

UofA. Engineer

Keeping in Touch with
Alumni

GREEN SCHEMES GOLDEN DREAMS

Engineering alumni are playing a pivotal role in energy conservation and sustainable practices

The Juggler—
Andrew Usenik

Mining for
New Knowledge

Railway
Research

Trailblazer—
Gordon Berdahl

Message from the Engineering Representative on the University of Alberta Alumni Council

On May 15, 1915 a small group of University of Alberta graduates formed the Alumni Association and with this a proud history began. The Alumni Association turns 100 years old in 2015. Get ready for a fantastic party!



Today, more than 25,000 Faculty of Engineering alumni and 250,000-plus U of A alumni worldwide will have the opportunity to participate in this milestone celebration. This 100-year celebration is just one of the exciting activities that your Alumni Association is currently working on.

This fall, the Alumni Awards will celebrate notable alumni in a number of categories. I can tell you that every person nominated for an award is truly amazing. In particular, the nominees with an engineering degree are outstanding! You have read about many of these individuals in the pages of this magazine. Leaders, scientists, researchers, educators, community supporters, volunteers, mentors, and inventors—all are deserving of receiving an award.

Your Alumni Association also organizes many interesting events. As alumni, there are activities that you can participate in, such as:

Alumni travel

Regional and international receptions

Spring and fall mixers

Informative speaking luncheons

Volunteering

Stay connected to the university and your engineering faculty.

As your engineering representative on the University of Alberta Alumni Council, I look forward to meeting many of you at the various engineering and university functions. I would like to hear your ideas and thoughts of how the Alumni Association can represent you and build a proud University of Alberta community and particularly Faculty of Engineering alumni community worldwide.

Best regards,

Tom Gooding, P. Eng. (Mechanical 1978)

Vice President and Business Unit General Manager Improve

WorleyParsons Canada

U of A Engineer is the Faculty of Engineering alumni magazine. It is published twice a year by the Dean's Office and is distributed to Faculty of Engineering alumni, friends, students and staff.

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FACULTY OF
ENGINEERING

FSC LOGO

VISION To be one of the largest and most accomplished engineering teaching and research centres, a leader in North America.

MISSION To prepare top-quality engineering professionals, to conduct world-leading research and to celebrate the first-class reputation and outstanding accomplishments of alumni.

VALUES Dedication, integrity, professionalism and excellence in teaching, research and service to the global economy and community.

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Andrew Usenik completed his degree in civil engineering while touring with his punk rock band, Ten Second Epic. Having earned his PEng, he's now bringing his diverse skills to his family's business.

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A young engineering alumnus named Gordon Berdahl found the path to a rewarding career when he took a job building the road to a remote northern town called Fort McMurray.

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Come back to the place where it all began. Check out our Alumni Weekend schedule of events—and make plans to connect with friends and revisit the Faculty of Engineering in September!

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A new research chair connects professors and students with global mining firm Xstrata. The new partnership adds to continuing growth in mining engineering and mineral process engineering and aims to address industry challenges and educate the next generation of engineers in sustainable resource development.

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On the Cover: Pine trees are reflected in the solar panels of the new Medical Isotope and Cyclotron Facility at the South Campus. Len Sereda (Mechanical '72) and Michael Versteeg (Mechanical '99) are part of a U of A team that has been saving money and reducing the university's environmental impact since 1975. Photo by Jason Franson.

Message from the Editor

Spring Cleaning

We're making important changes to the way we connect with alumni through *U of A Engineer* and alumni events

It's springtime and as much as I'd like to talk about the magic of the approaching convocation ceremonies, or tell stories about coyotes chasing rabbits in the river valley, we must tend to some serious business first.

We're doing exciting new things with *U of A Engineer* and our alumni events by seeking partners to connect with engineering alumni. In terms of face-to-face get-togethers, the Faculty of Engineering is looking for partners to sponsor alumni events. With respect to *U of A Engineer* magazine, we're now looking for advertisers.

There are strong advantages to partnerships, in both instances. The motivation is not only one of financial responsibility, but also a desire to strengthen connections with our alumni.

We want to stay in touch with you because of our shared successes. The Faculty of Engineering enjoys a sterling international reputation not simply because of what we do today but because of you, our alumni. Your professionalism, knowledge, creativity and expertise are, in many ways, the Faculty of Engineering's calling card. In turn, we are yours: many of our professors are world-renowned researchers who are leading the way in innovation; they also dedicate themselves

to providing an outstanding education for the next generation of engineers. The reputations of the faculty and our alumni support one another and our relationship with you is essential to our continued success.

Faculty of Engineering alumni are invited to attend alumni events across Canada, throughout the year. On page 23 you will see an ad calling for sponsors to help us connect with alumni across the country. Sponsors will have access to highly educated professionals in a fun, relaxed setting while you renew old friendships and learn about new developments at the Faculty of Engineering.

With respect to *U of A Engineer* magazine, we've crunched some numbers and our per-issue cost is respectable but we can reduce those costs by bringing advertisers on board. Over the years we've had inquiries about advertising so there is interest. Another house ad, on page 11, invites potential advertisers to join us. Please contact me with any questions regarding this.

We're also investigating electronic delivery methods for the magazine. I don't want to speak prematurely but we are hoping we can make our magazine available on mobile devices such as iPads and tablets in the very near future. It is my own preference to continue publishing in print but I am also becoming a huge fan of the additional content that digital print is capable of providing. Adding a digital dimension to our publication would be a definite enhancement.

Last but not least in our spring cleaning is the Case of the Missing Calendar. Oy! You folks sure love our annual wall calendar and when we made changes to production and distribution last year, a lot of people missed out on delivery. Find out more about the calendar and how you can get yours, on page 5.

Finally, with respect to spring itself, a cursed chain of snowstorms caused a little trouble—OK, unprecedented trouble—for anyone driving on the QEII on March 21. There was only one good thing to come of that storm, and it was the fact that we'd scheduled a photo shoot with railway research chair Derek Martin that day. You'll love the photo Jason Franson took, on page 8.

But better days are in plain sight. Spring convocation is approaching—2013 is the 100th anniversary of our first engineering graduates. We're conducting interviews with new graduates for the Rising Stars feature in the fall edition of *U of A Engineer* magazine and we're looking back into our past to commemorate our history. Look for the fall issue of the magazine in September. In the meantime, keep up with Faculty of Engineering news by visiting us online at www.engineering.ualberta.ca.

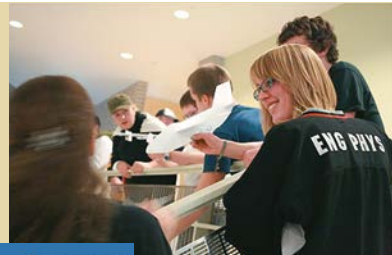
Richard Cairney
Editor

Staying in touch just got easier

Want to be informed about what's going on in the Faculty of Engineering?
Want to hear about other alumni, students and professors?

Become a fan of the U of A's Facebook page—you'll get news, photos and videos about the Faculty, students and alumni sent directly to your own Facebook account.

Join us online at:
www.facebook.com/UofAEngineering.





The Case of the Missing Wall Calendar



Since December, we've received hundreds of calls from alumni wondering what happened to their Faculty of Engineering 2013 wall calendar. We're pleased to hear it was missed!

Since 2002, we have mailed calendars to all engineering alumni for whom we have good addresses. In recent years, our alumni base has been growing by nearly 1,000 alumni per year, increasing our printing and mailing costs annually. In the interest of being fiscally responsible, we wanted to ensure that every calendar we mailed out was indeed wanted. We included a note in the 2012 calendar and accompanying letter from Dean Lynch asking alumni to let us know if they wished to continue receiving the calendar. Based on the replies we received, we reduced the number of calendars printed and mailed. However, given the number of calls we've received from alumni looking for their calendars, it appears not everyone saw these notes.

We've been happily mailing copies of the calendar to anyone who requests one, and will continue doing so until they're all gone. We will add any Engineering alumnus/alumna to our permanent calendar mailing list at his/her request. Donors to the Faculty of Engineering automatically receive the calendar as a token of our appreciation, but you do not have to donate to be placed on the mailing list—you just have to ask! Similarly, if you received a 2013 calendar or are a donor, but you do not want to receive future editions, just let us know.

We're also working on an app for your iPhone or iPad that will allow you to have the amazing images of the calendar right on your phone or tablet. Once it's released, we'll send out an email to all Engineering alumni to let you know when it's available.

Thank you to everyone for your positive feedback regarding our calendar! We're so glad that you're all enjoying the photos and finding the calendar useful.

(P.S.: The theme for the 2014 wall calendar is 'Extreme Engineering'. The deadline for alumni photo submissions has been extended to May 31. You can email your submissions to richard.cairney@ualberta.ca. We're looking forward to seeing your photos!)

Let Us Know!

Email wallcalendar@ualberta.ca if:

- You wish to have your name added to the permanent calendar mailing list (use subject line "Receive Future Only")
- You wish to receive a copy of the 2013 calendar and be added to the permanent calendar mailing list (use subject line "Receive 2013 and Future")
- You wish to be removed from the calendar mailing list (use subject line "Cancel")

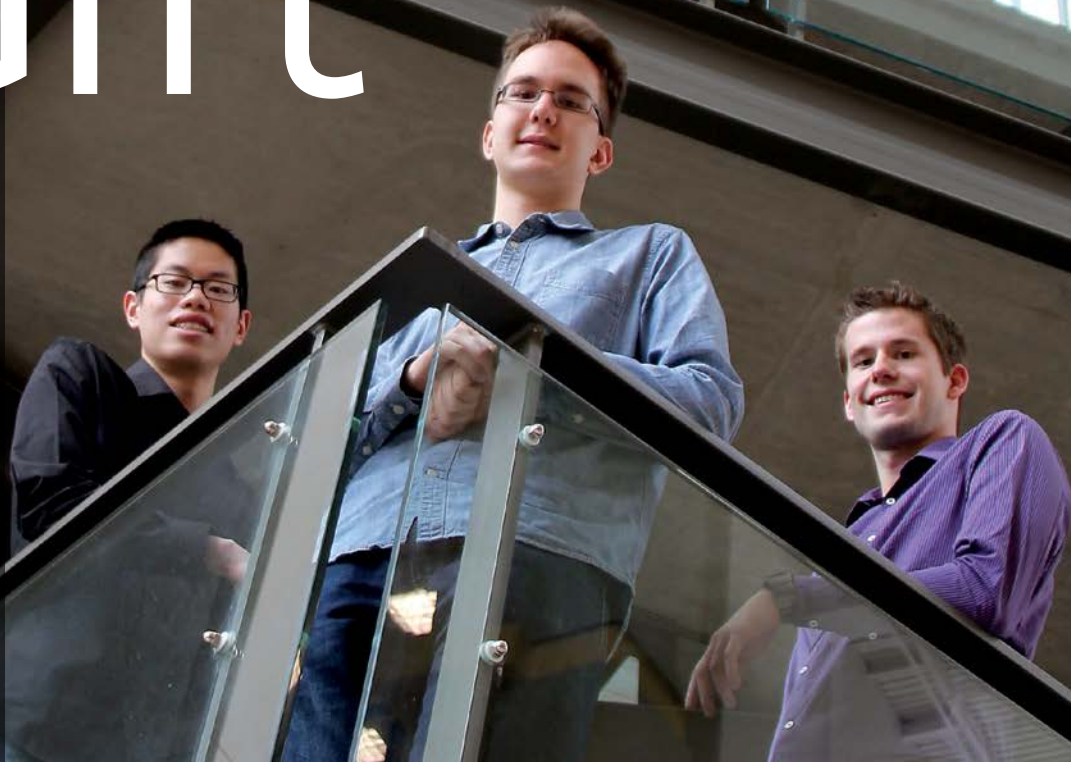
You may also call (780) 492-7050 to make the above changes, but email is preferred.



the Gift

Computer engineering alumni are having an impact on the lives of current students

BY RICHARD CAIRNEY



When alumni from the Computer Engineering Classes of '84 and '85 joined forces to establish a student award, their sincere desire was to commemorate Michael Lazar (Computer '84), a classmate who had passed away. The idea was to “honour Michael by rewarding people who are like him,” according to Brent Allen (Computer '84).

