THE PROFESSIONAL

EDGE

ISSUE 146, SEPTEMBER/OCTOBER 2013

Rural Engineering

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Achieving a Safe and Prosperous Future through Engineering and Geoscience

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Photo courtesy of Bourgault Industries

President's Report

President Dwayne A. Gelowitz, P.Eng., FEC

Rural engineering is the focus of the current issue of the *Edge*. Rural engineering can encompass agricultural and industrial development and the construction of provincial and community services.

The imagination and ingenuity of the settlers who came to our great province dealt with many of the issues associated with surviving and thriving in our harsh climate. Addressing the cold winters and hot summers, the drought and floods, they built our province into the wonderful place we call home.

Over the decades that followed, infrastructure was built throughout the province including power, gas, telephone and highways. Communities grew to service rural residents as supply centers and trading posts. Centralized water and sewer systems, recreational facilities and landfills were all constructed to meet the needs of a growing population. Many challenges existed in the construction of these facilities and the challenges were met by our engineering predecessors. Large networks and low cost solutions were developed which provided exceptional service for decades.

Much of this infrastructure is now in excess of fifty years old and has effectively reached the end of its service life. With the current trend of expansion in the size of farming operations and the urbanization of our province, many of the smaller communities are facing new and daunting challenges associated with providing increasingly complicated services to a declining population. With a shrinking population and tax base, and rising costs of construction, it has become difficult for these communities to provide safe and reliable municipal services. In addition, the regulation surrounding these services is becoming increasingly more complex. New ways of providing cost effective services need to be developed.

One of the solutions considered to address these challenges is the development of more regional systems or utilities to serve as a larger regional supplier. This provides the benefit of reducing the number of facilities requiring operation and maintenance but with a much larger distribution or collection system.

Suppliers and distributors are working to create products and services that address the needs of the smaller communities in an appropriate technological, sustainable and cost effective manner. The problem is that development of these technologies costs money and the potential return on the investment may not justify the cost.

Just as the communities are dealing with the local issues, the province is addressing the needs of maintaining the largest network of highways per capita in Canada. With the abandonment of many of the railway spur lines and local elevators throughout the province, there is an increasing need to transport our agricultural products across roads not designed to carry these loads.

Many challenges exist to sustain the infrastructure in our rural areas and maintaining and enhancing the way of life of our rural residents. I am confident that the ingenuity of our professions will find the ways to solve these challenges just as our predecessors did many decades ago.

Dwayne A. Gelowitz, P.Eng., FEC
President

Something to Brag About?

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

Our annual Company Profiles 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:
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BOURGAULT INDUSTRIES -

Building the Future

BY MARTIN CHARLTON COMMUNICATIONS

Ever since he was a boy, Frank Bourgault had shown a knack for invention, combined with good mechanical instincts. As a young man, Frank built a gas engine powered snow toboggan long before snowmobiles were developed. In 1969, Frank was a 44 year old farmer and partner in the Massey Ferguson farm implement dealership in St. Brieux, Saskatchewan. During his time at the dealership, Frank earned a reputation as an excellent farm equipment mechanic by solving problems that other mechanics were unable to solve.

Frank felt that he could produce a cultivator design that could overcome many of the shortcomings he saw in his shop and in the field.

"This particular area is pretty rocky. Frank was looking for a practical solution to a local problem. He was trying to make a field cultivator to deal with those issues," says Devin Lung, P.Eng., Product Development Team Leader at Bourgault.

From 1969 to 1973, Frank tested and developed his cultivator from the Massey Ferguson dealership with the help of his sons, partners and local farmers. The first prototype model, a 16 foot unit, was built in 1970 for $1,300. In the following years more and larger units were built and sold. The units were so well received that Frank, his family and his business partners began to consider mass production.

Today, Frank's eldest son Gerry Bourgault, P.Eng. is president and CEO of F.P. Bourgault Industries Ltd. Gerry joined the company full time in 1975 after graduating from the U of S College of Engineering.

Gerry and his cousin Richard Coquet, P.Eng. have brought their engineering perspective to guide the company to develop an aggressive research and develop-ment division. The company has designed and marketed dozens of innovative pieces of farm equipment which has helped to win its sales in the US, Australia and Eastern Europe.

"Our goal as a company is to develop and offer new products that increase the farmer's ability to successfully cope with the variability in the weather and soil conditions that they can encounter. We are constantly pursuing new innovations that expand the capabilities of our equipment to make farming easier and more rewarding. Our designers are always striving to extend the limits of what the equipment can do," says Gerry Bourgault.

Bourgault backs this up by keeping roughly 40 engineers on staff at the plant.

"The engineers provide the an important set of skills that are crucial for our business. They have the right scientific process to ensure we find the root cause of a problem without becoming sidetracked. We have high expectations for our engineers – pre-tests, tests in the field with customers, refinements at all stages. Engineers do well in that environment," says Lung.

Big Wheels Keep Rolling

A prime example of Bourgault's focus on innovation is its new Hi-Flotation Drill.

"Modern farming operates on thin margins. Farmers are also facing increasing challenges with manpower. For these reasons, farmers are using wider and wider equipment to make their operations more efficient. But there's a trade-off: it's hard to keep this big equipment from sinking in wet soil," says Lung.

To help solve this problem, Bourgault developed a number of adaptations for an air drill.

- **Flotation** – Bourgault engineers experimented with altering tire pressure to reduce the pressure on the ground to keep the vehicle from sinking. They succeeded to the point that the drill actually puts less pressure on the ground than a conventional car.
- **Diameter of tires** – according to Lung, a small diameter tire will bulldoze the soil. Larger diameters help keep the tires on top of the soft soil.

Photos courtesy of Bourgault Industries

The Bourgault Hi-Flotation Drill in action

- **Treaded design** – ensures the tires keep rolling in soft soil, allowing them to roll back on top.

The product was launched in 2012 and has met with good customer response so far, Lung says.

"One major refinement we've had to make is with transportation. The units are very long and wide so we added wagon-style steering to keep them centered on conventional roads," Lung says.

Getting a Crew to St. Brieux

In the face of the company's global sales and operations, one can't help but wonder why the company keeps its corporate headquarters in a community of 600 located an hour and half from any major centre.

"It's a family business and the Bourgault family is committed to their hometown. I think it's really just as simple as that," says Lung.

How does the company succeed in convincing dozens of engineers and other professionals to make the same commitment?

"Many of the people on staff come from an agricultural background so they are the sort of people who prefer living in this environment. I feel that the company shares the same core values as I do," says Lung.

The company also offers flexible policies for staff members like Lung who have hobby farms or family farms on the side.

"It's in the company's interests to do so. Our researchers are able to get more appreciation for the needs of our customers when they have to sweat the details and put their own money on the line."

Positioned for the Future

Far from pulling out of St. Brieux, the company is actually in the midst of a $50 million expansion of its production facilities there. The move is aimed at taking advantage of what Lung describes as a rare period in prairie history.

"We are in a bit of a boom in the farm equipment industry in western Canada with farmers retooling to a degree not seen since the 1980s. It's been fuelled by better crop prices and better efficiencies in the farming operations. It won't last forever but in the near term we want to be in the best position to benefit from that," Lung says.

According to Gerry Bourgault, the key to achieving that will be to continue to cultivate top-shelf R&D staff.

"The success of Bourgault Industries Ltd. would not have occurred without the dedication and skill of the talented team of men and women who are the backbone of the company. Their contributions have been crucial in building the company's reputation for producing high quality products and providing superior service to its customers. We will have to continue to focus on aggressive efforts to find and recruit the most talented team members as we look forward to meeting the challenges ahead."

Photos courtesy of Bourgault Industries

FROM TRACTORS TO TANKS:

PAMI Grows Diversity from Agricultural Roots

Photo courtesy of PAMI

BY MARTIN CHARLTON COMMUNICATIONS

What do farm equipment and military equipment have in common? They have both found a home in the Prairie Agriculture Machinery Institute (PAMI). In spite of its name, this world-class research institution based in Humboldt and Portage la Prairie has grown beyond its farm equipment roots to become a diverse centre of innovation for the transportation industry, biofuels, agricultural by-products, aerospace and, yes, even military equipment.

About half of the PAMI staff come from engineering or technology backgrounds which David Gullacher, P.Eng., President and CEO of PAMI cites as a major contributor to the organization's success in diversifying.

"Much like the engineering profession in general, the DNA of a PAMI person is that we will find a way to get the job done one way or another. At the start of a project, we often don't know how we're going to get it done but we are confident we will find the solution," says Gullacher.

History

PAMI was established in 1975 following recommendations of a federal Royal Commission on Farm Machinery in 1971 to create a central agency for testing and evaluating farm machinery in Canada. It was originally supported by the provincial governments of all three prairie provinces and had branches in Humboldt, Portage la Prairie and Lethbridge. The Alberta government eventually pulled out of the agreement and took over the Lethbridge office, which maintains a close relationship with PAMI.

PAMI's original mission was a straightforward one that was reflected by the institution's name:

- To evaluate and develop agricultural machines
- To research matters concerning agricultural machines
- To circulate information on agricultural machines.

Making a Virtue of Necessity

Until the late 1980s, PAMI mainly relied on government funding. In 1988, because of a combination of government budget constraints and rising costs of machinery evaluations, the organization had to quickly brainstorm new sources of revenue and new justifications for its existence.

"PAMI assumed responsibility for earning much of its revenues from fee-for-service work, which currently accounts for 90 per cent of our revenue, with base-grants from government providing the balance," says Gullacher.

In the course of their brainstorming, the PAMI managers had a major 'eureka' moment: 'If we have the facilities to test and develop farm equipment, why don't we provide these services for other equipment as well."

