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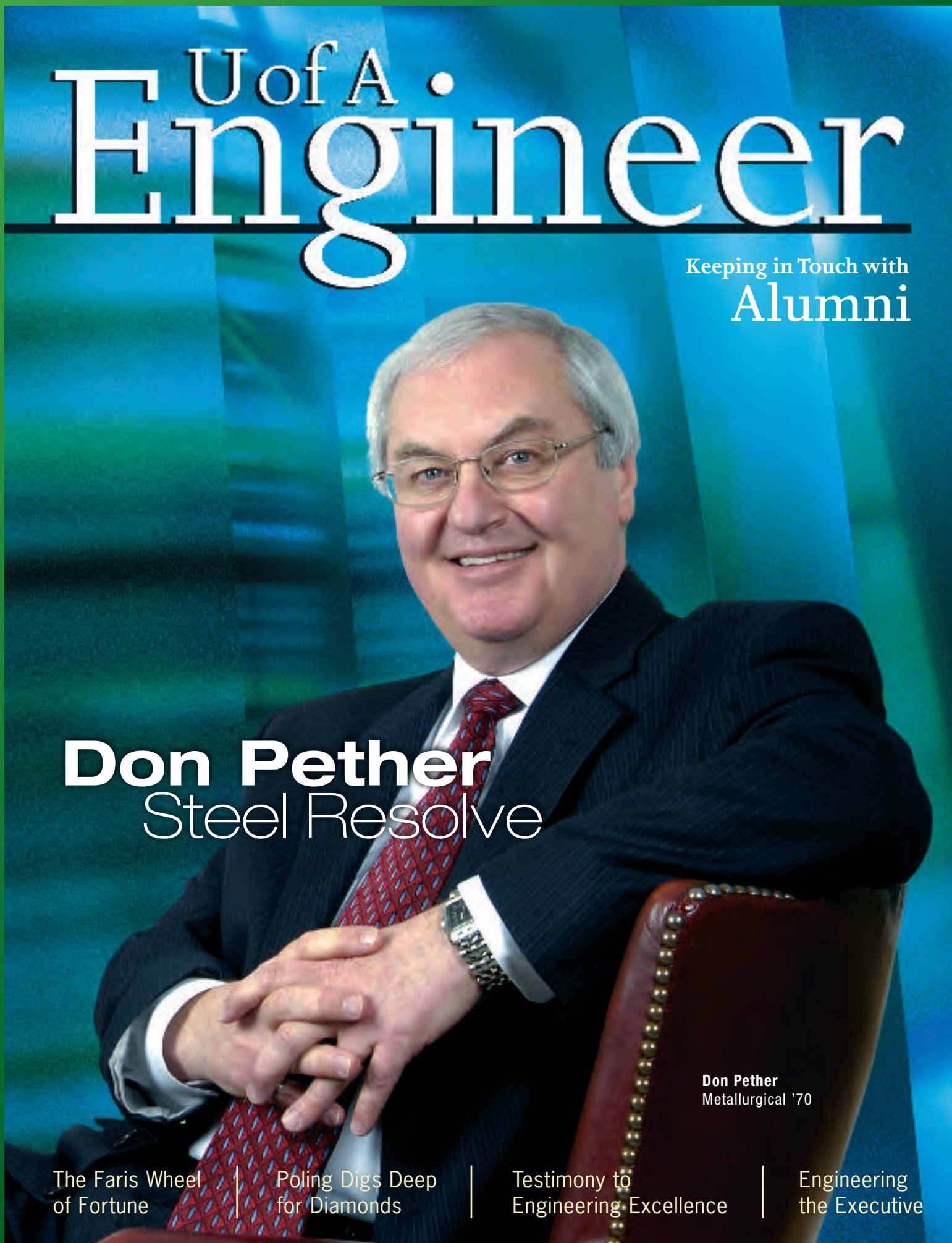
U of A Engineer

Keeping in Touch with Alumni



Don Pether
Steel Resolve

Don Pether
Metallurgical '70

The Faris Wheel of Fortune | Poling Digs Deep for Diamonds | Testimony to Engineering Excellence | Engineering the Executive

Greetings from the Dean

I am pleased to announce a five-year extension to my term as Dean of Engineering, effective July 1, 2005. The past ten years have been both professionally satisfying and personally rewarding, and I look forward to the challenges ahead. The strategic initiatives for the Faculty of Engineering from 2005–2010 are to attract and satisfy outstanding students, achieve national and international recognition for research excellence, provide an outstanding learning environment, and meet the needs of our national and international communities.

These initiatives will be achieved with support from students, faculty, staff, corporate partners, and alumni. In fact, alumni support is now more crucial than ever for ensuring our success. Although our infrastructure needs have in large part been met, alumni support will now play a pivotal role in launching major teaching and research initiatives. That is why the Faculty's future advancement efforts will be focused on endowments, with the goal of raising our endowment pool to $100 million or more. Ambitious? Yes. But certainly achievable—especially considering the recent generosity of our outstanding alumni and corporate partners. To all of you who have contributed to the future of the Faculty of Engineering, I offer my sincere thanks.

The tremendous growth and success of this Faculty would not have happened without the extraordinary advocacy and support of our thousands of U of A Engineers. I look forward to continuing to work with you over the next five years to further enhance the reputation of the Faculty of Engineering at the University of Alberta.

Yours truly,
David T. Lynch, PhD, PEng
Dean, Faculty of Engineering

Faculty of ENGINEERING University of Alberta

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.*

U of A Engineer
Summer 2005 Issue 17

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

Dean of Engineering
David T. Lynch (PhD Chemical '82), PEng

Assistant Dean, External Relations
David M. Petis

External Relations Team
Mandi Cronin, Vivian Giang, Katherine Irwin, Leanne Nickel, and Laurie Shinkaruk.

Publisher/Managing Editor
Sherrell Steele

Art Direction
Halkier + Dutton Strategic Design

Contributing writers and photographers
Blue Fish Studios, Adam Bello, Robin Brunet, Donna Clare, Rod Clark, Mandi Cronin, Will Gibson, Don Hammond Photography Ltd., Lois Hammond, Tom Keyser, Tony Kryzanowski, Catherine Kuehne, Leanne Nickel, Ann-Marie Pelletier, and Debby Waldman.

Send your comments to:
Sherrell Steele
Faculty of Engineering
E6-050 Engineering Teaching & Learning Complex
University of Alberta
Edmonton, AB T6G 2V4
Tel: 780.492.4514 or 1.800.407.8354
Fax: 780.492.0500
E-mail: sherrell.steele@ualberta.ca
Website: http://www.engineering.ualberta.ca

Faculty of ENGINEERING University of Alberta

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Message from the Editor

It is my pleasure to introduce a new colleague, Mandi Cronin, who is dedicated to development and communications for the Department of Chemical and Materials Engineering. If you are a graduate of this Department, you have received a discipline-specific insert in this issue of the *U of A Engineer* alumni magazine. If you are a graduate of the other disciplines, visit www.engineering.ualberta.ca/cme to become familiar with her work and the Department.

I hope you enjoy the summer issue of the magazine. Feedback is always welcome. Contact me at 780.492.4514 or sherrell.steele@ualberta.ca

Sherrell Steele
Publisher/Managing Editor

Publications Mail Agreement No. 40051128

Return undeliverable Canadian addresses to:
Faculty of Engineering, University of Alberta
E6-050 Engineering Teaching & Learning Complex
Edmonton, AB T6G 2V4

e-mail: sherrell.steele@ualberta.ca

Dear Editor:

I am privileged to have access to your publication through my partner, an engineering alumnus of the U of A. We live abroad and are always excited to receive mail from home, especially magazines in English.

The Winter 2005 edition just arrived and after your "Message from the Editor" solicited feedback about the magazine I felt there was no time like the present to ask a question. It seems like every single feature, kudos, cover story, etc. highlights the successes of male engineers. Where are all the ladies? Can I be so bold as to say, "Shame on you for perpetuating the male engineer stereotype!"

Now I hardly classify as some sort of raging feminist, but if memory serves me correctly, there were one or two females enrolled and even successfully graduating from U of A Engineering during my years as a student. It is not just this latest issue either. I am always left feeling like the accomplishments of women are at best given lip service throughout each issue. Surely some U of A women must have achieved global/national/local success as engineers? However, your publication does adhere to coherent writing and good production values. It certainly must provoke donations from those who can afford to give.

Can I make a suggestion for an article to focus on a neglected demographic? What about focusing on a recent graduate in each issue? Somebody two or three years out of the program, not a superhero engineer or exceptionally high achieving, just your average kind of engineer, doing good work, learning about the profession and its possibilities. It would help to highlight an individual your younger readership could identify with; someone who, with time, will be a potential donor along with their cohorts. It could also provide you with excellent fodder for articles in the future—a "where are they now?" kind of thing.

Anyhow, that is my two-bits. I look forward to seeing more women highlighted in future editions.

JENIFER BACHAND, partner of ALEXIS GUILLEMIN (Electrical '97)

EDITOR'S NOTE: *I appreciate the feedback, Jenifer, and I am very interested in profiling female graduates. Suggestions are always welcome.*

engineer.alum @ualberta.ca

Civil Engineering

Deroy, Jean Marc (MEng Civil '76)

I am currently working as representative and regional director for the United Nations Industrial Development Organization (UNIDO) regional office in Bangkok for Cambodia, Lao PDR, Malaysia, Myanmar, and Thailand. UNIDO disseminates knowledge on industry and provides a platform for the public and private sectors, civil society, and the policy-making community in general to enhance cooperation, establish dialogue, and develop partnerships. By the end of 2003, UNIDO developed 900 Montreal Protocol Projects in 68 countries with a total budget of $355 million.

Glucksmann, Pedro (Civil '67)

I've been in the practice of engineering for many years now. I am semi-retired now and have been traveling the world with my sailboat with many adventures. I also have been giving lectures in different places regarding the profession.

Computer

Bhasin, Sunny (Computer '02)

My team of MBA students from the University of Toronto's Rotman School of Management took home first place at the Sauder School of Business at the University of British Columbia's Enterprize Conference and business plan competition, held in January.

In the MBA business plan competition, the team of Kenny He, Bobby Gautam, and I won the $5,000 first-place prize. Our plan focused on the launch of Gradecast, an on-line system which functions as an intermediary in the collection, distribution, and streamlined sharing of confidential information, including academic information, such as transcripts. Gradecast will be the world's first system implemented using this new model. The team is actively seeking funding to launch the product into the marketplace.

Over 300 undergraduate and MBA students from Canada's top business schools took part in the two-day event, which featured both the business plan competition and speaker sessions with seasoned entrepreneurs and venture capitalists. Enterprize is an annual event organized and run by students at the Sauder School of Business, which focuses on fostering successful student entrepreneurship and motivating students to realize their visions by turning ideas into plans, and plans into reality.

We have also been invited to present at the prestigious business plan competition at Rice University in Houston in April. This year, 130 schools from all over the world entered and only 36 have been invited to the finals. We were the only Canadian entry invited. Needless to say, just making it to the Rice finals is a huge achievement.

Electrical

Reinke, Leslie
(Electrical '88, MEng Electrical '95)

My family and I are living in Doha, Qatar, where I am teaching at a technology college. For those who wish to contact me, my e-mail address is leslie.reinke@cnaqatar.edu.qa.

Mechanical Engineering

Storey, Robert (Mechanical '86)

I enjoy the magazine quite a bit. Keep up the good work! I don't have any recent news, but if you are desperate for a "filler" item, here's what I'm up to these days. I am currently a project manager with the Canadian Standards Association in Toronto, working on the development of energy efficiency and renewable energy standards. I encourage any fellow alumni to contact me directly at robert.storey@csa.ca to learn more about our organization.

Mining Engineering

Mclure, Gordon (Mining '40)

I continue to enjoy the news contained in the alumni magazine, have been doing so for the last 60-some years. I am one of the fortunate ones that still enjoys good health in mind and body. If the same continues, I expect to be at the Reunion this fall. It does depend also on the number of my classmates that are still able to attend. I have nothing to report in the way of engineering achievements. I still do some writing and painting; my golf has deteriorated, but I still manage to shoot my age once in a while. I lost my wife, Joan Lofts (Nursing '38), last November and miss her terribly.

2006 Engineering Perspectives Calendar

Thanks for your contributions to the 2005 Engineering Perspectives Calendar. Feedback has been very positive and donations raised to date exceed last year's total. This will greatly assist the Engineering Students' Society.

Interested in participating in the 2006 calendar?
Contact sherrell.steele@ualberta.ca for further information.

the Faris wheel of Fortune

BY ROBIN BRUNET

When University of Alberta Engineering alumni discuss their career achievements, they usually cite something along the lines of a majestic bridge that was a nightmare to construct or a section of highway punched through a mountain.

But when you ask Nabih Faris (Chemical '73) about his proudest moments, he leans forward with a grin and says almost conspiratorially, "Nothing gets me more excited than making a good deal. Sometimes it takes weeks, sometimes months, but when all the elements come together and a deal is closed, nothing could be more satisfying."

Nabih Faris (Chemical '73)

Faris is famous as one of Vancouver's most formidable dealmakers. Although his activities seem far removed from his chemical engineering studies, he credits his Faculty for providing him with the tools to prevail in the world of high finance—a world in which he has bought companies and turned them into billion-dollar enterprises.

Faris is director, president, and chief executive officer of the Intergulf Development Group, one of North America's leading development firms. Calgarians may best know the company as a partner in the massive Westgate Park project, the three condominium towers located on the old Westgate Hotel site. Intergulf has provided Vancouver with many distinctive residential buildings, such as Alameda Park, Avanti, and Treo. And in San Diego, the company built Treo at Kettner and other fine edifices.

But Faris becomes most visibly animated when he talks about his extensive experience in the oil and gas sector.

"I started my career in Alberta as a field engineer and then overseas in Oman, where I built a whole bunch of materials factories," he says. "And when I returned to Canada in 1982, I joined my two brothers and cousin [Joe Houssian] to focus on oil and gas development, which led to the creation of Intergulf."

Although he was raised in Lebanon, Faris came from a family that appreciated the benefits of higher education in Canada. His father, Ahmed, graduated with an engineering degree in 1933, and his brother, Moh (who founded Calgary's Intrawest Corporation, a leader in mountain resort development), was also a university graduate.

"We have deep roots in Canada," he says. "My grandparents emigrated to this country in 1897."

Although his familial peers pursued careers in real estate, Faris was inspired by high school teachers to study chemistry.

"I would have happily continued studying pure chemistry in university were it not for my dad and brother, both of whom convinced me that chemical engineering would give me better career opportunities," he recalls.

So, after emigrating to Canada in 1967 with little knowledge of the country other than it was cold and vast, Faris searched for a university that would satisfy his needs.

"I love putting together deals . . .

You're constantly hunting for opportunities, and then when you find something you have to move very, very quickly. After that, you spend months embroiled in due diligence and securities; then once a management team is assembled, it's on to the next deal."

Calgary was a logical choice given his brother's activities in that city, but after examining campuses from coast to coast, he chose the U of A "because its engineering department was far more established than those of other universities," he explains.

