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Association of Professional Engineers
& Geoscientists of Saskatchewan

THE PROFESSIONAL

EDGE

ISSUE 176 • SEPTEMBER/OCTOBER 2018



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Important Reminder:

CPD

Continuing Professional Development

The new Continuing Professional Development (CPD) Program comes into effect on January 1, 2019. Members will be required to report their 2019 CPD activity online.

For more information, visit: <https://www.apegs.ca/Portal/Pages/cpd-announcement>

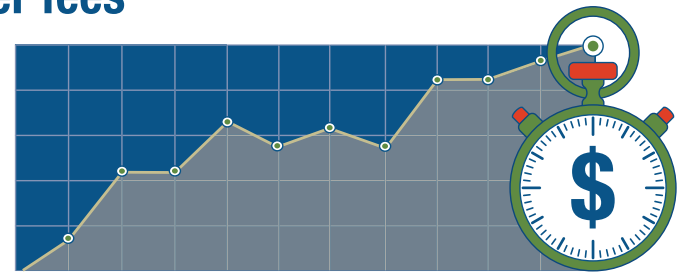
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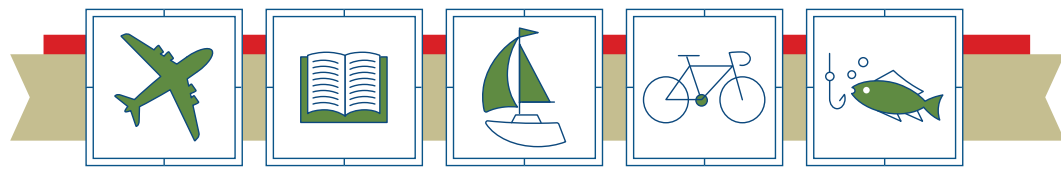
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2019 Membership and Licence Fees

Due on or before December 31, 2018

Renewal notices will be mailed soon!

Renewal notices will be sent in mid-November and it is the responsibility of members and the official representative for a Certificate of Authorization to make sure contact information is up to date, including your email address.

If you don't receive your dues notice by December 1, 2018, contact APEGS. Fees are due on or before December 31, 2018 regardless of problems with delivery.

Check your contact information in your On-Line Profile

To check your contact information, log into your On-Line Profile by clicking "Login" in the top right corner on the APEGS home page. If you have never used the system before, click on "New password / Forgot password" and follow the instructions.

Other things that can be done in your On-Line Profile are: all other fee payments, entering Continuing Professional Development (CPD) credits, renewing Permission to Consult, managing your email/mail subscriptions and volunteering for APEGS.

What happens if I don't renew?

You would no longer have the privilege of practising within Saskatchewan or on properties or facilities located in Saskatchewan. Use of title in Saskatchewan is also a privilege of membership.

Members who do not retain their membership in APEGS and/or another Canadian association/ordre will lose coverage under the National Secondary Professional Liability Insurance Program. Also, failure to maintain your membership will result in ineligibility for benefits under the group life insurance program offered through Manulife and Engineers Canada if you have subscribed to this insurance.

What if I am not working in Saskatchewan?

Members who are retired or not working (at anything) in Saskatchewan can retain membership and may be eligible for a waiver of the fees for the annual licence. More information can be obtained from the documentation accompanying the dues notice or from the APEGS office.

What if my membership ceases and I need to reinstate?

Memberships that have ceased are subject to a 15 per cent fee to reinstate in the same calendar year. Members who notify the APEGS office in writing of their intent to resign their membership on or before January 31, 2019 may reinstate their membership and licence during the calendar year without the payment of a reinstatement or application fee. The late payment penalty for the holder of a Certificate of Authorization is 15 per cent of the annual fee.

For reinstatement procedures for subsequent calendar years, see the APEGS website under Apply, Reinstatement.

Eligibility for life membership

Members who are 65 years of age and retired are eligible to apply for life membership. An application will come with your renewal notice in mid-November.

President's Message



Stormy Holmes, P.Eng., FEC

In all my travels – trips representing APEGS, trips that were part of my job and trips just for fun - I have toured many different cities and places.

On these trips, I have met a lot of people and always seem to encounter at least one or two from Saskatchewan.

In December 2004, I took a trip to Thailand for a month with a friend. We were going on a river raft tour in the middle of nowhere. On the bus to the launch, we discovered that of the four or five other people, two were from Saskatchewan.

On a triecta sports tour in Phoenix, Arizona about 10 years ago, my husband and I wore our Rider jerseys with pride to a Cardinals game. What a beacon for other people from Saskatchewan! We had many people approach us to chat and talk about our other connections, but especially about our home province.

There have been times when my career could have taken me out of Saskatchewan. Two in particular come to mind. During the “brain drain” of the mid-80’s my father chased work and ended up moving to Alberta, taking the whole family except me with him. Having just finished my first year of university, I chose the wonderful opportunity to stay in Regina with my grandmother and finish university.

After graduation, many of my friends travelled to Ontario or Alberta to pursue their careers. I managed to find work in Regina just as I was packing my bags to pursue opportunities in Alberta. As time has moved on and people have started families, there seems to be a call home. Those Saskatchewan ties are strong and many of my friends have started coming back. There is a foundation here, a certain way of life (and a short commute!) that seems to be what people seek.

These thoughts remind me what it means to be “homegrown.” I am thoroughly and completely a Saskatchewan girl. Though I complain about the cold winters, I do love driving through this beautiful province, meeting great people and seeing the province in all its different sizes, shapes and colours.

It is also a point of pride to see the infrastructure that I have been part of creating, re-creating, maintaining and operating. Knowing many of the hands that have touched the fabric of our society and appreciating all of those that came before me, I am always excited to see and experience (and in my case as a designer of buried infrastructure, not see) our accomplishments.

Our local professional engineers and geoscientists are so important to how our society functions, but our works seem to go unnoticed for the most part, until they don’t work. People have grown to expect dependable internet, running water and toilets and the comforts of air conditioning. It is important that our communities are aware these conveniences are a result of the work of our professions.

Let children and students know that if they want to make lives safer and better, engineering and geoscience can give them that opportunity. We need to be proud and we need to trumpet our accomplishments. As professional engineers and geoscientists, let’s talk about what we do and how we support people having a better and easier life, and that we are doing it from home.

TIP:

Reporting Continuing Professional Development



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Homegrown Success

There was a time when Saskatchewan's young people thought they had to leave the province to find fame and fortune. That's no longer the case. More and more Saskatchewan businesses are building world-class success right here in the Land of Living Skies.

Engineers and geoscientists have long been a part of Saskatchewan's business success, either as employees of major established companies or as the owners of engineering- or geoscience-focused businesses.

In this issue of *The Professional Edge*, we take a look at engineers and geoscientists who have had a different impact on Saskatchewan businesses – as entrepreneurs or team members in start-up businesses not directly related to the professions.

Engineers and geoscientists are innovators and problem solvers by nature, so it comes as no surprise that the business ventures which they launch or to which they contribute often achieve outstanding success both at home and abroad.





John Styles, P.Eng., FEC conducts a tasting at Outlaw Trails Spirits Distillery

From High Spirits to High Profits

BY MARTIN CHARLTON COMMUNICATIONS

The old saying goes “find something you love and you’ll never work another day in your life.”

John Styles, P.Eng., FEC puts in long hours at Outlaw Trails Spirits Distillery, but he doesn’t describe what he does as work.

“As an engineer, I just geek out over all of this stuff. The machinery, the chemistry, the precision process – I find it endlessly fascinating.”

When one visits the distillery, located in Regina’s warehouse district, the tasting samples are almost a distraction. Styles’s passion and enthusiasm for his business are more intoxicating than the products he sells.

Today the distillery makes over 14 products – with more to come – and has won international awards. But it all started with a family vacation.

From Inlaws to Outlaws

Styles previously worked in the petroleum sector and is still active on many company boards. When he sold his company in 2009, he and his wife Charmaine started to look at options for semi-retirement businesses they could both enjoy.

“We looked at dozens of franchises and other types of businesses but couldn’t find anything that was the right fit and would suit both of our interests,” Styles says.

But destiny finally came calling in 2011 when the Stylesees paid a visit to John’s brother-in-law in Butte, Montana.

“One day he sent us on a tour to a place he thought was a craft brewery. I think he just wanted to get us out of the house for a while. It turned out to be a craft distillery. The minute I walked in, I was like a raccoon – I was attracted by all the shiny stuff. My engineer’s mind started to go into overdrive.”

The idea of starting their own craft distillery would allow John to combine his experience with chemistry and refining with his wife’s love of wine making. There were still some significant gaps in their knowledge, which they filled through training courses and trial and error.

“Sometimes error gets the best of me but that’s what applied science is all about – learning from mistakes.”

Flowing from their visit to Butte, the Stylesees named their new business in honour of the Outlaw Trail, a legendary network of secret caves and hidden horse trails stretching from southern Saskatchewan to Mexico. The trail had been used by many of the most notorious outlaws from the Wild West through to the Prohibition eras.

“My wife’s grandfather was the Montana territory’s first brand inspector, responsible for catching cattle rustlers. We’ve carried that heritage through to our products which all have Old West names, labels and bottle designs.”

The name is also a nod to Saskatchewan’s infamous history from the Prohibition era.

“It’s interesting that Saskatchewan was so late to the game with craft distilling because, when you think about it, this is where Canada’s independent distilling industry started – with Al Capone and the rum runners of the 1920s.”

The Name Game

Have you ever noticed that certain sugary cereals are described as “chocolatey”, “choco” or “cocoa” flavoured? That’s because government food regulations prohibit the use of the word “chocolate” unless the product reaches certain standards of cocoa content. Styles’s products face a similar challenge.

“One of the most daunting parts of starting a craft distillery – or any business, really – is the sheer amount of government regulation you have to get through. Saskatchewan Liquor and Gaming, the city, the fire marshal, the health authorities, the Canada Food Inspection Agency and many others all want their turn to peek under the hood.”

