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*Association of Professional Engineers
& Geoscientists of Saskatchewan*

THE PROFESSIONAL

EDGE

ISSUE 196 • JANUARY/FEBRUARY 2022



Profiles in Achievement



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² Statistics Canada, "Household spending, Canada, regions and provinces," November 25, 2019.

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Deadlines:

Issue: March/April 2022

Submit to APEGS by: Feb. 9, 2022

Publication distributed week of: March 28, 2022

<https://www.apegs.ca/Portal/Pages/Advertising-Edge>

Subscription Rates:

Members and Licensees - Free. Others in Saskatchewan - \$12/year. Elsewhere - \$20/year.

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This issue of *The Professional Edge* has been printed using a different paper than previous issues. This is due to paper supply options being limited at the time of printing.

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CORRECTION:

A photo of Holy Rosary Cathedral in Regina incorrectly appeared on page 48 of issue 195 of *The Professional Edge* accompanying a story about St. John's Anglican Cathedral in Saskatoon. We apologize for the confusion.

Profiles in Achievement



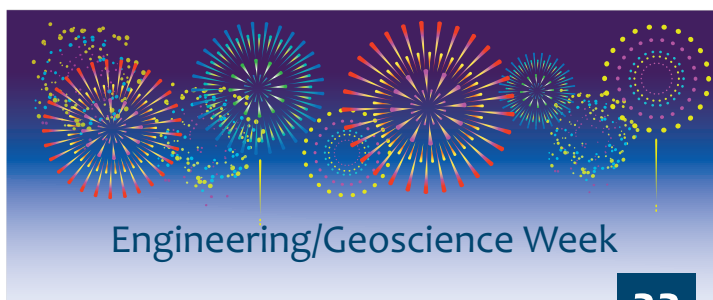
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APEGS' Annual Meeting and Professional Development Conference

May 5 - 7, 2022

TRANSFORMATION

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President's Message



Kristen Darr, P. Geo.

Highly impressive. That's the best way I can describe the projects of APEGS members.

When you go through the Profiles in Achievement that are featured in this issue, I'm sure you too will be impressed by these examples of the work being undertaken by engineers and geoscientists in Saskatchewan.

These projects range from extracting and processing resources that are in demand to planning and constructing technology to designing the infrastructure necessary to deliver crucial services and improve our quality of life. This work is not only bettering our province, but it is making an impact around the world.

It's exciting for engineers and geoscientists to be able to share these types of stories with the entire membership of APEGS and all who read *The Professional Edge*.

Thank you to all who contributed to bringing forward these examples for all of us to learn about and better understand the types of projects underway or completed by engineers and geoscientists registered in Saskatchewan in 2021.

I learned about the requirement to be licensed with APEGS through my employer, who believed it would be valuable to them as well as myself to have a professional designation. At the time, there was no direct path for an Environmental Scientist like there was for an engineer or a geologist. My employer's interest pushed me to get in touch with APEGS and inquire about the process and requirements.

Sharing is also what APEGS will be doing with its new social media accounts. New in 2022, you can follow APEGS on Facebook, Twitter and LinkedIn to get valuable information members need while also learning more about the association. It's a convenient way of staying informed about timely updates.

What is also important to note about 2022 is that it is the 25th year of APEGS regulating geoscience. It was in March 1997 that Saskatchewan's geoscientists became required to be licensed under *The Engineering and Geoscience Professions Act* that had recently been proclaimed. This move brought Saskatchewan in line with the rest of Canada and the world by making geoscience an accountable self-regulated profession.

This inclusion was possible because of strong communication and planning. This, too, helps explain APEGS' current strategic planning. While strategic planning is not new to council, the process has become more formalized to focus the attention and efforts of those involved.

This planning is how council sets objectives, manages risks and prioritizes actions for the coming years. The formalized process creates structure around answering questions that come up during strategic planning. What is happening around the organization? What could impact APEGS in the future? What risks should be understood and addressed? The process encourages big-picture thinking in the realm of good governance. This structure includes a new formalized risk register that will drive our strategic planning well into the future.

Credit to council and staff for their dedication and work over the past year to ensure the strategic plan remains front and centre in everything we do. The recent focus on strategic planning and the importance of having a strong process has been key in order to meet the objectives set out by council. That same dedication — to doing work that is necessary for progress to occur — can be seen in our membership. Our members continue to persevere through an uncertain time in the world to work on extremely exciting and interesting projects. The Profiles in Achievement in this issue are just some examples of that dedication that exists among engineers and geoscientists in this province.

With 2022 now underway, I hope you all have interesting and important projects to work on in the coming months that engage you fully in contributing to the betterment of the communities and province we call home.

Profiles in Achievement

Many fascinating and important projects are worked on by members of APEGS.

It is important that we tell these stories to amplify awareness of what Saskatchewan engineers and geoscientists are contributing to the province and the world.

In late 2021, members of APEGS were asked to share details and photos of their projects from that year for the annual Profiles in Achievement issue of *The Professional Edge*.



2021

Sasktel



Photo courtesy Sasktel

The Macro tower outside of Borden, SK.

The organization

SaskTel is the leading Information and Communications Technology (ICT) provider in Saskatchewan, with over \$1.3 billion in annual revenue and approximately 1.4 million customer connections.

SaskTel and its wholly-owned subsidiaries offer a wide range of ICT products and services including competitive voice, data and

internet services, wireless data services, maxTV services, data centre services, cloud-based services, security monitoring services, advertising services and international software and consulting services.

The achievement

Wireless Saskatchewan was a joint initiative started by SaskTel and the Government of Saskatchewan to enhance SaskTel's wireless service in over 100 communities and other rural areas that had limited cellular coverage by constructing nearly 200 new towers. A four-phase initiative was launched in December 2017 to provide rural Saskatchewan residents with improved wireless connectivity and high-speed internet services.

The work started with the High Speed Fusion Internet network expanding to 34 towers as of spring 2018. This expansion was part of a \$4.2-million investment that brought the total number of Fusion-equipped towers serving rural areas province wide to 102. This Phase 1 work brought wireless high-speed internet connectivity to new locations and opened up some existing locations to new customers, providing a reliable connection with download speeds up to 10 Mbps (megabits per second) to these areas.

Next up was SaskTel's Small Community Builds project. This Phase 2 work of the Wireless Saskatchewan initiative saw SaskTel construct small cell sites that enhanced the 4G LTE wireless network in 105 communities at cost of \$16 million. The upgrades on the first 50 towers were completed by March 31, 2019. Another 55 were in service by the end of September 2020.

Each site required meticulous planning, increasing the workload of SaskTel's wireless team by about 25 per cent compared to other years. There was work to secure the sites and plan backhaul links before construction began. The team was in a race against Mother Nature to ensure all of the build foundations were completed before the ground froze or the phased project risked being delayed. As of September 2020, all 105 previously announced small cell sites were complete, improving service in several underserved rural communities, and providing wireless service to some communities with a population as low as 50.

Then, there were 89 new 107-metre macro towers installed in busy provincial parks, along highways and in rural areas bringing in 4G LTE wireless service. Announcements about these towers began in September 2019 with word that 15 were to be ready by September 2020 at a cost of \$14 million. Another 74 new macro cell towers were announced in September 2020, when SaskTel and the provincial government said it was investing \$72.2 million to build these towers for underserved rural and resort communities by early summer 2021. Those towers were launched between January and September 2021 (six in January, six in February, 43 in March, nine in April and 10 in September.)

SaskTel also enhanced existing cell towers at a cost of \$1.5 million to improve the wireless data capacity in 11 resort communities in order to address higher traffic levels that occur as people flock to Saskatchewan's lakes and beaches.

When the final phase of the program was complete as of September 2021, SaskTel's wireless network had grown to include over 1,000 cell towers in the province. The total investment in rural connectivity made by SaskTel and the provincial government since 2017 was more than \$107 million. SaskTel President and CEO, Doug Burnett, pointed to a recent report from the Canadian Radio-television and Telecommunications Commission that he said showed Saskatchewan has the best wireless coverage in Western Canada, with over 99 per cent of the population and 98 per cent of the major roadways and highways being covered with LTE wireless service.

The team

Wireless Saskatchewan was a massive undertaking requiring hundreds of hours from SaskTel's wireless team to plan and execute the project.

SaskTel's team of wireless engineers and engineering worked on the network planning and deployment for this project. They were led by Joash Picard.

Prairie Lithium



Photo courtesy Prairie Lithium

Prairie Lithium rig by Panther Drilling

The organization

Prairie Lithium is a lithium resource and technology developer working in the Williston Basin in southeast Saskatchewan. It has come a long way in the five years since Zach Maurer, Prairie Lithium's CEO and Geoscientist-in-training, first started researching lithium to know how to find it and extract it in Saskatchewan.

Maurer explained how he came to develop his interest, ability and experience in lithium. Southeast Saskatchewan is known for its oil and gas industry, which Maurer worked in during his high school and university years. After graduating high school, he moved to Calgary to get a geophysics diploma from SAIT in 2012. He returned to Saskatchewan and obtained a geology degree from the University of Regina, but had to reconsider his path in oil and gas when the price of oil dropped substantially in late 2014 and throughout 2015.

"There were massive layoffs in downtown Calgary so it was pretty obvious to me at that time that I was going to have to diversify my skillset for any form of job security in the future."

Upon graduating university, he found employment as an environmental consultant, among those jobs were cleaning up oil and gas sites that were no longer producing. But his real interest was in resource exploration. He was intrigued with trying to understand what resources were going to be needed in the future. The why, where and how they were mined drove him to research.

"Lithium is a resource that kept topping the list and was associated with this large potential demand in batteries and electric vehicles," said Maurer, who received his geology degree in 2016.

Maurer knew lithium was being mined in South America. He knew some had sampled saltwater brines for lithium in Alberta. He wondered what had been done around the resource in Saskatchewan.

"There have been a couple high-level studies done, but nobody had ever really focused on trying to understand the commercial opportunity of lithium in Saskatchewan, which ultimately led back to no one really trying to understand the origin or evolution of the resource to date," said Maurer.

In early 2017, Maurer proposed a Master's study to the University of Regina aimed at understanding the origin and the evolution of lithium in the subsurface brines in Saskatchewan. While still working full time as an environmental consultant, he studied in the evenings and on the weekends.

“Towards the end of 2018, I really started to crack the code on the hydrochemistry and hydrogeology of the subsurface, and really started to understand why the lithium is concentrated in certain formations in certain areas and not concentrated in certain formations in other areas as it pertains to Saskatchewan,” said Maurer.

By 2019, he was ready to start a business. He incorporated the company now known as Prairie Lithium, issued himself 100 shares for \$100 and went to work. Bringing Dr. Ian Ireland on board, Prairie Lithium's current chief technology officer, was an important move.

“He was a natural fit as I had an understanding of the resource and the subsurface and he had a really in-depth understanding of the surficial chemical process that was going to be required to process all this brine” said Maurer. The third partner brought into the business was Isobrine Solutions, an Alberta-based oil and gas service company specializing in geochemical fingerprinting of co-produced water and natural gas samples for baseline studies, hydraulic fracture evaluation, reserve allocation and out-of-zone fluid identification. Those at the company have extensive experience and a large geochemical database covering much of the Williston Basin.

“We spent much of 2019 building that foundation, using a small amount of capital to purchase some very small properties and to start looking at these different direct lithium-extraction technologies that were being developed in the world,” said Maurer.

“2020 is when we really hit the gas on developing our direct lithium-extraction technology,” said Maurer.

Early in the year, they were working with test tubes and beakers pulling lithium out of 500 millilitres of brine a day. Through the year, they scaled up so that in the fall, they had a proof-of-concept unit in the field that peaked at 50,000 litres of brine through put per day. “We scaled our

process 100,000X in eight months, during a global pandemic, this is unheard of.”

Through this scaling up, they like everyone else dealt with the pandemic.

“When COVID hit, there was zero stability to know where the money was going to come from and how we were going to fund this and get it off the ground.”

“So, we just kept our heads down, worked hard and put forth good science, and the science prevailed and attracted investment.”

Achievement #1

A lot was done by the company in 2021, but it was the third-party verification of their Prairie Lithium Ion Exchange (Plix) technology that was vital.

“It's the most important step when developing a resource project is making sure that everything's third-party verified,” said Maurer.

Prairie Lithium is extracting lithium in their own way. Maurer explains that others in the world have mined lithium and extracted it in one of two ways. The first is hard-rock strip mining. The lithium is identified in the rock, which is drilled to explore it. When the mine is ready to go into production, the rock is blasted to reach the lithium and convert it into a battery quality lithium chemical.

The second, which is done in South America, uses evaporation pond processing. Like the lithium being mined by Prairie Lithium, they drill to bring the brine to the surface. It goes into massive ponds in a desert area. The brine evaporates over 18 to 24 months, so the salts precipitate out and a concentrated lithium solution is left. This solution can be converted into a battery-quality lithium chemical.

What Prairie Lithium does is different. It developed direct lithium extraction technology which involves bringing the brine to surface. Instead of letting the brine evaporate, the technology selectively separates the lithium ion from other impurities in the brine — in minutes. The brine is then returned underground.

“The advantage is a much smaller surficial environmental footprint, reduced freshwater intensity, reduced waste generation and it's more efficient,” said Maurer.

