APEGS
Association of Professional Engineers & Geoscientists of Saskatchewan

2020 Salary Survey

THE PROFESSIONAL

EDGE

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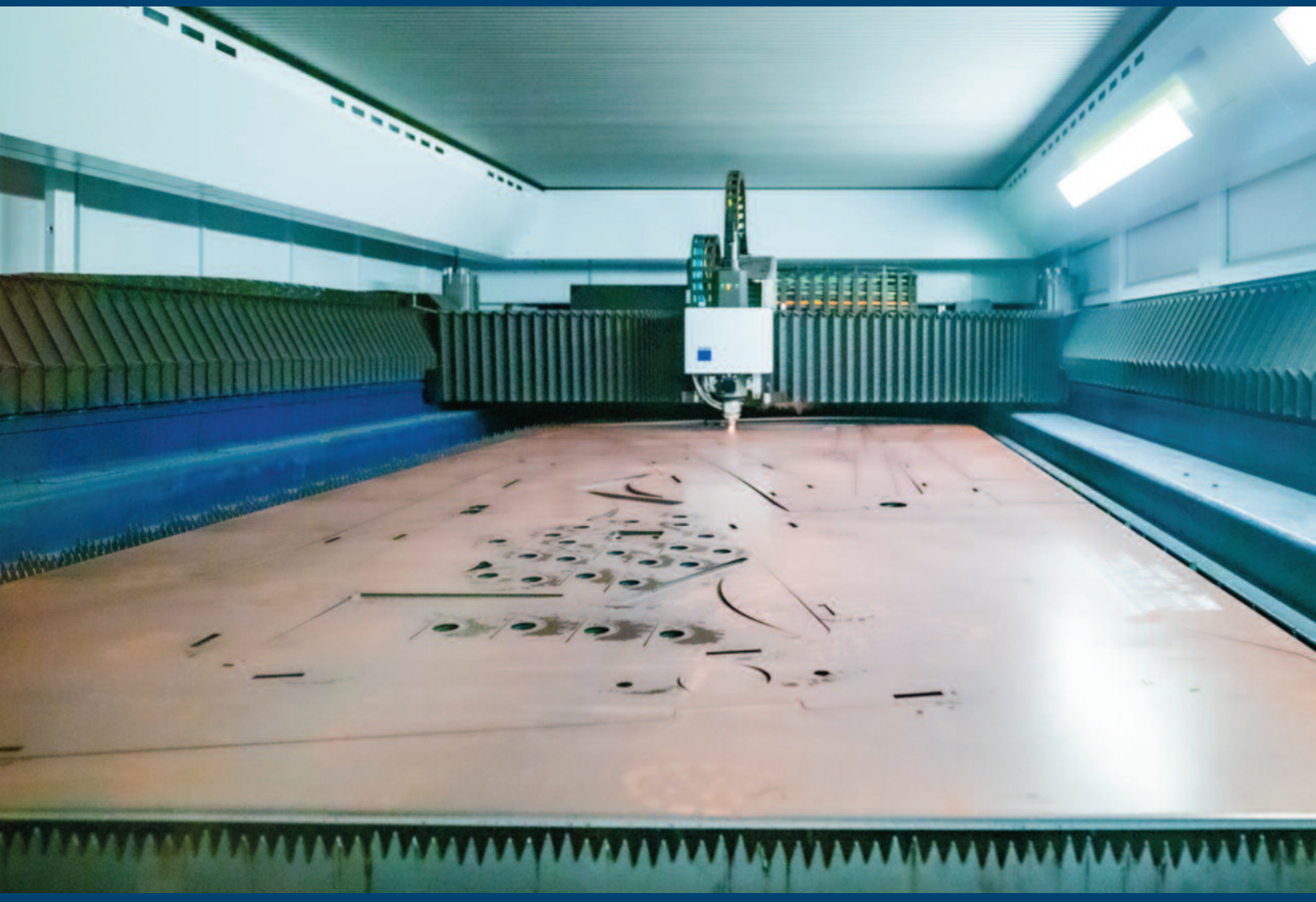

Automation

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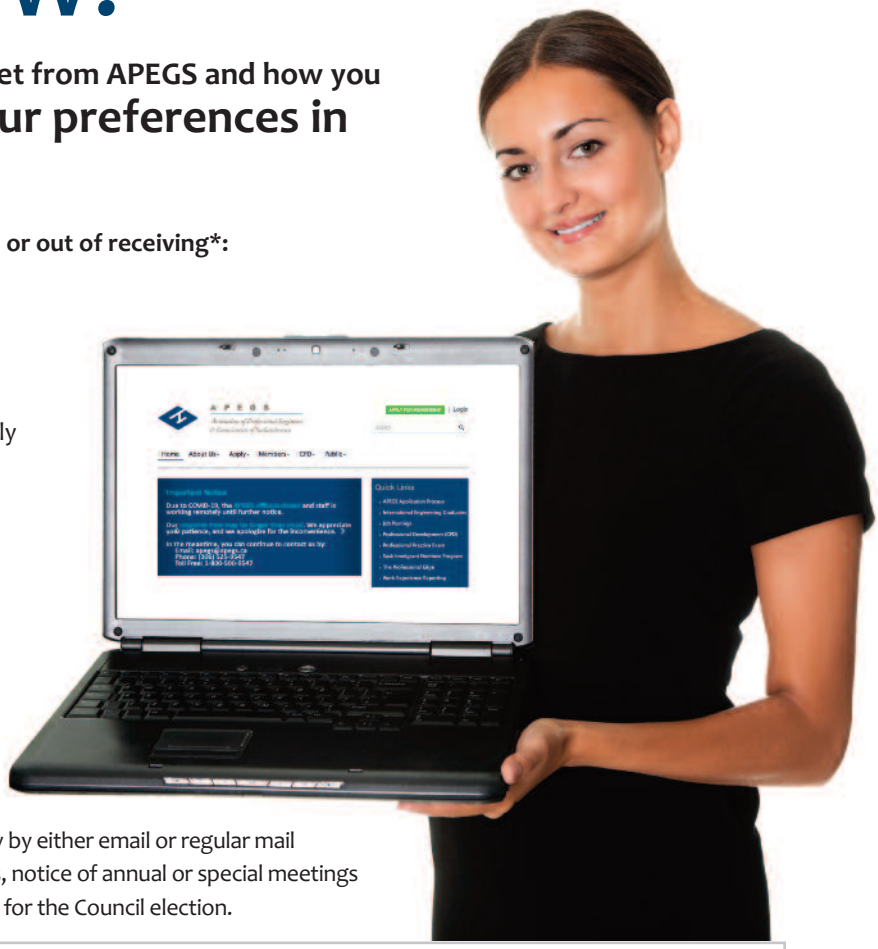

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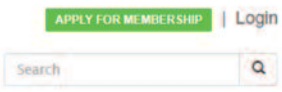

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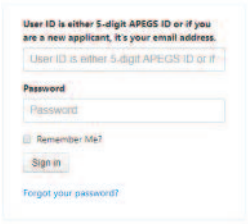

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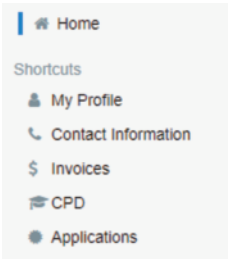

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Association of Professional Engineers & Geoscientists of Saskatchewan

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Smart factory laser: Brandt's smart factory is home to three 10-kilowatt fibre lasers. Two of these lasers are connected to PartMaster manual sorting stations, while the third employs a fully automated SortMaster to pick and stack parts.

President's Message

Andrew R. Lockwood, P.Eng., FEC

I sit here at my kitchen table sculpting my second president's message and I love the topic of automation. Why, you may ask? I have a tiny blister from gardening and my delicate engineer's hands look forward to the day our robot overlords develop a rake-bot to prevent future generations from suffering as I do.

COVID-19 has shown that Saskatchewan engineers and geoscientists can continue to innovate and drive society forward even while working remotely from their homes. Whether it is Last Mountain Lake, Meadow Lake or Mississauga, APEGS license holders have shown great perseverance in non-traditional work structures. One silver lining coming out of these challenging times is the real incentive for engineers to increase the use of automation.

Take SaskEnergy, for example, and its advanced metering infrastructure featured in this issue. By automating the meter reading process, engineers bring a host of short- and long-term benefits to society.

In the short term, meter readers are not exposed to potential hazards in the field, fuel consumption and its environmental impacts are lessened and customers get timely data.

In the long term, I am excited to see what further automation the data gathered can enable. Picture a smart system that tunes its delivery, maintenance and asset management around the weather forecast, customer usage and all sorts of things someone smarter than me has already considered.

Private sector innovators like Delco Automation and Brandt are also increasing automation to the benefit of society. Their stories remind us of the important work engineers engage in to add intelligence to asset management (Delco and the Saskatchewan Hospital in North Battleford) and the health, safety and productivity benefits to workers from automated manufacturing (Brandt Smart Factory).

These successes must also be tempered by the moral and ethical questions rising from an increasingly automated world. How does an engineer design for the "Trolley Problem" of automated decision making? If someone is harmed by self-learning systems, who does APEGS discipline? How do you teach an automated system to balance health, the environment and the public interest? What guidance can a regulator provide? Will our robot overlords have to take the Professional Practice Exam? I am genuinely curious to see how our profession manages these fast-approaching quandaries.

Speaking of engineers inadvertently causing havoc, I am looking forward to our upcoming Annual Meeting in September. Plans are in full swing to deliver APEGS' first ever virtual annual meeting. Now if we can only automate chairing Council meetings, I will be fully set.

P.S. – If you are still stuck at home, I encourage you to reflect on some of the great people and projects you know of in Saskatchewan and nominate them for an APEGS award. Nominating details are contained within this *Edge* and I am excited to see what is out there.

IPFusion unifies systems and devices so cameras, door locks, alarms, nurse calls, communications and lighting can communicate with one another.

Delco Automation software is a Game-changer

BY MARTIN CHARLTON COMMUNICATIONS

Yes, Alexa and Siri have become commonplace in almost all of our lives.

The growing trend for smart home automation can connect video cameras, lighting and your home's thermostat with more and more devices being supported every day. The Internet-of-Things (IoT) trend has enabled your fridge and doorbell to talk to your smart phone.

But what about in industry? How do you create a smart building? A smart hospital? A team of Saskatchewan engineers has cornered the market on this emerging trend.

IPFusion unifies systems and devices so cameras, door locks, alarms, nurse calls, communications and lighting can communicate with one another.

IPFusion is an enterprise Internet-of-Things software suite created by a division of Delco Automation. Drawing from Delco's previous experience and knowledge, development of IPFusion was started in 2012 and has matured into the commercial off-the-shelf software it is today.

Over the past number of years, it has been installed in many facilities across Canada, including correctional institutions, hospitals, commercial high-rises, energy facilities, stadiums, court houses and academic institutions.

"Enterprise automation is really shifting into a digital age. We are seeing a trend for large scale, software-driven automation with very complex systems that were never really meant to talk to each other," explained Edward Reed, P.Eng., director of software with IPFusion.

"In the home automation space, systems are being designed to work together. In industry, it isn't and that's where the engineering component comes in. It's a very

complex side of things, especially when you're spanning a bunch of different corporate departments like security, clinical healthcare, facilities and IT. All of those departments have different systems from different decades and we're trying to bring them all together so they can work as one."

The Saskatchewan Hospital in North Battleford and its staff and patients are beneficiaries of this technology.

This project was a recent undertaking for Delco Automation. There are more than 10,000 connected devices working together across door control, wireless staff communication, real-time location tracking, intrusion detection, water control, video surveillance, fire alarms, lighting and perimeter security.

"It is very hard to make those systems talk to each other," Reed said. "Your fire alarm system doesn't typically talk to your camera system. They just don't connect. That's why they need software in the middle to broker that communication and provide automation. IPFusion is that software."

The new facility, which officially opened in March 2019, is a unique design. It has 284 total beds — 188 psychiatric rehabilitation beds and a separate secure wing with 96 beds for offenders living with mental health issues. Full lockdown on one side of the facility, while the other side allows some patients to come and go at their choosing.

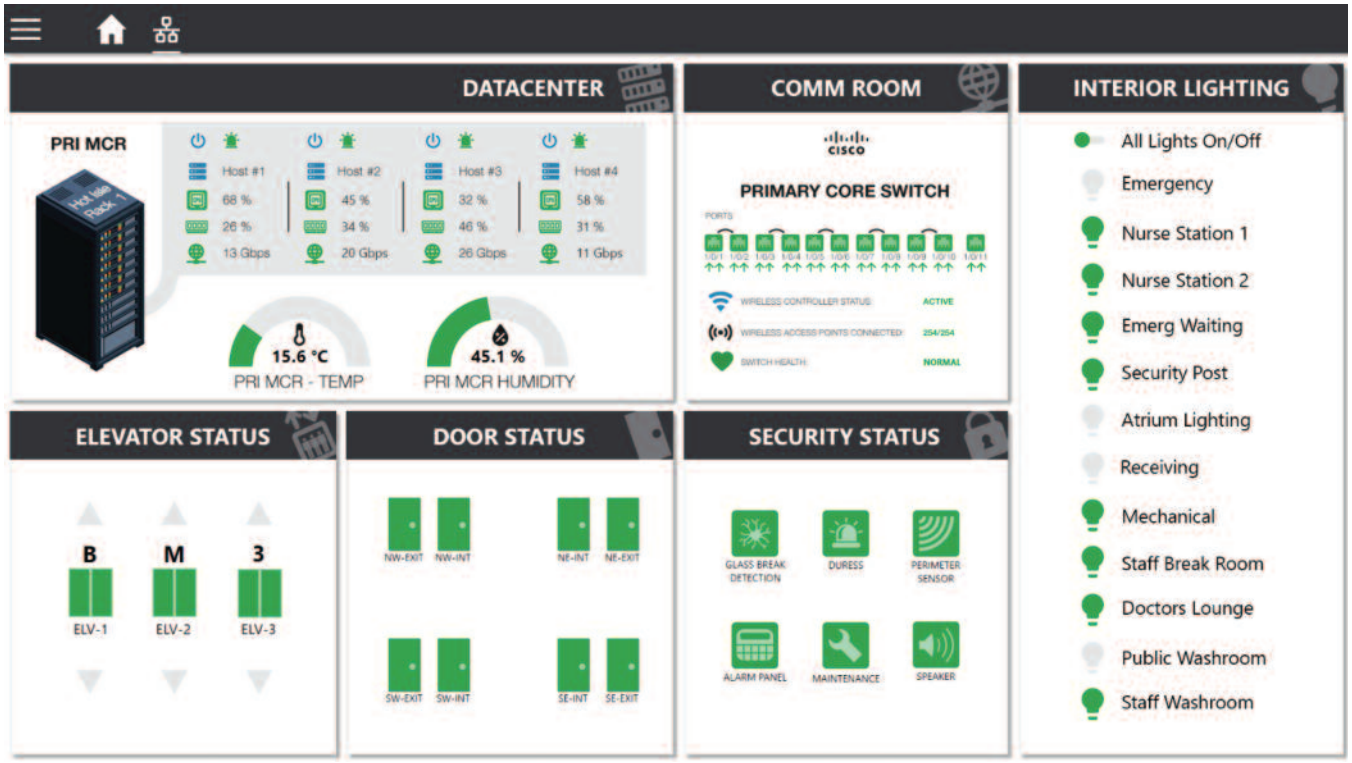
To have a unified system that connects many systems, spans the entire facility and satisfies the different needs in each half posed an interesting challenge for the engineers.

Delco worked with consultants, facility staff and senior representatives from provincial corrections and healthcare to design a solution that satisfies all users' needs. The facility has the ability to digitally shift system behaviour and security posture depending on the day-to-day needs of specific areas.