To date, three computer engineering students have been presented with the Peer of Peers Award, an honour for which they must be nominated.

“What I like about it is that it focuses more on your peers’ opinion of you,” says Michael Wong, who completes his degree in computer engineering (nanoscale option) this spring. A co-op student, Wong says he made certain the award was included on his résumé. “This is an award that says something about you that other awards can’t say. A lot of times I feel corporations

know they are going to train you, so they are more interested in how you work in a team environment and how you interact with other people. It isn’t as easy to see that in a résumé.”

Wong served as co-ordinator of the Engineering Students’ Society (ESS) handbook one year, but hasn’t been heavily involved in student groups. He guesses he was nominated for the award after working on a challenging group project. He has had satisfying co-op experiences and has his heart set on going into graduate studies in electrical

Peer of Peers Award recipients Michael Wong, Ranek Kiil and Andrew Ovens are grateful to the Computer Engineering Classes of '84 and '85 for establishing an award that recognizes strengths other than grades.

engineering. The \$500 he received from the Peer of Peers Award will help. While it isn’t a tremendous amount of money, every penny counts when you’re a student, and Wong has saved up all of his awards in order to help cover the costs of graduate school.

“The award was awesome,” Wong says. “I really appreciate what they’re doing and starting this trend, maybe, of rewarding something other than pure academic achievement.”

Subsequent Peer of Peers Award recipients Andrew Ovens and Ranek Kiil

are equally grateful. Ovens, a computer engineering student who is also set to graduate this year, has accepted an offer to work for Microsoft in Redmond, Wash. He also included the award on his résumé.

“It was really a heartwarming story for them [the Class of ’84 and ’85] to establish this award. The recognition is priceless. It means a lot,” says Ovens. “I’m so proud to be able to put on my résumé something called the Peer of Peers Award.”

Ovens grew up in Cutknife, Sask., a small town where he earned a reputation as a helper. In school, this meant lending a hand on the technical side of things for presentations. At home and in the community, he was kind of a go-to kid when someone needed help with a computer. He attended NAIT to earn an engineering technology diploma and was active in student life there, and when he arrived in the Faculty of Engineering, he just kept pitching in. He joined the Computer Engineering Club and has been active at senior levels of the ESS as vice-president of finance for two years.

Kiil, this year’s recipient of the Peer of Peers Award, is active as a volunteer on and off campus. He serves as a member of the City of Edmonton’s Youth Council and is involved in the ESS. He has co-ordinated production of the ESS Student Handbook twice, has served on the senior executive team and rewritten software for the society’s online election system.

Kiil says taking part in student life brings a creative dimension to his engineering education.

“Being able to work on projects that are creative and beneficial to our campus community is important to me,” he says. “It adds tremendous value to your education.”

From day one of his engineering studies, literally, Kiil was taking part in student life. “On my first day in first year, the people who I met with the ESS were really supportive and welcoming,” he recalls.

Ultimately, being active and helping others is a given for Kiil.

“Academics are important, but I feel that something’s missing if academics are the only part of your degree.”

The establishment of the Peer of Peers Award was driven by Class of ’84 members

Steven Knudsen, Brent Allen, Ron Unrau and Gail Powley (Chemical ’84) in 2009, as their class, the second to graduate from the computer engineering program, celebrated its 25th anniversary. Knudsen, Allen, Unrau and Lazar were close friends throughout their university years and graduated as the top four computer engineering students in the Class of ’84. They remained close friends after graduation. Lazar and Unrau earned their masters’ degrees in biomedical engineering together and Lazar and Knudsen earned their PhDs together. Lazar died before his 40th birthday of complications from cancer, in 2001.

The award is given annually to a third-year computer engineering student nominated by the Department of Electrical and Computer Engineering based on recommendations from the ESS and the Computer Engineering Club.

Knudsen, who now runs his own consulting firm, is gratified when he hears about the award recipients. After graduation, he and Lazar earned their PhDs at the University of Calgary, where Knudsen has taught. He knows what it’s like to see deserving students in the classroom and labs and says the Peer of Peers Award is “our way of propagating good karma.”

“I taught in university for awhile and in one of the courses, toward the end of the year, one of my students came to me to see if there was a way we could increase

his grade but there was just no way to get him to the next level. I said to him: ‘Listen, I saw you the whole term and if I could hire anyone from this class, it would be you because you worked so well with everyone else,’” says Knudsen. “The Peer of Peers Award is a little bit of that—we could envision a student who is struggling in terms of marks still winning this award. This is why we wanted other students to have a hand in selecting them.”

Knudsen says the name of the award was chosen carefully because it doesn’t elevate one student over another but recognizes individuals who support their fellow students, are community minded and who earn the admiration and respect of their peers.

“All of us have observed that academic performance is one thing but success is more about what you are like as a person.... We didn’t want to create an award on solely scholarly achievements but to identify those people who, if you were given a choice to work with them 15 or 20 years later, you would jump at it,” he says.

“It sounds like it’s working out just the way we wanted it to. The people who do the kind of stuff that Ranek and Andrew and Michael have, they do interesting things later on in life, too, and you want to keep track of them. I hope they look back one day and give back to the award, or that they’ll somehow pay it forward.”

Setting up awards, scholarships and bursaries is relatively straightforward. A number of classes have established such legacies to honour favourite professors or classmates. The Chemical Engineering Class of ’49, for example, established the Dr. George W. Govier Award, a \$2,000 annual grant that gives priority to students in financial need. The Civil Engineering Class of ’55 established an award on its 30th anniversary in memory of professor Leonard Gads and another on its 40th anniversary to honour professor Jack Longworth.

A minimum of \$25,000 is needed to endow an award.

If you’re considering setting up an award or scholarship, contact Leanne Nickel at 780-492-4159 or by email at leanne.nickel@ualberta.ca.

“We didn’t want to create an award on solely scholarly achievements but to identify those people who, if you were given a choice to work with them 15 or 20 years later, you would jump at it.”

—Steven Knudsen

Railway Research Is



A new research program based at the University of Alberta Faculty of Engineering has been established to improve railway safety and efficiency

By Richard Cairney

On The Right Track



In the late 1800s a ribbon of steel first united our country. Canada's first transcontinental railroad was built of blood and sweat and sheer force of will, overcoming political and geographic obstacles. Railways today are less of a symbol of national unity but their role is as vital as ever.

Canada has one of the most extensive railway networks in the world, with 48,000 kilometres of route track—nearly enough to cross the country 10 times. This network is subject to extreme swings in weather and geographic conditions that can wreak havoc with tracks, tunnels and the trains themselves. The economy, the environment and human lives depend in large part on safe, reliable railways.

“Building a railroad isn't driving spikes by hand anymore,” says Derek Martin, who has been named the NSERC Industrial Research Chair in Railway Geomechanics. “It's about the technology that keeps it operating 24 hours, the maintenance and the freight. Essentially it's like a pipeline but above ground. For Canada to continue to grow and prosper, it's important that our transportation system evolves to become

more innovative, efficient and resilient to our changing environment.”

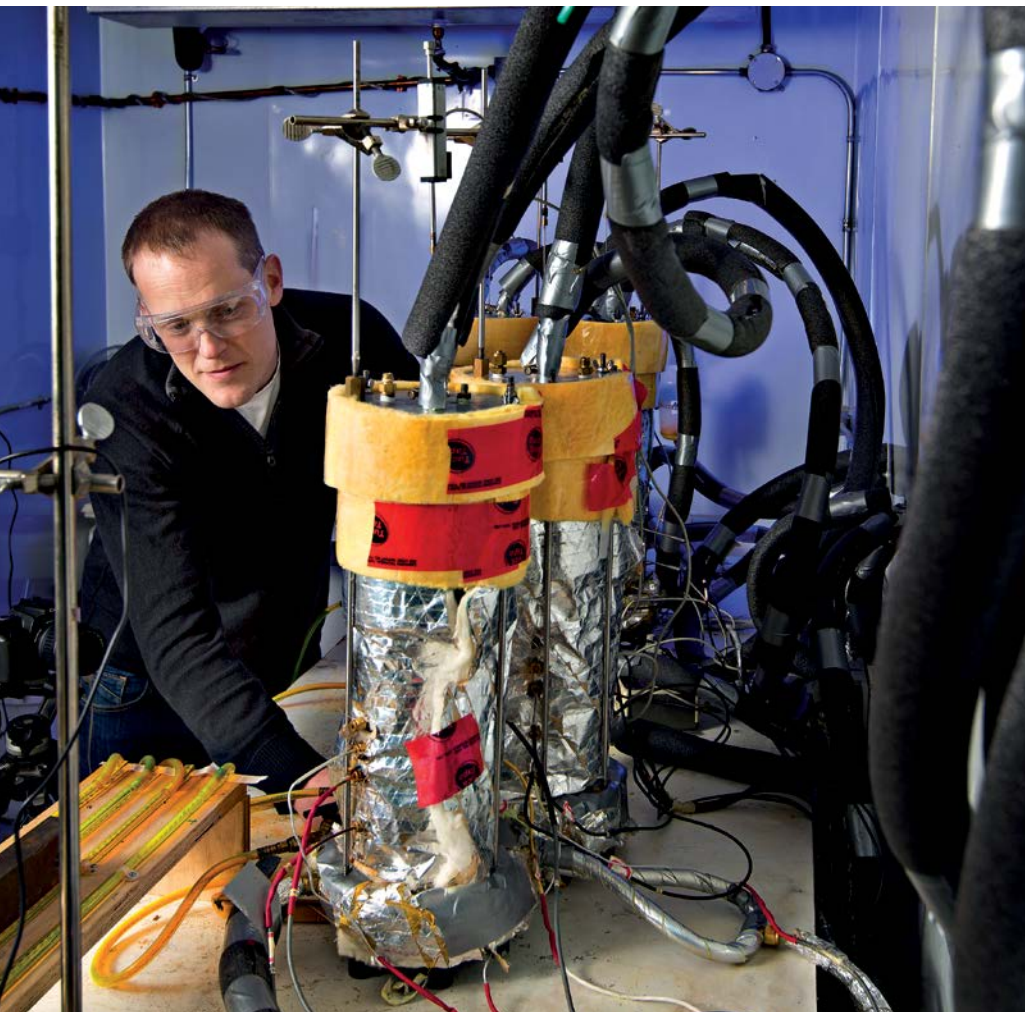
The Faculty of Engineering's \$4.8-million railway research initiative has two elements: Martin's industrial research chair and the new Canadian Rail Research Laboratory (CaRRL). The research is supported by the Natural Sciences and Engineering Research Council (NSERC), the Railroad Research Advisory Board (RRAB), Transport Canada, CN, Canadian Pacific and the American Association of Railways (AAR)/Transportation Technology Center Inc. (TTCI) through its Technology Scanning Program.