Food and liquor regulations require many alcoholic products to be aged a certain amount of time (three years for whisky, a year for rum) before they can be marketed with their common names. Using artificial aging and flavouring techniques, Styles can produce beverages that are indistinguishable from their namesakes, but he still cannot use the actual name. His shop is therefore coincidentally (considering his name) full of “styles” – rum-style molasses beverage, whisky-style grain beverage and so forth.

“Scotch is the worst as it is an internationally protected trademark, like champagne. If it’s not from Scotland, the furthest you can go without incurring a lawsuit is ‘single-malt beverage’.”

The one exception, Styles says, is vodka which has no minimum aging time. The only regulatory restriction is that it be flavourless, containing no suggestion of the taste of the original food source.

It all starts with beer

When most of us think of the craft distilling process, we probably think of a moonshiner’s copper kettle still. Styles has a couple of devices that look like those old-time stills but on steroids – tall steel and copper tanks that refine the raw product into high-grade alcohol. But the process starts at a level familiar to any home brewer.

“Every alcoholic beverage basically starts with a beer but it’s a special kind of beer. Whereas a brewer will put in hops to give the beer a more savoury flavour, distillers beer is sweet to account for the concentration of flavour in the distilling stage. If you put a conventional beer through the distilling process, the bitter flavour would become super-concentrated, which would ruin it.”

Distilling requires an enormous quantity of this raw material. Styles estimates that 400 litres of distillers beer would produce at best 28 bottles or about 21 litres.

The distilling process requires three key pieces of equipment. The masher combines grain and water to create mash. The mash goes into huge steel fermenting vats (Styles owns three) where mash, yeast and water create the distilling beer. This is then piped to the stills. Outlaw Trails has one still for brown liquor and a second (with several more distilling rings) for vodka.

Straight from the still, the distilled liquor is almost pure alcohol. To get it to legal alcohol levels, modern distillers use the simple method of Prohibition speakeasies: they water it down. However, in an industrial setting, this process must be very precise to ensure consistency.

After the alcohol level is adjusted, the liquor is poured into tubs for aging and flavouring. While traditional distilleries use oak casks for this stage, Styles uses plastic tubs but uses a trick he picked up from the wine industry.



TOP: Outlaw Trails's vodka distiller. LEFT: Aging and flavouring vats. RIGHT: Fermenters.

“Wine is also traditionally aged in oak casks. There was a time when there was a world shortage of casks right at the time the Napa Valley wine industry was coming into its own. To get around the shortage, the winemakers inserted oak rods into steel cases. In theory, the wine absorbs even more of the oak flavour than through traditional methods because more of the wine was exposed to the wood at any one time.”

Styles also uses what he calls “tea bags” of fruit, spices and other ingredients to infuse flavours into vodka, liqueurs and spiced rums. But Styles’s real secret ingredient is a surprising one: local water.

“The water in the Saskatchewan river system couldn’t be better for the craft distilling process. It helps us emulate a wide range of products. That, combined with the quality of local grain products, gives us a real edge.”

Constant Research

The Styleses are constantly on the lookout for new ways to improve their products, which takes them to craft distilling conferences across North America.

“We absorb a lot of information from people who have done minute research into oaking, casking, playing with yeasts and temperature, all sorts of ways of creating a superior tasting product without having to wait 15-20 years. I love it – all the experimentation brings out the mad scientist in me.”

It was at one of these conferences where Outlaw Trails won a bronze medal and a best in category for international spirits for one of their whiskeys.

“It was a huge boost for us, having only been in business for a year at the time.”

Serial Entrepreneur

While the distillery business is Styles’s latest entrepreneurial venture, it isn’t his first.

“Although I worked as an employee for companies large and small at the start of my career, I eventually moved on to a series of start-up ventures. I was one of the people Steve Halabura brought into a little potash exploration project called Potash One that eventually was bought out by K+S and became the Legacy mine. That experience continues with other ventures I’m involved in with the oil and gas and municipal water sectors. So I’ve had entrepreneurial experience throughout much of my career. The whole process of putting together a business at this point is natural as breathing for me.”

“I call myself a serial entrepreneur – find it, grow it, sell it – except probably this one. I’ve got too much passion invested with Outlaw Trails. I may die under a still at age 95.”

Be an engineer first

For other engineers thinking of starting a second career as an entrepreneur, Styles has some simple advice: be an engineer first.

“What are the attributes that lead to a successful business? Due diligence. Research the hell out of a product before implementing. It’s important to thoroughly understand the product before you invest capital. Engineers are innovators and problem solvers. To every beaver, everything looks like a tree. To every engineer, everything looks like a puzzle, which is a good approach to establish a successful business. Engineers are also tenacious, which is probably the entrepreneur’s greatest asset when you’re trying to push the product over the finish line.”

“It also doesn’t hurt to have a few extra dollars hanging around because new ventures can blow through money like water.”



Agrimatics's flagship product, Libra Cart

Sensing Success

BY MARTIN CHARLTON COMMUNICATIONS

The first lesson that Michael Lockerbie, P.Eng. and Ian Meier, P.Eng., the founders of Bitstrata Systems, learned about entrepreneurship is that it is highly stressful.

“We had to move fast. We had both quit our jobs, so we couldn’t wait around for the perfect idea. We had to just go with the first one that made sense,” says Meier.

The two electrical engineers had been almost like career brothers. Meier had worked with Lockerbie at his first job and ended up working for many of the same firms over the years. Each of them had a long background developing high-tech solutions for companies like Brandt Industries and International Road Dynamics.

Today their Saskatoon-based company makes the Agrimatics line of electronics, a market force in precision agriculture across North America and Australia.

An Apple a Day

The inspiration for them to try their hand at developing their own products came from a rather mundane source: the latest iPhone at the time.

“Apple had put some new Bluetooth capabilities into their phones that we thought offered an interesting, user-friendly way to interact with sensing equipment. We had tried in our previous jobs to develop products that were similar but they were clumsier, requiring clunky external monitoring equipment, and the results weren’t as good as you could now achieve on your phone. So Mike and I set out to capitalize on those capabilities.”

The pair did not move immediately into the agricultural field. They began with an oil industry application. But they ultimately decided that the agriculture industry offered the best prospects for a proof-of-concept product.

“We were looking for markets where there was a need for a constant operator to do real-time tracking and where cloud connectivity would be useful. The farm sector seemed to fit the bill. Plus, for me, coming from a farm background, it seemed like coming full circle. We did some informal market research and everyone seemed to like the idea so we decided to go for it.”



Agrimatics's flagship product, Libra Cart

Libra Cart

The company's flagship product is Libra Cart, a system for monitoring the loading and unloading of grain carts through a Bluetooth connection to a smartphone or tablet.

Grain carts have for some time come installed with devices called load cells that monitor weight in the cart. Previous systems to interface with the load cells have been unwieldy. Agrimatics's system connects a Bluetooth transmitter to the load cells and this is picked up by software on the mobile device. An add-on service, Aero Cloud, backs up data from the readings to the cloud.

The service delivers a host of benefits for farmers, Meier says.

“It makes sure you don't overload the truck so you don't get costly road tickets. Crop insurance accepts it as proof of yield for claims. Compared to traditional methods of tracking loads – just writing it down – it's a tremendous time saver. It provides GPS monitoring that gives the farmer very precise information on where grain was loaded or unloaded. As farms get bigger, it becomes harder to manage all of this sort of information. Many customers view this as their most important tool for managing harvest.”

In addition to booming worldwide sales, the product has won numerous awards, including the 2013 Tech Venture Challenge, the 2013 P2C Business Planning Competition, Manitoba Ag Days' Inventor's Showcase and the Science Technology and Innovation Product Award.

Libra TMR

With their newest product, Libra TMR, Agrimatics has branched out to the livestock industry. The system allows farmers to monitor and remote-control feed rations for livestock directly from a mobile device.

The product won the Canada's Farm Progress Show Sterling Innovation Award in 2017.

Building a company you'd want to work for

Agrimatics operates out of Innovation Place in Saskatoon where it benefits from synergies with surrounding businesses. Much of the company's electronics are built by SED Systems, Saskatchewan's world-class satellite communications company.

With production largely outsourced, the company runs a lean shop of roughly a half dozen employees, most of whom are software developers.

Meier believes his experience with larger companies has helped him to become a better boss.

“It's good to go into business with that experience of having been an employee. It helps us empathize with our staff and have a better understanding of what works and doesn't work. For Mike and I, it's not just about the money. We wanted to build a company that we would want to work for.”

Being thorough ... where warranted

Although much of the technical development is now in the hands of their staff, Meier and Lockerbie continue to feel that their engineering background benefits their approach to business.

“It makes us focus on quality and reliability and avoid shortcuts. Our decisions aren't life or death – not like, say, the work of a civil engineer – but our philosophy is to approach them as though they were. Our customers' livelihoods depend in part on the performance of our products so we don't want to ever be cavalier about our decision. When things aren't working, we believe in digging down to find the root cause rather than just try to hack together a solution. If you go for the quick fix without understanding the ultimate cause, other problems could crop up later. It's all summed up by that word in the engineering crest – Thorough.”

Even so, Meier cautions that one of the challenges engineers face in the world of business is the tendency to become too navel-gazing for the wrong reasons.

“You have to get out in front of your customers early and often to determine what is really important to them. As engineers, we tend to like to sit and tinker and not tell



Ian Meier, P.Eng. (left) and Michael Lockerbie, P.Eng. (right), founders of Agrimatics

anyone what we're doing until we think it's absolutely perfect. The trouble is, though, you could waste weeks working on something no one cares about. You have to make sure you're solving actual problems and fulfilling customers' needs rather than waste time creating solutions looking for a problem."