Profiles in Achievement

In May, Prairie Lithium announced its core Plix technology was third-party verified by Coanda Research & Development at lab scale to achieve an average of 99.7 per cent lithium extraction from brine produced in Saskatchewan over a series of tests.

That's not all that was accomplished in 2021.

"Prairie Lithium is really a two-headed beast in terms of our technology development and then our resource development," said Maurer.

"In 2020 we developed this really great patent-pending extraction process so that coming into 2021 we could really focus on our resource acquisition."

Achievement #2

Bringing the brine to the surface so their technology and process could extract it required Prairie Lithium to drill what is believed to be the first lithium brine well in Canada. In advance of that, the company increased its land holdings to over 362,000 acres across southeast Saskatchewan.

"Much of 2021 was focused on acquiring the land we needed to build out the project, do our inferred resource assessment on the property we purchased and then ultimately go out and de-risk the resource," said Maurer.

That de-risking of the resource led to the drilling program in the fall. On Sept. 21, drilling for the Discovery #1 lithium well near Torquay in southeast Saskatchewan began and was completed four days later.

"Doing that initial inferred resource assessment with historic data was fine to set the stage to pick the location of our first well," said Maurer.

"The goal of that program was to prove out our resource theories, because nobody has ever drilled a well to measure lithium concentrations in this formation, in this area before. This well was required to connect the dots in the subsurface. It was a high-risk wildcat well.

"If it hit, it was going to prove out a lot of things of what we think we know is happening in the subsurface in terms of lithium and brine in Saskatchewan."

The company announced when the well was completed that early results showed it produced some of the highest known lithium brine concentrations in Canada.

"I guess I could say all of our resource hypotheses to date have been correct and we encountered what we consider a fairly high-quality lithium brine resource in Canada."

In addition to that first well, to correlate the resource across its property, Prairie Lithium conducted a re-entry on another well in the area. The company will continue to delineate the lithium across its land base through additional drilling and re-entry opportunities.

In 2021, Prairie Lithium finished assembling its testing and laboratory facility in Emerald Park, Sask.

The team

Establishing and growing the company requires Prairie Lithium to employ many types of engineers.

"Hydrogeology is number one. There's not a lot of hydrogeologists that specialize in deep Williston Basin brines," said Maurer.

"Number two is the hydrochemistry, because you need to understand how the hydrogeology and hydrochemistry affect one another in the basin. To properly understand the resource you need to understand why the brines are changing chemical compositions as a result of the hydrogeology.

"It's a pretty niche skillset because everyone in the past has always been focused on oil or gas, potash or some other resource.

Petroleum engineers are necessary to plan the drilling. Chemical, electrical, structural, mechanical and environmental engineers will also be needed.

In addition to Maurer, those APEGS members who are part of the team are:

Mark Caplan, P.Geo. - Resource Manager

Chelsey Hillier, P.Geo. - Geoscience Manager

Jordan Alberton, P. Eng. - IMS Manager

Sakib Ahmed, Engineer-In-Training - Junior Process Development Specialist

Don Bender, P.Eng. - Engineering Manager

North American Helium

Battle Creek Helium Purification Facility



Photo courtesy North American Helium

Battle Creek Helium Purification Facility

The organization

Founded in 2013, North American Helium Inc. (NAH) is a Calgary-based, private helium exploration and production company.

To its knowledge, NAH is the only company in the past 40 years to successfully explore for and discover new non hydrocarbon-based economic fields of high helium gas in North America. Over the past several years, NAH has made five new discoveries and acquired rights to explore for and produce helium on a land base of over 5.7 million contiguous acres, primarily in Saskatchewan and Utah. The company owns and operates Canada's largest helium purification facility, providing a reliable, long-term North American supply of this scarce resource to meet growing demand.

NAH has been the most active helium driller in Saskatchewan with 37 wells drilled to date. The company plans to have a continuous capital investment program, which will include acquisition of additional third-party and proprietary seismic data, drilling 20 wells per year, and concurrently building additional helium processing facilities as new fields are developed.

The achievement

North American Helium opened Canada's largest helium purification facility in April. Located near Consul in southwest Saskatchewan, the new \$32-million facility is expected to produce more than 50 million cubic feet per year of purified helium for commercial sale.

Engineering for this project involved civil, mechanical, electrical and process engineering. All the disciplines were utilized to complete this successful Battle Creek Helium Purification facility on time and under budget.

For example, civil engineering started with all the foundations of all the skids and finished with the building to house all the equipment of the plant. Mechanical engineering was utilized to design the interconnecting piping of the process equipment. Electrical engineering was employed to tie SaskPower into the site and service all the equipment for their electrical needs. Finally, the process engineering was used to make all the pieces of equipment required to purify the gas so that NAH could meet sales gas specifications of 98.5 to 99.999 per cent helium.

The team

Journey Engineering provided overall design services for the Battle Creek Purification Plant. This included design works from all disciplines: civil, structural, process, mechanical, electrical and instrumentation. In addition to the interface design work, and the direct design work on the balance of plant equipment, Journey also provided interface management between third-party equipment suppliers to integrate the packages into the overall design.

The lead engineers on the project who are APEGS members are Stuart Ridgway, P. Eng., and Kaj Christensen, P. Eng.

Ridgway provided process engineering support and project oversight for North American Helium. This involved providing base design criteria for all of the equipment vendors, sizing the ancillary equipment and interconnecting piping. Christensen was the mechanical and project engineer on the project, tasked with mechanical interface management, piping design and procurement support for the process and mechanical equipment.

Vance Blydo, P.Eng., was the project manager from NAH and had full direction of all engineering services to complete the project from the perspective of North American Helium.

Norseman Structures

Amphitheatre for Shakespeare on the Saskatchewan



Photo courtesy Norseman Structures

The amphitheatre designed by Norseman Structures for Shakespeare on the Saskatchewan

The organization

Norseman Structures is located in Saskatoon. It is a leading provider of ShelterSolutions in mining, oil and gas and commercial agriculture in North America. It offers turnkey pre-engineered building solutions, with a primary focus on fabric-covered buildings. Its purpose is to provide peace of mind for its customers by delivering intelligently designed ShelterSolutions that protect and enhance their business.

Norseman has been delivering Fiercely Reliable solutions in the shelter and protection business since 1921, marking 2021 as its 100th anniversary. Its focus is on crafting fit-for-purpose solutions based around its customers' needs. Its products are engineered for some of the harshest site conditions in northern Canada and beyond.

The achievement

Shakespeare on the Saskatchewan has a long history in Saskatoon where Norseman is located. Norseman Structures was approached in 2017 about future site plans for Shakespeare on the Saskatchewan. Norseman stayed in communication with the group, who approached them as their plans developed.

This connection led to Norseman engineering a fully custom structure for the Shakespeare on the Saskatchewan site, which held a theatrical production in the new structure for the first time ever in 2021.

The structure is known as the Norseman Structures Amphitheatre for Shakespeare on the Saskatchewan. This amphitheatre was part of a full remodel of the Shakespeare on the Saskatchewan site in partnership with the City of Saskatoon. This site is to be used as a community event venue in the city and to be a landmark along the Meewasin Trail for all to enjoy.

The purpose of the amphitheatre is to provide a safe and permanent structure to hold events all year long with the primary use of hosting Shakespeare on the Saskatchewan theatre each summer. The significance of this project is its serviceability and functionality.

The structure provides an excellent atmosphere for people to gather and enjoy the performances in a safe environment. The architecture and landscaping of the site, combined with the unique structural design of the amphitheatre, surrounded by the natural beauty of the river, all result in a wonderful space that will be enjoyed by many.

This project had several design considerations that made it interesting, but also challenging. These considerations included a requested round shape, a lean budget, a prominent location, as well as numerous serviceability considerations.

The final building ended up being a clear span 25-metre diameter decagon shape, comprised of structural steel trusses connected to a round central hub. The building was designed as a High Importance structure with the safety of patrons and performers as the primary focus.

Since it was decided early on that the fabric cladding would only be in place through the summer months, wind loading governed the majority of the design. The structure was modelled in 3D with STAAD.Pro finite element analysis software and spherical wind load coefficients as per the National Building Code of Canada were applied. The structure utilized a mix of standard inventory parts for Norseman, as well as custom designed components.

Another customer request was to have a fabric solution that was versatile for a number of different events. Each panel section was designed with a theatre door opening that can be tied up in multiple ways to create a variety of looks. Versatility, safety and aesthetics were key to this project.

The fabric cladding is a PVC flame-retardant membrane which will be installed for summer months and removed each fall. Due to this, additional considerations were required to ensure that the site was left in a safe manner since it would be open to the public all through the winter.

The potential for any injuries that could be sustained as a result of climbing was the main concern. To eliminate the potential for climbing, the bottom three metres of the structure were equipped with steel sheets over the trusses and the bracing system was designed without cross bracing in the lower part of the structure.

Shakespeare on the Saskatchewan was also looking for a theatre solution that would allow it to be more versatile in production and also enhance the security and safety of its facility. The permanent structure with galvanized steel trusses has allowed Shakespeare to enhance its staging, lighting and props, while having peace of mind around the safety of its actors and patrons. The ShelterSolution also incorporates ventilation providing a much cooler environment in the hot summer months.

This project was the result of collaboration between groups at PCL, Norseman Structures, as well as Shakespeare on the Saskatchewan. Norseman Structures manufactured the structure and supplied its design to PCL

for the installation. Then, Norseman Structures installed the fabric on the building as sponsorship support for Shakespeare on the Saskatchewan.

Norseman appreciated the opportunity to bring its experience and passion of providing protection and enhancing operations to the theatre world while supporting an incredible local organization. While Norseman typically shelters industrial operations and bulk commodities, this was an opportunity to provide a different kind of shelter while supporting its local community. This solution better protects patrons of Shakespeare on the Saskatchewan and also enhances the overall theatre experience. In addition, the structure is to be utilized for other community events year-round in Saskatoon.

The team

The structural design was carried out by a team of Norseman Structures engineers. Taulant Alilanj, P.Eng., was the lead structural engineer who designed and detailed the building. Mark Antonini, P.Eng., consulted for the project and Brittney Green, P.Eng., was the engineering manager who reviewed the final project. The work was reviewed by a third-party consulting firm, Eclipse Engineering, and stamped by Brian Hanson, P.Eng.



Photo courtesy Norseman Structures

Norseman Structure's design for Shakespeare on the Saskatchewan was a clear span 25-metre diameter decagon shape, comprised of structural steel trusses connected to a round central hub.

Specialized Hospital for Women's Health



Specialized Hospital for Women's Health under construction in Riyadh.

The organization

Sheraz Khan, Engineer-in-training, and Mir Abid Ali Khan, Engineer-in-training, work for Nesma & Partners Contracting Co. Ltd.

Nesma & Partners is a contracting company in the Kingdom of Saudi Arabia specialized in engineering, construction, electro-mechanical, infrastructure, oil and gas and hospitality.

Known for incorporating the latest and most advanced industry technologies, Nesma & Partners provides plant expansion and ground-up construction services for Lump Sum Turnkey (LSTK), Engineering, Procurement, and Construction (EPC), and Lump Sum Building (LSPB) projects.

Considered a major contributor to Saudi Arabia's industrial and infrastructure sectors since 1981, Nesma & Partners is responsible for major construction work in the Kingdom and the Gulf Cooperation Council.

The achievement

Both Sheraz Khan and Mir Abid Ali Khan worked on the Specialized Hospital for Women's Health in Riyadh, the capital city of Saudi Arabia, where they live. The hospital is in the final testing and commission phase.

This hospital is part of the Saudi Arabian National Guard Health Affairs Specialized Hospitals project by Nesma & Partners Contracting Co. Ltd. that took place between 2014 and 2021. That project was to build five new specialized Saudi Arabian National Guard Health Affairs hospitals. The hospitals will serve an additional 1,400 citizens per day in facilities specialized in women and children care and neuroscience and trauma.

The Specialized Hospital for Women's Health is a reinforced concrete structure constructed adjacent to King Abdullah Specialized Children's Hospital and connects through a multi-storey linking bridge to connect services between both facilities.

This 300-bed hospital will provide a full range of health services for women with units for obstetrics and fetal medicine, gynecology, endocrine and fertility, prenatal and postpartum care, deliveries, surgeries, X-rays and newborn care. It includes an 11-storey main building, electromechanical services buildings and a multi-storey parking facility. This hospital is a LEED (Leadership in Energy and Environmental Design) building that is meeting the international standards for sustainability design.

Building this hospital required geotechnical investigations, complete engineering (civil, architectural, electrical, mechanical, plumbing, environmental and medical), contract management, procurement and construction.

The team

Sheraz Kahn was assigned to this project as senior contracts administrator at the time that excavation for the construction began in January 2015. He remained on the project until March 2021, doing contract administration, change orders management, contractual correspondence, subcontract agreements administration, negotiations with suppliers and vendors as well as co-ordinating meetings.

Mir Abid Ali Khan joined the project in 2020 for the testing and commissioning phase and continues to work on it. He is working on testing and commissioning of low current, IT and data networks and co-ordinating with suppliers, vendors and third parties for testing and commissioning works.

City of Regina



Photo courtesy City of Regina

A front-end loader flips waste that has been covered for weeks to create a new pile before finishing the active composting stage.

The organization

The City of Regina is a municipal government that provides more than 60 services that residents depend on every day to a population of nearly one-quarter million. The City of Regina has a strategic plan that helps make decisions, allocate resources and determine the future direction of the organization. Its vision is to be Canada's most vibrant, inclusive, attractive and sustainable community, where people live in harmony and thrive in opportunity.