"I know that's been said many times before, but it's true, and in my day the chemical engineering sector was especially renowned. Some of its professors had earned patents and were famous in the private world, Dr. Lynch being one of many prime examples."

Faris moved into Henday Hall dormitory and cracked the books. When prodded to describe his extracurricular activities on campus, he struggles to maintain a dignified composure. He scans his richly-appointed Intergulf office with its vertiginous view of downtown Vancouver, and shakes his head.

"I suppose we were troublemakers to a degree, even though we were segregated. But, really, our workload occupied most of our time. It was dark when we woke up and dark when we returned home."

Faris developed his love for the oil and gas industry through a summer job with Home Oil.

"I worked from Swan Hills to Edmonton checking batteries and storage tanks," he says. "After graduation I became a field engineer for the Alberta Trunk Line, and my job was to ensure that all systems were running at ultimate capacity."

Although the work itself was fulfilling, Faris eventually abandoned Alberta for Oman.

"I remember quitting during one particular winter when the windchill reached minus 65. I just couldn't stand it. Plus, I knew a guy 10 years my senior who was still struggling to pay his mortgage, and that kind of future was definitely not for me! So I obtained my P.Eng. Without it, I would have remained an engineer in training, unable to stamp my name on anything."

But before Faris left Alberta, the province provided him with another asset in the form of a New Zealand-born legal assistant named Lynette. They married in 1976 and raised three sons: Sharif, now 26 and employed at Intergulf; Sasha, 16, a professional skater; and Shaadi, 24, a U of A political science student. ("I apologize to the Dean for that," jokes Faris. "We can't all be engineers.")

Faris spent five years in Oman involving himself in joint venture factory construction projects. Although the leadership aspects of this work were a quantum leap from toiling in the Alberta oil fields, he credits his close relationship with British banks and a thriving post-energy crisis economy for contributing to his success.

"Would I do the same thing now at 55 as I did at 26? Probably not. Taking risks didn't scare me back then; I simply envisioned the worst-case scenario and prepared myself to cope with it. Fortunately, all the projects came to fruition smoothly, and I learned to be an expert in electrical and mechanical as well as chemical engineering. I had no choice! In the Gulf there were only engineers or labourers, nothing in between, so you had to rely on yourself. I even learned how to overhaul motors."

This acumen stood Faris in good stead when he reunited with his brothers and Houssian in Vancouver and laid the groundwork for what would become Intergulf. Faris entered the B.C. big leagues in 1982 by investing in Renaissance Energy Ltd., building it into a multi-billion-dollar business. Much has been written about Renaissance and how its principals retired as millionaires, but Faris insists that the formula for developing a winning company is simple: "If you put together a good management team that complements each other, you'll never go wrong. Fortunately, the oil business—not to mention the residential development business—is a very small world, with everyone knowing everybody and who the up-and-comers are."

That same formula has enabled Faris to expand one company's market cap (Penn West Petroleum Ltd.) from $6 million to $4.6 billion and pursue oil production in Indonesia.

"I love putting together deals like Penn West or Renaissance," he enthuses. "You're constantly hunting for opportunities, and then when you find something you have to move very, very quickly. After that, you spend months embroiled in due diligence and securities; then once a management team is assembled, it's on to the next deal."

But exactly how did his years at U of A contribute to his expertise in high finance? Faris doesn't even hesitate:

"Engineering trains you to get a good handle on analyzing opportunity. You begin to understand the rationale behind analysis. As a student, you also routinely encounter problems and must deal with them in a systematic fashion. And really, that's all I'm doing today."

Faris is currently forming a company that will produce oil in South America, and his supervision of new residential developments in the Californian communities of Irvine, Anaheim, and Orange County oblige him to be on the road up to 60 percent of each month. But, mindful of the fact his father "began to fall apart" after retiring in his 70s and died in 1999, he refuses to contemplate slowing down. "I will probably work until I drop dead."

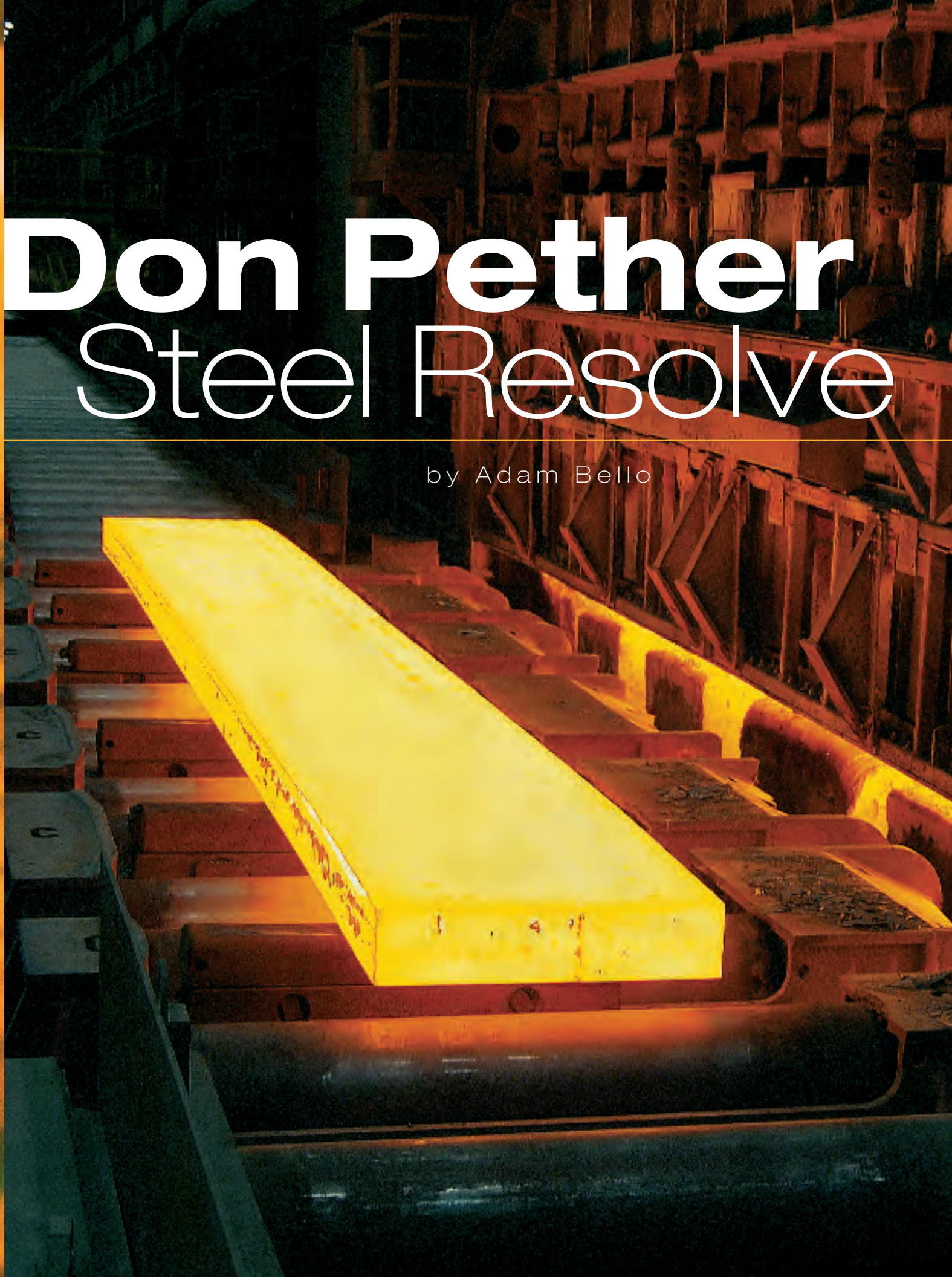
In fact, he is so busy it wasn't until three years ago that he was able to catch up with events at the U of A. And, characteristically, he made up for lost time. Although he is too modest to admit it, Intergulf contributed $125,000 towards the new Allan P. Markin/Canadian Natural Resources Ltd. Natural Resources Engineering Facility. Faris also served as alumni host for the October 2004 reception in Vancouver, and he assumes a reverential tone when describing a recent visit to his Faculty.

"I was so impressed with what they've done, and the new facilities are world class. I actually felt a little jealous of the students."

The would-be chemist never suspected he would be in such high demand as a power broker, but on the other hand, he knew as a student that the sky was the limit.

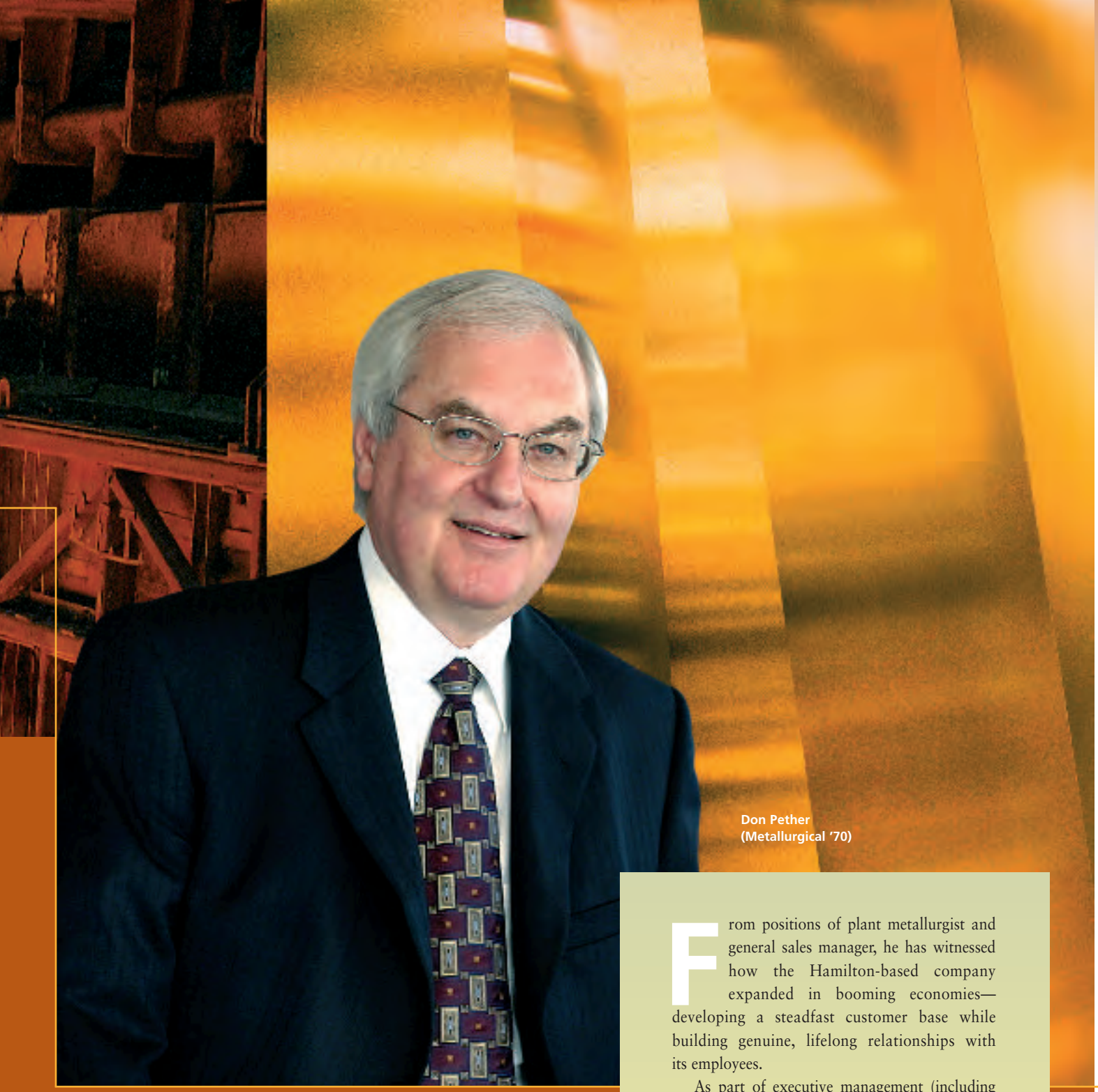
"My Faculty was so well established and so brimming with talent that you couldn't help but feel you could accomplish anything," he says. "That was the case then, and that remains the case now. I get excited whenever I contemplate the opportunities that lie ahead for the new generation of graduates."

Robin Brunet is a freelance journalist based in Surrey, British Columbia.



Don Pether
Steel Resolve

by Adam Bello



Don Pether
(Metallurgical '70)

Moving up the ranks of Dofasco Inc. during his 35-year career, Don Pether (Metallurgical '70) has looked at the company from many different vantage points.

From positions of plant metallurgist and general sales manager, he has witnessed how the Hamilton-based company expanded in booming economies—developing a steadfast customer base while building genuine, lifelong relationships with its employees.

As part of executive management (including vice presidential roles in sales and commercial divisions, executive vice president, general manager of Dofasco Hamilton, and chief operating officer), he has stared into the horizon of uncertain times for steel production. Industry contraction and recessions of the early 1980s brought the prospects of plant closures and layoffs.

However, he also has seen the company find its true mettle. Embracing change has been somewhat of a tradition in Dofasco's 93-year history. This outlook helped Pether and the other members of the management team open more than a few eyes to changing market demands. With the foresight to

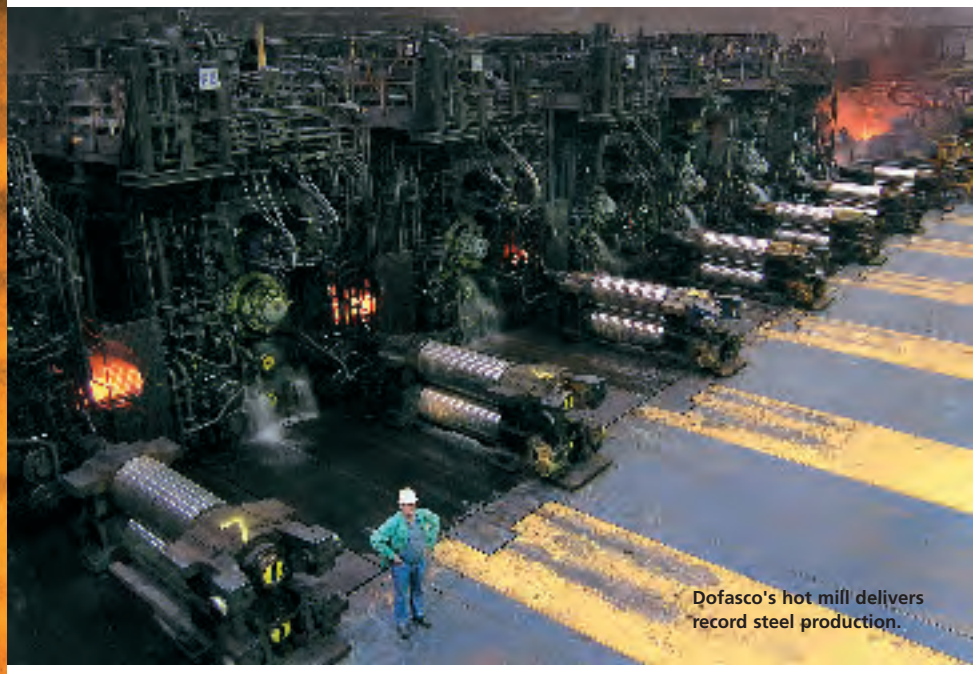
embrace new production technologies, identify emerging customer needs, and implement outreach initiatives to continue to build trust with employees, the company's re-invention brought uncommon successes where competitors continued to struggle. Today, Dofasco is Canada's most successful steel producer and a global leader in manufacturing, with top-tier customers in a range of industries (automotive, construction, energy, manufacturing, pipe and tube, appliance, packaging, and steel distribution). In 2004, Dofasco achieved record earnings of $376.9 million, was once again the only steel company in the world to be listed on the Dow Jones Sustainability World Index, and was recognized as one of Canada's 50 best employers in an annual study conducted by *Report on Business Magazine* and Hewitt Associates.