The establishment of the chair was announced in September 2012 and a course for graduate and undergraduate students was quickly implemented to complement a growing body of research projects already underway. Paul Miller, a former vice-president of CN, stepped up to design and teach a course that Martin refers to as “Railwaying 101.”

“We wanted a course that our graduate students and some of our undergraduates could take so that they would understand railways and the issues they face,” says Martin. Miller, who in addition to teaching the course is serving as an “engineer in residence” in a voluntary capacity, notes that master's and PhD students have valuable but specific and technical areas of research and study, whereas the new course brings together all the pieces of the railway puzzle.

“We wanted to offer a course in the basics of railroading. How does the railway work? Where does the traffic come from? How are all these things linked together? We want the students to have a business context for their technical studies,” says Miller.

As part of the course, other experts from industry volunteer their time to deliver presentations to students about all aspects



Jason Franson

Michael Hendry, a professor in the Department of Civil and Environmental Engineering and associate director of CaRRL, inspects a graduate student's experiment measuring the effects of freeze-thaw cycles.

of railways and how they work: from the complex logistics and planning required to move freight and passengers across the continent to determining the lifespan of the rock ballasts that support train tracks.

Adding more expertise to CaRRL is associate director Michael Hendry. His research with the railway industry started in 2005 as a graduate student collaborating with Northern Ireland Railways on projects relating to slope stability and the cyclic loading of embankments over soft peat foundations. Railways in Canada face the same issues and Hendry's current research is focused on the strength of soft foundation soils under heavy axle loading, the degradation of railway ballast and its effects on the integrity of track structure, and the fundamental soil mechanics of peat and organic soils. He is a strong proponent of field based studies and has an interest in finding new means to measure soil behaviours in the field.

Understanding railway engineering issues literally from the ground up is vital

TOMORROW'S RAILWAY ENGINEERS NEED TO THOROUGHLY UNDERSTAND THE INDUSTRY'S NEEDS BECAUSE THE SMALLER DETAILS OFTEN HAVE THE GREATEST IMPACT.

because the smaller details often have the greatest impact. While events such as derailments or landslides can have catastrophic effects and are enormously expensive, routine maintenance and operational issues are, in fact, more costly.

“Those low-frequency, high-impact events cause quite large costs but those are relatively small when you compare them to just running a railway on a day-to-day basis. There are far more wheel breaks and rail breaks during the winter than the summer, for example. So if you could come up with a way to reduce those or eliminate

all of that work—the number of times you have to take wheels off of buggies or take cars out of service—you can see that the incremental improvement factor is what really makes a big difference.”

Industry professionals hope Martin's research chair and the establishment of CaRRL will help define those incremental changes in the future. Miller began his 34-year career with CN as an engineer and retired as a vice-president and chief safety and sustainability officer. He feels the programs will help the industry from the field to the boardroom by providing not only highly qualified engineers, but also the next generation of industry leaders.

“One reason I'm interested in working with CaRRL is that railroads are facing the same demographic bubble all other industries are facing,” says Miller. “There is a tremendous opportunity for hiring and careers, and the greater an understanding one has of the whole business, the more room one has to branch out into other things beyond.”

By advertising in *U of A Engineer* magazine, you are connecting with more than 18,000 U of A Faculty of Engineering alumni.



making powerful connections

U of A Engineer gives you exclusive access to a dedicated readership of highly educated engineering graduates with a broad range of interests and expertise. You are also accessing a readership of young, ambitious engineering students: U of A Engineer is mailed directly to 18,000 engineering alumni and about 3,000 copies are circulated to students, professors and partners.

Whether you're looking for highly qualified personnel or providing service to professional engineers, advertising in U of A Engineer is right for you.

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GREEN SCHEMES GOLDEN DREAMS



Engineering alumni are playing a pivotal role in energy conservation and sustainable practices.

By Mifi Purves



Necessity may create the conditions for invention, but it's crisis that spurs innovation.

In this case, the energy crisis of the mid-1970s saw the start of an innovative program at the University of Alberta aimed at reducing costs and consumption of what, until that point, had been cheap and plentiful oil and gas. In 1975, overseers at the university's newly minted Office of Energy Management set to work boosting efficiency and conserving resources at the institution, giving rise to the Energy Management Program (EMP). None of the players at that time could have foreseen where their efforts would lead.

"The university saw that conservation made good business sense," says Len Sereda (Mechanical '72), director of energy management & sustainable operations. "At the time, the EMP was more about cost savings. Today, there's also a very strong focus on reducing the environmental footprint of the university."

In a small meeting room on the fourth floor of the inelegantly named General Services Building, Sereda sits smiling with his ever-present mug of coffee in front of him. He looks more like an engineer and manager than the environmental champion that he is, but with three children and three

Len Sereda (Mechanical '72) and Michael Versteeg (Mechanical '99), in front of solar panels installed at the new Medical Isotope and Cyclotron Facility (MICF) in the former home of the Balmoral Curling Club on South Campus. The solar PV panels are built into the south-facing exterior and will generate approximately 26 megawatt hours per year, saving roughly \$2,700 annually.

Jason Franson

“There is a lot of infrastructure and upgrading work going on around campus We’re looking for synergies—where we can make the projects more efficient.” — Len Sereda

grandchildren, creating a sustainable future is a very personal endeavour for Sereda—one that is reflected in his work.

Sereda knows efficiency when he sees it. In 1986 he joined the university’s EMP, which was 11 years old by that time. Since then, the EMP has become one of the most successful energy conservation programs in the post-secondary sector. In 2008, the university recognized Sereda’s growing and multifaceted role and created his current position, director of energy management and sustainable operations. “There are higher expectations now,” he says. “But this role nicely pulls everything together.”

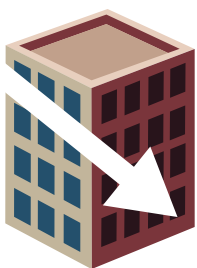
As director, there are two major thrusts to his work. The first is sustainable operations. “That’s anything that can advance sustainability,” he says. “For example, a hybrid vehicle fleet, sustainable foods—anything with an operational flavour. The Office of Sustainability is

the hub of the university’s sustainability initiative and of campus activities in terms of sustainability outreach and engagement,” Sereda says. He works with Trina Innes, director of the Office of Sustainability, and campus stakeholders to take sustainability to the next level across the university, including teaching and research, and engaging students, faculty and staff.

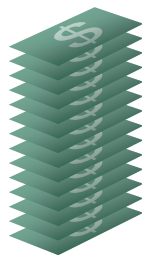
“We look for opportunities to create sustainability in areas where it isn’t part of the core curriculum,” he says. “Hypothetically, it might mean taking a sustainability problem to students in a math course and using the math curriculum to solve the problem. We want to use our facilities and operations as experiential learning opportunities—as living laboratories.” In fact, the Office of Sustainability has an academic director, professor Naomi Krogman, who works to integrate sustainability into the university’s academic programs.

The second aspect of Sereda’s work covers the Envision initiative. The 2012/13 academic year saw the rebranding and launch of the EMP as Envision—a fusion of the words energy and vision—with Sereda overseeing a team headed by program manager Michael Versteeg (Mechanical ’99). The team has built steadily on the successes of the EMP, the track record of which established the tone for Envision.

Seated with his back to the meeting room’s window, there’s an early appearance of silver in Michael Versteeg’s hair, which lends him a gravitas that underscores his position overseeing the day-to-day operations of Envision. Like the EMP, the success of Envision counts on a cash infusion. For its latest \$35-million, seven-year iteration, Envision will borrow \$5 million per year from the Alberta Capital Finance Authority (ACFA), which provides flexible low-cost financing for capital



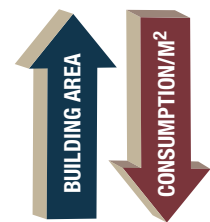
The University of Alberta’s water consumption has decreased 70% per square metre, electrical consumption has been reduced 23% and steam consumption has seen a decrease of 45%.



The last seven-year cycle of the EMP invested \$25 million to reduce CO₂ emissions by 27,000 tonnes, generating \$3.5 million in savings per year.



Energy-related upgrades to infrastructure provide better work/study environments. Envision not only advances campus sustainability, but also helps address the serious challenge of deferred maintenance.



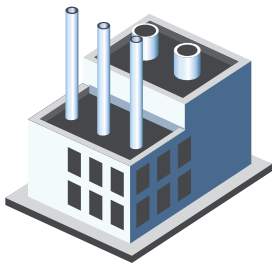
While building area has increased 50% since 1975, utility consumption per square metre has decreased significantly.



BUILT-IN SUSTAINABLE TECHNOLOGY

projects. “It lets us borrow in a managed fashion,” Versteegen says, adding that the plan allows them to balance short- and long-term paybacks on their projects. The plan accounts for cost savings in excess of the \$35 million to cover financing costs, with full payback achieved in savings by the end of 15 years. “We tend to be conservative in our estimation, and sometimes we see payback sooner,” Versteegen says. He emphasizes that the ability to finance sustainability activities through loans ensures that beneficial projects that might not otherwise be funded can be completed.

Envision is setting its sights on harder-to-achieve goals. The low-hanging fruit—such as retrofitting double-bulb fluorescent lights to one bulb to decrease energy use by 50 per cent—has been picked. The midway gains, such as tinting windows with high-e reflective coating to prevent summertime heat absorption, have likewise been realized.



Envision will invest \$35 million over the next seven years, and will reduce the university’s greenhouse gas emissions by 30,000 tonnes while saving the university approximately \$3.8 million per year.

The new Innovation Centre for Engineering (ICE), presently under construction, is going the distance in terms of building with sustainability in mind. ICE has been designed to achieve, at a minimum, the Canada Green Building Council (CaGBC) Leadership in Energy and Environmental Design (LEED) Green Building Rating System Silver certification for Core and Shell development.

Responsible construction practices coupled with several leading edge technologies will reduce resource and energy use, minimize environmental impact and improve indoor air quality.

Some examples:

Considerate land use

ICE meets LEED Standards on site development with respect to green space: no green space is being lost.

Fan walls

Instead of using large energy-intensive fans to draw in fresh air ICE will employ Fan Wall technology that uses an array of smaller fans operating at variable speeds, on demand. Energy use is dramatically reduced and maintenance costs are lowered significantly.