The achievement

Organic waste, including food and yard waste, makes up about 50 per cent of the average Regina resident's garbage cart. When organic waste is sent to the landfill it decomposes in an anaerobic environment and produces methane, a potent greenhouse gas which is difficult to effectively capture in a landfill environment.

An important step to becoming a more sustainable city, was to implement a citywide organic waste collection program, beginning with a one-year curbside Food and Yard Waste pilot in September 2020 to determine how to best design a program for the residents of Regina. The goal of the program is to improve the amount of residential waste diverted from the landfill, decrease the corresponding greenhouse gas emissions in the city and create a useable end-product that contributes to a circular economy.

This new service is part of the City of Regina's long-term solid waste management plan, Waste Plan Regina, to send less waste to the landfill and reach the 65 per cent residential diversion target.

Selecting households for participation was key to ensure the pilot group were representative of the city's population. Those selected were chosen based on a number of factors including house types, yard size, income levels, family size and waste collection methods to ensure they represented Regina as a whole. There were 2,800 households selected for the pilot with a mix of front street and back alley collection. This represents about four per cent of the total households in the city, which is typical for a pilot project service.

Most large municipalities in Canada already offer curbside collection of organic waste for residents, although there are different configurations of these programs across Canada. To determine which program configuration would be most suitable for Regina, the project team interviewed other municipalities to better understand the options available and the benefits and challenges identified by those currently offering the service.

Through these interviews, the project team identified how to develop a program that would work in Regina based on the city's climate, infrastructure and resident priorities. The City's pilot service accepted "scrape the plate food waste," co-mingled with yard waste, in a cart collected by an automated collection vehicle. Other options included manual collection of smaller "food waste only" carts with a separate seasonal yard waste program or co-collection of food waste and garbage collected with split trucks.

Each potential solution had unique challenges and opportunities. The benefits of accepting "scrape the plate food waste" are that it is the easy to understand and communicate, which can often be a challenge with source-separated diversion streams, such as recycling, and it increases the amount of waste that can be diverted from the landfill by accepting more items. There are also challenges associated as it includes meat, dairy, bones and grease which require a more complex processing system to ensure requirements are met for pathogen removal and to avoid excess negative odour or pest concerns at the processing site.

Profiles in Achievement

There is also a challenge which arises from having food and yard waste co-mingled in one cart. The benefits of co-mingled food and yard waste include that it is easy for residents to only have one cart and that automated collection is cost-effective and safe. The challenge is that it creates a large variation in waste volumes and composition throughout the year as the volume of yard waste generated at residential households is high from April to November, and minimal during the winter from December to March.

To address these challenges, the project team required a processing solution that could effectively handle “scrape the plate food waste” without generating unwanted odours which could impact the public perception of organic waste processing facilities.

Other important factors included that the processing solution needed to ensure successful removal of pathogens to create a safe, useable end-product and be flexible to waste volume and composition variations in the incoming waste stream. Finally, the implementation of the processing solution needed to meet the approved project timeline.

The project team was able to implement a pilot scale organic waste processing site at the City of Regina landfill using the GORE® Cover Composting System. The pilot processing site was situated on the City’s existing landfill in an area that already contained a leachate collection system and an existing Permit to Operate from the Ministry of Environment that was amended to include the operation of the pilot processing site.

This simplified design and planning requirements, helped to meet the required project timeline with no delays associated with permitting, as well as minimized costs associated with additional environmental controls.



The Gore® Cover system uses patented technology to create a closed system similar to an in-vessel operation, sealing off the active composting pile from excess water and allowing for effective air circulation in the pile.

The site location, small scale and flexibility of the system facilitated operation by City of Regina Landfill staff, who were able to use existing equipment and staff resources to manage the site as part of the regular operations of the Regina Landfill.

The Gore® Cover system was well-suited to meet the City’s needs for flexibility, odour control and pathogen removal. The covers use patented technology to create a closed system similar to an in-vessel operation that seals off the active composting pile from excess water and allows for effective air circulation in the pile.

The system includes blowers connected to a perforated HDPE pipe to add oxygen to the organic waste, which is key to the composting decomposition process. Waste stays under the covers for three to eight weeks at a time, depending on the rate of incoming material, then is flipped using a front-end loader to create a new pile for another three to eight weeks before finishing the active composting stage.

The flip allows the waste that has settled to move, creating new pore space for oxygen and moisture to move throughout the pile ensuring all waste is effectively composted. To ensure high-quality compost is achieved, the finished product undergoes a curing process where it rests uncovered for a minimum of three months to ensure no more biological activity is present before it is screened and tested according to the Compost Quality Alliance (CQA) standards.

As a way to thank residents who participated in the Food and Yard Waste Pilot, as well as emphasize the benefits of creating useable end products over landfill disposal, the finished compost will be made available to residents in the pilot areas.

A key component of the Food and Yard Waste Pilot was the trialing of three different cart sizes for the food and yard waste green carts, and two different cart sizes for garbage carts, within the three scenarios assigned to different groups throughout the pilot areas. The scenarios were assessed based on resident feedback through service requests and surveys, as well as through the quarterly curbside waste audits.

By assessing the different scenarios according to criteria including weekly cart per cent full, bi-weekly cart per cent full, weekly set-out rate, set-out rate over two weeks, and food and yard waste capture rates, the project team determined that a 240-litre green cart would be most suitable for the curbside Food and Yard Waste program. The 240-litre green cart effectively captured both food and

Photo courtesy City of Regina



Photo courtesy City of Regina

The finished product undergoes a curing process, resting uncovered for at least three months to ensure no more biological activity is present before it is screened and tested, according to the Compost Quality Alliance (CQA) standards.

yard waste, whereas the 120-litre green cart was only effective at capturing food waste and the 360-litre cart was only effective for capturing yard waste. Additionally, the 240-litre cart was proven to meet set-out and fullness requirements, according to the data from the waste audits.

Educating the participating households on the new service was essential. Before the pilot began, the City issued a notification letter and held three virtual information sessions with participants. When green carts were rolled out, a welcome package was included that explained how to use the service, provided a collection calendar, included tips for reducing food waste and a magnetic sorting guide for the fridge. A small waste bin was provided to keep inside the home to conveniently dispose of kitchen scraps before placing material into the green cart.

This pilot allowed households to try the service and provide feedback on their experience. Households were encouraged to sign up to participate in an online engagement community through the Be Heard Regina tool.

Through Be Heard, they received updates, newsletters, participated in surveys and asked questions to City staff throughout the pilot. After a successful pilot, Regina City

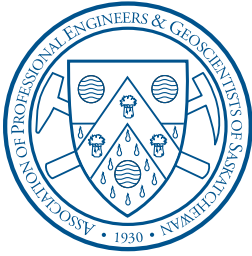
Council approved the implementation plan for the food and yard waste service to be rolled out in fall 2023. This service is expected to extend the life of Regina's Landfill, reduce greenhouse gas emissions and process the material to create a useable end-product.

The team

Engineers were one part of the project team which included employees from departments including communications and engagement, waste specialists and business administration.

The City of Regina's Manager of Environmental Services, Garret Ruiters, P.Eng., was the project manager, and Kurtis Doney, P.Eng., Director of Water, Waste and Environment was the project sponsor. Keneni Debia, Engineer-in-training, served as Waste Processing Lead and Performance Measurement Lead. Greg Kuntz, P.Eng., Manager of Energy & Sustainability was on the project steering committee, as was Faisal Kalim, P.Eng., Manager of Solid Waste Operations.

Council Notes



The APEGS Council held an in-person meeting with the option to participate virtually on Dec. 2 and 3, 2021 in Regina, Sask. The meeting was attended by Council and the Directors to Engineers Canada and Geoscientists Canada. The next Council meeting will be on Feb. 3 and 4, 2022 in-person in Saskatoon. Microsoft Teams will be made available for those unable to attend in-person.

Council received the following items:

- Executive Committee minutes of November 19, 2021
- Governance Board minutes of November 4, 2021
- Professionalism Board minutes of November 18, 2021
- Regulatory Board minutes of November 9, 2021
- Investigation Committee (Abridged) minutes of November 19, 2021
- Discipline Committee minutes of November 4, 2021
- Corporate Registrant Task Group minutes of October 5 and November 17, 2021
- Constituent Society Relationships Task Group minutes of November 17, 2021
- Financial Statements - August, September and October 2021
- Registrar's Report and Statistics and Applications Received – September and October 2021
- Regina Engineering Society report
- Saskatoon Engineering Society report
- Moose Jaw Engineering Society report
- Saskatchewan Geological Society report
- CIM Saskatoon GeoSection report
- ACEC-SK report
- Engineers Canada report
- Geoscientists Canada report

Council approved the following motions:

- Accept the 2022 budget.
- Introduce a social media program.
- Reduce the number of print issues of *The Professional Edge* and introduce monthly e-bulletins.
- Select Ernest Barber as the Saskatchewan representative to Engineers Canada for their consideration.
- Accept the government relations strategy and policy.
- Amend the council meeting cycle to be quarterly with one special meeting in March to approve the audited financial statements.
- Offer the National Professional Practice Exam (NPPE) five times a year. The exam will be 110 multiple choice questions. The time to take the exam will be 2.5 hours.
- Offer the current available seminar content online five times a year until January 1, 2023 to allow Professional Practice Exam Committee (PPEC) to determine the best options for the future of the seminar.
- Amend the Professional Practice Exam policy 1.0 to reflect the changes approved in the two above bullets.
- Accept life member applications
- Amend Equity and Diversity Committee terms of reference.
- Investigate the conduct of the named person as outlined in a document submitted by an anonymous source at the University of Regina.
- Revise Executive Committee terms of reference.
- Accept the Corporate Registrant Task Group work plan.
- Appoint Dustin Unger, P.Eng., Terry Werbovetski, P.Eng., and Sarah Yeo, Engineer-in-Training to the Constituent Society Relationships Task Group.
- Amend student funding and student funding procedures.
- Recommend Ian Sloman to the Engineers Canada Qualification's Board Nominating Committee as the Saskatchewan and Manitoba CEQB representative for a third and final three-year term.

APEGS Strategic Plan



Throughout 2021, council has been working toward establishing its strategic priorities to set the direction for 2022 and beyond.

This approach will establish more focused objectives for management, enable good governance oversight for council and best practices in regulating the professions.

Over the past few months, management has taken steps to better align work priorities to the strategic objectives set out by council and will begin reporting progress in 2022.

A new risk registry has also been developed and will further serve as an important tool to help guide and prioritize deliverables at APEGS.

Council will also be holding a strategic planning event in June 2022. Given the newness of both the strategic plan and risk registry, this June meeting will serve as an opportune time for council to assess progress to the strategic objectives and adjust if needed.

Overall, the strategic plan is intended to prioritize work for APEGS as determined by council and assure council that management is delivering on the key objectives to regulate the professions effectively and protect the public.

25 Years of Regulating Geoscientists

The article below is taken from Issue 167 of *The Professional Edge* for March/April 2017 about the formation of APEGS and 25 years of regulating geoscientists.

Celebrating the formation of APEGS

March 7, 1997 was a landmark date in the evolution of the professions in Saskatchewan. That was the day that APES became APEGS as geoscientists were welcomed into the association under the newly-proclaimed *The Engineering and Geoscience Professions Act*.

Before that time, geoscientists were represented by a collection of more informal voluntary organizations such as the Saskatchewan Geological Society (SGS), or by registration as a professional engineer under the previous legislation. The coming together of the two professions came about as part of a growing trend in Canada and around the world to bring accountable self-regulation to geoscience.

Back in the 1990s, former APEGS Executive Director and Registrar Dennis Paddock, P.Eng., FEC, FCSSE, FCAE, FGC (Hon.) was a volunteer who helped co-ordinate the merger talks.

“Although the Bre-X scandal didn’t happen until the merger was complete, there had been a number of smaller scandals in other places that caused governments to become concerned about exploration speculation. Consequently, we got signals behind the scenes from our partners in government that they wanted to see something happen to avoid something happening here,” Paddock says.

Saskatchewan was not the first to take this step. Alberta and B.C. had already brought geoscientists into their engineering associations and other provinces were lined up not far behind. Fran Haidl, P.Geo., FEC (Hon.), FGC, who co-chaired negotiations from the geoscience side notes that this was a key motivation for her peers at the time.

“It was clear that professional registration would soon be necessary for interprovincial mobility. But that wasn’t the only reason. It was obvious that this was a step that was needed to protect the public and that it just didn’t make sense to have two separate organizations,” she said.

Haidl notes that perhaps the greatest challenge in transitioning from a voluntary to a formal association was maintaining communication. To facilitate communication,

To commemorate 25 years of APEGS regulating geoscientists, look for the (design feature) like this one to find out how a few geoscientists learned about the requirement to be licensed with APEGS.

the SGS/CIM Professional Registration Committee, composed of geoscientists from industry, government and both universities, was formed in 1989.

Both Paddock and Haidl recall that the talks proceeded smoothly with only a few small points of contention that were easily resolved. The harmonious atmosphere of the discussions was further proof that the two professions were meant to be together.

That harmonious partnership has played out in the decades since, Paddock said.

“I think that, at first, some geoscientists might have been concerned that they would be overwhelmed and have little voice in the new association. On the contrary, geoscientists have proven to be important voices in the development of APEGS. They have held many posts on the executive and have been active members of many boards and committees,” he says.