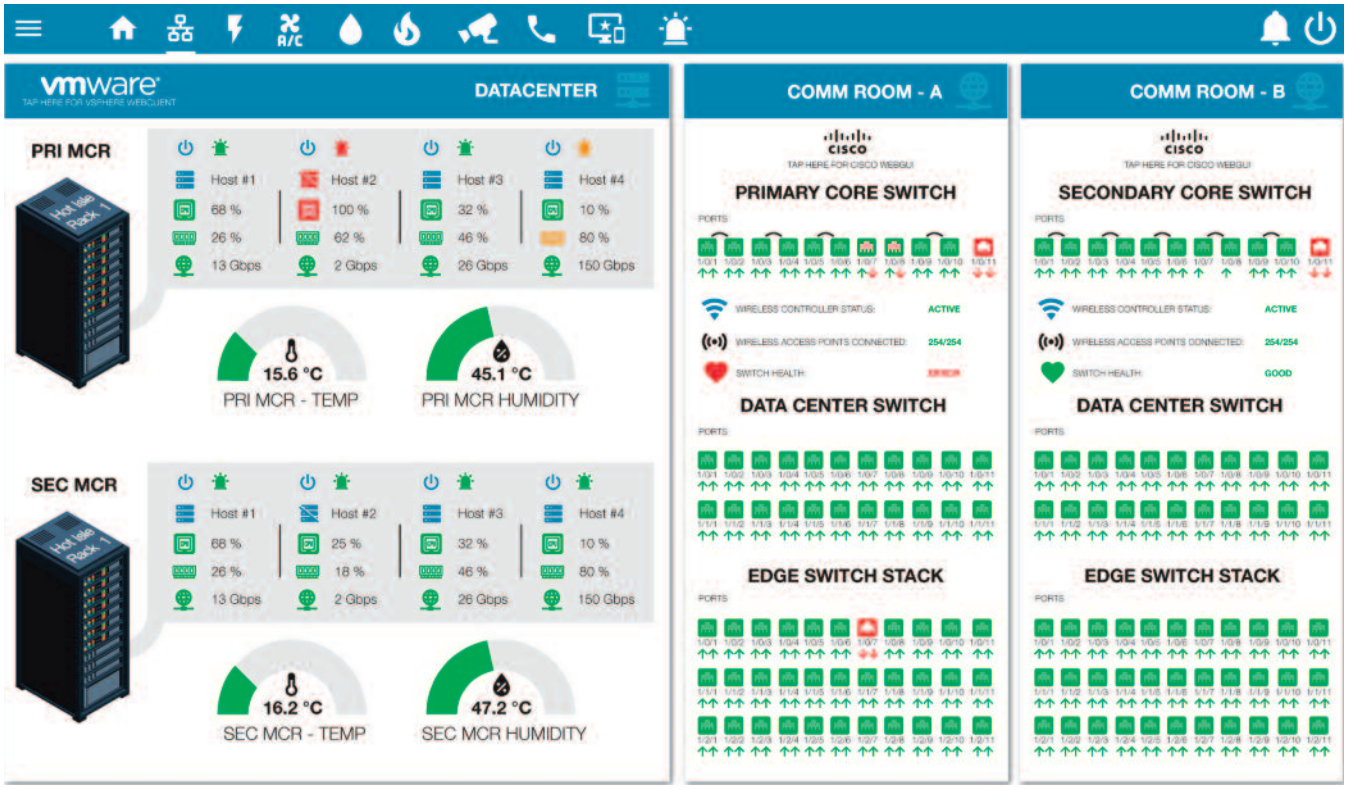
For example, the gymnasium is a shared area where the security posture shifts depending on the level of security required. Based on the type of user, it can be a secure area or completely open. All doors leading to and attached to the gym are automated and can be adjusted as needed by simply pressing a button on a touchscreen.

Another example of the software capabilities includes the controlling of water valves. Some patients at the hospital suffer from polydipsia – the desire or thirst for constant water, which can cause harm if too much is consumed. The software remotely controls the valves to allow nurses to disable the water flow to specific bathrooms or sinks. This is readily available at the nurses' desk on a touchscreen that unifies all the systems on the unit.

The original Saskatchewan Hospital was constructed in 1911 and closed in 2018. Throughout its life, it saw little in the way of technology, automation and electronics.



Delco's automation eliminates challenges that were placed on humans like dealing with emergencies and collecting information from various devices and documenting it on paper.



IPFusion is not limited to linking systems facility by facility. It's looking bigger picture by spanning the entire province, country or all facilities of a large company to integrate and automate on a much larger scale.

Introducing IPFusion and its vast capabilities was a major step forward for staff who work at the new facility.

Greg Smythe, P.Eng., a technical sales engineer at Delco, says an important part of this particular automation is how it is assembled so it is usable and doesn't overwhelm users.

"The way some people are with technology, we have users who aren't comfortable doing much more than using email," he said. "If all of a sudden you present them with a system that controls several elements, a huge part of our design work is figuring out a way to make that all very seamless and easy to use."

"If something is too complicated, you're just going to ignore it because you can't process everything. That's a big challenge for us. We have to get the buy-in from all of the operators and users or all of our work is for nothing."

This automation eliminates challenges that were placed on humans like dealing with emergencies and collecting information from various devices and documenting it on paper. Human error is taken out of a lot of these processes, resulting in increased safety and efficiency.

There are other facilities that also benefit from IPFusion, such as The Irene and Leslie Dubé Centre for Mental Health. For security purposes, automation provided by IPFusion is extremely effective.

Should there be an altercation between a patient and a nurse, the nurse can pull on a personal duress tag attached to a lanyard to activate a wireless duress alarm that, through IPFusion, will automatically alert security with the location of the incident, display location specific video cameras and message near-by responders. If the subjects move from room to room or from a room to a hallway, the location of the incident is updated on graphical maps and video cameras act as a live-tracking system and will follow the action.

"This allows them to have eyes and ears on situations so

"If you want the old approach of having hardwired signals, it's expensive and it's limiting," Smythe said. "With one cable and integration software in the middle, you can query a device for many different things and optimize systems to be the most efficient. There are all sorts of applications once you have more data to help make those decisions."

that, as first responders arrive on scene, they're not walking blindly into a situation which could be dangerous," Reed explained.

"The traditional way of notifying responders in an emergency could take up to half a minute. Now, we can do that in less than a second and seconds can save lives."

IPFusion also is being applied in industrial settings. The software can collect data from water treatment plants to monitor instrumentation, alarms and key performance indicators. Although the basic concepts of data collection is not novel, how IPFusion presents the normalized data and leverages its robust automated workflows empowers organizations to be more effective and decisive.

"You can bring all of that information into one spot and make adjustments to how you're managing your plant," Smythe said.

"It's totally reasonable to gather all of the remote data to a centralized location and automatically produce a detailed report that shows production from pump station X and pump station Y, for example. It helps reduce the time to create and send that information and increases the accuracy of that information and helps people make faster and more-informed decisions on how to run facilities."

Delco Automation has partnered with companies internationally to provide IPFusion's value to clients worldwide.

It's not limited to linking systems facility by facility. IPFusion is looking at a bigger picture by spanning the entire province, country or all facilities of a large company to integrate and automate on a much larger scale.

"Different facilities have similar workflows, but they are also fragmented with different systems from different decades," Reed added. "Clients sometimes have a limited perspective in what they can do with their technology because of what the system is or was. They believe they can't achieve the same outcomes as more modern facilities can. But when you use this software and look at it with a wholistic view, you actually can in most cases. Connecting everything – that is the future."

Delco Automation is a 100-per-cent Canadian owned and operated company headquartered in Saskatoon. Originally founded in 1994, Delco has expanded to include five major divisions with offices across Canada and has grown to a workforce greater than 250 professionals.

Further Detail on Competency-Based Assessment (CBA) for Geoscientists-in-Training is Now Available

As previously announced in the January/February issue of *The Professional Edge*, a proposed bylaw change to incorporate competencies for geoscience is coming to the 2020 annual meeting on September 18.

Further detail is now available on the geoscience competencies, workplace examples and the assessment rubric at www.apegs.ca under Members, Competency-Based Assessment – Geo. You can also view the presentation on that webpage for an overview of APEGS' plan to implement CBA for geoscience, as well as an introduction to the competency framework for geoscience.

Eliminating Estimates

SaskEnergy AMI meters offer precision consumption information

BY MARTIN CHARLTON COMMUNICATIONS

Paying bills for services we use is just a fact of life. But with SaskEnergy's AMI System, the process has been made a little easier.

SaskEnergy's Advanced Metering Infrastructure (AMI) System is the foundation for providing affordable, timely and actual billing information for its customers. The AMI system automatically collects, transmits and manages actual consumption data used in customer billing and other business critical processes.

"SaskEnergy plays a vital role in providing natural gas service to the province of Saskatchewan. Our customers expect us to deliver safe, reliable and affordable service. They also expect their bills to be based on actual consumption, not estimates. Our Advanced Metering Infrastructure (AMI) System allows us to deliver just that," explained Dana Kostyk, P.Eng., Senior Engineer, Gas Measurement Integrity at SaskEnergy.

Prior to AMI, meters were manually read only once every three months, meaning two-thirds of customer bills were based on estimates. The adoption of AMI technology has improved billing accuracy by significantly reducing the need for estimates and eliminating issues associated with manual reads such as inaccessibility to premises and human error.

The implementation of AMI also has resulted in a reduced number of vehicles travelling for manual meter readings and tenancy changes, as well as reduced customer service call volumes, all of which have helped SaskEnergy to reduce operational costs and keep its rates affordable.

Full-scale deployment of SaskEnergy's AMI solution began in 2013 and was substantially completed in 2018. Currently, 99.3 per cent of SaskEnergy's more than 399,000 customer meters are read via the AMI system.

Here's how it works

Throughout the distribution system, meters are used to measure natural gas usage at individual premises. The AMI system uses a module attached to the index drive of the meter to collect time-synchronized interval meter data reflecting natural gas usage during a specified time period (typically hourly, daily or monthly).

The module transmits this data up to six times daily to a series of fixed receivers, similar to cell phone towers. From there, the information is transferred through data collectors into a meter data management system and finally through to SaskEnergy's billing system.

Detailed data

The deployment of the AMI System has the potential to deliver some enhanced benefits to customers and the province. The AMI system can collect, send and transmit more granular data than traditional meters (hourly data). By leveraging near real-time interval usage data, SaskEnergy can identify and rectify mechanical failures with equipment or identify other situations like loss of service.

"In January 2018, 4,500 customers in the City of Melfort lost natural gas service as the result of a line hit. We were able to use interval AMI data to help identify impacted customers so that service could be restored," Kostyk added.

This is just the beginning

With nearly 399,000 meters across the province sending information to the databases, one could understand the wealth of data being received.

"Access to data is the key to the future," explained Kostyk. "We're still in the process of understanding all of the data we are receiving. There really is an endless opportunity to use the information to improve our operational efficiencies. Customers could potentially benefit in the future as well by having access to more granular information on their natural gas consumption."

"Also, with advances in technology that are now available, we'll be able to leverage our AMI network for far more than metering data. In the future, there is the potential to use the AMI network to monitor pressure, temperature and pipeline cathodic protection levels, among many other parameters."

"I think we're just beginning to understand the capabilities of the system and information," she said. "In the future, with the help of analytics, SaskEnergy will be able to leverage our AMI system and all of this data to continue to improve our operation."

Brandt will soon open Western Canada's largest fully automated 'smart factory' in north Regina.

Brandt Smart Factory

BY MARTIN CHARLTON COMMUNICATIONS

They say that fortune favours the bold. If true, then the Brandt Group of Companies has sent an unmistakeable message to Canada's manufacturing sector: a commitment to advanced manufacturing technologies on a scale never previously seen in Western Canada.

The Regina-based industrial manufacturer now boasts one of the largest fully automated smart factories in the country, decked out with state-of-the-art machinery new to this part of the country and with unique capabilities that impress its new handlers.

"It's like night and day from when I first started (at Brandt) in terms of growth and complexity," explained Brandt's Engineering Manager, Dan Bonnet, P.Eng. "What we have here now is pretty special."

Going back three or four years, automation at Brandt meant what it could provide to its customers for automated systems. Internally, the company started incorporating automation by bringing in robotic welders. Bonnet said this smart factory is "the next generation for us."

"The high-precision technologies we've brought on-stream give us significant capacity to automate, allowing us to create safer, more efficient and productive manufacturing processes. Our customers will be the big winners here."

With Brandt continuing to expand its reach into custom manufacturing for rail, mining, construction and pipe industries, in addition to its roots in agriculture, developing the new smart factory was critical for the company. The new plant plays a central role in securing the company's ability to maintain technological leadership in its various business categories while delivering increased value for its customers.

Unique capabilities

Located on Brandt's North Regina Works campus, the smart factory is a state-of-the-art facility, both in terms of the technology and machinery found inside and for what it is capable of doing.

There are three TL5040 10-kilowatt fibre lasers from Trumpf GmbH + Co., all connected to an 18-tower STOPA storage system that houses 375 storage locations. Two of the lasers are connected to PartMaster semi-automated sorting stations that convey materials to the operator to sort, while the third laser employs a fully automated SortMaster to pick and stack parts.

The wattage of the machines also is unique, as is the speed at which it can cut through steel.

This new equipment has a lot more cutting power, plus it's easier on the environment. Its energy consumption is about one-third what the older technology was, meaning lasers can last a lot longer between service intervals.

As a result, the new system delivers much higher uptime capacity versus older lasers (that required an advanced overhaul approximately every 2,000 hours) virtually eliminating potential production delays.

Additionally, the system has the capacity to hold more than four million pounds of plate inventory, with every pound of that steel accessible by automation.

The new facility is also home to three of four new press brakes.

"We didn't used to have the capacity to cut sheets for plates. Now, we're at the stage where we have three lasers, all automated and connected," explains Brandt's Director of Plant Design, Darren Borstmayer, P.Eng.. "This is a fully integrated storage and retrieval system that does all material handling for you."

With the new system, material is stored in a vertical storage system before it's picked and placed automatically. It can then be tracked and traced throughout the entire process from raw plate to finished part.

When a job is released, the system will bring down that piece of steel and automatically feed the laser system. When the laser finishes cutting the sheet, the system will then pick the cut sheet and transfer it to one of the three sorting destinations; manual, semi-automated or fully automated. All of this material handling is done while the laser works in parallel on its next job, creating exceptional uptime and efficiency. To top it off, the system can deliver the automatically sorted parts directly to the press brake where the parts are easily accessed and formed into their final shape.

In the past, there would be several touches or human interventions required to cut and form a part from a sheet of steel. Today, nobody needs to touch a part until it is cut and sorted, ready to be delivered to the customer.

"The entire operation is a sequence of events … like a chain," Bonnet said. "Every link in that chain has to do its part to make sure customer timelines are met."

Some assembly required

To ensure that Brandt had state-of-the-art capacity to support the industry, it reached out to leading German industrial machine manufacturing specialist Trumpf, to provide machine tools, laser technology and electronics for the new smart factory.

Stopa lift: The 18-tower STOPA storage system features 375 storage locations.

Smart factory laser: Brandt's smart factory is home to three 10-kilowatt fibre lasers. Two of these lasers are connected to PartMaster manual sorting stations, while the third employs a fully automated SortMaster to pick and stack parts.

From there, it was all hands on deck when it came time to bring all of the pieces together.

Brandt called upon engineers from their various departments - civil, structural, mechanical, plant design and IT, all of whom played a role in expanding the building, renovating the facility and piecing the machinery together.

According to Trumpf, up to 90 per cent of service-related activities can be solved remotely with this equipment configuration, ensuring uninterrupted service for Brandt customers.