Chilled beams

This innovative air tempering technology is not often seen in North America. Chilled beams enable the heating and cooling of a building to be decoupled from its ventilation. Instead of air being used as the primary heating and cooling medium, water is used to heat or cool the air in the occupied spaces. This results in a significant reduction in the size of the main air handling equipment and its associated ducts throughout the building along with a significant reduction in the total annual amount of energy required to heat and cool the building.

Reducing hot and chilled water

There was a time when it was popular to continuously circulate hot water so you wouldn’t have to let tepid water run down the drain while you waited for heated water to come out of the spout. ICE eliminates this problem by heating water on-demand at the tap, saving on heating costs and eliminating the energy used to constantly pump hot water through a building. In a similar vein, only a small amount of chilled water will be available—piped only to water fountains.

Water conservation

Low-flow bathroom fixtures in ICE will dramatically reduce water use.

Motion-sensing light switches

No one can forget to turn off the lights when rooms are equipped with motion-sensitive light switches. When you walk into a room the lights turn on. When you leave, the lights are turned off.

For more information on ICE, visit our website at: www.engineering.ualberta.ca/Engineering/EngineeringFacilities/ICE.aspx

EMP/ENVISION BY THE NUMBERS

38

The number of years the Envision program and its predecessor, the EMP, have been conserving energy and saving cash for the U of A

70

The percentage by which the U of A's water consumption has decreased since the EMP started in 1975

45

The percentage by which steam consumption has decreased in that time

\$25 million

Amount invested in the EMP in a seven-year cycle that ended in 2010

\$3.5 million

Amount saved per year in CO₂ reduction during that seven-year cycle

27,000

The reduction, in tonnes of CO₂ emissions during that seven-year cycle

\$274 million

Total savings generated by the EMP and Envision

\$15.9 million

The amount saved in the 2010/2011 academic year

30,000

The annual reduction in tonnes of CO₂ emissions upon completion of the next-generation program

Landscape maintenance carts purr around campus, energized by solar-powered batteries.

A collaborative project with the Faculty of Engineering will see the installation of “dashboards” in the Chemical and Materials Engineering Building upon completion of the current renovation. These are LCD monitors that allow laboratory users and building occupants to monitor real-time use of utilities in CME research labs. Other projects are more intricate.

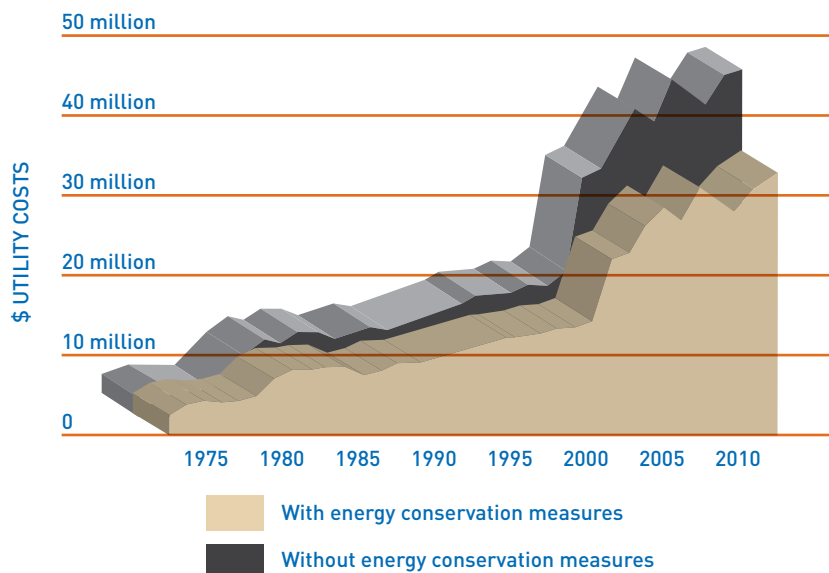
Here's where Sereda and Versteeg's networks come in. “There is a lot of infrastructure and upgrading work going on around campus. We look for opportunities like installing the dashboards where we can become part of those projects,” Sereda says. “We're looking for synergies—where we can make the projects more efficient.” Going forward, he says, the group is ramping up the conservation work and more aggressively exploring renewable and alternative energy projects.

One approach is to incorporate renewable energy into construction and renovation projects. “For example, we aren't just adding solar panels,” says Versteeg, “we're getting involved in major renovations, incorporating solar PV right into the cladding of a building.” He mentions the fly tower of the Camrose Performing Arts Centre at Augustana Campus, slated to open in 2014, and the

Medical Isotope and Cyclotron Facility (MICF) in the former home of the Balmoral Curling Club on South Campus as prime examples of this approach. At MICF, the solar PV panels are built right into the south-facing exterior, and they will generate approximately 26 megawatt hours per year, saving roughly \$2,700 annually.

But that's not the only big project in which Envision is involved. Sereda gestures out the window towards the site of the Physical Activity and Wellness Centre (PAW), under construction next to the Butterdome. An assessment is underway to look at the inclusion of solar PV, solar thermal for water heating, a small amount of wind energy as a pilot and a fuel cell that will generate electricity and heat. “We'd like to model and demonstrate these technologies to users of that facility,” Sereda says. It's a way to educate, engage and raise awareness about sustainability.

Beyond the more tangible gains Sereda's team produces—gains brought by retrofitted lighting, reduced carbon emissions, buildings clad in solar PV and more—there are intangible and immeasurable gains. “This institution graduates more than 8,500 students a year,” Sereda says. “If we can encourage a mindset of sustainability and engage them—well, that's something they'll take with them when they leave and that can have great local and global impacts.”



Environmental engineering professor Daryl McCartney gives his students the opportunity to blend teaching and research by conducting waste audits for the university.

TALK ABOUT HANDS-ON LEARNING!



Professor Daryl McCartney's students learn about waste management in a unique way, conducting waste audits for the University of Alberta and making recommendations for change

By Mifi Purves

Once they got used to the smell, and they claimed they did, the 50-plus students in environmental engineering professor Daryl McCartney's ENV E 432 class said that manually sorting through five tonnes of garbage wasn't so bad. In addition to earning credits by getting up close and personal with the organic waste, the results the class produced accounted for the U of A's 2012 Organic Waste Audit, a joint effort between Facilities and Operations, the Department of Civil and Environmental Engineering and the Edmonton Waste Management Centre of Excellence (EWMCE). Organic waste, in this case collected over a three-week period, accounts for almost 60 per cent of the university's waste, and the aims of the audit include assessment and increased waste diversion in the near term.

The task of sorting the garbage was as instructive for students as it was smelly, and it's just one initiative the EWMCE has had a

hand in. The centre is a world-class facility and a place that holds many surprises.

"It's a little-known fact that, second only to West Edmonton Mall," says McCartney, "the centre is the most visited tourist attraction in Edmonton." He'd know. McCartney is the executive director of EWMCE, the research and development arm of the centre. A professor in the Department of Civil and Environmental Engineering since moving to Edmonton from the University of Manitoba in 2002, McCartney is halfway through a five-year, 80-per-cent secondment to the EWMCE. "The U of A has one of the strongest environmental engineering programs in the world," he says, "and the EWMCE is a world-class facility. I'm a very lucky guy."

Partnerships between the EWMCE and the department have helped to keep up the profile. McCartney has been using his tenure at the EWMCE to improve the already enviable rates of diversion the City of Edmonton achieves. A global leader, Edmonton diverts 60 per cent of its municipal solid waste from landfill. The average across Canadian centres is between 20 and 25 per cent, he says.

In 2011, the university diverted more than 1,000 tonnes of its waste from landfill, accounting for nearly one-third of its total. The goal of 50 per cent diversion by 2015 seems within reach, according to McCartney.

But McCartney and other experts in the field understand that it's tricky to

measure these things. A few years ago Len Sereda, the university's director of energy management and sustainable operations, connected with McCartney to see if they could help better characterize the types of waste generated on campus and connect it to coursework. An annual waste audit and ongoing collaboration was born. The most recent audit saw engineering students sort through garbage collected from food service spots on campus. The project and the class demonstrate ways in which teaching and research work hand in hand and how the university works with students to achieve its sustainability goals.

"The U of A has one of the strongest environmental engineering programs in the world."—Daryl McCartney

Waste audits and diversion rates are not the only efforts of this collaboration between McCartney and his energy management and sustainable operations colleagues. "Within the context of municipal solid waste," McCartney says, "what goes into landfill is a lot of organic material that breaks down, creating methane—one of the biggest contributors to greenhouse gases."

In a back-to-the-future development, McCartney and his collaborators may also look at ways to use biogas from the anaerobic digestion of organic waste to create electricity and heat. Stay tuned—your home may one day be powered by garbage.

COOLEST JOB ON CAMPUS



Richard Semars

Laurel Roblin makes sure campus stays cool.

By Richard Cairney

As supervisor of the university's chilled water operations, Laurel Roblin (Chemical '01) and her team face huge responsibilities in providing key services.

Laurel Roblin (Chemical '01) was just a few months out of school when she joined the University of Alberta's utilities department as a temporary utility services engineer.

Even applying felt like a bit of a gamble: on one hand, it was engineering work; on the other, the job involved a lot of mechanical expertise. The interview could have gone either way.

"At first I thought 'Well, everything is a process. We're making steam, we're generating power.' But there was a lot of machinery involved on the mechanical end so I learned a lot," she says.

She must have. Twelve years later, Roblin is still working with the university as utility production supervisor of chilled water operations. She was also on the front lines during one of the most remarkable periods of growth the campus has ever embarked upon. Since 2001, Roblin has seen the construction and commissioning of a new boiler, a thermal energy storage tank, and a new cooling plant. Beyond expanding its utilities capacity, the university was growing at a phenomenal rate: at one point during the mid-2000s, 11 tower cranes pierced the campus skyline. In all, nine new buildings, including a new student residence, three engineering buildings and the National Institute for Nanotechnology have been completed. Non-university utilities clients like the Mazankowski Alberta Heart Institute have also come on board. Today, two projects are under construction: the new Innovation Centre for Engineering (ICE) and the Physical Activity and Wellness (PAW) Centre.

"It was an amazing learning experience to see all those projects in that amount of

time," Roblin says of the building boom. "It was so beneficial. We're probably not going to see a big expansion like that again soon. Looking back, it seems crazy. But when we were in the middle of it, it seemed normal. We've got very, very talented people and working here has given me a great diversity of experience, from programming a control system to project management."

Roblin's first project involved the installation of a 900-psi natural-gas-fired steam boiler, part of the university's district energy system. Steam produced by the boilers (there are five in total) provide heat and run turbines that generate electricity for the university.

The university never exports power into the grid, but it does respond quickly to fluctuations in energy costs. When the price of electricity is low, the university uses steam for heating purposes only and buys electricity on the open market; when power costs rise, it uses the steam to generate its own electricity.

The chilled water system, which Roblin is now responsible for, is operated in an equally strategic manner. The eight-million-gallon thermal energy storage tank "allows us to produce chilled water in off-peak hours, when energy costs are lower. We fill the tank at night, when prices are lower, and during the day we use it to meet demands."

When Roblin tells people she works with the chilled water system, they often think of water fountains. But the system doesn't include potable water. Instead, it covers air conditioning and cooling systems—vital functions that go well beyond simply keeping classrooms and offices cool during the summer months.

