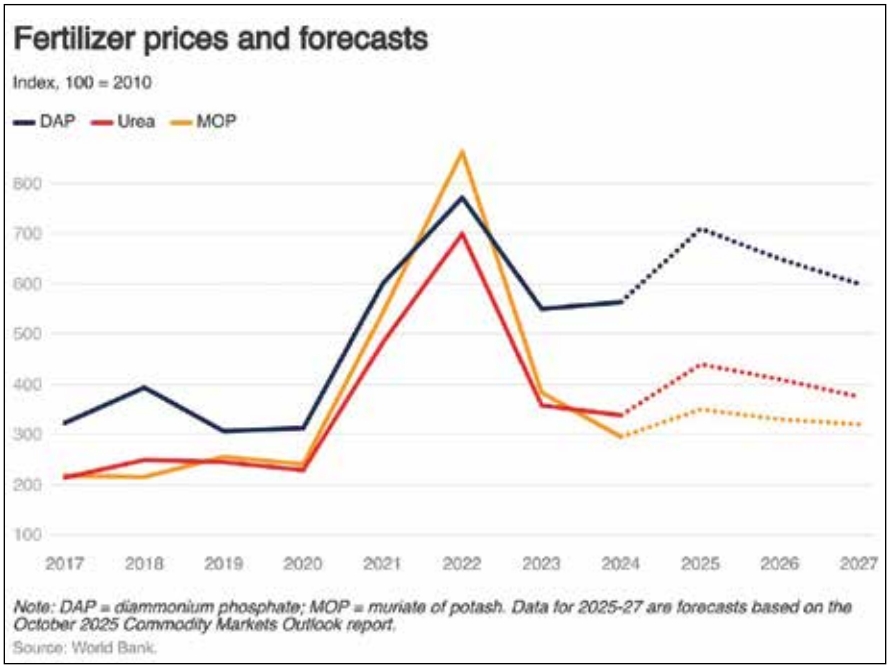
Back in the saddle for potash suppliers of the east

BY JOSHUA MAYFIELD

In Q3 2025, Russia's Uralkali announced intentions to increase potash supplies to producers of compound and complex fertilizers by 400,000 tonnes. The company had performed a series of potash facility maintenances at key production sites in Russia since Q2 2025. This means that Russian potash exports could be boosted to global markets to meet demand.

Time is of the essence for Urakali since the Russian Federation has already announced fertilizer export quotas that will kick in from December 31, 2025 to May 31, 2026. The total amount for mineral fertilizer exports set by the Russian government is 18.7 million tonnes for the six-month period. We should be mindful that China has fertilizer export restrictions in place, so Uralkali will probably export more of its fertilizers to China and India depending on the demand for MOP.

MOP has been one of the main targets of the export quota system, due to Russia's significant global market share, which is also a concern for Russia's domestic fertilizer procurement for potash. At the beginning of 2025, data released from the Russian Federation stated that potash production levels would reach 16.9 million tonnes for the entire year. Market analysts also speculated that the export quotas would cause a rise in global potash prices. It's not entirely clear if Russia's domestic potash production has been affected by the fertilizer export quotas, but the outcome was clearly a steady rise in potash prices on the global market due to fears over tighter global supplies.



Belaruskali is faced with an entirely different problem. The Belarusian government is patiently watching the steady rise in global potash market prices, since running up revenues from potash exports is more important to the state-owned potash producer at this time. Potash exports have been hit with sanctions from both the U.S. and the E.U. over the last five years. Higher potash prices could've been a positive sign for Belaruskali, until another flare up happened on the borders of Poland and Lithuania.

The government in Minsk has been criticized by the E.U. for a "targeted hybrid campaign" against Lithuania. The campaign came with a barrage of so-called smuggling balloons that had reportedly been used to smuggle cigarettes from Belarus into the

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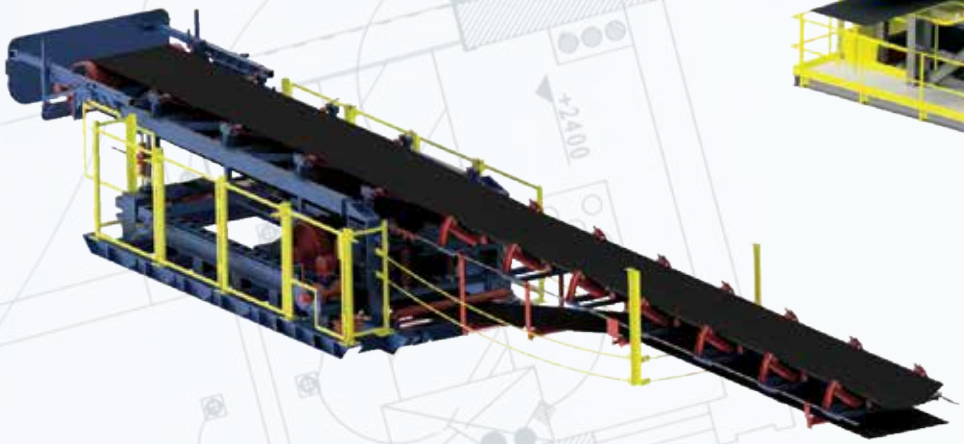

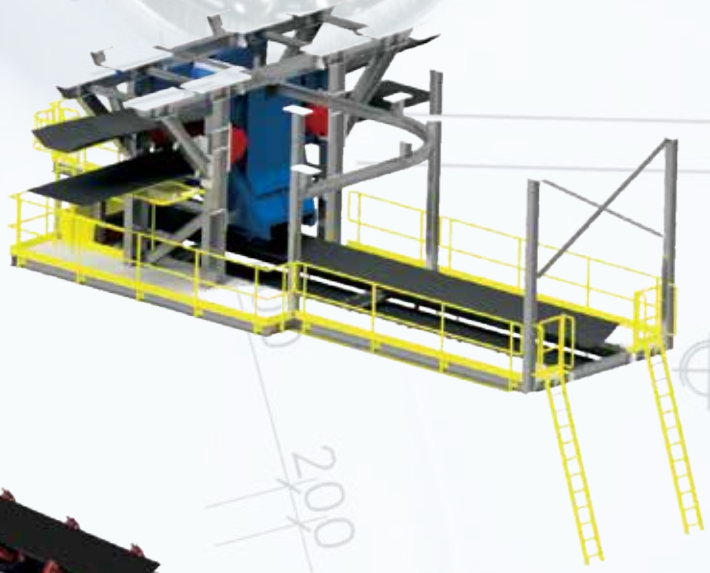

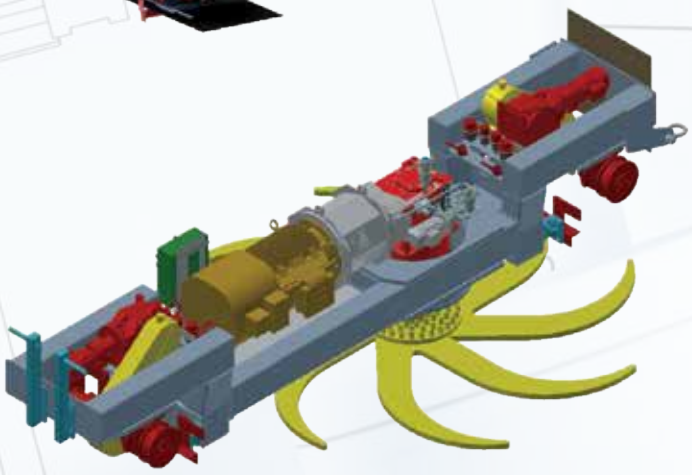

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E.U. The Lithuanian government then announced that it would close its entire border with Belarus until November 30 due to the security risks posed onto Lithuania's airspace. Then, the Polish government also announced that it would delay the re-opening of its border with Belarus, probably due to the Lithuanian government's decision. The border between Poland and Belarus was initially closed on September 12, 2025 in response to the joint military exercises held by Russia and Belarus, known as Zapad 2025. Poland has also accused Belarus of engaging in a hybrid war.

The geopolitical issues will not bode well for Belaruskali or marketing arm Belarusian Potash Corporation (BPC). BPC got hit with E.U. sanctions the hardest, while both the U.S. and E.U. have sanctioned Belaruskali. If Belaruskali wants to get the E.U. potash market back into its portfolio, then it will have to negotiate with the E.U. to have sanctions on BPC lifted. Maybe there could be a compromise between Belarus and the E.U. over sanctions, but it will not matter at all if the current sanctions on BPC hold for the long term.

The other problem for Belaruskali is again related to the Lithuania-Belarus border. Another entity involved in the E.U. sanctions on BPC is Lithuanian Railways. There have been reports in the media suggesting that a new agreement between Lithuanian Railways and Belarusian Railways could be imminent. Other goods have already been transported via the Belarusian railway connections into Lithuania that were destined for the Baltic sea port at Klaipėda. Thus, all it will take is for the E.U. to make a deal for allowing Belarusian potash exports to resume through Lithuania, at which time one of the world's largest potash suppliers would be back in the seaborne potash market.

With potash demand on the rise globally, junior potash explorers and developers want a seat at the table. For Belaruskali, it's about getting back in the saddle.

Joshua Mayfield is a growth minerals and sector analyst with Hallgarten + Company Ltd., specializing in fertilizers, mining projects, and emerging market trends in the resource sector. ▲

Underground safety rocks

BY LESLEY MCGILP, EXECUTIVE DIRECTOR, IMII; AND
CRAIG FUNK, DIRECTOR, GEOSERVICES & LAND, NUTRIEN & IMII BOARD MEMBER

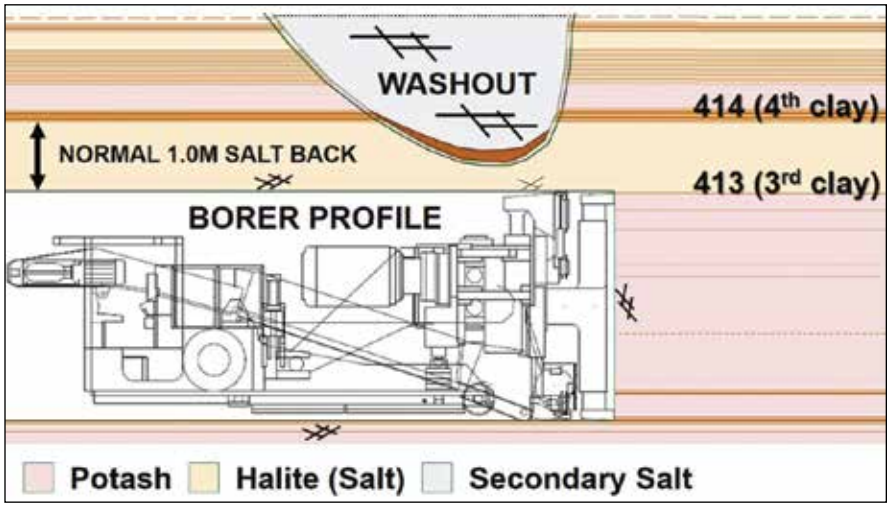


Figure 1 - Illustration of potential fall-of-ground hazards in potash mines (used with permission from CSEG's article "How Geoscientists are making potash mines safer").

This article was prepared for publication prior to the December 2025 ground-fall event at the Esterhazy K3 mine that took the life of a member company employee. The authors wish to acknowledge the tragedy and that of other miners who have lost their lives in the line of duty. This incident emphasizes the importance of continuing efforts to improve mine safety so all miners can return home safety to their families at night.

The International Minerals Innovation Institute (IMII) is a member-based consortium that facilitates collaborative innovation and workforce development to advance the Saskatchewan mining sector. IMII's focus areas include safety and the consortium has a number of cutting-edge initiatives focused on improving safety from hazards posed from the rock itself.

One of the hazards of any underground mining operation is rock stability and especially "back" stability (aka the mine roof). Figure 1 illustrates this hazard.

While mining machines, processes, and operating procedures are designed to mitigate risks to people and equipment from back falls, improved knowledge and technology can further reduce risk. Potash is a 'soft rock' that behaves viscously, causing it to 'flow' in response to induced stresses. Saskatchewan potash mines employ stress-relief mining techniques, which use "short-term sacrificial mine rooms to draw mining-induced high horizontal stresses away from nearby long-term entries", according to the article "How geoscientists are making potash safer", which can be found on the CSEG website. Clay seams, which are found in the Saskatoon area mines, require extra diligence because they are zones of weakness. The Shadowband clay – a distinct geological marker within the Lower Patience Lake salt beam (aka B-Zone) – is poorly understood. As such, operators excavate this layer, along with adjacent extra sub-economic material to mitigate roof failure risks. The Shadowband clay is a subdued and a rather subtle feature which is how the name 'Shadowband' was coined.

University of Regina professor Dr. Leslie Robbins is working with a team to identify characteristics of the Shadowband clay that may contribute or lead to roof collapses in the Patience Lake B zone. The U of R team will review data from funders Nutrien & BHP (Mitacs is also a funder), including geophysical data, mining reports, core photos, and borehole logs. Statistical techniques will be used to identify the key contributing factors to roof collapse and then seek to identify optimal measurement methods to monitor those factors.

IMII also has other projects underway exploring underground measurement and sensing techniques to detect 'beyond the mining face'. A completed project explored mining-induced micro-seismicity with Nutrien and Western University, and a current project with University of

Saskatchewan funded by Nutrien, Mosaic, and BHP is building on this work by examining the mechanical behaviour of pillars under variable mining and geological conditions in potash mines. Mitacs/NSERC contributed funding to both projects. Saskatchewan Polytechnic and the Southern Alberta Institute of Technology recently began a project to identify the most promising electromagnetic frequency ranges for imaging beyond the visible surface of the boring face. The goal of the work is to enable future development of an imaging system for field use. The project is supported by Nutrien and BHP, and falls under the P2inacle program co-funded by PrairiesCan.

Ground Penetrating Radar (GPR) tools developed for Saskatchewan potash operations presently provide real-time measurements of salt-beam thickness, which are used to warn operators about potential thinning of this layer. While GPR technology has been a great success, further innovations could further improve mine safety. Presently, IMII members Mosaic and BHP are contributing funding to a system under development by Saskatchewan's Ambitionner AI Solutions. Known as AmbDrift, it will integrate AI-powered visual inspection and analysis of non-visual data, such as stress and movement within geological formations, collected through a network of sensors. The system will identify visible and invisible defects, prioritize areas needing attention, and recommend timely remedial actions without interrupting daily operations. This project is co-funded by IRAP/SAIF and Ambitionner with in-kind from Sasktel.

The described projects involve IMII member contributions of $627,000 cash and $116,000 of in-kind contributions, which, with additions from other funders acknowledged above, involves a total budget of $1.68 million.

The projects take place from 2020 to 2028 and involve over 36 researchers and industry collaborators. IMII's work in this area is increasing the collective knowledge of the Saskatchewan mining innovation ecosystem that drives innovative advancements to improve underground potash mining safety. ▲

Getting field layout right

Spacing, scheduling, and scaling in solution-mined potash

BY ANIL TOKCAN, DRILLING ENGINEER

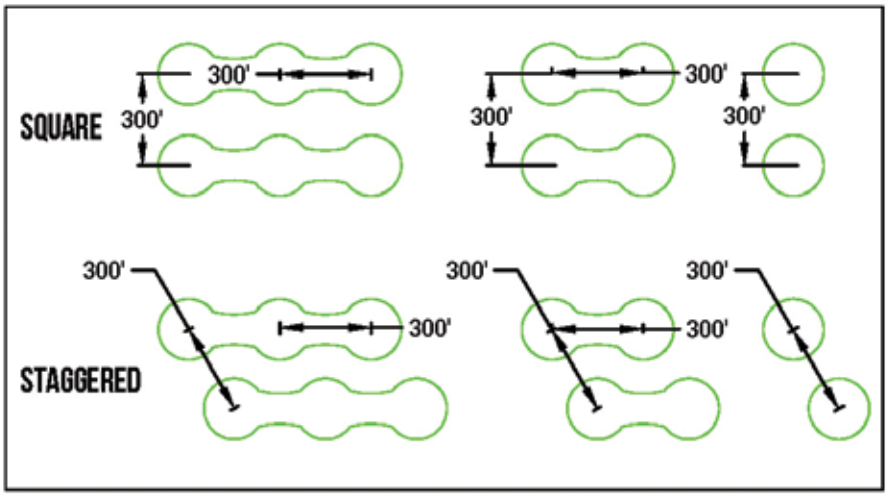
As solution mining expands into new regions and targets more complex evaporite systems, operators are increasingly encountering a challenge that older design models were never built to handle: extensive, laterally continuous, thinly bedded deposits. These stratiform evaporites offer enormous potential for potash, trona, and salt extraction. Historically, these deposits were avoided because vertical wells couldn't economically develop them, but directional drilling now makes horizontal-well projects viable.

Adopting horizontal wells forces a rethink of how cavern fields are planned. Unlike domal salt, where caverns behave largely as isolated units, stratiform evaporite development projects involve dozens or even hundreds of smaller caverns whose behaviour is tightly interconnected. Three elements become inseparable: spacing, scheduling, and scaling. Decisions in one area influence recovery, stability, cost, and long-term performance. RESPEC's framework helps operators navigate these tradeoffs early.