Today, PAMI offers its services over a diverse range of vehicles including semis, buses, ambulances, road construction and mine equipment. The organization has also developed proficiency in design and protptype fabrication.

"We often now operate under the mantra design, build, test, which describes our broader capabilities," says Gullacher.

PAMI's pilot-scale solid state anaerobic digester has nabbed attention lately because of its green energy potential. The project is focusing on finding ways to adapt biofuel generating technology for the prairie climate, and on how to digest solid agricultural waste as opposed to the liquid material used in most of the world's biodigesters.

PAMI's capabilities include:

- Force and vibration simulation
- Noise and vibration measurement
- Field and laboratory testing
- Extreme temperature testing
- Mobile data acquisition
- Regulatory compliance and standards certification
- Safety testing
- Alternative fuel and vehicle performance testing.

Food to Fuel and More

In addition to diversifying its equipment testing and development, PAMI has also branched out into a wide range of biologically-oriented research. This includes traditional agricultural research areas such as crops, but also includes a number of cutting edge product lines.

Among these is the institute's work on biofuels research. One of these projects that has received special attention lately is research into solid-state anaerobic digesters (SSAD). PAMI's research focuses on finding ways to adapt biofuel generating techology for the prairie climate, using solid agricultural waste such as feedlot manure, animal remains and wet distiller grains.

"This exciting 'green energy' research opens the possibility of putting any solid organic waste into a digester - from leftover feed to grass clippings. From this waste, energy in the form of gases is produced that be converted to heat and electricity or eventually be upgraded to natural gas and fed back into the provincial grid. And the material left inside the digester after the gases is taken away can be composted," says Gullacher.

PAMI's biodigester research was recently recognized by 21st European Biomass Conference and Exhibition in Copenhagen, Denmark.

Another area of agricultural-based research PAMI is developing is the expanding nutraceutical field of consumer products. Nutriceuticals are health supplements based mainly on plants rather than chemicals. The best known of these is the popular cold remedy ColdFX for which PAMI helped provide some of the initial development.

Tanks a Lot

One of the most exciting areas PAMI as moved into is military research.

"This is an initiative where the connection between agriculture and military equipment doesn't seem obvious at first, but on closer consideration there's a very close alignment. Farm equipment, as with military equipment, has to be designed to be rugged and durable under a wide range of difficult environmental conditions. The military is always looking to keep its vehicles and equipment one step ahead of whatever might be thrown at it, so our innovative folks have been able to help a great deal in serving their vigilance."

Of course, the details of PAMI's military projects are classified so Gullacher can only hint at the work that they do.

"Some of our military work is routine testing but we've also had to learn to deal with some pretty out-there electronics as well as having to learn about the effects of explosive blasts on equipment."

Gullacher is also able to disclose that some of their military work does not involve field equipment at all.

"There is a growing demand in the military for simulator equipment. Simulators were once used only for pilot training but now they have extended to almost every type military field equipment including tanks, personnel carriers and even common military-grade trucks. Given the high expense of equipment and live training, simulators help the military to reduce annual training costs while at the same time ensure time spent live training is optimised by allowing operators to hone their skills before live exercises."

These have been some of PAMI's most interesting projects, Gullacher says.

> "There are a lot of factors involved. Simulators involve marrying many technologies including mechanical, structural, hydraulic, electronic and computer hardware and software."

Small Town Challenges

The global reach of PAMI's achievements is made all the more impressive by the fact that it operates out of two relatively small prairie centres. Towns and cities of equivalent size have struggled to recruit even a single municipal engineer yet PAMI has had relatively little trouble attracting dozens of talented engineers.

"The quality of the work we do is a great draw for many engineers. In many cases, they are willing to trade off living in a larger centre just for the opportunity to participate in our projects. But you also have to look for the right kind of person. We look for people who don't mind living in a smaller centre and are interested in making a career with us. In larger centres, talented people often hop from job to

job to advance their careers but we have a relatively low turn-over."

In fact, some of Gullacher's biggest challenges come not from urban centres but from the surrounding area.

"We have a number of mining operations in the area as well as some farm equipment manufacturers so those put pressure on us not only for the professional staff but also for skilled trades. Fortunately, we have very good relationships with those industries. That helps mitigate those pressures. We actually benefit a great deal from the closeness of the 'iron triangle' of equipment manufacturers in the Humboldt-Watson-St. Brieux area. We are able to access some of the sophisticated production equipment such as laser and hydrogen welding and spray coating that has become available in this community."

Eye on the Horizon

As Gullacher describes it, PAMI has built a solid client base from sheer persistence.

"It's the old story that success is 10 per cent inspiration and 90 per cent perspiration. A lot of our revenue has been generated by handling the mundane as well as the creative aspects of equipment development so that our clients can focus on the big picture. With this approach, we've reduced our dependence on government support with most of our funding coming from clients – and we have many repeat and long-term clients."

But Gullacher is under no illusions that PAMI can rest on its laurels.

> "An organization like our's always has to be looking as far ahead as possible."

"We have to continue to be relevant to industry as well as doing our best to predict the shape of agriculture and the evolution of the prairie economy to 2020 and beyond. The one thing that won't change is our dedication to do our best work which is our best guarantee of work tomorrow."

PAMI has provided the Royal Canadian Air Force with structures of prototype CH146 helicopter simulators, which will be used for training helicopter pilots and crew in Canada.

Photo courtesy of PAMI

Water Under Troubled Bridge

BY MARTIN CHARLTON COMMUNICATIONS

In 2002, elders from the One Arrow First Nation organized a sweat lodge to bless the proposed site of the St. Louis Bridge.

These days, the project's regional director Doug Hansen, P.Eng. sometimes wonders if the Ministry of Highways shouldn't have them back to give the project an extra dose.

Throughout its history, the bridge has seemed more cursed than blessed. Despite the setbacks, the engineers and geoscientists working on the project have risen to the occasion to overcome every hurdle.

Balancing Budgets

The original St. Louis Bridge, which spans the South Saskatchewan River about half way between Saskatoon and Prince Albert, almost qualifies as a heritage site. It was initially built as a railway bridge in 1912 and was converted to traffic lanes in 1929.

"Needless to say, transportation has changed a lot since that time. This is a bridge which is just simply at the end of its operational life," said Hansen.

While the bridge's antiquated state has been obvious for decades, it took awhile before replacing it made it to the top of the Ministry's priority list.

"We had looked at replacing it several other times over the years but we are talking about a significantly expensive project. It always came down to an assessment of whether we could squeeze a few more years out of the existing bridge before it became absolutely necessary to replace it," said Hansen.

Even when the $60 million project was approved in 1997, it continued to face budgetary setbacks. The process continued through the stages until the environmental assessment in 2002 at which point the project was delayed again because of a mix of budget considerations and complications that arose from the environmental review.

Pile of Bones

The old bridge might have seemed like a heritage site but, as it turned out, the proposed site of the new bridge actually was one. Assessment crews came across a huge cache of buffalo bones which led them to uncover the remains of an ancient Aboriginal settlement. In addition to the bones, archaeologists also found tools and other evidence of settlement. The bones were carbon-dated to be up to 7,000 years old and the site itself is estimated to have been continuously occupied for a period of roughly 3,000 years.

This exciting discovery brought special responsibilities for the Highways officials.

"We brought in Stantec, who have crews specializing in archaeological work, to do a thorough excavation and cataloguing of the site. After they were done we could proceed but on the condition that we could not excavate the site any further. We could put dirt on it – we could bury it again – but we could not dig it up any more."

The project team also established strong ties with the One Arrow First Nation to help them preserve the cultural and historical integrity of the site.

Slip Slidin Away

When Highways crews were finally able to start site preparation in 2007, they were soon confronted with the many geotechnical challenges of the area.

> "Right off the bat, we found two active landslides on the north bank of the river that we had to mitigate."

After considering several alternatives, Hansen's team ultimately decided to use a relatively new stabilization technique that basically involved injecting columns of crushed rock into the unstable soil.

But while deep holes helped fix a problem in one area of the project, they were utterly inappropriate in another area.

"We had to deal with a shallow aquifer so we could not use conventional pilings in some areas. We would have ended up with gushing artesian wells higher than the river level. We had to do some very extensive geotechnical work to come up with alternatives in those areas.

The crews also had to tip-toe around areas with certain unfavourable soil types.

"The soil in the area, called diamicton soil, is really an awful building material. It just becomes a real mucky mess if it's exposed to air and water. So our challenge was to try to build in those areas while disturbing the soil as little as possible."

Steel Yourself

The geotechnical challenges proved no match for the can-do attitudes of roughly 50 engineers and geoscientists working on the bridge. With much of the site preparation at last behind them, Hansen and his team were looking forward to putting the steel girders in place during the winter of 2012.

One small problem: the steel never came.

"We were faced with a steel shortage that year. One of our contractors in Winnipeg who were fabricating the girders was unable to find a source in time to meet our winter build schedule. We lost an entire building season as a result."

This past winter, things went better – for awhile. The suppliers in Winnipeg had enough steel this time. They finished building the girders and loaded them up on a truck bound for St. Louis.

South embankment of the St. Louis Bridge project, May 2011.

Photo courtesy of Stantec

"And then the truck tipped over. The steel was damaged and had to be sent back. It was a very, very rare type of incident but it cost us another whole season."

This Bird not Worth Two in the Bush

Although the steel construction work could not begin, the Highways crews were still able to keep themselves productively busy on some of the remaining grading work – until they encountered the Horned Grebe, a protected water bird. Three nests of the endangered bird were found on the site which led to a temporary shut-down. When work resumed, crews had to stay at least 100 metres away from the nests and were not allowed to disturb the nests until the young had left.