"It is a beautiful facility to look at. You walk in and there are bright, shiny floors and tons of natural light. The last thing you're thinking is this is an industrial plant that is cranking out tons of steel every day," Borstmayer said. "It would be quite different than the typical steel-cutting plant that you are used to seeing."

Speedier, safer and more consistent

"If you try to manually load and unload sheets (of steel) these days, you're going to lose capacity," explained Brandt Manufacturing Engineer, Chris Dornstauder, P.Eng. "Within 30 seconds, we can change from one sheet or a certain thickness or cut to the beginning of the next one. We can keep up with the lasers and their speed."

The connectivity of components has been a game changer. Prior to the new automated system, staff would manually program tooling pieces for certain jobs, meaning operators may not be using the same tooling from part to part.

"You could never quite get consistency. But now that we're doing it online, we can make the programs, we can guarantee the features are going to be precisely what they're supposed to be," Borstmayer said. "The press brakes have laser-controlled bend angles so we can guarantee repeatability. That's a leap forward, for sure."

When it comes to safety for staff, the less interaction humans have with tens of thousands of pounds of body-crushing steel plates, the better.

"In this business, safety is always a major focus," Dornstauder said. "With machines now automatically moving the millions of pounds of steel around the plant, it significantly reduces the danger to our employees."

The technology allows technicians to service the equipment without having to shut down the systems. The laser is completely enclosed and the subsequent fumes and dust particles from cuts are extracted.

The future starts now

"What we have now is a strong foundation for us to build upon," Bonnet said of the smart factory. "Five to 10 years from now, we're still going to be building on this. This is the base and we can build it from here."

Added Dornstauder, "Everything is connected and can talk to each other; we have that ability now. Factories used to be dark and dingy and now they're bright and clean and all of the pieces of equipment can talk to each other."

"It's like switching from checkers to chess," Dornstauder said. "There's a lot more at play. You have to be thinking ahead and you have to make sure you're making the right moves."

"There are a lot of provisions for a future state. We designed a lot of options to make use of more automated sorting and robotic implementation. The technology is changing at such a rapid pace that it won't be too long before the next steps are feasible and useful to us."

Notes from APEGS Council

The APEGS Council held a virtual meeting via Microsoft TEAMS on June 11 & 12, 2020. The meeting was attended by 19 of 19 Councillors and the Directors to Engineers Canada and Geoscientists Canada. Council will meet next on September 17, 2020 in Regina, assuming group meetings are allowed.

Council received the following presentations and information items:

- The APEGS Director of Special Projects and members of the Steering Group provided an update on the Governance Change Project.
- Activity updates from the constituent society liaisons, the ACEC-SK liaison, and the Nominating Criteria Task Group.
- COVID-19 planning related to reopening the APEGS office and conducting the 2020 Annual Meeting in the fall.
- Continuing Professional Development compliance statistics.
- 2020 Communications Plan update.
- The APEGS Director to Engineers Canada provided a written report and a verbal update on the activities of the national organization.
- The APEGS Director to Geoscientists Canada provided a written report and verbal update on the activities of the national organization.
- APEGS Director to Geoscientists Canada, Kevin Ansdell, P.Geo. has been elected as President-Elect of Geoscientists Canada.

Council passed motions as follows:

- Approving that work proceed on the planning and impact assessment of implementing each of the recommendations from the Governance Review for Council's consideration when making decisions on the recommendations.
- Approving the Terms of Reference for the Governance Change Project Steering Group.
- Appointing the following to the Governance Change Project Steering Group: Stormy Holmes, P.Eng. (Chair), Kristen Darr, P.Geo., John Desjarlais, P.Eng., Nicholas Kaminski, P.Eng., Peter Jackson, P.Eng. and Shawna Argue, P.Eng. (Advisor).
- Bob McDonald, as Executive Director and Registrar, also sits on the Steering Group as an Advisor as per the Terms of Reference for the Steering Group.
- Updating signing authorities for Association cheques to reflect the members of the newly elected Executive Committee.
- Approving two requests for refunds of fees.
- Approving revisions to the Terms of Reference for the Experience Review Committee.
- Approving amendments to the Competency Assessment Guide.
- Appointing Doug Hird, P.Eng. as the Chair of the Experience Review Committee.
- Approving a new policy – LAC1.0 – Licensee Eligibility Policy.
- Approving Life Membership for 14 members.
- Appointing Elvia Torres Morales, P.Eng. as Chair of the Equity & Diversity Committee.
- Re-appointing Chanelle Joubert, P.Geo. to the Discipline Committee.
- Appointing the following members to the Discipline Committee: Daryl Andrew, P.Eng., Stormy Holmes, P.Eng. and Dan Kishchuk, P.Eng.

Council noted and received the following reports:

- Registrar's reports for March, April and May 2020.
- The unaudited financial statements for March 2020 (revised) and April 2020.
- Executive Committee minutes, board minutes and the reports from the committees and task groups, abridged Investigation Committee minutes and Discipline Committee minutes.

Member Profile

Jason Alfke, B.Comm, Engineering Licensee

This month *The Professional Edge* chats with Jason Alfke, B.Comm, Engineering Licensee

Tell us about your personal and professional background. Where are you from? Where did you attend university?

I was born in Calgary, AB. I attended the University of Alberta in Edmonton to obtain my Bachelor's degree in commerce. The University of Alberta offered a crossover program with the engineering faculty and this is where I was first introduced into the world of engineering.

Why did you choose to go into engineering?

It wasn't until I started my oil and gas career that I was introduced to the role an engineer had in the industry and it was much later in my career when I had completed the requirements to hold a license.

Did you have any engineers in the family who influenced you?

None at all. The focus was the family business, which ultimately led me to pursuing a business degree.

What was your first job after university? Where was it and what was your role/title?

I worked in the family trucking business throughout university and for a few years after I convocated. It was an invaluable experience and exposed me to many challenges and disciplines that were not covered in a job title.

What do you feel has been your single greatest accomplishment?

It was a pretty proud day for me when I obtained my engineering license. I've been involved with large scale oil and gas operational budgets, large projects and my work scopes are high level. It has been a very good match with my business degree, as my engineering role is more administrative at this stage of my career.

What is one goal you'd still like to accomplish during your career?

I've been incredibly lucky to participate in technical events, as well as industry committees. The constant desire to keep improving current practices will never grow old with me. I follow a few key principles in all of my projects and will always take the time to make them more efficient. This is especially important to me as I review other projects that have grown bigger but have struggled with efficiency or accountability. Ongoing training, project optimization and regulatory guidance will continue to be the backbone goals of my career.

What are your interests outside of work? What do you do for fun?

After work you can find me chasing after my three kids and supporting their sports and hobbies. For me, I like to golf and watch hockey or catch up with friends over a pint.

What is your favourite vacation spot? What makes it special?

My summer spot is Salmon Arm, B.C. Mountain lakes and a moderate amount of people, lots of sunshine and, of course, the Shuswap Pie Company.

My favourite winter getaway is Costa Rica, with its diverse regions providing a variety of food, culture, ocean, mountains, rainforests, volcanoes. My kids' favourite pastime while vacationing is releasing baby sea turtles.

Do you have a favourite book or movie?

It has to be 1980s and 1990s comedies, but it's so hard to name just one. I'm a fan of most of the James Bond movies, the Die Hard series and the Ballers series.

What do you do for continuing professional development?

Outside of the work component, keeping up with oil and gas innovations and new technologies is easily second on the list. It's especially rewarding when these innovations are actually implemented and the opportunity to optimize is presented. There is never a shortage of directives to review or keeping up with regulatory changes. Currently, I am self-studying the project management professional program and prepping to challenge the exam.

Who has had the greatest influence on your life and career?

I've been extremely fortunate to work with some solid engineers and business people alike. I also enjoy learning from my fellow peers as well as the individuals that I have mentored. It's amazing what an extra set of eyes on a project can bring, especially if they are inquisitive.

Gems of Geoscience

Dr. Janis Dale, P.Geo. FGC

Eggbert – A Story of Discovery and Resilience

Anyone who spends a minute talking with a geoscientist learns that almost all of them have a beloved rock collection. In this regular section of *The Professional Edge*, we learn about geoscientists and their profession through their favourite rocks. In this issue, we talk with Dr. Janis Dale, P.Geo. FGC.

Eggbert is my favourite rock. He is a quartzite (a type of metamorphic rock) shaped like an egg and the size of a small yet very heavy bowling ball.

As a professor of geoscience, I love taking Eggbert to my geology classes to explain his amazing life as a rock. He has travelled around central North America and his resulting features can teach us about the past.

I came across Eggbert 20 years ago on a geology field trip through Cypress Hills. We were walking across a field south margin of the Conglomerate Cliffs when I tripped over him. I took a closer look and discovered that I had stumbled upon a ventifact — a rock formed by the wind. I could see where the winds and sand together had polished the surface and made grooves by sandblasting it.

I realized that Eggbert was part of a whole field of ventifacts obscured by grasses and weeds. Here we were on route to a geological feature and nobody noticed that we were traversing over another — the rare discovery of a field of ventifacts commonly found in desserts.

How did Eggbert get there? The scars tell the story. He was a quartzite rock that probably came from the Sweet Grass Hills to the south. When the Rocky Mountains formed, they began to uplift resulting in weathering and erosion of surfaces. Eroded materials were carried by large braided streams that were rising. Channels that flowed developed across the prairies, gradually dumping their load.

These rocks were picked up by glaciers and transported. Percussion marks (small circular fractures) on the side of Eggbert that has not been sandblasted show his tale of riding strong and turbulent streams, banging into other rocks and gradually becoming rounded.

He travelled a long distance before landing for awhile only to be eroded and picked up again by glaciers. We will never know how many times Eggbert was picked up and transported by the succession of glaciers.

He was finally deposited with a group of his friends in a field where katabatic winds developed (strong gravitational winds). Glaciers are very windy places. As the wind blew, it picked up sand and silts and sandblasted Eggbert. As time wore on, he eventually became covered in vegetation and soils and disappeared from view.

In Eggbert, we can learn a lot of things from one rock — how he was formed, exposed, eroded, caught up in streams, transported to prairies, dumped in a field, polished by wind and overgrown with plants.

There is a lot that went on that might not be apparent from a glance. From a single rock, I can take my students back in time and look at the geological processes from the birth of the Rocky Mountains, to the development of great streams across the prairies, and the behaviour of glaciers and winds.

APEGS 90th Annual Meeting

Virtual Annual Meeting

Friday, September 18, 2020

The APEGS Annual Meeting originally scheduled for April 30 – May 2, 2020 in Saskatoon and postponed because of the COVID-19 pandemic has been rescheduled For Friday, September 18, 2020 as a virtual meeting via Microsoft TEAMS.

The Engineering and Geoscience Professions Act and Bylaws require that the annual meeting of the Association be held in the first six months of the year at a place in Saskatchewan determined by Council.

At its April 3, 2020 meeting, Council passed an Administrative Bylaw to allow for the postponement of the meeting because of the COVID-19 pandemic.

At its June 12, 2020 meeting, Council passed an Administrative Bylaw to allow for the holding of the annual meeting virtually.

The 90th Annual Meeting of the Association will be called to order at 9:00 am

Friday, September 18, 2020.

Registration

All members will be required to pre-register to obtain a secure access code to attend the meeting and to be able to vote. The deadline to register is 11:59 pm - Friday, September 4, 2020. Information on registration will be included in the formal Notice of the Annual Meeting which will be sent to all members in August.

The agenda for the meeting includes:

- Minutes from the 2019 Annual Meeting
- Business arising out of the minutes
- Reports from committees and boards
- Audited financial reports
- Bylaw amendments
- New business
- Report of the scrutineers.

Bylaw Amendments

The following amendments to the Administrative and Regulatory Bylaws have been approved by Council and are to be "confirmed, varied or revoked" by the membership in attendance at the next Annual Meeting of the members of the Association.

The details of the changes will be included in the official Notice of the Annual Meeting to be sent to all APEGS members later this summer as is required *by The Engineering and Geoscience Professions Act*.

Regulatory Bylaws

- Updates to allow for the implementation of competency-based assessment for geoscientists in training.
- Allowing for the publication of an online member registry and the content of that registry.

Administrative Bylaws

- Provisions permitting the postponement of the 2020 annual meeting.
- Provisions for conducting the 2020 annual meeting virtually.

APEGS Governance Changes

In the May/June issue of *The Professional Edge*, APEGS advised that a governance review was completed in April and that the next step was to engage a consultant to assist APEGS in developing implementation plans and assessing impact of the recommendations. This information will support future council decision making.

At its meeting on June 12, council approved a terms of reference for the project steering group to oversee next steps in the project. Council also passed a motion to proceed with work to further examine all the recommendations in the consultant's report, which include improving governance practices and increasing focus on APEGS' regulatory objects by:

- Changing council size and composition, nomination criteria and evaluation of performance.
- Enhancing practices regarding risk management, public transparency and management of sponsorships.
- Revising APEGS' organizational structure, including changes to its boards and committees.
- Increasing training for committee members and evaluation of performance of committees and boards.
- Balancing work between committees and staff.
- Examining APEGS' role and relationship with constituent societies.

"Any well-run organization continues to look outwards and reflect inwards for potential improvements," said President Andrew Lockwood, P.Eng, FEC. "APEGS is taking these steps in updating its governance structure to best serve a 21st century Saskatchewan and I am excited to lead the association through this sharpening of the tools."

On June 25, APEGS engaged T. Bakkeli Consultants Inc. and Lana Gray Leadership Services to support APEGS. The consultants began the work in July and will work with APEGS to consult with stakeholders as part of the process. Council will review the impact assessment and plan for each recommendation to determine whether to approve implementation. Progress on the project will be reported in future issues of *Edge.*

In the meantime, committees will continue with regular operations. For any large and longer-term initiatives in 2020, committees will consult with their respective board chair and liaison councillor for direction specific to those initiatives.

"As the self-regulation of professions continues to evolve, particularly with respect to public expectations, it is important to ensure that regulators meet those expectations to maintain the privilege of self-regulation," said Bob McDonald, P.Eng., Executive Director and Registrar.

Purpose

Examine the recommendations and approve those that will help APEGS improve governance practices and increase focus on APEGS' regulatory objects to:

- Create a modernized structure aligned with regulatory responsibilities.
- Increase role clarity.
- Enhance APEGS' ability to plan and prioritize volunteer and staff activities.

Rationale

- Growth in membership.
- A committee structure carried forward from the late 1980s.
- Changes in APEGS' regulatory environment, including removal of the licence for permission to consult, introduction of a required continuing professional development program and introduction of competency-based experience reporting.
- Provincial governments around the country are making or considering significant changes to the legislation for self-regulated professions.

Background

- APEGS announced the governance review in the May/June 2019 issue of *The Professional Edge*.
- APEGS reported progress on the review in the Sept/Oct 2019 issue.
- APEGS reported that the consultant completed the review and submitted all final recommendations to council in the May/June 2020 issue.

Next Steps

- Council has engaged T. Bakkeli Consultants Inc. and Lana Gray Leadership Services to support APEGS as it prioritizes the recommendations and develops impact assessments and implementation plans.
- Council will review the impact assessment for each recommendation to determine whether to approve implementation.
- In the meantime, committees will continue with regular operations.

Steering Group:

Stormy Holmes, P.Eng. . . . . Past President (2019-2020)

Kristen Darr, P.Geo. . . . . President-Elect

John Desjarlais, P.Eng. . . . . Vice President

Peter Jackson, P.Eng. . . . . Past President (2012-2013)

Nicholas Kaminski, P.Eng. . . . . Council member

Bob McDonald, P.Eng. . . . . Executive Director and Registrar (Advisor)

Shawna Argue, P.Eng. . . . . Director of Registration (Advisor)

Project Director:

Tina Maki, P.Eng., Director of Special Projects

Consultants:

T. Bakkeli Consultants Inc. and Lana Gray Leadership Services

Questions?