Pether now sees the view from the top. As the president and CEO, he is leading the company through the good times by looking at what factors would change the direction steel was heading," he says. "We took a different tact from the competitors. Developing our Solutions in Steel marketing strategy allowed us to gain the competitive edge by transforming Dofasco from a traditional manufacturer of steel to a high-tech producer with innovative solutions.

"The company became much more customer focused. We shifted from measuring growth by capacity [of production] to value-added steelmaking for our customers and increased our efforts to become a leader in technological capabilities for the industry. As a result, Dofasco has become one of the most profitable steel operations in North America based on earnings per tonne."

And that profit benefits more than shareholders.

Pether maintains that regional economies benefit when they support area studies in engineering and related disciplines that spur



Dofasco's hot mill delivers record steel production.

beyond the tried-and-true solutions of yesterday's steel industry. Instead of waiting for industry demands to change, the company is peering ahead to the next industry and global factors shaping steel's use, while keeping an eye on daily operations to pinpoint exceptional ways to improve processes and develop new products.

"Dofasco has always had a culture that fosters innovation, which allowed us to look

technological innovation. Partnerships involving local government, enterprise, and academia (through the universities and colleges) provide business opportunities that build on advancing specific technological research conducted by the programs. When students become highly skilled and specialized (in those technological niches), more expertise and resources begin to cluster around their field work. This leads to new ventures, meeting demands in the greater economy.

"I am a bigger believer, from the perspective of community, that all local stakeholders can work together as a powerful force to achieve economic growth. Ultimately, innovation creates more jobs, additional taxes [collected for the community], and opportunities for the universities to grow and attract more students."

Pether points to the role of active alumni support in achieving these ends.

"We did not have the same sort of alumni representation in 1970, but it wasn't as crucial back then because the government subsidized more of the costs of education. Today, alumni donors have a visible role in the success of both the students and the schools.

"Both McMaster and U of A programs are just two examples of the great Canadian success stories in technological innovation that are making important contributions to the economy. Upgrading the resources and facilities of the engineering programs is a continuing process and key to remain competitive internationally. Around the world, the levels of technical people graduating are providing a tremendous benefit to the economies of those countries. A strong base of graduates in engineering and technical disciplines in Canada is extremely important to our future, and we need to prepare them to be leaders within corporations. Having the alumni's support behind the graduates not only furthers the diversity of the technological research and scientific experimentation of today, but also provides the sustenance of tomorrow's economic growth."

Pether's enthusiasm for "hands-on" education is a life-long trait that started when growing up in the farming communities of Wetaskiwin and Camrose. His fascination with how the world around him developed into keen interests for archeology, geology, and ancient history.

"I would walk along the riverbanks of Alberta collecting items I believed would reveal something new about our past."

Being among the minority of students from Wetaskiwin High School heading to university programs, Pether started gravitating toward math and sciences in his final years of study. Weighing his career options, engineering

held greater appeal than theoretical sciences while sharing commonalities with his earlier interests.

"Engineering was becoming a popular choice at the time because of the race to put a man on the moon, and it was also an applied science with structure, and provided the prospect of working with materials. It also held the same appeal of the tactile pursuits I enjoyed in archeological work."

Starting his bachelor's degree at U of A in 1966, his explorations turned from fossils to fossil fuels, with petrochemicals among his general studies. Finding his work in materials to be the most fascinating area of curriculum, he decided to specialize in metallurgy.

Discussing the faculty, professors that Pether admired during his studies were Dr. Michael Wayman and Dr. Franz Vitovec.

"I respected them for their depth of knowledge and passion for engineering. Dr. Vitovec was quite knowledgeable with insights from his time in Europe, and Dr. Wayman was a young professor with a lot of energy and enthusiasm."

Lab work played a large role of Pether's fourth-year thesis. It was also a place where he was again digging in the dirt, but this time for base metals.

"Petroleum companies were interested in finding out if it was viable to extract aluminum from the oil sands," he says. "When you separate the oil from the sands there are still a lot of minerals and metals left inside, and the economic potential for extracting aluminum from the sand was tremendous for both the Albertan and Canadian economy.

"They [the oil companies] would ship me these five-gallon barrels of oil sands to perform extraction [experiments]. It was a pyro-metallurgical process, which involved a lot of time measuring and heating the sands."

While Co-op job placements were not yet around in his day, Pether sought out summer employment that would provide insights into the range of entry-level positions utilizing his degree. His first job was a civil assignment for the Government of Canada surveying for the map of Canada.

"It was an interesting summer; we [the survey team] spent about four months traveling to the Northwest Territories, northern Saskatchewan, and Manitoba."

The next summer, he gained exposure to chemical engineering, working at an installation plant in Fort St. John. In the summers between his third and fourth years of study, he found employment at a steel plant with one of Dofasco's major competitors. Working for AtlaSteel, a division of Stelco, he gained practical laboratory experience by preparing metallurgical samples.

Pether's work in base metals would lead to golden days. Graduating into a period of prosperity brought an array of job offers, including those from the manufacturing and natural resource sectors. Weighing his options, he decided to accept Dofasco's offer as a plant metallurgist and made the cross-country move to Hamilton, Ontario. In retrospect, the job would not only be the first step in a career for life—a common experience for many employees in the history of Dofasco—but where he began learning a wealth of business lessons derived from Dofasco's traditional values. An important lesson absorbed in its corporate culture has been an appreciation to nurture employee relations, long before the idea became a common corporate mantra.

"From the shop floor to the executive offices, Dofasco has a team approach where everyone is comfortable to stand side-by-side and can be fully engaged in the process," says Pether, who spent 17 years in the metallurgical department. "You have to make people believe there is room to grow in the company and show them the proof through your actions."

Dofasco also offers employees a unique sense of community. The company distributes the rewards of its success through profit sharing and variable compensation. The annual Christmas party is the largest in corporate Canada and more than 30,000 employees, retirees, and friends turn out for Dofasco's annual Canada Day celebrations.

However, the bonds of Dofasco's employer-employee relations would be tested during the recessions of both early 1980s and 1990s. In the later period, the North American steel industry continued its decade-long decline; excess supplies of steel helped drive pricing down, global competition began to emerge, and many competitors entered bankruptcy. At Dofasco, previous expansion and acquisition moves to increase its market position would later prove costly; sales of subsidiaries led to tough decisions, notably a company-wide restructuring and a downsized workforce. The majority of departing employees found themselves choosing early retirement or voluntary severance packages. To soften the situation as much as possible, management set up a centre to help departing employees prepare for new employment.

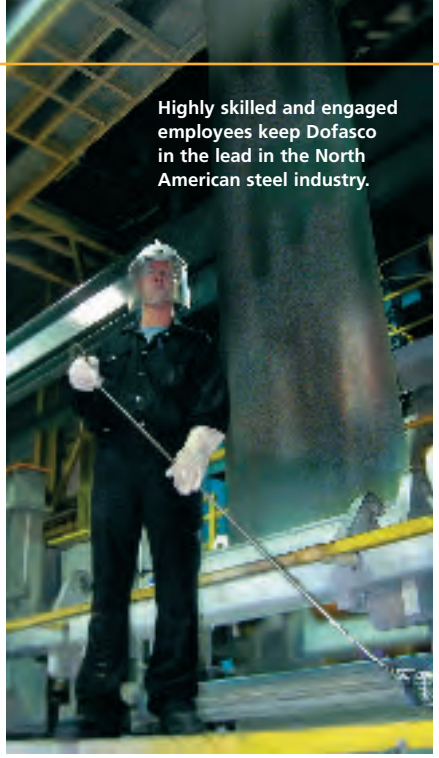
"Engineering was becoming a popular choice at the time because of the race to put a man on the moon, and it was also an applied science with structure, and provided the prospect of working with materials.

"We implemented a one-on-one program to help laid-off employees look for new employment or additional skill development without cost to them. It was important that we did this; I just wish we had found ways to head off the situation entirely."

Learning those painful lessons led to realizations about the business of steel. A sobering look at where the company and the industry were heading gave rise to the need for a true re-invention of the steelmaking giant.

"We [senior management] spent about seven or eight months in '93 identifying how we would create a total re-visioning of the company," he says. "The re-invent really took shape when we started looking at the business through the eyes of the customer, which really drove the value and evolved this into the Solutions in Steel strategy.

"At the time, I was the vice president of the commercial division. I was deeply



Highly skilled and engaged employees keep Dofasco in the lead in the North American steel industry.

involved in Solutions in Steel and felt very strongly about this direction. We needed to develop a strategy based on understanding the value chain of our clients' operations. By taking the company's strengths in processing and incorporating a product side, we could fill in those 'white spaces' for exact demands that fell between our operations and our customer's plants. Now we would have a new market advantage: creating a higher-value-added product chain from steel with less competition [who could offer the same services]."

Implementing Dofasco's new corporate vision required more than a commitment to modernized facilities, but a need to foster innovation. This would involve taking a leadership position in developing innovative technologies within the industry. It would also have to be an ongoing and evolving process to help the company stay ahead of the next wave of change.

"In today's market, if you are not technologically advanced and in a position to build solutions, you run into problems that you cannot address when crises or opportunities presents themselves."

Part of the new strategy for Dofasco was to increase its focus in specific industries: automotive, construction, and packaging.

"In the case of the automotive sector, we took stock of changing global demands. We identified the growing need to offset the challenges that aluminum [options] would make in replacing steel auto parts. This led Dofasco to become an early entrant in the ultra-light auto body program. We realized the need to create lighter parts that would increase fuel efficiency, produce fewer emissions, and have increased structural strength. We also had to counter the pressure most manufacturing suppliers were facing to follow automotive companies to other parts of the world."

The company soon found the right links between processing and product development. Dofasco began producing automotive tubular steel (used to manufacture axles, prop shafts, door intrusion beams, and stabilizer bars, among other automotive body parts), and established related production facilities with proprietary processes. The company also identified an opportunity to become an early entrant in providing laser-welded blanks for the North American automotive industry. The process would use multi-directional lasers to seam-weld two or more sheets of various steel grades and thicknesses into a single "blank" to be stamped into auto parts such as door frames, body side panels, and underbody parts.

The benefits of the new manufacturing technology using linear and non-linear laser welds were increased product durability and performance in needed areas, while reducing waste and unnecessary material costs in other sections. Realizing the competitive advantage of laser welding led the company to develop a partnership with Powerlasers Limited (Concord, Ontario), a laser research and development operation for Magna International. The technology provider would later become a 100 percent-owned Dofasco subsidiary. Together, the two specialties strengthened the links in Dofasco's automotive value chain.

Keeping your technological advantage does not always mean developing an in-house solution from scratch. Pether says delivering the right technological solutions can be obtained from a variety of partnerships, including competitors.

"We have a joint venture with Arcelor (Luxembourg) to operate a world-class galvanizing line at Dofasco's Hamilton operations. This brought technology to the automotive industry that was not previously available in North America."

Another current example is its long-term partnership with JFE Steel Corporation of Japan, the world's fourth largest steel producer. The DJ Galvanizing Corporation in Windsor, Ontario, now produces 400,000 tonnes of value-added automotive-galvanized products for North American customers.

Identifying drivers for innovation requires benchmarking from outside the steel industry.

"Determining which investments to make in the company involves looking for changes external to your industry. You need to look years into the future to understand major changes that will dislocate your current business operations and how you will prepare for it. Understanding global drivers, such as water, energy, and global trade, can be used to gain perspective about future challenges."

While technology may drive the company forward, he says the great catalyst within Dofasco is its culture and the adaptability of the people. Accepting innovation does not have to be a battle from within, provided management is clear in demonstrating the value of those changes within the organization.

"Your business can have the best technology in the world, but if you fail to make your strategy an inclusive approach, you can fall face down. You need people to drive those objectives forward and commit to ongoing growth. This requires that everyone understands what direction the company is heading toward, so they can become fully engaged and see the value in executing their work."

Discussing operating approaches, Pether says another strength the company has developed is its intellectual capital, using cross-department participation to identify cost reductions or add value.

"Everyone is bombarded by information, which requires ways to identify which items are important findings. We developed a matrix management system as opposed to functional, where people report on business processes involving different departments. For example, procurement reporting may involve our purchasing, financial, and manufacturing departments, with staff communicating interrelated findings. By integrating and leveraging all the departments, we can identify new efficiencies or opportunities. This allows employees to initiate new projects that turn information into added value."

He adds that the cross-departmental projects give people an opportunity to gain additional on-the-job training through greater depth in management experience and company operations.

"People gain opportunities to rotate through the related positions and departments, increase their skills sets, and get paid for it as well."

Discussing corporate governance, Pether says the exceptional strength of Dofasco's board of directors has been its close working relationship with senior management. Instead of pushing for compliance to meet each side's objectives, both sides have fostered an attitude of collaboration.

An integral part of Dofasco's resurgence has been its commitment to corporate social responsiblity. Dofasco's environmental initiatives have become a model to the corporate world, earning the company a place on the Dow Jones's Sustainability World Index for six consecutive years. Passionate about the benefits corporate sustainability can provide, Pether says the responsibilities of corporate citizenship are not a campaign on an "as-needed" basis, but an active role in improving the quality of life in its residing communities. In 2005, Dofasco will announce special community-building gifts totaling more than $8 million for local cornerstone organizations.

"We fundamentally believe that there is an integral link between the strength of the community and the strength of our company.

"The choice is fundamental as far as we're concerned," he says. "You're only going to be successful if you take a broad approach, acting from what can be done from a social and environmental perspective, which will ultimately have financial possibilities. It's not about offsetting one against the other, but the integration of all three."

He says taking steps to practice a balanced triple bottom line will prepare corporations for their requirements under the Kyoto Accord.

"If you're not getting ready for Kyoto, it can make a company inefficient enough to be unsustainable [when it goes into effect]. We have been actively involved in Kyoto [as one of the participating companies on behalf of the steel industry], and have seen the steel industry achieve 30 percent reduction in emissions."

Dofasco's long-term approach to its environmental responsibility has helped the company maximize its contributions, while setting the terms to undertake those initiatives. The recent completion of a 30-year environmental program is a shining example.

"Going back to the 1970s, we worked cooperatively with the federal and provincial government to develop an environmental management system, and we have achieved every one of those goals we set for emissions from water, air, and ground perspectives," he says. "To date, Dofasco has spent $500 million on environment programs to make sure that the water we put into the bay is cleaner than the water we took out in the first place."