March 7, 1997

Honourable John E.N. Wiebe, Lieutenant Governor of Saskatchewan, signs the proclamation of *The Engineering and Geoscience Professions Act*.



Heinrich Feldkamp, P.Eng., FEC (APES President 1996 – 1997)
Frances Haidl, P.Geo., FEC (Hon.), FGC (Act Amendment Committee)
John E.N. Wiebe (seated)

Member Profile



Ken Ashton, P.Geo., FGC, FEC (Hon.)

I grew up in a family of four in Toronto but spent summer vacations at a cottage surrounded by forest, lakes and rocks, and later, camping, which opened my eyes to both nature and exploring new places. My early interest in rocks and minerals, together with my acquired love for the outdoors, led me to pursue a career as a field geologist in the Precambrian Shield.

I obtained my B.Sc. degree from the University of Toronto (1975) but, by the end of third year, I still had no field experience, which is not ideal for an aspiring field geologist. Fifty typed letters to mining and exploration companies eventually landed me one positive response.

It was for a summer job helping explore for lead-zinc deposits on an Arctic island in the barrens. That job came with July blizzards, pristine fossils, daily helicopter flights, sightings of muskoxen and caribou and being left out overnight. It wasn't the Precambrian Shield, but I was hooked!

The following summer, I began a field-based M.Sc. project in northern Saskatchewan at the University of Saskatchewan. That experience led to eight summers working as an assistant, mapping various parts of the Northwest Territories and Nunavut with the Geological Survey of Canada (GSC), which included the field work for my PhD. thesis at Queens University (1988).

I learned about the requirement to be licensed with APEGS since membership in APEGS is a condition of employment for geologists working with the Saskatchewan Geological Survey and my colleagues, Gary Delaney, P.Geo., FGC, FEC (Hon.) and Fran Haidl, P.Geo., FGC, FEC (Hon.) helped to put the act together.

While competing my PhD., I obtained a four-year contract with the GSC to map in northern Saskatchewan between 1985-1988, which was followed by a one-year contract in 1989 with the Manitoba Geological Survey to extend my mapping eastward.

The Saskatchewan experience led to a permanent job as a Precambrian Geologist with the Saskatchewan Geological Survey. Membership in APEGS is a condition of employment for geologists working with the Saskatchewan Geological Survey, so I joined when the *Engineering and Geoscience Professions Act* came into effect in 1997.

My job as the Saskatchewan Geological Survey's Precambrian Geologist was to help discover mineral deposits by determining and documenting as much of the roughly 3.3 billion years of geological history as possible. It was daunting work, but immensely satisfying when new pieces came together.

Soon after I arrived in Regina to work for the Saskatchewan Geological Society, I became an Adjunct Professor at the University of Regina. That experience was also richly rewarding. It involved some classroom teaching, successful collaborations with university faculty, as well as co-supervision of B.Sc. and graduate students, many of whom discovered their thesis projects while working with me as summer field assistants.

In 2021, I retired from the Saskatchewan Geological Survey. Retirement still feels new to my wife and I. Our two children are now following their own life paths, but our lives remain full. I continue to work on geological projects that have spilled over from my working days, and otherwise enjoy reading, nature photography, and spend as much time as possible hiking, cycling, cross-country skiing, and filling bird feeders at our cottage.

Gems of Geoscience



Melinda Yurkowski, P.Geo., FGC, FEC (Hon.)

Melinda Yurkowski is the Assistant Chief Geologist with the Ministry of Energy and Resources. She manages the Petroleum Geology Unit at the Subsurface Geological Lab in Regina.

I grew up on a farm in central Saskatchewan in an area where I am sure the joke about seeing your dog run away for days originated. With four siblings, cousins nearby and more pets of varying species than you can count, it was a busy and a happy place where there was always something to do.

Finding geology

Like a lot of other geologists, I fell into it when I went to the University of Regina. When I was a kid, I could look at maps for hours on end (and still do) and was always digging around on the rock piles or in the sand and mud. In high school, I knew I wanted to study astronomy in part fuelled by the science fiction books and movies that I had consumed as a teenager. The astronomy class was full by the time I registered for my first year of classes, so my counsellor in the physics department recommended that I take a geology class in the meantime.

I learned about the requirement to be licensed with APEGS because I was working closely with Fran Haidl, P.Geo., FGC, FEC (Hon.) at the time that she was a member of the committee working to incorporate geoscientists into APEGS. She encouraged me to register.

I really enjoyed the class, but what really caught me was the lab. I loved making and interpreting those simple maps and cross sections and identifying the rocks. I signed up for another geology class and was hooked. What sealed the deal was my first geological field trip, which was to Yellowstone through the Bearpaw Mountains. It was an eye-opening experience. I had driven through the mountains before, but never bothered to stop and really look at the rocks.

I have two degrees in geology, both from the University of Regina. I started in the late '70s and graduated with a Bachelor's in 1984. At the time, the Geology Department was small compared to other universities' geology departments, but I appreciated that it was small. We were taught the foundational blocks of geology. It was a collegial environment where the staff and students knew each other which encouraged both teamwork and personal responsibility.

While working towards my undergraduate degree, I had a couple of summer jobs working in the Precambrian Shield. Those were amazing experiences, but I found myself gravitating to sedimentary rocks, and as a result, my career has evolved primarily around the hydrocarbon industry, and a great majority of it with the Geological Survey with the Government of Saskatchewan.

Working as a geologist

Shortly after receiving my undergraduate degree, I started work at a local oil company as a petroleum geologist. The experience there was fantastic as I was exposed to many different aspects of the oil and gas industry. Unfortunately, it was short lived as about two years after I started, the price of oil dropped to a quarter of its value overnight and soon layoffs were happening across the industry, mine included.

I went back to the university to start a business degree. I quickly realized that I was missing the rocks, so switched back to geology to do a Master's degree specializing in carbonate sedimentology.

I was fortunate to have Dr. Don Kent, P.Geo., as my supervisor. He is well-known for his vast knowledge of carbonate rocks. I was also fortunate to be able to look at and analyze the well bore rocks (known as cores) for my study area that were stored at the core repository at the Subsurface Geological Lab in Regina.

Getting the graduate degree became a long and protracted process as I wound up working part-time and had children at the same time. It was during this time that I also started to work part time with the Ministry of Energy and Resources (then Energy and Mines) with the Geological Survey at the Subsurface Geological Lab, determining geological markers for the Government of Saskatchewan's oil and gas database.

To be honest, it was pure stubbornness on my part that I finished my Masters. I am glad I did as it has allowed me to progress in my career.

After a brief hiatus, I returned to the same job at the ministry full time under contract. Since then, I have held a couple of different geological jobs with the ministry, including a research position in geology with the Geological Survey. Using the available core at the repository, I focused on the sedimentology and stratigraphy on shallow gas deposits in Saskatchewan.

In February 2000, I became a registered geoscientist with APEGS. Then, in 2011, I moved into my current position, where I manage the Petroleum Geology Unit at the Subsurface Geological Lab. I also recently finished writing a report on helium potential in southern Saskatchewan.

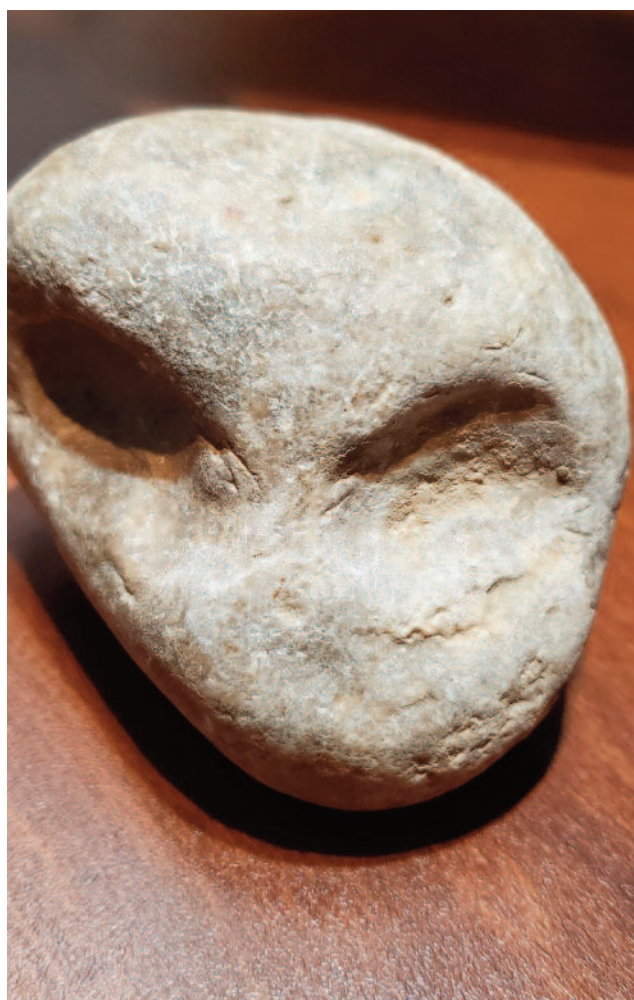
I've been in the industry for a while now, and I still love looking at the rocks. I've been on some great field trips, looking at outcrops of rock across Western Canada and the U.S. I still get a charge out of opening the boxes of a core and trying to figure out what type of environment the rocks inside might have been laid down in.

The only thing that makes it better is looking at the core with colleagues. I would say that the wonderful people that I have met and worked with over the years is what makes it the best career in the world. I've also been very fortunate to have also been mentored by some fantastic colleagues over the years. I am extremely grateful to have had the opportunity to learn so much from them.

Finding my favourite rock

Asking me to name my favourite rock is almost like asking me to pick a favourite child! It's hard to pick just one, but if pressed, I would have to say it's the one that I have had the longest.

I found it on a rock pile on the farm when I was just a kid. At the time, I did not know what it was, but to me, it looked like the head of an alien. Or maybe the head of a



Yurkowski's favourite rock is this cobble-sized fossiliferous limestone.

small dinosaur. While I never truly did believe it was alien, being the science fiction bug I was, part of me secretly hoped it was.

After I had a few geology classes under my belt, the alien theory died as I realized it was a cobble-sized fossiliferous limestone. It had most likely travelled from the outcrops in northern Saskatchewan to our farm and had been sculpted to its present form by glaciation processes. It's fascinating to reflect on the conditions under which it was deposited and how it traveled to where I picked it up off the rockpile in the middle of the grassland Prairies. Rocko – as I have affectionately named it — has been with me for over 50 years, and even now has a place of honour on my desk at work.

Aside of it having great sentimental value, it serves as a constant reminder to me that geological ideas and interpretations change with new information and so I should always be open to new ideas and not get too attached to my theories. It's not the prettiest nor the most exotic rock I own, but my little alien companion is the best.

Corporate Registrant Task Group



One of the recommendations resulting from the governance review is for APEGS to consider changes to the requirements for the registration of partnerships, associations of persons or corporations that engage in the practice of professional engineering and/or professional geoscience (“firms”) in Saskatchewan, commonly referred to as the Certificate of Authorization (CofA). In the fall of 2021, council established the Corporate Registrant Task Group (CRTG) to undertake this work, including the review of the ongoing need for, or appropriateness of, Permission to Consult (PtoC). Members of the task group consist of representatives from a variety of CofA holders.

What is the purpose of this initiative?

The main purpose is to better regulate firms in alignment with the other engineering and geoscience regulators across the country. A secondary purpose is to examine if some redundancy exists related to the requirements of the PtoC and individual reporting under the Continuing Professional Development (CPD) program with which all individually licensed members must comply to maintain licensure with APEGS.

What will the task group do?

Their first task is to contact a representative sample of members employed by firms holding CofAs in Saskatchewan to determine their willingness to engage with, and ultimately contribute to, a consultation process to better understand the current and potential future alternatives to registration and regulation of firms in Saskatchewan. Ultimately it is anticipated the work will enable council to optimize and modernize APEGS’ firm registration and regulation requirements, better aligning them with other Canadian jurisdictions, thus easing interprovincial mobility. It is also anticipated to streamline the APEGS registration and tracking processes by eliminating some redundancies.

Why does this initiative matter to members?

It is important to the membership at large as well, as the outcomes are anticipated to minimize confusion and redundancy around responsibility for professional work, professional competence, individual and corporate liability, and inter-association mobility.

How will this initiative allow APEGS to be a better regulator?

APEGS will be counted among the majority of professional engineering and geoscience associations in Canada who, through good governance practices, are ensuring that the public and the environment are protected. The people of Saskatchewan will be able to rely on the engineering and geoscience professions’ model of self-governance and know that it aligns with current governance practices in Canada that are in place to safeguard the public and environment.

INTRODUCING

APEGS Connect, the Member Survey Panel

In November, APEGS invited members to participate in APEGS Connect, an online survey platform for members to provide a breadth of input on a variety of topics.

Like any other volunteer opportunity with APEGS, participants receive continuing professional development credits for their time — in this case, the time it takes them to respond to surveys.

Member feedback is used to guide APEGS' considerations in planning and operations. So far, APEGS has conducted surveys to:

- invite participants to nominate members for APEGS awards and suggest people and projects to profile in this issue of *The Professional Edge*.
- understand member preferences for professional development at PD days and the annual meeting and conference.
- gauge member awareness about the Continuing Professional Development (CPD) program and reporting requirements.