"Fortunately, that only affected about one-third of our worksite. We were able to continue working on the remaining area."

Looking Forward to Finishing

In its initial assessment, the Ministry of Highways had initially expected the bridge to be done in 2012. With the repeated delays, that's now been pushed back to the fall of 2014.

Needless to say, after all the hurdles, Hansen is eager to finish. At the same time, he values the experience he and his colleagues have gained from it.

"From an engineering perspective, it has been a very interesting project. For many engineers, this is one of those once-in-a-lifetime projects so a lot of us involved with the bridge have found it a very rewarding experience," Hansen says.

Pier construction, Oct 2011.

Photo courtesy of Stantec

Member Profile

This month *The Professional Edge* chats with Craig Murray, P.Eng., an electrical engineer with the Saskatchewan Research Council (SRC) in Saskatoon.

Tell us about your personal and professional background.

I was born in Wilkie and raised in Outlook. I studied engineering at the U of S. I worked in Toronto for nine years after which I moved back to Saskatchewan to work at SRC and I've been here ever since.

Why did you choose to go into engineering?

I liked math and physics, went to an open house at the U of S and thought engineering was of interest. As for my specialty, I basically just went where I thought the jobs were going to be. I thought electrical was where the profession was headed. It was a hard decision between that and mechanical.

What was your first job after college?

I worked for IBM in Toronto. That was a great opportunity. I got to work with many smart and capable people in a large team. You could see the output of your work in the products that we made. I was proud to be part of the team that created some of the world's first PCMCIA cards – although that's an obsolete technology now!

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

The most rewarding project I worked on, back in 1999-2000, was the Cigar Lake jet-boring development project for Cameco. It was a massive and successful project that brought together engineers, technologists and professionals of all descriptions from all over the world to develop a solution that is really quite innovative and unique. Early next year, they'll finally be putting it into production.

What are your interests outside of work?

I enjoy playing the guitar although nobody else enjoys me doing it. I also like tooling around on my motorcycle. Once a year, I like to take a longer trip through a mountain pathway or south on some windy roads.

Have you ever met anyone famous?

I didn't exactly meet her –but I stayed in the same hotel as Angelina Jolie and Brad Pitt once when I was in India. It was a media circus.

Did you enjoy travelling in India?

Yes, very much so. I've been there five times on business and vacation. I like the busyness, the crowds, the people and how different everything is from Saskatchewan. You can hardly imagine we're even on the same planet. I've made some good friends there and enjoy returning when I can.

Where have you vacationed recently?

I like to vacation in warm weather places like Bali, Indonesia where I was fortunate to travel to last winter. It's very beautiful and tropical but at the same time very urban. We like to rent a house and immerse ourselves in local activity. I met many great people. On the whole, I like places that offer chaos in a warm environment.

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

For my life, I would say my daughters Carolyn and Hannah. They are really amazing young women who influence and inspire me - sometimes in very quiet and subtle ways.

For my career, I have to say an engineer I worked with at IBM named Chris Copeman. He was 10 years older than me but was doing a similar job so he was a great mentor who offered a lot of great advice that I think about almost daily.

Is there any one piece of advice from him that stands out?

Yes, that's easy. He told me something once that has helped me many times over the course of my life. He said: "Be cool man. You can fix it."

APEGS View

Levene Graduate School of Business Unveils Engineering Management MBA

Following a two year review of graduate business programs, which included consultation with industry leaders and The Association of Professional Engineers and Geoscientists of Saskatchewan, the Levene Graduate School of Business (GSB) at the University of Regina has launched a dynamic new MBA program.

The new Levene MBA is designed to be completed in 18-36 months of study. It consists of a four-course core plus four-course specializations, including a new and innovative specialization in Engineering Management. The program is capped off with an integrative practicum in which students utilize knowledge across their program of study to focus on solving people's problems in a real business situation.

All Levene MBAs now include an international study tour. In these tours students have visited multiple companies, many engineering-based. Building on the Levene GSB's international network, students are involved in joint consulting projects with students from schools such as the Estonian Business School or Turku University of Applied Sciences (TUAS) and organizations including Kalev Chocolates and STX Finland.

These practical projects are beneficial to both students and the companies visited. Working with students from Levene and TUAS on a real STX issue "has given me realistic thinking by third-party points of view, which has been very beneficial for the actual management of STX," said Kyung-Yeol Chun, Senior VP of STX Finland.

For more information and application details, visit: http://www.uregina.ca/business/levene/

Fees for 2014 are Due

on or before December 31, 2013

APEGS will mail out dues notices for 2014 annual fees to individual members and holders of a Certificate of Authorization in mid-November. Your annual fee payment covers the upcoming calendar year. If you do not receive your dues notice by December 1, 2013, call APEGS at 306-525-9547 (Regina) or 1-800-500-9547 (North America) and ask to have a copy sent to you. Fees are due on or before December 31, 2013 regardless of whether you received your dues notice. In accordance with The Engineering and Geoscience Professions Administrative Bylaws, 1997, your membership will cease on January 31, 2014 if your annual fee payment has not been received in the APEGS office on or before January 31, 2014.

Members who are 65 years of age and retired are eligible to apply for Life Membership. Life members are not required to pay the annual membership and licence fee; however, if they wish to resume practice, fee payment is required. Members who are retired or not working (at anything) in Saskatchewan can retain membership and may be eligible for a waiver of the annual licence. More information can be obtained from the documentation accompanying the dues notice or from the APEGS office.

Failure to maintain your membership will result in ineligibility for benefits under the group life insurance program offered through Manulife and Engineers Canada (CCPE) if you have subscribed to this insurance. 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.

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, 2014 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 fees.

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Call for Expressions of Interest

2014 APEGS Annual Meeting

May 1-3, 2014, Delta Bessborough, Saskatoon, SK

“Growth & Diversity – We see more”

APEGS invites you to submit an Expression of Interest to do a presentation during the professional development sessions at the 2014 APEGS Annual Meeting on Friday May 2nd, 2014 in Saskatoon.

The Annual Meeting Planning Committee is inviting speakers for track sessions with a focus on one of the following subthemes, “Personal Growth, Project Growth, Provincial Growth or Professional Growth.” Presentations are scheduled for 45 minutes, allowing for a 40 minute presentation and 5 minutes of questions and answers.

Your Expression of Interest should contain the title of your presentation and a maximum 100 word description. Submissions should include an engineering or geoscience component related to the themes described above.

Submissions should be forwarded to Tara Zrymiak - Tara.Zrymiak@snclavalin.com or Chris Wimmer - cwimmer@apegs.sk.ca

For additional information contact Chris Wimmer at (306) 525-9547 or 1-(800) 500-9547 (North America).

Terms and Conditions

All submissions will be subject to review by the APEGS Annual Meeting Planning Committee. If selected for the conference, authors are authorizing publication of their submission in the conference program and their final presentation electronically.

CANADIAN CONFERENCE ON

Electrical and Computer Engineering 2013

BY RAMAN PARANJAPE, P.ENG.

CCECE Award Winners

The South Saskatchewan Section of the Institute of Electrical and Electronics Engineers (IEEE) in collaboration with IEEE North Saskatchewan Section and IEEE Western Canada Region organized and hosted the 26th Annual Canadian Conference on Electrical and Computer Engineering in 2013 (CCECE 2013) in Regina on May 5-8, 2013. The theme of the conference was Electrical and Computer Engineering: The Enabler of the New Economy.

The Canadian Conference on Electrical and Computer Engineering is the flagship event for IEEE Canada. CCECE is Canada's premier networking forum for leading researchers in the broad areas of electrical and computer engineering.

Keynotes

The three morning plenary speakers were Chancellor Eric Grimson of the Massachusetts Institute of Technology, Ibrahim Gedeon the Chief Technology Officer at TELUS Communications Inc and Tom Kindred, Vice President and Chief Information Officer of SaskPower.

Chancellor Grimson is a professor of computer science and engineering and holder of the Bernard Gordon Chair of Medical Engineering. He spoke about the revolutions in on-line teaching that MIT and Harvard are leading with the MITx and Edx projects, in which all teaching materials are provided freely on the internet.

Dr. Ibrahim Gedeon is responsible for technology strategy, network and services architecture and network support systems at TELUS, and spoke about the future of Telecommunications in Canada.

Tom Kindred spoke about the importance of technology to the evolution of business in Canada and the technologies being used by SaskPower to make it a world leading utility.

Events

In addition, the IEEE Humanitarian Initiative Committee (HIC) ran a student paper competition and round table at the conference. The winning student was given an award for travel to the IEEE Global Humanitarian Technology conference in San Jose. The Regina Engineers Without Borders student chapter participated in both the round table and student paper competition.

The CCECE 2013 attracted over 265 paper submissions all of which were peer reviewed. Just over 200 papers were accepted and presented by top researchers, faculty and graduate students from across Canada, the USA, and around the world. There were papers presented from over 25 countries including India, China, Brazil, Iran, Korea and Japan.

CCECE 2013 included approximately 50 oral sessions, a poster session and a tutorial on communication networks. The diversity of the technical program ensured that the conference was interesting and relevant to all attendees.

Thank you

The conference organizing committee received support from U of R (Faculty of Engineering, Faculty of Graduate Studies and Research, Department of Compute Science), SIAST, SaskPower, SaskTel, PTRC, APEGS, Regina Engineering Society and Regina Hotel Association. The committee would like to thank everyone involved for making this event a success.

Innovation

through the Lens of an Engineer

BY LESLEY MCGILP, P. ENG., MBA

Innovation is intrinsic to an engineer's discipline.