Why traditional approaches fall short

Most historical cavern development guidance originates from domal operations—tall caverns, fewer wells, and simpler spacing. Stratiform evaporites behave differently. Caverns must be short but long in lateral extent, and the number of wells needed to meet production targets is significantly larger. Pillars are thinner, interactions are more frequent, and surface infrastructure must expand in step with the subsurface.

Without a planning model tailored to thinly bedded resources, operators risk layouts that compromise recovery or stability. The framework links cavern geometry, surface systems, subsidence behaviour, and operational timing to address this gap.



Plan-view schematic of cavern field layouts. Top: square pattern with 300-foot spacing in both directions. Bottom: staggered (hexagonal) pattern with the same 300-foot spacing, illustrating an alternative arrangement of the same cavern inventory.

Getting spacing right

Spacing sets the foundation. Cavern diameter, injector–producer separation, unit-to-unit spacing, and cavern layout orientation (square versus hexagonal) all influence recovery and stability.

A few patterns emerged clearly in RESPEC's analysis:

- Larger cavern sizes increase recovery per well, with reserves scaling quadratically.
- Closer spacing improves

recovery factor but narrows pillars and raises risk of interaction and surface subsidence.

- Hexagonal patterns provide modest recovery gains and more uniform pillar stress.
- Injector–producer spacing shapes early flow paths, influencing how evenly caverns develop.

Geomechanical analysis underscores the tradeoff: narrow pillars and tight spacing increase stress concentration within the pillar and the surrounding rock, and the potential for higher subsidence, particularly when many caverns come online simultaneously. Wider spacing reduces these concerns but spreads infrastructure and increases capital intensity.

Scheduling as a stability and logistics tool

In stratiform systems, scheduling is a timeline, a stability tool, and an operational constraint. Caverns share pumps, headers, water sources, and surface corridors. The drilling and leaching sequence affects subsidence patterns and construction efficiency.

Two development patterns illustrate the spectrum:

- Corridor-based development advances caverns along a defined path, helping phase capital and infrastructure more predictably. It simplifies early stages but can create congestion if multiple crews operate too close together.
- Staggered development distributes leaching stresses more evenly and protects pillars but requires more complex routing and coordination.

Scheduling must also account for water supply, brine handling, permitting windows, local logistics, and plant processing limits. Accelerated development push teams to compete for resources and create early bottlenecks.

Scaling for long-term growth

Scaling defines how a field grows from initial development to full production. In stratiform deposits, growth is incremental: operators add pads, caverns, and surface systems in stages instead of step-changes.

Key considerations include:

- Cavern unit size and development increments, which govern how predictable and flexible expansion can be.
- Surface routing and tie-in points, which determine whether the next pad can be integrated efficiently.
- Tubular sizing and flow capacity, which influence whether wells can sustain higher flow rates later without costly redesigns.

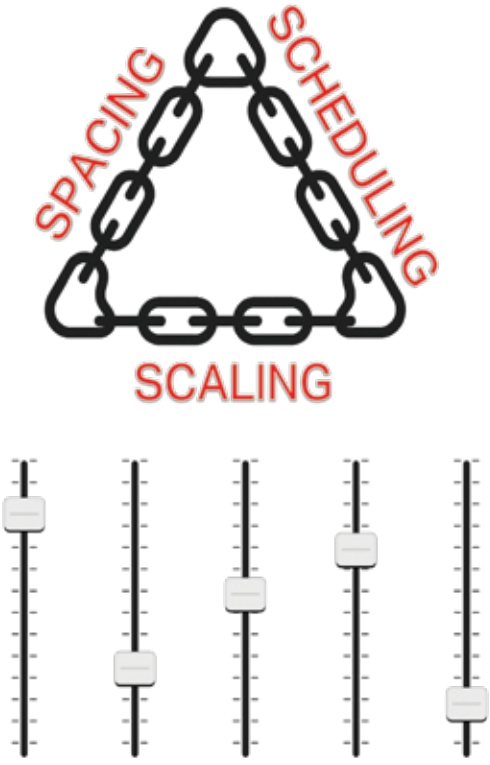


Illustration of spacing–scheduling–scaling as an interdependent control system, showing that field-design settings move together, not in isolation.

Undersized early infrastructure constrains growth. Oversized systems burden projects with unnecessary upfront costs. The most economical pathway is one that preserves optionality, accommodating infill drilling, step-outs, and staged expansion without reworking earlier decisions.

For potash and other evaporite developers, success in stratiform deposits comes from synchronized planning that balances geology, engineering, and economics.

Tools that anchor early decisions

To support early planning, three screening tools can be used to evaluate the options:

- Recovery factor estimation, showing how diameter, spacing, and layout influence the amount of resource that can be potentially extracted.
- Subsidence screening, highlighting W/H ratios and cavern arrangements that stay within acceptable vertical displacement thresholds at the ground level.
- Hydraulic performance checks, flagging tubing size or well-design limits on flow, pump efficiency, or long-term deliverability.

These tools do not replace site-specific modeling but prevent advancement of concepts that are technically and economically undesirable, in practice.

A more coherent path to stratiform development

The framework's strength lies in its structure, which encourages operators to treat spacing, scheduling, and scaling as a coordinated system rather than isolated tasks. It also emphasizes iteration, using field data, surveys, pressure behaviour, and subsidence monitoring to refine assumptions as the project matures.

For potash and other evaporite developers, success in stratiform deposits comes from synchronized planning that balances geology, engineering, and economics. With more projects targeting these thinly bedded horizons, frameworks like this will become essential tools for navigating uncertainty and achieving both recovery and long-term stability. ▲

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Air quality measurement and monitoring requires innovation for long-term results

SRC's air quality team offers a wide range of services for a variety of industries, such as mining, manufacturing, biofuels, construction, and electricity generation. (Copyright SRC)

BY ERIN MATTHEWS FOR THE SASKATCHEWAN RESEARCH COUNCIL

From potash to oil and gas to manufacturing, industrial air quality measurement and monitoring has historically focused on reporting for regulatory purposes, with an end goal of protecting people and the environment.

With industry and government focusing more on improving the environmental performance of industrial facilities, the ability to measure, monitor, and model air quality is important to reporting and delivering on these goals.

For more than 45 years, the Saskatchewan Research Council (SRC) has helped important economic sectors operating on the Canadian Prairies keep a close eye on their air emissions to ensure they meet environmental standards and regulatory requirements, as well as to implement process improvements for emissions reduction strategies.

SRC's air quality team offers a wide range of services, from industrial source testing to ambient air monitoring and industrial hygiene, for a variety of industries, such as mining, manufacturing, biofuels, construction, and electricity generation.

Insight into process refining and pollution control equipment

With highly trained and highly experienced team members, SRC is a trusted provider of stack sampling on the Prairies.

Generally, large facilities are required to test what is emitted from their stacks annually. SRC's air quality team conducts this regulatory compliance testing at field sites. To help clients reduce their emissions, the team also works with their clients to refine their processes or test new types of pollution control equipment.

"Helping clients implement process improvements that reduce their air emissions is where our expertise really shines," says Kent Orosz, SRC's air quality team lead. "Our expertise is unmatched in Saskatchewan. A lot of companies can come in and do compliance testing, but we are able to take the data and use our air quality expertise and experience to help

Kent Orosz leads a team of specialized experts at SRC who —through measuring, monitoring and modelling—help clients achieve long-term environmental and economic benefits. (Copyright SRC)

our clients improve their processes and navigate next steps."

The potash industry is one place where this expertise has proven valuable.

SRC works with nearly every potash mine in Saskatchewan, conducting stack sampling, compliance testing, and creating or updating environmental protection plans (EPPs) under the Saskatchewan Environmental Code's Industrial Source (Air Quality) chapter.

"Potash mining requires complex processes related to air emissions," Orosz says. "We have the skills, expertise, and knowledge to give industry the information and resources needed to help them improve the environmental performance of their operations."

Beyond testing and providing air quality reports, the team has measured dust from mine ventilation exhaust, sampled particulate and gases in stacks from dryers and other process equipment, and measured airflow, temperatures, and pollutant rates entering and exiting pollution control equipment.

Integrated services for managing air emissions

SRC can deploy customized mobile stations for ambient air monitoring, offering real-time data to clients. These stations can monitor gases like sulfur dioxide, hydrogen sulfide, carbon monoxide and weather data, such as wind speed and direction, temperature, and more.

With services like trace analysis testing, SRC can measure the amount of volatile organic compounds, total hydrocarbons and metals in emissions. And, when it comes to indoor air quality, Orosz and his team can identify and measure gases, fumes, and biological hazards—like mould or bacteria—that can impact the health and safety of employees.

With decades of experience, SRC's air quality experts are working with industry to protect the environment, improve the quality of our air, and provide companies operating on the Prairies with the support and resources they need.

The integrated services offered by SRC ensure that clients receive accurate and timely data, and are informed about their operations' performance. SRC works with clients to provide them with a plan to improve their air emissions processes and help them meet their environmental performance goals.

To learn more about SRC's air quality services, visit src.sk.ca/services/air-quality-monitoring-services. ▲

How much will global potash demand grow through 2050?

Photo courtesy of Canada Action.

Global potash demand is expected to increase by approximately 70 per cent by 2050 according to a new infographic by Visual Capitalist [1], presenting a significant opportunity for Canada to solidify its position as a leading and reliable supplier.

As the world's population is expected to grow to 9.8 billion by 2050, so will the demand for food, making potash a critical component in ensuring global food security. Canada, with its vast reserves and established production capabilities, is well-positioned to help meet rising potash demand and play an even more vital role in feeding the world.

What's causing potash demand to rise?

According to Visual Capitalist, global potash demand is expected to reach 118 megatonnes (Mt) by 2050, up from 71.6 Mt in 2021. Several key factors are driving the projected increase in potash demand worldwide, including[1]:

Growing global population: With the world's population expected to grow by around two billion between now and 2050, the need for more food will inevitably lead to a greater demand for potash-based nitrogen fertilizers to increase crop yields. Today, almost all, or 95 per cent of potash production, is used in fertilizer production.

Increasing living standards: As economies develop and living standards improve, especially in developing emerging market economies, there will likely be a dietary shift towards more calorie-dense and nutrient-rich foods, necessitating more intensive agricultural practices and a greater use of fertilizers.

Enhanced agricultural techniques: Innovative advances in farming, particularly in fertilizer application, are leading to a more efficient use of potash, helping to boost crop quality and yield.

Importance of potash to global food security

Potash is a naturally occurring mineral rich in potassium, one of the three essential nutrients—along with nitrogen and phosphorus—required for plant growth. It is a key ingredient in the production of fertilizers that enhance crop yields, strengthen plant root systems, and improve resistance to drought and disease. As global demand for food continues to rise, the role of potash in maximizing agricultural productivity becomes increasingly apparent.

According to Our World in Data, it is estimated that nitrogen fertilizers, which are made using potash, support approximately half of the global population. Without these fertilizers, the world's population would be much smaller. The development of synthetic nitrogen fertilizer, in particular, has been a significant contributor to the substantial increase in crop yields observed throughout the 20th century.

Canadian potash sector's critical role

What role does Canada have to play? Examining the numbers, we gain insight into our country's significant role in global potash markets.

In 2023, Canada accounted for more than 32 per cent of global potash production, over 41 per cent of exports, and held the world's largest reserves. In other words, Canada is the world's top producer and exporter, and with an estimated 1.1 billion tonnes of potash still in the ground, we can do more to help feed a growing world.

Today, Saskatchewan produces roughly 30 per cent of the world's potash supply, which is incredible!

Canada's role as a major supplier of potash is poised to expand with projects such as the Jansen

Mine, about 140 kilometres east of Saskatoon. The new $10.6 billion expansion will make it one of the world's largest potash mines, with a projected annual production of approximately 8.5 million tonnes, equivalent to roughly 10 per cent of the current global supply [2].

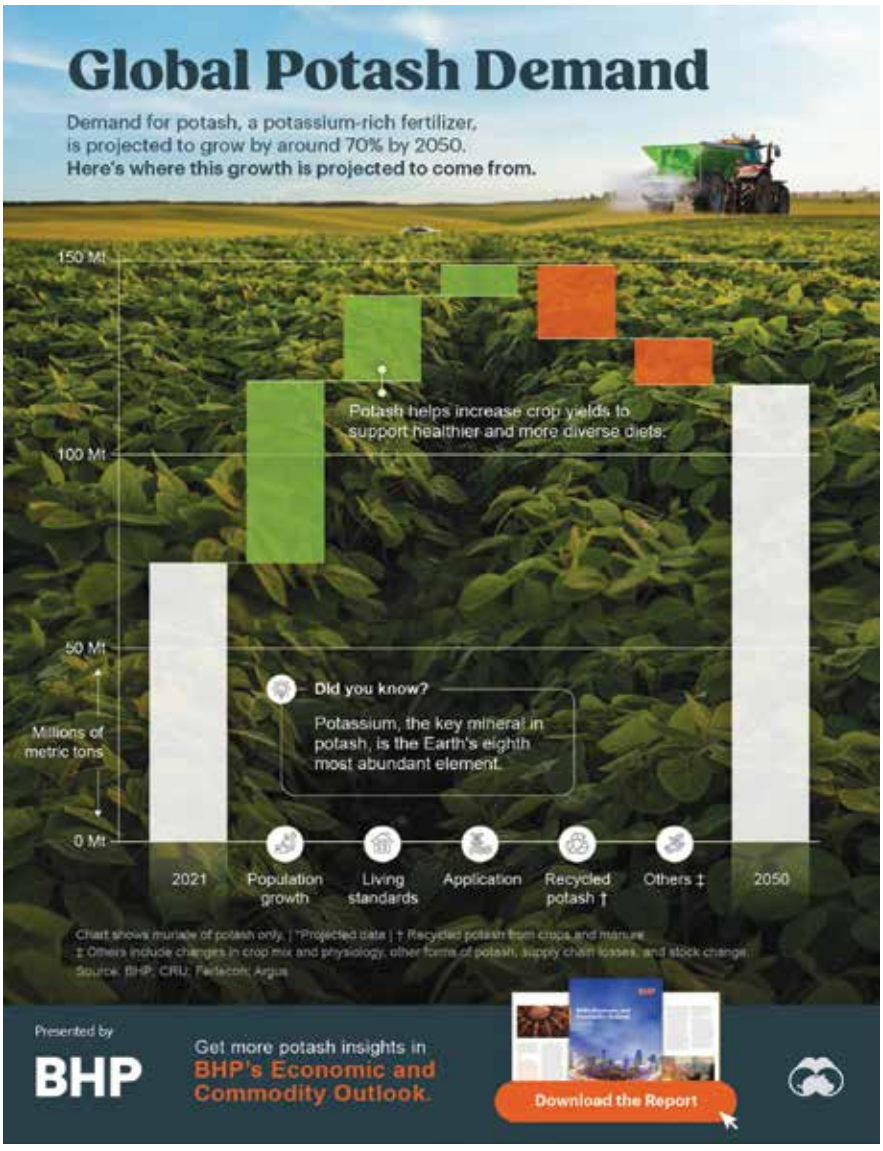
With its vast reserves, established infrastructure, and commitment to reliable mining practices, Canada is poised to be a global leader in the potash market for decades to come. By providing a dependable supply of this essential commodity for many years, Canada's role in ensuring global food security is only set to grow – and alongside it, the economic benefits for Canadian families and governments here at home.