Please relay questions to the steering group through Tina Maki.

Calls for Award Nominations

APEGS members do great work that benefits everyone in the province.

Let's celebrate what we do!

The Awards Committee is seeking nominations for the APEGS Awards as well as other provincial and national awards. If you have a friend, colleague, employee or client who has done something outstanding, this year or over the course of their career, please make sure we hear about it.

You can even nominate yourself!

Our awards recognize both APEGS members and non-members who have made special contributions to the professions.

There are seven APEGS awards:

- Brian Eckel Distinguished Service Award
- Outstanding Achievement Award
- McCannel Award
- Exceptional Engineering/Geoscience Project Award
- Environmental Excellence Award
- Promising Member Award
- Friend of the Professions Service Award

In addition, the Awards Committee nominates APEGS members for awards presented by both Engineers Canada and Geoscientists Canada and numerous other provincial and national awards.

The nomination process is quick and easy!

You can do it online at **apegs.ca** under Members/APEGS Awards.

You can also send nominations to:

APEGS Awards Committee
Email: apegs@apegs.ca

The due date for nominations for 2021 is November 30, 2020.

Spotlight on Executive

APEGS has two firsts within the group of four executive members of council: President-elect Kristen Darr, P.Geo., as APEGS' first female president-elect geoscientist and John Desjarlais, P.Eng., as the first Indigenous vice president in an engineering and geoscience regulatory association in Canada. Of course, there are many qualities that make Kristen and John unique, as you will read below.

Kristen Darr's, P.Geo. future will make history

In May 2020, Darr assumed the role of APEGS' president-elect. One year from now, when current president Andrew Lockwood's (P.Eng, FEC) tenure ends, Darr will transition into that role.

With it, Darr will become the first female professional geoscientist to serve as APEGS president.

That was news to her. She wasn't aware of that fact until after she was voted in.

"Yes, it's important. But I don't dwell on it," Darr said. "I do take it seriously in knowing that it will be one for the record books and there will be a lot of people who see that. It's a real positive."

"Whether you're a P.Geo. or a P.Eng. or both, male or female, the president role is significant. There's a lot of time and effort that has to be given by that individual. That doesn't change based on your professional background. When you have a P.Geo. versus when you have a P.Eng. or male versus female, you get different perspectives. That's what excites me the most about the role."

Darr is the Director of Health, Safety and Environment with SaskEnergy. She is responsible for the corporation's safety and environmental management systems.

Networking is a big component of Darr's professional life. It has proved beneficial in her volunteering endeavours as well. She didn't hesitate to reach out to familiar faces like Ernie Barber, P.Ag,, P.Eng., FEC and SaskEnergy CEO Ken From, P.Eng., FEC – two men who previously held the title of APEGS president – to glean their knowledge and experiences.

Darr volunteered with APEGS committees prior to joining council, on which she served from 2015-18. She felt those experiences helped develop a good base for what she's getting into.

"I felt that personally and career-wise I could benefit by being on council," she said. "Volunteering at APEGS at this level would give me a perspective I haven't been exposed to. I'm the type of person who likes to continually learn and gather other perspectives and network with other people in other areas of business. This was a great opportunity for that."

Her experiences have been positive, which is why she let her name stand for president-elect.

"It's the year before I take on the biggest responsibility as president. It's a very big honour and you realize it's time to learn and time to get to work.

"This is my year to learn and to understand because this role, in my mind, is prepping for next year and taking on that bigger responsibility and to do it in a way that makes me proud in what I'm doing and to provide value to APEGS as well."

Darr prefers listening over talking, but don't confuse that with being passive. She's more than capable of sharing her perspectives and knowledge and feels her roles this year and next are ones in which her voice should be heard.

"You need to listen to council and you might be the chair of the meetings, but you shouldn't be doing all the talking," she said. "You should be listening and guiding the conversation and have the ability to guide through the discussions and get to a point of making decisions."

Darr did not campaign for the president's role on a specific platform, nor does she have a set agenda for when she assumes the chair next spring.

She said she is a strong promoter of the governance review and where it will lead APEGS in the future.

"I want this to be successful for APEGS," she said. "There are huge benefits to what we're doing. It helps us understand the big picture and it allows council to have all of the information to make the right decisions."

"We'll be dealing with staff and volunteer structure and we have to take those very seriously. We have to make decisions that are best for APEGS, but there's a human component too and that has to be understood."

Prior to SaskEnergy, Darr began her career in the consulting industry, primarily working in environmental and geotechnical areas. She built a foundation of experience travelling throughout northern Alberta and Saskatchewan conducting field work. This foundation allowed her to take on the responsibility of a variety of major projects as an environmental geoscientist and project manager later in her career.

She obtained her degree in geography and environmental studies from the University of Victoria.

John Desjarlais, P.Eng. persevered into VP role

John Desjarlais spent every chance he could of his childhood whizzing around Cumberland House, his hometown, on a snowmobile and a motorized fishing boat.

His genuine curiosity for how these machines ran fascinated him. He found himself taking apart engines and putting them back together.

Couple that with a gentle push from his parents – his father John Sr., worked a variety of roles in the mining industry and his mother Rhonda challenged him academically and encouraged him to be creative and innovative – and that is what led Desjarlais to pursue a post-secondary education.

Engineering, however, came later.

"I didn't identify or relate to engineering," he said. "It was something that was a really abstract concept at that point. I didn't know any practitioners or professional engineers. It was really challenging for me to even think about."

At 21, Desjarlais had more of an interest in environmental science. He studied that and found work at Cameco as a junior radiation technician. That's where his real exposure to engineering was found and it inspired him to return to school.

Desjarlais eventually graduated in 2011 with a mechanical engineering degree from the University of Saskatchewan.

Fast forward to May 2020 and the soon-to-be 40-year-old is now APEGS' vice-president, one of the few Indigenous engineers in such a role for a Canadian engineering regulator.

"I'm very proud that I'm able to grow within the organization," he said. "I'm proud that this is something voted on by the members. The community voted me in knowing my background and knowing who I am and what I've done. That really means a lot."

"That affirmation from my peers, that respect from my peers, makes me feel very proud. It helps me realize that I made the right choice. All of that doubt is gone."

The doubt Desjarlais refers to comes from his youth and not being able to identify with Indigenous people in engineering.

"There's this doubt that creeps in and you ask yourself if you can succeed," he said. "It's almost like a self-imposed racism. You start to believe that you lack something that prevents you from succeeding in this occupation. As I grew older, I realized that was just a self-imposed barrier and something that was just plain wrong."

Desjarlais quickly forged his path with APEGS and became immersed in several initiatives. Originally, he became involved with the Equity and Diversity Committee and the Indigenous sub-committee. Through these, he was able to champion the creation of national and regional organizations with a purpose of increasing awareness and participation of Indigenous people in STEM.

Desjarlais now serves as co-president of the first professional Canadian Chapter of the American Indian Science and Engineering Society, Sask.caISES, which organized .caISES2020 - the largest gathering of Canada's Indigenous STEM professionals and students in Saskatchewan.

"I wear my Indigeneity on the outside," he said. "I speak very proudly of it. It is absolutely who I am and it's where I came from."

"It breaks my heart when I see people that I can identify and relate with that are overcome by a lot of the issues that we can certainly overcome if we make things more accessible."

In addition to the Inclusion and Diversity Committee, Desjarlais also serves on APEGS council for the 2018-2020 term, the APEGS Professional Development Committee, the Education Board and has served on the Image and Identity Board and the K-12 Committee.

"When I first started, I was very passionate as a regulator," he said. "How do we increase the awareness and participation of Indigenous people in our professions? As I got to learn more about the organization, I became involved in a lot more and offered my perspectives in good governance and self-regulation. Our responsibilities to the public really aligned with my values."

As an aside, Desjarlais earned a non-profit governance certification and serves on a variety of boards and offers his experience and leadership to help serve his community.

As a student at the U of S, he worked as a sessional lecturer for the College of Engineering and volunteered as a mentor with the university while he completed his Master's in business administration from the Edwards School of Business. He is working to finish a second Master's in Governance and Entrepreneurship and Northern and Indigenous Areas through the Johnson Shoyama School of Public Policy.

Desjarlais is the general manager of Great Plains Contracting – a First Nations partnership that prioritizes sustainability and capacity development in delivering quality project and construction services.

Check out the e-Edge at apegs.ca for a video message

Terry Fonstad, Ph.D., P.Eng, P.Ag., FEC

President Andrew Lockwood, P.Eng., FEC, and Past President Terry Fonstad, Ph.D., P.Eng, P.Ag., FEC look back on the achievements of 2019-2020 (required CPD reporting and the governance review) and what they look forward to in 2020-2021 (Terry on joining the ranks of past presidents and Andrew on improving transparency during his term as president).

Andrew Lockwood, P.Eng., FEC

2020 APEGS Salary Survey Summary Results

The Association of Professional Engineers and Geoscientists of Saskatchewan (APEGS) contacted 6,323 Professional Engineers, Professional Geoscientists, Engineers-in-Training, Geoscientists-in-Training and Licensees living in Saskatchewan. A total of 1,788 members completed the survey representing a 28.3-per-cent response rate. Surveys were completed in March and April 2020 and salaries reported were as at December 31, 2019. Insightrix Research Inc. compiled and tabulated all results. The detailed report, which includes analysis by gender, can be found on the APEGS web site at **http://www.apegs.ca/Portal/Pages/salary-survey**

The main goals of the survey are:

- to provide information to all members regarding monetary compensation for different levels of responsibility and advanced degrees;
- to provide information to employers to assist them in establishing appropriate pay levels for recent graduates and ensuring competitive compensation packages for experienced professionals; and
- to give students, career counsellors and other interested persons information on employment, including salaries, in the engineering and geoscience professions in Saskatchewan.

Annual Salary by Final Year of Graduation (B.Sc.)

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
1976 & Prior	19	1.1%	$139,460	$88,000	$92,000	$127,508	$192,500	$220,000
1977†								
1978†								
1979†								
1980†								
1981†								
1982	10	0.6%	$138,329	$85,200	$104,000	$139,000	$176,800	$183,000
1983†								
1984	13	0.8%	$146,538	$60,000	$110,000	$140,000	$174,000	$240,000
1985	10	0.6%	$160,412	$94,000	$112,750	$139,464	$202,438	$250,000
1986	17	1.0%	$141,709	$37,500	$105,000	$147,800	$175,000	$225,000
1987	30	1.8%	$144,332	$45,000	$100,000	$154,500	$176,000	$250,000
1988	24	1.4%	$150,348	$100,000	$130,225	$152,550	$176,756	$190,000
1989	17	1.0%	$136,914	$10,000	$120,000	$140,000	$160,000	$250,000
1990	15	0.9%	$119,530	$30,000	$88,620	$114,000	$159,000	$172,000
1991	15	0.9%	$169,015	$113,000	$130,000	$175,000	$210,000	$240,000
1992	11	0.7%	$130,846	$68,640	$90,000	$121,968	$180,000	$215,000
1993	18	1.1%	$133,135	$100	$120,000	$140,500	$160,000	$208,000
1994	30	1.8%	$140,644	$60,000	$99,210	$140,567	$173,000	$247,500
1995	22	1.3%	$129,195	$70,000	$103,000	$112,700	$170,000	$205,000
1996	28	1.7%	$153,997	$72,000	$111,000	$157,187	$194,829	$216,000
1997	16	1.0%	$151,557	$94,486	$118,250	$142,000	$196,440	$220,000
1998	23	1.4%	$132,179	$65,000	$101,080	$135,000	$152,140	$185,000
1999	28	1.7%	$128,022	$52,000	$105,000	$122,204	$154,373	$214,000
2000	39	2.3%	$128,385	$62,000	$101,000	$120,000	$154,000	$205,000
2001	44	2.6%	$130,012	$67,278	$107,750	$128,000	$154,245	$185,000
2002	39	2.3%	$125,514	$30,000	$102,000	$126,000	$153,000	$209,300
2003	34	2.0%	$127,043	$20,000	$98,075	$118,750	$152,000	$210,000
2004	38	2.3%	$128,054	$72,000	$103,000	$126,250	$158,000	$206,000
2005	62	3.7%	$119,595	$60,000	$98,046	$118,500	$144,000	$180,000
2006	49	2.9%	$109,652	$33,000	$92,000	$110,000	$127,944	$157,123
2007	75	4.5%	$112,551	$65,000	$92,000	$113,360	$131,000	$160,000
2008	74	4.4%	$105,018	$60,000	$93,000	$102,000	$119,140	$150,000
2009	75	4.5%	$101,834	$50,000	$90,000	$100,000	$117,000	$146,900
2010	76	4.5%	$105,477	$55,000	$90,070	$103,250	$116,825	$160,000
2011	74	4.4%	$98,351	$52,000	$83,600	$96,000	$112,000	$152,000
2012	86	5.1%	$90,392	$64,257	$79,040	$90,000	$100,000	$120,000
2013	84	5.0%	$88,925	$56,000	$79,250	$89,444	$98,750	$116,000
2014	80	4.8%	$82,618	$55,050	$70,250	$83,000	$95,000	$107,955
2015	90	5.4%	$83,392	$60,000	$68,000	$75,250	$89,000	$106,600
2016	70	4.2%	$72,622	$59,928	$66,000	$70,000	$80,000	$95,000
2017	63	3.8%	$68,377	$48,000	$61,500	$67,000	$75,000	$92,000
2018	73	4.4%	$65,772	$46,126	$61,000	$64,000	$71,000	$88,000
2019	71	4.2%	$66,843	$54,000	$60,000	$65,000	$71,000	$88,500

*Not available due to reporting rules (insufficient data)

Annual Salary by Designation

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
P.Eng.	1,064	63.3%	$121,852	$74,500	$95,000	$112,143	$142,875	$197,000
P.Geo.	77	4.6%	$125,424	$75,000	$98,000	$115,000	$144,000	$210,000
P.Eng./P.Geo	16	1.0%	$115,255	$62,000	$90,500	$110,500	$148,323	$175,000
Engineering License	12	0.7%	$121,203	$79,188	$90,564	$120,500	$143,375	$173,000
Engineer-in-Training	482	28.7%	$72,932	$50,500	$62,000	$68,963	$81,000	$101,300
Geoscientist-in-Training	28	1.7%	$83,330	$48,000	$64,250	$81,150	$96,563	$117,000
Geo Licensee†								

*Not available due to reporting rules (insufficient data)

Annual Salary by Discipline

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Ag/Forestry	44	2.6%	$92,970	$61,200	$68,775	$87,800	$113,000	$141,000
Biological/Biomedical†								
Chem/Ceramic/Metal.	88	5.2%	$107,848	$64,000	$80,000	$98,000	$126,500	$194,417
Civil	351	20.9%	$100,498	$58,200	$72,400	$92,000	$115,000	$180,000
Elec/Eng/Physics	235	14.0%	$111,063	$58,500	$83,500	$108,699	$134,000	$177,000
Environmental	116	6.9%	$100,792	$50,000	$74,250	$92,223	$111,890	$170,000
Geo/Mining/Petro Eng.	166	9.9%	$126,969	$67,000	$96,000	$115,500	$160,000	$208,000
Geosciences	79	4.7%	$117,513	$65,000	$89,500	$110,000	$140,000	$210,000
Mechanical/Industrial	397	23.6%	$107,188	$60,000	$75,000	$100,000	$132,000	$180,000
SoftwareEngineering	42	2.5%	$87,796	$60,000	$70,000	$87,239	$97,500	$127,000
Other	155	9.2%	$105,134	$49,400	$70,000	$99,000	$120,000	$205,000

*Not available due to reporting rules (insufficient data)