Whether you are designing an intricate electronic positioning system, troubleshooting a process or researching the cause of a failure, engineers frequently require ingenuity to find solutions to the many challenges faced by our profession.

The 'Aha!' moment when a novel solution to a complex problem comes into focus is for some their favorite part of engineering.

In the geosciences there are similar opportunities to innovate and solve problems and the profession also includes the observation and incorporation of nature's innovative spirit.

Of course innovation isn't just about science and engineering. Innovation touches almost every facet of human life–be it domestic, artistic, scientific or business.

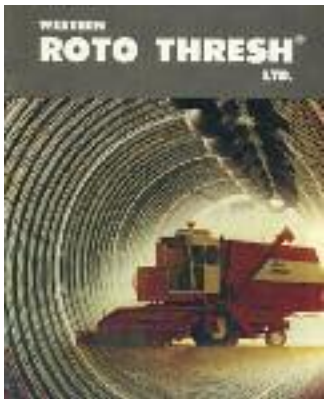
From October 21-26, 2013, the ingenuity of Saskatchewan's pioneers and the energy of entrepreneurial invention and our thriving innovative sectors will be celebrated during Saskatchewan Innovation Week.

Innovation Week 2013 will be held in conjunction with National Science and Technology Week and also coincides with National Small Business Week and Design Week.

Started in 2012 as an extension of the 100 anniversary of the University of Saskatchewan's College of Engineering, Saskatchewan Innovation Week reflects the palpable excitement and creativity that is occurring within our province's borders among the research clusters at the world-renowned Innovation Place Research Parks and organizations in all corners of Saskatchewan.

This year's theme - Pathways to Innovation - was chosen to encourage reflection on the variety of journeys that are undertaken in pursuit of innovation. According to Innovation Saskatchewan, this theme also reflects the direction of the province's innovation agenda. This Government of Saskatchewan agency is the principal sponsor of the week and is responsible for implementing Saskatchewan's innovation priorities.

Innovation is integral in Saskatchewan's diverse and growing economy. The list of successful innovations of our province's engineers and geoscientists is long. The Western Development Museum's online display "Saskatchewan Innovations" lists many of the province's innovations including the first air ambulance, ATMs and debit cards and numerous pieces of farm machinery.



Photos courtesy of Western Development Museum

Left - Roto Thresh Centre - ATM and Debit Card - A Saskatchewan innovation! Right - Straw Car

Photos courtesy of Western Development Museum

CF-SAM represents a milestone in Saskatchewan and Canada's aviation history. It belonged to the fledgling Saskatchewan Air Ambulance Service (SAAS), the first non-military, government-operated air ambulance service in the world.

Interestingly, many Saskatchewan innovations involve collaboration between engineers and other disciplines, such as the straw gas car or the new start-up 3twenty Solutions, who build modular housing and offices from seacan containers. This sort of collaboration is common at the Saskatchewan Research Council (SRC) where brain-storming innovative solutions to solve experimental challenges frequently occurs when our technologists and engineers sit down for coffee together.

A variety of perspectives can be important ingredients for Innovation, as noted by Steven Berlin Johnson, author of *Where Good Ideas Comes From: The Natural History of Innovation*. His research on the topic found that innovations occur more frequently through collaboration and that innovative people tend to have diverse personal networks.

Often times, engineers are enablers of the process starting with a great idea and through a little (or a lot) of engineering develop the concept to the point of innovation. Inventions such as airplanes to fly through the air, rocket ships to travel into space and seismic tools to see into the earth are just a few examples of dreams turned to reality through the application of engineering and geoscience.

Engineering, geoscience and the exciting inventions that these professions have created are just some of the work that will be on display during Saskatchewan Innovation Week.

The week will kick-off with a press conference and networking event at Innovation Place and will be followed by Pathways to Innovation seminars in Regina and Saskatoon, sponsored by SRC and APEGS.

The seminars will include talks on developing innovation skill sets, leveraging innovative tools like business intelligence and social media and experiences of Saskatchewan innovators on their pathways to innovation.

The week will also include a special event at Boffin's in Saskatoon to showcase innovation in the food industry and to celebrate Saskatchewan's Manning Innovation Award nominees.

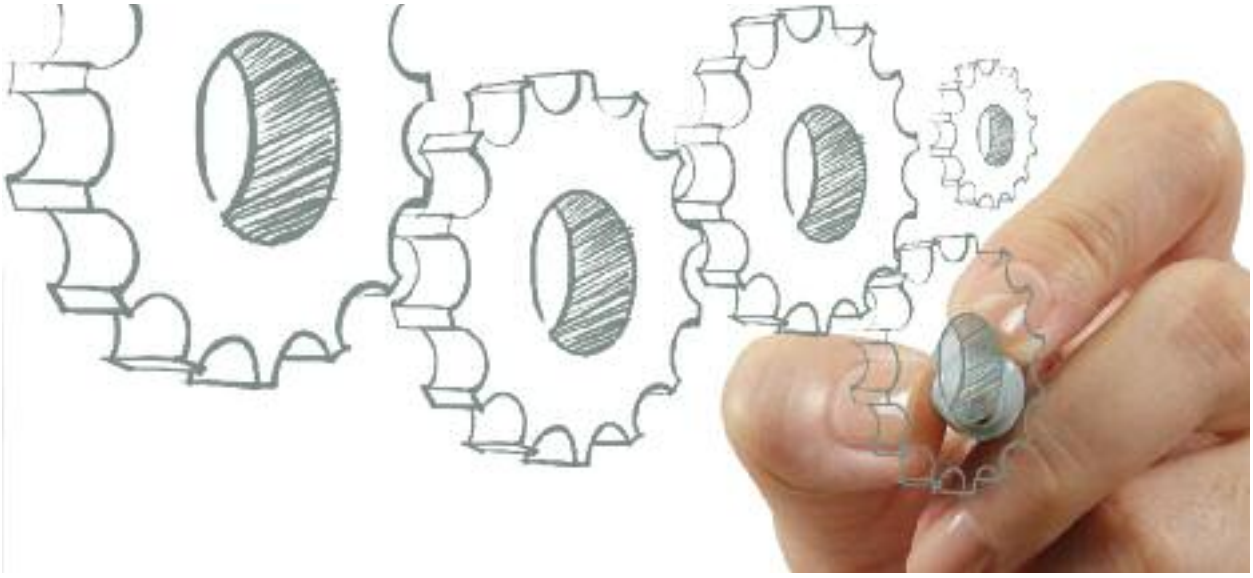
Other highlights include the Building Saskatchewan Green Conference, a Geek Girl Dinner, a Women of Influence Breakfast and tours of the Saskatoon Airport Expansion and the Canadian Light Source (CLS). There will also be activities in Saskatchewan schools to explore the development of innovation skills.

There are numerous ways to get involved in Saskatchewan Innovation Week and explore your connection to the fascinating phenomenon of Innovation. Whether you're hosting or attending an event, Saskatchewan Innovation Week is guaranteed to open your mind and your network to new possibilities.

For more information and an updated schedule of events please visit **www.saskinnovationweek.ca**.

A Continuing Professional Excellence Opportunity

Parktown Hotel, Saskatoon, January 23-24, 2014



The APEGS Professional Development Committee is pleased to offer a Continuing Professional Excellence (CPE) opportunity for engineers and geoscientists.

Check the APEGS website for updates and registration information: **www.apegs.sk.ca**. Accommodations can be reserved directly with the Parktown Hotel, 924 Spadina Cres. E., Saskatoon, SK S7K 3H5, ph: 306-667-6076.

SESSION ONE (JANUARY 23-24)

Get to the Point!

A Two-Day Practical Writing Course for Technical Professionals

This highly interactive two day session is designed for engineers and geoscientists who write reports, emails, letters and proposals, and want to write them more efficiently and present their information more effectively. Sharpen your personal writing style to create a strong and effective presence. There will be individual and group practice exercises, with lots of discussion and feedback.

SESSION TWO (JANUARY 23)

Working With the Environmental Code

The Ministry of Environment's proposed new results-based regulatory model is an outcome-based process that specifies what is to be achieved and largely leaves the how up to the proponent. It establishes clear performance expectations while eliminating ineffectual scrutiny to process, especially for routine, well understood and low-risk activities.

This full day workshop, facilitated by Saskatchewan Ministry of Environment, is for engineers and geoscientists who will work closely with the new environmental code in areas such as affected sites, landfills and transfer stations, drinking and wastewater, forest management and industrial air quality. The workshop also provides an in-depth explanation of who is a qualified person and how someone can apply for designation. Information on the ministry's new business web-based interface will also be provided.

SESSION THREE (JANUARY 24)

APEGS is pleased to offer members the following information regarding a concurrent CPE opportunity being offered at the same facility on January 24, 2014. **This is not an APEGS event. A separate registration will be required, with details forthcoming.**

1st ANNUAL

Sustainability Networking Conference

Urban Transportation and Design:

Getting Where We Need To Go

The University of Saskatchewan's School of Environment and Sustainability, in conjunction with APEGS and the City of Saskatoon, is pleased to introduce the first annual Sustainability Networking conference on January 24, 2014. True to its title, the conference will discuss current urban transportation practices and then examine how we can design and build more sustainable systems for our cities in the future.

COURSE THREE

January 24, 2014, 8:30 a.m.-5:00 p.m.

Urban Transportation and Design:
Getting Where We Need To Go

Member Surveys

We are listening to you!

APEGS makes extensive efforts throughout the year to gather information from our members so we can improve our services to you and so that you can make more informed decisions about your careers.