Meier's overall advice for engineers looking to become entrepreneurs is to brace themselves for uncertainty.

"Entrepreneurship isn't for everyone. It's stressful. Unlike in many workplace situations and especially many

engineering careers, you can't control everything. That can also be liberating because you don't need to ask permission. If you have an idea, you can just go for it. But with that freedom comes risk. We've been fortunate to make money but, no matter how good your idea is, you could easily toil away and make no money at all."



Sparkling Success

The Engineering of Hillberg & Berk

BY MARTIN CHARLTON COMMUNICATIONS

There are few more dramatic Saskatchewan homegrown entrepreneurial success stories than the meteoric rise of Hillberg & Berk. The internationally renowned jewellery company has become a favourite of some of the biggest female celebrities, including Carrie Underwood, Sarah McLachlan, Michelle Obama, Barbara Walters, Celine Dion and, most notably, Queen Elizabeth II.

It's hard to imagine a more storybook tale of business built from the ground up. Company founder Rachel Mielke has made jewellery as a hobby since high school. In college, she started to sell a few pieces to friends. In 2005, she tested the waters with a trade show where she sold thousands of dollars worth of pieces in one weekend. After that, she took the plunge to start her own company (originally named Urban Pearl). The brand and its unique jewellery designs became an overnight sensation which required Mielke to start a slow but steady course to expansion. In 2008, she appeared on CBC's *Dragon's Den* and secured a \$200,000 investment from W. Brett Wilson, which she used for advertising, real estate, research and staff. Today the company does roughly \$15 million in annual global sales and employs over 150 people.

Bring in the Engineers

As her production has expanded from her kitchen table to factories, Mielke's technological needs have changed. For that reason, industrial systems engineer Scott Kiefer, P.Eng. and chemical engineer Leslie Squire, P.Eng. have been added to the team to improve efficiency, capacity and quality control.

Kiefer was the first engineer hired with the company in 2016 and he recalls that, despite the company's reputation for methodical decision making, the decision to bring him on as an engineer was done somewhat on the fly.

"I had originally applied for a job in their distribution division but then, as they started looking at my resumé, they became intrigued by the perspective an engineer could bring to their processes so they brought me on as production manager instead," Kiefer says.

Kiefer's job primarily involves planning the mass production of the jewellery pieces.

"The company previously didn't do a lot of planning about how their pieces would make the transition from artistic design, where they are handcrafted, to larger limited runs.



TOP: Hillberg&Berk engineers Leslie Squire, P.Eng. and Scott Kiefer, P.Eng.

Now we are a liaison between the suppliers and the designers to find the best way to produce the piece so that it maintains artistic integrity yet is efficient to manufacture. It sometimes requires us to do some tweaking to the design,” Kiefer says.

Art and Craft

Achieving this requires a careful balancing act between the artistic mind and the engineering mind.

“You have to put yourself in artists’ shoes. Part of me wants to make the pieces as simple and easy to replicate as possible but that would diminish the artistic value of the pieces. We have to be aware, every bit as much as the designers are aware, of what the customers want. Essentially, we have to use engineering problem-solving skills to overcome artistic problems,” Kiefer says.

Quality Control

Squire was hired in early 2017. Kiefer was happy to have her on the team.

“It was pretty lonely there for a while being the only science guy on a team of artistic, marketing and finance people. It was good to have a fellow engineer on board.”

Squire’s work focuses mainly on quality control, using her skills to ensure consistency in the products delivered from manufacturing suppliers. However, she’s also been able to add to the quality and efficiency of the production process.

“Before Scott and I got here, the company had limited ability to liaise with suppliers about detailed product specifications. Now, rather than simply requested a ‘plated ring’, we’re able to drill down further into the technical specifications of the plating process so that we receive a product that has much more precise quality standards,” Squire says.

Squire has also worked with researchers at the University of Regina to develop improved techniques for carrying out testing and quality check on metals.

Customer First

Just like the designers and marketing team, the Hillberg & Berk engineers keep a close ear to the ground for feedback from customers.

“Everything we do has to be aimed at making a product with which the customers are happy. The company has an extensive system for gathering that information. Our marketing people do a lot of research in advance. We get daily reports from our front-line retailers about sales statistics and customer response. We do focus groups and testing. That all helps us ensure we are living up to the company’s quality standards,” Kiefer says.

Enhanced Analysis

Together the pair has helped the company improve its ability to roll out products and respond to markets.

“Before, the company was more at the mercy of suppliers so there wasn’t a clear sense of how long it would take to move a product from design stage through larger limited runs, which makes marketing planning more difficult. Now when they are planning a launch, we do more analysis upfront to tell them how long it will take to make and how much it will cost. But still the process isn’t always exact. In engineering we always want things to be perfect but sometimes you can’t make things perfect, so then you just have to use your skills to find a way to make things work,” Kiefer says.

Member Profile



This month The Professional Edge chats with Raelynn Jackson, Engineer-in-Training, chemical engineer working as a process engineer working for Mosaic at Esterhazy K-2.

Tell us about your personal and professional background.

I was born in Saskatoon but my family moved to Sherwood Park, Alberta when I was young. I came back to Saskatchewan for university and graduated from the U of S in 2016.

What brought you back?

I had always planned to live in Saskatchewan and a lot of my family is here.

Why did you choose to go into engineering?

I have known this is what I want to do nearly my whole life. When I was eight, I started telling everyone that I was going to be engineer. I always loved science and math. At the time, I thought mechanical engineer – I wanted to work on planes. But physics didn't excite me in high school and I decided I liked chemistry better. I had some very good chemistry teachers who drew me to that side.

What was your biggest challenge in college?

Like everyone, I was surprised by the big leap in workload from high school to university. This was particularly true for me since I took some extra classes

What was your first job after university?

My first job after university wasn't in engineering. I worked at a housing development as a landscaper for eight months. After that, I was hired on at Mosaic as a chemical technician at Colonsay for about seven months and then moved into my current role as an applied process engineer in Esterhazy.

What do you feel was your single greatest accomplishment as an engineer/geoscientist?

Getting an engineering job! I did a lot of physical work before I got one and interviewed many times before being hired by Mosaic. It definitely made me appreciate the opportunity to work in my field

What are your interests outside of work?

I am active in CrossFit, both as an athlete and a coach. I spend most of my time outside of work in Esterhazy at the local CrossFit gym. I also have my grade 10 Royal Conservatory piano, so I sometimes enjoy playing and have taught students over the years.

Have you ever met anyone famous?

I was a competitive dancer as a kid and once had the opportunity to take classes from hip-hop dancer Stephen "tWitch" Boss from *So You Think You Can Dance* and *The Ellen*

DeGeneres Show. He's a guy who built himself up from nothing so he was an inspiring role model. In our classes, he was genuinely eager to help and give back to young dancers.

What is your favourite vacation spot?

Flotten Lake in the Meadow Lake Provincial Park. Each summer my extended family camps together there and enjoys the outdoors.

What is your favourite book?

The Chemist by Stephenie Meyer, naturally. It's cooler than it sounds.

What do you do for professional development?

Mosaic offers many internal professional development opportunities. For example, I've taken off-site courses in project management and technical writing. I also spend time catching up on professional magazines.

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

For my life, my parents of course. My dad was the director of operations, region for United Rentals Canada and he always put forward an insane work ethic. He passed that work ethic on to me and continues to encourage me to always strive to go to the next level. My mom was a teacher who instilled in me the importance of constant learning and the ability to coach people. She taught me that it's just as important to be able to explain what you know as to know what you know.

For my career, I can't focus it down to one mentor because there have been too many. I have been very fortunate at Mosaic and otherwise to work with many accomplished professionals. Likewise, in university, I had some excellent professors who positively influenced me during my degree

Celebrating Our Own



Kresta named Fellow of the Canadian Academy of Engineers

At a ceremony in Calgary on June 18, 57 engineers from across Canada were inducted as Fellows of the prestigious Canadian Academy of Engineers (CAE). Among them was Suzanne Kresta, Ph.D., P.Eng.,

Dean of the College of Engineering at the University of Saskatchewan.

Kresta has contributed to the field of mixing research at a national and international level, through her contributions to academic and industrial literature in a well-recognized handbook, an important contribution to the engineering literature. Her leadership has been demonstrated through many academic leadership appointments, industrial consulting and serving in engineering accreditation and

regulatory bodies. Dr. Kresta is widely recognized for her passion for engineering education pedagogy and has received many awards for her contributions to improving the student learning experience. She is a Fellow of the American Institute of Chemical Engineers (2016) and Engineers Canada (2014).

CAE is the national institution through which Canada's most distinguished and experienced engineers provide strategic advice on matters of critical importance to Canada. CAE is an independent, self-governing and non-profit organization established in 1987. Members of the CAE are nominated and elected by their peers to Fellowships, in view of their distinguished achievements and career-long service to the engineering profession. Fellows of the Canadian Academy of Engineering are committed to ensuring that Canada's engineering expertise is applied to the benefit of all Canadians.



COMPETENCY ASSESSMENT

Experience Reporting Change for Engineers-in-Training Competency-Based Assessment

The APEGS membership voted unanimously in favour of changing the way Engineers-in-Training report their experience to make it easier and to make assessment more transparent. The new online Competency-Based Assessment (CBA) system will allow Engineers-in-Training, validators and assessors to better gauge experience that qualifies for professional registration. The change comes into effect on January 1, 2019.

How to Access CBA Online

All Engineers-in-Training and Engineer-in-Training applicants will be notified when the CBA website is ready. They will access the online portal and create a user account. Then the system will retrieve authorization directly from APEGS.

Benefits of CBA

CBA makes experience reporting easier and more transparent.

- **It is easier to gauge if your experience qualifies for professional registration and therefore increases your confidence when writing your submission.**

We have better described what constitutes acceptable engineering work experience.