Annual Salary by Function

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Corporate Management	148	8.8%	$158,954	$88,000	$127,958	$150,000	$180,000	$247,500
Project Management	608	36.2%	$112,844	$66,000	$86,425	$105,000	$135,000	$185,200
Project Administration	33	2.0%	$87,558	$54,000	$66,000	$80,000	$110,400	$134,000
Design	386	23.0%	$89,803	$56,000	$66,839	$85,000	$104,000	$144,500
Research/Planning	99	5.9%	$102,604	$48,000	$70,000	$97,000	$123,600	$190,000
Inspection/Quality Control	41	2.4%	$92,610	$52,000	$62,000	$73,250	$100,000	$142,060
Operating/Maintenance	153	9.1%	$108,821	$64,400	$85,000	$103,000	$128,679	$178,000
Teaching	30	1.8%	$124,560	$80,616	$93,363	$101,000	$168,000	$191,000
Marketing/Sales	30	1.8%	$83,990	$40,000	$65,100	$85,620	$98,480	$134,600
Approvals/Enforcement	55	3.3%	$89,698	$56,550	$77,000	$88,800	$100,000	$120,000
Exploration	37	2.2%	$105,770	$48,000	$81,373	$102,000	$115,748	$240,000
Other	60	3.6%	$81,094	$10,850	$60,625	$71,750	$106,250	$149,405

Annual Salary by Industry

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Consulting Service	370	22.0%	$102,312	$57,173	$70,000	$91,601	$125,000	$185,000
Resource Industry Oil & Gas	77	4.6%	$109,581	$56,550	$85,017	$100,000	$135,000	$180,000
Except Oil & Gas	276	16.4%	$126,445	$72,000	$100,000	$117,450	$146,975	$205,000
Procurement/Construction	136	8.1%	$102,294	$58,000	$71,850	$93,000	$127,250	$180,000
Manufacturing Durables	190	11.3%	$89,041	$54,000	$65,000	$81,810	$100,000	$155,000
Manufacturing Non-Durables	53	3.2%	$119,866	$62,000	$92,000	$105,575	$142,060	$209,300
Service For Profit	41	2.4%	$92,069	$57,000	$70,000	$90,000	$100,000	$156,820
Service Not For Profit	131	7.8%	$101,126	$64,420	$80,604	$97,390	$110,000	$152,962
Utilities	244	14.5%	$113,967	$65,000	$85,000	$109,576	$138,750	$182,000
Educational Services	64	3.8%	$119,260	$50,000	$83,036	$99,179	$167,822	$220,000
Agriculture and Forestry	29	1.7%	$94,073	$61,200	$68,500	$88,500	$110,000	$160,000
Other	69	4.1%	$97,041	$49,400	$70,000	$95,194	$120,000	$168,000

Annual Salary by Degree

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Bachelor's Degree	1167	69.5%	$104,303	$60,000	$74,500	$96,900	$123,600	$179,000
...	189	11.3%	$108,211	$58,000	$80,808	$102,000	$133,000	$180,000
Master's Degree	232	13.8%	$111,182	$54,000	$83,625	$101,875	$132,750	$194,968
...	30	1.8%	$131,013	$48,000	$89,000	$109,250	$185,200	$243,202
Doctorate Degree	62	3.7%	$134,893	$55,000	$96,000	$140,274	$175,000	$220,000

Annual Salary by Experience

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
<1 year	84	5.0%	$67,417	$47,500	$58,650	$65,000	$71,892	$99,000
1 year	36	2.1%	$81,855	$46,126	$61,650	$66,500	$72,000	$150,000
1.5 years	64	3.8%	$68,311	$50,000	$60,000	$64,000	$75,000	$111,780
2 years	83	4.9%	$72,320	$50,000	$63,500	$68,400	$78,000	$101,550
3 years	95	5.7%	$76,526	$50,000	$64,000	$70,000	$83,000	$120,700
4 years	83	4.9%	$81,940	$58,000	$69,000	$76,000	$87,444	$108,300
5 years	105	6.3%	$84,358	$64,257	$72,000	$80,000	$93,300	$106,200
6 years	77	4.6%	$91,746	$66,839	$80,500	$90,480	$99,000	$116,000
7-8 years	172	10.2%	$94,621	$70,000	$82,625	$93,000	$102,750	$133,000
9-10 years	144	8.6%	$106,651	$76,600	$92,000	$104,000	$118,375	$145,000
11-12 years	144	8.6%	$115,589	$81,373	$97,125	$110,000	$130,033	$170,000
13-14 years	115	6.8%	$122,380	$85,000	$102,500	$120,000	$140,000	$180,000
15-17 years	119	7.1%	$136,890	$87,500	$112,835	$131,000	$156,000	$205,000
18-20 years	96	5.7%	$131,505	$65,300	$105,000	$126,500	$154,350	$201,000
21-24 years	80	4.8%	$153,964	$90,200	$129,700	$150,000	$185,800	$215,238
25+ years	183	10.9%	$151,375	$90,000	$120,000	$150,000	$177,000	$234,000

Annual Salary by Sector

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Public Sector	530	100.0%	$107,583	$63,630	$80,616	$100,000	$125,000	$180,000
Private Sector	1,135	100.0%	$106,902	$57,990	$74,000	$98,046	$130,000	$190,000
		Mean	**5**	**25**	**Median**	**75**	**95**	**%**

Total Salary (full time positions)

	COUNT	COLUMN N %	MEAN	PERCENTILE 05	PERCENTILE 25	MEDIAN	PERCENTILE 75	PERCENTILE 95
Base Salary	1,680	94.8%	$105,716	$55,000	$74,856	$98,000	$128,000	$186,000
Salary incl. bonus			$129,529	$60,401	$82,650	$110,350	$157,395	$259,670
		Mean	**5**	**25**	**Median**	**75**	**95**	**%**

Salary Changes - Full Time Positions

	MEDIAN SALARY	% INCREASE	MEAN SALARY	% INCREASE
1987	$48,000		$49,269	
1989	$50,928	6.10%	$62,887	27.64%
1991	$54,110	6.25%	$57,578	-8.44%
1993	$54,480	0.68%	$56,703	-1.52%
1995	$56,400	3.52%	$59,142	4.30%
1997	$60,000	6.38%	$62,266	5.28%
1999	$62,500	4.17%	$65,401	5.03%
2001	$66,000	5.60%	$68,877	5.31%
2003	$68,800	4.24%	$71,210	3.39%
2005	$71,008	3.21%	$73,607	3.37%
2007	$74,000	4.21%	$77,374	5.12%
2008	$76,352	3.18%	$83,025	7.30%
2009	$80,000	4.78%	$86,908	4.68%
2010	$82,950	3.69%	$91,548	5.34%
2011	$84,224	1.54%	$91,154	-0.43%
2012	$89,472	6.23%	$96,219	5.56%
2013	$90,000	0.59%	$98,030	1.88%
2014	$94,500	5.00%	$102,475	4.53%
2015	$97,000	2.65%	$105,111	2.57%
2016	$96,000	-1.03%	$104,628	-0.46%
2017	$97,000	1.04%	$107,130	2.39%
2018	$96,485	-0.53%	$104,743	-2.23%
2019	$97,500	1.05%	$107,287	2.43%
2020	$99,265	1.81%	$107,298	0.00%

Regression Analysis

A stepwise linear regression was used to find the best model for predicting salaries for engineers and geoscientists working in different industries. This process was used to:

- Identify key factors which predict salary as well as factors which are not related to salary
- Make the results independent of the different scales used to measure each factor
- Identify Boolean components (such as receipt of professional designation) influencing salary
- Create a linear formula with as much predictive power as possible

An overall formula was also produced which members of APEGS can easily use to estimate their salary. The formula explains about 57 percent (57.2%) of variance in salary. Any model explaining at least 50% of the variance in the dependent variable can be considered an effective model. B-values are the raw numerical coefficients of each variable. Since the scales for each variable are different, the beta values are a better measure of relative importance of factors within the model. Refer to the "Classification Rating Guide", which can be found on **http://www.apegs.ca/Portal/Pages/salary-survey**, to determine the values for each factor.

FACTOR	COEFFICIENT (B)	RELATIVE IMPORTANCE (BETA)
(Constant)	46481	
Duties (A)	127	0.196
Experience (C)	342	0.325
Leadership Authority and/or Supervision Exercised (F)	151	0.113
Supervision Scope (G)	784	0.200
Receipt of professional designation	10739	0.123

To calculate the approximate projected salary, input the points for each variable in the following formula:

Formula for expected salary (SE) without bonus:

SE = 46,481 + 127*A + 342*C + 151*F + 784*G

Add 10,739 if you have acquired professional status within your field (P.Eng. or P.Geo.)

Book Prize Winners

APEGS provides gift certificates of $300 to students with the highest academic achievement at specific points in their education to purchase books of their choice at their university bookstore.

University of Saskatchewan's awards event was on March 9, 2020. Pictured are (front row) APEGS' Executive Director and Registrar, Bob McDonald, P.Eng, FEC, FGC (Hon.), Erika Erlandson, Duong Minh Au, Tristin McDonald, (back row) Dustin Archdekin, Stephanie Lipoth, and APEGS' Past President Terry Fonstad, Ph.D., P.Eng., P.Ag, FEC.

	FIELD	ACHIEVEMENT	RECIPIENT
University of Regina	**Engineering**	Student with the highest Grade 12 average registered in first year	Unavailable
		Students with the highest average for semester 6 and 7	Mohammad Hassan - Electronic Systems Riley Guathier - Environmental Systems Christopher Chase - Industrial Systems Cody Enns - Petroleum Systems Chiagoziem Imegwu - Petroleum Systems Jonathon Florek - Software Systems Mikalya Peterson - Software Systems
	Geoscience	Most distinguished student at the end of third year	Hayley Folk
University of Saskatchewan	**Engineering**	Student with the highest Grade 12 marks registered in first year	Alex Mayhew
		Students with the highest average for semester 6 and 7	Julia Batiuk - Chemical Erika Erlandson - Civil Brayden Heck - Electrical Patrick Hunchak - Engineering Physics Stephanie Lipoth - Environmental Madeline Martel - Mechanical Tristin McDonald - Geological Bishal Saha - Computer
	Geoscience	Most distinguished student at the of third year	Unavailable

Gold Medal Awards

Every year, APEGS recognizes the top graduating students in engineering and in geoscience at both universities for outstanding academic achievements and leadership with a gold-plated medal and pin. Congratulations 2020 Gold Medal recipients!

APEGS Gold Medal
Spring 2020 Convocation

Madeline Martel

Madeline Martel grew up in Saskatoon and graduated from the University of Saskatchewan with a Bachelor of Science degree in Mechanical Engineering.

Throughout her undergraduate degree she worked as a research assistant in the biomechanics lab at the university studying magnetic resonance imaging of meniscus tissue in the knee joint. She also completed the Engineering Professional Internship Program where she worked at the City of Saskatoon for a 16-month term.

Madeline is continuing to work on the research project that she has been a part of throughout her undergraduate degree, and she has returned to the City of Saskatoon in the role of operations engineer.

APEGS Gold Medal
Spring 2020 Convocation

Malaya Coppola

Malaya Coppola is graduating with Great Distinction from the University of Regina with an applied science degree in Environmental Systems Engineering and has also completed the Co-operative Education Program.

Malaya has been on the Dean's List every semester of her academic career and has received numerous awards as a result of her academic efforts.

Throughout her time at the University of Regina, Malaya was heavily involved in extra-curricular activities. She volunteered her time with Engineers Without Borders Canada (EWB), The Canadian Society for Civil Engineering (CSCE), and the University of Regina's Great Northern Concrete Toboggan Race Team (GNCTR).

It was through her work and volunteer experience that Malaya developed and displayed excellent leadership skills.

During her free time, Malaya enjoys reading, cooking and outdoor activities such as hiking and downhill skiing.

APEGS Gold Medal
Spring 2020 Convocation

Shelby Brandt

I have wanted to be a geologist for as long as I can remember. As a child, I was obsessed with my rock collection and thought earthquakes, volcanoes and mountains were fascinating.

In 2015 I began my Honours degree in Geology at the University of Regina and found my niche in third year after taking Dr. Bethune's structural geology course.

That summer, I was fortunate to find employment with the Saskatchewan Geological Survey as a senior assistant for a bedrock mapping project in the Glennie Domain of northern Saskatchewan. I used this data and produced a structural analysis for my B.Sc. thesis - a project that blended field work with research - a combination I thoroughly enjoy and which led me to embark upon a Master's project also within the Dept. of Geology, University of Regina, that began in January of this year.

During my time as a student of Geology, I have gained a variety of experiences that have instilled leadership qualities from voluntary roles and interaction with the broader Geoscience community.

While I am just at the beginning of my career in Geology and I am eager to see where this amazing field leads me.

APEGS Gold Medal
Spring 2020 Convocation

Katherine Thue

Born and raised in Saskatoon, Katherine Thue received her Bachelor of Science Honors Degree in Geology from the University of Saskatchewan in spring 2020.

Katherine grew up spending holidays in the Canadian Rockies and in 2015 travelled to Rwanda, experiencing a new culture and landscape. This inspired her to learn about the physical world, and her academic interest in geology was sparked by holding a piece of meteorite during an intro geology course.

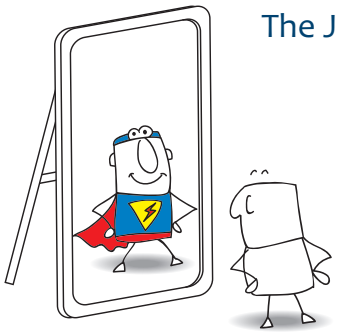
Katherine's focus in soft rock geology led her to attend a field course in Spain, the highlight of her undergraduate career. Throughout her degree, Katherine enjoyed supporting her classmates and sharing her love of geology.

In her last two years she served as an undergraduate teaching assistant in first year geology labs.

In 2019, Katherine received the Dr. Rui Feng Geological Science Award, and in 2020 received the APEGS Continuing Undergraduate scholarship.

Katherine is looking forward to pursuing a Master's program at the U of S.

Something worthy of acknowledgment?



The January-February issue of *The Professional Edge* is all about you!

Our annual Profiles in Achievement issue will profile Saskatchewan-based engineering and geoscience companies and projects.

If you want your company or project profiled or would like to recommend one, let us know.

Please contact: Sheena August, APEGS Manager of Communications: **saugust@apegs.ca**.

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. From more information, navigate to the CPD tab at **apegs.ca**.

Upcoming Professional Development Events

Looking for Ethics Training?

Of the many ways to get your annual ethics credit, here are two free online options that APEGS provides to help members who are working remotely:

- **Module 1** - Professionalism and Ethics
- **Module 2** - Conflict of Interest

For more information and to access the module, please visit the CPD tab at **apegs.ca**.

Get to the Point!

Technical Writing Course

Online webinar coming in September. Further details will be posted on the APEGS website as they become available.

2020 Fall

Professional Development Days

Online webinars coming in November. Further details will be posted on the APEGS website as they become available.

What Are My Annual CPD Requirements?

Are you uncertain about your annual CPD requirements? The following is an excerpt from the Continuing Professional Development Program document, that outlines member requirements.

Table 4: Annual Requirements for a CPD Program*

Member Category	Credit requirement	Minimum # of activity categories required	Annual ethics component required?	Annual reporting of CPD credits required?
Members-in-Training	80	3	Yes	Yes
Professional Members	80	3	Yes	Yes
Licensees	80	3	Yes	Yes
Temporary Licensees	80	3	Yes	Yes
Waiver Holder	30	2	Yes	Yes
Applicant	Not applicable			
Life Member	Not applicable			

*Members joining APEGS part way through the year may prorate their requirements. See Section 4.5 of the CPD program document for instructions.