Salary Survey

Approximately 5,000 APEGS members in Saskatchewan were invited by email to participate in online surveys in 2013. The annual salary survey was completed in March and the results published in the May/June issue of The Professional Edge. Annual salary survey results can also be found on the APEGS website www.apegs.sk.ca

Annual Meeting Survey

The Connection and Involvement Committee conducted the annual meeting survey in late May 2013. This survey solicited feedback regarding the events and structure of the 83rd APEGS annual meeting held in Regina May 2-4, 2013.

Over 340 members completed the survey representing a response rate of approximately seven per cent. Respondents who did not attend the 2013 annual meeting were provided the opportunity to provide general feedback on the Association's annual meeting.

The respondents in attendance at the annual meeting were asked to rate each event on a scale of 1 to 4 (1 poor, 2 fair, 3 good and 4 excellent).

All events were rated higher than a 3 on average. The Awards Banquet held Saturday evening received the highest average rating at 3.73. The Friday track sessions were individually rated with 11 of the 16 sessions receiving a rating greater than 3 and no single session rated lower than 2. The track sessions as a whole received an average rating of 3.33. The host facility was well received with an average rating of 3.44.

The survey indicated that a large percentage of people attending the annual meeting had been invited by APEGS. Over 60 per cent of survey respondents that attended the annual meeting stated they were APEGS volunteers.

Over 45 per cent of the attendees indicated they personally covered the costs to attend the annual meeting. Just over 40 per cent indicated APEGS covered their costs to attend and approximately 25 per cent stated their employer covered the costs. These percentages total greater than 100 per cent, so it appears for some attendees the costs are shared.

All respondents were asked to indicate for what events they were willing to pay a registration fee. Registration fees would help offset the costs APEGS incurs to conduct the annual meeting. Over 40 per cent indicated they would pay a registration fee for the professional development sessions. Over 40 per cent were also willing to pay to attend banquets and approximately 30 per cent would be willing to pay for luncheons. Thirty per cent of respondents indicated they would pay an overall registration fee to attend all the events. Just over 20 per cent indicated they are not willing to pay any fees.

Some general feedback was solicited from respondents regarding attending annual meetings. When asked why they did not or will not attend the APEGS annual meeting over 30 per cent indicated they are not interested. This question received the largest volume of comments, with the most common response being that they are too busy. Location of the annual meeting was also an important consideration in deciding whether to attend or not.

Professional Development Survey

Members were also invited by The Professional Development Committee to complete a survey in July 2013. This survey sought feedback on what professional developments opportunities may be of interest to the association's members.

This survey was completed by over 500 members

representing a response rate of greater than 10 per cent. The survey questions asked for input on five main categories: engineering, geoscience, industry, environment, business and general interest.

Although there were many topics of interest, the most popular were (in no particular order): civil engineering; environmental engineering; mechanical engineering; geoscience; mining and minerals; oil and gas; sustainability; renewable and non-renewable resources; leadership and management.

The survey indicated that fall and winter are the most popular time of year to offer professional development opportunities to the membership, with summer being the least popular.

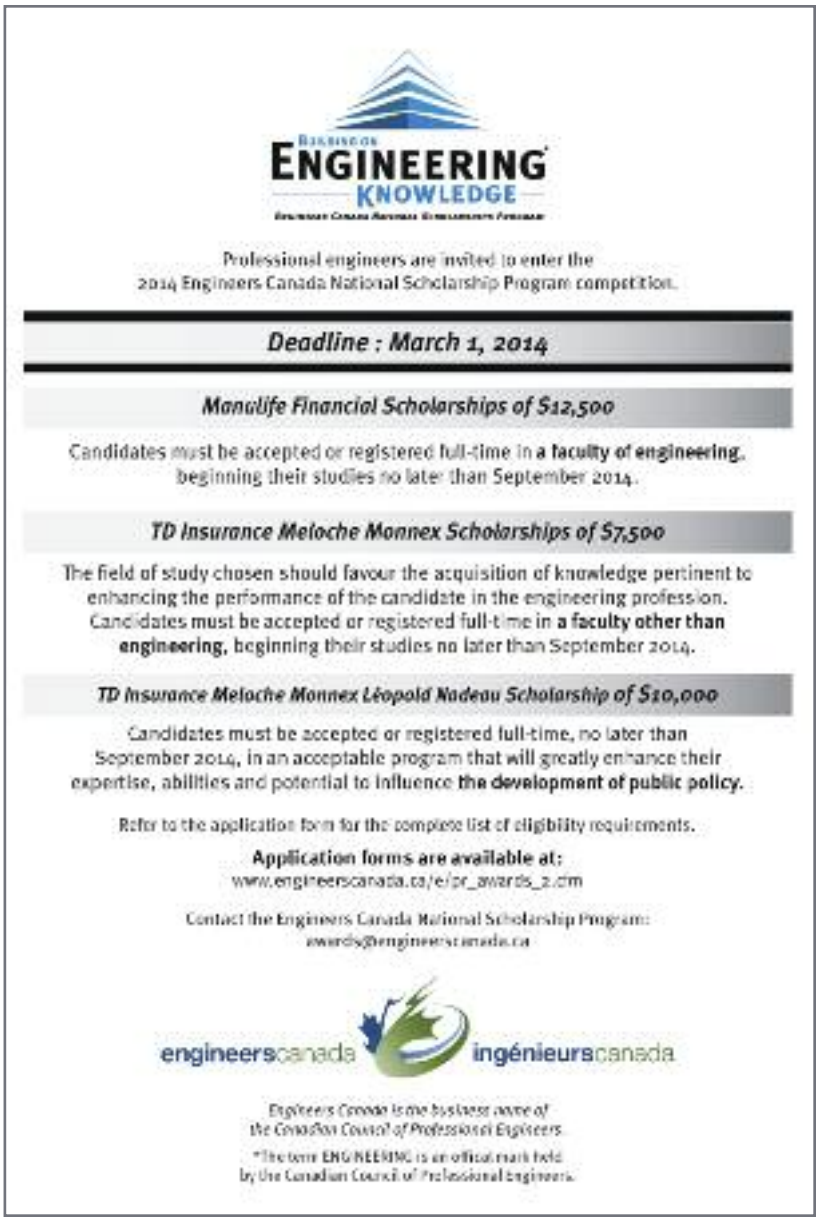
Library Services Survey

The library services survey was completed in August 2013. This survey requested feedback on the services available to members of the association through the universities' libraries in Regina and Saskatoon. Over 425 members participated in the survey, representing a response rate of greater than eight per cent.

Almost 80 per cent of the respondents reported they did not know how to access the universities' libraries. Approximately 20 per cent have accessed the library in Saskatoon and less than 10 per cent in Regina. Workshops and seminars was the library service of most interest and the workshop topic of most interest was staying current with a member's discipline.

More information regarding access to the university libraries can be found on the APEGS website: www.apegs.sk.ca in Members/Members Benefits.

The Connection and Involvement Committee and the Professional Development Committee thank you for your participation in these surveys. Additional comments or suggestions are always welcome and encouraged on an ongoing basis. Feedback can be forwarded to Chris Wimmer, P.Eng., FEC cwimmer@apegs.sk.ca or Patti Kindred, P.Eng., FEC pkindred@apegs.sk.ca at the APEGS office. All feedback will be provided to the appropriate planning group. The source of the feedback will remain confidential.



Do you have your RESERVATION?

Consulting Engineers of Saskatchewan

Proudly Presents the Industry's Prestigious

2013 Awards Banquet

Showcasing the achievements of companies and individuals in the Consulting Engineering and Geoscience field

Thursday, November 28, 2013

Radisson Hotel

Saskatoon, SK

To register or for information, contact CES Office

Ph: 306.359.3338 Email: ces1@sasktel.net

ces

Open to all employees of CES members and Invited Guests

Call For Council Nominations

Nominating Committee

The nominating committee, chaired by Past President, Leon Botham, P.Eng., FEC, is soliciting names for the positions described below. You may contact staff support to the Nominating Committee, Bob McDonald, at rhmcdonald@apegs.sk.ca to propose the names of potential candidates. Bob 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, for President the person holding the office of President-Elect, and one person for the position of President-Elect (typically the person holding the office of Vice-President). Andrew Loken, P.Eng., FEC is the current President-Elect and Margaret Anne Hodges, 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 any other vacancies.

Submission 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 13, 2014, as the election will take place when ballots are counted on Monday April 28, 2014, the polling day.

2014 Vacancies & Terms of Office

Officers

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

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

- Group VI (Chemical, Ceramic and Metallurgical)
- Geoscience North District
- North District
- South-West District

Eligibility for Nomination

- 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 who is 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.

MINE *your* POTENTIAL

OCTOBER 22, 2013. SHERATON CAVALIER, SASKATOON.

An inaugural development event for women in or interested in the natural resources sector in Saskatchewan that provides skill development and networking.

Keynote Speaker: Maryann Mihychuk
The first ever recipient of the Women in Mining Canada Trailblazer Award in 2012 and a founding director of Women in Mining Canada.

Lunch Speaker: Roberta Jamieson
President and CEO of Indspire.

Session Topics Include:

Fierce Conversations
Mentorship and Coaching
Leading With Courage

Register online: https://www.picatic.com/event13793453588151

8:30 AM - 7:00 PM, $500 per delegate, $100 student rate

PRESENTED BY

Women IN Mining SASKATCHEWAN

Women in Nuclear CANADA

FOUNDING SPONSORS

bhpbilliton resourcing the future · Cameco · AREVA forward-looking energy · K+S Potash Canada · EY Building a better working world

EVENT SUPPORTERS: AMEC, DELOITTE, GOLDER AND ASSOCIATES, HATCH, KPMG, MOBO PROMOTIONAL PRODUCTS AND WORLEY PARSONS

Celebrating Our Own

U of S engineering professor receives national recognition

Dr. S. Lee Barbour, P.Eng., an oil sands reclamation expert at the U of S and a professor in the Department of Civil and Geological Engineering, has been elected a Fellow of the Canadian Academy of Engineering (CAE).