- **There are indicators to provide more insight into what will satisfy a competency.**

Indicators help applicants interpret the competency descriptions to further understand what information to include in each competency description.

- **It is more quantitative.**

There is an explicitly described rating scale from 0 to 5 that the applicant, validators and assessors use.

- **Only 34 examples required.**

You provide one example for each of the 34 competencies from any time in your entire engineering experience history instead of 54 (or more) examples in the outgoing paper-based system.

- **It is online.**

No more paper and obtaining signatures! The online system facilitates all information entry, sharing and notifications. No more coordination is needed by the applicant through email and mail to validators and APEGS.

For more information, visit www.apegs.ca, under Members, Competency-Based Assessment. You can also view the CBA system online using the sample APEGS applicant access found under Related Attachments.

Member Benefits and Affinity Programs

As an APEGS member you are eligible to participate in the member benefit and affinity programs.

Corporate Discounts

APEGS partners with selected suppliers to offer discounts to members on various products and services.

APEGS Travel Insurance Program



This program is available to members, employees of members, and staff of the association.

It has been specifically designed to deliver the most comprehensive and cost-effective travel health and accident insurance available.

APEGS Travel Discount Program



APEGS is pleased to offer an exclusive worldwide travel discount service to our members.

Savings average 10-20 per cent below-market on all hotels and car rental suppliers around the world. Save time and money. Let Local Hospitality Inc. negotiate the best deals and comparison price for you. Any hotel, any car, anywhere, any time, other discount programs, home insurance, rentals and health & fitness.

Engineers Canada Affinity Programs

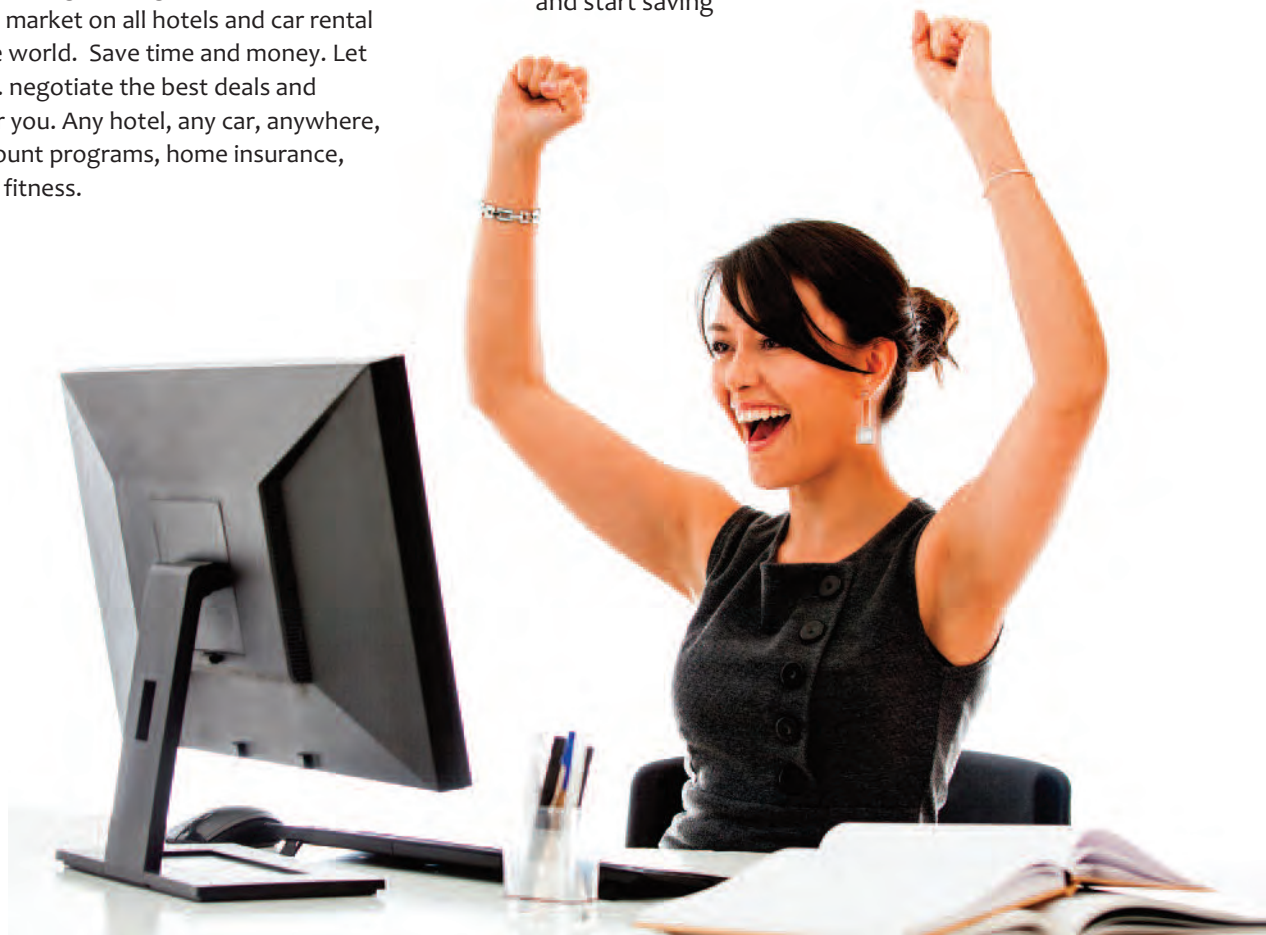
All APEGS members and their families can take advantage of the insurance plans, financial and other services through Engineers Canada's sponsored initiatives.

APEGS Services

Numerous services are available and many costs are included in the APEGS membership fee.

- Subscription to *The Professional Edge*
- Professional Development
- University Access
- Volunteer Opportunities
- Local Constituent Societies
- Engineers Canada Affinity Programs

Visit apegs.ca/Portal/Pages/member-benefits today and start saving



Call for Council Nominations



Nominating Committee

The Nominating Committee is soliciting names for the Council positions described below. You may contact staff support to the Nominating Committee, Shawna Argue, at sargue@apegs.ca to propose names of potential candidates. Shawna may also be reached through the APEGS office in Regina by phone at 306-525-9547 (toll-free 1-800-500-9547 North America), or facsimile 306-525-0851.

The Bylaws require the Nominating Committee to nominate, whenever possible, the person holding the office of President-Elect for President, and one person for the position of President-Elect (typically the person holding the office of Vice-President). Terry Fonstad, P.Eng., FEC is the current President-Elect and Andrew Lockwood, P.Eng., FEC is the current Vice-President. The Nominating Committee is also required to nominate, whenever possible, at least two persons for Vice-President and at least two persons for each vacancy on the Council.

Submissions of Nominations

Any five members may nominate over their signatures an eligible nominee for any elective office, except that of President. Such nominations shall be in the hands of the Registrar at least forty-five days before the election is to take place. To meet this requirement, the nominations must be in the APEGS office no later than 5 p.m., Thursday, March 14, 2019, as the election will take place when ballots are counted on Monday, April 29, 2019, the “polling day.”

2019 Vacancies & Terms of Office

Officers

- President-Elect – one-year term
- Vice-President – one-year term

Group and Electoral District Councillors – to serve a three-year term

- Group I (Civil)
- Group III (Electrical and Engineering Physics)
- Group IV (Geological, Mining, Petroleum, Geophysics and Geoscientists)
- Group VII (Environmental)

Terms of Office

Only members in good standing are eligible for nomination.

A person elected to Council may only hold office while a resident of Saskatchewan.

A person nominated for President-Elect must have served at least one full year (i.e. from the close of business at one Annual Meeting to the close of business at the next Annual Meeting) as a member of APEGS Council prior to the date on which they would assume office as President-Elect.

A person nominated as a representative of an electoral group must be classified with the Association in that electoral group. The Councillor representing Members-in-Training can complete the term of office after obtaining his or her P.Eng. or P.Geo. status.

<http://www.apegs.ca/Portal/Pages/council-elections>

Engineers Canada's Change to the Eligibility Definition of Manulife's Insurance Products

Effective September 1, 2018, Engineers Canada and Manulife will be changing the eligibility requirements under the Engineers Canada-sponsored insurance programs to the following: membership in a participating association will only be required at time of application for insurance. Therefore, an insured would not be required to maintain their membership strictly to maintain their insurance coverage. The revised definition also applies to spousal and dependent coverage.

Manulife will be mailing the endorsement letters to all insureds confirming the change in Eligibility definition by the end of September 2018 and updating their website and marketing brochures accordingly.

Frequently asked questions:

- Q1.** I purchased a Manulife insurance product sponsored by Engineers Canada, but I am no longer a member of the participating association. Can I increase or decrease my insurance coverage?
- A.** Based on the new definition, if individuals purchased an insurance product when they were a member, they can still increase or decrease their coverage amount regardless of their current member status. Please note that individuals may be subject to underwriting to qualify for additional coverage. (N.B. This is standard practice and not a change in Manulife procedures.)
- Q2.** I am no longer a member but have an insurance product under the Engineers Canada-sponsored program. Can I purchase a different product? (i.e. Term Life, Income Protection, Extended Health and/or Dental, Critical Illness or Retiree Health & Dental plans).
- A.** If you are no longer a member, you cannot purchase any new insurance products. For example: A member purchases \$500K in Engineers Canada Term Life insurance. Five years later, the individual is no longer a member of the participating association. Consequently, the former member cannot purchase any other products offered under the Engineers Canada program (i.e. Extended Health Care, Disability Insurance, Critical Illness, etc.). However, the individual can still increase* or decrease their Term Life insurance coverage
- * May be subject to underwriting to qualify for additional coverage.*
- Q3.** I have not received my endorsement letter yet. Does the change in eligibility requirements apply to me?
- A.** Yes, it does. Engineers Canada and Manulife have implemented the change to the eligibility definition effective September 1, 2018, which applies to all the Engineers Canada-sponsored insurance products as of that day. Manulife is working diligently to ensure the endorsements letters are mailed as soon as possible to all insureds.