Contributing to the community's betterment is another aspect of corporate sustainability. Discussing some of Dofasco's recent commitments, Pether notes the range of civic activities the company has championed through financial and voluntary efforts.

"Many of the stakeholders of our company live in this community, so we can see firsthand the kind of positive impacts that level of participation has. Right now we have 40-45 percent of our employees involved in the community as volunteers, including leadership roles."

At Dofasco, the product is steel, but the strength is people. As CEO, Pether is steward of a unique corporate culture that gives Dofasco a key competitive advantage. Other steel companies have the same technology and equipment, but they don't have the Dofasco workforce. Says Pether, "At the end of the day you have to ask yourself: Is what we accomplish today getting us to where we want to go tomorrow?" For a CEO with steel resolve, the answer is clear.

Adam Bello is a freelance journalist based in Richmond Hill, Ontario.

Getting into Dofasco just over the wire

Was it an act of fate or a communication breakdown? Call it what you like, but Pether's illustrious career at Dofasco may have never happened if things went … according to plan.

With the Canadian economy expanding in all directions, numerous employment opportunities existed in engineering as he approached graduation in 1970, particularly in the metals and resource industries. After a series of job interviews, Pether received several serious offers. He narrowed down his choices to two well-established organizations: Dofasco and Cominco Ltd., the mining and smelting giant in Trail, B.C. (today known as Teck Cominco Limited, a diversified mining group).

"Cominco indicated they were only offering the job to two individuals and wanted a response within 48 hours or they would go down the list to the next candidate. I thought long and hard, and finally decided that while it was a good job offer from Dofasco, I was from western Canada and this [Cominco's position in Trail] would be the right thing to do."

Pether headed to downtown Edmonton and sent his acceptance letter for the position using the fastest communication technology available: the telex. In the decades before SMS text over mobile, e-mail, and the fax machine, the telex was the quickest and most cost-effective way to send "instant messages" between cities. Transmitted from a local dispatch bureau to a worldwide wire system, messages were relayed to bulky, typewriter-style printers. However —as it still happens—the message sent was detoured as it traveled along the forerunner of today's information highway.

"I waited for a couple of days and did not hear anything. So I sent another telex. I received a response a couple of hours later indicating that they had not received my first telex and had gone on to the next individual who accepted."

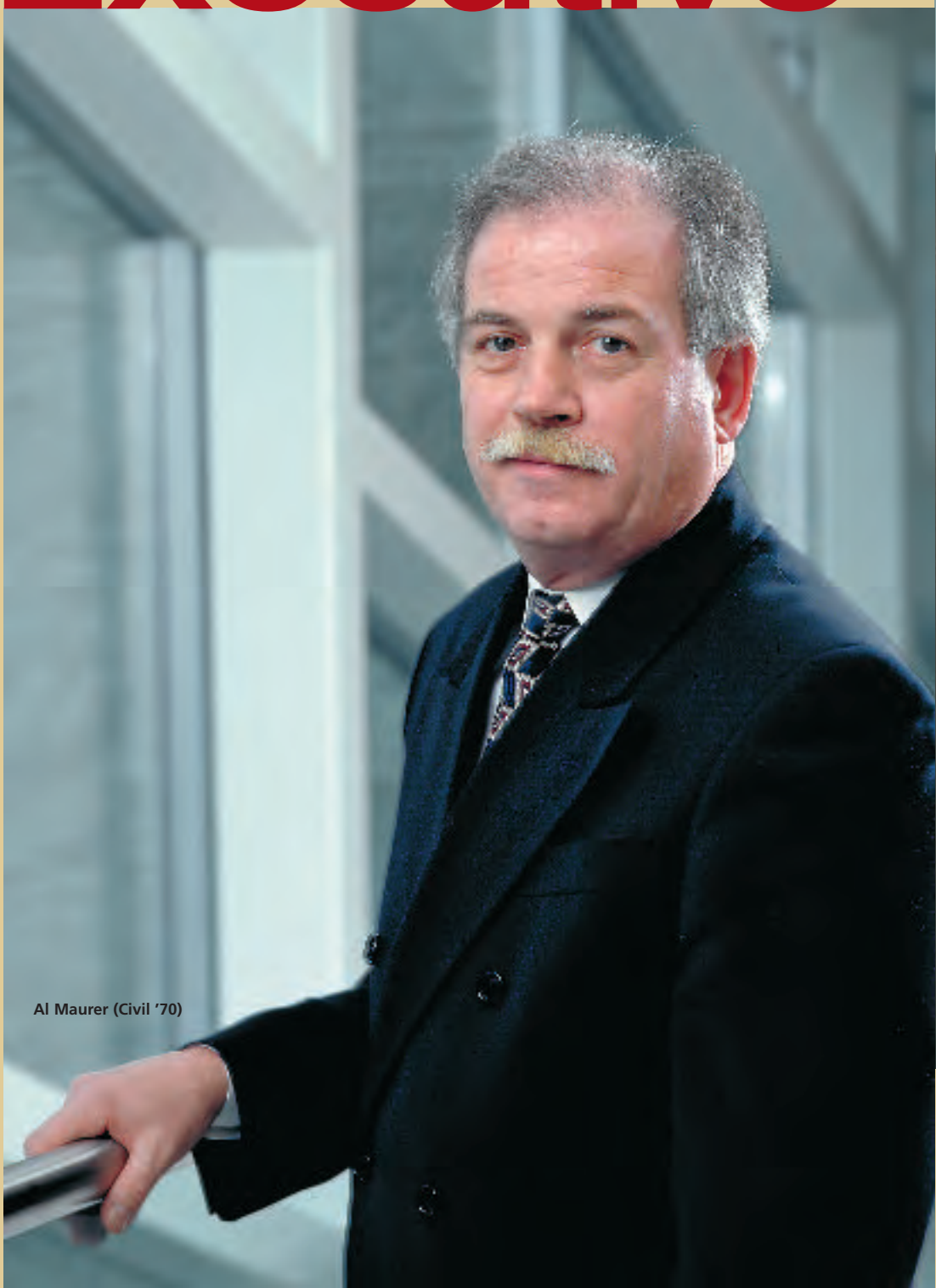
Pether had some uncertainties about the news received. "I was quite concerned; I thought there might have been doubtful feelings by the company [about hiring him]. I went back and traced the telex. Apparently, it went through the computer systems in Toronto before going to Trail, but was lost in between."

It would also prove to be a blessing in disguise. "I then followed up with Dofasco once again, and in serendipity, it turned out the position was still available. Who would have thought an errant message would have been the best professional move of my career?"

Engineering the Executive

by Will Gibson

Al Maurer (Civil '70) and Anne Marie Toutant (Mining '87) are separated by almost two decades as graduates of the Faculty of Engineering, 450 kilometres in their physical location, and a world apart in their industries. But both Maurer and Toutant represent a growing trend—engineers in the executive suite.



Al Maurer (Civil '70)

Anne Marie Toutant (Mining '87)

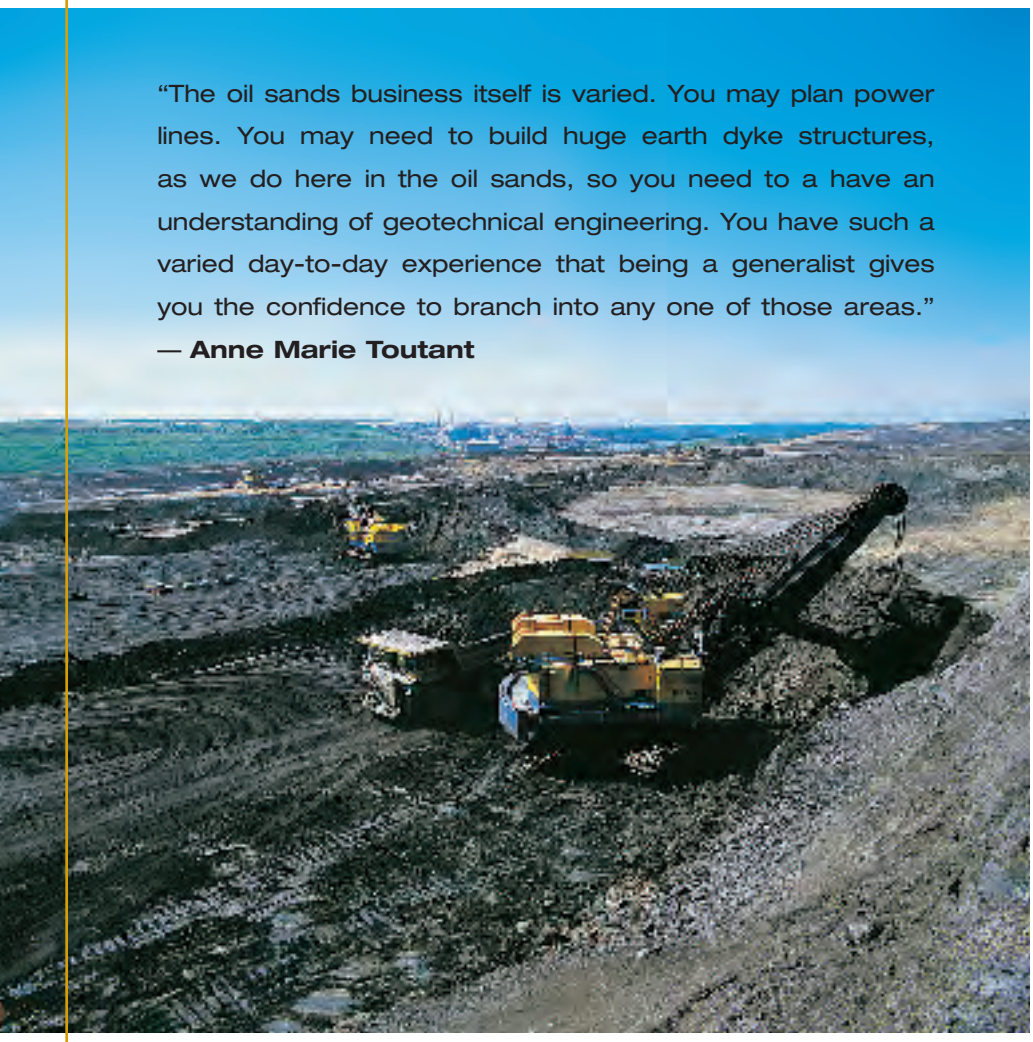
When Suncor Energy began looking earlier this year for a new vice president to take charge of its sprawling mine about 30 kilometres north of Fort McMurray, the oldest player in Canada's oil sands industry went to Estevan, Saskatchewan, where Toutant was general manager of Luscar's large coal mine operation, which encompasses three business units. Suncor, like many of its competitors in the oil sands, has tended to fill its executive ranks with professional engineers rather than accountants, marketers, or other traditional business school denizens.

The raw numbers involved in Suncor's mining operation—1,100 workers excavating enough oil-stained oil-rich earth to produce about 230,000 barrels of oil each day—may not faze the average engineer. It's a little different, though, when you need to marshal those workers and a fleet of heavy equipment to work in a sprawling open-pit mine, which looks like a lunar landscape carved into the endless sea of jackpine and spruce of northeastern Alberta. Maintaining a steady flow of bitumen into the plant's extraction facility requires an elephantine interplay: massive shovels heaving clumps of dirt the size of passenger cars into walk-up-apartment-sized dump trucks.

Coming off of 12 years at Luscar's mines in the Rocky Mountain foothills, Toutant fit into her new job as easily as she adapted to Suncor's unofficial dress code of steel-toed work boots and blue jeans.

"Mining engineering provides a technical foundation, but it is one of the more generalist engineering degrees," says Toutant. "We took a little bit of civil structure, a little bit of hydrology, geology, thermodynamics, electrical, metallurgy, and computer sciences.

"The oil sands business itself is that varied. You may plan power lines. You may need to build huge earth dyke structures, as we do here in the oil sands, so you need to a have



"The oil sands business itself is varied. You may plan power lines. You may need to build huge earth dyke structures, as we do here in the oil sands, so you need to a have an understanding of geotechnical engineering. You have such a varied day-to-day experience that being a generalist gives you the confidence to branch into any one of those areas."
— Anne Marie Toutant

an understanding of geotechnical engineering. You have such a varied day-to-day experience that being a generalist gives you the confidence to branch into any one of those areas."

Suncor isn't alone in turning engineers into executives. Engineers now run some of the largest corporations in the country. And more and more companies, from high-tech start-ups to resource industry giants, see engineering school as ideal training for boardroom decision-making.

The trend doesn't surprise Al Schuld (Electrical '66), deputy registrar of the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). To keep up with technological advances, today's boardroom leaders need a thorough grasp on their products or services, an intimate knowledge provided by an engineering background.

"Engineers do not just understand technology, but they can explain it," says Schuld. "And it isn't just about your technical knowledge. More and more, leaders are being asked, 'Do you know enough about it to successfully integrate it together?'"

It's easy to understand why Suncor, Syncrude, and other players rely on engineers to guide their fortunes in the oil sands, a relatively new and evolving industry. But organizations in more traditional fields have also turned to engineers to lead them.

Al Maurer, Edmonton's city manager, oversees 8,000 employees and a $1.5 billion annual budget. He says his engineering background helps him break down complicated infrastructure projects to both politicians and community activists.

"In the administration, we have to have the ability to explain these projects. The training that you get in engineering allows you to present the projects in very uncomplicated, simple terms. That is extremely important in politics, whether you are explaining a transportation project to council or you are talking to a community group about their request for a traffic signal."

That technical knowledge also gives Maurer and other engineers a big advantage when it comes time to discuss major capital projects.

"A lot of the dollars that go into the capital side go into redoing roads. It's all engineering," says Maurer.

"You have a confidence level that others might not necessarily have in dealing with that side of the business. The background of an engineer allows us to get there quicker and stay there longer."

Maurer, who first began working for the city in 1965 as a summer student, believes his education and training gave him the ability to see the big picture, an increasingly important skill as he rose within the ranks of managers.

"I think a lot of things that we learn in engineering seem to expand that point of view. I never really had the time to do a post-graduate degree in management or whatever. I wasn't really sure what it was going to give me. The training that I received in engineering school was being able to look at plans and visualize stuff."

To Maurer, the city's annual setting of priorities for capital projects seemed right out of classroom exercises completed at engineering school.

"It went back to our university assignments about the practicality of doing *x* versus *y* and the value for money," Maurer says. "You know what is doable and what isn't doable."

Toutant has experienced that feeling of déjà vu in her job as well. In a corporate environment that encourages team building, Toutant is reminded of days spent in the Cameron Library, crunching numbers with fellow mining students.

"Whether it is by design or fluke, the workload that is created in engineering with six or seven courses a term and numerous labs encourages collaboration and teamwork," she says.

"That workload creates an interdependency. You totally rely on the other person to get their part done. You trust their work, you review each other's work."

Toutant also credits the Faculty of Engineering with forging the right links with

the industry, which has helped her career advancement.

"In engineering, there is a really tight relationship between the university and the business world. Business people will go in and do guest lectures or technical presentations. The U of A is also actively involved with industry groups such as the Mining Industry Advisory Committee," Toutant says.