Barbour, a civil engineer with more than 30 years of research and industrial experience in geo-environmental engineering, has made numerous pioneering contributions in oil sands and mine waste management and reclamation.

Barbour was recognized for his achievements and career-long service to the engineering profession, particularly his multidisciplinary research into the performance of oil sands mine sites and the reclamation systems and materials used to establish sustainable ecosystems on former mine site areas.

Shawna L. Argue, P.Eng., FEC, FCSSE awarded Fellowship

Shawna L. Argue, P.Eng., FEC, FCSSE was awarded a Fellowship in the Canadian Society for Senior Engineers (CSSE) at the May 25, 2013 awards dinner in Quebec City.

Shawna is a University of Regina graduate in Industrial Systems Engineering. Shawna became registered as a professional engineer in Saskatchewan in 1990 and obtained her Permission to Consult in Environmental Engineering in 1995. In addition, she is a Certified Environmental Auditor and Environmental Management Systems Lead Auditor, as certified by the Canadian Environmental Certification Approvals Board.

Shawna served as President of APEGS in 2010-11 and has participated in many of the Association's boards and committees. Shawna has also served on the board of the Association of Consulting Engineering Companies - Saskatchewan. Shawna is a Fellow of Engineers Canada and the recipient of the YWCA Women of Distinction - Award for Science and Technology and a recipient of the Regina Engineering Society's Technical Excellence and Volunteer Service Awards.

Shawna is the President and Principal Consultant of Argue and Associates Management Consultants, Inc., an environmental, health and safety management consulting company in Regina.

Mohindar S. Sachdev receives 2013 IEEE Charles Proteus Steinmetz Award

Mohindar S. Sachdev, P.Eng. is a power engineer whose passion for standards development made him a driving force in creating and revising guidelines for safer and reliable electric power systems. For this work, he is being honoured by the Institute of Electrical and Electronics Engineers (IEEE) with the 2013 IEEE Charles Proteus Steinmetz Award. IEEE is the world's largest technical professional association.

The award, sponsored by the IEEE Standards Association, recognizes Sachdev for contributions to and leadership in the

development of guides, recommended practices and standards for power system protection. The award was presented on July 23, 2013 at the IEEE Power and Energy Society General Meeting in Vancouver, B.C.

Sachdev has more than 60 years of experience in power engineering, with contributions to the operation of transmission and distribution systems and designing automation, control and protection circuits for a power plant in India. He has published over 300 papers on power system analysis, control and protection.

An IEEE Life Fellow, Sachdev is Professor Emeritus with the Department of Electrical and Computer Engineering at the University of Saskatchewan, Saskatoon.

Bland Brown P.Eng., FEC, FCSSE awarded Fellowship in CSSE

Bland Brown P.Eng., FEC, FCSSE was awarded a Fellowship in the Canadian Society for Senior Engineers (CSSE) at their May 25, 2013 awards dinner in Quebec City.

Bland Brown, a professional engineer with over 40 years of experience in municipal and electrical utility management, earned a degree in Civil Engineering with Great Distinction from the University of Saskatchewan and did post graduate studies in engineering structures.

Bland held leading engineering and managerial positions with the provincial power utility followed by an illustrious career in municipal engineering with the two major cities in Saskatchewan holding positions with general managerial responsibilities for environment and infrastructure operations.

Bland served as President of the APEGS in 1979-80 and has participated in the association's education and qualifications affairs. Bland is an Honorary Warden of the Iron Ring Kipling Camp in Regina.

Bland received the 1994 Lieutenant Governor's Medal awarded by the Institute of Public Administration in Saskatchewan, the 2002 APEGS Distinguished Service Award and Fellow of Engineers Canada in 2009.

CALCULATED SAVINGS...

THROUGH INNOVATION

Saving you money and protecting the environment is what we do best. In fact, we saved a client over $170,000 while reducing CO_2 emissions by 95% – that's nearly 540 tonnes of carbon. How do we know this?

Nilex's new **Innovation Calculator** estimates the percentage CO_2 savings as well as potential dollar savings when using Nilex geogrid or erosion control products versus traditional methods.

To calculate the environmental and economic savings of your upcoming road construction or erosion control project, contact us at 1.888.543.5454 or visit www.nilex.com

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Unearthing better results.

News Beyond Our Borders

www.skyscrapercity.com

Norway floats a tunnel

Planning is underway on the world's first floating tunnel and, at four kilometres, the world's longest floating bridge. The bridge and tunnel are among a series of "remarkable highway structures" being planned along about 1,000 km of coastal highway in Norway.

The $24.5-billion project would eliminate seven ferry crossings in the fjords and help carve eight hours from a 20-hour drive between Kristiansand and Trondheim.

Source: Engineering News-Record

OIQ launches voluntary audits

The Ordre des ingénieurs du Québec (OIQ) has recently launched a voluntary audit program for consulting engineering firms that will allow it to examine their business practices and encourage integrity. To participate in this program, firms agree to follow specific rules and practise specific standards, to submit to audits by the Ordre and to implement the changes such audits recommend.

By taking pre-emptive action on the business practices of organizations involved in consulting engineering, the OIQ hopes to be in a better position to improve practice in all areas where engineers work, and especially their ethics and professional conduct.

Source: Ordre des ingénieurs du Québec

chronicle.augusta.com

Nuclear plant construction returns to the U.S.

For the first time in 30 years, concrete has been poured for new construction of a nuclear power plant in the United States. Work began in March on the V.C. Summer Unit 2 plant near Jenkensville, South Carolina.

Another pour took place in Georgia three days later. Foundation pours of this type are considered the formal first step in the construction of nuclear plants.

Source: Engineering News-Record

Vancouver Sun

Alberta pipelines best regulated in Canada, says panel

Just short of a year after the government of Alberta tasked Group 10 Engineering with independently reviewing the province's pipeline safety, the results are in: Alberta has the "most thorough overall regulatory regime of all the assessed Canadian jurisdictions".

As Canada's oil and gas epicentre, Alberta has developed a "very mature" and "well established" industry, the report stated. The panel praised Albertans for their "complete" approach to reporting spills and compiling incident statistics.

The engineers also had something to say to Canada as a whole: Harmonize your regulatory and reporting requirements. Also, see what Alberta is doing.

The panel noted inconsistencies and lack of clarity between provincial and federal guidelines and definitions – particularly when it came to defining a body of water.

With no clear understanding of what is and what isn't a body of water, companies may not be properly mitigating risks that come with operating near them.

One major criticism of the review was the absence of analysis of enforcement - a factor which Group 10 engineers said was not meant to be included.

Another sticking point is the fact that no environmental or public interest groups were consulted during the drafting of the report.

Source: CTV News

huffingtonpost.com

Elliot Lake mall collapse may change rules

The deadly mall roof collapse in Elliot Lake may change the way engineers work in the province of Ontario.

The inquiry investigating the roof collapse at the Algo Centre Mall last summer – which killed two people – has received a 28-page document with recommendations from the Association of Professional Engineers of Ontario (PEO).

Over the 30-plus year history, many different engineers examined the leaky Algo Centre Mall. That led to questions at the inquiry as to how structural problems inside the leaky building could have been missed.

In its submission, the PEO agrees that should change.

The regulatory body says there should be more guidelines for structural inspections so engineers are not limited in their inspection by terms set out by building owners.

The PEO recommends those reports be called structural adequacy reports. They could include a long list of potential requirements, such as a timeframe for any suggested repairs and a section on any limitations or restrictions placed on engineers' work.

PEO also recommends such reports be provided to the municipality – making them available to any future owners, engineers or members of the public.

PEO also recommends the creating of a specialist certification for engineers carrying out structural inspections.

Source: CBC News

martylogan.com

Program to train engineers

Queen's University is partnering with industry and government in a new program to train engineers to work in remote and aboriginal communities.

The Sustainable Engineering in Remote Areas program is designed to teach graduate students and researchers about First Nations approaches to engineering and sustainability.

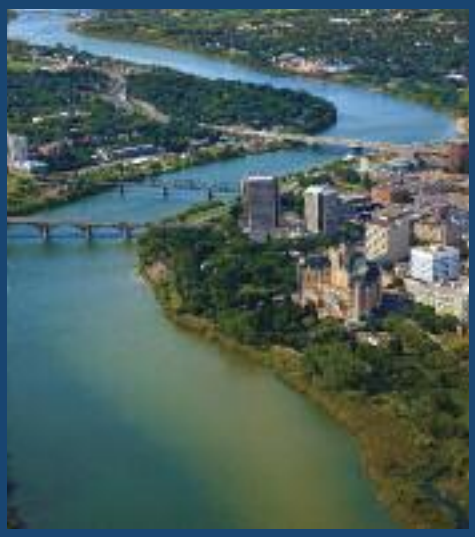
The program is being funded by $1.65 million from the Natural Sciences and Engineering Research Council of Canada's Collaborative Research and Training Experience program.

The focus of the program is renewable energy systems, sustainable energy and energy-efficient home design for northern communities.

The program is also meant to bring engineering and aboriginal cultural values closer, said civil engineering professor Mark Green.

Source: Kingston Whig-Standard

News From The Field



roadmapsaskatoon.wix.com

Saskatoon to host international science conference

Saskatoon StarPhoenix - The international STEMfest — dubbed a "festival of conferences" — is coming to Saskatoon in 2015 and it could bring along more than 3,000 delegates.