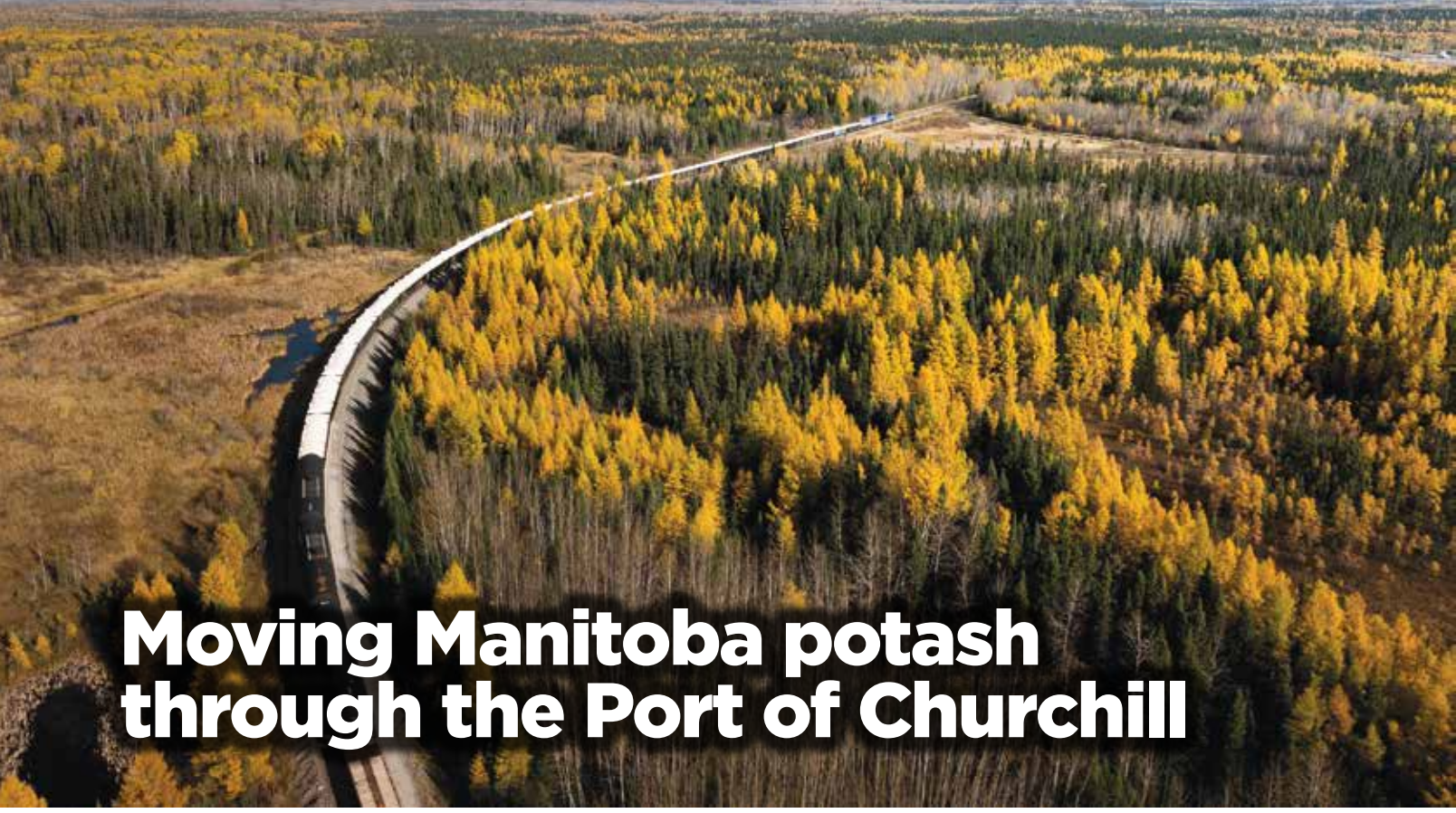
Republished with permission from www.canadaaction.ca/growing-global-potash-demand-opportunity-canada.

[1] https://www.visualcapitalist.com/sp/bhp01-visualized-the-surge-in-global-potash-demand/

[2] https://www.mining.com/bhp-bets-on-10-6b-jansen-mine-to-build-potash-footprint/ ▲

Infographic courtesy of Visual Capitalist





Moving Manitoba potash through the Port of Churchill

BY CHRIS AVERY, PRESIDENT & CEO, ARCTIC GATEWAY GROUP

Manitoba companies are working together to move Manitoba resources to world markets.

At Arctic Gateway Group, we have always believed that the Port of Churchill has untapped potential to connect Western Canada's resources to the world. Potash is part of that future.

Today, we are working to ship more kinds of products through Churchill. Over the past two years, we have proven we can move critical minerals to global markets, with zinc concentrate shipments exported to Europe from the Port of Churchill. Now, through our new partnership with the Potash and Agri Development Corporation of Manitoba (PADCOM), we are expanding and diversifying again, this time with potash mined in Manitoba. We are also in active talks with potash producers in Saskatchewan.

This partnership is about opportunity and teamwork. Manitoba companies are working together to move Manitoba resources to world markets. Arctic Gateway, owned by 41 Indigenous and northern communities, operates the Hudson Bay Railway and the Port of Churchill. Churchill is Canada's only deepwater Arctic port linked by rail to the national network. PADCOM is developing a potash mine near Russell, Manitoba. Together, we are building a made-in-Manitoba solution that gets products overseas faster, makes Manitoba more competitive, and supports jobs in northern and Indigenous communities.

PADCOM's president, Daymon Guillas, said it best: "This is a story about Manitoba potash by Manitoba people through a Manitoba port. It is a good Manitoba story." PADCOM expects to send its first test train to Churchill in 2026, a major milestone that will open new markets in Europe, Africa, and South America. Shipping north through Churchill also cuts travel time from three weeks to six days.

At Arctic Gateway, we have been preparing for this moment for years. The Hudson Bay Railway is being rebuilt and modernized. Freight volumes have doubled, travel times are three hours shorter, and new tools such as drones, LiDAR, radar, and artificial intelligence help us keep the line strong and reliable in ways that weren't possible in the past. At the Port of Churchill, we are adding a new bulk storage facility that will triple capacity for potash and other minerals.

This partnership is about

Freight volumes have doubled, travel times are three hours shorter, and new tools such as drones, LiDAR, radar, and artificial intelligence help us keep the line strong and reliable in ways that weren't possible in the past.

At the Port of Churchill, we are adding a new bulk storage facility that will triple capacity for potash and other minerals.

unlocking the full potential of Manitoba's maritime coast and Canada's Arctic Trade Corridor, showing what happens when local innovation and strong northern infrastructure come together.

Manitoba is a maritime province, and Churchill is its northern port. With PADCOM, we are charting a new course that connects Manitoba's resources to the world and brings the benefits home to the communities that helped build it. ▲

Case Study: From legacy to legendary with Mitsubishi VFDs

Potash mining is a cornerstone of the Saskatchewan economy and to maintain competitiveness in the global market these mines require continuous and reliable operations. One factor in improving operational performance is the use of Variable Frequency Drives (VFDs). VFDs regulate the speed and torque of industrial motors, thereby enhancing process efficiency and providing greater overall motor control. This article will examine the process of JA Tech's recent VFD upgrade at a local potash mine.

Established in 2003, JA Tech is deeply integrated into Saskatchewan's mining industry, with over two decades of experience serving various mine sites. The company delivers many specialized electrical services, including end-to-end Mitsubishi VFD sales and service, staffed by certified VFD specialists. The local support comes right out of their office in Saskatoon, located near various mining operations. JA Tech is committed to supporting projects from initiation through to decommissioning.

In 2025, JA Tech executed a VFD upgrade at a local potash mine. The client required VFDs that would integrate seamlessly with the existing Motor Control Center (MCC), offer proven reliability, and be supported with local expertise. The project scope included the removal of the existing VFD

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In 2025, JA Tech executed a VFD upgrade at a local potash mine.

buckets, installation of retrofit kits for MCC cells featuring Mitsubishi VFDs, and full system commissioning—all accomplished within a few weeks.

Why retrofit

The existing VFD manufacturer introduced frame size changes which changed the overall dimensions of the VFD. This made it incompatible with many MCC applications unless significant modifications were made. Coupled with rising maintenance costs, a transition was warranted. The Mitsubishi A800 series VFDs offered a direct fit for all MCCs without modifications, competitive pricing, local support, and robust design, making them well-suited for this integration.

Scope and execution

Sixteen VFD replacements were scheduled during a four-week shutdown. The retrofitted VFDs had to support vital equipment such as transfer screws, force feeders, bucket elevators, and feed belts, all of which were critical to the mine's operations. JA Tech commenced the project with design work to ensure they met every one of the customers needs in every location, followed by the conversion of parameter settings from the previous brands to Mitsubishi, thus ensuring continuity in protection and control features. Mitsubishi Diamond Distributor Arrow Speed Controls manufactured and CSA certified each retrofit kit off site. During the shutdown, all 16 VFD units and associated components were replaced by JA Tech in just seven days. Immediately following the install, JA Tech's VFD specialists began working through their detailed commissioning plan that tested the entire control systems functionality.

At JA Tech, the motto is "Integrity, Quality, Commitment" and the JA Tech team understands that quality is in the details.

Quality assurance

At JA Tech, the motto is "Integrity, Quality, Commitment" and the JA Tech team understands that quality is in the details. To ensure quality on this project, the VFDs underwent comprehensive functional testing at Arrow Speed Controls and were re-inspected at various stages of the project. Additionally, the MCCs were evaluated before VFD installation to confirm optimal mechanical and electrical condition. Each cell was cleaned, lubricated, and tested to mitigate any potential issues during re-energization. Every phase of the demolition and installation process was photographed and documented, providing the client with a detailed record of the completed work. During commissioning, parameter entry sheets were followed that had the pre-agreed-upon settings between the client and JA Tech VFD specialists. Furthermore, an extensive equipment-specific commissioning checklist was utilized to verify that every operational scenario was tested.

The result

The project was completed within the scheduled timeframe and budget. The mine resumed operations without any interruptions or technical issues. The implementation of these Mitsubishi VFDs has significantly enhanced process reliability for the foreseeable future. JA Tech has proven again why they are "the power system specialists".

For any questions or quotes regarding Mitsubishi VFDs for your application, please feel free to contact us at sales@jatechpowersystems.com. ▲

Built for brutal conditions

How cast urethane powers potash mining reliability

Potash mining and milling place extraordinary demands on equipment. From underground extraction to finished granules, every step of the process exposes machinery to abrasive ore, corrosive brines, slurry movement, impact loading, vibration, and temperature fluctuation. Components are expected to operate continuously, and even brief downtime carries major production and cost implications.

In these conditions, traditional materials such as rubber, plastics, and many metals frequently fall short. Components crack, swell, deform, corrode, or wear out prematurely, which drives maintenance cycles higher and reliability lower.

For these reasons, high-performance cast urethane has become one of the most relied-upon materials in the potash industry. Modern formulations like BoKure™ urethane, developed through the cast urethane division of Hi-Tech Seals, are engineered to deliver longer wear life, superior toughness, and industry-leading chemical and mechanical durability. BoKure™ can be cast into virtually any geometry, enabling rapid design, prototyping, and customization.

Urethane offers a rare balance of:

- Wear and abrasion resistance far exceeding most elastomers
- High rebound, essential in de-blinding screens
- Excellent tear strength for components under tension or impact
- Chemical compatibility with brines and salt-rich process streams
- Dimensional stability under repetitive loading
- Shock and impact absorption that protects steel infrastructure

Urethane applications in mining & milling lifecycle

Screening and classification

Potash screening equipment relies heavily on urethane because of its exceptional rebound and abrasion characteristics. Urethane screener balls, modular and tensioned panels, side-tension strips, and feed-end impact liners work together to deliver longer wear cycles and reduce blinding, two key factors that contribute to overall screening efficiency.

Crushing, grinding & slurry handling

High-solids slurries accelerate wear in pumps, hydrocyclones, and classifiers, driving strong demand for urethane in these systems. Urethane components offer excellent resistance to abrasion and brine corrosion, both of which are essential for maintaining circulation flow and preserving slurry quality. Common urethane components in these applications include hydrocyclone liners, slurry pump liners, impellers, wear rings, classifier shoes, and mixer or agitator paddles.

Material handling & conveying

From the mill floor to underground haulage, urethane plays an important role in controlling spillage, extending belt life, and preventing metal wear. Urethane's ability to absorb impact helps reduce noise, minimize belt damage, and support safer material handling operations. Urethane components used in these systems include conveyor skirting, idler and guide rollers, belt cleaner blades, impact pads, chute liners, and traction wheels for transfer points.

Advanced urethane in rotary & processing equipment

Rotary valves, feeders, dryers, and granulation equipment all benefit from the toughness and resilience of urethane. The components must withstand continuous impact, rotational forces, and salt abrasion, and continue to deliver reliable performance where traditional materials often fail. Rotary valve blades, tips, end plates, feeder liners, dryer and cooler lifter bars, wear-resistant granulation liners, and roller wheels or trunnions are produced in urethane to endure the demands of harsh rotary and processing environments.

Floatation & separation equipment

Potash flotation circuits require materials that can resist chemical attack and maintain dimensional stability under constant cycling, which is why urethane is widely used in these systems. It performs exceptionally well in flotation darts, sleeves, seats, valve and flow-control seals, and abrasion-resistant cushioning components. This performance contributes

to support more consistent flow control, reduce downtime, and reliable metallurgical results.

Underground mining

Underground potash mining adds dust, vibration, and constant abrasive ore contact to an already challenging environment. Urethane is widely used in these conditions for screening and de-dusting components, wear pads and bumpers, belt transfer skirting, shuttle-car wheels and rollers, and custom wear protection for mobile equipment. These upgrades help reduce maintenance intervention and improve the overall robustness and reliability of underground machinery.

Customization and refurbishment benefits of cast urethane

While urethane's inherent durability is impressive, its customizability is what makes it invaluable. Cast urethane can be formulated to perform like soft rubber, medium-hard wear-resistant compounds, or rigid materials similar to structural plastics. Hi-Tech Seals' BoKure™ urethane is available in a wide range of Shore hardness levels and can be bonded to steel, aluminum, or nylon to create hybrid components capable of handling demanding loads. Its low tooling cost also supports rapid prototyping and small-batch production, making it ideal for niche components or replacing obsolete OEM parts.

Beyond the custom-engineered solutions, urethane components can be refurbished through Hi-Tech Seals' reclamation process, which removes worn material and re-casts new BoKure™ onto existing hardware. This method reduces costs, minimizes waste, extends equipment life, and shortens lead times. It has become especially valuable for large rollers, blades, and other metal-bonded components used throughout potash processing. ▲

Employers to benefit from enhanced services coming to Sask Apprenticeship

Saskatchewan Apprenticeship and Trade Certification Commission

Early in the new year, the SATCC will launch a journeyperson/apprentice registry that will be publicly available on its website, saskapprenticeship.ca

Apprentice employers will soon benefit from enhanced services at the Saskatchewan Apprenticeship and Trade Certification Commission (SATCC).

In April 2025, the Forum of Labour Market Ministers' (FLMM) tasked apprenticeship authorities across Canada with reducing administrative barriers and enabling digital verification of trades credentials to support labour mobility and workforce responsiveness under the Canadian Free Trade Agreement (CFTA).

Early in the new year, the SATCC will launch a journeyperson/apprentice registry that will be publicly available on its website, saskapprenticeship.ca.

The registry will allow employers to confirm potential employees' credentials at their own convenience.

To conduct a search, the employer will be required to input a name, a trade, and the number on that person's journeyperson certificate or apprentice level card. The registry will contain only certificates and level cards that were issued in Saskatchewan. However, each province and territory is currently developing its own online registry, accessible via a central Red Seal landing page that will provide a convenient location for employers to check credentials issued in other provinces/territories.

The SATCC is also planning a significant change to MyATC that will affect the technical training registration process.

Employers and Joint Training Committees will have the ability – and be required – to approve technical training that their apprentices register for. This function lets employers participate directly in the oversight of apprentices' technical training schedules and manage their workforce in a way that is most beneficial for their company.

When apprentices register for training, employers will receive a notification and have a period of time to approve it. If the training is not paid for and approved in time, the seat will be released.

This function is not yet available, but the SATCC anticipates the change will be implemented by mid-2026. More details will be shared closer to the implementation date.

"We are committed to providing excellent service to our industry stakeholders and partners," says Jeff Ritter, SATCC CEO. "We value employers' feedback about how we can improve their experience with us. The online registry will enable employers to verify credentials without calling us, and the enhancement to MyATC will give employers more autonomy over their business practices." ▲

Above: Full load dynamometer test of 1200 HP repair.
Inset: WEG Miner Head Motors for Prairie Machine Xcel72A Boring Miner.

PEM: Building strong partnerships with Saskatchewan's potash industry

For over two decades, Precision Electro-Mechanical (PEM) has grown alongside Saskatchewan's potash industry—serving not just as a repair shop or supplier, but as a trusted partner in keeping the province's vital operations running. As a local, family-owned company, PEM understands that strong relationships are the foundation of reliable service and customer satisfaction. Their success has always been tied to the mines, teams, and communities they work with every single day.

Relationships built on trust, responsiveness, and commitment

PEM's relationships with potash producers were formed through years of showing up when it mattered most. Mines across Saskatchewan know they can count on PEM for honest communication, fast response times, and a commitment to doing the job right the first time. From emergency after-hours repairs to proactive maintenance planning,

PEM has positioned itself as a dependable partner that understands the urgency and scale of mining operations.

These relationships aren't transactional—they're long-term partnerships rooted in mutual trust. Many potash operations have worked with PEM for more than two decades, relying on the company not only to repair equipment, but to support their ongoing success.

Understanding the needs of an industry that never stops

PEM knows the potash sector doesn't have the luxury of downtime. That's why the company has shaped its services around the unique needs of mining operations. When a critical motor fails, PEM responds quickly, prioritizing the customer's uptime and production goals. The company's complete vehicle fleet means customers can be rest assured they will be looked after in emergent situations. Potash producers trust PEM because the team understands their timelines, their equipment, and their pressures. This deep industry knowledge, built through years of close collaboration, allows PEM to anticipate challenges, offer informed solutions, and help mines maintain safe, reliable production.

Supporting potash mines with quality equipment and supply partnerships

PEM's partnership with WEG Canada, the country's largest motor supplier, is another way the company supports the potash sector. By maintaining access to high-quality motors, VFDs, and strategic inventory, PEM ensures its mining partners have the equipment they need, when they need it. This reduces delays, strengthens supply chain reliability, and reinforces the trust mines place in PEM as a long-term supplier.

Expertise that strengthens every partnership

PEM's technicians and diagnostics specialists are known for their honesty, skill, and attention to detail. They communicate openly with customers, provide realistic repair options, and deliver work that stands up to the demands of heavy industry. Over time, this level of transparency and craftsmanship has earned PEM a reputation of dependability that potash producers can count on.

These relationships thrive because PEM's team treats every repair, service call, and consultation as part of an ongoing partnership—not a one-time job.