- determine member support for reducing the number of print issues of *The Professional Edge* and introducing monthly e-bulletins.

- identify if members prefer the Law and Ethics seminar online or in-person.

Thanks to the 997 members who participate on APEGS Connect, there were many more awards nominations and suggestions for Profiles in Achievement than previous years.

APEGS has also received hundreds of responses to other survey questions to help APEGS better understand member preferences and make informed decisions.

New members are needed on an annual basis to refresh the group. To influence the future through your thoughts and opinions, consider volunteering on APEGS Connect.

If you have selected in your online profile that you wish to volunteer with APEGS, you may be contacted to participate in APEGS Connect for a one-, two-, or three-year term as part of a representative sample of APEGS members.



A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

SURVEYS



APEGS Profiles in Achievement Suggestion

NEWS



Profiles in Achievement Information

Continuing Professional Development

The Continuing Professional Development (CPD) Program requires APEGS members to complete ongoing professional development activities to maintain and improve their competence. It encourages members to engage in lifelong learning to protect public health, safety and welfare. The program provides tools for members to assess their current skills, knowledge and abilities, determine activities to maintain or enhance them and report completed activities online to APEGS as professional development credits. For more information, navigate to the CPD menu at apegs.ca.

CPD Reporting



CPD Reporting Deadline

Members are reminded of the following CPD deadlines:

December 31, 2021 – Earn credits for 2021

January 31, 2022 – Report 2021 credits online

September 30, 2022 – Apply for a 2022 CPD Variation

CPD Remediation Plans

If you did not obtain your required CPD for 2021, you must complete a CPD Remediation Plan and submit it to APEGS for approval.

A CPD Remediation Plan is a document that states the specific activities you will undertake in 2022 to make up for your missing 2021 requirements. Note that these requirements are in addition to your 2022 CPD annual requirements.

Featured CPD Opportunities

Online Ethics Modules

APEGS has free one-hour online ethics modules available to assist members in obtaining their ethics credit for the year. The modules are not mandatory and are offered as one option available to members.

Our current ethics module topics are:

Module 1 – Professionalism and Ethics

Module 2 – Conflict of Interest

Module 3 – Investigation and Discipline

Module 4 – The Ethics of CPD, available in late April 2022

For more information and to access the modules, please visit the CPD menu at apegs.ca.

4 Seasons of Reconciliation Indigenous Awareness Training

4 Seasons of Reconciliation promotes a renewed relationship between Indigenous Peoples and Canadians, through transformative multi-media learning. The course is designed to help fulfil Call to Action 92 of the Truth and Reconciliation Commission and provides insight into the history of residential schools, treaties around the country and reconciliation and restitution initiatives. Featured are award-winning reconciliation documentaries, slideshows, quizzes and an additional video library that is available after you have completed the course.

How to access the course:

Sign up using the link provided on the APEGS website under CPD / Professional Development Courses / 4 Seasons of Reconciliation.

The 4 Seasons team will add you within two business days and an invoice for \$38 plus tax will be sent to your email from Reconciliation Education (noreply@notify.thinkfic.com).

Go to apegs.ca to view a short trailer about the course under CPD / Professional Development Courses / 4 Seasons of Reconciliation.

2022 Spring Professional Development Days

A variety of online courses will be offered during Engineering and Geoscience Week, February 27 to March 5, 2022. Refer to the Events page at apegs.ca for more information.

Free Course on Practical Geocommunication

Through Geoscientists Canada, APEGS has acquired a professional development opportunity which allows all members FREE access to Geologize's critically acclaimed course 'Practical Geocommunication' – a \$450 US per person value.

This 10-hour course has video lessons, quizzes, brief assignments and the opportunity to interact directly with Dr. Haydon Mort, the course instructor, through forums. Launched on January 5, 2022, the course is on-demand and available until Dec. 31, 2023. Members can sign up now and start at any point.

The geocommunications training helps geoscientists become more effective and powerful public ambassadors for geoscience. This skill is more important today than ever as professionals communicate with broad audiences about the effects and mitigation of climate change, impart knowledge concerning critical minerals, communicate with various stakeholder groups, inspire the next generation of geoscientists in the face of declining post-secondary geoscience enrolment; and so many other important topics.

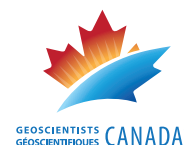
How to Enrol

Get APEGS' unique access code by logging into APEGS Central, the self-serve portal, where you will see the code front and centre on the main screen in the news section.

Go to <https://training.geologize.org/courses/gc>

1. Click on 'MEMBER ACCESS'
2. Register (Important - Use an email address you have on record with APEGS)
3. On the payment screen, click the link 'Have a coupon?'
4. Enter coupon code (available on the APEGS Central newsfeed)
5. Click "Enroll Now"

The code is limited to use by the members of APEGS. Periodic checks will be made by the course developer to ensure the code is only being used by members. Those enrolled follow the course at their own pace, with the ability to save and continue at any point. A certificate is provided at the end of the course.



Connect with APEGS on social media!

To better connect with members and the communities they serve, APEGS is proud to announce the launch of its social media accounts. Follow us to stay up to date on deadlines, celebrate members, hear about projects, join in on discussions, and educate Saskatchewan residents on the contributions of engineers and geoscientists and APEGS' role as a self-regulatory body.



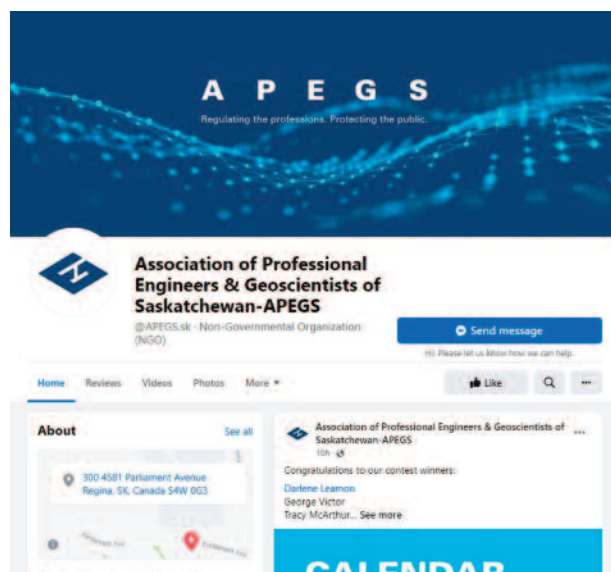
Twitter: @APEGS_SK



Facebook: @APEGS.sk



LinkedIn: Association of Professional Engineers & Geoscientists of Saskatchewan (APEGS)





A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

APEGS' Annual Meeting

And Professional Development Conference

*IN-PERSON AND VIRTUAL

May 5 – 7, 2022

Delta Bessborough and Sheraton Cavalier, Saskatoon SK

Thursday, May 5

Evening Welcome Event at Nutrien Wonderhub

Friday, May 6

Breakfast Plenary

Professional Development Streams

Professional Development Luncheon and Luncheon Keynote

President's Reception

Saturday, May 7

92nd Annual Meeting

Member Recognition Luncheon

Awards Banquet

Registration

Opens on April 1, 2022

www.apegs.ca

TRANSFORMATION

All events are in-person (subject to change) with virtual attendance available for the annual business meeting, the professional development sessions, and the awards gala.

Session times to be determined.



Jared A. Brock

LUNCHEON KEYNOTE SPEAKER

Surviving Tomorrow: Re-engineering life in the face of democratic, ecological, and economic breakdown

ABSTRACT

How will we navigate life in an age of democratic destruction, ecological collapse, and economic irrelevance? Award-winning author and Surviving Tomorrow editor Jared A. Brock explores some of the biggest threats to widest-spread well-being and offers contrarian perspectives on where we could go from here.

BREAKFAST PLENARY

Characterizing, Managing and Reporting on Environmental, Social and Governance Issues

Kirsten Ketilson, P.Ag.

ABSTRACT

Environmental, Social and Governance (ESG) issues are of increasing importance to investors seeking to increase the proportion of responsible investments within their portfolios. This presentation will provide some background on the global agreements, standards, and recommendations relevant to ESG matters and review the key issues and standards relevant to the mining industry.

TRACK 1	TRACK 2	TRACK 3	TRACK 4
Practising Geoscience	Practising Engineering	Leadership & Engagement	APEGS / Ethics
Update on Saskatchewan Resources Gavin Jensen	Urban Climate and City Design Dr. Iain D. Stewart	Embracing Change Part 1. Penny Popp	The Future of Corporate Entity Regulation Bert Munro
Mining Life Cycle Assessments Alex Grant, Laurens Tijsseling (virtual)	The impacts of workplace Injuries – they are larger than you may think Grant Van Eaton	Embracing Change Part 2. Penny Popp	Governance Transformation at APEGS Kristen Darr, Stormy Holmes
New Resources in Saskatchewan – Helium, Lithium, Cobalt, Nickel Panel presentation Andrew Davidson, Zach Maurer, Roger Lemaitre	Q & A with Jared Brock, Keynote Speaker	Duty to Consult and Accommodate Tracy Campbell	7 Lenses of Ethical Leadership - Through the Kaleidoscope Linda Fisher Thornton
New Resources in Saskatchewan – Panel Q&A Continued from session 3. Moderator: Erik Nickel	To be determined	To be determined	7 Lenses of Ethical Leadership - Applying Ethical Thinking Linda Fisher Thornton

Professional Development Tracks

TRACKS 1 AND 2

Practising Geoscience and Engineering

Update on Saskatchewan Resources

- Gavin Jensen, P.Geo.

ABSTRACT

This presentation will be an update on new and upcoming resources in Saskatchewan.

Mining Life Cycle Assessments

VIRTUAL PRESENTATION. PRESENTERS ARE OUT OF COUNTRY

- Alex Grant
- Laurens Tijsseling

ABSTRACT

Understanding the environmental impact of a natural resource project is key to decarbonising the world, as the critical materials will need to be sourced without offsetting the improvement in downstream performance. For example, lithium can be made in dozens of different ways depending on the unique natural resource, process pathway, geochemistry, and site location. The environmental impacts of making lithium and other battery chemicals is dependent on all of these variables. Minviro has conducted the most sophisticated set of lithium, graphite and other battery materials project life cycle assessments (LCAs) in the world, including the first public LCA of lithium hydroxide and anode grade graphite production. LCA is a critical tool for quantifying the environmental performance of making these different battery materials. In this talk we will share the results from some of this work that help answer the question of how to quantify the “green” credential of a battery materials project.

New Resources in Saskatchewan - Helium, Lithium, Cobalt, Nickel Panel Presentation

- Andrew Davidson, CPA
- Zachary Maurer, Geoscientist-In-Training
- Roger Lemaitre, P.Eng., P.Geo.

ABSTRACT

This will be a panel presentation on new resources in Saskatchewan from an industry perspective - helium, lithium, cobalt, and nickel. The presentation will be followed by Q&A with the panellists in the next session.

New Resources in Saskatchewan – Panel Q&A

- Andrew Davidson, CPA
- Zachary Maurer, Geoscientist-In-Training
- Roger Lemaitre, P.Eng., P.Geo.
- Moderator: Erik Nickel, P.Geo.

ABSTRACT

Continuing from the previous session on new resources in Saskatchewan - helium, lithium, cobalt, and nickel. This will be a time for Q&A with the panellists. Moderated by Erik Nickel.

The impacts of workplace Injuries – they are larger than you may think

- Grant Van Eaton

ABSTRACT

Grant Van Eaton from the Saskatchewan Worker’s Compensation Board will be providing an overview of catastrophic work-related injuries and work-related fatalities and the long-standing impact they have. Grant has spent a considerable part of his career working with individuals and families impacted by a catastrophic injury or a work-related fatality and will be sharing some of that experience with the goal of bringing home the need for safety in the workplace.

Urban Climate and City Design

- Dr. Iain D. Stewart

ABSTRACT

Urban living is the norm for most of humanity. It is also the main driver behind climate change at local to global scales. It is therefore essential that cities are designed to be resilient to these changes. This will require the careful exchange of knowledge between urban climatologists and city planners. In this talk, the field of urban climatology is introduced, demonstrating that the climates of cities are generally hotter and drier than their natural surroundings, and that rates of urban warming are exceeding those of global warming. Examples are given for cities around the world, from both historical and scientific perspectives. The talk concludes with simple guidelines for climate-sensitive urban design.

TRACK 3

Leadership and Engagement

Embracing Change

- Penelope Popp, P.Eng.

Penelope will be giving two presentations. They are designed to stand alone if you wish to attend only one.

ABSTRACT

Change is a certainty of personal, team and organizational evolution and success. Intentionally managing change as its own unique process increases the successful implementation of both transactional and transformational initiatives.

Embracing Change is a two-part series that introduces participants to the phases that a successful change process must go through. You will learn how to get attention for this needed change, create a vision of

what would happen if the change is achieved, and identify others with the skills, attitudes and abilities you can leverage for buy-in.

Part One will introduce participants to the stages of change and how to recognize behaviours and abilities congruent with each stage to implement and anchor change practices.

Part Two will examine dynamics you can assess and consider to successfully ensure changes will progress. Participants will look at strategies to ensure communications are at the forefront of all change initiatives.

Duty to Consult and Accommodate

- Tracy Campbell

ABSTRACT

Tracy will deliver a presentation on duty to consult and accommodate. Further information will be provided on the Annual Meeting webpage when registration is available in early April.