The CPD Program – The First Year is Now in the Books

With any change, a period of adjustment is always needed to get everyone on the same page. The same has proven true for the new APEGS CPD program.

APEGS completed its final round of compliance reviews for the 2019 CPD reporting year in June. Overall, 88 per cent of APEGS members were compliant with the CPD requirements. The 2019 reporting year was used as training for members, volunteers and staff; as such, no corrective actions were taken for those that did not comply. This will not be the case in future years.

For 2019, if there had been corrective actions taken:

- 945 members may have had their license administratively suspended at the discretion of the registrar.
- 507 members may have had a remediation plan assigned to them by the CPD Compliance Committee or the registrar.

APEGS thanks those members who fulfilled their professional obligations by being aware of the CPD program requirements and either reported correctly, applied for a CPD variation or submitted a 2019 remediation plan.

In fielding thousands of inquiries from our members in the last few months, APEGS reminds members of the following:

Program Basics	• Members have from January 1 - December 31 each year to undertake CPD activities. For members that join part-way through the year, activities undertaken between the date they became an APEGS member to December 31 are eligible for credit. • While members can update their online report at any time, the final deadline for submission is January 31 of the following year. • For members in extenuating circumstances (e.g. parental leave, medical leave, retirement) that cannot meet their annual requirements, they can apply for a CPD variation. The deadline to submit a 2020 CPD Variation Request application is September 30, 2020. For more information about this program, please see Section 5 in the CPD program document.
Online Reports	• APEGS is not able to provide the option for members to upload their supporting CPD documentation. Members are required to retain copies of all their CPD supporting documentation for at least three years. These documents are to be kept by the member and only submitted to APEGS if specifically requested to do so. • After members have completed their ethics training for the year, they need to log into their online report and manually check the Ethics Training checkbox and claim the time as credits under Formal Activity. • For assistance in navigating our online system, APEGS has two how-to documents available for download from the CPD page of our website. • Each CPD Activity Category has an annual limit for how many credits can be claimed per year in each category. Reminders of these limits are posted beside each text box on the online reporting page. Please take these limits into consideration when calculating how many credits you can claim per year.
Compliance	• Submitting false reports to APEGS is a breach of the Regulatory Bylaws and the Code of Ethics. Falsification of records may result in the member being reported to the Investigation Committee. • The compliance reviews suggest that a number of members have indicated that they are reporting CPD in another province/territory and are compliant with that program, when in fact, they are not. This action constitutes professional misconduct. Members are reminded that not reporting CPD to APEGS may result in an administrative suspension, but lying about it can result in a disciplinary suspension.

A STEM INCLUSION CHALLENGE

Empowerment Through Our Choice in Words

WRITTEN BY ROSANAH (ROSE) SANTOS, P.ENG.

"We are standing on the shoulders of the women who came before us and we cannot disappoint them." – Dr. Vianne Timmons

I believe words are powerful. The words from Dr. Vianne Timmons' speech at a PowHERhouse event sponsored by SaskPower resonated with me. I reflected on the lives of women that have paved the way through their voices for equal opportunity and to enable future generations of women to reach countless opportunities to succeed in life, including me.

Words reflect our mindset

I have a daughter in elementary school. I am doing my best to teach her a growth mindset through role modelling and positive self-talk. I personally believe that our words are indicators of our mindset. Over the last several months, I have heard the term "male-dominated" from several women's support groups who were working to elevate and support female career growth in Science, Technology, Engineering and Math (STEM) careers. It dawned on me that those words could possibly be generating feelings of under-confidence and a fight to change a trajectory.

Companies committed to the movement of balancing the number of females and males in Science, Technology, Engineering and Math (STEM) careers must continue to speak up to specifically invite and encourage females into the roles. Let's work to empower all our workforce as unique contributing individuals. I believe this begins with a mindset shift, which is demonstrated through our words. As of 2020, I personally challenge us to stop using the words "male-dominated" and intentionally replace them with "male-populated".

Words have the power to change lives, help us to feel included and start a movement

I think we need to be more deliberate in our choice of words when stating that there is an imbalance in gender numbers in STEM. The definition of domination in Merriam-Webster's dictionary is supremacy and exercising mastery or ruling power. In contrast, population is a noun for all the inhabitants of a town, area or country. Populations are factual. Populations can change over time.

According to Statistics Canada's 2016 Census, women made up 34 per cent of STEM bachelor's degree holders and 23 per cent of science and technology workers among Canadians aged 25 to 64. Let's stop referring to it as male dominated. The word populated allows for equal opportunity, whereas dominated creates the vision or feeling an uphill battle. Let's ignite this mindshift.

There has never been a better time to be in the workforce

The pathway to what you want to experience in your careers is there – waiting for those who demonstrate strong work ethic, intentional pursuit and character. I am gratefully reaping the benefits of the women who have pioneered their way into the workforce not all that long ago. I am also aware that my responsibility as a female leader in 2020 is to ensure the path for those coming up behind me is clear, direct and as unencumbered with unnecessary blocks or barriers as possible.

I do not want our current and future generation of women feeling like they must fight for their career.

Instead, I want them to be empowered to lead, deliver and change statistics. Was I the only woman in the room? Many times. Did I ever feel alone? No. I'm thankful for my team members, particularly the men and women who have supported my career.

I hope one day that we won't need to use the term male-populated to describe STEM careers. Let's work to make it obsolete.

#chooseourwords

APEGS Introduces the
Role of Inclusivity Champion

In April, council established the role of an inclusivity champion as part of the Equity and Diversity Committee chair's duties. APEGS had previously appointed a 30 by 30 champion and group to focus on increasing women in the professions to 30 per cent by 2030. That role became encapsulated in the new inclusivity champion in recognition of the importance to consider all types of diversity, in addition to gender.

The inclusivity champion serves to:

- Represent APEGS to Engineers Canada's 30 by 30 Champions Network, or assign a designate, approved by the Image and Identity Board Chair (APEGS' President-Elect).
- Report on national initiatives related to inclusivity for APEGS' consideration.
- Liaise with other APEGS committees on inclusivity initiatives and considerations.

In June, council appointed Elvia Torres Morales, P.Eng. as the inclusivity champion and chair of the Equity and Diversity Committee. Council is examining how to integrate inclusivity with APEGS' regulatory role of protecting the public as part of the governance review and council's annual strategic planning session in fall 2020.

Celebrating five years of 30 by 30

In 2015, council created the 30 by 30 Task Group in connection with Engineers Canada's 30 by 30 initiative with a Saskatchewan goal to raise the percentage of women in engineering and geoscience from 11 per cent to 30 per cent by the year 2030.

The group had many achievements, including creating new branding and material to promote the goal, partnering with the Saskatchewan Science Centre to release *Dream Big: Engineering Our World*, providing professional development opportunities internally, promoting external professional development events, identifying and establishing new activities that have been adopted by APEGS' committees, and establishing strong relationships within the national 30 by 30 champion community of regulators and universities as well as within the K-12 educational community.

The terms of reference for the 30 by 30 group expired on December 31, 2019. The responsibilities of the group were incorporated in the work of existing committees. The group submitted its final report to Executive Committee with recommendations for going forward.

Council thanks all the members of 30 by 30 for their work with special thanks to Margaret Anne Hodges, P.Eng., 30 by 30 champion and chair, for her leadership in and passion for increasing the number of women in engineering.

APEGS Scholarship and Bursaries

APEGS congratulates the scholarship and bursary recipients for this year:

University of Regina's awards event was on February 27, 2020. Pictured are APEGS' Past President (2015-2016) Margaret Anne Hodges, P.Eng., FEC, FGC (Hon.), Lois Arokoyo, and Denise Stilling, P.Eng.

Annually, APEGS offers the following scholarships and entrance bursaries awarded at the University of Saskatchewan and University of Regina. Cut off dates to apply vary by university, award type and field. Refer to each university's website for more information.

	AWARD TYPE	FIELD	RECIPIENT
University of Regina	**Scholarship**	Engineering	Ashley Balzer
			Kaylee Hayko
			Wil Norton
			Lois Arokoyo
		Geoscience	Shelby Brandt
			Aspen Skiba
	Bursary	Engineering	Aly Ould Abdallahi
			Kawthar Alkhateeb
		Geoscience	David Earl Kramer
University of Saskatchewan	**Scholarship**	Engineering	Douong Minh Au
			Not awarded
			Not awarded
			Selby Louisa
		Geoscience	Not available
			Not available
	Bursary	Engineering	Dustin Archdekin
			Levi Noe
		Geoscience	Not available

Scholarships recognizing leadership and volunteerism among university students currently enrolled.	• Six scholarships of $2,000 (three for each university) for current students of any field of engineering. • Two scholarships of $2,000 (one for each university) for current students of any field of geoscience.
Scholarships aimed at female university students who are transferring their field of study to engineering or geoscience.	• Two scholarships of $3,200 (one for each university) for women in engineering. • Two scholarships of $3,200 (one for each university) for women in geoscience.
Bursaries aimed at encouraging and assisting high school graduates entering the study of engineering or geoscience.	• Two bursaries of $4,000 (one for each university) to be applied towards first-year tuition in any field of engineering for a self-identified Indigenous student. • Two bursaries of $4,000 (one for each university) to be applied towards first-year tuition in any field of engineering for a student of any background. • Two bursaries of $3,000 (one for each university) to be applied towards first-year tuition in any field of geoscience for a self-identified Indigenous student.

Member Grants Available

Through the University of Saskatchewan and the University of Regina, APEGS offers six merit-based grants of $7,500 each to encourage existing APEGS members to further their education.

Eligibility Requirements

Members returning to post-graduation studies at either university in the field of engineering or geoscience or for an MBA program are eligible to apply. Applicants are evaluated in the following areas:

- Accomplishments in the practice of professional engineering or professional geoscience which indicates exceptional potential.
- Demonstration of leadership, volunteerism and community involvement.
- Service to the professions in public education, understanding the role of professionals in society and/or active participation in engineering/geoscience associations, societies and institutes.
- Reasons for pursuing the post-graduate degree, goals, personal statement and how their studies will contribute to the professions.

How to Apply

Applications may be sent to APEGS any time throughout the year. Applications received by December 31 of each year are considered and awarded early the following year with presentations made at APEGS' annual awards banquet, typically in early May of each year.

Go to **apegs.ca** under Members/Member Grants for the application form and more information.

Celebrating Our Own

Kevin Ansdell, Ph.D., P.Geo., FGC, FEC (Hon).

At the June 5, 2020 Geoscientists Canada Board of Directors meeting, Dr. Kevin Ansdell was elected as the President-Elect of Geoscientists Canada, the national organization of the provincial and territorial licensing bodies that regulate the practice of geoscience in Canada.

Kevin grew up in Sheffield, England and obtained his Bachelor's degree in Geology from Oxford University in 1982 and later his Master of Science from University of Alberta in 1984.

After working in the gold mining industry in South Africa and Australia, he obtained a Ph.D. from University of Saskatchewan in 1992.

He is a currently the Professor of Mineral Deposits and Precambrian Geology in the Department of Geological Sciences at the University of Saskatchewan. He has been a professor since completing a post-doctoral fellowship with the Geological Survey of Canada in 1993, including a stint as department head from 2003-10.

He has been actively involved in the teaching and supervision of undergraduate and graduate students in the subject areas of Precambrian geology, petrology, tectonics, isotope geology and mineral deposits including gold, uranium, rare earth elements, lithium and base metals. He is particularly proud of the many students that have graduated from the geology program at the University of Saskatchewan that he continues to mentor.

Kevin has been a professional geoscientist with APEGS since 1998, with permission to consult and has been active with the association having served on the Student Development Committee, Academic Review Committee, Nominations Committee and the Professional Practice Examination Subcommittee, as well as the recently formed Geoscience Advisory Committee.

He was the Saskatchewan representative on the Canadian Geoscience Standards Council for 11 years, before becoming a director on the Board of Geoscientists Canada in 2017 and now as President-Elect. In addition, he has volunteered for the geoscience community in Canada, having served as an active member on the Canadian Geological Foundation (he is the current president), the Geological Association of Canada and the CIM Saskatchewan Geology Division. He was also an associate editor for the Canadian Journal of Earth Sciences from 1998-2006 and has been involved in more than 150 expert and external reviews of university programs, reports, manuscript and theses.

News Beyond Our Borders

globalnews.ca

Abandoned wells require attention

CBC - The collapse of an Alberta energy company has left B.C. with hundreds more oil and gas wells to clean up, more than doubling the total number across the province.

The financial troubles of Calgary-based Ranch Energy mean 401 of its oil and gas wells and three of its energy facilities in northeastern B.C. have now been deemed orphan sites, bringing the total in the province to 770, according to the B.C. Oil and Gas Commission, the provincial regulator.

Just five years ago, that number was 45.

Gas and oil wells and facilities are deemed orphaned when energy companies go bankrupt or abandon the site without shutting down or completing reclamation work and then cannot be located by authorities.

Almost 200 of Ranch Energy's newly abandoned wells are on farmland or private property. Most property owners in B.C. do not own the rights to petroleum or natural gas under the surface of their land.

Cleaning up these sites could take up to 10 years, the B.C. Oil and Gas Commission told CBC News, though some may be restored much sooner.

The regulator said cleaning up all 404 sites will cost around $40 million.

Most of the recently orphaned sites are former gas wells that operated within 50 kilometres of Fort St John, B.C.

Longest race finally finished for engineering Olympian

University of Calgary - Retiring at the top of your career and then working toward graduating from university.

A different path for sure, but then Alex Gough has always taken a unique track through life.

An engineering degree from the University of Calgary will soon be sharing a place of honour beside an Olympic silver and bronze, plus a half-dozen world championship medals.

It was 2018 when Gough retired as Canada's most-decorated luger in history, to turn her attention to the civil engineering degree she started while still training as an Olympic athlete.

Gough had already spent 15 years on the luge track when she first started studying at Schulich School of Engineering, but balancing post-secondary with athletics meant taking the former slowly, in order to train for a sport where sleds can reach 140 km/h.

With a chance to study full time and take part in activities around the faculty — including a role as guest lecturer with Schulich's Bioengineering Summer Institute — Gough could finally focus on a finish line that had seemed forever on the horizon.

"The highlight of all for me was submitting my last final exam. Not because I don't like being at university, but the sense of accomplishment of having finished my degree," says Gough. "I took my first university course in 2007, so it's been a long time coming."

A career in civil engineering also places Gough on a brand new, but very familiar team: Her parents and younger brother also wear the iron ring as civil engineering graduates.

Pandemic impacting women in skilled trades

Daily Commercial News - Prior to COVID-19, manufacturing, construction and other trades were focused on recruiting women to the sector, but since the crisis hit that has become more difficult due to what economists are calling the "she-cession."

"If we talked a couple of months ago, I would have had some really great news to share," said Rhonda Barnet, president and COO of AVIT Manufacturing, formerly Steelworks Design, an engineering and custom automation firm in Peterborough, Ont.

"Right now, we're finishing our thoughts on the health crisis and looking to the economic crisis. What we are realizing in our country and around the world is that women have been greater impacted in this recession than men and economists are talking about this period as the 'she-cession.'"

While women represent 48 per cent of the workforce in Canada, they represent only 28 per cent of the manufacturing labour force and that figure has been stagnant for 30 years, explained Barnet, who was appointed the first female chair in history of Canadian Manufacturers and Exporters (CME) from 2016-2018 and is still with the organization.

Things were looking positive for the sector just prior to the pandemic with women representing 29.5 per cent of the labour pool.

"That's really interesting because what we know statistically is if we can move the dial over 30 per cent things really start to rebalance themselves. We were so close to 30 per cent and then COVID happened," Barnet explained. "Schools shuttered and daycares shuttered and guess what? Women were more disadvantaged in needing to leave their job to take care of their kids, to take of their seniors, to take care of all these people once again. That is why a lot of people are now calling this period the she-cession."