<https://engineerscanada.ca/services/insurance-financial-and-other-benefits>

Call for Volunteers

APEGS goes big with Dream Big!

APEGS is bringing Dream Big: Engineering Our World to every school in Saskatchewan so that all students can learn more about engineering right in the classroom.

MACGILLIVRAY FREEMAN'S

DREAM BIG

ENGINEERING OUR WORLD

Help APEGS dream bigger!

As an engineering or geoscience professional, volunteer to introduce the show at a school during Engineering and Geoscience Week from March 3 to 9, 2019. APEGS will supply you with instructions and speaking notes.

Sign up today at www.APEGS.ca.

Haven't seen *Dream Big* yet?

Contact the Saskatchewan Science Centre in Regina to see it in IMAX or check it out on Netflix.

Don't miss this unique opportunity to inspire a child and be an ambassador for the professions in your community!

A HEARTFELT STORY OF HUMAN INGENUITY

Call for APEGS Awards Nominations

The Awards Committee is seeking nominations for the APEGS Awards as well as other provincial and national awards such as the Saskatchewan Order of Merit, the Order of Canada, the Canadian Engineers' Awards (Engineers Canada) and the Canadian Professional Geoscientist Award (Geoscientists Canada).

If you know of a Professional Engineer or Professional Geoscientist who should be considered for an award, or an exceptional engineering or geoscience project that should receive an award, the committee would like you to nominate that member or project. There are seven APEGS awards: the Exceptional Engineering/Geoscience Project Award, the Environmental Excellence Award, the Friend of the Professions Service Award, the Promising Member Award, the McCannel Award, the Brian Eckel Distinguished Service Award, and the Outstanding Achievement Award. Criteria for each of the awards are contained in the nomination form that appears on the next page.

In addition to the APEGS Awards, the Awards Committee nominates APEGS members for awards presented by both Engineers Canada and Geoscientists Canada. Nominations for awards must be received by November 30 to provide time for the Awards Committee to review and consider the nominations for the annual APEGS Awards and to prepare nomination packages for provincial and national awards. The Awards Committee will develop and maintain a list of nominees for consideration for the various awards.

Nomination form on following page.

Please send nominations to:
APEGS Awards Committee
300 - 4581 Parliament Avenue
Regina SK S4W 0G3
Fax: (306) 525-0851
Email: apegs@apegs.ca



Nominations for APEGS Awards

Do you know an individual or a group who should be considered for an award?

I would like to nominate:

In the following category:

Exceptional Engineering/Geoscience Project Award

Accomplishments in Engineering/Geoscience (100%). The project team must be made up predominantly of Saskatchewan engineers and/or geoscientists. The project may be located inside or outside of Saskatchewan. The award will be granted when the efforts of an individual or team of engineers/geoscientists is deemed to be of great significance.

Environmental Excellence Award *(all professional members of APEGS are eligible)*

Environmental awareness, preservation, protection and reclamation through education, leadership and/or involvement (25%). Enhancement of quality of life by improvement of the physical or social environment through engineering, geoscience or other works (10%). A real extent of environmental protection or preservation as a result of the efforts (50%). Prevention of potential environmental impacts vs. correction/remediation of existing impacts (15%). This award is intended to have broad scope and be open to a wide range of projects, achievements, initiatives and activities contributing to the protection and preservation of the environment.

Friend of the Professions Service Award *(available to anyone who is not a member of APEGS)*

Recognizes contributions by an individual or a group in the support and promotion of the professions (100%). Examples of activities include: documentation of the history of the professions; comprehensive media coverage of an outstanding engineering or geoscience achievement; long-time service on an APEGS committee or other form of contribution to the success of activities promoting the professions to the public.

Promising Member Award *(available to any member who has held P.Eng./P.Geo. for less than 5 years)*

Accomplishments in Engineering/Geoscience (50%). Service to the professions in public education and/or active participation in engineering/geoscience associations, societies, institutes (25%). Service to community (25%).

McCannel Award

Accomplishments in Engineering/Geoscience (20%). Service to the professions in public education and/or active participation in engineering/geoscience associations, societies, institutes (70%). Service to community (10%).

Brian Eckel Distinguished Service Award

Accomplishments in Engineering/Geoscience (35%). Service to the professions in public education and/or active participation in engineering/geoscience associations, societies, institutes (35%). Service to community (30%).

Outstanding Achievement Award

Accomplishments in Engineering/Geoscience (70%). Service to the professions in public education and/or active participation in engineering/geoscience associations, societies, institutes (20%). Service to community (10%).

I am nominating this person / project because (25 words or less):

.....

Other references (professional and community service related) to contact include:

.....

Submitted by:

.....

Engineering and Geoscience Member Grants, Scholarships and Bursaries

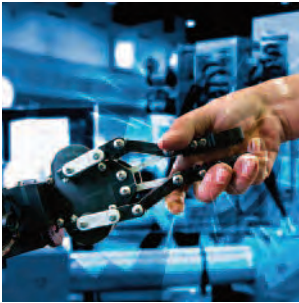


APEGS offers six member grants and 14 annual scholarships and bursaries to be awarded at the University of Saskatchewan and University of Regina.

Member Grants

These merit-based grants are aimed at encouraging existing APEGS members to further their education.

Up to six grants of \$7,500 each for current APEGS members returning for post-graduate studies (either university) in fields of engineering, geosciences or an MBA program.



Undergraduate Scholarships

These academic performance- and community participation-based scholarships are aimed at recognizing leadership and volunteerism among students currently enrolled in engineering or geoscience.

Six scholarships of \$1,875 (three for each university) for current students of any field of engineering.

Two scholarships of \$1,875 (one for each university) for current students of any field of geoscience.



Entrance Bursaries

These bursaries are aimed at encouraging and assisting high school graduates entering the study of engineering or geoscience, particularly Indigenous students.

Two bursaries of \$3,625 (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 \$2,750 (one for each university) to be applied towards first-year tuition in any field of geoscience for a self-identified Indigenous student.

Two bursaries of \$3,625 (one for each university) to be applied towards first-year tuition in any field of engineering for a student of any background.



For more information, refer to the APEGS website: <http://www.apegs.ca/Portal/Pages/Scholarships-Bursaries-Grants>

APEGS Recognizes the Top

Engineering and Geoscience Graduates

Every year, APEGS recognizes engineering and geoscience graduates at the University of Regina and University of Saskatchewan for outstanding academic achievements and leadership. Meet the next generation of innovation.

Congratulations 2018 Gold Medal Recipients!



Erik Olson

Engineering
University of Saskatchewan

Erik Olson is the son of Dr. Valerie Verge, a professor and researcher in the College of Medicine at the U of S, and Ole Olson, a farmer from Plenty, Saskatchewan. His desire to pursue engineering comes from his agricultural background, while his academic career is influenced by his mother's. As an NSERC undergraduate researcher under Dr. Jack Gray in the Department of Biology, he designed flight simulators to interface with insect nervous systems. He is now pursuing a Master of Science in Mechanical Engineering at the U of S as a Canada Graduate Scholarship recipient supervised by Drs. Travis Wiens and Jack Gray, combining engineering with biology. Erik is involved extensively with the U of S Aero Design Team. His interests include cooking, boatbuilding, 3D printing and design, hiking, freshwater invertebrate collecting and Swedish folk music. His dream is to pursue a Ph.D. in Mechanical Engineering focusing on biomimetics and become an engineering professor.



Hoang Anh Tu (Lavie) Nguyen

Geoscience
University of Saskatchewan

Lavie Nguyen is originally from Vietnam. She holds two degrees from the U of S: Bachelor of Science (High Honours) in Geological Science and Bachelor of Science (Great Distinction) in Computer Science. She previously attended the College of the Rockies (COTR), Cranbrook, BC. Her undergraduate research has focused on designing and implementing software to support plate tectonics study and mineral exploration. She has earned a long list of scholarships and awards including First Prize in Mineral Exploration (along with other teammates) from the U of S 2016; U of S Undergraduate Student Award 2015-2016 from Mineralogical Association of Canada; Michael Welch Award from U of S in 2016; the Walter Kupsch Award from Saskatchewan Geological Survey in 2018; the Second Prize for Undergraduate Poster from Saskatchewan Geological Survey Open House in 2017; Dr. Rui Feng Geological Science Award in 2015; Guaranteed Entrance Scholarship from the U of S in 2014 and the International Excellence Scholarship from COTR, Cranbrook, BC in 2012.



Jason Garvey

Engineering
University of Regina

Jason Garvey previously studied engineering at Selkirk College in Castlegar, BC, from which he transferred to the U of R with a 96.8 per cent average. He graduated from the U of R Faculty of Engineering with Great Distinction in Industrial Systems Engineering with a 93.48 per cent average. Prior to graduating from engineering, Jason earned a Bachelor of Commerce degree from the University of Alberta and pursued a successful career in the business side of the natural gas industry. He was a natural gas trader for BP Canada Energy Company in Calgary. He was VP-natural gas trader for Société Générale in New York. He was VP-Natural Gas Trader for Citigroup Energy in Calgary. He served as a teaching assistant while studying for his engineering degree. He is currently providing contract engineering services in pipeline engineering.



Josh Kluck

Geoscience
University of Regina

Originally from Drumheller, AB, Josh Kluck has earned a Bachelor of Science in Geology (Distinction) and a Certificate in Business Administration (Honours) from the U of R. Over his academic career, his awards and distinctions have included being the Student Industry Field Trip (SIFT) participant for the U of R in 2018, the Robert Milner Award for top undergraduate geology student at the U of R, the APEGS Undergraduate Scholarship, the W.A. Gordon Prize in Geology, the John Lewry Prize in Geology and the Geomorphology Book Prize. His summer jobs in the industry have included serving as an exploration geologist for SSR Mining (Seabee Gold Operations) and regional operations supervisor for Marksmen Vegetation Management Inc. & MVM Rail. In his personal life, he is an avid hockey player and enjoys carpentry and camping. In the future, he looks forward to pursuing a career in the mining industry.