"Being involved with groups such as the CIM (Canadian Institute of Mining, Metallurgy, and Petroleum) from the start of your education, you get exposed and get the opportunity to interact with people in the business. That goes a long way because people get to know you before you ever get into the business. Many people that I interacted with at that point in time I've known my whole career since. There's this real progression that starts. You don't get an education and then go look for a career. It all kind of all happens simultaneously."

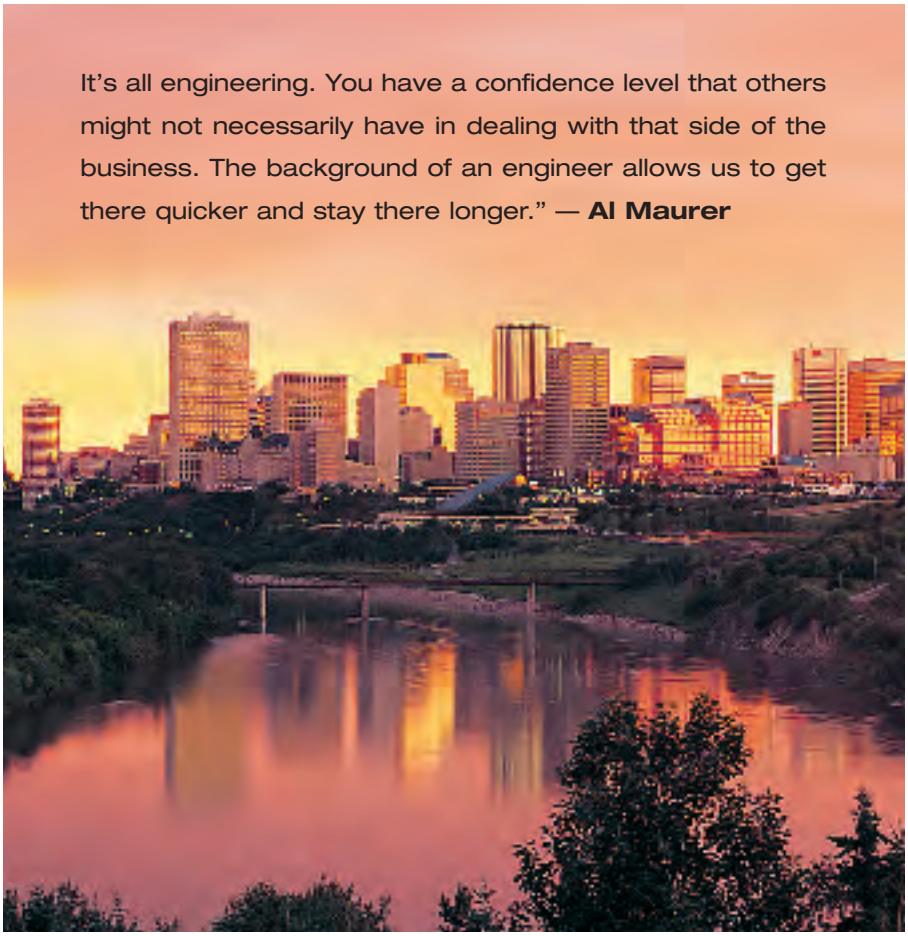
An education in engineering, says Toutant, builds the analytical skills executives need to break down obstacles and find solutions prior to starting tasks. It's an entirely different sort of analysis than what's provided by business school grads.

"A lot of skills that you might learn in a business school or other programs are reconciliation skills. The whole problem-solving issue is one of looking at what's been done and drawing conclusions about what has been done," explains Toutant.

"In engineering studies, analytical problem solving is all future looking. That really is a skill set that I utilize more and more as I become a senior leader, whether it's in tactical planning, setting strategy, or getting people to understand the corporate vision and how that turns into the four or five very practical key objectives that we will tackle next year."

Engineering, it seems, isn't just about building bridges, computer circuits, and condominiums. It's also about building leaders.

Will Gibson is a Fort McMurray-based freelance writer.



Quick Facts on **City of Edmonton**

Employees:
8,000 employees

Engineers employed:
170

Roadways:
3,170 kilometres

Drainage system:
1,940 kilometres of storm sewers, 1,770 kilometres of sanitary sewers, and 935 kilometres of combined storm/sanitary sewers

2005 operating budget:
$1.1 billion

2005 capital budget:
$0.5 billion

Quick Facts on **Suncor Energy**

Employees: 4,400 (2,400 in Fort McMurray)

Engineers employed: 265 working in engineering roles, 149 in the oil sands

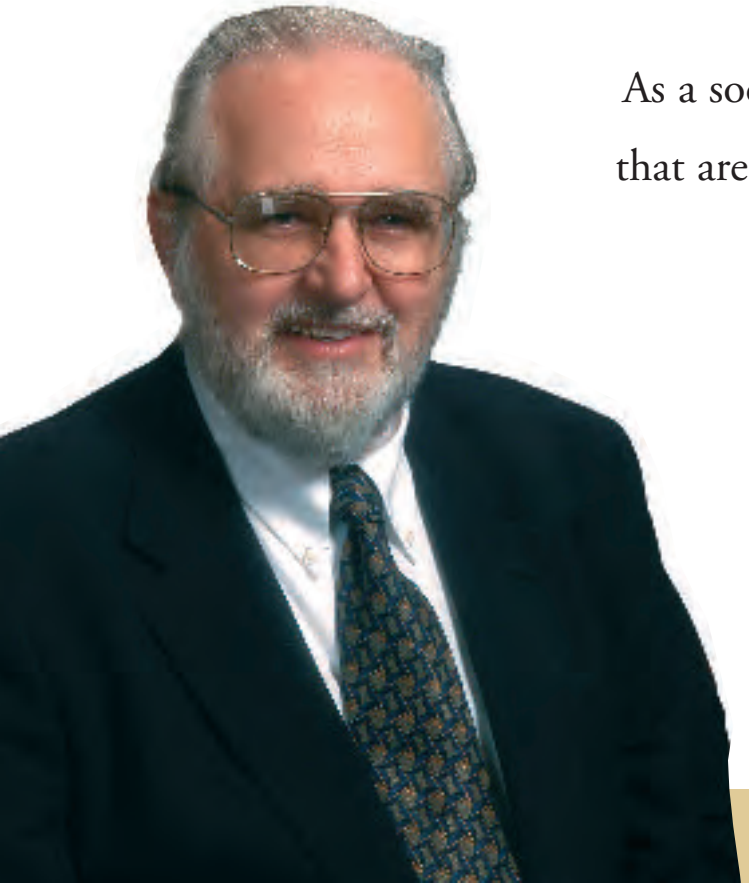
Output: 230,000 barrels of oil per day

Revenues: $6.3 billion (for the first nine months of fiscal 2004)

Pre-tax earnings: $1.7 billion (for the first nine months of fiscal 2004)

TESTIMONY *to* ENGINEERING EXCELLENCE

by CATHERINE KUEHNE



Dr. Ottfried Hahn
(Engineering Physics '58)

As a society, we are always striving for products that are better: stronger, faster, healthier, bigger, or smaller. We want new and improved. But to DR. OTTFRIED HAHN (Engineering Physics '58), product improvement is more than a market-driven consumer choice—it's a matter of life and death.

Over the years, Hahn has become a sought-after expert witness in product liability investigations against such companies as Firestone, Audi, Kimatsu, Ford, and Volvo.

He first appeared as an expert witness in 1968, in a vehicle accident case involving a serious injury.

"Up to that date, the industry had a record of defence verdicts in which they paid an average of $12,000 per death," recalls Hahn.

"I was selected to look at the tire, as it was considered a major contributor to the accident. As it turned out, the main problem was the unreasonably dangerous design of the multi-piece rim components."

In that first case, the family of the injured was awarded $27 million. It was the first major settlement of its kind in the United States.

Over the years, Hahn has testified on behalf of individuals and corporations. But, because his testimony has cost certain companies many millions of dollars, his name is now blacklisted from many an expert witness roster.

Hahn's interest grew from a quest to discover why things didn't work, to a quest to make products safer. But what is important to Hahn is people.

"I'm more interested in finding out what happened to prevent an accident from occurring in the future than getting the company to pay," he explains.

"However, if they pay too little in compensation to take care of the injured and their family, it gets my attention and I go after the industry safety issue.

"My testimonies have been in the area of mechanical engineering covering topics such as coal gasification plants, gasoline and diesel engines, automobile component failure (tires, air bags, seats, seat belts, electronics, fires, and transmissions), heaters (electric and kerosene), ATVs, backhoes, dozers, cranes, etc."

Hahn arrived at the witness stand after a diverse, circuitous life journey. He came to Edmonton from Germany in 1952. By the time he entered the Faculty of Engineering at the University of Alberta, he had found a summer job in the oil field that afforded him the time during the winter to focus exclusively on his studies. Even with the "rabble rousing" activities of his engineering class, he graduated with distinction.

After the U of A, Hahn went to the universities that could offer him the largest scholarships. In 1960, he earned a MSc in Nuclear Engineering from the University of West Virginia. He then moved on to Princeton University where he completed a Master's and PhD in Mechanical Engineering.

After graduation in 1964, he went to work as a nuclear reactor physicist and designer with General Electric in Peterborough, Ontario. Three years later, he was invited to interview for a position in the Nuclear Energy Program at the University of Kentucky. He began as an assistant professor and worked through the ranks to become a professor in 1984.

Over the past 25 years, while testifying in over 100 product liability trials, Hahn has seen the role of expert witnesses change. In the past, witnesses primarily offered professional opinions. Now, however, they're expected to provide detailed presentations outlining research of the product design, situational testing, reviews of all documents pertaining to similar incidents, and industry recommendations.

An engineer can help a jury determine if a product is unreasonably dangerous, by not meeting design goals or not providing sufficient warnings and instructions for safe use.

"As engineers, we pride ourselves on discovering a better design. However, unless there is a solid business reason, products won't change. I see changes primarily driven by economics. Changes come when either there is an increasing cost from court cases, and it appears that the cost for paying out plaintiffs will be more than the cost to change the design, or that the competition has made the change already," he explains.

"In 1985, the total cost for payouts (insurance, lawyers, settlements, etc.) for

injuries and other damages in the United States was $0.25 per $100 of product sold. By 1998, this number had dropped to $0.10 per $100 of product sold. A manager of any organization has other costs (labour, materials, etc.) which demand his attention.

"Without high-profile, expensive, punitive court verdicts, management has little incentive in most industries to change."

He cites a safety issue with cellphone chargers. Faulty chargers have already caused 50,000 house fires, some of them fatal. The cost to eliminate this safety issue is $0.25 per item.

In Dr. Hahn's first appearance as an expert witness, he tested and measured the lock and steel components of an off-road construction vehicle to determine reasons for tire failure.

A company will often choose to defend a faulty product, rather than change the design and thus admit there's a problem. If a product is deemed to be faulty, then everyone who has suffered injury as a result of the product may demand compensation.

Dr. Hahn sees himself as part expert witness and part safety advocate.

"I am most pleased when the needs of the injured person are partially or totally met, and if at the same time the settlement has not caused the industry in question to go out of business, or caused the loss of jobs, but rather has adjusted their product to make it safer," he says.

A case he is currently working on involves a transmission malfunction, which caused a vehicle wreck and reduced a college student to the mental ability of a five-year-old and the body control of a two-year-old. Hahn worries that, unless the compensation is adequate, the man will be on welfare and the public will pay.

"There is never a winner in these cases. I do not know of anyone who would trade places with these injured persons."

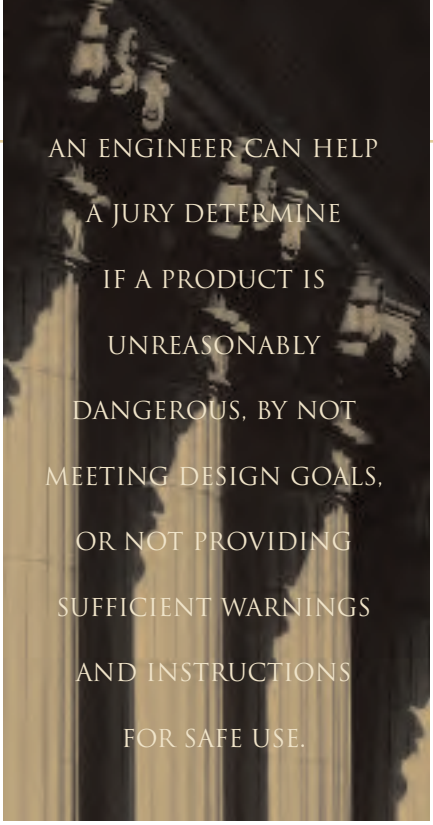
Hahn acknowledges that engineers have already developed many safety improvements, but they do not always make it into the final product. The car industry is a prime example. The crushable body, a safety standard in today's cars, was first developed in 1951 by Daimler-Benz. Benz chose not to patent the design because it was so important to the safety of the general public. Yet crushable bodies didn't make it into North American-built cars until the mid-1970s.

One of the most contentious and time-consuming cases Hahn has worked on surrounds portable electrical heaters. A number of safety features have been added as a direct result of his recommendations, including mesh screens covering the heating elements, fans to avoid overheating, and automatic "kill" switches should they tip over.

Although Hahn feels a sense of accomplishment when victims are compensated, he is frustrated when the defence prevents the examination of the greater problem. They hold back important information that could push companies to enhance the safety features of their products.

He is also concerned by skyrocketing costs for documentation and justification. It can now cost between $10,000 and $100,000 to bring a case to court in the United States. Unless large damages are sought, it is simply not feasible to proceed.

According to a 1995 study by the Ontario Civil Justice Review, the cost of a typical litigation case starts at $38,000. A report by the Canadian Bar Association suggests that these costs are fairly consistent across the country in higher courts, making it virtually impossible for many Canadians to take their cases to court.



Expert testimony accounts for only a small portion of court costs, so Hahn is particularly frustrated that fewer than 10 percent of cases actually proceed to court.

"This is unfortunate," he points out, "because the safety issue is not brought before the courts offering the opportunity for change."

Hahn looks forward to retirement so that he can consult full time on safety issues, particularly with the National Safety Council.

The lessons of his U of A instructors have consistently guided his approach to life he says.

"While in school, people judge you by what you put on an exam. Years from now, it will be the many other things that you have done that will remain as your legacy."

Through his role as an expert witness, Hahn is doing work that will remain.

Catherine Kuehne is an Edmonton-based freelance writer and journalist, whose articles and essays have appeared in national and international periodicals and anthologies.

Alan Nelson

Catalyst for the Future

Syncrude may be the biggest player in the oil sands, but sometimes it needs outside help. Who does Syncrude call when they need better catalysts? Dr. Alan Nelson, a professor in Chemical and Materials Engineering at the University of Alberta.

"Increasing the quality of oil we are able to produce from oil sands will have a major impact on Alberta's economy. I am analyzing the behaviour of particles on a quantum level which will lead to increased efficiencies in processing and higher grade oil," says Nelson.