Ten kilometres of utility corridors snake their way beneath the U of A campus piping chilled water, among other things, into every building on campus—including the University of Alberta Hospital, the Mazankowski Alberta Heart Centre, the Cross Cancer Institute and Canadian Blood Services. Life and death literally hang in the balance. The chilled water system is responsible for cooling operating theatres, MRIs and stored tissues.

"It's a very critical utility," Roblin says. "It cools all of the blood and blood

products for northern Alberta. In the hospitals, it cools operating rooms and MRIs."

There's more: the university and its on-campus utilities clients rely on a massive amount of computing power, and the server rooms generate a lot of heat while keeping networks running. Cooling this equipment is essential.

"We are very aware of the fact that we have a huge impact on our customers. That's why our system is very well maintained—we could affect a lot of things if something goes down."

Roblin readily admits that, in her student days, she hadn't given any consideration to the engineering work that made everyday life possible.

**"We are very aware of the fact that we have a huge impact on our customers. That's why our system is very well maintained—we could affect a lot of things if something goes down."
– Laurel Roblin**

"I had no idea any of this even existed when I was a student here. You just take it for granted that the lights go on when you walk into a classroom and that it's going to be warm inside when it's cold outside."

When she looks back on her job interview, and the fact that the position might have gone to someone with a different engineering specialty, she's grateful for a well-rounded education that empowered her to meet challenges head on.

"Honestly, I think in engineering they teach you the fundamentals really well," she says. "They teach you problem-solving skills. They teach you how to learn, how to troubleshoot, how to think critically. You have been taught how to think."



how Andrew

THE JUG



Chady Awad

Usernik manages multiple careers

GLER

By Judy Monchuk

Juno-nominated musician and engineer Andrew Usernik takes on new roles in the family business

Most days, when Andrew Usernik (Civil '08) sits down with his laptop and phone, he's like every other land developer in the business.

That visual image shifts somewhat, however, when Usernik takes to the road with his band Ten Second Epic. On those days, the lead vocalist still flips his computer open at the beginning of the day, except that he does it on his band's bus—for example, when the band spent two weeks last summer on the Vans Warped tour. While his bandmates snored in their bunks until noon, nursing hard-won hangovers, Usernik was hard at work for his family's business, Strata Developments.

"There was a time when I would fit being an engineer and developer around my job as a musician, but to be honest I sort of prefer it this way," the 27-year-old lead singer says from his office at Edmonton-

based Strata. "I recently got married, and after 10 years of grinding it out on the road it's nice to be home around family and friends. Now, when I go out (on tour), it's special, a short tour with big crowds. I get a lot out of it."

Pursuing music has always been a gamble but the last few decades have been particularly hard on anyone who straps on a guitar for a living. Ten Second Epic, now heading into its 13th year as a going concern, has done a reasonably good job at beating the odds. The original five members have stuck together since they first started jamming in drummer Patrick Birtle's parents' basement, and they've managed a slow but steady rise in the oversaturated realm of guitar bands.

Endless touring in those early days helped build the band's success, but the members have also been fertile songwriters. The band

has released three EPs and three full albums since 2002—most recently, 2011's *Better Off*, released in Europe on Hassle Records. Europe has been especially good to the band, but Ten Second Epic has also done quite well back home. The track *Young Classics* from *Better Off* managed to hit number 22 in the Canadian singles charts. The band has twice been nominated for Juno Awards (Band of the Year, 2010 and Music DVD of the year for *Better Off*, 2013) and various MuchMusic video awards, and was named Group of the Year at last year's Edmonton Music Awards.

Through much of this, Usernik juggled his music career with a full schedule at the Faculty of Engineering at the U of A. The effort paid off in June 2008, after he flew back from tour to write his final exams and complete his degree in civil engineering.

"I'll tip my hat to my parents on that," he laughs. "They grew up on farms in

Jason Farnson

Saskatchewan, so they know the value of an honest hard day's work. I'm sure that when I started doing music and it became a full-fledged career they probably had no idea what was going on. It really wasn't thought of as an option—it was a little out of the wheelhouse—but they seemed to understand. They instilled the fact that even if it was a cool and interesting thing, you have to look after yourself in the long term.”

Despite Ten Second Epic's early success, Usenik never regarded civil engineering as a Plan B. “I've always loved the work,” he says. “I know it probably looks like all of my schooling and work was a backup plan, but that's not how I view it. I don't view what I've done as ‘keeping a level head about things.’ I view myself as a selfish person who is attempting to do more than he probably should. Still, why shouldn't I? I know it's a cliché, but shouldn't we be trying to do as

much as we can in the time that we're given?”

When Usenik got the opportunity to join his father and sister at Strata, he jumped on it. Having earned his PEng working as an engineering consultant, he missed the interaction he enjoys as a musician. Strata offered a much more diverse workload.

“There's a strong engineering component to what I do but there's also dealing with municipalities and administration on a daily basis, and often directly with politicians. There's sales, business, and accounting—that makes every day interesting to me. While I liked consulting, I found it a little repetitive to be sitting at desk doing design work. I liked the challenge of it, but in moderation.”

At Strata, Usenik must constantly co-ordinate the many different parties that come together on the developer's

residential projects. As a land developer, he collaborates with engineers on building communities, such as Southfort in Fort Saskatchewan, working from the ground up on raw land that his company owns. He often deals with issues revolving around storm water, overland or underground pipe systems and soil conditions.

In high school, Usenik worked with an underground contractor for a couple of summers, and he grabbed a part-time job as a surveyor while in university. Those small but vital experiences carried over into many aspects of his current job.

“People will tell you that things that work on paper don't always work in real life,” he points out. “Being on construction sites and having that early experience gives me a good perspective on things and makes it a lot easier for me to communicate with our contractors and engineers. In terms of the other parts of the job, there's obviously a lot of learning to do, but those will come as well.”

You might think a job as a civil engineer in land development wouldn't in any way mesh with a parallel career in music but the two fields share certain traits, sometimes giving Usenik a bit of an advantage.

“I have a band of five people that I live with every moment when we're working together,” he explains. “You rely on them for everything, and you're nothing without them. Then there's the auxiliary team of record label, booking agent and publicist, and it's important that everyone function well together. It's the same as working as a developer; you can accomplish more through utilizing each other's strengths.”

He has also naturally taken on a leadership role, a position that can reap fruits both bitter and sweet.

“Whether in my job as a land developer or as a front man of a band, I'm constantly the person people look to for answers,” he says with a wry chuckle. “You're front and centre, responsible for the image of a band or a company, and you're representing everyone else. When it goes wrong, it can certainly be a tough position, but when it goes right, it's amazing.”

Usenik's older sister Courtney Jensen, who is a co-owner of Strata, is not particularly surprised at his ability to juggle occupations.

“I know it probably looks like all of my schooling and work was a backup plan, but that's not how I view it. I don't view what I've done as ‘keeping a level head about things.’ I view myself as a selfish person who is attempting to do more than he probably should.”

—Andrew Usenik



Jason Farnson

"I'd have to say that they're outlets for different parts of his personality," she says. "One shows his creativity; the other is a lot more focused on operations, co-ordination of construction, and building. That being said, each has an element of the other in it, since planning a neighbourhood can be very creative as well. And music isn't all creative. It also requires production, sales, promotion and scheduling."

Usenik's education and experience as an engineer have made him a very methodical man, and this fits well with the dynamic of his band. He describes the other four members of the group as far more impulsive than he is, working more from gut instinct than careful analysis. At the same time, he's learning to incorporate some of that spontaneity into his own style as a developer.

"Music has definitely done a lot for me, and it particularly has given me the confidence to take risks," he says. "Engineers aren't risky by nature, I think it's safe to say. The usual way that we solve problems is to dissect them from every which way we can, so

that we can have as much certainty as we can get. The thing is, the market is ever changing, and there are so many things where timing is everything, and in the end you have to trust your gut and go with it. That can be scary for someone who likes to control everything and feel they know the situation."

Rock 'n' roll singers tend to be pretty good at working the crowd. Perhaps Usenik has spent more than his share of time behind a desk, working out plans and making calls, but he also knows how to connect onstage in front of thousands of people.

"Land developers have to interact with community," Jensen says. "Andrew's confidence serves him well in situations like public hearings, or speaking in front of [city] council."

Usenik worked freelance for a few years after graduating before joining his father Blaine and sister Courtney at Strata. He's still somewhat new to the game but he enjoys the advantages of working in a family-run enterprise, especially because it allows him to dip his toes in many parts of

the operation. Whereas other companies use specialized employees for various tasks, Usenik can take on several roles, seeing a project through from start to finish.

He enjoys the promise that every day will be different from the last and that he will always have something interesting to sink his teeth into. Strata grants him room to work on his own projects, but also offers family support when it's required. This thought comforts Usenik as he grows older, and contemplates Ten Second Epic's future.

"There's a shelf life on these things, and we're not a timeless band. We're not the Rolling Stones or the Foo Fighters or the Red Hot Chili Peppers. We'll know when it's time to go, and when that happens we'll bow out gracefully. That time hasn't come yet, though. We've had success internationally with our last record, so there's still some life left in us. I'm just happy with the fact that when the time comes I'll have a career that I love that will continue on for decades. So when the day comes that I put down the mic and move on, it will be OK."

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the TrailBlaz

When **GORDON BERDAHL**
(Civil '60) volunteered to
supervise construction of a
new highway to Fort McMurray,
he never dreamed the road
would lead him to a rewarding
career, or that the highway
would become so infamous.

BY WANDA VIVEQUIN



er

Jason Franson



The media call it the Highway of Death, and rarely a week goes by when an accident on Highway 63's almost 450 kilometre length does not make the news. Every time it happens, Gordon Berdahl's (Civil '60) heart sinks a little deeper.

"No one wants to read about accidents on a piece of the road you have built," says the now 74-year-old retired civil engineer. Over half a century after supervising the surveying and clearing of the first all-weather road between Wandering River and Mariana Lake, Berdahl still talks fondly about "one of the best jobs I ever had."

"It's a great road built to high standards, but no one back in the early '60s ever imagined it would end up carrying the kind of traffic it does today," he says. Berdahl still drives the road periodically when visiting life long friends in Wandering

River, and his son Andrew drove the road regularly while working as a teacher in Fort McMurray.

Highway 63 serves as a critical piece of provincial infrastructure, connecting the oil sands and Fort McMurray to the rest of the province. Last April, Berdahl's connection to the highway's beginnings was highlighted when the *Edmonton Journal* invited him to travel some of its length with a reporter and photographer. Berdahl was able to visit the scene of an April 2012 motor vehicle accident in which seven people died. Standing on the side of the road near the

accident site, Berdahl says he took a long hard look at what might have happened.

"I looked in one direction and then the other and really wondered 'Why did this happen?' The sight lines are good, the geometry is good and it just makes me so sad," he says. "You talk to all the drivers up there, the truck drivers, the bus drivers, and they mostly say the same thing about what the problem is on that road. It's the drivers."