A P E G S

*Association of Professional Engineers
& Geoscientists of Saskatchewan*

News Beyond Our Borders

BC eyes major changes to professional regulation

Engineers Canada - The Government of British Columbia recently published a report that could have a far-reaching impact on engineering and other self-regulated professions in the province. This could include significant changes to their operating costs and degree of autonomy.

In 2002, the BC Liberal government made the decision to reduce regulation in the natural resource sector and shift towards a results-based system of professional reliance, where the government establishes natural resource management objectives, then licensed professionals decide how best to meet them. This move affected professionals across the natural resource sector, including members of Engineers and Geoscientists BC.

The province's newly elected NDP government has recently completed a review of the model. The resulting report, which was published June 28, 2018, focused on three major areas: best practices to protect the public interest, the adequacy of current government oversight, and the conditions governing qualified professional involvement in resource management decisions.

Among the 121 recommendations the report makes, Engineers and Geoscientists BC have identified two key ones that would significantly impact its role as a regulator of the professions.

The first of these suggests that the government establish an independent Office of Professional Regulation and Oversight, both to oversee the five associations subject to the review and to administer their legislation. In their public response, Engineers and Geoscientists BC questions the efficacy of this approach, suggesting that it would "add cost as well as an additional layer between government and practising professionals without a clear indication of how it would improve the regulatory model."

The second key recommendation proposes that the government introduce umbrella legislation to standardize 10 elements of professional governance, including the introduction of a formal continuing professional development program that sets standards and tracks compliance. While no legislated program currently exists for engineers in the province, they are required under the Code of Ethics to keep themselves informed to maintain their competence. Engineers and Geoscientists BC also notes that they have already done significant work on each of the areas addressed in this recommendation.

The province is expected to make a final decision on how the report is implemented later this year.



<http://www.scienceinfo.news>

How to breathe on Mars

APEGA - What's a critical thing to pack when you're embarking on that Mars adventure your species has been dreaming, writing and scheming about for decades? Better not leave behind your oxygen, that's for sure.

A group of chemical engineering students at the University of Calgary decided to look at options for creating oxygen on the planet itself.

The team nabbed first place for its work at the U of C's 2018 Engineering Design Fair. Based on its calculations, the team estimated it would take more than 800 tonnes of oxygen to support life on Mars for just a handful of astronauts. Shipping costs would be extraordinary.

But what if, instead, the new folks on Mars used atmospheric carbon dioxide that's already there to create oxygen? The students devised a four-part process that involves electrochemically splitting carbon dioxide into carbon monoxide and oxygen, with the potentially harmful carbon monoxide being transformed into useful by-products.

AECON Group Inc. remains Canadian-owned

APEGA - A controversial deal between Canadian construction company Aecon Group Inc. and China's CCCC International Holding Inc. has been quashed by the Government of Canada. Last year, the 140-year-old firm announced its decision to be acquired by the state-run Chinese company for \$1.5 billion, pending government approval.

While the acquisition could have helped pave the way to freer trade with China, analysts warned that it could also put Canada's trading relationship with the US at risk. After its assessment of the deal, the federal government announced that it would block the sale, citing threats to national security.

Fund will help communities mitigate natural disasters

Government of Canada news release - The Government of Canada has launched a fund to support large projects meant to help communities withstand natural disasters like floods, wildfires and droughts. The Disaster Mitigation and Adaptation Fund is a 10-year, \$2-billion national program supporting wetland restorations, setback levees, wildlife barriers, diversion channels and similar projects. A qualifying project must cost at least \$20 million.



<http://podis.cisnr.okstate.edu>

Create firebreaks in cities, research suggests

APEGA - Engineering researchers at the University of Calgary say urban areas need wide-open spaces to help prevent wildfires from ravaging communities. The team used high spatial resolution satellite images to understand how civic design and planning affected wildfire movement through Fort McMurray in 2016 and Slave Lake in 2011.

The resulting data show that the destruction of buildings was strongly related to how close trees and vegetation were to neighbourhoods. Depending on forest density, even distances of 30 to 50 metres can allow fire to spread. The study includes recommendations to slow or stop fires, including the use of ring roads and large parking lots as firebreaks.

Scientists seek DNA secrets from Loch Ness

Reuters - If there is a Loch Ness Monster, research this past summer might turn up actual evidence.

Scottish scientists are using a robot submarine to scour the depths of the lake for any environmental DNA that's down there. Sources will include urine, shells and feathers. Analysis of the samples will provide information about the types of animal life in the body of water, which is unusually cold and deep.

Professor Neil Gemmill of the University of Otago in New Zealand is heading the expedition. Gemmill's team, which comprises scientists from Britain, Denmark, the United States, Australia and France, is keen to stress that the expedition is more than just a monster hunt.



<https://www.aldouriecastle.co.uk>

“While the prospect of looking for evidence of the Loch Ness monster is the hook to this project, there is an extraordinary amount of new knowledge that we will gain from the work about organisms that inhabit Loch Ness,” Gemmill said on his university website.

He predicts they will document new species of life, particularly bacteria, and will provide important data on the extent of several new invasive species recently seen in the loch, such as Pacific pink salmon.



<https://www.maritimeuk.org>

Multi-purpose autonomous river boats

APEGA - Researchers at the Massachusetts Institute of Technology have designed a fleet of low-cost autonomous boats. The MIT vehicles, which 3D printers can output at about 60 hours per unit, have the maneuverability and precise control needed to function as self-guided water taxis in cities with abundant waterways. Rectangular hulls come equipped with sensors, microcontrollers, GPS modules and other hardware.

Potential beneficiaries include cities such as Amsterdam, Venice and Bangkok.

The boats could be programmed to reconfigure themselves into structures like floating bridges or platforms for food markets. They could also monitor a city's water quality and supply.

OIQ Disciplinary Council has busy summer

Ordre des ingénieurs du Québec – The Disciplinary Council of the Ordre des ingénieurs du Québec rendered four judgments over the summer, three over contract-sharing schemes and one related to drunken behaviour.

Normand Fallu has been ordered to pay a total of \$22,500 in fines. Normand Fallu was found guilty of violating two sections of the Code of Ethics of Engineers for tolerating a contract-sharing scheme designed to circumvent the competitive bidding process of the City of Longueuil and for participating in it on several occasions.

Rosaire Sauriol and Jean-Pierre Sauriol were found guilty of bribes to politicians to receive contracts. Both resigned and agreed to not register again on the roll of the Ordre des ingénieurs du Québec.

France Michaud will be permanently struck from the OIQ's roll. Ms. Michaud, who entered a guilty plea, was found guilty of violating the Code of Ethics of Engineers for proceeding to develop a contract-sharing scheme that made it possible to circumvent the competitive bidding process of the City of Boisbriand, participating in said scheme, and being involved in potentially harmful practices for the public or the profession.

Noubar Semerjian was fined a total of \$7,000 and temporarily struck from the OIQ's roll for a period of 90 days. Mr. Semerjian was found guilty of failing to fulfill his professional obligations by practising in conditions likely to compromise the quality of his

services, i.e. by consuming alcohol; failing to respect the secrecy of all confidential information obtained in the practice of his profession; betraying the good faith of a fellow engineer and tarnishing her reputation by making obscene and lewd remarks about her.



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News From The Field

SGS celebrates 70th anniversary

JWN - “It all starts with the rocks.” That’s something you’ll often hear from Gary Delaney, P.Geo., chief geologist of Saskatchewan. And he’s had the opportunity to say it a lot this year, with the 70th anniversary of the Saskatchewan Geological Survey (SGS) of which he is the head.

The Saskatchewan Geological Survey was formally established in 1948. Its mandate was to map the northern mineral areas, as well as carry out geological surveys of potential gas and oil areas and other economic minerals of southern Saskatchewan.

Maintaining the province’s geological information, be that cores, technical reports or maps, is one of the survey’s key roles.

Around 1950, Delaney says, officials became interested in archiving the various petroleum drill cores that had been collected. Some were stored up in Saskatoon in the basement of a Saskatchewan Liquor Board store. These were moved to an abandoned chicken processing facility in Regina which became the province’s first core lab.

That building was a precursor to the current Subsurface Geological Laboratory, which was built in 1958. It has been expanded numerous times since then. It was the first such facility in Canada and one of the first in North America.

The facility currently stores core from 22,644 wells. If you lined those cores up end to end, it would stretch 640 kilometres, almost exactly the length of the TransCanada Highway from the Manitoba to Alberta borders. It fills 426,793 boxes.

SGS also maintains reports submitted for mineral claims. To keep mineral claims in good standing, companies must provide technical reports on their exploration programs (confidential for three years). “We literally have millions of pages of these reports. Two years ago we undertook an initiative that scanned that information so somebody coming in that wants to work on a mineral project can go online and find reports and maps from previous industry work.”

“We are the keepers of the provincial geological database,” Delaney said. “You have to look at geological data as infrastructure. You have roads, you have power lines, but we understand the geological architecture of the province. We take that to build 3D models, research papers, maps and so on. We have all that information. We make it freely available. It contributes to the province’s competitiveness.”

MINING

BHP remains confident about Jansen

Saskatoon StarPhoenix - Crews have finished sinking the first of two kilometre-deep shafts at a massive potash mine under construction east of Saskatoon, but BHP says a final decision on its multibillion-dollar Jansen project is “not imminent.”

The Anglo-Australian miner’s latest expression of prudence comes just over a year after it walked back a proposal that could have seen the mine’s four-million-tonnes-per-year first stage approved last June and producing potash by 2023.