TRACK 4

APEGS / Ethics

The Future of Corporate Entity Regulation

- Bert Munro, P.Eng., FCSCE, FCSSE, FEC, FGC (Hon) Chair, APEGS Corporate Registrant Task Group

ABSTRACT

One of the recommendations resulting from the governance review that APEGS undertook in 2019 was for APEGS to consider changes to the requirements for corporate entity registration in Saskatchewan, commonly referred to as the Certificate of Authorization (CofA). The Corporate Registrant Task Group (CRTG) was formed to examine the regulation of corporate entities that engage in the practice of professional engineering or professional geoscience, including sole proprietors,

and to provide recommendations on future requirements for CofA holders, PtoC, and any required bylaw revisions. This track session will provide an overview of the work of the CRTG to date and present possible recommended changes to the regulation of corporate entities. The CRTG will also be seeking input and feedback from the members in attendance, as stakeholders in this process, to be considered as the CRTG prepares their final recommendations to Council.

Governance Transformation at APEGS

- Kristen Darr, P.Geo.
- Stormy Holmes, P.Eng., FEC, FGC (Hon.)

ABSTRACT

Join us to hear about the accomplishments of the Governance Change project and the status of implementation still underway. This will include the status of the Constituent Society Relationships Task Group and other plans APEGS has for continuous improvement as a regulator and why.

7 Lenses of Ethical Leadership

- Linda Fisher Thornton

Linda will be giving two presentations. They are designed to stand alone if you wish to attend only one.

7 Ethical Lenses: Through the Kaleidoscope

Professional challenges continue to increase in complexity, with the pandemic adding new ethical variables.

At the same time, traditional ethical decision-making processes have lacked the breadth and depth to guide ethical choices while meeting the needs of multiple stakeholders.

As a result, there is a critical need for a broader, higher-level process for ethical thinking and decision making. In this session, Linda Fisher Thornton, Author of 7 Lenses, will provide an

in-depth review of her 7 Lenses model with seven perspectives for “seeing” ethical choices that provide a multidimensional view. Together the 7 Lenses provide a kaleidoscopic perspective on ethical responsibility and an eye-opening picture of what it means to “do the right thing.” She will share an example to demonstrate how seeing a situation through all 7 Lenses reveals ethical nuances and guides us to make ethical choices that benefit a wide array of stakeholders.

7 Ethical Lenses: Applying Ethical Thinking

Having a robust ethical decision-making model is not enough; it is using it in real time that makes the difference.

In this session, Linda Fisher Thornton, Author of 7 Lenses, will briefly review her 7 Lenses model from the previous session that includes a continuum of seven perspectives for recognizing and thinking through complex ethical issues. Using this multi-lens schema takes the dialogue about responsibility to a higher level and leads to the kind of multistakeholder thinking that builds positive organizations and communities.

She will share a challenging situation that requires ethical thinking and participants will engage in a discussion as they apply all 7 Lenses to the situation together to see its ethical nuances. There will be time to discuss other possible applications of this model including areas where 7 Lenses thinking.



Understanding your Secondary Professional Liability Insurance

**Members in good standing at
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This unique program protects both you and the public in numerous scenarios involving whistleblowing, retirement, intellectual property, data loss, mentorship, and more.

To learn more about the program, coverage amounts, and other benefits available to you, please visit the Engineers Canada website.



Registering for the National Professional Practice Exam?

APEGS is now offering the exam five times per year - Effective January 2022!

Each session for that month offers the exam six times: one morning and one afternoon slot over three days.

Upcoming Exams

Exam Dates	Registration Deadlines
Jan. 24-26, 2022	Dec. 3, 2021 (Deadline Passed)
April 4-6, 2022	Feb. 18, 2022
June 6-8, 2022	April 29, 2022
Aug. 22-24, 2022	June 30, 2022
Nov. 7-9, 2022	Sept. 23, 2022

The professional practice exam tests knowledge of Canadian law, ethics and professionalism. You must pass the professional practice exam before you are eligible to take responsibility for professional engineering or geoscience work.

For more information on how to register go to APEGS website: <https://www.apegs.ca/apply/how-to-apply/professional-practice-exam>.





Celebrating Engineering and Geoscience Week

February 27 to March 5

There are a variety of ways APEGS celebrates Engineering and Geoscience Week. Each year, APEGS requests the Government of Saskatchewan to proclaim the observance for the first week in March. This timing coincides with National Engineering and Geoscience Month, which is observed by the other engineering and geoscience regulators throughout Canada during March. APEGS and the Government of Saskatchewan issue a joint news release.

On the Saturday preceding the week, APEGS publicizes the role that engineers and geoscientists play in the lives of Saskatchewan residents as a feature insert in the *Regina Leader-Post* and the *Saskatoon StarPhoenix*. APEGS also introduces the newest professional members and provides content to reinforce its mandate to regulate the professions in the public interest. With APEGS' new presence on social media, there will also be posts on LinkedIn, Facebook and Twitter during the week.

APEGS sponsors two online educational opportunities in engineering and geoscience for students from kindergarten to Grade 12 and promotes them during the week.

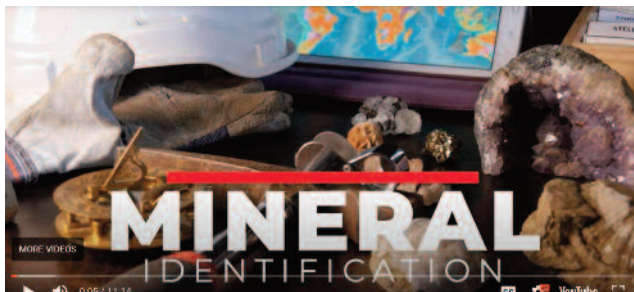
GeoExplore Saskatchewan is an interactive map and online resource featuring information on an array of geological points of interest and geoscience concepts that explain their origins. There is content for people of all ages and

experience, and APEGS has created videos on mineral identification for students in Grades 4 and 7 and Earth Science 30. Check out GeoExplore Saskatchewan and the videos on the APEGS website under About / Engineering and Geoscience Week.



The movie, *Dream Big: Engineering Our World*, and accompanying educational resources explore how engineers solve big and small problems to improve people's lives. APEGS provides a sponsorship to make the movie and resources available to all Saskatchewan schools through the Ministry of Education's ROVER service (Recommended Online Video Education Resources).

APEGS wishes all members of the engineering and geoscience professions a happy and safe Engineering and Geoscience Week!



Celebrating Our Own

STIC Awards

USask College of Engineering - Projects led by two USask Engineering faculty members — Tate Cao and Seok-Bum Ko — were recognized at the Science, Technology, Innovation and Collaboration (STIC) Awards in Saskatoon.

The STIC Awards celebrate the people, projects and products leading science and tech in our community and are hosted by the Saskatoon Regional Economic Development Authority (SREDA). The awards were presented in early December at an event at Prairieland Park.

SIGMA Entrepreneurial Project

The SIGMA Entrepreneurial Project is a STIC award launched by Tate Cao, P.Eng., in 2021, was awarded the Outstanding Initiative Award. The project is based in the Graham School of Professional Development. Cao is an Assistant Professor and the LaBorde Chair in Engineering Entrepreneurship at the University of Saskatchewan.

SIGMA stands for Saskatchewan Innovation Growth & Market Acceleration. During summer 2021 the initiative engaged six student teams in the first stages of their start-up concepts.

SIGMA Skill Accelerator is a product of the community. Supported by PrairieCan, Innovation Saskatchewan, and our dedicated community volunteers, the program focuses on the founders of the start-ups and their skill levels, Cao said.

“We believe that in the community we can support the development of knowledge, passion and skills as our students take action to be the engineers the world needs. We want SIGMA to be a pipeline for developing and strengthening founders and highly trained employees and leaders for existing companies.”

Deep learning automated diagnostic systems from medical imagery

A research team led by Seok-Bum Ko, P.Eng., won the Project Award, which is known as the “most likely to save the world category.” Ko is Acting Head of the Department of Electrical and Computer Engineering at USask.

The award recognized the team’s commercialization of deep learning automated diagnostic systems from medical imagery.

Numerous biomedical engineering applications that use deep learning to analyze medical imaging have been developed at the computer engineering research lab (CERL) at the University of Saskatchewan. Applications are being developed for diagnosing lung cancer, breast cancer, (early) ankylosing spondylitis (AS) and detecting COVID-19 from lungs.

This SREDA project award is not only recognition for the achievements of my lab so far, but also an encouragement for the future, said Ko.

“I have had the privilege of working with wonderful collaborators including Korean Radiologist, Dr. Gongyong Jin and his team, and exceptional graduate students. I look forward to continuing this exciting research to implement AI-powered solutions in medical diagnosis.”

2021 Emerging Leader Awards

Nicholas Kaminski, P.Eng., M.Eng., PMP, won the Emerging Leader Award for Initiative presented by Construction Canada in Toronto at the Buildings Show in early December.

This is the third year these honours have been awarded. They “honour members of the architectural, engineering, and construction (AEC) community who demonstrate excellence, impress and inspire their co-workers, and are well on their way to becoming the next leaders in the profession.”

Kaminski works as a structural engineer at KGS Group in Regina.

Dr. Gordon Huang inducted as Engineering Institute of Canada fellow

University of Regina - Dr. Gordon Huang has been inducted as a 2022 Engineering Institute of Canada (EIC) Fellow.

He is the only one from Saskatchewan of the 20 members inducted this year. The Fellow inductions will be made at the next EIC Banquet in April.

Dr. Huang is Professor of Environmental Systems Engineering at the University of Regina. His research has been about planning of energy and environmental systems, synchrotron-based environmental chemistry and biochemistry, climate modeling and downscaling, and simulation of hydrological and environmental systems.

Dr. Huang has received more than 200 research grants and contracts, eight Natural Sciences and Engineering Research Council of Canada (NSERC) Strategic Grants, and over 20 other Natural Sciences and Engineering Research Council of Canada/Canada Foundation for Innovation grants.

He also has over 1000 peer-refereed international journal papers with an H-index of 75 in Science Citation Index, was recognized in 2019 by Web of Science Group for 0.1 per cent of the world’s researchers across 21 research fields, and was the most cited researcher in Environmental Science and Engineering as recognized by Elsevier in 2016. He supervised over 100 Master and PhD students with over 30 of them teaching at universities around the world.



ASSOCIATION OF CONSULTING
ENGINEERING COMPANIES | SK

The Lieutenant Governor's Meritorious Achievement Award is part of the Association of Consulting Engineering Companies Saskatchewan awards program. It is presented to a Saskatchewan resident for "their outstanding achievements and contributions to the consulting engineering and geoscience industry in the province."



Tom Atkins, P.Eng.

Stantec vice-president Tom Atkins, P.Eng., was presented the Lieutenant Governor's Meritorious Achievement Award for his 40 years of engineering guidance in Saskatchewan and throughout North America.

Other award recipients at the November event were:

Mentor Award: Jeff Osborne, P.Eng. (Retired)

Young Professional Award: Cosme Loi, P.Eng.

Community Initiatives Award: PINTER & Associates Ltd.

Brian Eckel Scholarship Recipient: Garret Churchill

Brian Eckel Awards recognizing outstanding Saskatchewan projects:

Award of Merit: Associated Engineering

Award of Excellence: Daniels Wingerak Engineering Ltd.

Award of Excellence: WSP Canada Inc.

Award of Excellence: AECOM Canada Ltd.

Award of Excellence: CIMA Canada Inc. & Catterall & Wright

Award of Excellence: Stantec Consulting Ltd.

Pinnacle Award: AECOM Canada Ltd.

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News From the Field



www.oilsandsmagazine.com

FCL announces investments in transition to reduced emissions

Global Regina/The StarPhoenix/Leader-Post - Federated Co-op Limited (FCL) will spend \$264 million to purchase 181 Husky retail fuel sites from Cenovus Energy Inc, the latest in a series of moves it has made.

"This puts FCL in a position to move forward with initiatives that take a leadership role in the transition to a low-carbon economy," said FCL CEO Scott Banda during the announcement in early December.

Those initiatives include FCL's commitment to reduce greenhouse gas emissions by 40 per cent below 2015 levels by the year 2030 and a goal to achieve net-zero emissions by 2050.

"The way we look at it is we probably have a decade as we move through the transition to ensure we can continue to offer our members in the communities fuel services," said Banda.

"By doing this transaction, it allows us over the near term to enhance our profitability and help finance those investments we have to make to ensure our energy production in liquid fuels is set for the next generation."

In early November, Regina's city council approved a \$5.48-million land purchase option for FCL to build a renewable diesel plant just north of its refinery.

A report before council said FCL plans to spend between \$1.5 billion to \$2 billion on the plant. No timeline has been provided, other than FCL saying it hopes to have the facility operational by 2027.

In late October, it entered into an agreement with Whitecap Resources, stating it was investing \$500 million to introduce carbon-capture and sequestration (CCS) technology at their refinery complex in Regina and the ethanol complex by Belle Plaine, Sask. The memorandum of understanding signed between the two companies calls for FCL to build and operate carbon-capture plants at its Regina refinery and its ethanol plant near Belle Plaine. Whitecap would be in charge of compressing the resulting carbon dioxide, then transporting it via pipeline to its CO₂-enhanced oil recovery facility in Weyburn.