Highway 63 represents many different things to people who travel it. For growing numbers, it is the road home to family; for others, it is a road to riches. For Berdahl,



Photos taken by Gordon Berdahl chronicle the process of building a highway, circa 1963. Above left, a tracked all terrain vehicle, often referred to as a “swamp buggy” is mired in a beaver dam on the route of Highway 63. This type of vehicle was often used to access locations ahead of actual construction in the unfrozen summer period. Right: this photo, also in the summer of 1963, shows the first piece of Highway 63 subgrade construction underway about 5 kilometres north of Wandering River.

it is a nostalgic reminder of his first job as a resident highway engineer, building a highway into Alberta’s frontier country.

Barely old enough to drink in a bar, Berdahl spent two years, beginning in December 1962, supervising the surveying and clearing and construction of the road. “I had no idea what I was getting into,” he says, smiling as he sits in his modest Edmonton home of nearly 45 years. “I was young and I was stupid, and I didn’t know what I didn’t know. I asked for the project and liked the challenge of building a new highway into a remote area. Seldom even today does an opportunity like this arise.”

On his kitchen table, neatly ordered into a metal box, are dozens of slides chronicling some of his construction projects over the years. Those from Highway 63 tell the story of building a road through a sparsely populated landscape with every kind of challenge the northern Canadian wilderness could throw at workers. Muskeg, beaver dams, frozen ground, remote location—you name it, Berdahl and his hardy team of workers had to deal with it.

For a southern Alberta boy brought up on a farm near Drumheller—whose only experience with muskeg and permafrost came sometime during his first summer job as a U of A engineering student—it was a steep learning curve. It began shortly after Berdahl graduated, when he heard rumours that a new highway construction project was coming up north of Edmonton. He

was among the first to put his hand up and show interest.

When he finally got the offer to work on Highway 63, Berdahl had little time to prepare. Before he knew it, he and brand-new wife Carol moved their 50-foot trailer to Wandering River to begin an adventure.

Carol, who stayed in the camp, worked as a “cookee.” “Yes, she was up for it,” says Berdahl, pointing to slides of Carol working as a cook’s assistant in the camp. For two years on the Highway 63 job, the Berdahls moved their trailer home from one camp location to the next as construction worked its way north.

At the time, the only way to get to the small settlement of Fort McMurray was by a winding railway or a treacherous winter road. “There were a few times putting the road in when we would come across a poor soul sleeping in their car after encountering some kind of problem on the winter road, including getting stuck or running out of gas,” Berdahl recalls.

The engineering crew, including the Berdahls for several months, lived in basic bunk-style accommodation in the camp. Life was simple, sometimes tedious and, more often than not, downright hard. “We worked hard throughout the winter surveying and clearing, took our holidays during the spring breakup, and then worked the summer building the road,” he says.

“No one back then ever imagined what might happen at Fort McMurray. I mean, they weren’t even talking about paving the

road back then. They were just interested in being able to get there year-round. Oh, sure, there were rumblings that there was stuff going on at the oil sands back then but for me, I was just interested in the challenge of a project like this working in new territory.”

Berdahl, who spent 35 years working for the Alberta Department of Highways, says an old photo of him as a child offers some clues as to his early aspirations. “There is a picture of me as a young boy working in the farm yard with piles of dirt and a home-made tractor building roads, so I guess there was an inclination there even in the early years.”

He was the first in his family to attend university, spurred on by his parents and certain teachers and bankrolled in part by a calf given to him by his grandfather. “I raised that calf, and the calves it produced and was able to pay for my first year of university with the proceeds,” he says.

That same enterprising spirit carried the young Berdahl through the U of A, where he managed to snag summer jobs working on roadwork projects. “Around the time I was at the U of A, our local MLA was Gordon Taylor, who I believe was one of the best highway ministers there ever was. He hired a lot of kids from university for summer road-building projects, and I was lucky I was able to secure good jobs throughout my time studying,” says Berdahl. “This prepared me quite well for the workforce, even if it meant just being a joe-boy on a survey team.”

Berdahl graduated at age 20 and was offered a position as a resident highway engineer with the Alberta Department of Highways. Impressively enough, 10 members of his 1960 graduating class were hired by the department that year.

Berdahl's itinerant life eventually ended in 1966, when he was given the opportunity to head the Department of Highways testing laboratory in Edmonton. There, he was responsible for developing, testing and designing all materials used to build highways in the province.

In the materials lab, Berdahl oversaw the construction of a new state-of-the-art testing facility. He eventually became executive director of engineering and in 1991 an assistant deputy minister, responsible for the central engineering functions of the department.

Berdahl retired as an assistant deputy minister in 1994. These days, he still enjoys spending time with some of his former colleagues talking about roads and road works. Naturally, a 2012 report on twinning Highway 63 and fast-tracking the project provokes spirited discussions.

In the introduction to the report, *Towards a Safer 63: The Report of the Special Advisor on Highway 63*, Mike Allen, MLA for Fort McMurray-Wood Buffalo says:

"Traffic safety on this critical transportation link to Wood Buffalo is a matter that goes beyond local interest.

"No one back then ever imagined what might happen at Fort McMurray. I mean, they weren't even talking about paving the road back then." — Gordon Berdahl

Highway 63 is vital to the future prosperity and health of the region that drives Alberta's and the nation's economy. Twinning the highway as quickly as possible has been identified by all stakeholders as their ultimate goal but it is not the most immediate means to improve traffic safety."

Although twinning will most certainly decrease the number of accidents, Berdahl agrees that other efforts could have been just as effective—and cost a lot less money.

"It's the drivers," he repeats. "Twinning the highway will certainly reduce the kinds of motor vehicle collisions we are seeing, but driving speeds will most certainly increase and the incidence of wildlife collisions will increase" (Collisions with wildlife currently represent 40 per cent of all collisions on the road.)

Berdahl firmly believes that more passing lanes, better enforcement and more driver education would go a long way, as well as support from the industries whose employees drive Highway 63. "It's their people getting killed out there," he says.

"One billion dollars is a lot of money, and at the end of the day we are still going to have the same drivers on the road, driving faster and taking risks," he adds.

Fittingly, half a century after Berdahl worked on the road to Fort McMurray, another graduate, Landon Reppert (Civil '96), is heading efforts to bring the highway into the next phase of its life.

Reppert, the Department of Transportation's regional director for Fort McMurray, oversees the twinning of the highway between Grassland and Fort McMurray.

"These days, there are many more things to consider and the public is much more aware of the work that needs to be done," says Reppert. Utility companies, the oil industry, private land owners and environmental concerns all have to be considered at various stages of the project.

Reppert, who joined the Government of Alberta in 2004, says his U of A engineering degree prepared him and other engineering alumni well for the mammoth task of overseeing the twinning project. "Most of the engineering work is actually being outsourced to consulting engineering firms, and there are many U of A grads with these firms taking part in the twinning work," he says.

With 240 kilometres to twin in total, and an end date of 2016, Reppert has his work cut out for him. Construction is now underway on four separate sections with additional tenders to be issued in the coming year. Reppert is confident the twinning will be completed on time. "This is an enormously important highway construction project, and a lot of eyes are on us," he says. Like all Albertans, he hopes all the efforts, including driver education and enforcement, will pay off in the end.

"We all want people to be safe on our roads," he says. As the investment and growth continue in the Fort McMurray region, the foundations laid by engineers like Berdahl and the ongoing work of more recent graduates like Reppert will pave our way into the future.

Gordon Berdahl looks through slides that chronicle his career, including his literally trail-blazing work on Highway 63.



Jason Fanson

Alumni Weekend 2013

Wednesday, September 25
through Sunday, September 29

Mark your calendar for a weekend of reconnecting and reminiscing!

Fall brings the University of Alberta's namesake colours of green and gold back to campus and, with them, our engineering alumni for the annual Alumni Weekend. Once again, the Faculty of Engineering's External Relations team is working with the U of A's Office of Alumni Affairs to put on a great weekend of activities for engineering alumni to enjoy. All alumni are invited back to campus for a great celebration, regardless of year of graduation – but this year, if you graduated in a year ending in a “3” or an “8”, you are celebrating a special anniversary!

Beginning with the Alumni Recognition Awards on Wednesday, September 25, and ending with a concert by the University Symphony Orchestra and Symphonic Wind Ensemble on Sunday, September 29, the weekend is full of opportunities to see the people and places that you got to know so well as a student. Watch your mailbox for the Spring edition of *New Trail*, which will include a brochure containing details of everything taking place during Alumni Weekend 2013. Information is also available on the Faculty of Engineering's website (www.engineering.ualberta.ca/alumni), as well as in the alumni section of the University of Alberta's website.

We hope you attend the many great events we have designed particularly for you during this very special time on campus. Someone out there is hoping they will see YOU at Alumni Weekend 2013!

External Relations Team Contacts – Alumni and Individual Class Reunions

In addition to the Faculty of Engineering special events planned for all engineering alumni and those celebrating a milestone anniversary year, many engineering reunion classes will be holding private class dinners, social evenings or other events throughout Alumni Weekend. For specific information on individual engineering class events, please contact your department's External Relations officer as noted below or visit our alumni web page for more information at (www.engineering.ualberta.ca/alumni).

Chemical, Materials, Metallurgical, Mineral, Electrical, Computer, Engineering Physics

Contact: Corinne Longoz 780-492-6192 or corinne.longoz@ualberta.ca

Civil, Environmental, Mining, Petroleum

Contact: Trevor Wiltzen 780-492-4004 or trevor.wiltzen@ualberta.ca

Mechanical

Contact: Linda Kelly 780-492-4160 or linda.kelly@ualberta.ca

Faculty of Engineering Alumni Special Events

Note: All Engineering Alumni Weekend events are FREE to alumni and their guests. However, pre-registration is requested to help ensure adequate space and refreshments. To register, visit www.ualberta.ca/alumni/weekend after May 1. For further information on all events, contact Cindy Spears at 780-492-7050 or cindy.spears@ualberta.ca.

Friday, September 27

Class of 1953 Engineering Alumni Luncheon 11 a.m. to 2 p.m.

Faculty Club (11435 Saskatchewan Drive)

The Engineering Class of 1953 and their guests are invited to celebrate their 60th anniversary and reminisce with their classmates at a private lunch hosted by the Dean of Engineering. Graduates from before 1953 are also welcome!

Dean's Engineering Reception 4:30 to 7 p.m.

Solarium, 2nd floor
(Maier Learning Centre)
Engineering Teaching and Learning Complex (ETLC)

Dean David Lynch invites all Engineering alumni and their guests to kick off their Alumni Weekend activities by reconnecting with Engineering classmates, professors and colleagues over hors d'oeuvres and refreshments.



Saturday, September 28

Dean's Engineering Alumni Breakfast 9 to 11 a.m.

Solarium, 2nd floor
(Maier Learning Centre)
Engineering Teaching and Learning Complex (ETLC)

All Engineering alumni who graduated in 1968 or earlier and their guests are invited to join Dean David Lynch in exploring the past, present and future of the Faculty of Engineering at the U of A. Reunion class photos will be taken following breakfast.

Engineering Expo 10 a.m. to 3 p.m.

ETLC (Engineering Teaching and Learning Complex)

Alumni, prospective students, parents and guests are all invited to Engineering Expo 2013. Take in displays from our Engineering departments and student groups and attend free lectures on topical engineering-related subjects. Visit www.engineering.ualberta.ca/Expo for more information and a schedule of tours, activities and events.