"By mid-May the representation of women in the sector in Canada dropped to 26.9 per cent," she added.

"Now we're below historical levels on a representation basis, so we've got our work cut out for us. A lot of the work that I've been doing is to really move the dial and make a difference."

Prior to COVID, Barnet spent a lot of time talking about the labour shortage in the trades and encouraging young women to consider a career in science, technology/trades, engineering and math (STEM).

"When I talk about STEM I always include the trades," Barnet said. "Women are grossly underrepresented in our country, in most countries, and we need to do something about it. If we want to fill the pipeline down the road with more technical women in manufacturing, we need to start really young. We need a lot of our work to focus on broadening the minds of young girls and women so they can see their way to successful careers in any trades and technology field like construction, like manufacturing.

"We are educating our young girls but we are not doing enough to create the linkages to these really interesting trades and technology sectors."

In 2018 Barnet launched CME's We Can Do It campaign, an initiative funded in part by the federal government to add 100,000 women to the manufacturing workforce over the next five years.

"Amazingly in one-and-a-half years we added 40,000 net new jobs for women in the sector," she said. "We have a government that is really promoting the value of women in the workplace. We have some really great programs running here in the country."

Program to add short-term employment in STEM fields for young Canadians

Vancouver Online - Ottawa will create 500 short-term employment opportunities for recent graduates and youth in the natural resources field.

A program will be launched to create 500 positions – jobs or internship opportunities – to help young Canadians experiencing difficulty in finding employment to explore possibilities in fields involving STEM (science, technology, engineering and mathematics).

The positions, which will range in length from six months

canadayouthworks.ca

to a year and will be placed in five sectors: Energy, forestry, mining, earth sciences and clean technology. The exact roll-out plan has not been announced.

Engineers Canada celebrates award winners for 2020

Engineers Canada – A month-long celebration began for the seven recipients of the 2020 Engineers Canada awards, honoured for their outstanding projects and achievements, community and professional involvement, contributions to engineering education and support for advancing gender equity and diversity in the profession.

"This year's recipients truly represent the transformative power of engineering," says Jean Boudreau, FEC, P.Eng., president of Engineers Canada. "As educators, innovators and role models, they are improving the lives of all Canadians."

Among this year's winners are several in or adjacent to the consulting engineering, construction and infrastructure community, including the following:

- Clayton Deutsch, PhD., P.Eng., receives the Medal for Distinction in Engineering Education. He is a professor in the University of Alberta's department of civil and environmental engineering.
- Megan Pate, P.Eng., receives the Young Engineer Achievement Award. She is the design manager for Vancouver's Northeast False Creek viaducts removal and replacement project.
- Colin Smith, M.S., MBA, FEC, P.Eng., receives the Meritorious Service Award for Professional Service. The Victoria-based consulting engineer has worked on international mining projects, the SkyTrain and the Vancouver Convention Centre (VCC).
- Russ Wlad, P.Eng., receives the Meritorious Service Award for Community Service. Based in Red Deer, AB, he is Stantec's executive vice-president and regional operating unit leader for Canada.

More women than ever working in core STEM roles

Institution of Mechanical Engineers - There are more than one million women working in core roles across science,

technology, engineering and maths for the first time ever, according to the Wise Campaign.

The number of women in engineering has almost doubled in the last decade – from just over 25,000 to more than 50,000 – the campaign group said, as it marked #1ofTheMillion Day on June 10.

Thanks to an increase of more than 350,000 women in core STEM roles in the past 10 years, women now reportedly make up 24 per cent of the core workforce.

"We're thrilled that so many people have joined in with the campaign today, and hope to see more throughout the year," said Wise CEO Helen Wollaston. "It's been wonderful to read all the stories of women who are proud to work in Stem, and inspiring others to join them.

IMechE chief engineer Dr Jenifer Baxter told Professional Engineering: "As both a chartered engineer and a chartered scientist, hearing that there are more than 1m women working in core STEM activities is fantastic news.

The engineering sector has tried to increase the number of female engineers in recent years, but challenges still remain.

According to a 2019 Engineering UK report, girls drop out of engineering education at every level. Companies also struggle to retain women, with calls for increased flexibility and more promotions to senior roles.

Wise is also showcasing 20 previous winners of its Wise Awards, to highlight "the individuals and organizations whose stories have the most potential to inspire others to follow in their footsteps".

International Women in Engineering Day was June 23.

Economic recovery starts here: Engineers

CBC - With at least two million jobs lost across Canada due to the COVID-19 pandemic and the economy officially in recession, more stimulus is expected from the federal government to get the economy moving again.

Beyond what has already been pledged for stimulus, experts say additional investments in infrastructure, especially related to clean technology, are one of the best ways to get people back to work and to leave a lasting legacy.

To create tangible, long-term benefits and get people back to work, here are five stimulus projects engineers, clean energy advocates and other experts say should be launched.

Electric vehicle charging stations

The Canadian Press - Despite being seen as the cars of the future, electric vehicles only make up for 3.5 per cent of cars sold in Canada. While consumers are concerned about the price and range, automotive companies continue to put out new electric vehicles in hopes the market catches up.

ctv vancouver

The government has announced $130 million in funding, over five years ending in 2024, to develop a national recharging network.

But that alone won't create enough charging stations to allow someone to drive an electric car from coast to coast, Hewage said, and the private sector is currently apprehensive about putting up the additional cash for installation.

Building a network to cover 25 per cent, 50 per cent and 100 per cent of the country would cost roughly $1 billion, $2 billion and $5 billion, respectively.

Cost: About $5 billion for electric charging stations to cover the whole country.

watertechnology

Improved water management

The Canadian Press - Climate change is expected to exacerbate flooding across Canada and current water infrastructure — especially in big cities like Toronto and Montreal – isn't ready for the additional pressures.

Fixing and improving aging pipe, sewage systems and treatment facilities would be a great way to create jobs and meet environmental targets.

The federal government has been spending some money on improving the system, but the financing could use an additional shot in the arm. Provinces and municipalities might also pledge new funds if the federal government got the ball rolling, he said.

Cost: $3 billion initially from the federal government.

www.ecofriendlysask.ca

Energy-efficient homes

The Canadian Press - Provinces are currently spending about $1 billion annually on subsidies and other programs to make homes more energy efficient, according to calculations from Efficiency Canada.

For that funding, about 0.6 per cent of buildings in Canada can be retrofitted annually.

Energy consumption for homes and buildings accounts for 17 per cent of Canada's greenhouse gas emissions, according to government data.

The total cost of retrofitting every building in Canada by 2050, a necessary shift in order to meet climate change commitments, would be about $300 billion.

Energy-saving retrofits for most houses include techniques such as: installing better insulation, improving windows to reduce heat loss, installing a zero-carbon heating system and in some cases solar panels.

With residential construction expected to drop by about one-third this year compared to 2019 due to the pandemic, keeping construction workers employed with retrofits makes economic sense.

"Go small" costs: $11 billion in seed capital upfront for a green infrastructure bank, $500 million for training new workers.

"Go big" costs: $300 billion over the next 15 years.

Rebuild bridges, roads and tunnels

The Canadian Press - Broadly, Canada's infrastructure deficit is more than $150 billion, according to the Canadian Federation of Municipalities, a coalition of city governments.

Following the Second World War through the 1950s, Canada was spending roughly three per cent of the GDP on infrastructure, compared to about 0.4 per cent today.

For bridges and tunnels, the infrastructure deficit is about $21 billion, according to the 2019 Canadian Infrastructure Report Card, a report from engineers and municipalities.

www.macleans.ca

Forty per cent of bridges and roads are not in good condition and about 10,000 bridges need immediate attention.

Cost: An initial investment of about $3 billion from the federal government.

thenarwhal.ca

Clean up old mines, wells

The Canadian Press - The federal government recently announced $1.7 billion to help clean up orphaned and abandoned oil and gas wells in Western Canada.

A similar program should be launched for abandoned mines, said Sandro Perruzza, CEO of the Ontario Society of Professional Engineers.

In Ontario alone, there are some 5,000 known abandoned mines, closed prior to 1991, which have no current ownership, he said.

The abandoned sites are an environmental concern, such as ground water contamination.

Taking on the issue would improve land and water quality, especially in northern and rural communities, and would employ thousands of people.

Cost: In Ontario alone, at least $2.59 billion.

News From The Field

uscgg.com

ENERGY

Budget offers support for energy

Pipeline News - The 2020-21 provincial budget provides strong support for the growth and future economic development of Saskatchewan's prime natural resource sectors.

The budget includes $150 million for the Accelerated Site Closure Program, which supports the abandonment and reclamation of inactive oil and gas wells and facilities which gets Saskatchewan people back to work.

The program will prioritize Saskatchewan-based service companies and support up to 2,100 full-time equivalent jobs. Up to 8,000 inactive wells and facilities will be abandoned and reclaimed over the life of the program.

The government also has recently introduced another SaskFirst new growth tax incentive, the Oil Infrastructure Investment Program, which will support new and expanded pipelines, as well as new pipeline terminals, with the goal of getting Saskatchewan oil to export markets.

The budget also provides continued support for existing SaskFirst incentive programs, including the Oil and Gas Processing Investment Incentive, the Saskatchewan Petroleum Innovation Incentive and the Targeted Mineral Exploration Incentive.

The government also reinstated the provincial sales tax exemptions for exploratory and downhole drilling activity. The reinstated PST exemption for downhole oil and gas drilling services has also been expanded to include drilling for helium.

Saskatchewan could be new energy tech frontrunner

Nature World News - Saskatchewan has a promising future as an energy technology frontrunner. Instead of solar power companies granting loans or wind power businesses giving large land grants, Saskatchewan is looking into the adoption of small modular nuclear reactors.

These modular reactors may be small enough for transport and this project is considered to be the most significant shift in terms of energy technology this century.

The Saskatchewan government announced the establishment of an office to help the push for nuclear power. The office will assist in the planning and development of nuclear reactors in the province.

The Ministry of Environment, through Minister Dustin Duncan, expressed that collaboration with several partners in this endeavor is required. In order to establish and adopt small modular reactors, the government's nuclear secretariat needs to coordinate with the Climate Change and Adaptation Division regarding its nuclear policy and program work.

The policy is considered suitable for Saskatchewan since Cigar Lake Uranium Mine, the world's highest-grade uranium mine is located in the northern part of the province.

Innovation in Saskatchewan uses a jet-boring method to mine Cigar Lake's ore, which is considered a challenging feat. The jet-boring technique does not require direct personnel contact with the orebody. Instead, it uses high-pressure water to cut cavities from the ore.

This new program will ensure the localization of energy production within the province.

Around 50 to 300 megawatts of power is projected to be produced by these SMRs. The government is aiming for reactors or power modules that are designed to be small enough for truck or shipping container transportation.

The use of SMRs, however, is not projected until the 2030s.

h2-view.com

Unique hydrogen project coming to province

CKRM – An Alberta-based company is to embark on a first-of-its-kind hydrogen project in the world.

Proton Technologies will be deploying its patented process in the Kerrobert area to extract hydrogen from existing oil reservoirs

while keeping carbon dioxide trapped in the ground.

This is the first formally approved initiative under the government's Saskatchewan Petroleum Innovation Incentive (SPII) program, which was created to support the commercialization of innovations in the oil and natural gas sectors.

"Saskatchewan is a great place to invest and do business, especially in the energy industry," Proton Technologies Chairman and CEO Grant Strem said. "We are excited to move ahead with the first commercial deployment of this technology in the world here in Saskatchewan and we have exciting plans to further advance and scale this technology in future stages."

on-sitemag.com

Kruger Energy to build solar facility

Sask Power - Kruger Energy Saskatchewan Solar will build Saskatchewan's second utility-scale solar project. Kruger's Foxtail Grove Solar Power Facility will be located in northeast Regina. It will provide 10 megawatts (MW) of power, or enough clean energy to power more than 2,600 homes.

Kruger will build, own and manage the facility, while selling the power produced to SaskPower over a 20-year term.

Construction is expected to begin in 2021, with the facility expected to be in service as early as the end of 2021.

Saskatchewan's first solar project, Highfield Solar, is currently under construction near Swift Current and is expected to come online before the end of 2021.

SaskPower has committed to adding 60 MW of solar power to the provincial power grid in the coming years.

INNOVATION

Squirrel saloon has clientele going nuts

Global News - During the COVID-19 pandemic, many people have undertaken projects at home to pass the time.

Dave Hunchak, P.Eng. constructed a western-style saloon.

However, the clientele at the One Star Saloon aren't people.

curiocity.com

They're squirrels.

"These Franklin's ground squirrels showed up here maybe three or four years ago and we hadn't had them before, and they were quite bold," Hunchak said. "So, we started trying to feed them and last year they would come and take a peanut from your hand, and this spring they remembered."

It took roughly 100 hours for the retired engineer to complete the two-storey saloon, which comes complete with paintings, a pair of tables and chairs, a piano and a bar.

"(Being able to) measure out our piano and then build a little version of it, and make the cabinets the right height, then they look sort of proportionate to the squirrel," Hunchak said. "They use them well too, like when they're sitting at the table, it looks pretty darn good."

Hunchak said the squirrels are fairly territorial and will chase each other off if there is more than one in the saloon at a time.

"They'll have a little scrap, so there's quite a few bar fights," he said.

nsenergybusiness.com

Saskatchewan launches new lithium production project

Global News - Saskatchewan will soon be home to a new lithium production project.

The Prairie-LiEP Critical Mineral joint venture is being undertaken by Prairie Lithium Corp. and LiEP Energy Ltd.

Their two-stage pilot project will produce lithium hydroxide from some of the province's oilfield brines.

The first stage of the project is based in Regina and is set to being in July. The second stage is set for the second half of

2021, with field operations in southern parts of the province.

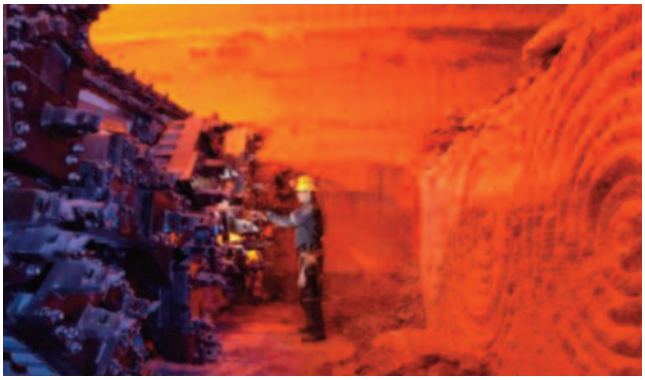
The project has been conditionally approved by the Ministry of Energy and Resources under the Saskatchewan Petroleum Innovation Incentive (SPII) program.

SPII targets a broad range of innovations deployed across the province's oil and gas industry, which includes lithium.

Stage 1 of the joint venture will produce one to 1.75 kilograms of lithium hydroxide each day, while Stage 2 will include the construction of Canada's first lithium extraction and refining facilities. That will help produce about one tonne of lithium hydroxide every day.

The province said global demand for lithium is expected to increase by 10 per cent every year between 2019 and 2024.