Provincial funding provided to Saskatchewan Science Centre to encourage girls in STEM



www.huffpost.com

Government of Saskatchewan - The Saskatchewan Science Centre is receiving \$50,000 from the provincial government to offer programming encouraging girls to pursue careers in science, technology, engineering and mathematics (STEM).

The funds allow the science centre to offer its Go! Code: Girls club to participants at no cost. The introductory level program offers a chance for girls ages 11 to 16 to explore the world of coding through virtual sessions that will cover coding language basics, video game creation, animation and coding hardware devices. It supports girls exploring career possibilities, enabling them to build connections with female STEM leaders from across the province.

It will also host an exhibition, Game Changers, until January 2022. The travelling exhibition explores how innovation has shaped gameplay within video games and transformed the way people interact with technology.

Benefits of delivery model for hospital construction



Moose Jaw Today/CJWW – The benefits of using an Integrated Project Delivery Model to design and build a hospital were explained by the most recent winner of the Lieutenant Governor’s Meritorious Achievement Award.

Stantec vice-president Tom Atkins, P.Eng., started with the project to construct Moose Jaw’s Dr. F.H. Wigmore Hospital in 2012 as its lead mechanical engineer and was involved on the project’s executive committee. Near the end of the project, he became the lead representative for all disciplines.

“It was a unique project,” Atkins said, who has a history of designing for health care.

“It was the first project delivered under the Integrated Project Delivery Model, so it was exciting being involved in something that’s first like that.

The Integrated Project Delivery Model meant the health region, builder and design team all needed to collaborate. That had never before been done to construct a hospital in Canada.

Design work started in 2012, construction in 2013 and the hospital officially opened on Nov. 6, 2015.

“It was delivered in an unbelievably short amount of time for that project,” Atkins said.

“It was said to be a year ahead of schedule, but that’s a modest estimate of how fast it was done.

“Typically projects like that can take seven years or more from conception to operational, and we did it in under four years.”

Not only was it delivered in an impressive amount of time, but the \$86-million facility was within the budget set by the health region.

Atkins said it was vision of those at the Five Hills Health Region that led to this process being used, after learning of it at a conference.

“I have to give them credit for pulling along the rest of the groups, the design and the construction community and convincing everyone that’s the way it should go... If everyone is convinced and singing from the same song page, good things can happen.”

Atkins also explained that his team was a crucial factor in the success of the project.

“We assembled our team so we had seasoned professionals from across many different disciplines,” he said.

“We also partnered with an architectural firm from the U.S. that had been part of these projects, and so did the general contractor.

“The combination of people with seasoned technical skills, the buy-in to the advantages of the contracting method and the support of the U.S. companies helping with nuances of it helped a lot.

“You can’t cherry-pick one or two things. They all have to work together as a system and it’s not something for a neophyte to go into.

“You need people with considerable experience for something like this and we were fortunate to have that.”

Rare earth processing advancing at SRC



Saskatchewan Research Council – As construction continues on the Saskatchewan Research Council’s rare earth processing facility, Dr. Jack Zhang, P.Eng., has been providing technical guidance for rare earth processing.

The team he is part of is working on rare earth elements processing that has focused on three major areas. Zhang is Director, Rare Earth Element Division and Manager, Mineral Processing for SRC. He was the first employee in the mineral processing unit and helped build the unit from the ground up.

The first area deals with the challenges of complicated mineralogy by developing a highly efficient ore beneficiation process. The second is developing innovative hydrometallurgical processes to reduce costs and environmental footprints. The third is developing a rare earth solvent extraction separation process to produce high purity end-use products.

SRC reports that the team has achieved significant progress in all three. For example, it produced ore concentrate with about 60 per cent rare earth oxides, developed hydrometallurgical processes with minimum wastes, and separated individual rare earth elements with high purity.

Not long after Zhang became an employee of SRC in 2010,

over 250 rare earth junior mining companies rushed into the market with all kinds of challenges. SRC has been supporting industry in this area since then. SRC's work with the North American industry has led to the development of beneficiation and hydrometallurgical processes. The development of separation technology was mainly done through internal SRC funding as the majority of rare earth companies are in the earlier stage of development and are not yet there.

SRC's rare earth processing facility is due to start initial processing in 2023.

Saskatchewan potash sector poised for more growth in 2022 and beyond



The StarPhoenix - Potash's near seven-year slump could be at an end with demand and prices rising putting Saskatchewan, as the world's largest producer of potash, in a favourable position.

Demand for Saskatchewan's potash is coming back. In recent years, the province's industry has been challenged by overproduction by producers in Russia, Belarus, China and elsewhere in recent years. Producers in these areas typically have lower workplace safety and environmental protections than Saskatchewan operators, said Dr. Brooke Dobni, professor of strategy at the Edwards School of Business at the University of Saskatchewan.

These low-cost producers have run into production and logistical problems, while facing geopolitical challenges such as European Union sanctions. That, along with the pandemic, has created conditions that have increased prices in markets such as India and Pakistan.

Asian nations with contracts with Eastern bloc suppliers are finding those producers unable to make good on their deliveries. So, they are turning to Canada to deliver potash orders on time at an agreed upon price.

Then, there is the world's growing population. Saskatchewan's potash will be essential to support global food security and sustainable production, said Pam Schwann, P.Ge., president of the Saskatchewan Mining Association (SMA).

The world's population is estimated to be 10 billion by 2050. In that time, the global middle class is expected to grow, increasing the demand for higher quality food. Schwann explained that over the next 40 years, more food will be produced than in the last 10,000 years to feed billions more people. To meet this demand, crop production must increase by 70 per cent by 2050.

Increasing food production on existing land, while dealing with a changing climate, makes production more challenging with each passing year, said Schwann. The only way it will be possible is through precision fertilizers. Potash is among the most critical ingredients in those fertilizers.

What is expected in coming years will be a rebound from a slump. Prices have begun to climb in North America and soar elsewhere after market demand for potash peaked in 2009 with prices slowly falling in the years that followed.

During the price slump, large operators in Saskatchewan, such as Mosaic, K+S and Nutrien, continued operating seven underground and three solution operations. They were among the first to use autonomous mining equipment, electrical vehicles and techniques like ground freezing for more efficient, lower-cost production, Schwann said.

This activity in Saskatchewan serves as foundation for growth that has begun. Last year, Saskatchewan's potash sales increased to a record high of \$5.5 billion.

BHP restarted construction on its Jansen mine and intends to invest another \$7.4 billion. Industry has committed \$30 billion to production in the coming years, said Saskatchewan's Energy and Resources Minister Bronwyn Eyre. That commitment includes expanding Mosaic's Esterhazy mine and K+S's Bethune mine.

Plus, new mines are being developed in Saskatchewan and a number of them are testing technology new to the province's potash sector, including Gensource Potash and CanPacific Potash.

Helium action plan released

CBC Saskatchewan - Saskatchewan's government released a Helium Action Plan aimed at building the province's helium production from one per cent to 10 per cent of the world supply by 2030.

"Helium, as we know, is far more than party balloons. It's another future-facing commodity, boosting advanced technology sectors, medical research, space exploration, nuclear energy generation and manufacturing semiconductors," said Energy and Resources Minister Bronwyn Eyre.

About 90 per cent of the world's helium supply comes from natural gas producers, who capture small quantities of helium from the natural gas stream during production.



Helium can also be extracted using wells, the method the province is looking to capitalize on. The government's plan includes offering companies a range of support including administrative help, a reduction in red tape and tax credits, which could encourage companies to take the risk drilling wells that may not be productive.

Canada has the fifth-largest known supply of helium in the world. Most of that is in Saskatchewan, the provincial government said.

Helium's low boiling and liquefaction points, and its ability to easily conduct heat, make it sought after in medical fields for use in MRIs. It is also used to cool nuclear reactors and as a temperature control in the aerospace industry.

"There's no substitute for it. Limited supply and surging demand, and that global demand is expected to rise significantly over the coming years, with estimates the helium market will double by 2030," said Eyre.

Right now, there are about nine active helium wells in Saskatchewan with 24 additional ones being drilled. By 2030, Eyre anticipates Saskatchewan will have 150 helium wells.

The government estimates the increase in helium production will create about 500 new jobs and \$500 million in annual exports.

Building at site of church that held Louis Riel's body spared from demolition

Leader-Post - A heritage building in downtown Regina that is now considered by engineers to be unsafe has been spared from demolition by city council.

Some city councillors as well as a representative of Heritage Regina are concerned that the owners of the Burns Hanley Building allowed it to continue to deteriorate rather than repair what engineers identified in 2019.

Regina city councillors voted 9-1, rejecting an application by Harvard Developments to demolish the building at 1863 Cornwall Street. That is the site of the 1883 St. Mary's Roman Catholic Church where Louis Riel's body was temporarily kept after he was hanged.

A 2019 engineering report by JCK Engineering found that the

building had undergone years of sustained water damage due to a damaged roof and broken pipes. Its report also said that vegetation is growing on the roof of the historic building. The report recommended \$200,000 in repairs to help stabilize the building, but no repairs were done.

Two years later, the engineering company inspected the building again and found that water damage was so severe and the condition was so poor that they were unable to inspect parts of the structure.

"The building is unsafe and should not be occupied for any reason," the JCK Engineering report concludes.

It is a designated heritage building in the city's Victoria Park Heritage Conservation District. That means the owner of the building must receive permission to demolish it.

In July 2021, Harvard applied for a demolition permit, citing its deteriorating condition. That application did not have a proposed redevelopment plan, despite a city bylaw requiring one. Instead, Harvard said its initial plan was to infill the basement of the demolished building, as it plans to acquire neighbouring properties, and then develop a mixed-use highrise building.

The condition of the Burns Hanley Building is central to the dispute over its future.

"(\$200,000) is a small cost to a corporation like Harvard. They did not do that, they waited until the building disintegrated," said one city councillor.

The estimates to rehabilitate the building have skyrocketed to \$4.7 million. That includes structural repairs, shoring up walls, and removing debris and hazardous material.

A representative of Heritage Regina said the proposed demolition of the building is part of a trend of "demolition by neglect" in Regina with designated heritage properties.

A representative for Harvard told council the company had planned to do the repairs, but it reconsidered due to the pandemic. However, that explanation was questioned by one city councillor who reminded the meeting the pandemic started in early 2020.

City staff initially recommended the site at 1863 Cornwall St. remain a designated property within the boundaries of the Victoria Park Municipal Heritage Conservation District, but that council approve the demolition of the building.

That recommendation was voted against by the Regina Planning Commission. It recommended council deny the demolition application and order Harvard Developments complete "at minimum" repairs necessary to stabilize the building and preserve its facade.

The councillor who questioned Harvard's reason for not doing the repairs proposed an amendment that would see the company pay for repairs to the building and would refer the proposal for demolition to the provincial Heritage Review Board.

News Beyond Our Borders



Saskatoon company partners in Earth X-ray for Low-Impact Mining project

Digital Technology Supercluster news release/Financial Post - Saskatoon company Dias Geophysical is among a group of Canadian innovators working on a project to help mining companies target deposits more precisely, reducing their need for drilling which saves them money and reduces their emissions.

The Earth X-ray for Low-Impact Mining project launched in November. With an investment from industry and Dias Geophysical is a partner in the project being led by muon tomography pioneer Ideon Technologies, which is based in Vancouver. Other partners in the project are Simon Fraser University (SFU), Microsoft, Fireweed Zinc, and Mitacs. BHP is also involved.

The project will deliver a new Discovery Platform to help mining exploration companies identify density and magnetic anomalies with greater resolution and certainty up to one kilometre beneath the Earth surface. The technology does for the earth what X-rays and MRIs do for the human body – make the inside visible.

The Discovery Platform uses hardware and software, novel data inversion and integration techniques, advanced AI algorithms, and geostatistical methods to construct detailed 3D profiles of subsurface anomalies — such as mineral and metal deposits, air voids, caves, and other structures.

Most deposits that are near the surface of the Earth have already been discovered. Mining companies are having to search deeper underground in more difficult-to-reach locations. Exploring those deposits can mean extensive drilling.

“This project will generate new technologies and breakthrough approaches to help solve one of the oldest problems on Earth,” said Gary Agnew, CEO and co-founder of Ideon.

“As co-innovators, we will deliver a solution to the global mining industry that will directly reduce the cost, time, risk and environmental impact of finding new mineral and metal deposits, while dramatically increasing certainty and discovery rates in a sector that has been historically characterized by uncertainty.”

A question asked by an unnamed geologist in Saskatchewan planted the seed that grew into Ideon Technologies’ pioneering of muon tomography. That geologist asked B.C.-based Triumf — Canada’s national particle accelerator lab, which partners with a number of Canadian universities — if muon tomography could be used for mineral exploration. Scientists affiliated with the lab have been developing the technology ever since. Ideon emerged in March 2020 out of Vancouver-based Triumf.

Muon tomography is studying the path of subatomic particles emitted by cosmic rays, which are known as muons, in order to learn more about the geology of the Earth.

“It sounds far fetched but the science is decades of understanding,” said Agnew.

Industry partners in the project will apply their deep expertise in exploration, geology, and geophysics to help inform product design and trials, economic value analysis, and commercialization strategy. Saskatoon-based Dias Geophysical brings unique knowledge of quantum magnetometry and synthetic diamond chip production to the project.