Engineering Pre-Dinner Reception 5:30 to 6:30 p.m.

Shaw Conference Centre –
Salon 3 (bottom level)

If you are attending the University of Alberta's Alumni Dinner and Dance (ticketed event) on Saturday evening, plan to come a little earlier for the complimentary Engineering Pre-Dinner Reception. It's a great place to socialize with other engineering alumni prior to sitting down with your classmates for a great dinner.

Class Reunion Organizers

The engineering alumni below have enthusiastically volunteered to be class reunion organizers for Alumni Weekend 2013. If you are a member of one of the classes listed below, you may already have received a call or email regarding plans for the reunion of your class. If not, please contact the External Relations Team Contact listed on the first page of this article to find out how to get in touch with your class organizer. If your class is not listed, you may want to consider volunteering to help ensure you don't miss a great opportunity to get together!

- 1948 Civil
Bruce Burgess
- 1948 Mining
Robert (Bob) Spencer
- 1953 Civil
Glenn Irving, Neil Longson,
Peter Nettleton
- 1953 Electrical
Ted Jacobs
- 1958 Chemical
Donald Thurston
- 1958 Civil
Michel Morin
- 1958 Electrical
Bud Finley
- 1963 Civil
Allan Olson
- 1963 Mechanical
Dr. Gary Faulkner
- 1968 Mechanical
Val Pohl
- 1973 Mechanical
Barry Kossowan, Grant Firth,
Douglas Buchanan,
Patrick Garvin, Warren Jones,
John Matemisz, Bruce Otto
- 1978 Chemical
Greg Gulayets
- 1978 Mechanical
Patricia Armitage, Tom Gooding
- 1983 Computer
Samson Mah
- 1983 Electrical
Tom Greenwood-Madsen
- 1988 Electrical
Ameen Hamdon, Lisa Marik,
Michael Palamarek,
Dr. Makarand Paranjape,
Marc Provencher
- 1998 Mechanical
Dr. Kajsa Duke
- 2008 MSc Mechanical
Farshid Chini

MINING

FOR NEW KNOWLEDGE

Xstrata establishes new research chair in mining and mineral process engineering

By Nicole Basaraba

A \$3-million gift from Swiss mining giant Xstrata to the Faculty of Engineering is being used to establish a new mining engineering and mineral processing engineering research chair designed to address industry challenges and help educate the next generation of engineers. The chair will be a permanent position aimed at developing advanced technologies with a focus on extraction and purification of metals, coal and other mineral resources. The chair will look at issues such as the depletion of ore supplies and ways of recovering as much metal as possible with a reduced amount of waste.

Founded in 2002, Xstrata operates in more than 20 countries and employs 70,000 people at more than 100 operations and projects around the world. It is one of the top five global producers of copper, thermal and metallurgical coal, ferrochrome, zinc and nickel. It also produces silver, lead, platinum, gold, cobalt and vanadium.

Ian Pearce, chief executive of Xstrata Nickel and Xstrata Canada Corporation, says the endowed gift will “act as a catalyst to push the boundaries of knowledge within mining, inspire the innovation required to develop

breakthrough technologies to further reduce impacts on the environment, and attract the very best scientific minds from across Canada and beyond, who can make a real difference in the mining industry.”

Dean of Engineering David Lynch says the Xstrata Chair clearly demonstrates the necessity of partnerships between the corporate and academic communities, particularly in an area of research that is so significant to Canada’s economy. And the chair will be associated with the faculty’s Canadian Centre for Clean Coal/Carbon and Mineral Processing Technologies (C⁵MPT), which has a vision to become a world-class research centre and innovation hub for these technologies. “By providing the basic research foundation, we can promote the development and upgrading of Alberta’s natural resources in an environmentally responsible manner,” Lynch says.

With mining and mineral processing playing a key role in the Canadian and world economies, the demand for new engineering graduates with specialized education is high, says Chad Liu, a professor in the Department of Chemical and Materials Engineering and scientific director of C⁵MPT. Those young engineers, he notes, will help mining and mineral processing industries develop new technologies and techniques to operate more efficiently and reduce their environmental impact.

“Developing new engineers, really high quality personnel, is a very important part of this,” says Liu. “The educational component is really needed by industry right now. And

it’s something that Xstrata and all of the sponsors of the centre are helping with.”

The Xstrata chair position will improve existing connections between the faculty and the mining and mineral processing industries. Those relationships include research presentations by students and professors to visiting industry representatives and visits to mining and processing sites where students and academics get a better idea of challenges their industrial partners are facing.

“We try to bring students and professors to the partners’ operation sites and share our research outcomes,” says Liu. “The benefit when we visit is that they can share more of their operating challenges and issues with us. And they get to know which students they want to hire—it is also another recruiting and placement opportunity—it’s a good story.”

Liu says work is underway to recruit from among “the best and the brightest” to fill the chair position. The chair holder, like others associated with C⁵MPT, will also engage students in the faculty’s growing School of Mining Engineering.

“We’re seeing students in mining also taking a lot of our classes for mineral processing,” says Liu. “They want to know about processing minerals as well.”

Liu is aiming for an integrated approach among the faculty, C⁵MPT and industry supporters like Xstrata to address mining and mineral processing challenges and find ways to minimize the industrial impact on the environment.

—with files from Richard Cairney



Chad Liu, a professor in the Department of Chemical and Materials Engineering and scientific director of C²MPT, meets with a group of graduate students. Providing challenging, relevant research projects and education to the next generation of engineers is an key piece of a new research chair funded by Xstrata.

PEYTO CEO
DARREN GEE
IS DOING
BIG THINGS

UNDERD

but not under the radar

By Judy Monchuk

Darren Gee (Mechanical '89) is more likely to joke than swagger when asked to sum up why he was recently named Alberta's energy CEO of the year.

"I asked them who else was in the running," says Gee, 45, president and CEO of Calgary-based Peyto Exploration and Development. Joking aside, it's easy to see why Alberta Oil magazine named the personable executive its top choice in a year of turmoil for the oil and gas industry. Gee says the recognition celebrates Peyto's alternative corporate strategy of organic growth, a key to the gas-weighted company earning accolades as "outstanding over-performer" in 2012.

On this Monday morning, Peyto staff has surprised Gee with coffee and muffins to celebrate his CEO of the year honour, briefly setting back his day but in a good way.

Modest and self-effacing, Gee prefers to put the success spotlight back on his team.

"I do my part to market this story to anyone who will listen," he says, sitting in his office at a work table covered in

production graphs and printouts. "But the real authors are the whole team."

It took years for the investment community to accept Peyto's philosophy of building value over time by being in charge of its own destiny. This meant using capital to create its own infrastructure and operations for the gas-weighted company, from gas plants to multi-frack wells that operate in Alberta's Deep Basin. Such vision allowed Peyto to set up the low operating costs that set it apart in the industry and give it a competitive advantage.

"We've had to establish ourselves with a successful track record to get people to believe that different is good," says Gee, who joined Peyto in 2001 as a vice-president and became CEO in 2007.

In fact, he's surprised Peyto's low-cost producer approach—the vision of company founder Don Gray—is not being emulated by more players in the oil and gas industry. It meant that when natural gas prices stumbled, the Peyto team could continue on its regular business path while competitors were scrambling to survive.

"We can do a lot better job than the guys that are trying to put us out of business," Gee says.

It has been a year of change in the oil patch, with a handful of big names leaving the industry. The January exit of Randy Eresman, president and CEO of natural gas giant Encana, was the latest in a string of veteran leader departures that included Rick George from Suncor Energy Inc., Patrick Daniel of Enbridge Inc., and John Manzoni from Talisman Energy Inc. Economic pressures on the industry, including a stronger Canadian dollar, mean more companies may want to follow the Peyto model. But catching up is easier said than done. Gee clearly relishes the nimbleness that comes with being small enough to keep intimately involved with many parts of the operation. He's one of the rare executives without an assistant. He writes his own monthly updates for shareholders and the investment community, a practice he began shortly after becoming president in 2006.

"We are a bit of a unique company, so I have the ability to write about what we

OG



did last month because I know,” he says. “It’s much harder to pull that together at [energy giant] Encana.”

When then-CEO Don Gray lured Gee to Peyto in 2001, there were only seven people on staff. At the time, Peyto was producing 1,000 barrels of oil equivalent (boe) a day. Today, the company output is close to 60,000 boe, but the low-cost producer still runs an incredibly lean operation, with fewer than 45 employees.

“Most companies at this size would have several hundred staff,” Gee concedes. “It’s amazing what we’ve been able to accomplish organically.”

“How did my role as a reservoir engineer at Petro-Canada affect the Petro-Canada bottom line? No clue. In a small company you can see how your efforts make a difference.” —Darren Gee

The majority of energy companies grow by purchasing assets, a transaction-oriented strategy that Gee says creates “impatient investors.” In contrast, Peyto made its first acquisition last summer: the \$187.2 million purchase of junior producer Open Range Energy Corp.

“Up until then, everything we had we built ourselves,” he says. “But in doing so, we only [added] people as needed.”

In fact, Gee jokes that Peyto has the “best gas-to-ass ratio in the industry.”

Born in Calgary, Gee spent his early years in the energy capital before his family moved to Grande Prairie, Alta. After completing high school, he lived in Edmonton’s bedroom community of Sherwood Park while attending the University of Alberta. He met wife Angela (Mechanical ’90), one of a handful of women in mechanical engineering, at a university party in 1986. She remembers an energetic, outgoing guy who wasn’t the type to sit back; someone who made her laugh.

“He liked to tell jokes while going to school,” says Angela, who spent almost a decade as a petroleum engineer with Amoco and Crestar Energy before deciding to stay home and raise the couple’s three

children, now 11, 13 and 15. The shared engineering experience helps them avoid the communication breakdowns that could hamper other marriages. Angela says the busy CEO has a twinkle in his eye when discussing work or school.

“Engineers are a fun group: we like to work hard and play hard,” he says, smiling at the university memory of taking apart a Volkswagen Beetle and reassembling it around a tree during Engineering Week. That enthusiasm to play hard is now focused on family activities: golfing and motorboating at their home in British Columbia’s Okanagan Valley, hiking in the mountains or collectively taking part in the annual Terry Fox run/walk.

Gee describes himself as an average student in his university days but notes that “there’s more to working with people than just getting good grades.” In fact, Gee believes that young engineers would benefit from an increased emphasis on communication skills—especially writing and the soft people skills that are core to success in the business world. Gee recalls that early in his career, a supervisor at Petro-Canada quickly got the newly minted engineer involved with Toastmasters, where he was able to learn and hone the public speaking skills that have become increasingly valuable for presentations at conferences to industry and investors. Gee believes clear writing is equally important, noting that engineers are often the ones in a company who best understand the technical workings of an issue. Without the ability to share that information in easily understood language, everyone suffers.

“If you can’t write, it’s hard for you to explain it,” he says.

Gee acknowledges the extent to which he handles the communications message is rare for an energy CEO.

“I want to be the one to tell the story,” he says. “Rather than have a staff of writers, I want to write it and I’m capable of it. I write all the annual and quarterly reports.”