Tourism Saskatoon announced that it won its bid to host the 10-day event, which brings together international researchers and industry leaders in science, technology, engineering and math for several different conferences that run simultaneously in one city.

To date, Tourism Saskatoon has secured the World Conference on Safety in Science, Industry and Education; the World Conference on Power Control and Optimization; and the International Conference on Transnational Collaboration in STEAM Education.

Tourism Saskatoon said the event could pump $2.6 million in direct spending into the city but that number could grow as more conferences are added to STEMfest.

Women in engineering earn 25 per cent less than men

LiveScience.com – Women who work in engineering or optics earn less than men, and the wage gap peaks mid-career, a new survey finds.

Median salaries for men in these fields were 36 per cent higher overall than for women. The median salary for men was $79,755, compared with $58,431 for women.

The findings were detailed in the International Society for Optics and Photonics (SPIE) 2013 global salary report.

Men earned 140 per cent more than women in technical fields in the Middle East (at all income levels), 63 per cent more in Asia (in higher-income jobs), 41 per cent more in Europe (in higher-income jobs) and 32 per cent more in North America (at all income levels), the survey found. The smallest gap was in Oceania, where men earned only nine per cent more than women in technical fields (at all income levels).

The engineering income gap between men and women was the widest during the mid-career years. After 16 to 20 years of employment, men earned 43 per cent more than women, compared with eight per cent more after fewer than five years of employment, and 24 per cent more after more than 30 years of work.

Male survey respondents also reported working longer hours than women. Between 25 and 30 per cent of the men said they work 50 hours or more per week, compared with about 20 per cent of women. But the number of hours worked is just one of many factors that might explain the difference in pay mid-career, the report's authors noted.

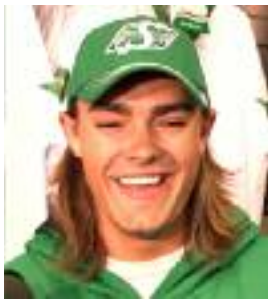
Some Roughriders busy hitting the books in off season

CKOM - Life as a professional athlete can be short, especially in football. With that in mind some of the Saskatchewan Roughriders have been busy in the last few off seasons working towards their degrees.

One of the more impressive Riders when it comes to education is defensive back Graig Newman. The former Saskatoon Hilltop spent the last five years working towards a degree in chemical engineering at the University of Saskatchewan.

"Finished last year," said Newman. "Wasn't easy, but I got through it."

Newman hopes to get his foot in the door with some jobs in his field in future off seasons.



Riderville.com

So what is chemical engineering?

Newman says it's basically turning raw natural products like potash, uranium and natural gas into useable products. Needless to say Newman will have plenty of job opportunities in Saskatchewan with that kind of education.

Having gone a more difficult route to the CFL by playing junior football, Newman thinks being tested so hard in school has definitely helped him on the football field.

"I feel the transition from junior football to the CFL was massive," said Newman. "My engineering skills played a part in me picking up everything so fast."

Not surprisingly Newman was a big fan of Bill Nye the Science Guy growing up.

"Growing up that show was awesome," said Newman.

First Nations mining career web portal

Northern Ontario Business Magazine - Thunder Bay's Oshki-Pimache-O-Win Education & Training Institute officially launched an interactive educational web platform, Learning2Mine.ca to help First Nations youth across Canada explore the world of mining.

The site is considered a vehicle to inform young people to consider careers in mining. It features a mining game guided by First Nation traditional knowledge and modern mining practice. Gamers learn the basics of being a miner by exploring the land and discovering hidden resources and artifacts underground.

Learning2Mine.ca uses videos, job profiles and a "career visualizer" with a questionnaire to match youth with careers in the industry based on their answers.

Institute executive director Rosie Mosquito wants to see Aboriginal people eventually employed as engineers, environmental technicians, project managers, geophysicists and working in administration.

Science gender gap widening

CCSE press release - The Canadian Center of Science and Education (CCSE) knows that the gender gap in the science, technology, engineering and math (STEM) fields is something that has troubled many educators. With initiatives to boost female participation in STEM programs failing to make significant headway with regard to this issue, the professionals at CCSE are urging educational institutions to further identify ways to close this gap.

According to a report generated by STEMConnector reveals that "nearly 40 percent of high school boys express an interest in STEM education, compared to just 14.5 percent of girls. The gender gap, according to the report, is widening even as the number of jobs in science and engineering is expected to grow." This is illustrated by the Academy of Science, Engineering, and Technology at Bartlett High School. The article cites that, out of 88 freshmen entering the program, only 25 are female.

The major concern with this gender gap is that women are going to be at a disadvantage in the job market, according to professionals at the Canadian Center of Science and Education. With jobs increasing in the STEM fields, the disappointingly low number of women who are training for these jobs indicates that the women who will be entering the workforce in the next 10 or so years will not be prepared for the jobs that are available.

The problem, though, lies in pinpointing why this gender gap has occurred.

UNIVERSITIES AND RESEARCH

U of R Engineering accreditation renewed

Engineers Canada - The Faculty of Engineering and Applied Science at the University of Regina has received continued national accreditation by the Canadian Engineering Accreditation Board (CEAB).The Electronics Systems, Environmental Systems, Industrial Systems and Petroleum Systems Engineering programs were each accredited for six years, the longest accreditation period possible in Canada. The newest program, Software Systems Engineering, was accredited for three years, with the possibility of extension for an additional three years.

"Getting accredited for six years is an outstanding achievement," explains Dr. Paitoon Tontiwachwuthikul, P.Eng., outgoing Dean of Engineering and Applied Science. "This speaks to the incredible dedication and hard work of our faculty, staff and students. It demonstrates that our programs are nationally recognized as premier engineering programs in Canada."

Future engineers unhappy with student unions

Macleans - Engineering students are different from other undergraduates. They have more hours of classes, more assignments and clearer career paths. While many undergrads face the prospect of unemployment or underemployment, engineers' skills are in demand across

many industries, from the resource extraction sector to the military.

But that career path is the source of conflict between engineering students and university student unions that they must pay fees to each year, which tend to align themselves against things like resource extraction and the military.

"A lot of engineering societies don't have that close a relationship with their central student union," says Lisa Belbeck, president of the Canadian Federation of Engineering Students (CFES), which claims to represent 60,000 engineering students and does not lobby governments.

The Canadian Federation of Students (CFS), on the other hand, which claims to represent 600,000 students in dozens of student unions across the country, does take strong political stands. The local and national chapters of the CFS routinely stage protests against the oil and gas industry, uranium mining, the military, the nuclear power industry and other major employers of young engineers.

This has led to a very high level of dissatisfaction among engineering student societies across Canada, several of which have voted to divert fees away from the local CFS chapters.

Saskatoon selected for study on road safety

CBC News - Volunteer drivers in Saskatoon will be part of a highway safety project that will be collecting data on how they navigate around the city. Saskatoon was selected by a national committee for The Canadian Naturalistic Driving Study as the first location for this type of research.

"This is a significant opportunity for Saskatchewan to assist transportation engineers across North America in building safer highways for all motorists," said Don McMorris, the Minister of Highways and Infrastructure.

For the next two years, volunteer vehicles will be equipped with cameras and sensors that will collect data about how drivers move around the city.

Virginia Tech Transportation Institute will be conducting the research, which will involve collecting information including how drivers navigate curves, how they behave at intersections, their highway speeds and how well they understand roadside signs.

"The advancements in technology have allowed us to gain more knowledge and insight about driver behaviour on roadways than we were able to obtain previously," said Charlie Klauer, the group lead with the Center for Vulnerable Road User Safety at Virginia Tech.

MINING

Tuberculosis at SK mine sparks check of workers

CJME - An active tuberculosis case was discovered at the Cigar Lake Cameco mine at the end of July and caused the mining company and TB Control Saskatchewan to work

together to track individuals possibly exposed to the disease. The latest count showed 130 individuals spread across eight provinces from British Colombia to New Brunswick.

Under the Public Health Act and disease control regulations there are a number of communicable diseases that are reportable by law, including TB. Public health does a follow up to figure out what individuals may have been exposed. Those people are offered a skin test to see if they have the TB bacteria and are then offered antibiotic treatment.

So far, there have not been any confirmed cases of active TB disease as a result of this particular case.

The initial contact tracing was for 119 people, 105 who reside in Saskatchewan and 14 from out of province. The number has since grown to 130 people.

For most people who become infected with TB it remains dormant. A small amount of people have a 10 per cent lifetime risk of developing active TB and only in those cases is it infectious.

At peak times the Cameco mine can have over 900 employees working on-site, many who recently came to Canada or are from Saskatchewan's northern communities. Both are populations that tend to be more at risk to develop active TB. Currently, rates in Saskatchewan are higher than national average and 54 per cent are experienced in the north.

BHP spends $2.6 billion, seeks partners

Bloomberg - BHP Billiton Ltd. is seeking partners for its Canadian potash project after approving spending of $2.6 billion, less than a month after the largest producer set off a possible price war.

The project in Saskatchewan province may cost $16 billion to build, Citigroup Inc. said last month.

Russia's OAO Uralkali, the world's largest potash producer, quit a marketing venture in July that controlled about 43 percent of global exports. BHP's projections for Jansen assume a shift away from the current market dynamic and the expectation that prices will reflect the cost of adding new supply, the company said in a statement.

U.S. company making play for SK helium

CKOM - In a province where potash and oil get all the attention it's not often we think of helium. But a worldwide shortage of the element is forcing one Dallas, Texas-based company to take a closer look here. Weil Helium will re-enter two existing helium wells near Swift Current that were originally drilled in the 1960s.