Using current technology, an estimated 1.3 trillion barrels of oil can be extracted from the oil sands. Nelson believes that improved technologies could boost that number to a jaw-dropping 330 trillion barrels.

Recently, Nelson has also applied his insights to the production of metal nanoparticles, which are important in the semiconductor industry. Nelson's research funding as primary investigator exceeds $1 million.

Nelson has established the first research program dedicated solely to surface science and engineering. His work focuses on improving the efficiency of oil sands, heavy oil, and coal processing—key areas in Alberta's economy.

Nelson traces his success back to a personal catalyst: "Moving to Edmonton was a big step in my career. The Department of Chemical and Materials Engineering has a solid foundation on which I've been able to build my program. I have the resources to carry out my research and have the ability to focus on teaching. It is very clear the Faculty is committed to success."

Nelson has been working in the chemical engineering industry since he was 16. Now, 14 years later, he has received several awards for his research in surface science and catalysis, including the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA) Early Accomplishment Award for 2005, the prestigious University of Alberta Teaching Award for 2004, and the Faculty of Engineering Undergraduate Teaching Award for 2004/2005.

"Training tomorrow's engineers is important to me. I want students to learn how to solve problems, not memorize pages from a textbook."

A leader in the profession, Nelson serves as co-chair of two programming divisions for national conferences in the United States—one in engineering education and one in catalysis.

No wonder Syncrude includes Dr. Nelson on their "who to call" list.

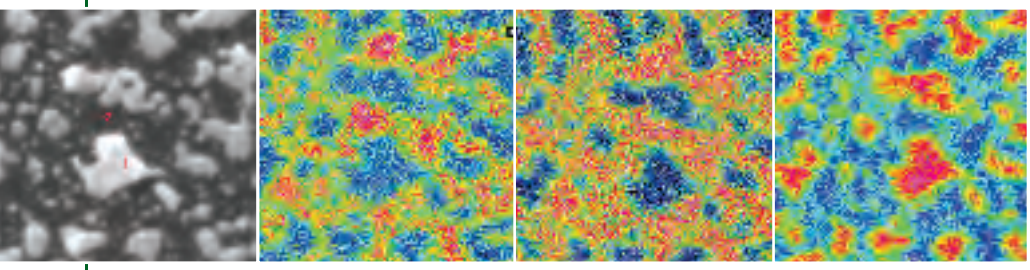
The **Faris** Wheel of Fortune

One of Vancouver's most formidable developers, Nabih Faris (Chemical '73) can point to residential complexes, condominium towers, and other fine edifices as tangible evidence of his success. Faris is director, president, and chief executive officer of the Intergulf Development Group, one of North America's leading development firms.

Faris has an unusually long list of achievements. But how did he parlay his early experience in the oil and gas sector into the realm of finance and property development? The answers may surprise you.

To read more about Faris, go to page 6 in the summer edition of *U of A Engineer*.

Looking the Su Below



Until very recently, Alberta had no instrumentation for surface analysis. Now, the Alberta Centre for Surface Engineering and Science (ACSES) has comprehensive lab capability and highly sophisticated equipment to examine surface samples. Located within the Chemical and Materials Engineering building, ACSES will vault Alberta to the forefront of surface science and engineering.

Dr. Murray Gray director of ACSES and a professor in the Department of Chemical and Materials Engineering says, "This Centre is unique in western Canada and contains equipment that is first of its class in North America."

"ACSES is an impressive example of the type of partnerships that are essential to ensure Canada's success in the knowledge-based economy," says Dr. Eliot Phillipson, president and CEO of the Canada Foundation for Innovation (CFI). "This new facility will enable researchers to perform their cutting-edge work right here in Alberta."

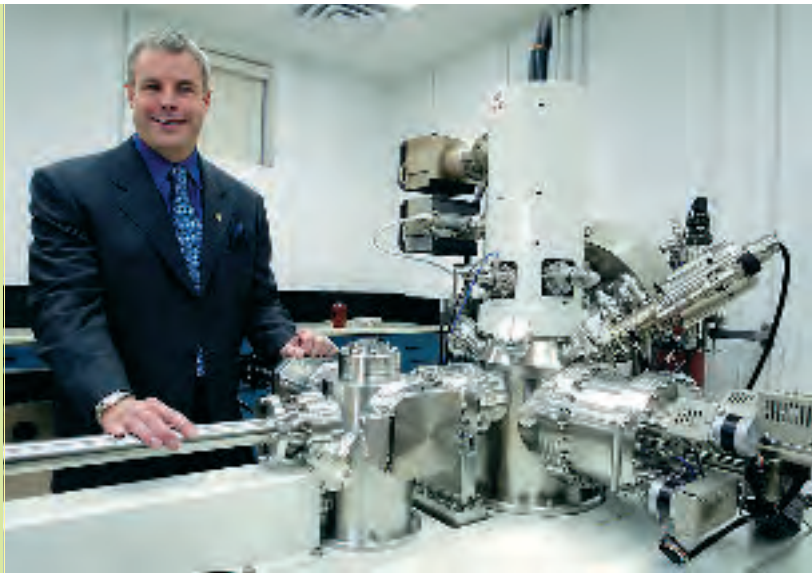
New methods are being developed to control the physical, chemical, and biological surface properties of materials. These will be central to many applications in resource extraction, petrochemicals, microelectronics, medical implants, pharmaceutical, and emerging micro- and nanotechnologies.

ACSES will directly enable world-class research in the following areas targeted for increased investment:

- advances in energy production through improved catalysts and recovery of resources;
- enhanced catalysts for producing value-added chemicals and plastics;
- new materials for information technology, telecommunications, and wireless technology; and
- health through the development of new materials for improved medical devices and replacement organs and tissues.

Tools of the Trade

Just how close can an engineer get to atoms? Ask Dr. Murray Gray. As director of the Alberta Centre for Surface Engineering and Science (ACSES) and professor in the Department of Chemical and Materials Engineering, Gray uses electron streams, rather than light, to view atoms. The JEOL JAMP-9500F field emission auger microprobe magnifies using electron streams. It can measure, analyze, and provide a 3-D view of matter at the atomic level, down to a scale of 10 nanometres—about 1/80,000 the diameter of a human hair. "There's no better tool you can get your hands on than this instrument," says Gray. The microprobe will revolutionize chemical and materials engineering research at the University of Alberta and help the Faculty of Engineering vault to new heights.



rface

The synergy of the ACSES facility, university researchers from a variety of disciplines, MicroFab, National Research Council, and Alberta companies will move Alberta to the forefront in the world of materials research, with an unparalleled resource of highly-trained personnel and multidisciplinary infrastructure.

> This new facility will enable researchers to perform their cutting-edge work right here in Alberta.

"This facility is an excellent example of the innovative things that happen when universities, industry, and government work together," says Victor Doerksen, Minister of Innovation and Science. "This investment has practical applications in many sectors and we're proud to be part of an initiative that will have such a positive impact across the nation."

Funds for ACSES came from the Canadian Foundation for Innovation, the Government of Alberta (through the Alberta Science and Research Investments Program), Syncrude, and Micralyne. The Faculties of Engineering and Science and the U of A made in-kind contributions.

Building on established research strengths, ACSES has positioned the Department for new discoveries. Working in collaboration with NanoFab and the National Institute for Nanotechnology, the groundbreaking research will further strengthen industry links, while serving as a nucleus for interdisciplinary discoveries.

Student CENTRAL

Martina Rusnacik

Who has X-ray vision and operates at the speed of photoelectrons? Martina Rusnacik may not literally be a superwoman, but with hands-on experience using highly-specialized equipment, she's not exactly your typical engineering grad student.

The 2003 Bachelor of Science grad is currently working on her thesis in chemical engineering, which she hopes to complete by 2006. At 23, Rusnacik is studying the extent of copper and nickel powder agglomeration, or the way the atoms stick together on a nano level. She is working on ways to keep the atoms separated. Her research will have practical application in microelectronics.

"X-ray photoelectron spectroscopy (XPS) is a highly sophisticated technique used to determine the chemical composition of a sample with a high degree of accuracy. Not many people have access to this type of equipment, and I'm experiencing it first-hand," Rusnacik says.

Working with Dr. Alan Nelson and Umicore, an international metals and materials group, in the Alberta Centre for Surface Engineering and Science (ACSES), Rusnacik is confident she will gain the knowledge and technical skills needed to lead her own research team in the chemical engineering industry. "The professors in the Department of Chemical and Materials Engineering are very knowledgeable and have strong industry relations; thus, they are able to give you the opportunity to apply your knowledge to true industrial applications."

With powers like that, Rusnacik is clearly set to boldly go where no grad student has gone before.

University of Alberta ENGINEERING

Help build the bridge to the 21st century

Our alumni tell us that great engineers are not always those who received the highest marks at university. We know the most successful engineers also developed skills in teamwork, communication, management, and creativity.

Recognizing that these skills are acquired as much outside the classroom as they are within, the Faculty of Engineering has created a "student life enhancement fund" to assist in extra curricular activities and projects.

Your contribution to the Bridge to the 21st Century fund, for chemical and materials engineering students, will enhance student life through student support, scholarships, and other applied-learning needs.

Help support tomorrow's chemical and materials engineers.

For further information contact:

Mandi Cronin
Communications and
Development Coordinator
Faculty of Engineering
University of Alberta
E6-050 Engineering Teaching &
Learning Complex
Edmonton, AB T6G 2V4
Tel: 780.492.8969
Fax: 780.492.0500
e-mail: mandi.cronin@ualberta.ca

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* To best meet Faculty of Engineering's needs, donations may be directed to endowed funds.

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☐ 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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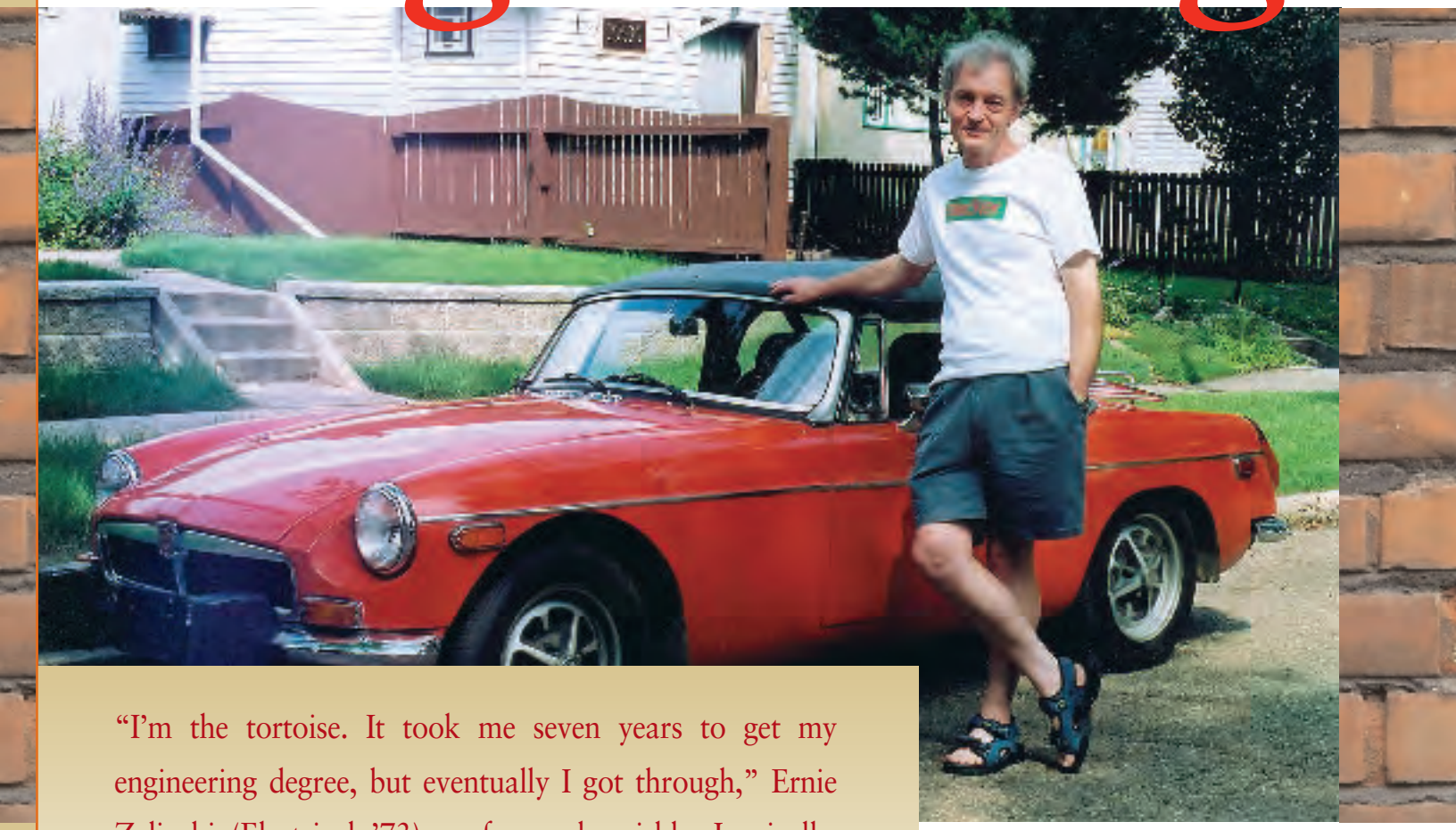
Edmonton, Alberta T6G 2V4

P90

the Joy of (NOT) Engineering



"I'm the tortoise. It took me seven years to get my engineering degree, but eventually I got through," Ernie Zelinski (Electrical '73) confesses sheepishly. Ironically, after all that effort, his greatest joy and profit now comes from publishing—he's a best-selling author with 78 book deals in 22 countries. — BY ANN-MARIE PELLETIER

Growing up on a farm in Grassland, Alberta, Zelinski didn't know what career path to choose, but he was very good at mathematics, trigonometry, and physics. So, on the advice of his teachers, he enrolled in engineering at the University of Alberta in 1966.

Despite staying out an entire year, quitting twice, and missing 85 percent of his classes, Zelinski surprisingly graduated seventh in a

class of 250. He might have ranked even higher, if he hadn't failed first-year English three times. Zelinski thought, if he waited around long enough, English would be dropped from the curriculum and he wouldn't have to take it. Zelinski didn't bother showing up for class. But before he could be accepted into fourth-year engineering, he was forced to take English in summer school. Choosing the easiest English class possible, Zelinski finally passed. Not with a super mark, however.

"That's why it's kind of odd now that I'm a writer. I keep telling people that if I can do it anyone can," says Zelinski.

"After I finally got my engineering degree, they took out English for a few years after that. That really bugged me," Zelinski says, chuckling. "I figured I was going to outwait them."

Upon graduation, Zelinski worked for Gamma Engineering in Vancouver. He returned to Edmonton to work, first for Bechtel, then Edmonton Power, where he stayed for five and a half years. His responsibilities included designing cable installations, supervising contractors and subcontractors hired to install the high-voltage underground cables, and contract preparation and administration.

While working for Edmonton Power, he realized he preferred mechanical and civil engineering to electrical.

"I didn't care for electrical engineering. I still tell people electricity to me is really weird stuff. About the only thing I handle now is switching the light on and off," laughs Zelinski. "That's how far I am removed from the engineering part of it."