Facilities and technology built for the customers they serve

PEM's investments in a 40,000+ square-foot facility and more than $15 million in modern equipment are driven by one purpose: serving customers better. Every tool—from the VPI tank to the regenerative dynamometer—was added to support more efficient, consistent, higher-quality repairs for the mines that rely on PEM daily. Everything happens in-house, so PEM provides fast turnaround times and complete quality control—both essential to maintaining trust with potash producers. ISO 9001 certification further reinforces the confidence customers place in PEM's repair standards.

Investing back into the industry and the community

PEM values the relationships that have built its business, and that commitment extends beyond the shop floor. They contribute to local communities, invest in environmentally friendly technologies, and create services—such as climate-controlled motor storage and maintenance programs—that directly support the reliability needs of their mining customers.

These actions strengthen the bonds PEM shares with both the industry and the province.

Valuable partnerships—and a future focused on serving Saskatchewan mines

PEM's story is, at its core, a story about relationships. For years, Saskatchewan's potash industry has trusted PEM to keep its operations moving. In return, PEM has devoted itself to being a dependable partner—responsive in emergencies, honest in communication, consistent in quality, and committed to long-term success.

As Saskatchewan's potash industry continues to grow, expand, and lead globally, PEM is proud to grow with it. ▲

THE Mining Investment Event

THE Mining Investment Event – Canada's Only Tier 1 Global Mining Investment Conference© is held annually in Québec City, Canada. It is independently sponsored and designed to facilitate privately arranged meetings between mining companies, international investors, and various mining and government authorities. The conference has become one of the most important platforms in Canadian mining for investors and thought leaders in the sector. THE Event is also committed to promoting diversity, equality, and sustainability in the mining industry through education and innovation through its unique Student Sponsorship and SHE-Co Initiatives.

THE Event launched International Mining Week with the support of the International Trade and Forfaiting Association (ITFA), representing the rights and interests of banks, financial institutions and service providers involved in trade risk and asset origination and distribution, and the Association Minière du Québec (AMQ), who count as members some of the largest international mining issuers. The vision for International Mining Week is to create collaborative partnerships that bring together international mining companies, supply chain expertise, investors, and government entities in one location concurrent with THE Event. THE Event will be announcing other mining community groups and jurisdictions as we grow this initiative. ▲

Information on THE Mining Investment Event & International Mining Week, or register to attend: www.themininginvestmentvent.com

Reduced Maintenance Costs + Higher Performance = Long-term Productivity

How the right equipment investments can help mining operations lower their maintenance costs

Standardized equipment built for mining environments and materials can shrink maintenance expenses and improve production

BY ANDREW PARKER

Mining operations strive to be safe, efficient, and productive, but they often allocate up to 50 per cent of their annual budget to equipment maintenance just to keep things running.

How can operations run smoothly to actualize lofty production goals if you're constantly throwing money at repairs?

Considering the constant dust, heat, toxic substances, and crowded spaces at mining sites, operating conditions pose a significant challenge, including the performance of your equipment. In an industry where consistently moving bulk material is paramount, unplanned downtime because of malfunctioning equipment is costly and potentially catastrophic for an operation.

"It is an unforgiving work environment," said Jay Houghton, vice-president of engineering at CDM Systems, Inc. "Conditions at mining sites are often extreme and always brutal on your machines. The constant battering at high volumes leads to failed components and costly production disruptions, and it becomes an expensive hurdle."

If your site moves large quantities of key mined materials such as nickel, lithium, and iron ore over long distances in difficult environments, the financial hit from poor equipment extends beyond the frequent maintenance bills. For example, the average cost of unplanned downtime in mining operations is about $180,000 per incident. That's in addition to wages and other operational and intangible costs.

The takeaway: Mining sites can lose hundreds of thousands of dollars per day from unplanned equipment downtime.

Reducing maintenance costs through equipment standardization

For mining engineers, maintenance managers, and operations managers, there is constant pressure to keep material moving consistently, but still keep the site safe.

Additionally, teams must strike a balance between:

- Equipment maintenance and performance
- Minimizing production losses while navigating increasingly higher output goals
- Ensuring strict compliance with OSHA, MSHA, and other regulations while answering increased demand

Considering operational factors such as these, scalable equipment that can handle large and expanding capacities of rough materials with minimal maintenance can be money-makers in a mining operation.

"If conveyors, bucket elevators, or stacker-reclaimers are constantly out of commission, operations can't move material in the needed quantities, or sometimes even at all," Houghton said. "That is in addition to having to deal with daily operational costs, rising maintenance expenses, scarce parts availability, and unrealized output goals."

What is a good way to mitigate this? Standardize your equipment.

The takeaway: Mining operations already juggle daily resource allocation, regulations, and production expenses. Avoidable equipment issues only make it worse.

Cheap equipment creates more problems down the road

Sometimes maintenance managers and engineers look for cheap equipment replacements from a mishmash of manufacturers. The danger with that approach is, best-case scenario, it becomes just a replacement, rather than an improvement. You can expect the same problems at some point. And the same expenses.

The harsh reality is that cheaper equipment may lead to even more maintenance issues, especially if the equipment is an off-the-shelf option, piecemealed together, or misapplied to the specific material and conditions.

Instead, a more efficient strategy for upgrades or replacements would be to standardize the equipment. Maintenance, repair, and operations (MRO) procedures become more effective when utilizing heavy-duty machines from the same manufacturer, streamlining the maintenance process and improving output. This means more revenue in your pocket because less time and resources are spent on maintenance and repairs.

"Standardizing your conveyors and other bulk material transfer equipment speeds things up for maintenance teams and can have a significant impact on production," Houghton said.

The takeaway: Cheaper, mismatched equipment is rarely, if ever, an improvement. Standardizing with quality equipment decreases maintenance time and costs.

Vetting manufacturers for the right material transfer equipment

The key to improving productivity and saving on potentially avoidable maintenance expenses is to invest in the right material-handling equipment from the start. That means bulk material handling equipment specifically designed for the material characteristics and quantities required for your site.

Because of the critical demand for reliable capital equipment, look for the following characteristics from a manufacturer:

A proven track record: Prioritize manufacturers with a demonstrated history of supplying reliable equipment that meets the application's requirements. References from other operations are invaluable.

Durable components: The durability of every component is important – motors, gearboxes, bearings, troughs, and much more – in extending the equipment's lifespan and minimizing its maintenance.

Expert consultation and engineering: Although it may cost more upfront, custom-made equipment for your site offers better lifetime value. Find a manufacturer that helps you through the spec process and doesn't tighten a single bolt until they know precisely what you need the machine to do.

Designed for maintainability (DFM): The equipment should be designed with scalability and ease of maintenance in mind. This means easy access to lubrication points, replaceable wear parts that can be quickly swapped out, and standardized components.

The takeaway: Your choice of manufacturer can play a big role in lowering maintenance costs and improving the efficiency of your mining site.

Conclusion

Mining companies often spend 30 to 50 per cent of their annual budgets on equipment maintenance, underscoring the need for reliable, durable material handling equipment to minimize downtime and expensive repairs.

One way operations can mitigate high maintenance costs is by standardizing their heavy-duty equipment, such as conveyors, bucket elevators, and stacker-reclaimers. These pieces of capital equipment are the primary drivers of productivity in mining operations and are costly when they are forced to shut down.

Working with a reputable manufacturer to design and build bulk material-handling equipment tailored to your specific material and jobsite conditions can go a long way in helping to reduce maintenance costs and improve production in the long run.

Andrew Parker is president of CDM Systems, Inc. He has more than 20 years of experience in the bulk material-handling industry. He oversees operations, including conveyor design and development. He can be reached at Andrew@cdmsys.com. To learn more, visit CDM Systems, Inc. ▲

A QUICK REFERENCE GUIDE TO CUSTOM HEAVY-DUTY MINING EQUIPMENT

From initial extraction to outbound transfer, mining sites require dependable, heavy-duty equipment to transport bulk minerals without stoppages.

Matching the right equipment to the right job will enable you to improve production, minimize unplanned downtime, and reduce your annual maintenance costs. Here's a rundown and the key features to consider that will help move mining material with greater efficiency and reliability.

DRAG CHAIN CONVEYORS

- Superior handling of abrasive materials in severe environments
- Most efficient bulk material-handling equipment for high volumes
- Engineered for 24/7 operation, and to minimize carryback and overload

SCREW CONVEYORS

- Single- or multiple-screw configuration, depending on feed rate and hopper design
- Handles semi-fluid, dry, sluggish or free-flowing material consistencies
- Application-specific builds provide reduced maintenance and optimized transfer points
- Fully enclosed product transfer to minimize hazards

BUCKET ELEVATORS

- Needed for a high volume of vertical lifting
- Designed to carry iron ore or other abrasive, heavy and dry materials
- Centrifugal or continuous discharge
- Belt or chain configuration based on specific application

STACKER-RECLAIMERS

- Can stack and retrieve up to five-million cubic feet of material storage
- Built for large piles of iron ore and other heavy metals and minerals
- Circular or linear stackers customized to the site and application ▲

A 182 MM Btu/h SubCom® unit to heat a potash solution mining brine in Patience Lake in Saskatchewan.

SubCom® direct-fired heaters

Bringing a proven history of efficiency and sustainability to today's potash producers

In the ever-evolving potash industry, producers face regular economic, environmental, and safety challenges. Thus, efficiency and sustainability have become critical assets and prime commodities in an ever-changing industrial landscape.

To address these unique industry challenges, forward-thinking potash producers have often turned to Submerged Combustion (SubCom®) direct-fired heaters as a consistent, reliable, and innovative solution.

Proudly Canadian, Inproheat Industries Ltd. developed, patented, and launched its SubCom® technology in 1972. The submerged combustion process involves burning fuel in a direct-fired heater chamber submerged below the surface of a chosen liquid or slurry. Heat transfer occurs through direct contact between the liquid or slurry and the resulting combustion gases.

Designed for liquid heating and direct evaporation applications, SubCom® direct-fired heaters are most effective with corrosive and fouling liquids, abrasive slurries, high suspended or dissolved solids. They boast high thermal efficiency that can exceed 99 per cent (HHV basis) and they can be further enhanced by integrated heat recovery units for reduced water loss.

Further benefits come from fouling resistance, a reduction in GHGs and fuel, high turndown, and low maintenance, which leads to a long system life. SubCom® units adhere to CSA, NFPA, FM, and CEN parameters, and operators – who can maintain them remotely – don't need to possess boiler operator certification.

For potash producers, SubCom® direct-fired heaters have demonstrated versatility and efficiency in applications such as solution mining, amine reagent mining, process water, and crystallization.

A notable example is the conversion of an underground mine at Patience Lake in Saskatchewan – overseen by the Potash Corporation of America – into a solution mining operation after flooding. To maintain brine temperature, Inproheat delivered a 26 MM Btu/h SubCom® unit for use on a floating barge in 1989.

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A 60 MM Btu/h SubCom® direct-fired process water heater for Sulphate of Potash production from Great Salt Lake Brine in Ogden, Utah.

Two years later, a full-scale 10-burner 130 MM Btu/h SubCom® installation was completed, capable of heating 17,000 gpm to 17°C. This achievement earned the Potash Corporation of America an award from the Canadian Gas Association for the innovative use of natural gas.

Operational ownership later transferred to the Potash Corporation of Saskatchewan, which led to a significant SubCom® upgrade in 2011. This upgrade included four additional burners, a 182 MM Btu/h capacity, a modernized PLC control system, and an operator-friendly platform design. Now owned by Nutrien, the Patience Lake mine remains active today.

In another instance, Compass Minerals commissioned Inproheat for a SubCom® direct-fired heater to replace an existing system of package boilers that were adversely impacting the operating costs of a Sulphate of Potash (SOP) application in Ogden, Utah. Inproheat delivered a 30 MM Btu/h SubCom® unit for heating process water in 2014. An upgrade followed in 2016 to improve the capacity of SOP mining through crystallization, with Inproheat providing a 60 MM Btu/h SubCom® direct-fired heater system to increase hot water supply and overall process efficiency. This SOP operation continues today.

These projects – along with others in Canada, the United States, Mexico, and as far away as Chile and Europe – exemplify how Inproheat's SubCom® direct-fired heaters have provided the industry clients with efficiency and reliability, while addressing their specific needs. Successful projects evolve and endure, and so has SubCom®.

For potash producers looking to enhance current operations or map out ambitious projects, SubCom® direct-fired heaters are poised to meet their critical industry demands and build on 50 years of proven history.

We welcome the opportunity to learn more about your potash mining goals and provide your cutting-edge project with an industry-leading solution.

For more information:
Osama Shenouda
CEO - Inproheat Industries Ltd.
oshenouda@inproheat.com
Inproheat.com ▲

Komatsu's application engineers combine hands-on mining experience with digital modeling to assess how each machine will perform under specific geological and operational conditions.

Beyond the machine: How engineering insight drives smarter mining decisions

No two mines share the same DNA. From geological variability to production goals and extraction techniques, every operation faces a unique set of challenges that shape how efficiently it runs. Increasingly, mining companies are discovering that the key to optimizing performance doesn't lie solely in the machines they use, but in the data and analysis that guide how those machines are deployed.

At the centre of this shift is a discipline often overlooked: application engineering, a bridge between theoretical modeling and on-the-ground mining reality. Komatsu's Application Engineering Services offers examples of how this approach can reshape decision-making in modern mining.

Understanding operations from the ground up

When Komatsu's engineers begin working with a mine, the process starts not with equipment, but with understanding. Through an extensive Request for Information (RFI), the team collects detailed operational data, from mine plans and geology to ventilation systems and ground support requirements.

This information feeds into a production model that mirrors the mine's actual performance, often within a 10 per cent margin of accuracy. The goal is simple but powerful: simulate reality well enough to predict how changes, whether in equipment type, cutting sequence, or haulage configuration, will affect output.

Such modeling allows mine operators to explore

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End-to-end system reviews can identify bottlenecks across haulage, cutting, ground support, and ventilation.

Success increasingly depends not just on the power of equipment, but on the quality of the data guiding its use.

"what if" scenarios without risk or downtime. Before a single machine is deployed, they can compare current configurations against alternative systems, assessing potential gains in productivity, energy efficiency, or material flow.

Data-guided decision making

Selecting equipment for a mine has always involved experience and intuition. What's changing now is the ability to back those instincts with quantifiable data.

Komatsu's application engineers combine hands-on mining experience with digital modeling to assess how each machine will perform under specific geological and operational conditions. They evaluate factors such as seam cuttability, cutting cycles, haulage cycles, and overall system performance. The output is more than just a recommendation; it's a framework for evidence-based decision-making.

In one example, adjustments based on model insights led a mine to reconfigure its haulage layout, improving throughput without additional equipment investment. The result: tangible performance gains driven not by capital expenditure, but by smarter system alignment.

Looking beyond the fleet

What makes this approach distinctive is its scope. Application engineering doesn't stop at matching machines to tasks; it examines the entire mining ecosystem.

End-to-end system reviews can identify bottlenecks across haulage, cutting, ground support, and ventilation. Seemingly minor changes, like modifying haulage routes or altering cutting sequences, can translate into measurable improvements in tonnage per shift.

This broader systems-thinking is what allows mining operations to move from reactive problem-solving to proactive optimization. By correlating simulated projections with real-world performance data, operators establish a feedback loop of continuous improvement, a hallmark of mature, data-driven operations.

Lessons in partnership and adaptation

Another lesson emerging from this model is the value of long-term collaboration. Application engineering is not a one-time engagement; it's an ongoing dialogue between mine operators and engineers.