Gee also thinks engineering students need more economics training to be able to make the switch into the boardroom. He gained a lot of knowledge through his time at Petro-Canada, Anderson Exploration and Renaissance Energy before it merged with

Husky Oil, but he decided a long time ago that he’d prefer to be a key cog in a smaller operation.

“How did my role as a reservoir engineer at Petro-Canada affect the Petro-Canada bottom line? No clue. In a small company you can see how your efforts make a difference.”

Despite the increased risk, Gee notes that his situation makes for “a lot more job satisfaction at the end of the day.”

The global marketplace and the strength of the Canadian dollar are putting stresses on Alberta’s energy industry, requiring companies to be far more efficient going forward. Gee says while some companies are adjusting creatively to the changing landscape, others will have more challenges. He says Peyto is well positioned to go forward.

“Western Canada’s oil and gas [industry] has gone through a lot of violent change and we’re still busy developing the reserves,” he says. “We [Peyto] are trying to lead the charge; be a good example for the rest of the industry. This is how low-cost you can be.”

One way Peyto continues to be innovative is its decision to use more compressed natural gas in its day-to-day operations instead of costly diesel. Gee expects others will eventually follow Peyto’s path and that the industry will be stronger in the long run. Meanwhile, Gee revels in the underdog status that Peyto affords him. Much like Brad Pitt’s character in the movie *Moneyball*, where the baseball executive is offered his dream job with the Boston Red Sox after using an unorthodox strategy to creating a winning team in Oakland, Gee says he wouldn’t be swayed by an offer to take over the helm of an energy giant that’s looking for a new boss.

Someplace like, say, Encana.

“I’d have to say ‘Thanks, but no thanks’” says Gee, his face serious.

He pauses for a moment, and then expands on his train of thought. He confides that portfolio managers who discuss Peyto’s performance have told him that many of the executives they interview say if given a choice of any energy company to run, Peyto would be their first choice.

“I think that’s a real compliment to our team and the fact that our strategies work,” he says.

BASHIR, NASEEM Peng (Electrical '92)



Has been awarded the Queen Elizabeth II Diamond Jubilee Medal in recognition of his outstanding contributions to the engineering profession and the province. Bashir is the president and CEO of Williams Engineering Canada. He is actively involved in promoting professional engineering across Canada and is a committed supporter of numerous charities.

DANIEL, PATRICK Peng (Chemical '68 LLD [Hon] '10)



Has been awarded the Canadian Business Leader Award from the University of Alberta School of Business. He is the 32nd recipient of this award. Daniel served as president and CEO of Enbridge from 2001 – 2012.

FAULKNER, GARY Peng (Mechanical '63, MSc '66)

Has been awarded the Queen Elizabeth II Diamond Jubilee Medal in recognition of his outstanding contributions to the engineering profession and the province. Faulkner is director of research and technology development at the Glenrose Rehabilitation Hospital. He develops innovative health care technology to help improve patients' quality of life. He is a former mechanical engineering professor and department chair and a long-time APEGA academic examiner.

HAMILTON, DOUGLAS Peng (Electrical '80, MSc '84)

Has been awarded the Exceptional Engineering Achievement Medal by NASA. This prestigious award is given for accomplishments far above others in quality, scope, and impact which are explicit, significant, and demonstrate results. A former NASA flight surgeon, Hamilton earned this award for investigating and identifying risks of electric shock to astronauts during spacewalks on the International Space Station. Hamilton is now an associate professor and member

of both the Libin Cardiovascular Institute of Alberta and W21C at the University of Calgary.

HENEIN, HANI Peng

Has been appointed vice-president of the Minerals, Metals and Materials Society (TMS). Henein is a materials engineering professor and director of the university's Advanced Materials and Processing Laboratory. He is currently a member of the TMS financial planning committee, has served as the TMS board director of programming and has been a TMS member for 30 years. This appointment is part of the TMS three-year presidential cycle, where Henein will serve as president in 2014 and past president in 2015.

KENT, WILLIAM (Civil '31)



Bill Kent was presented with the "Community Builder Award" from You've Gotta Have Friends, a community support group in Langley, BC. The 105-year-old was recognized for his dedication over the past six years, stating: "Bill is at the centre of the group and he continues to be curious, caring and interested in all the folks that come through the door. The community gathers around him wherever he goes."

MORGENSTERN, NORBERT Peng (DSc [Hon] '07)

Has been awarded the Queen Elizabeth II Diamond Jubilee Medal in recognition of his outstanding contributions to the engineering profession and the province. A professor emeritus in the Faculty of Engineering, Morgenstern focused his research on the stability of earth and materials, as well as on the movement of materials in the earth.

SPARROW, BEN Peng (Mechanical '99)



Has been awarded the Queen Elizabeth II Diamond Jubilee Medal in recognition of his outstanding contributions to the engineering profession and his province. Sparrow is CEO

of Vancouver-based clean-tech firm Saltworks Technologies and recipient of the 2012 Alumni Recognition Award of Excellence.

THUNDAT, THOMAS



Has been designated as a Distinguished Alumnus of the University at Albany – State University of New York.

Thundat is a professor in the U of A Department of Chemical and Materials Engineering and holds the Canada Excellence Research Chair in Oil Sands Molecular Engineering. He has authored over 285 publications in refereed journals, 48 book chapters and holds 30 patents. He has received a number of awards, most recently the Outstanding Achievement Award in the Sensor Division of the Electrochemical Society.

WEIR, CHARLIE Peng (Civil '50, MSc Civil '52)

Was posthumously presented with the 2013 Consulting Engineers of Alberta CEA Lieutenant Governor Award for Distinguished Achievement. The award is given in recognition of dedication to the consulting engineering industry and the well-being of the greater community. Weir passed away in Sept., 2012. He was the second chief executive officer and a former senior partner of the firm Stewart Weir.

VERHAPPEN, IAN Peng (Chemical '82)



Has been inducted into the Process Control Hall of Fame. Verhappen is managing director of Industrial Automation

Networks Inc., and has held various posts with the International Society of Automation. As ISA vice-president of publications, he co-authored the first edition of the Foundation Fieldbus book, soon to be in its fourth edition in English, Spanish and Portuguese.

Do you have news to share? Send your news of awards, appointments and other successes to engineer.alum@ualberta.ca.

In Memoriam

The Faculty of Engineering sincerely regrets the passing of the following alumni and friends.

Edward Alexander, Mining '50, in July 2012
Lloyd Anderson, Mechanical '62, in November 2012

The Hon Dr Harvie Andre, Chemical '62, PhD (Chemical) '66, in October 2012
Stanley Asselstine, Chemical '45, in September 2012

Lorne Baker, Electrical '57, in February 2013
Kenneth Banks, Civil '68, in September 2012
Dr Hari Chaurasia, PhD (Electrical) '74, in 2012
Marion Checknita, Chemical '61, in July 2012
Brian Clarke, Electrical '66, in November 2012
William Davies, Civil '61, in February 2013
Paul E. d'Haëne, Chemical '73, in September 2012

Marshall Dmytryshyn, Electrical '64, in December 2012

Peter M. Dranchuk, Professor Emeritus, Petroleum '52, MSc (Petroleum) '59, in September 2012

Dr Nelson Durdle, PhD (Electrical) '83, in February 2013

Major Donald F. Edie, Civil '49, in September 2012

Peter Ffoolkes-Jones, Petroleum '63, in February 2013

Kenneth Gillespie, MSc (Civil) '66, in March 2013

Gerald Golden, Chemical '56, in November 2012

John Irvine, Chemical '49, in September 2012
John Jensen, Mechanical '63, in September 2012

William G. Jewitt, Chemical '49, in July 2012
Romanus Koncohrada, Chemical '50, in October 2012

Colonel George Lackonick, Metallurgical '64, in February 2013

Lucien Lambert, Chemical '43, in October 2012
Keith Lea, Petroleum '56, in August 2012

Raymond Litkenhaus, Mining '41, in September 2012

Albert Malanchuk, Civil '55, in September 2012

Ronald Mann, Civil '73, in December 2012
Leslie McManus, Civil '34, in May 2012

Marvin Mishio, Mechanical '75, in December 2012

Doug Morrison, Chemical '52, in August 2012
Gordon Munk, Mining '61, in December 2012

D Mickey Mykitiuk, Electrical '61, in November 2012

Dr Edmund Newhall, Engineering Physics '49, in January 2013

David Ng, Mechanical '03, in March 2012

Raymond Phillips, Chemical '48, in March 2013
Victor Prystawa, Civil '63, in February 2013

Mark Rosenberger, Mechanical '96, in September 2012

Thomas Sissons, Electrical '46, in January 2013
William Syroid, Mechanical '79, in December 2012

John Twach, Civil '58, in August 2012

Arthur Vollendorf, Civil '63, in October 2012

Marius Vos, Civil '63, in December 2012

Charlie Weir, Civil '50, MSc (Civil) '52, in September 2012

Lars H. Welde, Electrical '11, in November 2012

The Faculty of Engineering was recently made aware of the passing of the following alumni more than a year ago:

Lowell Court, Electrical '67, in January 2012
Emil Drucker, Civil '59, in July 2007

Donald Elfner, Mining '50, in February 1998

William Fedunec, Civil '52, MSc (Civil) '54, date unknown

Allan Gunter, Chemical '39, in June 2009
Gary Kellam, Civil '64, in May 2011

Dick Maze, Civil '59, in October 2011

Jonathan Petrunia, Chemical '77, in June 2011
Manahan Tampubolon, MEng (Civil) '91, in 2010

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Edmonton, AB T6G 2V4

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University of Alberta ENGINEERING

Take the plunge

The Engineering Student Life Enhancement Fund (ESLEF) recognizes that successful engineers need not only technical skills, but also well-developed skills in teamwork, communication, management, and creativity. While these skills are learned through formal engineering education, they are more often honed through hands-on activities outside the classroom.

The ESLEF provides funding for extracurricular projects and student activities that focus on the non-academic qualities of a successful engineer. The fund supports our student vehicles projects – helping to fund teams through the phases of designing, building, and taking their vehicle to competition. The fund also helps improve student learning and study spaces; supports our varsity-level athletes through the U of A's Adopt-an-Athlete program; and provides financial assistance for engineering students to attend technical, leadership, and professional development conferences and competitions.



You can read about building an underwater robotic vehicle in a textbook—or you can build one yourself. Support from the Engineering Student Life Enhancement Fund enables students to apply the knowledge gained in the classroom to real-life challenges.



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I have also enclosed a corporate matching gift from my (or my spouse's) employer

I would like information on how to include the Faculty of Engineering at the U of A as part of a will, life insurance or other planned gift instrument

I have provided for the Faculty of Engineering at the U of A in a will or trust agreement

I would like information on how to make a gift of publicly traded securities to support the Faculty of Engineering at the U of A

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\$ _____ Electrical and Computer Engineering Fund

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\$ _____ Other _____

* Donations made to endowment funds are invested in perpetuity and the investment earnings are used to advance the specified purposes of the funds within the University.

Please note that gifts over \$1,000 to the Faculty of Engineering qualify you to become a member of The President's Society

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