Nevertheless, Zelinski advanced quickly in his career at Edmonton Power. However, after three years of taking money rather than vacation time at the company's request he decided he wanted two months off in the summer to make up for lost time. The company refused, but he took it anyway. He was fired on his return.

Zelinski was shocked, afraid, and upset. It was during the recession, and his job prospects were not good. To make matters worse, he lost most of his money in the stock market and had to sell the majority of his belongings. Yet, he was determined to neither work nor go to school for a year but just to enjoy leisure.

After taking time off, Zelinski eventually found himself back at the University of Alberta, this time in the MBA program. Graduating in 1987 with hopes of becoming a college instructor, Zelinski did manage to pick up some teaching positions; however, work was scarce. He was about $30,000 in debt from student loans, and he had to consider other options. That's when he decided to write and self-publish his first book about creativity, *The Art of Seeing Double in Business* (Ten Speed Press later picked the book up and renamed it *The Joy of Thinking Big*).

This marked the beginning of Zelinski's successful career as a writer, entrepreneur, and professional speaker.

In 1991, he wrote his second book, *The Joy of Not Working*. It was rejected by publishers, so Zelinski borrowed half the money from his mother to self-publish and market the book. Ten Speed Press finally printed it after he sold 50,000 copies in Canada. Today, this international bestseller has sold more than 175,000 copies and has been published in 16 languages.

"One of my biggest accomplishments was writing and self-publishing *The Joy of Not Working*," says Zelinski. Despite the title, Zelinski is adamant that he isn't anti-work. It's about working smarter rather than harder and getting a balanced life.

Zelinski, 55, seems to have found that balance. This child-free bachelor rises around 11 a.m., runs or bikes for an hour in Edmonton's river valley, writes at cozy coffee shops for about three to four hours a day, and prefers not to work at all in any month that doesn't have an "r" in its name.

Since opting out of the traditional workplace more than 20 years ago, Zelinski does what he wants to do when he wants to do it.

Excerpts taken from *Grafitti for the College Student's Soul* by Zelinski.

> This child-free bachelor rises around 11 a.m., runs or bikes for an hour in Edmonton's river valley, writes at cozy coffee shops for about three to four hours a day, and prefers not to work at all in any month that doesn't have an "r" in its name.

He also gains great satisfaction from the letters and correspondence he receives from his readers all over the world on a weekly basis, and he's always amazed how his books affect people's lives.

Zelinski has become something of a Canadian publishing phenomenon.

"I'm really the exception in that I actually was able to make a living by writing all these years," says Zelinski.

Canadian authors have roughly a one-in-ten chance of ever getting a manuscript published by a reputable publisher, and only one published book in ten ever gets translated. Zelinski has published 12 books, and every one has had at least three translations. His average is seven translations per book.

Zelinski and his books have received national press attention in both U.S. and Canada. Major newspapers such as *USA TODAY, National Post, Oakland Tribune, Boston Herald, Toronto Star*, and *Vancouver Sun* have featured him; he's been interviewed by more than 100 radio stations and has appeared on CNN's *Financial News*, CBC's *Venture*, and CTV's *Canada AM*.

Zelinski's books are successful because they have universal appeal. Filled with humorous anecdotes, quotes, and cartoons, they are both entertaining and enlightening. From *The Lazy Person's Guide to Success* to *The Joy of Not Being Married*, Zelinski never ceases to inspire and provoke his readers to pursue their life's passions. His success also lies in knowing his market and following social trends closely. During the recession in the 1990s, the unemployed ate up *The Joy of Not Working*. And one of his most recent books, *How to Retire Happy Wild and Free*, caters to aging baby boomers.

Zelinski is particularly proud of the mere fact that he successfully completed his U of A engineering degree.

"I don't know what the failure rate is," he smiles, "but I remember the speech given to the freshman class: 'Look to the left and look to the right; neither of the two people you see will be here by the time you graduate.'"

Zelinski notes that the skills he developed during his engineering career have proved very valuable to him as a writer and self-publisher.

"Working as an engineer at Edmonton Power gave me the skills of handling contracts, which I do now with publishers. I draft up my own contracts."

Many people are shocked when they find out Zelinski has both an engineering degree and an MBA, but has chosen not to make a more substantial income working in either profession.

"It's true! Some people have made a lot better money than me throughout the years, but I still believe I'm going to catch up with them one day. Remember what I told you earlier: I'm the tortoise," smiles Zelinski.

After all, his success is just starting to roll. His latest book about friendship will be out this year, and he's hoping for a total of 100 book deals in the next few years.

"I'm feeling more prosperous than I ever have in my life!" he exclaims. "I'm in the top 10 percent tax bracket; I'm only working two to three hours a day, and I have my freedom too."

Ann-Marie Pelletier is an Edmonton-based public relations practitioner with aspirations to experience "The Joy of Not Working."

MAN ON

Two summers ago, Graham Buksa (Electrical '04) tossed his white coat and safety goggles for the chance to get some colour in his skin.

Now it looks like the gamble he took with the four-wheeled world of longboards is paying off in another colour—green.

"I was working a lab job and went crazy working indoors on nice days, so when I got home, all I could think about was being outside," recalls the soft-spoken Buksa.

"I'm a pretty pasty kid, so getting some color on my skin in the summer is a top priority."

During the evenings after work, Buksa set out to build a press so that he could manufacture his own longboards—a longer version of a skateboard that's designed for travel, not tricks.

But Buksa only took up riding very recently. "You know, it's funny because I never was a skateboarder when I was young. I couldn't do a kickflip if my life depended on it," he laughs.

Buksa's foray into the world of wheeled boards wasn't because of any one thing, either. It was a combination of enjoying designing and manufacturing the boards, and trying out unique designs that he felt had never been attempted.

"I knew a fair amount about the materials, and I had the tools available because of engineering," he says.

Despite his engineering knowledge and design wherewithal, however, Buksa's homemade press would never get used.

When he returned to school in the fall of 2003, Buksa ran into a friend from the industrial design program who'd worked for a furniture design studio over the summer.

"[He] was able to hook me up with the exact wood I needed to make skateboards," he says. His friend also gave Buksa access to the design computers and industrial mills required to create the moulds for his boards.

Through the fall (2003) and winter (2004), Buksa worked on and refined his designs. By the time summer rolled around again, Buksa was ready to press his first board. Thanks to his connections in the department of engineering, Buksa had to right tools to create his masterpieces.

A life decision, however, needed to be made. He was still working in the campus biomedical lab and all the wood—over 46 square metres of Canadian Rock Maple, enough to make about 60 skateboards—was arriving in two weeks.

"I knew there was no way I could make skateboards and work a job, so I quit the job. It was a good decision because pasty kids like me shouldn't be working in labs," he laughs.

Buksa took out a $5,000 loan and spent the rest of the summer of 2004 perfecting his art, creating boards in his garage and Rayne Longboards was born. The company name is a combination of rain, evoking growth and the environment, and reign, which implies control.

"After that, we simply took the sound of the words and made a new spelling, for the kids," he says.

After making more than 50 decks, Buksa bought a truck and went on a road trip through British Columbia.

By summer's end, he was turning out a product that was starting to get some good reviews.

"One guy in the States tested one and called it 'the Audi TT of longboards,'" he recalls. "At that point, I was pretty sure I was making a good thing."

Armed with a new confidence, Buksa continued his trip, stopping by about 25 shops in B.C. and Alberta to get a sense of the demand for his boards. By the time he returned home, he'd sold close to 15 complete skateboards, at an average price of about $240.

"Not too bad," thought Buksa.

Buksa started working towards creating Rayne Longboards, the company he now owns, which operated out of his southside apartment (Buksa has subsequently moved to Vancouver). However, just because Rayne Longboards is now fully incorporated doesn't mean Buksa's rolling down easy street.

"It's a struggle, like anything," he notes. "I'm trying to find money, and thankfully, because of engineering, banks like giving me money on a personal basis, but not a business basis."

BOARD LONGBOARD

by Adam Rozenhart

Buksa wanted to keep his personal life and his business as separate as possible, but he isn't about to say no to a personal bank loan that could help his fledgling company find its feet. "You've got to do what you've got to do," he says.

The start-up costs, Buksa notes, have made things a little difficult. Since he's only having small quantities of boards pressed—by Canada's own Olive Skateboards—Buksa doesn't get any discounts for large runs of thousands of boards. Things are starting to pay off, though. Rayne Longboards are now being carried at several Edmonton stores—The Summit and United Cycle—and Buksa hopes to add a few more vendors to his distribution list.

Since he started creating longboards, Buksa's created eight different decks (a total of nine designs with varying graphics on them) that he says will forever change longboarding, a form of transportation that he likens to urban snowboarding.

"If you go downhilling, it can be a huge rush," he says. "Getting out on a longboard means you can go explore the city. It makes you take different paths and see the sights, if only for a bit of smooth pavement."

One of his designs features a hole where the trucks go, requiring one to mount the trucks through the board. This drops the overall clearance of the board and makes for a more stable ride.

"There are only a couple of companies doing that, and I thought, 'It's an easy modification.'"

Buksa made these modifications based on what he noticed ski and snowboard manufacturers were doing.

"I noticed snowboards and skis weren't changing because of more materials; they were just changing shape and design," he says.

Buksa then took pen to napkin and came up with his own design. That it ended up working, he says, was just a lucky shot in the dark.

Buksa's designs also combine cambers (an arch in the board that typically extends from front to rear axle) and concaves (a curve running perpendicular to the length of the board) to yield board designs that have never been tried before. These sorts of designs aren't common because they make the board more difficult to press.

"You're dealing with complex curves, and wood doesn't want to bend in two directions at once," noted Buksa.

But riders notice the difference—a lateral curve gives more flexibility and provides for better turning. The concave design results in a better feel and a stiffer board.

Buksa's desire to design and create longboards is kind of a selfish pleasure, however.

"I love shop days when I can go to the garage and make a few decks of my own design. It's just so rewarding to make a good skateboard. It feels good to know that someone will have a good time riding something I designed."

Adam Rozenhart is an Edmonton-based freelance writer.

Skateboarding: A brief history of GRIND

1950s: Rollerskates are screwed into wood planks to replicate surfing. Clay wheels roll onto the scene and sidewalk surfing becomes popular.

1960s: The first skateboarding contest is held in California in 1963. Fifty million skateboards are sold in three years. Due to inferior products, injuries, and a disgruntled public, mainstream skateboarding grinds to a halt in 1965.

1970s: The creation of urethane wheels (resulting in better traction) marks a skateboarding revival in 1973. In 1976, the first outdoor skatepark opens in Florida. In 1978, Alan Gelfand invents a no-hands aerial trick known as "the Ollie." By 1980, however, skateparks are shutdown due to high insurance rates.

1980s: Mostly "hardcore" skateboarders are the only ones participating in the sport. By 1984, vert riding and launch ramps take off. Skateboard-related publications start popping up, including *Thrasher* and *Transworld Skateboarding*.

1990s: Despite a recession in 1991, which negatively impacted the industry, the 90s saw skateboarding transform into the sport as we know it today. In 1995, ESPN's *Extreme Games* popularize skateboarding once more. Longboarding gains popularity, thanks in part to the advent of the Street Luge.

POLING Digs Deep for DIAMONDS

George Poling
(Mining '57, MEng Mining and Meturallurgy '61, PhD Mining '63)

The next time you find yourself staring at a one-carat diamond and gasping at the price, consider this: in order to find that 200-mg piece of rock, geologists, gemologists, and minerologists sifted through 2,000 tonnes of kimberlite ore from deep below the earth, a process that required everything from helicopters to high-powered electron microscopes, cost millions of dollars, and took years. **by Debby Waldman**

"It's the proverbial needle-in-the-haystack search," says George Poling (Mining '57, MEng Mining and Metallurgy '61, PhD Mining '63), who has been involved in diamond mining since 1987 when he was named to the board of DiaMet minerals in Kelowna.

At the time he joined the board, Poling was head of the Department of Mining and Mineral Process Engineering at the University of British Columbia (UBC), where he taught from 1968 until his retirement in 1997.

He'd always been interested in diamonds, but few people had considered looking for diamonds in Canada—a mistake, as it turns out. "Canada has a huge tract of land that is very promising for prospecting for diamonds," says Poling.

DiaMet, which was bought out by BHP Billiton two years ago, discovered commercial diamonds in Canada at what is now known as the Ekati mine, about 300 kilometres north of Yellowknife. Ekati and the nearby Diavik mine, which is owned by Rio Tinto and Aber, account for one-third of the total gem-quality diamonds in the world. The other major mines are in Botswana, Russia, South Africa, and Australia.

According to Poling, Canada will likely be the world's top producer of gem-quality diamonds within 10 years. The two NWT mines produce nearly $2 billion worth of diamonds a year, or about two coffee cans of small diamonds a day. Other mines around the world are petering out, but Poling expects the NWT mines will operate for up to 20 more years. Two other mines are in various stages of permitting and construction, and Poling says that DeBeers is finding great diamonds at its property in Ontario.

Finding diamonds requires patience, fortitude, and a lot of money. Diamonds are made from carbon, which crystallizes at a depth of 150 kilometres or more below the earth's surface. The diamonds being found in the NWT were created between 50 and 600 million years ago during cataclysmic explosions of kimberlite, a molten magma originating up to 400 kilometres beneath the earth's surface.

When the kimberlite erupted, it picked up the diamonds and carried them to the surface, creating carrot-shaped intrusions, or dykes, which are known in the mining world as "pipes." Glaciers often carved relatively deep depressions at the surfaces of these pipes, leaving behind debris from the kimberlite as they melted.

Because diamonds are so rare, engineers and geologists know better than to spend their time looking only for them. Instead, they look for trails of glacial debris containing kimberlite-indicating minerals, or KIMs: pyrope garnets, chrome diopsides, and picroilmenites.

Poling and his partners have formed their own diamond exploration company, Trigon Exploration, which went public late in 2004. Workers are now staking and will soon be drilling targets at its properties in south Slave Province, NWT, in the north Churchill craton (at the northwest corner of the Hudson's Bay), and in Ontario. Although profit is a long way off, Poling proudly says that this venture is at the forefront of exploration technology.

Few people had considered looking for diamonds in Canada—a mistake, as it turns out. According to Poling, Canada will likely be the world's top producer of gem-quality diamonds within 10 years.

In addition to magnetic geophysics, Trigon is using a new technique, time-domain electromagnetic geophysics, to identify diamond pipes. The process involves towing a transmitter underneath a helicopter while surveying an area. The transmitter sends out electromagnetic waves at a broad range of frequencies and the responses are measured.

"What we're looking for is a change in conductivity in the rock underlying the geophysical device," Poling says. "It's been used for other deposits, but we are the first to use this technique to look for diamond pipes. We've found several good-looking targets, so we're really happy so far."

Once the responses have been collected, it takes a month or two to analyze the data.

"Geophysicists perform all kinds of mathematical jiggery-pokery on the data," he says. "Sometimes they show it as maps, sometimes as line tracings with various signal strengths."