"We have found wells that were drilled for helium but never produced and that's what we're going after; we're going after areas where known helium reserves exist but were never produced for various reasons," said President Bo Sears.

A massive underground helium storage reserve site near Amarillo, Texas will soon be closed by the United States government. It produces 35 per cent of the world's demand. That loss is why Sears and his company are looking at Western Canada.

The plan will cost the company about $1.7 million per well with the main objective to produce helium as the main target instead of a byproduct. If the project is successful, it could end up being a highly profitable business.

It's an element many of us know simply for making balloons float. Sears insists it's much more than that.

"Its primary use is in its liquid properties, like MRI machines. MRI's represent the largest single users of helium in the world," he stated.

Besides MRIs, university laboratories use the element in particle accelerators. Sears is hoping to get the project going sometime this year.

K+S Aktiengesellschaft

German potash miner sticks to project

Mining.com - German potash giant K+S Group will carry on with its project in Canada despite Russian rival Uralkali's decision to leave an export cartel that triggered fears of a collapse in potash prices.

The firm, the world's fourth-largest potash miner, said its Legacy mine in Saskatchewan is on track and that the company "will not call this important venture into question in response to mere speculation".

"There is no substitute for potash and it is urgently needed for sustainable and efficient farming," CEO Norbert Steiner added.

Last month Ulrich Lamp, president and CEO of K+S Potash Canada, a unit of the European fertilizer firm, announced the company had reached an important deal with Canadian Pacific Railway to ship potash from Legacy to domestic Canadian and US markets.

The Legacy mine, currently under construction, is expected to start production by the end of 2016, ramping up to two million tonnes per year in 2017 and reaching full capacity of 2.86 million tonnes by 2023.

Golden Band restarts La Ronge operations

Canadian Mining Journal – Golden Band Resources of Saskatoon has resumed full operations at its La Ronge gold project, suspended since late February 2013 while the company sought to restore profitability to the operation.

The company has been busy for the last five months. Roads have been built to the Golden Heart and Greywacke areas, and they are ready for mining. The underground Roy Lloyd mine has been redesigned and mining restarted. New mining plans and resource calculations have been made. Additional work has been done on the tailings pond and expanding the camp. Refurbishing the mill is nearly complete, as is a stockpile to support operation at full capacity. The first gold pour happened in August.

Golden Band is drafting operational plans for the next two years that will include ore from the Roy Lloyd, Greywacke, Decade, Komis and Golden Heart deposits.

OIL AND GAS

New natural gas facility announced

Estevan Lifestyles - Bayhurst Energy Services Corporation (BESCO), a subsidiary of SaskEnergy, has announced a joint venture with Mistral Midstream Inc. of Calgary. It will result in the construction of a facility that will extract ethane and other hydrocarbons from natural gas being transported on SaskEnergy's natural gas system from the Bakken formation in southeast Saskatchewan.

The $72.5 million facility, of which BESCO will have a 10 per cent share, will be located near the Viewfield area, in a region of the province where natural gas liquids (NGLs) must be removed from natural gas so it can meet specifications to allow it to be delivered to homes and businesses in Saskatchewan.

The facility, known as a "straddle plant," will sit alongside SaskEnergy's natural gas pipeline system, where it will recover NGLs that will be marketed to commercial and industrial customers. Once processed to recover the NGLs, the natural gas will be compressed and re-injected into the transmission pipeline.

Construction on the facility will begin in 2014 and the plant is expected to be operational in early 2015.

INFRASTRUCTURE

Estevan asked to stop using nuclear device

Canadian Press - The city of Estevan has been ordered to stop using a nuclear device commonly used in road construction.

The Canadian Nuclear Safety Commission says it inspected a work site in the southeastern Saskatchewan city and found 16 safety violations involving a nuclear density gauge. Municipal crews use the portable device, which contains radioactive materials, to measure the density of soil at road construction sites.

The commission has ordered the city to stop using the machine until it proves that effective radiation safety procedures will be followed. The city says it will comply with the order and stop using the gauge.

Saskatoon seeks solutions to unstable slope

CBC News - As a section of the river bank slope remains unstable, the City of Saskatoon is taking on a bigger role to find solutions. The city administration presented a report to council about the slope, between 11th Street East and Saskatchewan Crescent East, that continues to move 3.5 centimetres per day.

The report asks for council approval of a sole-source contract for engineering services. The services would include geotechnical instrumentation, monitoring, investigation and recommendation of remedial options for the slope failure.

"As the slope failure began to increase we determined that it needs to be a collective effort," Rob Frank, Saskatoon's strategic services manager said. "You can't do a single solution on any of these properties, so we're collecting enough data over the next 90 days so that we can come up with some potential solutions."

Earlier in the summer, eight families were asked by the city to voluntarily leave their homes, out of safety concerns. The families remained in their homes, but the city continues to recommend they evacuate.

The city is monitoring private property but has suggested owners get their own engineering advice.

Saskatchewan moving forward with its first P3

Journal of Commerce - A Crown corporation in Saskatchewan is moving forward with the province's first public-private partnership with the construction of a new long-term care facility in Swift Current. It is expected to serve as a model for future projects.

The provincial government and the Cypress Regional Health Authority recently decided to proceed with a design-build-finance-maintain public-private partnership (P3) procurement model for the 225 bed long-term care facility.

The site for the new facility is about six hectares and is located adjacent to the existing Cypress Regional Hospital. The new facility will replace three long-term care facilities and be designed like a series of homes with the flexibility to add capacity in the future.

The site is part of the local community's master plan to create an integrated campus that is envisioned to include indoor and outdoor sports facilities, public and school libraries, an art gallery, elementary schools and senior care facilities.

Partnerships British Columbia is using experience in the planning, delivery and oversight of major projects to provide procurement and infrastructure expertise. Since 2002, Partnerships B.C. has participated in more than 35 capital projects worth more than $12.5 billion.

The City is striving to make the construction of the new long-term care facility in Swift Current a model for future projects. The procurement process for the private partner started in mid-August and onsite work may begin as early as next spring.

Two other Saskatchewan projects in the March 2013 budget are being considered for the P3 approach - the Regina Bypass and the North Battleford Hospital.

Critics warn rail plan will ruin roads

Saskatoon Star Phoenix - The announcement of a $100-million rail terminal to ship oil from Kerrobert to U.S. refineries has sparked criticism that the facility will cause road damage caused by hundreds of additional trucks coming to the area to supply the rail cars.

"The amount of oil trucked in will be astronomical," said a member of the West Central municipal government's transportation committee. The advisory body is made of dozens of area municipalities. Critics worry rural taxpayers will be left to fix the already damaged roads.

A Saskatchewan Highways and Infrastructure spokesperson said the government realizes industry activity "places stress" on local roads. He said the government has supplied record amounts of money to municipalities for roads and other infrastructure in recent years. The spokesperson said there is no specific plan to finance road maintenance in Kerrobert, but local officials are welcome to apply for funding.

Kerrobert to get crude-by-rail terminal in fall

Canadian Press - A transportation company has announced plans to build a $100 million rail hub in central Saskatchewan by next fall.

Torq Transloading says it will more than quadruple its shipping output to 168,000 barrels a day when its planned crude-by-rail terminal is expected to hit full production.

CEO Jarrett Zielinski says the shipment of oil by train makes sense when done safely and ethically.

He says oil by rail has the ability to not only compete with pipelines but supplement pipelines in market diversity given the fact that the infrastructure already exists.

Zielinski says Torq's destination markets on the U.S. Gulf Coast, East Coast, and mid-continent make Kerrobert a prime place to build the terminal.

Construction is set to begin this fall. Torq currently has crude-by-rail terminals in Saskatchewan near Shaunavon, Bromhead, and Lloydminster, as well as other locations.

Calendar of Events

Saskatchewan Innovation Week 2013
October 21, 2013 - October 26, 2013
Province-wide
www.saskinnovationweek.ca

World Petroleum Congress Youth Forum
October 22 - 25, 2013
Calgary, AB
www.wpccanada.com/youthforum

Developing the Skills of Highly Effective Leaders
The Banff Management Course
October 23 - 26, 2013, Banff, AB
www.banffcourse.com

Work Experience Reporting Orientation
October 30, 2013, Regina, SK
www.apegsservices.ca/meetings

Saskatchewan Water and Wastewater Association 2013 Conference and Trade Show
November 6 - 8, 2013, Saskatoon, SK
www.swwa.ca/pages/conference/2013/

Reverse Engineering Considerations and Challenges
November 28, 2013, Toronto, ON
www.kinectrics.com

CES 2013 Awards Banquet
November 28, 2013, Saskatoon, SK
www.ces.sk.ca

Professional Development Days
January 23-24, 2014, Saskatoon, SK
www.ces.sk.ca

Connecting Human Resources with Your Bottom Line Conference
January 27, 2014, Regina, SK
www.apegs.sk.ca

2014 Electrical Safety, Technical and Mega Projects Workshop (ESTMP)
March 03 - 05, 2014, Calgary, AB
ieee.org/estmp

Spring Professional Practice Exam Registration
Cut off Date: March 14, 2014
www.apegs.sk.ca

Law and Ethics Seminar
April 25-26, 2014, Saskatoon, SK
www.apegs.sk.ca

APEGS Annual Meeting
May 2 - 3, 2014, Saskatoon, SK
www.apegs.sk.ca

2014 27th Canadian Conference on Electrical and Computer Engineering
May 05 - 08, 2014, Toronto, ON
ccece2014.org/index.html

Water: What is the Future We Want?
June 2 - 4, 2014, Hamilton, ON
www.cwra.org/en

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