In an interview, BHP vice-president of potash operations, Giles Hellyer, reiterated the company’s commitment to a “cautious approach” to bringing the mine — to which it has already committed US\$3.9 billion — into production.

Industry analysts have previously pointed out that work on the shafts and associated infrastructure is expected to continue through 2019, suggesting final approval from the company’s board won’t be required for at least another year.

At the same time, Hellyer said, the company remains confident in the fundamentals of the potash market, which is generally expected to continue expanding as global population growth drives demand for food and fertilizer.

Hellyer emphasized Jansen’s expected low cost of production — around US\$100 per tonne — and said, “We don’t tend to respond to current day pricing, for example. We take a long-term view on price.”

Helium industry ballooning in SK

JWN - In the southwest corner of Saskatchewan this summer, Savanna drilling rig 629 was in pursuit of helium, which in addition to filling balloons has a variety of uses including as a coolant for MRI scanners and space vehicles, to provide a protected atmosphere for making fibre optics and as part of barcode scanners at grocery checkouts, according to the Royal Society of Chemistry.

North American Helium Inc. was the company responsible for the Saskatchewan well. The drilling was northeast of Consul, just south of Cypress Lake.

Melinda Yurkowski, P.Geo., assistant chief geologist, petroleum geology, with the Saskatchewan Geological



<http://dzynezone.blogspot.com>

Survey, has been working on the geology of helium exploration for several years. She told *Pipeline News* there are 14 helium wells in Saskatchewan.

Historically, Saskatchewan had helium production in the 1960s and 1970s. But prices dropped in the late 1970s and the bottom dropped out of the market. Recently prices and demand for helium began rising again, fuelling interest in Saskatchewan.

Yurkowski's new report focuses on the eastern part of Saskatchewan, having already looked at the southwest corner. She is hoping to release her results in the fall.

Tech reduces costs, increases recoveries for lithium

Saskatchewan Research Council - Lithium, the lightest metal on earth, has numerous applications, ranging from lubrication grease and glass fabrication to rechargeable batteries that power many handheld tools, mobile electronics and electric vehicles. The demand for lightweight, rechargeable lithium batteries has increased greatly as markets grow for mobile devices, electric vehicles and renewable power storage. The challenge for the mining industry is to keep up with this fast-rising market demand.

Although lithium is found in many minerals and some brines, it's typically in low concentrations and each source has unique characteristics. This makes extraction expensive and time-consuming, two major challenges that mining companies face in the lithium sector.

Typical sources of lithium are hardrock deposits. It can also be recovered from some brines but this process is costlier and more time-consuming.

The Saskatchewan Research Council (SRC) is working with mining companies to develop lithium recovery processes from various sources to produce battery-grade lithium products and also to pilot and test new lithium recovery technologies.

In addition to testing and optimizing mining companies' own lithium recovery processes, SRC's mining and minerals team is also developing its own more selective and cost-effective lithium-recovery-from-brine technology, to overcome the challenges of the traditional lithium recovery process.

The successful implementation of this selective recovery technology will significantly reduce the lithium production cost – both capital and operating – and make it easier to recover and produce battery-grade lithium.

UNIVERSITIES AND RESEARCH



<https://www.ge.com>

Nerve-tingling tech at U of S

Regina Leader-Post - A new technique involving 3D printing could help with regenerating damaged nerves, according to University of Saskatchewan researchers.

"We know the human body actually has the function for regrowth and self-regeneration, but when the damage is really serious, it may lose the function to regrow," said Liqun Ning, post-doctoral fellow in the Tissue Engineering Research Group at the U of S and lead author of the research paper, which was published in the journal *Biofabrication*.

"With our method, we can build a tissue scaffold which can be used to regenerate those functions."

In the current treatment, healthy nerves from one part of the body are grafted to the damaged nerve. In the new method being researched, the 3D printed hydrogel-based scaffolds can be used like a bridge; the scaffold is placed into the damaged part of the body to try to regenerate peripheral nerves.

Although each side of the scaffold is smaller than a centimetre, the researchers were also able to create highly detailed and accurate 3D reconstructions of the scaffolds through the Canadian Light Source at the U of S.

According to Ning, the research is only the initial step for the purpose of nerve regeneration in human beings, but the scaffolds have great potential. Before the technique is implemented in medicine, researchers will have to go through the next steps, which include testing the method on animals and then finally in clinical trials.

OIL AND GAS



Call the plumber: leaky pipes all over SK

CBC Saskatchewan - Saline water used in the process of oil production has leaked from flowlines and pipelines in Saskatchewan more than 120 times since the beginning of 2017, according to the Ministry of Energy and Resources.

In July, Husky Energy discovered a breach in one of its saltwater lines which had leaked an unknown quantity of salt water into the ground.

It happened on a Saskatchewan farm near Turtleford, northwest of Saskatoon.

Aerial photographs show a wedge of dead trees and vegetation where the leak appears to have travelled downhill.

According to the ministry, 121 incidents involving the release of produced water from a flowline or pipeline have been reported since the beginning of last year. Of those, three came from Husky Energy. The leaks varied in size.

The company does not yet know when it started or how deep the salt water went into the ground.

Grant Ferguson, P.Geo., Eng.L., an associate professor of geological engineering at the University of Saskatchewan, said the number of leaks that occur in Western Canada is surprisingly low considering the amount of water that is being transported by the oil industry.

“Oil companies are actually water companies in a way,” he said. “The amount of fluid they move around, some of it is oil but in a lot of cases a lot of that is water.”

While public discussion often focuses on issues like fracking and major pipeline projects, Ferguson believes issues such as salt water, old leaking wells and aging infrastructure could be some of the most serious in the long term.

Collapsed SK caves may hold oil reservoirs

Pipeline News - In early July, the world was enraptured with the plight of 12 Thai soccer players trapped in a cave. But long before then, research geologist Dan Kohlruss, P.Geo., with the Saskatchewan Geological Survey, has been looking at caves for how they may figure into the petroleum systems of west-central Saskatchewan.

Kohlruss has been examining the phenomenon of karsting. Karst features are the result of rocks that were dissolved as a product of rainfall or water getting into fractures or cracks. This can result in vertical or horizontal caves.

“There’s also a collapsed cave that’s a reservoir. That’s cool, in my books,” Kohlruss says. “I was able to map the collapsed cave system,” he said.

His paper is done and now he’s working on showing the trapping model of karst-controlled reservoirs.

“What I’m finding is, where the caves are ending you have oil trapped,” he said.

The cave system Kohlruss is looking at would be in excess of 30 kilometres long.

“I’ve been talking about this to several companies in the area and they’ve been waiting for me to publish the info. It’s going to change, I think, a few of their interpretations of how to look for the oil,” he said.

ENVIRONMENT

Province boasts ag carbon plan

Lloydminster Booster - The Saskatchewan Ministry of the Environment asserts that the province’s agriculture sector is part of the solution to climate change that a federal carbon tax would disrupt.

According to a ministry presentation to the Lloydminster Chamber of Commerce, agriculture plays a big role in emissions reductions.

Under the federal government backstop, farm fuel is exempt from the carbon tax but there would still be taxes on truck and rail transportation that serve farmers and natural gas to make fertilizer and chemicals that farmers buy.

Saskatchewan didn't sign on to Canada's Climate Plan this year and wants to rely on its own climate change strategy with agriculture technology leading the way.

Through investments and research in crop varieties at the Crop Development Centre and the Global Institute for Food Security at the University of Saskatchewan, the ministry claims that agriculture is reducing its carbon footprint through technology.

Carbon intensity has been reduced by the increase in yields from genetics, agronomy, fertility and zero-till seeding. The introduction of zero-till seed drilling in 1981 cut about 600,000 tonnes of carbon dioxide emissions with less need for summerfallow.

Agriculture emissions are about 12.7 million tonnes a year in Saskatchewan. Zero-till drills are manufactured in Saskatchewan and exported around the world where they help to reduce emissions in places like Russia, Kazakhstan, throughout Europe and the United States. Saskatchewan's beef producers have reduced their greenhouse gas footprint by 15 per cent from 1981 to 2011 through technology and better management practices.

In addition, Saskatchewan companies export enough uranium to offset 350 million tonnes of emissions around the world.

The federal government has said it will impose its carbon pricing plan on any province that does not meet the September 1 deadline for a tax of its own.

Students take up challenge for natural disasters planning

Insurance Bureau of Canada – One thousand of the top high school students in Canada came up with some original ideas to answer a challenge from NASA and Canadian geophysicist astronaut Drew Feustel. The students were participating in SHAD, a prestigious summer science program. In early July, Feustel announced SHAD's theme for its 2018 summer program via video message from the International Space Station.

"Canadians need to be ready for extreme events," Feustel said. "This year's challenge at SHAD is to come up with some kind of solution to help Canadian communities be more resilient in a natural disaster."

Students heard first-hand accounts from experts involved in extreme events such as floods in New Brunswick and Calgary, hurricanes in Nova Scotia, wildfires in British Columbia among others.

Among the many solutions developed, a group of SHAD students working at the University of Saskatchewan devised a roof mounted, solar powered signalling beacon device to help first responders in municipalities in known flood regions.

SHAD teamed up with a number of experts who served as mentors and judges, including lead theme sponsor, the Insurance Bureau of Canada.

"With extreme weather events on the rise in Canada, we wanted to work closely with the SHAD students to help Canadians find new innovative ways to be more resilient when faced with a natural disaster," said president and CEO of the Insurance Bureau of Canada, Don Forgeron.



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Oil sands could acidify area size of Germany

The Canadian Press - The largest and most precise study yet done on acid emissions from Alberta's oil sands suggests they could eventually damage an area almost the size of Germany.

The study finds that in 2013 more than 330,000 square kilometres in northern Alberta and Saskatchewan absorbed acid deposits high enough to eventually damage life in rivers and lakes.