“We founded Dias on the principle of turning scientific discovery into innovative technologies that can be applied to tough geoscience challenges,” said Glenn Chubak, VP Technology for Dias Geophysical.

“Our partners in the Earth-X consortium share that vision, which is exciting for us as we work together on solutions to supply critical minerals to a world actively transitioning its energy production and distribution.”

Engineer warned of B.C. flooding

CBC - While some might think the flooding that occurred mid-November in the Lower Mainland was a result of an unforeseen weather event, engineers and others familiar with the dikes in the area have repeatedly warned what was likely to happen one day.



They say it is due to the governance structure that sees the province of B.C. set the standards for dike safety, but leaves local communities responsible for the cost of maintenance and repairs. Those elected to municipal governments say they are unable to afford that expense.

Jason Lum said he's warned for years about the need to update infrastructure and the financial challenges municipalities face in trying to maintain dikes to the standard set by the province. Lum is chair of the Fraser Valley Regional District and is also a Chilliwack city councillor.

"It's absolutely asinine to think that [these municipalities] could pay for a multimillion-dollar dike upgrade."

Tamsin Lyle is an engineer who wrote a report for the B.C. government in May. In it, she stated that "the current model for flood risk governance in B.C. is broken."

Lyle said she was asked by senior bureaucrats to "tone down the language." But she declined.

"One of my proudest moments is that I kept that line in," she said.

In the early morning hours of Nov. 16, the Sumas River dike in Abbotsford, B.C., overflowed and later broke apart, causing swelling rivers to flood some of the most fertile agricultural lands in the province.

The floods destroyed homes and farms, triggering an estimated \$1 billion in damage, according to Abbotsford's mayor.

Abbotsford Mayor Henry Braun said he was aware that the Sumas River dike was not built high enough, but the ability of his government to pay for upgrading was limited.

Local government doesn't have the financial wherewithal because we only collect property taxes," said Braun, who has been mayor since 2014.

"We have not been investing in our infrastructure at every level for decades.... And this is what happens when you ignore warnings."

A report commissioned by the B.C. government in 2015 found that the Sumas River dike, which protects the Sumas Prairie from floodwaters, was "substandard," "too low" and "need[ed] to be updated."

The same report also found that none of the 74 dikes examined in the Lower Mainland fully met the province's standards.

"It was preventable and I think it was predictable," Lum said. "There's going to be a time and a place where we're all going to be held accountable for our role."

The Sumas Prairie area was a lake until the 1920s, when it was drained to create a fertile farming region that now generates about \$1.8 billion in revenue annually. A series of dikes, canals and a pumping station were constructed to prevent the lake from returning.

Still, these protections have not always worked. As recently as 1990, the Nooksack River overflowed, flooding parts of Washington state and north into Abbotsford's Sumas River basin.

B.C.'s Public Safety Minister Mike Farnworth said the province has invested \$105 million over the past few years in projects that strengthen dikes and flood mitigation.

At the same time, he said responsibility for maintaining dikes was transferred from the province to local governments a number of years ago.

Farnworth said it was time for his government to rethink that responsibility.

"One of the lessons from this event, obviously, is the need for continued investment in dikes and, in my view, a stronger role for the province in that process."

But a 2020 report commissioned by the City of Abbotsford indicates that without a longer-term solution, the low-lying prairie remains at significant risk. Climate-change impacts will make dike breaches more common, the report says.

"The climate is changing and the traditional infrastructure that we have in place is not going to keep us safe the way it did when it was built 100 years ago," said Lum.

Women reflect 32 years after tragedy

CBC - Twenty-three-year-old engineering student Asmae Danouj sees December 6 as a statement of resilience by women engineers who are carrying on the legacy of those who were killed at l'École Polytechnique de Montréal on that date in 32 years ago.

On December 6, 1989, a mass shooting at the school ended the lives of 14 young women and injured another 14 people. Twelve who died were engineering students in their early 20s. Danouj is their age now.

"In my studies, I just came to realize how privileged I was," the fourth-year undergraduate student, who is studying biomedical engineering at the school now known as Polytechnique Montréal.

"[It shows that] no matter what, or no matter who is

standing in our way, we will take the place that we have the right to. And it's like a fuel, we will not be stopped," she said.

As president of the student association at Polytechnique, Danouj says the school places a large emphasis on equality.

"I think there's this community that gives so much importance to the women's place in engineering," she said. "It's just so strong here, like in between these walls, everyone's talking about [equality.]"

She feels women must still work hard today to be accepted in engineering.

"I cannot deny the fact that it is a struggle, no matter what, no matter how far we've come in the industry, the women still have to fight for their places," she said.

"As a woman, you still need to make that extra effort to make your place acknowledged, to make your value acknowledged, so that other students do understand that you're here because of your skills."

Justine Petrucci, a 25-year-old master's student in civil engineering in her sixth year at Polytechnique, reflects on earlier generations and considers the future.

"It allows me to remember all the woman who have come before me and the path they have travelled," she said.

"And because of that, I feel like ... now it's up to me to keep going for those who will come after me."

When asked to explain what being a woman in engineering is like in 2021, Petrucci said that, thanks to the women pioneers in the field before her time, she doesn't have to.

"At Polytechnique, at school in general ... I didn't feel that different [from] my male colleagues," she said.

"The goal is that we don't think about this question anymore and that women are just part of the engineering world."

She said there have been times she has wondered if it could happen again, but feels the subject of sexism and misogyny are topics discussed much more widely these days among her male colleagues, and they are "sensible to our calls and the challenges that women experience in the engineering world."

Petrucci works to encourage young girls to enter engineering. She's a student ambassador for GénieElles, a program offered at Polytechnique that aims to encourage the next generation of young women to enter science or engineering fields by demystifying career possibilities.

"We also give scholarships ... we do some conferences. And so the girls can ask me their questions about how it was to get [to be] a woman in engineering, why did I choose to do my studies in engineering.... It's all about sharing my experience and getting women being more represented."

The program offers a host of various initiatives for girls ages 12 to 20 and contributes to Engineers Canada's 30 by

30 initiative, which aims to have at least 30 per cent of women among newly licensed engineers by 2030.

Aerospace engineers no smarter than general population, study finds



CBC - A recently published study found no significant intelligence differences between aerospace engineers and the general population, a finding the lead researcher hopes will help encourage more young people to pursue careers in STEM.

The study began by looking at aerospace engineers and neurosurgeons before comparing them to the general population. Lead researcher Inga Usher, a neurosurgery PhD candidate at the University College London, said she and her colleagues were initially driven to find out who is smarter — brain surgeons or rocket scientists.

The researchers performed a series of cognitive tests on 329 aerospace engineers, 72 neurosurgeons and about 1,800 members of the general U.K. population who had no expertise in either field. The results were published in December in the British Medical Journal.

While no significant difference could be found between the rocket scientists and the general population, neurosurgeons could solve problems faster than the average person. But they also showed a slower memory recall speed.

"I guess I hope one of the messages is that science is for everyone and that these stereotypes should be questioned. Obviously, we often say this in jest, but these phrases do link to quite durable stereotypes," said Usher.

Children are often interested in science, math and technology at a young age, she said, but as they age, they begin dropping away from STEM, women and people of colour disproportionately so.

"I think it's important to question these stereotypes for that purpose, to try and encourage some of these disadvantaged groups to continue considering a career in these specialities," she said.

"The problems we face are complex and we're going to need diverse workforces to deal with them."

As for comparing neurosurgeons and aerospace engineers, the study found they performed equally on most cognitive tests, with just a few noticeable differences.

The brain surgeons largely performed better at semantic problem solving, which means tests involving definitions and other word-based problems. But the aerospace engineers performed better on the mental manipulation tests — for example, rotating a shape in one's head.

“In some engineering courses, my understanding is that this is taught. So it's a skill that's actively nurtured by training,” Usher said. “But it's also something that perhaps people have a flair for if you go into engineering, and that's probably quite a useful skill.”

Quebec labour shortage prompts government scholarships and incentives



CBC/Montreal Gazette - To address its labour shortage, Quebec is investing an additional \$3.9 billion over the next five years in the hopes of requalifying and attracting 170,000 workers in certain priority sectors.

Premier François Legault unveiled the action plan, dubbed Opération main-d'oeuvre. Nearly 80 measures targeting six areas of activity will be implemented.

The government has selected what it considers three strategic sectors — engineering, construction and information technology — where the province hopes to add 110,000 skilled workers. It is also focused on essential public services, including mental health and youth protection, the education sector and the childcare sector, to try to integrate an additional 60,000 qualified people.

Legault said his government will be deploying a major incentive scholarship program in higher education, something he said is expected to increase the number of graduates in essential public services and strategic sectors at CEGEP and university levels.

The targeted professions include engineers and engineering technologists, analysts, programmers, clinical and auxiliary nurses, respiratory therapists, psychologists, social workers, preschool, elementary and secondary school teachers, as well as special education technicians and early childhood educators.

All Quebec students enrolled full time in these priority areas will be eligible for a total of \$9,000 in scholarships for a three-year program at the CEGEP level, \$15,000 in scholarships for a three-year program at the university level and \$20,000 for a four-year program. There is also an allowance of \$475 per week for those unemployed taking up studies in sectors where there is a shortage of workers. Whether students are at the beginning, in the middle or at the end of their schooling, they will begin to be eligible starting in the fall of 2022.

One Quebec employer, Airbus, is working to strengthen ties with universities and technical institutes to attract workers, including engineers, more easily. It announced in November a \$200,000 partnership with Polytechnique Montréal and McGill University that will see Airbus will offer 10 engineering scholarships annually — five at each university — over four years. The European planemaker is planning to hire at least 500 people in Mirabel over the coming years as production of its Bombardier-designed A220 narrowbody jet ramps up.

Engineering degree offered by northern B.C. university to meet demand

University of Northern British Columbia - In anticipation of northern B.C. needing to fill thousand of jobs in technology, the University of Northern British Columbia (UNBC) in Prince George is offering a master of applied science in engineering degree.

It is the first of its kind in B.C.'s northern region. This degree program expands UNBC's engineering student spaces by 30, with an additional 15 graduates per year. These additional engineering seats mean Prince George tech businesses will have a greater supply of advanced engineering graduates in the area. Of the 75,000 job openings in tech-related fields anticipated in the next decade, 2,200 are expected to be in northern British Columbia.

Approximately 42,000 engineers are working in B.C. and nearly 16,000 job openings are forecast over the next 10 years. Civil, mechanical and electrical engineers represent more than 50 per cent of these job openings, while computer and software engineers represent another 35 per cent.

The program is a research-based degree and focuses on managing engineering challenges and needs specific to cold environments. The 30-credit degree program builds on UNBC's existing engineering degrees: master of engineering in integrated wood design, and two bachelor of applied science (BASC) degrees. One is in civil engineering and the other in environmental engineering. UNBC also offers a joint BASC degree in environmental engineering with the University of British Columbia.

Calendar of Events

Below are some featured events. Please see the Events calendar online for a full list of events:
<https://events.apegs.ca/>

Climate Risk Institute - Asset Management and Climate Resiliency Course

Feb. 15, 2022

<https://climateriskinstitute.ca/2021/05/20/course-asset-management>

Climate Risk Institute – Climate Change and Infrastructure Risk – the PIEVC Protocol

Feb. 23, 2022

<https://climateriskinstitute.ca/2020/10/22/course-pievc-protocol/>

ACEC-SK Young Professional Virtual Leadership Series

March 2022

https://www.acec-sk.ca/events/acecsk_young_professional_virtual_leadership_series_.html

APEGS PD Days - Project Management: What's In It For Me?

March 1, 2022

<https://events.apegs.ca/events/106272>

APEGS PD Days - Digital Privacy and Security

March 3, 2022

<https://events.apegs.ca/events/106280>

AISES 5th Annual Canada National Gathering

Vancouver, BC

March 4, 2022

https://www.aises.org/membership/caises?utm_source=Informzemail&utm_medium=email&utm_campaign=Informz

PDAC: The World's Premier Mineral Exploration & Mining Convention

Toronto, ON

March 7-10, 2022

<https://www.pdac.ca/convention/attendee-info>

SUMA Convention and Tradeshow

Regina, SK

April 3-6, 2022

<https://suma.org/events/conventions-and-tradeshows>

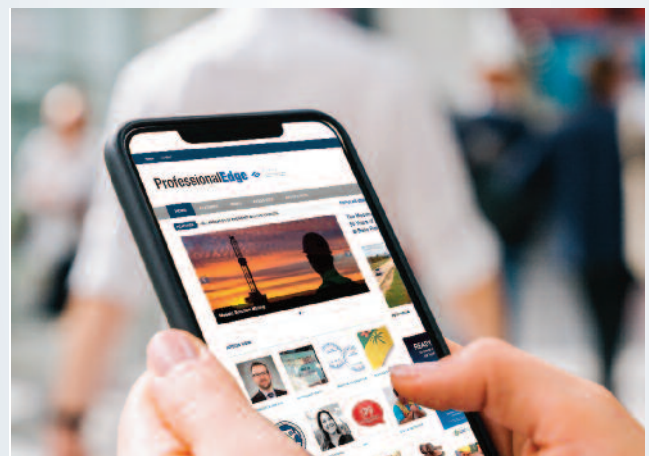
APEGS 92nd Annual Meeting and Professional Development Conference

May 5-7, 2022

In-person in Saskatoon, virtual options available

Registration opens on April 1, 2022 at apegs.ca

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