MINING



fcpp.org

SMA to assume responsibility for potash group

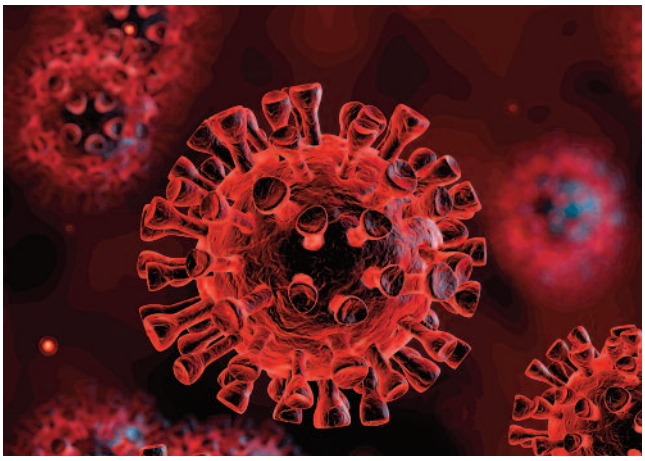
Pipeline News - The Saskatchewan Mining Association is taking over the activities and responsibilities handled by the Saskatchewan Potash Producers Association effective immediately, according to a joint media release.

The SPPA's three producing members, Nutrien, Mosaic and K+S Potash Canada, are all members of the SMA.

"Member companies felt that continuing with a separate industry association for potash was no longer necessary and therefore we have worked with the SMA to assume the SPPA responsibilities", said Sam Farris, the SPPA's board director. "We believe the amalgamation of responsibilities through the SMA will create efficiencies and reduce overlap between the two associations."

"We look forward to undertaking the additional responsibilities that will be transitioning to the SMA from the SPPA and continuing to effectively represent these members' interests", stated SMA Chair Tammy Van Lambalgen.

The SPPA was created in 1983 when potash mining was still a developing industry in Saskatchewan and served as a voice for discussions with government when the industry consisted of a number of smaller players.



oakvillenews.org

Sask. mining industry unevenly affected by pandemic

Saskatoon Star Phoenix – The coronavirus pandemic forced everyone, including Saskatchewan's largest mining company, to develop a plan for the worst-case scenario, likely a major outbreak.

Ken Seitz, who runs Nutrien Ltd.'s potash operations, is grateful he never had to use it.

"Just a few months ago, I was entertaining and planning around how we would, in the face of an extreme outbreak, safely shut down these operations … We were all asking those questions," Seitz said in an interview.

Saskatchewan's multi-billion-dollar mining industry has been unevenly affected by the pandemic, which forced businesses of every stripe to temporarily close or rapidly rethink operations and devastated entire sectors of the economy.

The division is broadly geographic. Potash companies with mines in the southern half of the province kept digging out pink gold, while uranium and gold miners with remote northern operations decided, more or less simultaneously, to close down in March.

"When we look across Canada, and even globally, we've seen a number of (fly-in) operations suspend production," said Saskatchewan Mining Association president Pam Schwann, P. Geo.

"It's all for a similar reason — the mining sector wants to make sure they're not a pathway for COVID to enter into communities that maybe don't have the same health and medical supports."

Mining was declared an essential service in the early days of the pandemic. Potash, for example, is used as fertilizer around the world, and food security was an immediate concern in March and April.

Seitz said the company moved swiftly to implement safety measures for employees. While hundreds of the company's employees have self-isolated, only four have contracted COVID-19, and none since April 3, he said.

The transition to operating a mine in the midst of a pandemic has been getting easier for workers, according to United Steelworkers spokesman Darrin Kruger, whose union represents miners with Nutrien and other companies.

In the early days of the pandemic, Kruger said, union locals across the province met with management to develop protocols to keep the mines running and the miners safe. Those talks were largely productive.

Precautions now in place include limits on gathering in confined spaces, such as the mine cage and break rooms, as well as the vehicles that roam roads deep underground that most people never see.

While safety measures, new operating procedures and isolating employees could have slowed down operations, Seitz said the company has been able to make up for that with overtime.

"We have not lost production as a result," he said, adding that the possibility of large swings in demand for potash from corn and palm oil producers have not materialized since the pandemic began.

K+S Potash Canada spokeswoman Maeghan Dubois offered a similar assessment, saying the company's Bethune mine continued operating through the pandemic without a slowdown or curtailment.

To date, she said, none of the company's employees have been diagnosed with COVID-19.

Cameco Corp. temporarily halted production at its Cigar Lake uranium mine about 600 kilometres north of Saskatoon, while Orano Canada Inc. shut down its McLean Lake mill, which processes ore from Cigar Lake.

SSR Mining Inc. similarly decided to put its Seabee gold operation near La Ronge — the only such facility in the province — into what the industry calls care and maintenance mode. All three companies cited safety concerns.

Cameco has pledged to continue paying laid-off employees, many of whom live in the north, at a reduced rate. Schwann said that means the shutdowns will "disproportionately" affect local contracting companies that serve the large miners.

Some in the contracting industry suggested work was postponed rather than cancelled entirely and signalled they expect to see it resume in the coming weeks and months.

Mining exploration has also been severely curtailed by the pandemic, in part because of northern travel restrictions making it difficult or impossible for prospectors to access remote sites.

A spokesman for Cameco — which has previously closed its McArthur River and Key Lake mill due to a prolonged downturn in uranium prices — said all of its northern operations remain in care and maintenance mode.

Schwann, meanwhile, said mining companies now have an opportunity to accelerate projects already in the works aimed at making underground mining more autonomous — a big push in the industry in recent years.

Seitz said that work is continuing at Nutrien, as it works to build the "mine of the future" while continuing to dig out potash to sell around the world.

eupoliticalreport.eu

South Sask. governments eye tenuous coal-free economic future

Regina Leader-Post - As several local governments in south Saskatchewan eye an economic future without coal, a veteran of the industry is looking back on its history, uncertain what type of future development in the area is sustainable.

"I have no problem with wind- and sun-power. But if the wind don't blow and the sun doesn't shine, I don't know what you're going to do. Put a crank on it?" scoffs 93-year-old Harold Siggelkow.

The longtime Coronach resident owned the local mine on the southeast side of town for two years, 1946 and 1947. He kept working in the industry several years thereafter, in Crowsnest Pass, AB and at the Coronach-area's Poplar River power plant, which used coal from nearby surface strip-mining, in the 1970s.

Several local governments in the area signed a memorandum of understanding (MOU) to pursue joint economic development that doesn't rely on coal mining. The federal government has ordered all coal-fired power plants in the country to be shut down by 2030.

The signatories to the MOU include Coronach, Bengough, Rockglen and Willow Bunch, along with the rural municipalities in the area: Happy Valley No. 10, Hart Butte No. 11, Poplar Valley No. 12, Bengough No. 40 and Willow Bunch No. 42.

The local governments are using the partnership to attract more residents and investment dollars to the area, find sectors for economic growth and support employees who will potentially be out of work after the Poplar River power plant shuts down.

The group is dubbing itself the Deep South Economic Partnership.

Coronach's administrator, Catherine MacKay-Wilson, said the coming coal phase-out "strengthened our need to realize the power of a region more than an individual town on its own."

Coronach also commissioned the consultant firm MBD Insight to do a socio-economic impact study to collect data on the partnership's economic goals.

Analyzing Coronach and its surrounding RM, the RM of Hart Butte, MBD's report estimates the closure of the coal mine and its power plant will: Cut the area's population by 573 people (67 per cent); trim 388 jobs (67 per cent); and reduce the area's GDP by $390 million (89 per cent).

Looking to the past, Siggelkow has detailed, historical knowledge of coal's importance to the region.

"Prior to it going industrial, when it was domestic use, (people) depended on it. Every house in town burned coal and all had an ash pile by spring … It was the mainstay of the people being here," he said.

From 1910 to 1950, 19 different, locally owned coal mines were operational around Coronach. These first set-ups were small, not expected to turn much of a profit.

In the two years he owned the Coronach Mine, he only had three employees; together the four of them put out 30 to 40 tons of coal per day, priced at $2.25 per ton, netting a daily maximum of $90.

canadianminingjournal.com

Cluff Lake ready for final closure

Canadian Mining Journal - Between 1980 and 2002, the Cluff Lake mine in northwest Saskatchewan produced more than 62 million pounds of uranium concentrate, with the site also producing gold between 1984-88.

After a planning process that included extensive public engagement, the site, which once hosted four open pits and two underground mines, was decommissioned and reclaimed between 2004-06. Ongoing environmental monitoring shows that the decommissioning was successful, with water quality meeting objectives, radiation levels within the regional background range, and fish, animals and plants harvested on site safe for consumption.

For operator Orano, the success of the site's reclamation is a point of pride, especially as the project, located 855 km north of Saskatoon in Treaty 8 territory, was the first uranium mine to be subject to modern-era decommissioning and reclamation standards introduced in the late 1990s.

Now that the site has been proven to be chemically and physically stable by 14 years of post-closure monitoring, Cluff Lake is poised for another first. Orano has applied to transfer control of the site to the province under Saskatchewan's Institutional Control Program.

Introduced in 2007, the regulation is one of the first formal programs to be developed that spells out the conditions under which responsibility for a closed mine site can be transferred back to the hosting jurisdiction.

Cluff Lake will be the first major uranium mining site to be transferred to the province – so far only the Contact Lake gold mine and several satellite sites of the historic Beaverlodge operation (mined between 1952 and 1982 by Crown corporation Eldorado Resources) have been transferred.

As part of the transfer, Orano will provide funds for the long-term monitoring and maintenance of the site and an assurance fund to cover costs related to unexpected events.

Rehabilitation work conducted at the site included decommissioning and removing all buildings, including a mill complex; backfilling mined out pits or converting them to pit lakes; and planting more than 650,000 local trees and shrubs. Underground mine entrances were also closed off and blended into the environment. The tailings in the tailings management area were consolidated into a solid mass, covered with a dry cover (local glacial till), with the cover contoured and planted with grasses native to area. The water removed from the consolidated tailings was treated prior to release.

The cover is a simple till cover, which is preferred over a complex cover, such as one with a low-permeability cap, because simple till covers are expected to improve over time with less intervention.

As the tailings contain contaminants including uranium and radium, the decomissioned tailings area was designed to limit the amount of snow and rain infiltrating the tailings in order to control the release of contaminants.

OIL AND GAS

Spending estimates adjusted lower

CBC - New forecasts show dramatically lower expectations for 2020 capital spending in the oil and gas sector both nationally and in Saskatchewan and especially in Alberta,

weforum.org

the province that produces 65 per cent of the country's natural gas and 82 per cent of its oil.

The Canadian Association of Petroleum Producers now estimates that $23.3 billion will be spent in the oil and gas production sector in Canada this year, down from about $37 billion in its January forecast.

Producers have announced billions of dollars in budget cuts since the start of the year to cope with lower oil prices as global energy demand plummets due to measures taken to control the COVID-19 pandemic.

Its January prediction represented about a six-per-cent increase over 2019, credited to new industry friendly policies in Alberta and Saskatchewan and growing optimism that export pipeline capacity would be added.

cbc.ca

Bids see lowest-ever June public offering

CBC - Saskatchewan's June public offering of Crown petroleum and natural gas rights, where companies place bids for the rights to explore and drill for oil on parcels of land, brought in $442,125 for the province — the lowest-ever total for a June offering.

According to the Ministry of Energy and Resources, the previous June low was $472,032 in 1968.

That's a fraction of the revenue brought in by last June's oil and gas public offering, which raised more than $6 million.

Ten years ago, the June public offering — one of six held throughout the year — generated $46.2 million.

This year's low sales come after oil prices plunged in the spring due in part to the COVID-19 pandemic — even briefly turning negative in mid-April — and experts are uncertain about the industry's path to recovery or change.

europeanscientist.com

Sask. funds $400K for methane reduction research

CTV News - The provincial government is investing $400,000 to support research that aims to reduce methane emissions through new technologies.

The research, which is part of the government's Methane Action Plan, will be conducted by the Saskatchewan Research Council.

The field-testing will help identify technologies that convert currently vented and flared methane into commercialized products.

Oil and gas producers will also be providing funding, helping validate projects before they are adopted commercially.

The government said the research council, along with the oil and gas sector, will review proposed technologies to identify ones that have the best potential to reduce methane emissions. As well, they will identify technologies that work best for Saskatchewan's conditions.

Saskatchewan's methane plan is part of the province's Prairie Resilience climate change strategy and its growth plan.

The plan aims to reduce emissions from methane venting and flaring in the upstream oil and gas sector. The goal is to see emissions reduced by 40 to 45 per cent by 2025.

medicalnewstoday.com

UNIVERSITIES

New U of S filter may lead to safer drinking water

Saskatoon Star Phoenix - A University of Saskatchewan chemical engineering graduate student is developing a new, environmentally friendly bio-filter that can remove arsenic from water and could help make drinking water safer across Canada and worldwide.

"Our filter aims to remove the arsenic from water by combining two natural materials that have separately shown promise for capturing this metal," said Khaled Zoroufchi Benis, a PhD student from Iran who has recently been awarded a prestigious 2020 Vanier Canada Graduate Scholarship.

One third of Canadians rely on groundwater as a source of drinking water. While arsenic is naturally present in water at various concentrations, these natural levels are not always safe, as exposure to arsenic may cause health problems such as cancer, diabetes and heart diseases.

"Our bio-compatible filter may have an impact around the world in countries such as India and Bangladesh as well where arsenic contamination is a big issue," said U of S chemical engineering professor Jafar Soltan, Zoroufchi Benis' co-supervisor.

The filter uses a bedding material made of biochar — activated carbon, a dark powder created from agricultural waste — and microalgae. Naturally found in water, some types of microalgae are highly resistant to arsenic but also can absorb it in their bodies.

Zoroufchi Benis will use the Canadian Light Source synchrotron at U of S to study the properties of these materials and create more efficient bio-filters.

The goal is to produce an alternative treatment method for arsenic-contaminated waters that would be cheaper and safer compared to the current expensive processes that rely on chemicals.

The bio-filter will be designed to produce highly concentrated and stable arsenic waste that can be stored safely. The filter will also be adaptable both to industrial and household uses.

University of Saskatchewan

Engineering grad plays waiting game

U of S News - Engineering grad Evan Machibroda is one member of the U of S Huskies who planned to be playing in the Canadian Football League this season.

Instead, the CFL season is delayed due to the coronavirus pandemic. It means that Machibroda must now wait to kick off his pro career.

Machibroda, a defensive lineman and 2019 Edmonton Eskimos draft pick, completed his fifth and final season with the Huskies by being named a U Sports All-Canadian and honoured as the most outstanding lineman in the Canada West conference. He led the Canada West conference with five quarterback sacks.

While there are no Spring Convocation ceremonies to attend, due to the COVID-19 outbreak, Machibroda celebrated his bachelor's degree, after finishing his final online exam. A two-time All-Canadian who could have turned pro last year, the 6-foot-3, 280-pound Machibroda made a point of returning to the U of S to complete his engineering degree.

Machibroda posted an average of better than 75 per cent while completing a full course load of 24 credit units.

He also was named Huskie Athletics all-around male athlete of the year for 2019-20.

Calendar Of Events

LEED Green Associate (GA) Training - Webinar

August 23, 2020
www.leadinggreen.com

Leading and Motivating Employees - Webinar

August 26, 2020
www.uregina.ca/cce

LEED Green Associate (GA) Training - Webinar

September 12, 2020
www.leadinggreen.com

Get to the Point! Technical Communications – 6 part Webinar

September 15, 17, 22, 24, 30 and Oct. 1, 2020
www.apegs.ca

APEGS 90th Annual Meeting (virtual)

September 18, 2020
www.apegs.ca

GeoConvention 2020 (virtual)

September 21 – 23, 2020
Calgary, AB
www.geoconvention.com

2020 ACEC-SK Annual Golf Tournament

September 24, 2020
Regina and Saskatoon
www.acec-sk.ca

Law and Ethics Seminar (virtual)

October 5 – November 25, 2020
www.apegs.ca

Professional Practice Exam

(administered and delivered remotely)
November 23 – 25, 2020
www.apegs.ca

Fall Professional Development Days

(online webinars)
November dates to be determined.
www.apegs.ca

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Informal Activity Category.

Attending conferences also counts as credits under the Informal Activity category.

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