"This work is a warning," said Paul Makar, an Environment Canada scientist and lead author on the paper published in the *Journal of Atmospheric Chemistry and Physics*.

"If emissions continue at 2013 levels, there will be ecosystem damage over a very large area."

The research involved scientists at Environment Canada as well as their counterparts in Alberta and Saskatchewan and from Trent University in Peterborough, Ont.

Their work began with a study of 90,000 lakes to determine how different water bodies responded to acids and at what point they would no longer be able to buffer them. That data was used to create a map of carrying capacities across a large swath of the northern Prairie provinces.

The team used the latest datasets and techniques — including satellite imagery — to model how 2013 emissions were likely to affect forests, rivers and lakes. Predictions were checked against measurements in the field and the model was then refined.

The study says if emissions continue at the level studied, tree growth would be stunted. Water plants would suffer from increased toxins. Fish and the bugs they prey on would get sick and reproduce less easily.

Terry Abel of the Canadian Association of Petroleum Producers acknowledged sulphur has been an issue in the oil sands "as far back as I can remember." Abel said industry-funded, government-run monitoring programs are in place.

Proposed mine skips environmental assessment

CBC News - A proposed potash mine in south-central Saskatchewan has just cleared a major hurdle on its path to late-2020 production. The province's Ministry of Environment ruled that Gensource Potash Corp.'s Vanguard One potash development doesn't need an environmental assessment. The project, located about 150 km northwest of Regina near the village of Eyebrow, will therefore skip most of the steps in a typical approval process.

"It's a significant occurrence for us, for any project," said Mike Ferguson, P.Eng., the president and CEO of Saskatoon-based Gensource.

Ferguson credits Vanguard One's fast track to the project's



<https://www.cbc.ca>

relatively small footprint and unique potash extraction method.

"The traditional methods of mining have brought all the mixture of salt and potash up to surface, either by solution mining or physically digging it out," said Ferguson.

"The key for us is to not bring the salt to surface. So we don't have a byproduct to store because we don't create one. We're using a mining method called selective mining where we leave that salt down below in the ore zone."

It's not all-clear for the project, however. Construction permits are still needed, not to mention \$280 million in financing at a time when the potash industry is in a downturn.

But Ferguson pointed to the recent signing of an off-take as a positive sign. That agreement is with a buyer who has agreed to buy all of the potash produced at Vanguard One for the first 10 years of the mine's life.

ENERGY

Saturn Power gets SaskPower nod

Electrical Business - SaskPower recently announced that Saturn Power is the successful proponent for Saskatchewan's first utility-scale solar power project.

SaskPower and Saturn Power have signed a 20-year power purchase agreement for the 10MW of solar power. The project will be located in the RM of Coulee, east of Swift Current. The facility, which will be called the Highfield Solar Project, is expected to be in service as early as the end of 2019.

The competitive process for this project got under way in 2016. During the request for proposals process, SaskPower evaluated 16 proposals from 12 of the 34 pre-qualified proponents. SaskPower will now start preparing for the next competitive process for an additional 10 MW project.



<http://belmontonian.com>

Swift Current looking to “gasify” cardboard

CKRM - The City of Swift Current is studying the idea of gasifying its cardboard instead of having it shipped for processing.

The feasibility of the project is being monitored by the Saskatchewan Research Council.

Engineer Erica Emery, P.Eng. said many larger centres use gasification to produce heat, energy and soil conditioner, while keeping shipping trucks off the road reduces greenhouse gases.

Emery noted that the equipment is expensive and the amount of by-product Swift Current generates may not make the process cost-efficient.

They are sending the cardboard to a gasifier manufacturer to find that out.

Meanwhile Saskatoon is considering several options to divert garbage from the landfill, including a “Pay as you Throw” plan and separate green bins for food and yard waste.

CO₂ gaining attention in North Dakota

Pipeline News - North Dakota’s governor is talking about boosting the state’s use of carbon dioxide for enhanced oil recovery, which plays right into the expertise of the Regina-based Petroleum Technology Research Centre (PTRC).

Dan MacLean, president and CEO of the PTRC, was at the Williston Basin Petroleum Conference in Bismarck, N.D., giving a presentation regarding the 20th anniversary this year of the organization. However, he was there to talk about the future, not just the past.

MacLean mentioned other enhanced oil recovery initiatives that might have some application in Saskatchewan. There were presentations at the show about using carbon dioxide for enhanced oil recovery in the Bakken.

“That’s something we’ve been trying to promote for a long time, that CO₂ is an important and viable element of enhanced oil recovery. It’s safe and it results in a greener hydrocarbon,” MacLean said.

North Dakota Governor Doug Burgum spoke at the conference specifically about using carbon dioxide from the state’s several lignite coal power plants for enhanced oil recovery. “We talk to SaskPower regularly. They are looking for new markets for CO₂. We are trying to facilitate that through conversations with other oil and gas producers, encouraging them to do field trials of CO₂ in their areas. Obviously there’s a big opportunity in the Viewfield area, in the Bakken there,” MacLean said

INFRASTRUCTURE



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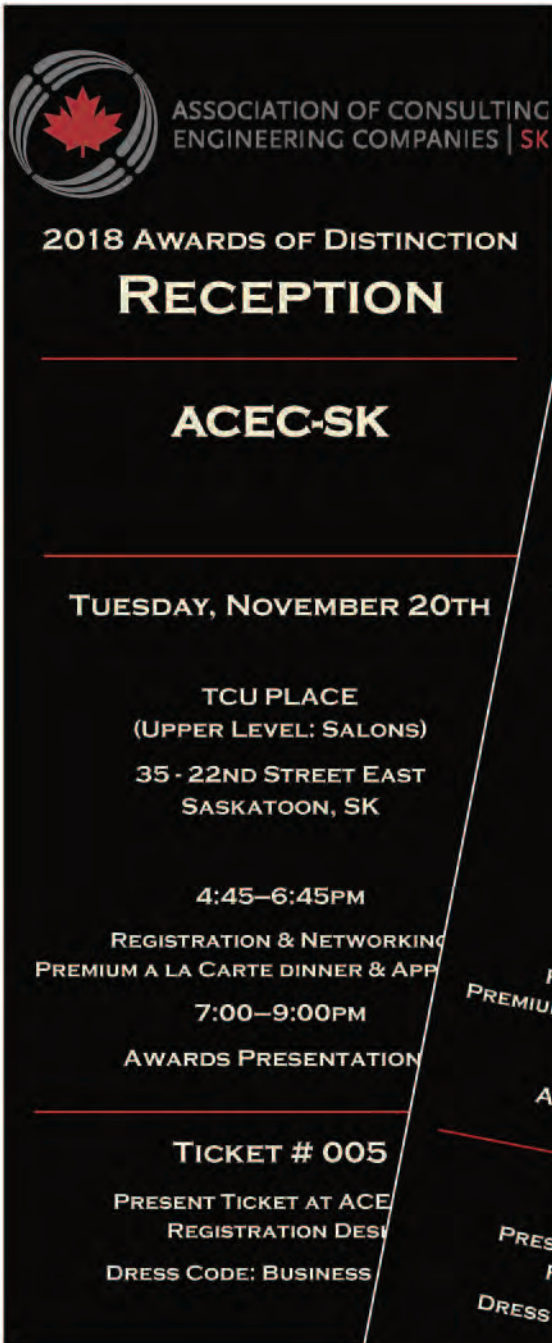
Consultant to study Broncos crash

Saskatoon StarPhoenix - In the aftermath of the Humboldt Broncos tragedy, the Ministry of Highways and Infrastructure will be bringing in third-party consultants to assess the traffic flaws of the area.

Critics of the intersection have said a clump of trees can obscure the view from a vehicle travelling west on Highway 335. The RM favours installing rumble strips along Highway 335 close to the intersection.

The province reviews highway safety after every fatal crash to see if any improvements are needed from a traffic engineering perspective to make things safer. “Given the magnitude and the significant attention that this collision has received, the government has thought it prudent to hire an independent third-party consultant engineer to do that work,” said a government spokesman.

The procurement process for the consultant is in the final stages. The ministry has not determined when the work will begin or when it is expected to wrap up.



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[†] www.moneysense.ca, "The real cost of raising kids," April 15, 2015.

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geosciences.conferenceseries.com

ACEC National Leadership Conference

October 21 – 23, 2018, Ottawa, ON
www.acec.ca/events_awards/conference/2018/about.html

Work Experience Orientation – Competency-Based Assessment

October 29, 2018, Regina, SK
www.apegs.ca

Work Experience Orientation – Competency-Based Assessment

November 1, 2018, Saskatoon, SK
www.apegs.ca

Fall Professional Development Days

November 5 - 6, 2018, Saskatoon, SK
www.apegs.ca/Portal/Pages/fall-pdd

ACEC-SK 2018 Awards of Distinction

November 20, 2018, Saskatoon, SK
www.acec-sk.ca

Water Management Initiative 2018

November 28 – 29, 2018, Calgary, AB
www.water-management-canada-shale-plays.com

Saskatchewan Geological Open House

December 3 – 5, 2018, Saskatoon, SK
openhouse.sgshome.ca

Prairie Wood Solutions Conference

December 11, 2018, Calgary, AB
cwc.ca/event/prairie-wood-solutions-conference

Project Everest: Reaching New Heights in Project Management

December 14, 2018, Calgary, AB
www.apega.ca/members/events/project-everest

Advanced Design and Control of Hydraulic Circuits

January 3, 2019, Saskatoon, SK
homepage.usask.ca/~tkw954/me847

SUMA Convention and Trade Show

February 3 – 6, 2019, Saskatoon, SK
suma.org/conventions

SARM Annual Convention

March 11 – 14, 2019, Saskatoon, SK
sarm.ca/events/conventions

APEGS Annual Meeting and Professional Development Conference

May 3 – 4, 2019, Regina, SK
www.apegs.ca

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