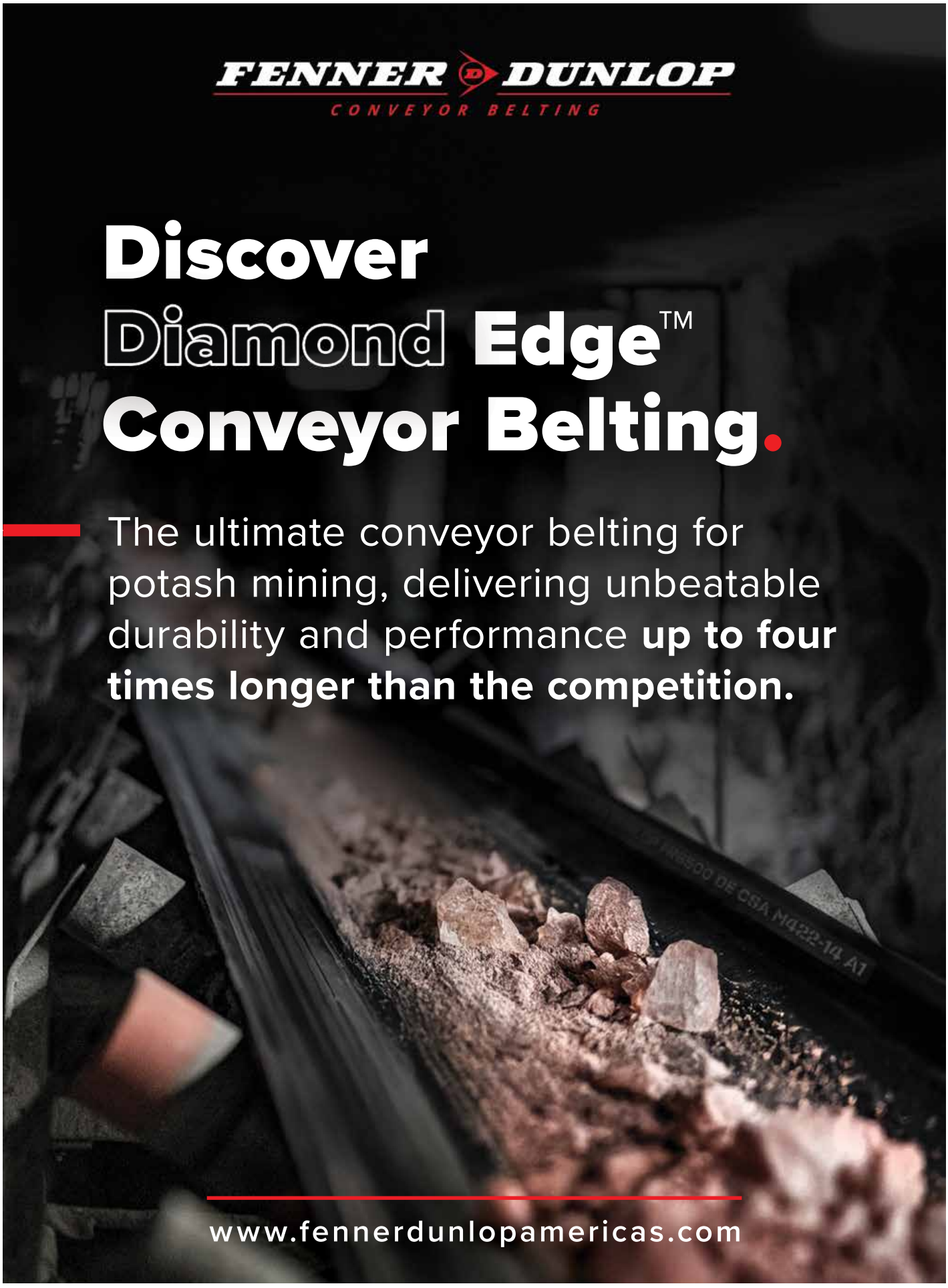
As geological conditions evolve or production priorities shift, the models evolve too. Regular follow-ups, on-site assessments, and integration support result in guidance that remains relevant. This partnership helps mines maintain alignment between their operational realities and their long-term strategic goals.

A broader view of mining efficiency

By pairing deep field knowledge with simulation and modeling, the process empowers mines to view their operations as interconnected systems rather than isolated components. The results speak to a broader truth in mining today: success increasingly depends not just on the power of equipment, but on the quality of the data guiding its use.

The mines that succeed won't have to run harder; they'll run smarter, guided by data and engineering insight that turn uncertainty into measurable progress.

Contact your local Komatsu sales representative to connect to our application engineering team. ▲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Advancing manufacturing for the potash industry: Standard Machine's strategic investments

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At Standard Machine, we understand the critical role that precision engineering plays in the potash industry, where equipment longevity and reliability are paramount.

The Höfler 2000 XL is perfectly suited for the oversized gears commonly required in potash mining machinery.

At Standard Machine, we are deeply committed to advancing our manufacturing capabilities to support the growing demands and technical requirements of the potash industry. This commitment has driven us to make strategic investments in cutting-edge machinery that expands our ability to deliver high-precision, large-scale machining solutions essential for potash mining operations. Our acquisition of the Höfler 2000 XL Gear Grinder and the Fermat WRF 150 CNC Horizontal Boring Mill is part of our strategy to enhance efficiency, precision, and innovation for our clients in the potash sector.

The Höfler 2000 XL Gear Grinder, one of the most advanced grinding machines on the market, has set a new standard in precision for large-scale gear production. As the first of its kind in Canada to feature wobble compensation technology, it reduces concentricity issues, leading to a significant improvement in both setup time and grinding accuracy. This innovation directly translates into faster turnaround times and more consistent quality—key advantages for the production of potash mining equipment, where gear reliability is essential.

With its extended stroke length and ability to accommodate larger grinding wheels, the Höfler 2000 XL is perfectly suited for the oversized gears commonly required in potash mining machinery. These gears are critical components in the transmission of power and torque within mining equipment, where even a minor defect can lead to costly downtime. By employing the Höfler 2000 XL, we can produce high-precision gears with minimal error, ensuring the durability and performance demanded by heavy-duty mining operations.

In addition to the Höfler 2000 XL, our capabilities are further strengthened by the Fermat WRF 150 CNC Horizontal Boring Mill. This machine is

designed to handle massive components up to 10 feet in diameter and weighing as much as 44,000 pounds, making it ideal for the potash industry's heavy-duty requirements. The Fermat WRF 150 offers unparalleled precision, achieving tolerances within 0.0005 inches. Its versatility allows us to efficiently perform both roughing and high-precision machining on components of varying sizes. This capability enhances our flexibility and allows us to meet complex and specific demands from our potash industry clients.

These recent investments underscore our dedication to supporting the potash industry with solutions that meet the highest standards of quality and reliability. The Höfler 2000 XL and Fermat WRF 150 are essential assets in our production process, allowing us to deliver components that are built to last, even in the harshest mining conditions. For our clients, this means equipment that not only meets precise technical requirements but also maximizes uptime and operational efficiency.

At Standard Machine, we understand the critical role that precision engineering plays in the potash industry, where equipment longevity and reliability are paramount. Our state-of-the-art machinery, coupled with award-winning project management, reflects our commitment to delivering manufacturing excellence. We continually invest in the best technologies and expertise to provide innovative, high-quality solutions that keep our clients' operations running smoothly.

As we move forward, Standard Machine remains focused on expanding our capabilities and reinforcing our position as a trusted partner in the potash mining sector. Our dedication to quality, innovation, and reliability ensures that we meet the evolving demands of the industry, consistently delivering value to our clients. ▲

Optimizing potash drying for modern fertilizer production

Challenges & opportunities

BY SHANE LE CAPITAINE, PROCESS SALES ENGINEER | FEECO INTERNATIONAL

FEECO potash dryer.

Glazed potash granules.

Flights in a rotary dryer.

In the evolving fertilizer landscape, drying plays a vital role in bringing potash products to market, contributing to process efficiency and product quality at various stages, from mine to field. With such a significant influence on both process and product, drying is a fundamental aspect of producing high-quality, market-ready potash fertilizers.

The growing importance of potash drying

As the global population grows and the world must feed more people from less arable land, potassium-bearing materials continue to gain prominence in global crop nutrition programs; potash is widely recognized for its essential role in achieving food security the world over.

While muriate of potash (MOP or KCl) remains the most widely used form, alternative potassium compounds, such as potassium sulfate (SOP) and potassium magnesium sulfate (SOPM or langbeinite), are seeing rapid growth.

As these specialty products expand in use, producers face new challenges to deliver consistent, dustless, free-flowing granules that meet market expectations around tight physical and chemical specifications. Whether working with traditional or novel potassium-bearing materials, drying is central to achieving process and product goals, influencing everything from bulk density and granule strength to storage stability and caking resistance.

Drying ultimately improves product handling, minimizes transportation costs, enables uniform downstream processing, and ensures product quality.

The many roles of drying in bringing potash to market

While processes may differ depending on potash source and product goals, drying generally plays a role at multiple points in the process of mining, processing, and granulating potash for use as a fertilizer:

Ore drying

Whether mined from salt brine or hard rock ore, an initial drying step – typically after crushing, crystallization, or flotation – is critical to preparing material for downstream granulation. When processing is not handled on site, drying the ore also reduces shipping costs and improves handling characteristics. Drying ensures a stable, free-flowing material for use as a suitable feedstock in both the wet and dry granulation processes.

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FEECO fluid bed dryer.

Potash dryer testing in progress in the FEECO Innovation Centre.

Side-mounted pneumatic hammer knocker.

Granulation

While the dry granulation process does not require a drying step, more fertilizer producers are choosing to wet-granulate their fertilizers to offer a premium product.

Because wet granulation relies on the use of a liquid binder to facilitate granule formation and achieve product quality objectives, a drying step is required to drive off moisture and produce a finished granule.

Granule drying discourages caking during storage by preventing the formation of crystal bridges between particles. This keeps the product flowable and in the granular form intended. Further, drying at this stage inhibits bacterial growth so the product is shelf stable. It also helps to achieve desired crush strength, an essential aspect of product breakdown and nutrient delivery.

Finishing

While compaction granulation circuits do not require a drying step, they will often employ a glazing step to reduce potential for attrition, or the breakdown of product into dust and fines.

Glazing can be carried out in various ways, but in most cases utilizes a rotary drum/dryer in which atomized moisture is misted onto the product and simultaneously dried, creating a hardened, recrystallized surface less susceptible to degradation. As granules produced via compaction granulation are subject to high rates of attrition, the use of a glazing step can significantly improve product quality and stability.

Rotary dryers vs. fluid bed dryers

Two primary technologies dominate potash drying: rotary dryers and fluid bed dryers, with each offering distinct advantages depending on material properties and process goals.

Rotary dryers

Rotary dryers are the industry standard for potash ore and fertilizer products. Their rotating shell and internal lifters provide high-capacity drying and uniform exposure to drying air. Advantages include:

- High tolerance for variable feed size and moisture
- Robust, heavy-duty construction suitable for abrasive materials
- Long-proven and well-understood technology
- When used as part of the granulation or glazing process, the rotation of the drum causes a tumbling action in the bed that polishes granules.
- Flights (material lifters) for maximizing heat transfer

Although rotary dryers can be configured for either co-current (parallel) or counter-current air flow, FEECO recommends the co-current configuration for drying potash. This design, which puts potash in contact with the hottest temperature at its wettest point, helps to prevent the degradation and discolouring associated with over-drying that could occur in a counter-current configuration, which puts material in contact with the hottest gas at its driest point (before discharge).

Fluid bed dryers

Fluid bed dryers excel at drying small, uniform particles with high thermal efficiency. They are often used in specialty applications where precise control of final product moisture is critical. However, they are less suited to coarse or variable feedstocks typical of potash ores, as slight variation in feedstock characteristics can cause an upset.

In most large-scale potash operations, rotary dryers remain the preferred choice due to their versatility, reliability, and ability to handle fluctuations.

Potash materials must be dried to precise moisture targets—typically below 0.5 per cent—to prevent caking, clumping, or degradation during storage and shipment. This requires precise control, as potash is hygroscopic, absorbing moisture from the surrounding air.

Challenges in drying potash materials

Despite the widespread use of potash fertilizer, designing a dryer that achieves process and product goals can still be a challenge, requiring careful consideration of the material's unique physical and chemical properties. Some of the most common challenges producers face when drying potash include:

Moisture control

Potash materials must be dried to precise moisture targets—typically below 0.5 per cent—to prevent caking, clumping, or degradation during storage and shipment. This requires precise control, as potash is hygroscopic, absorbing moisture from the surrounding air.

At the same time, potash can also be subject to over drying, resulting in fines generation, loss of product strength, and even discolouration. In engineering a dryer, manufacturers must take care in achieving a careful balance to reach the target moisture, without under or over drying.

Buildup

Potash can be prone to clumping, particularly at higher moisture contents. This often requires special measures in dryer design to discourage and prevent clumping. For example, FEECO often employs a "bald" or flightless section near the rotary dryer inlet to give material a chance to dry before exposing it to flights. Similarly, knockers are often incorporated onto rotary dryers to mitigate clumping and buildup on the drum's interior by knocking a wear band on the drum at predetermined intervals.

In fluid bed dryers, a mixing arm, pulsating air jets, or other mechanical aids can help to reduce buildup inside the dryer.

Corrosion

Potash salts are inherently corrosive, especially at elevated temperatures and higher moisture contents, making dryers especially susceptible to corrosive wear. Potash ore can also be abrasive. In both cases, dryer design requires special measures such as alternate or thicker materials of construction to protect against premature equipment wear.

Opportunities in drying potash

The challenges potash presents also translate to significant opportunities for optimizing the drying process, particularly as technology and knowledge around materials science advance.

Aging potash dryers installed decades ago hold potential for improvement through retrofits and upgrades such as the incorporation of combustion chambers, burner tuning, flight design and pattern optimization, and more. The FEECO customer service team regularly evaluates dryers to assess mechanical condition and process efficiency, providing reports that detail recommendations for improvement.

For troubleshooting existing systems, as well as designing new ones, the FEECO Innovation Centre offers potash producers the chance to evaluate both technologies and establish design criteria around their specific material through pilot-scale testing for both rotary and fluid bed dryers.

Conclusion

The role of drying goes far beyond a finishing step in the process of bringing potash fertilizers to market, influencing process efficiency, product quality, shipping costs, storage characteristics, and shelf stability.

From ore drying to the final product, the right drying system streamlines processing and ensures product quality and uniformity.

With decades of experience in designing, optimizing, and servicing potash rotary dryers, FEECO International remains a trusted partner to potash producers around the world—helping them achieve reliable, efficient, and sustainable drying performance. ▲

Beyond the hype: What employers need to know about GLP-1 drugs and employee wellness

BY ANDREA HANSEN, PRESIDENT, SUTTON BENEFITS & PENSION

It's hard to miss the headlines about Ozempic and similar GLP-1 drugs. Originally designed to treat Type 2 diabetes, GLP-1 drugs are now being heavily promoted as weight-management medications. Their popularity has surged across Canada, and many employers are wondering what this means for their benefits plans.

According to Statistics Canada, about nine per cent of Canadian adults have diabetes and as many as 65 per cent are overweight or obese. It's no surprise GLP-1 drugs are becoming a common prescription and a growing consideration for group benefits plans.

Unfortunately, this widespread chronic disease is often misunderstood by society, and even within the health care system, says Obesity Canada.

"Too many are told to 'just eat less and move more', reducing a complex disease to oversimplified advice," says obesitycanada.ca. "Dismissing the disease of obesity ignores the science, fuels harmful stigma, and unfairly shifts blame onto people for a condition they cannot fully control."

Many benefit programs still overlook obesity as a chronic condition and fail to offer adequate support, says Benefits and Pension Monitor, even though benefit coverage and early intervention could reduce downstream conditions such as diabetes, heart disease, and stroke.

Private plans remain the primary source of coverage

There is a lot of interest around GLP-1 drugs as part of the treatment due to the life-changing results some people are experiencing. The medications work by mimicking a natural hormone that regulates blood sugar levels and appetite, helping people feel full longer.

But the financial implications can be significant: the average annual cost for a GLP-1 drug, such as Wegovy, is about $5,500 per user. If even a small percentage of employees begin using these medications, an employer's total drug spending can quickly double.

Canada's new national pharmacare framework lays the foundation for future expansion, but for now it covers only select diabetes medications and contraceptives. GLP-1 drugs are not included. Additionally, at the time of printing, only four jurisdictions (PEI, Manitoba, B.C., and Yukon) have signed agreements with the federal government to carry the program.

That means private plans remain the primary source of coverage for GLP-1 drugs, and employers must decide how far they want that coverage to extend.

Support must go deeper than prescriptions

Weight loss is only the tip of the iceberg, however. Beneath the surface are the factors that can cause

According to Statistics Canada, about nine per cent of Canadian adults have diabetes and as many as 65 per cent are overweight or obese. It's no surprise GLP-1 drugs are becoming a common prescription and a growing consideration for group benefits plans.

someone to be overweight in the first place, such as high stress, trauma, poor nutrition, sedentary lifestyles, and mental health challenges.

Without addressing these root causes, employees may depend on drugs longer than necessary, or may not achieve lasting wellness even with medication support.

That's where a broader wellness strategy becomes essential. Employee assistance programs (EAPs), wellness initiatives, and mental health support should play a role in helping employees build sustainable habits and resilience.

By investing in holistic health supports, employers can reduce long-term reliance on costly medications while improving overall employee well-being.

Designing smart, sustainable plans

At Sutton Benefits & Pension, we encourage employers to think proactively about drug plan design. We recommend you:

- Budget for emerging high-cost drugs like GLP-1s and potential new therapies now in development.
- Set clear coverage criteria or limits in consultation with advisors and insurers.
- Leverage wellness resources — such as nutrition coaching, physical activity challenges, and mental health programs — to address underlying causes of chronic conditions.
- Educate employees about what's covered and how to access supports that help them stay healthy, not just medicated.

GLP-1 medications offer benefits for individuals managing diabetes or obesity, but they also highlight a deeper issue: many Canadians need stronger foundations in mental, physical, and nutritional wellness. For employers, the opportunity lies in taking a balanced, forward-thinking approach that supports employees holistically while maintaining a sustainable benefits plan. ▲

Evolving underground

Bit Service's next chapter in potash innovation

Since 1965, Bit Service Company Ltd. has stood alongside Saskatchewan's potash industry as both a supplier and a partner in progress. What began as a small shop in Esterhazy providing bit sharpening and service has evolved into a full-scale engineering and manufacturing organization—one uniquely positioned to support the province's world-class mining sector. Over six decades, Bit Service has witnessed every major evolution in underground mining technology, from early development machines to today's high-powered and efficient rotary boring machines. Through it all, our goal has remained constant: to help our clients mine more efficiently, safely, and sustainably.

Innovation rooted in Saskatchewan

Bit Service's growth has always mirrored that of the potash sector itself. The 1960s and '70s brought the first wave of underground development, when local supply and service were critical to operational uptime. Through the 1980s and '90s, as machine horsepower, bit geometries, and ground conditions evolved, our technicians worked directly with mine maintenance teams to redesign bit bodies and carbide profiles suited to new cutting conditions. Today, with Saskatchewan leading the world in potash exports, we continue to invest in the people, technology, and processes that keep this essential resource flowing.

Saskatchewan owned and operated since 1965.

A new era of manufacturing

Our most significant recent milestone is the completion of a new advanced manufacturing facility in Saskatoon—a purpose-built plant dedicated to the production of carbide cutting tools for underground potash mining. This facility marks a turning point for Bit Service. Years in development, it integrates advanced automation, robotics, and data-driven process control to deliver unmatched consistency and responsiveness. Every stage of production—from starting with a raw forging to machining, brazing, heat treating and tempering, is monitored and linked through digital monitoring systems that control and balance process variables. The result is faster product development cycles, higher reliability, and a step-change in quality assurance.

This investment represents more than an expansion of capacity; it's a commitment to Saskatchewan's manufacturing future. By keeping design, machining, and assembly in-province, Bit Service strengthens the local supply chain, reduces lead times, and ensures that potash producers have direct access to a responsive, experienced partner who understands the unique demands of underground mining.

Partnerships driving progress

Beyond local manufacturing, Bit Service continues to collaborate with industry leaders to bring the most advanced solutions to

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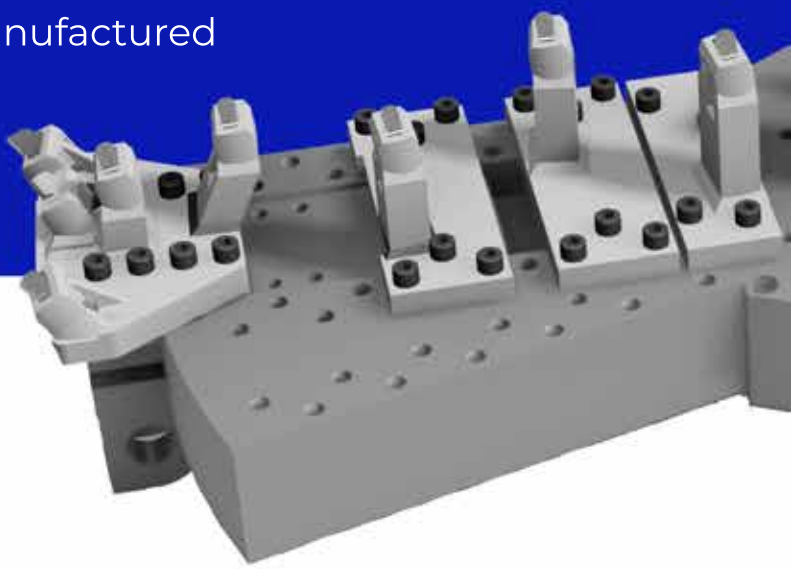

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Canadian mines. Long-standing relationships with Cincinnati Mine Machinery, Bowdil, Kennametal, STARCLEAN, and ULMA have allowed us to provide a complete range of cutting and conveying products tailored to potash operations. The addition of rock drilling products from Monark, Mitsubishi, Driconeq, and JSI provide a continuation of this long history which now extends into the drilling and hard rock sectors — delivering reliability and ease of maintenance underground where downtime is most costly.

These partnerships extend our reach and expertise, while maintaining the local engineering and service presence that has always defined Bit Service. Our clients benefit from global innovation combined with hands-on technical support close to home.

Looking forward: Automation, efficiency, and sustainability

As potash operations continue to embrace automation and data analytics, Bit Service's focus is turning to the next frontier—integrating sensor feedback, material science, and manufacturing precision to further enhance cutting efficiency and component longevity. Our R&D initiatives target measurable reductions in specific energy consumption and wear rates, supporting both economic and environmental goals.

We view innovation not as a single leap forward, but as a continuous process of refinement—an attitude that has kept us resilient through market cycles and technological change alike. From our beginnings and continued manufacturing in Esterhazy to our facility in Saskatoon, Bit Service's success has always been rooted in the strength of Saskatchewan's people, industry, and community.

Supporting the next generation

As we celebrate over 60 years of operation, Bit Service remains proud to employ and train local talent—engineers, tradespeople, and technicians who are building the next chapter of mining innovation. Our mission remains unchanged: to support our customers, strengthen our province's industrial capacity, and ensure that Saskatchewan continues to lead the world in safe, efficient, and responsible potash production. ▲

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Mining conveyor component compatibility guide

WRC WEST RIVER CONVEYORS

Mismatched or incompatible conveyor components create more than just minor inconveniences. They can lead to unexpected downtime, reduced efficiency, and even safety concerns.

Mining conveyors are built to last, but over time, they often become a patchwork of old and new components, different brands, and discontinued models. When this happens, questions of compatibility naturally arise: Will a new motor couple with my existing gearbox? Can this roller replace the one that just wore out? What if I can't find the exact part anymore?

Why compatibility matters in mining conveyors

Mismatched or incompatible conveyor components create more than just minor inconveniences. They can lead to unexpected downtime, reduced efficiency, and even safety concerns.

For mine operators and maintenance managers, that means lost productivity. For procurement teams, it means sourcing headaches and cost overruns. Ensuring compatibility is critical to extending the life of your system, optimizing performance, and keeping production on schedule.

Retrofitting legacy equipment

Legacy equipment often adds an extra layer of complexity. For example, many operations still rely on older equipment, which may not directly match newer components. West River Conveyors (WRC) frequently helps customers retrofit rolls into these older frames—one of the most common compatibility challenges they see. Most of the idlers are designed to fit seamlessly into these legacy systems and are designed to ensure a precise fit. In rare cases where components are no longer supported and retrofits are not possible, West River provides expert guidance on modern replacements to keep operations running efficiently.

Beyond rollers and frames, this same compatibility expertise is essential for terminal equipment like drives, where gearboxes and motors must be coupled correctly. While not all components are interchangeable right out of the box, WRC has the in-house capabilities to machine or modify parts so they work seamlessly together.

WRC's engineering and fabrication capabilities make it possible to tailor solutions for non-standard situations. Whether you are replacing a critical drive or a smaller rolling component, WRC can design or adapt parts so they integrate smoothly with your existing system.

Standard sizes vs. niche product sizes

Mining conveyors do not always follow a one-size-fits-all rule. While there are industry-standard dimensions, niche or custom product sizes can complicate part replacements.

WRC's engineering and fabrication capabilities make it possible to tailor solutions for non-standard situations. Whether you are replacing a critical drive or a smaller rolling component, WRC can design or adapt parts so they integrate smoothly with your existing system.

The advantage of WRC's surplus inventory

Compatibility is not just about fitting pieces together—it's also about finding those pieces in the first place. Over the years, WRC has built a surplus inventory that covers both:

- Common, industry-standard components – readily available and often discounted.
- Hard-to-find or discontinued components – sourced through aftermarket purchasing and kept in stock for when customers need them most.

This inventory gives customers a significant advantage: faster sourcing, reduced lead times, and substantial cost savings compared to ordering new equipment at full price. For mines facing urgent downtime, this surplus can make the difference between hours and weeks of lost production.

Rolling components: The most common compatibility challenge

Idlers, rollers, and other rolling components wear out more frequently than other parts, making them some of the most common sources of compatibility questions. Differences in brand, size, and design often leave operators wondering if a replacement will fit properly.

WRC can supply interchangeable components that meet or exceed performance requirements, and when a direct swap is not available, we can retrofit or machine solutions. Our surplus stock often includes the exact components customers need, saving time, money, and frustration.

Partner with WRC for compatibility confidence

At the end of the day, conveyor compatibility is about more than swapping parts. It is about keeping your system reliable, safe, and cost-effective, even as components age or become obsolete. West River Conveyors combines retrofitting expertise, custom machining capabilities, and a surplus inventory of both standard and hard-to-find components to deliver compatibility solutions for every need. West River specializes in providing solutions that keep your operation running smoothly and boost productivity. ▲

Engineering the impossible

The development of the DPIS-1-HD-KRMG3 for narrow-vein mining

During preliminary evaluations of narrow-vein mining operations in Latin America, the engineering team consistently encountered the same assessment: mechanized bolting could not be deployed due to insufficient heading dimensions. Although operators expressed a clear need for the productivity and safety improvements associated with mechanization, the geometric constraints of the headings prevented the use of conventional bolt modules and drifter systems. These conditions shaped the inception of the DPIS-1-HD-KRMG3, a system conceived not by reducing the scale of an existing jumbo, but by reconceptualizing how drilling and bolting systems could be designed to function within extremely restricted profiles.

Rather than beginning with a predetermined carrier and adapting the bolt module to it, Fletcher and Cannon Mining designers reversed the design sequence. They examined the narrowest operational environments and established the minimum feasible envelope for a mechanized bolt installation system. This design approach led to the development of the KRMG3 remote bolt module, the shortest mechanized bolt module available on the market. Its overall length—equivalent to bolt length plus approximately 27 inches—was achieved by structuring the system around the compact HV32 hydraulic percussive drill. The HV32's notably short body permitted the mast, travel mechanism, and housing to collapse into an exceptionally small footprint. When integrated with the Fletcher N3016-AD/E carrier (five feet and four inches in width) and the Cannon DPIN carrier (five feet and 11.5 inches in width), the resulting platforms could access headings that had previously been inaccessible to mechanized support equipment.

However, minimizing system dimensions alone did not resolve the operational challenges. Narrow headings inherently increase the impact of misalignment, vibration, and off-axis loading, causing minor collar deviations to become significant errors over the course of a six- to eight-foot bolt hole. To address this, the engineering team incorporated several precision-oriented mechanical features into the module. These included 18 inches of independent crowd on each mast, variable feed rate capability suitable for hard-rock conditions, a hydraulic stinger for module stabilization, and centrally aligned drill-steel paths designed to preserve bushing and seal integrity. Collectively, these measures allowed operators to achieve accurate collaring and drilling in environments where handheld equipment had historically been the only practical solution.

Selection of the drifter was equally consequential. The engineering team chose to support both the Fletcher HV32 and Cannon CH32 drifters, designing the KRMG3 so either unit could power both the drilling and bolt-feed functions. This design decision reduced inventory requirements, simplified training, and lowered maintenance complexity. The HV32 provided an additional advantage: its compact form factor reduced overall module length and operates without nitrogen accumulators, eliminating a common cause of vibration surges, rebuild-related downtime, and additional maintenance expense. Operator feedback substantiated these benefits, citing strong hammer durability, favourable bit and steel life, and consistently stable performance in hard-rock drilling conditions.

Upon returning to the narrow-vein operations that had originally deemed mechanized bolting infeasible, the engineering team demonstrated that the DPIS-1-HD-KRMG3 could enter, drill, and bolt within the available heading dimensions without modification. The system effectively introduced mechanized support into areas previously limited to handheld practices, expanded mechanization opportunities within the LATAM narrow-vein market, and delivered improved safety and control without compromising precision or penetration rate. ▲

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Preventing electrical shock: Why special-purpose GFCIs matter in mining

Electrical hazards are often invisible—and deadly. While qualified electricians understand the risks, most electrical injuries and fatalities occur among non-electrical workers performing routine tasks like operating machinery or cleaning equipment. According to U.S. Bureau of Labor Statistics data, an average of 150 deaths and nearly 2,000 serious injuries occur annually due to electrical exposure, and 64 per cent of these fatalities involve non-electrical occupations.

In mining environments, where high-voltage equipment and harsh conditions are the norm, traditional safeguards, such as personal protective equipment (PPE) and awareness training, are not enough. These measures rely heavily on human behaviour, which is prone to error. Instead, the industry needs proactive engineering controls—solutions that eliminate hazards before they reach the worker.

From GFCIs to SPGFCIs: A new layer of protection

Ground-fault circuit interrupters (GFCIs) have been saving lives for decades in residential and commercial settings. They detect leakage current and trip the circuit to prevent electrocution. However, standard Class-A GFCIs are designed for low-voltage applications (typically 120 or 240 V) and trip at 6 mA or less. In mining, where equipment often operates at higher voltages and currents, these devices are not practical.

Enter Special-Purpose GFCIs (SPGFCIs)—a technology that gained recognition when it was added into the 2023 National Electrical Code (NEC) in the USA. SPGFCIs extend personnel-level protection to circuits up to 300 V to ground (Class C) and above 300 V (Class D), with trip thresholds up to 20 mA to prevent ventricular fibrillation. More importantly, SPGFCIs incorporate a Ground Monitor/Interrupter (GM/I) function, which verifies the integrity of the equipment grounding conductor before energizing the circuit and continuously monitors it during operation.

Why is this critical? If a ground conductor is damaged or missing, a standard GFCI will only trip after a person completes the fault path—meaning the worker experiences a shock. SPGFCIs with GM/I isolate the hazard before anyone touches the equipment, preventing the incident entirely.

Prevention through design

The concept of Prevention through Design (PtD) emphasizes eliminating hazards at the source rather than relying on administrative controls or PPE. SPGFCIs embody this principle. By integrating ground monitoring and higher trip thresholds, they address two major challenges in mining:

- ***Industrial Loads:*** Traditional GFCIs cannot handle the leakage currents common on industrial circuits which contain large motors and variable frequency drives.
- ***Harsh environments:*** Wet conditions, damaged cords, and temporary wiring increase shock risk. SPGFCIs proactively detect these issues.

For example, consider a portable pump on a trailing cable. If the ground conductor breaks, a standard GFCI may not trip until a worker touches the energized frame. An SPGFCI with GM/I prevents the pump from energizing in the first place.

Figure 1. Littelfuse Industrial Shock Block®.

More importantly, SPGFCIs incorporate a Ground Monitor/Interrupter (GM/I) function, which verifies the integrity of the equipment grounding conductor before energizing the circuit and continuously monitors it during operation.

Applications in mining

Mining applications already have requirements to have ground monitoring (also called ground check) for some portable loads. SPGFCIs meet CSA M421 ground-check requirements and should be considered for:

- Portable and temporary equipment used in construction or maintenance.
- Industrial loads where Class-A GFCIs are impractical.
- Locations with frequent ground conductor damage or harsh environmental conditions.

These devices align with CSA Z462 and NFPA 70E principles for electrical safety and support the hierarchy of risk controls by implementing engineering solutions rather than relying solely on human behaviour.

The bottom line

Electrical shock incidents in mining are preventable. By adopting SPGFCIs with ground monitoring, operators can move from reactive protection to proactive hazard elimination. This technology represents a significant step forward in designing safer workplaces, especially for non-electrical workers who remain the most vulnerable.

As the industry embraces electrification and automation, integrating SPGFCIs into equipment design and temporary installations is not just good practice—it's a life-saving measure. ▲

Engineering cleaner transfers

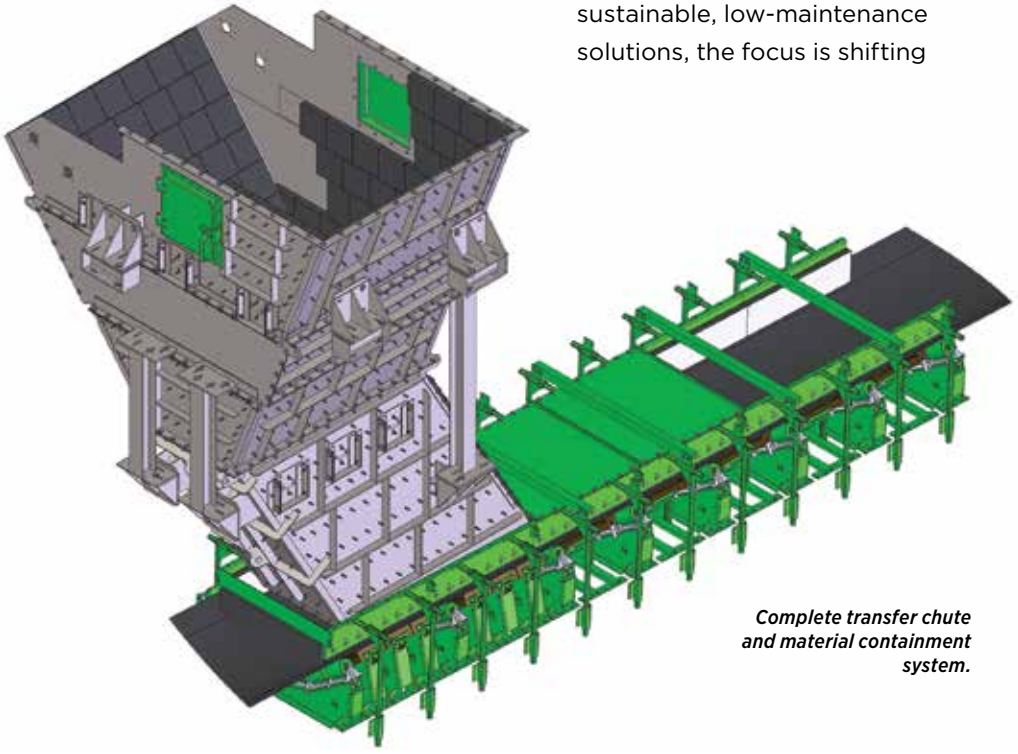
The case for complete conveyor sealing in dust control

BY RICHWOOD

Left: Material and dust containment. Below: Material containment with dust control.

In the mining and aggregate industries, dust control is not just a matter of regulatory compliance, it's a critical factor in operational efficiency, equipment longevity, and worker safety. Whether moving potash, coal, or crushed rock, transfer points on conveyors are often the biggest contributors to fugitive dust on site.

As more operations look for sustainable, low-maintenance solutions, the focus is shifting away from active dust suppression methods like water sprays or collection systems toward passive dust control. This approach aims to contain dust at the source through smarter engineering and better system integration. The key? A fully sealed conveyor transfer point that begins with proper transfer chute design and ends with effective belt sealing without relying on chemicals or mechanical filtration.



Complete transfer chute and material containment system.

Passive dust control is based on the principle of managing airflow and material movement within a sealed environment. Instead of capturing airborne dust after it's been generated, this method prevents dust from escaping in the first place. And in sectors like coal and potash, where dust can be combustible, corrosive, or extremely fine, preventing release at the source is not only safer but

also more cost-effective in the long term.

Dust generation often starts in the transfer chute. Poorly designed or undersized chutes create turbulence, unpredictable material flow, and uncontrolled impact forces. These conditions pulverize material, bounce fines into the air, and increase wear throughout the system.

A properly engineered transfer chute must be tailored to the application. By controlling the trajectory and energy of the falling material, properly designed chutes reduce both spillage and airborne particles from the outset.

Too often, discussions about dust control jump straight to sealing components like skirting or curtains. But those solutions can only be effective if the conveyor belt itself is properly supported. If the belt is sagging between idlers or has any vertical movement while being loaded, efforts to seal fines and dust will typically fail.

In fact, trying to seal against a moving unstable belt creates gaps and pressure inconsistencies that actively promote dust escape. Proper belt support is fundamental. This is usually best accomplished using engineered impact beds or cradles. It provides a stable consistent surface that allows sealing components to function as designed. Without it, every other dust control measure is compromised.

The five pillars of passive dust containment

A high-performance passive dust control system integrates several interdependent components. These include:

1. Controlled material flow

The geometry of the transfer

chute should guide material smoothly and centrally onto the belt, minimizing bounce and degradation that leads to fine dust creation.

2. Energy dissipation and belt support

Engineered belt support systems—like impact saddles or idlers—absorb the shock of material drop, protect belt integrity, and ensure the belt remains flat and steady, enabling effective sealing.

3. Full transfer enclosure

Effective containment requires more than just basic skirting. It demands a sealed system—including rugged wear liners, properly design skirting, skirtboards, and proper sealing rubber—to prevent escape paths for dust-laden air.

4. Air velocity reduction

Turbulent air is one of the primary causes of dust becoming airborne. Passive systems use baffled stilling zones and dust curtains to slow air movement, allowing fine particles to settle back onto the belt.

5. Pressure equalization

A sealed enclosure must allow for pressure relief to prevent sudden air bursts that force dust out. Passive systems incorporate venting, chimneys, and extended containment zones based on CEMA 575 principles, allowing dust to settle naturally without needing active suppression.

Across North America and globally, mining operations are proving the value of this passive approach. Companies like Richwood have delivered complete transfer point solutions that significantly reduce dust without water, filters, or moving parts.

In one coal facility example, implementing a full Richwood passive dust system reduced visible dust emissions to near-zero while cutting cleanup time and improving conveyor belt life. In potash handling, systems have maintained long-term performance in highly corrosive, fine dust environments. And in aggregates, they've proven successful under heavy impact from high-tonnage loads, reducing spillage and airborne particulate.

In addition to improved worker safety and actual system performance, passive dust control is far less maintenance intensive than active dust control methods like misting systems or baghouses. Its long-term impact on safety, production, and worker morale is significant.

About Richwood

Richwood engineers complete conveyor solutions for the mining and bulk material handling industries, specializing in dust containment, impact protection, and belt support. With almost 50 years of field experience, Richwood products are trusted worldwide for durability and performance. Learn more at www.richwood.com. ▲

The core strength of the MEGATEX XD™ Plus series lies in its ability to process large quantities of material efficiently.

The MEGATEX XD™ Plus: Redefining high-volume screening with ergonomics and durability

In the competitive worlds of mineral, fertilizer, and grain processing, maximizing throughput while maintaining operational safety and ease of maintenance is essential. Equipment capable of handling large volumes efficiently, without sacrificing precision or increasing downtime, provides a significant edge. The Rotex Group's MEGATEX XD™ Plus series embodies this ideal, offering a high-capacity screening solution designed for demanding applications, with a focus on operator ergonomics, serviceability, and long-term durability.

Unmatched capacity for high-volume applications

The core strength of the MEGATEX XD™ Plus series lies in its ability to process large quantities of material efficiently. Built specifically for industries such as fertilizer production, mineral processing, and grain handling, these machines feature increased flow inlet plenums that allow for higher throughput without bottlenecks. This means more material processed in less time, directly boosting productivity and profitability.

The Plus configuration also incorporates more spacing between screen decks, which significantly enhances material stratification. Better stratification reduces common issues like blinding and pegging – especially when handling sticky or abrasive materials – ensuring consistent separation quality. Deepened discharge doors facilitate smoother material flow and simplify maintenance, reducing downtime and enabling continuous operation even under the most demanding conditions.

Optimized for ergonomics and maintenance

While capacity is vital, operator ergonomics and ease of maintenance are equally important for long-term success. The MEGATEX XD™ Plus series addresses this with features designed to make routine tasks faster, safer, and less labour-intensive.

Larger, accessible decks with adjustable slopes allow operators to customize the machine based on specific material needs, optimizing screening performance, and reducing cleaning and inspection efforts. The increased screen area not only boosts capacity but also improves access for maintenance, making deck removal and screen replacement quicker and safer.

The design includes larger, reinforced access doors – especially at the discharge end – enabling easier cleaning and inspection without extensive disassembly. This ergonomic approach reduces physical strain on operators and minimizes routine maintenance time, translating into higher uptime and lower operational costs.

Advanced motion technology for superior separation

At the heart of the MEGATEX XD™ Plus is Rotex Group's proven gyratory-reciprocating motion technology. This sophisticated motion pattern begins as purely gyratory at the feed end, transitions to elliptical in the middle, and reverts to reciprocating at the discharge end. This dynamic movement ensures even distribution of material across the full width of the screen surface, promoting better stratification and higher yields.

The elliptical motion enhances separation efficiency – especially for sticky or abrasive materials common in fertilizer and mineral processing – while the reciprocating motion at the discharge end effectively removes near-size particles, improving overall screening accuracy and reducing rework.

The machine's customizable features, such as increased screen area and adjustable deck slopes, allow operators to tailor performance to specific applications, whether handling coarse or fine fractions. This flexibility ensures consistent, high-quality output across a wide range of processing needs.

Durability and long-term reliability

Durability is a hallmark of the MEGATEX XD™ Plus series. Heavy-duty construction, abrasion-resistant liners, and high-quality components ensure the machine withstands the harshest operating conditions. The design minimizes wear and tear, reducing maintenance frequency and extending service life.

The external drive system is engineered for longevity, with simplified access that allows for quick inspections and replacements. Combined with robust structural components, this results in a machine capable of reliable operation over many years, even in abrasive, high-volume environments.

A strategic investment for growth

As industries continue to demand higher capacities, better efficiency, and safer operation, the MEGATEX XD™ Plus series stands out as a comprehensive solution. Its innovative configuration, ergonomic features, and durability make it ideal for high-volume processing of fertilizer, minerals, and grain.

Investing in the Plus series means increased throughput, reduced downtime, and improved safety – all while maintaining the high-separation standards Rotex is known for. It's more than just a screening machine; it's a strategic asset supporting operational growth and long-term success.

Discover how the MEGATEX XD™ Plus can elevate your processing capabilities. Contact your Rotex representative today to learn more about this industry-leading solution. ▲

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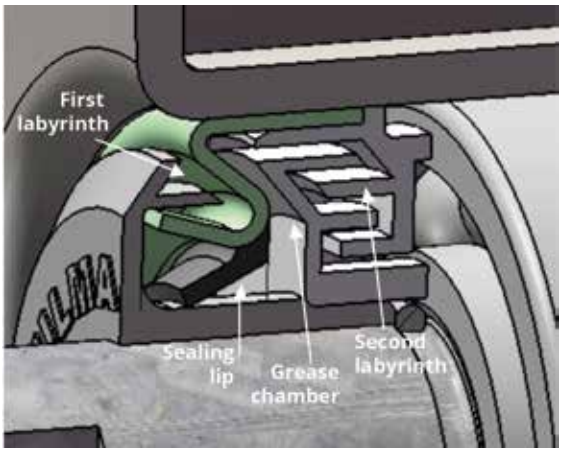
Sealing systems and advanced materials for extreme environments

BY MIKEL AGIRREGABIRIA - TECHNICAL MANAGER, ULMA-SPAIN;
AND RAJESH SHAH, P. ENG, FEC - SALES DIRECTOR, ULMA-CANADA



Far left: The materials and components used in the rollers—as well as the control over their manufacturing process—are critical to ensuring that the expected design performance translates into real-world results.

Left: ULMA's patented sealing system is composed of four protective barriers designed to work together.

In potash mining, conveyor belts are pushed to perform every single day. Underground operations battle fine, persistent, and highly abrasive dust that works its way into every gap and component. On the surface, conveyors face a different test: winter temperatures that can plunge to –40°C. And in some scenarios, belts receive freshly processed, high-temperature material only minutes after it leaves the plant.

The above radically different scenarios are with one shared challenge: keeping the belt running safely and consistently, so production never stops. In the balance between harsh conditions and operational reliability, rollers become a critical component.

The Sealing System: How a roller is shielded in harsh environments

The sealing system is the first line of defence to extend the roller's service life and ensure optimal performance. Its mission: prevent dust and moisture from entering the bearing, which could otherwise compromise the roller's durability.

To achieve this, there are two key principles:

- A multi-layer sealing structure designed to act in sequence.
- Avoiding oversizing the system to minimize the distance between the bearing and the roller's point of support, reducing the risk of shaft deflection.

System architecture

ULMA's patented sealing system is composed of four protective barriers designed to work together:

- First labyrinth: The scoop-shaped geometry of the metal cap expels water and dust outward, preventing it from accumulating – and freezing, if there is water – even when the roller is idle.
- Sealing lip: Operates while the roller is rotating, blocking the ingress of particles. Being vulcanized to the metal structure ensures long-term fixation.
- Grease chamber: Captures any particles that make it past the previous barriers.
- Second labyrinth: Uses rotation to generate centrifugal force, pushing out any particles that reach this stage.

Components: Engineered to minimize shaft deflection and maximize roller service life

Beyond these four barriers, there's another crucial factor to optimize the sealing system: minimizing bearing depth. This distance—from the bearing to the roller's support point—determines how much of the

shaft remains cantilevered beyond the main load-bearing area.

The longer this distance, the greater the shaft deflection under radial and axial load. This deflection creates misalignment in the bearings. If the oscillation exceeds 10 minutes, internal friction and vibration increases, eventually undermining performance and shortening service life.

By minimizing bearing depth, we reduce shaft deflection, maintain bearing alignment, and prevent damaging oscillations. In potash mining—where operational conditions leave no room for error—this design detail is often what separates a reliable roller from one that fails prematurely.

Manufacturing quality and full traceability

The materials and components used in the rollers—as well as the control over their manufacturing process—are critical to ensuring that the expected design performance translates into real-world results.

Producing and supplying all parts from European facilities allows for full traceability of materials and processes, reducing variability and ensuring spare parts consistently meet original specifications.

The other side of reliability: Composite tubes

Just as the sealing system and bearing configuration are engineered to extend service life, the choice of tube material can make a decisive difference in potash mining environments.

ULMA developed heavy-duty composite rollers designed to resist both corrosion and abrasive wear from fine particles. In many cases, the strength of certain composite compounds equals—or even surpasses—that of metal tubes under these conditions.

Composite rollers offer a key operational advantage: lighter weight. This reduces manual handling effort, shortens replacement times, and improves safety during maintenance. In operations with limited access or high-risk environments, this factor becomes critical for the personnel involved.

Ultimately, their durability doesn't just mean fewer replacements. It also means fewer interventions in critical areas, less exposure for maintenance staff, and greater operational stability for the line.

For more information about ULMA products, visit ulmaconveyor.com/en/. ▲

Forging stronger futures

JNE Welding celebrates 45 years and a decade of partnership with Indigenous Nations

In 2025, JNE Welding marked a milestone few companies in Western Canada's industrial sector achieve—45 years of business built on hard work, innovation, and community values. From its modest beginnings in the early 1980's with just 2,000 square feet of shop space and a handful of employees, JNE has grown into one of Saskatchewan's largest custom steel fabricators. With more than four decades of expertise serving potash, mining, energy, and industrial sectors, JNE continues to thrive as a trusted partner in some of Western Canada's largest and most complex projects.

This year also celebrates another significant achievement: the 10th anniversary of JNE Welding's unique partnership with English River First Nation (ERFN) and Peter Ballantyne Cree Nation (PBCN). In 2016, the two Nations became equity partners, creating a collaborative ownership model that brought Indigenous and non-Indigenous business leaders together in a shared vision. Today, that partnership remains a cornerstone of JNE's identity and a model of how industry and Indigenous communities can work together to build lasting prosperity.

Built on relationships

At its core, JNE's story has always been about relationships— with employees, clients, and communities. When ERFN and PBCN became equity partners, the relationship extended beyond business. It became about aligning values: respect, opportunity, and long-term growth.

For JNE, the collaboration has deepened its purpose. The company has long believed in investing in people, whether through apprenticeships, trades training, or safety-first culture. Working alongside Indigenous partners has expanded that focus, opening doors

As JNE Welding reflects on 45 years of growth and a decade of partnership with English River First Nation and Peter Ballantyne Cree Nation, the company is focused on the future.

for Indigenous youth and professionals in the trades and creating further opportunity for economic development in Saskatchewan communities.

Adapting and leading in industry

The potash industry has changed dramatically since JNE first opened its doors. Technology, safety standards, and global competition have all shaped the company's evolution. JNE has consistently risen to the challenge, investing in state-of-the-art equipment, advanced quality control systems, and skilled tradespeople capable of handling the largest and most demanding projects.

One of JNE's proudest strengths is its ability to bridge tradition and innovation. While its reputation was built on craftsmanship and hands-on expertise, its future is driven by innovative fabrication and inspection technology, and a workforce empowered to think differently. This adaptability has allowed JNE to remain relevant and resilient through economic cycles and shifting industry needs.

Looking ahead

As JNE Welding reflects on 45 years of growth and a decade of partnership with English River First Nation and Peter Ballantyne Cree Nation, the company is focused on the future. It aims to continue to be a leader in custom fabrication while also deepening its social and community impact.

"Our work has a ripple effect. Every weld we do, every fabrication we make, every project we build has an impact on our partner communities," said Adam Logue, CEO.

Forty-five years in, JNE Welding's foundation is solid, and its spirit is stronger than ever. With Indigenous partnership as part of its DNA and a reputation for excellence, the company is forging ahead into its next chapter—one defined by collaboration, innovation, and shared success. ▲

Kristian Crane service technician, Keith Bida, works on a repair and rebuild of a Demag P-Series wire rope hoist.

Kristian Electric supporting Saskatchewan's potash industry with proven crane and welding solutions

For more than half a century, Kristian Electric Ltd. has supported the industries that keep Western Canada moving. What began in 1964 has grown into a trusted, Canadian-owned provider of overhead crane service, hoist repairs, welding equipment support, and industrial solutions across Calgary, Edmonton, and Saskatoon. Today, with over 115 employees in three provinces, Kristian Electric continues to expand — and our Saskatoon branch has become an essential part of that growth.

A Saskatoon team built for potash

Potash operations demand precision, reliability, and quick response. Our Saskatoon branch is built to meet those expectations. Whether our technicians are working underground or on surface operations, they provide hands-on support that keeps equipment safe, compliant, and performing the way it should.

When equipment goes down suddenly, when a shutdown is scheduled, or when routine maintenance is needed, our team knows how important it is to respond quickly and get the job done right. Downtime is costly, and potash operations rely on partners who take safety and accuracy seriously.

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Kristian Welder service technician, Steve Carruthers, smiles in the welder service engine bay as he starts working on a Miller Bobcat engine-driven welder generator.

across Canada. In Saskatoon, we provide full crane and hoist support, including inspections that meet CSA standards, preventive maintenance, emergency troubleshooting, modernization projects, load testing, certifications, and complete hoist rebuilds.

Our technicians regularly work with equipment from respected global manufacturers such as Kito, Yale, Harrington, Gorbel, Columbus McKinnon (CM), J.D. Neuhaus, Coffing, Demag, and many others commonly used in the potash industry. Because they are trained on such a wide range of hoists and crane systems, they help ensure compliance, safety, and long-term reliability. Our Saskatoon facility also provides complete in-shop mechanical and electrical repairs, giving local operations both field and bench-level support when needed.

Welding equipment expertise for heavy industry

Welding service is where Kristian Electric began in 1964 — and it's still a core part of who we are today. Our Saskatoon team proudly supports Saskatchewan's potash industry with expert diagnostics, repairs, calibrations, consumables, MIG guns, and a full range of welding accessories.

As an authorized repair centre for Miller, Hypertherm, and Hobart, we service everything from shop welders to the rugged engine-driven machines used in remote or underground environments. Whether it's routine maintenance, troubleshooting, or a complete rebuild, our technicians are equipped to keep your equipment reliable, safe, and ready for demanding industrial conditions.

And we don't stop there — through our sales and service support, we work with all major brands, including Miller, Lincoln, ESAB, Hypertherm, and more. Wherever welding equipment is needed, Kristian Electric is here to keep your operation moving.

Above: Kristian Electric Saskatoon's showroom is fully stocked with welding and overhead lifting equipment. Right: Kristian's Murtaza Bhandari snaps a quick picture with one of multiple Miller Big Blue 600 Air Pak engine-driven welders sold to a local Saskatchewan customer.

Induction heating solutions for industrial applications

In addition to welding support, our Saskatoon branch also provides induction heating solutions commonly used in preheating, post-weld heat treatment, fabrication, and maintenance work. Our team supplies equipment, setup guidance, troubleshooting, and a full range of coils and accessories designed to improve weld quality, reduce preheat times, and increase on-site safety and efficiency. Whether operations are above ground or underground, induction heating offers speed, consistency, and reliability — and Kristian Electric is equipped to support it.

A Canadian company with deep roots and growing reach

Kristian Electric remains proudly Canadian and independently owned. Our growth from a single Calgary shop to branches in Calgary, Edmonton, and Saskatoon reflects our dedication to quality service, strong relationships, and long-term partnerships. Even as we expand, our values remain the same: hands-on service, practical solutions, and treating our customers like neighbours.

The potash industry in Saskatchewan embodies that same spirit of hard work and reliability, and we are proud to support the people who keep it operating.

Supporting Saskatchewan's future

As the potash sector continues to grow with new technologies, expansions, and rising global demand, Kristian Electric is committed to being a long-term service partner. Whether we are maintaining overhead cranes, rebuilding hoists, supporting welding fleets, or helping modernize aging equipment, our Saskatoon team approaches every job with skill and pride.

We look forward to continuing to support Saskatchewan's potash operations and being part of the province's growth for many years to come. ▲

Optimize your investment

How Ludman service technicians can assist your team

Ludman granulator.

Ludman compactor.

Potash producers worldwide face the challenge of losing their experienced workforce to retirement and competitors. They value vital resources to train their replacements. This challenge is no different in Canada. OEM on-site service is not only an opportunity to maximize your equipment performance, but you could be wasting valuable opportunities if you wait before taking advantage of furthering the training of your operators and maintenance team.

Ludman Industries is a North American-based manufacturer of compaction, briquetting, flaking, granulation, and crushing equipment. Ludman manufactured and assembled equipment for Allis-Chalmers prior to acquiring mineral processing and food-grade product lines in 1986. Ludman is a leading partner of building and supplying these products to Canadian potash producers. Ludman tasks service engineers to assist with equipment maintenance and operation. A typical OEM service visit includes reviewing the following items while simultaneously incorporating value-added training:

- Important safety considerations when operating and maintaining the equipment and reviewing vital safety procedures.
- Local lockout and tagout procedures use.
- Identify sources of stored energy and how to isolate or eliminate them.
- Verify machine guarding is in place and is secure.
- Reviewing the operation and service manual, how it is organized, what information it contains, and where to find it.
- Review daily, weekly, and long-term maintenance checklists in the manual and ensure the plant personnel understand what needs to be done and why.

- Determine if there are site modifications that ease maintenance tasks.
- Access plant start-up procedures and sequence of operations.
- Identify location of lubrication points and the specification of the lubricant to be used.
- Review lubrication frequency and how the plant documents.
- Review machine settings and discuss part life.
- Review alarms, their cause, and what the appropriate response should be.
- Highlight the most frequent alarms observed at the site.
- Review the Piping and Instrumentation Diagram (P&ID).
- Verify personnel understand the P&ID symbols and correlate what is on the schematics to actual hardware.
- Test and review the quality of product produced by equipment.
- Benchmark machines' performance against what would be expected in this application.
- Assure the equipment is maximizing production and discuss what possible upgrades would be of value based on observations.
- Check oil flow and temperature for compactor bearing and compactor gearbox oil.
- Verify glycol mix flow to heat exchangers.

Ludman service engineers are helpful in reviewing the following housekeeping tasks that are critical to maintain production and protect the mine's investment, such as:

- Equipment cleanliness and product material build-up
- Moisture and corrosion control
- Wear surface inspection
- Lubrication and seal maintenance
- Alignment and mechanical integrity
- Instrumentation and process control
- Dust control
- Safety procedures and structural integrity
- Emergency plan and procedures

Ludman service engineers have experience across many sites and applications, which helps them to identify site conditions and mineral properties which require customization to compactors and granulators. For example, a customer was experiencing problems with material sticking to the force feeder flights. Ludman optimized the force feeder with a specially designed gravity feed chute, which improved material flow, reduced downtime for maintenance, and improved productivity. At another location, the customer was having problems with grease and dust plugging the labyrinth seals on their compactor rolls. Ludman modified the labyrinths and introduced an air pulse system to keep the labyrinths clean and prevent abrasive dust from reducing seal life. Another customer was losing production yield due to material blowing by the side cheeks at the edge of the compactor rolls. Ludman designed new side cheeks that reduced the blow by and increased production from the customer's compaction circuit.

KCL build up in roll compactor.

The production area is the best classroom for operators and maintainers of compactors and granulators. A service call by a Ludman service engineer is a great opportunity to help employees who do not work directly with the compactor or granulators to receive training because one day they may be asked to do so. Training enables engineers, planners, and buyers to reconnect with production employees and understand their unique challenges, while discussing the nuances of production at the site and gaining invaluable product knowledge. ▲

Truckin' along

NRT grows and diversifies in the Canadian transport industry

NRT now proudly operates in Manitoba and Northwestern Ontario, partnering with local Indigenous groups to combine the professionalism, experience, and safety record of NRT with regional First Nations knowledge and employment.

Northern Resource Trucking Limited Partnership (NRT) was established in 1986 has been a leading transportation provider in Saskatchewan for nearly four decades. Initially, NRT was created to support Saskatchewan's uranium industry but has grown into a trusted logistics partner with a strong focus on safety, reliability, and community engagement. Today, NRT hauls a wide range of products including chemicals, fuels, propane, freight, and dry bulk products to a wide range of customers across Canada and into the far north. From ice roads to remote mines and everything in-between, NRT goes the extra mile to ensure safe, compliant, and professional delivery of bulk goods for our clients.

A key feature of NRT's identity is the ownership structure, which is 71 per cent Indigenous owned. This ensures that profits, employment opportunities, and long-term benefits are shared with our First Nations partners and distributed to their communities. In many respects, NRT set the standard and built the model for the multitude of First Nations-owned businesses that participate in the mining industry today. NRT is proof that not only can Indigenous companies provide top-tier service and safety, but given the opportunity, continue to grow and flourish well past the initial project.

To further engage our communities, in 2006 NRT launched the Training Division in Saskatoon and Prince Albert. Through the Training School, members of the Gabriel Dumont Institute and the general public can earn their 1A and 3A driver's license. A typical SGI MELT program dictates a minimum requirement of 121.5 hours to obtain this license; NRT provides 200 hours at no extra cost to ensure our students receive the highest possible training and are set up for success upon completion of the course. Many companies in Saskatchewan have directed their employees through the NRT Training School with much success and fanfare. We have become the go-to training centre and a bright spot in the truck driver training industry which has been plagued by negative press and non-compliance.

As all businesses must do, NRT has been searching for additional ways to grow and diversify revenue streams to absorb the ups and downs of both the transportation and mining industry. To achieve this goal, new partnerships have been formed and new sectors, such as potash, are beginning to be serviced. NRT now proudly operates in Manitoba and Northwestern Ontario, partnering with local Indigenous groups to combine the professionalism, experience, and safety record of NRT with regional First Nations knowledge and employment. Together, the partnerships prove to be an important tool in solving industrial, community, and government supply chain issues and shortages.

Entering our 40th anniversary year, there is much to celebrate and look forward to as NRT keeps trucking along into 2026. Together with our First Nations partners, employees, clients, and Training School staff and students, NRT is well situated to take advantage of the potent economic outlook in the resource sector. This will be accomplished by following our proven model of Indigenous ownership, safety, and customer service while forming new alliances along the way. ▲

Partnership At Work

The NRT fleet safely and professionally navigates equipment across a vast and challenging terrain; meeting the transportation needs of the industry giants.

Hauling items such as:

- Chemicals
- Construction materials
- Molten sulphur
- Propane
- Cement
- Lime
- Fertilizer
- General freight
- Groceries
- Explosives
- Mining machinery
- Fuel

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Mine Supply Company and Kawacatoose First Nation Council celebrate signing a Memorandum of Understanding at the SIMSA Mining Supply Chain Forum in Saskatoon in April 2025. The acquisition was finalized in December 2025.

Kawacatoose First Nation acquires Mine Supply Company

Sixty years of expertise, new Indigenous ownership

After more than six decades of potash extraction across Treaty 4 and 6 territories, Kawacatoose First Nation now owns a big part of that very supply chain.

In December 2025, Kawacatoose First Nation and Marc Collette finalized the acquisition of Mine Supply Company, the Saskatoon-based supplier that has served Saskatchewan's potash sector since Jim Balfour and Warren Champ founded it in 1966. Kawacatoose holds majority ownership; Collette—Mine Supply's VP since 2018—remains as operating partner in the role of CEO and president, ensuring operational continuity with the team that has built relationships across every potash operation in the province.

For operators struggling to meet Indigenous procurement commitments, the timing solves a longstanding problem. Since BHP's Jansen project sanctioned Stage 1 in 2021, $850 million in contracts have been awarded to Indigenous businesses—but mostly in construction and civil work, a pattern reflected at mining operations Canada. Supply chain procurement has lagged because

qualified Indigenous suppliers with technical expertise and enterprise system integration haven't existed at industrial scale. Until now.

Investing in a legacy supplier

Kawacatoose's investment in Mine Supply Company secures ownership of a proven operation built on relationships, technical capability, and operational integration. Since 1966, Mine Supply has established vendor partnerships with premium North American and international manufacturers of crushing and conveyor systems, mobile equipment, ground support, ventilation, MRO supplies, and more—delivering not just products but custom solutions developed collaboratively with clients on-site at surface and underground.

The company's value extends beyond distribution. Mine Supply's team includes operators, mechanics, millwrights, and procurement specialists with experience spanning all stages of mining operations. They work directly at client sites to solve operational challenges before they impact production, taking an end-to-end view of the supply chain that anticipates risks, optimizes inventory, and ensures critical components are available when needed. The company has also expanded custom manufacturing and assembly capacity, controlling more links in the supply chain to minimize costs and improve lead time accuracy.

Critical to operators, Mine Supply's developing technology platform will support better integration with SAP, Ariba, and other ERP systems, providing a streamlined procurement process that reduces administrative burden.

"The barrier to Indigenous participation in the mining sector isn't capital, it's knowledge and relationships," says Collette, who has more than two decades of experience in mining. "Operators need suppliers who understand their specifications, integrate with their procurement systems, and deliver reliably at industrial scale. Kawacatoose recognized that

investing in the sector by buying a legacy company gives them that capability immediately—with the same team and service standards clients depend on."

All existing Mine Supply employees remain with the company, preserving the technical expertise and client relationships that operators depend on. The expertise stays. The relationships stay. What changes is ownership structure—and where profits flow. Revenues now benefit Kawacatoose's more than 2,200 members, funding community development, education initiatives, and economic infrastructure that builds long-term prosperity for the Nation.

Strategic investment in Saskatchewan's diverse resource sector

The acquisition represents Kawacatoose's strategic move from seeking opportunities to owning an active operator in Saskatchewan's mining economy. For decades, Nation leadership has made efforts to maintain regular dialogue with operators and contractors to better understand industry needs, while struggling to identify pathways for meaningful participation. Ownership of a legacy supplier secures a seat at the table—and a voice—in an industry operating on traditional territory, one that has historically limited Indigenous participation. Mine Supply provides that pathway through accountable ownership of a proven supplier already embedded in the resource sector's operations and procurement systems.

"Buying Mine Supply is a strategic investment that empowers our participation in the resource sector, and not just in potash," says Chief Lee-Anne Kehler, Kawacatoose's first female chief, elected in 2021. "Operators will get the same reliability they expect, and Kawacatoose Development Corporation will gain revenues that support the Nation as we grow our sovereign economy."

With Kawacatoose's home reserve centrally positioned among Saskatchewan's 11 active potash operations, the Nation is developing on-reserve training programs in supply chain management, procurement, and technical sales, and exploring warehousing options to support operations as the sector scales—particularly with BHP's Jansen project reaching full production in 2026.

What changes for operators

What changes is procurement classification. Major operators including BHP, Nutrien, Mosaic, and K+S hold contractual Indigenous procurement commitments they've struggled to meet—not from lack of intent, but from lack of qualified Indigenous suppliers who can deliver at the technical standards and scale their operations require. Mine Supply purchases now count toward those targets without compromising the service reliability operators have depended on since 1966.

Across Saskatchewan's potash sector, operators have committed to Indigenous procurement frameworks—from BHP's 2013 Opportunities Agreement with Kawacatoose, Day Star, and Muskowekwan First Nations, to Nutrien's Indigenous Content Playbook targeting Indigenous supplier participation, to similar commitments from Mosaic and K+S. These frameworks created market access that didn't exist a decade ago. What's been missing are Indigenous-owned suppliers with the technical capability and operational scale to fulfill them. With Mine Supply, those commitments convert to measurable outcomes—Indigenous ownership of a qualified supplier already integrated into regional procurement systems and serving multiple operators across the province.

For Kawacatoose's more than 2,200 members, the acquisition delivers tangible economic outcomes. Profits flow to the Nation. Training programs create career pathways into supply chain management and technical roles. Employment opportunities build community capacity. And ownership ensures economic benefits stay within the Nation rather than flowing to external shareholders.

Sixty years of expertise. Indigenous ownership. And a supply chain solution that works for operators, community, and an industry finally creating space for First Nations participation at scale. Find out more at minesupplyco.com. ▲

PDAC announces 2026 Awards recipients

The Prospectors and Developers Association of Canada (PDAC) is pleased to announce the recipients of the 2026 PDAC Awards, celebrating the people and partnerships driving discovery, development, and sustainable growth in the mineral industry.

"The 2026 recipients demonstrate how passion and teamwork can turn ideas into achievement," said Karen Rees, PDAC president. "Their word reflects the determination, resourcefulness, and shared commitment that keep our industry moving forward."

Since 1977 the PDAC Awards have recognized the dedication and ingenuity that drive advancement in communities across Canada and around the world.

The 2026 recipients will be honoured during the PDAC 2026 Convention at the Awards Celebration and Nite Cap on March 3, 2026, at the Fairmont Royal York Hotel in Toronto. One of the convention's most anticipated evenings, this event features a cocktail reception, three-course dinner, and the presentation of the PDAC's five prestigious awards, followed by the Nite Cap reception. It offers a unique opportunity to celebrate achievement, connect with industry leaders, and enjoy an evening of networking and inspiration.

2026 PDAC Awards recipients

Bill Dennis Award: For a Canadian discover or prospecting success.

- Canadian Royalties Exploration Team—For the discovery of the Inukshuk Deposit in Nunavik, Que., Canada.

Shookum Jim Award: For Indigenous achievement in the mineral industry.

- Des Nedhe Group—For advancing Indigenous entrepreneurship and community-led economic development across the mineral industry in Sask., Canada.

Sustainability Award: For outstanding leadership in environmental protection and/or good community relations.

- Blue Lagoon Resources—For commitment to sustainable development and Indigenous partnership at the Dome Mountain Gold Project, B.C., Canada.

Thayer Lindley Award: For an international mineral discovery.

- AngloGold Ashanti, Renaissance Gold, and Callinan Royalties—For the discovery of the Silicon and Merlin gold-silver deposits (Expanded Silicon Project, now Arthur Project), near Beatty, Nevada, U.S..

Viola R. MacMillan Award: For leadership in management and finance for the exploration and/or development of mineral resources.

- Equinox Gold—For the acquisition, financing, and development of the Greenstone Mine in Geraldton, Ont., Canada.

Awards selection process

PDAC's board of directors select award recipients based on recommendations of the association's awards committee. Learn more about the PDAC Awards, including how to nominate candidates for the 2027 PDAC Awards at pdac.ca/about-pdac/awards.

Awards Celebration & Nite Cap

Ticket sales opened on PDAC's website in December.

About PDAC

The Prospectors & Developers Association of Canada (PDAC) is the leading voice of the mineral exploration and development community, an industry that employs more than 724,000 individuals, and contributed $156 billion to Canada's GDP in 2024 (Natural Resources Canada, February 2025). Currently representing over 8,200 members around the world, PDAC's work centres on supporting a competitive, responsible, and sustainable mineral sector. PDAC 2026, our 94th annual convention, will take place in person in Toronto, Canada from March 1-4. Please visit pdac.ca for more information. ▲

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