If the data show anomalies that might well be kimberlite pipes and these data line up with trains of KIMs, Poling's new company will collect preliminary drill core or drill cutting samples. If these indicate potential diamondiferous pipes, the next step is to obtain bulk samples. This often means bringing in massive drills. Because the pipes are often under lakes, the best time to drill is in the middle of the winter when the ice can be 1.5 metres thick. Even then, the ice sometimes has to be artificially thickened to support the equipment, which can weigh hundreds of tonnes.

The drill operators cut holes one metre in diameter and several hundred metres deep to remove samples of up to 2,000 tonnes. For the pipe to be economically viable, it usually must contain 0.2–4 carats per tonne. (Several of the Ekati pipes contain around 200 mg or one carat per tonne.) In addition, the diamonds must have a high market value. An Ekati diamond, rough, can be worth $200 per carat.

Diamond mining also requires extensive paperwork. Licenses and approval are needed for every step of the process, from exploring through to protecting the environment during operations and then restoring an area once a mine is no longer in use. Legal requirements vary between jurisdictions.

Environmental paperwork is one of Poling's specialties. Since leaving UBC, he has worked half time as a vice president of Rescan Environmental Services Ltd., a Vancouver-based environmental consulting company that serves the mining industry. Rescan does some reclamation work, but mostly it helps companies obtain mining permits. To that end, it conducts environmental impact assessments, helps with hearings, and gathers documentation on everything from the environment to socioeconomic concerns.

Rescan allows Poling to continue his lifelong work in environmental engineering, but mining provided his introduction to engineering, and it will probably always be his passion.

As a student at the U of A in the 1950s, Poling became interested in oil drilling and production. The year before he graduated, he worked at the El Dorado Mining and

Refining Company in Uranium City in northern Canada. After graduation, he considered going back to the oil patch, "but a little bit of wanderlust hit me," says Poling.

Jobs were plentiful for engineers in the late 1950s, and Poling had 10 offers. He opted to move to Central Africa, where he trained to be an underground mine captain at the Roan Antelope Copper Mine in Luanysha, Northern Rhodesia. There, he supervised miners from all over Africa and processed up to 20,000 tonnes of copper ore a day. Unlike in Canada, the African industry still relied largely on manual labour.

The mine was near the equator on a plateau 1,371 metres above sea level. "It was beautiful," Poling recalls. "It was dramatically different from what I had experienced growing up in Alberta. The landscape in that part of the world was really flat with a lot of eucalyptus trees, and some of the main features were these giant ant heaps. There were lots of elephants, and hippopotami, and snakes, and crocodiles."

After a year, though, Poling was ready to head home to his fiancée, Verna Fairbanks, a fellow Albertan. They rendezvoused in Italy, got married, and honeymooned through Europe before returning to Alberta. Poling enrolled once again at the U of A, this time earning both Master's and Doctoral degrees.

Poling spent a few years in Wappingers Falls, north of New York City, working as a researcher for Texaco. He returned to Canada in the late 1960s to be near his ailing mother and went to work at UBC. He found himself enjoying his new life in academe. "It was a lot of fun, mostly because of the undergraduate and graduate students I associated with, and, of course, the faculty."

In addition to his work with Rescan, DiaMet, and Trigon, Poling is chair of the board of directors and a director of Biotech Environmental Technologies Inc., a Vancouver-based company that produces process plants to clean up contaminated waters. He's also the director of two mining companies: Quadra Mining, which is rejuvenating a large open-pit copper mine in Ely, Nevada, and Minterra Resources, which is trying to develop gold and platinum group metal prospects in British Columbia and Nevada.

It's not exactly a quiet retirement, but Poling certainly doesn't seem ready to slow down.

"Life continues to offer so many challenging opportunities," he says. "I still enjoy working with good people, so I hope never to retire completely."

Debby Waldman is an Edmonton-based freelance journalist.

in memoriam

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

Bernard, Gerald (Civil '45)
Carlson, Melvin (Electrical '52)
Chu, Steven (Electrical '75)
Cunningham, Grant (Electrical '03)
East, Charles (Petroleum '52)
Geddes, Robert S. (Chemical '51)
Hanning, Frank (Electrical '49)
Hawkins, Dr. James E. (Electrical '32)
Homme, Robert (Civil '67)
Kapler, Bruce (Electrical '80)
Lauer, Lambert (Civil '52, MSc Civil '55)
Lies, Henning (Electrical '76)
Mazurek, Gerald (Civil '54)
McGregor, Bruce (Mechanical '63)
Schulte, Theodore (Civil '40)
Sherwood, Benjamin (Electrical '35)
Templeton, Carson (Mining '43)
Westran, Thomas (Mechanical '71)

for the record (missed memoriams)

The Faculty of Engineering was recently made aware that the following alumni passed away more than a year ago.

Drew, Dalton (Electrical '36)
Enns, Alvin (Civil '64)
Longair, Randall (Mechanical '82)

Keep in Touch

engineer.alum@ualberta.ca

Graduate's Name _____

Year of Graduation and Degree _____

Do you have a new address?

Home Address _____

Organization _____

Title _____

Business Address _____

City _____ Province _____

Postal Code _____ Telephone _____

Fax _____

Preferred E-mail _____

What's New with You?

(Comments for possible publication in a future magazine.)

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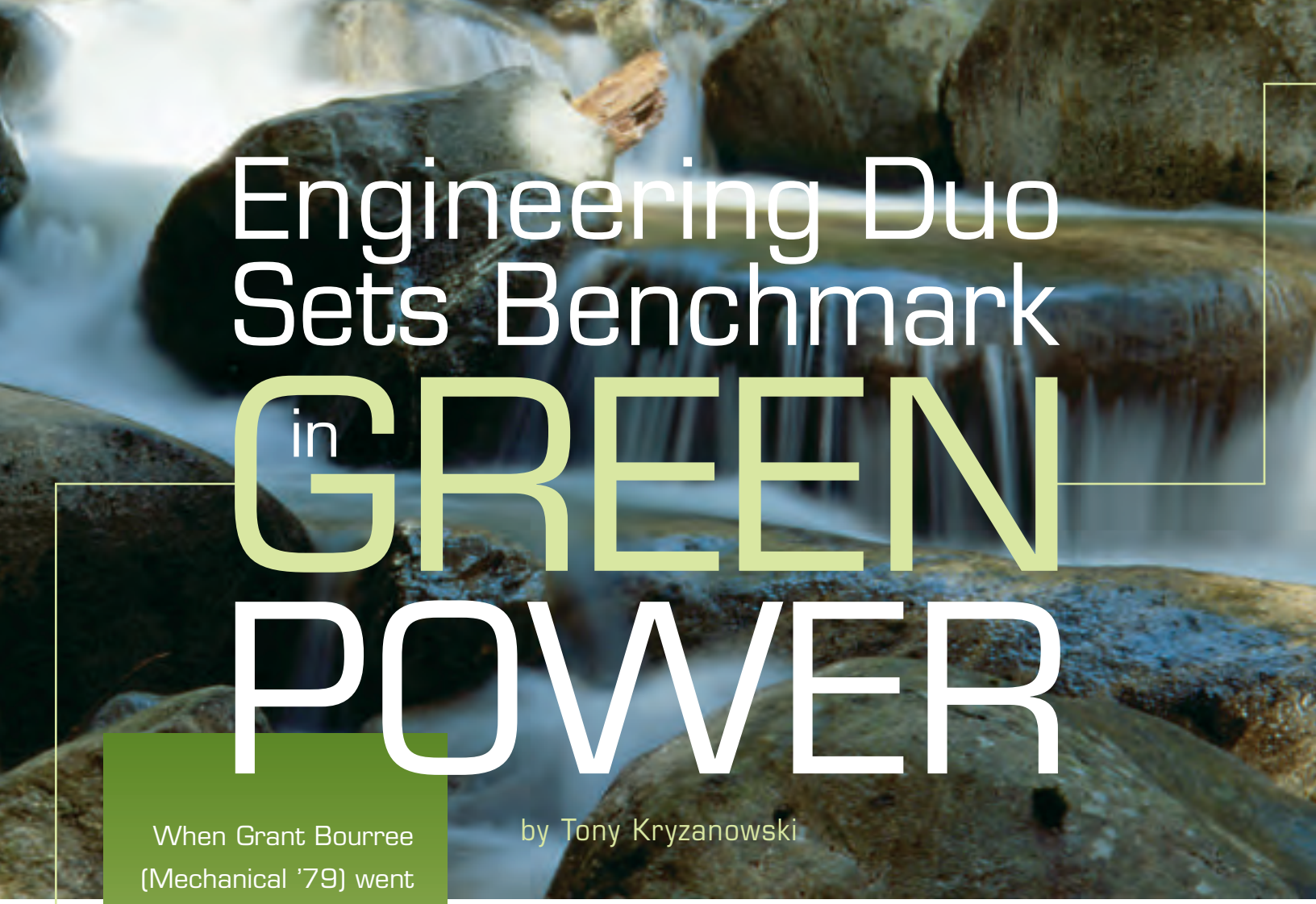


Engineering Duo Sets Benchmark in GREEN POWER

by Tony Kryzanowski

When Grant Bourree (Mechanical '79) went straight from the University of Alberta to a position with a Grande Prairie pulp mill, he intended to stay for a couple of years. That was 25 years ago.

Now project development manager for Weyerhaeuser Canada's Grande Prairie division, Bourree has been involved in planning and implementing over $500 million in leading-edge process and environmental improvements at the pulp mill.

When a project is under construction, Bourree typically wears many hats.

"The job has a lot of tentacles," he says. Fortunately, the U of A provided him with the necessary skills to flourish in a multi-tasking job environment.

"One day I'll be working on an environmentally-driven project in the pulping part of the process, and the next day, I'll be working on an energy project like our co-gen plant that we operate in partnership with TransCanada."

Building flexibility into the $93 million co-gen plant's operations was among the biggest engineering design challenges. Bourree describes the solution as a "combined-cycle plant design." A Rolls Royce Trent natural-gas engine that drives a 50-megawatt generator can be throttled up to boost electrical output at those times of the day when power prices are high. When prices are low, the engine is tamped down and the plant relies on a second 30-megawatt generator, powered by steam generated by the pulp mill. This second generator produces power continuously because the pulp mill never shuts down.

The co-gen plant was designed to use every ounce of potential energy to generate power. For example, the exhaust gas from the gas turbine engine is used to generate steam in a waste-heat-recovery boiler. That steam is then co-mingled with the steam transported from the adjacent pulp plant.

"Bringing it all together so that it would work in harmony was a bit of a challenge," Bourree says.

For example, he describes the use of the Rolls Royce engine as "pretty developmental technology even now."

With the construction of the co-gen plant, Weyerhaeuser Grande Prairie now meets its own electricity needs and is helping to supply an additional 18 megawatts of power to meet the needs of its facilities in Drayton Valley, Edson, Claresholm, and Slave Lake. By taking Weyerhaeuser's load off the power grid, the plant makes more power available to other users in the province.

The Weyerhaeuser/TransCanada partnership shows the positive side to Alberta's power deregulation initiative. Power deregulation in Alberta made it economical for companies generating power on one site to use any excess

power to support its other operations in the province. It also allows a company to sell excess electricity on the open market. That wasn't possible before deregulation.

"We could have generated enough power to be self-sufficient, but in terms of putting it out on the grid and then wheeling it into our other plants, that opportunity didn't exist on an economic basis," Bourree says.

While the 80-megawatt co-gen power plant is owned and operated by TransCanada, Weyerhaeuser provides about two-thirds of the steam required to operate the power plant's steam turbine generator.

In addition to wheeling power to all of Weyerhaeuser's Alberta facilities, the plant provides other significant environmental benefits.

The pulp mill's existing internal steam generator and the new co-gen steam turbine generator consume 350,000 tonnes of sawdust, bark, and planer shavings annually—100 percent of the wood waste residuals produced at both Weyerhaeuser's Grande Prairie pulp mill and sawmill, located next to each other.

The sawmill's recent expansion would have generated more wood waste than needed by the company's existing steam generator. If the new power plant hadn't been built, the excess wood waste would likely have gone to a landfill.

The pulp facility now also vents less steam into the environment. Although steam venting does not have any significant environmental impact, it wastes a potential energy source for power generation. Bourree, who has made the environment a high priority in both his personal and professional life, found this waste painful to watch.

Once the regulatory environment had changed so that power generated on site could be wheeled economically to its other operations, the company approached a number of energy developers as potential partners in the co-gen plant. TransCanada represented the best fit.

"From a business perspective, it was a challenge to put together this kind of joint venture between a pulp and paper company and a power generation company like TransCanada," says Bourree. "It was a unique learning opportunity, to find out how energy companies operate and do business."

The partnership brought Bourree together with another University of Alberta engineering alumnus, Craig Martin (Mechanical '94). Now manager of power marketing and development at TransCanada, Martin was then part of the business development team that helped to conceive the co-gen plant concept using wood waste residuals. He also negotiated the agreement with Weyerhaeuser.

"It definitely was not an off-the-shelf product," says Martin.

"For example, when we went to purchase a steam turbine, we had some challenges finding a vendor."

Although he was primarily involved in managing the business side of the partnership, Martin drew heavily on his engineering background and the considerable on-the-job experience he gained through the U of A Co-op program.

"Because of my hands-on experience, I knew what was and was not possible from a technical perspective," he says.

Furthermore, his engineering studies helped him to provide valuable input into some of the technical complexities inherent in the plant design.

For instance, Weyerhaeuser transports steam to the plant at 900 psi to power the turbine. Then it needs the steam transported back to the pulp mill at two different, lower pressures to be used in the pulp manufacturing process. Typically, steam used in power generation is simply condensed, collected, and recycled through the boiler.

TransCanada made an $80 million investment in the co-gen power plant. For its part, Weyerhaeuser invested $13 million to upgrade its power boiler and to upgrade its waste-wood-supply system so that it could physically transport the additional waste wood fuel from the wood room in the pulp mill and sawmill to the power boiler. As part of its investment, Weyerhaeuser also launched a number of conservation projects to free up additional steam for the new steam turbine in the co-gen plant. Weyerhaeuser continues to operate its internal steam-powered turbine to produce both steam and energy for its pulp-manufacturing process.

Demand for electricity in northwestern Alberta has grown steadily over the last couple of decades, fueled by natural gas exploration and development. Yet, during that time, almost no new power generation facilities had been added in that region. Instead, power was being imported on transmission lines that were not robust enough to deal with the growing demand.

Martin says that TransCanada's new facility producing power reduces the tie-line flow considerably and makes the whole power grid much more stable and reliable.

"Building the plant actually allowed the province to delay further investment in transmission lines," he says.

TransCanada qualified for special tax treatment on the co-gen plant, Martin adds, because the combination of co-gen and burning waste wood allowed it to meet certain federal efficiency thresholds.

"High efficiency means that the plant is good for the environment," he says. "It also represents responsible use of our non-renewable resources."

This success story also showcases the combined expertise of two U of A engineering graduates. Bourree and Martin have been able to combine a passion for engineering with a commitment to the environment—a combination that will benefit Alberta for years to come.

Fact: Other Alberta forest companies are also building co-gen plants. For example, Canfor has partnered with a Calgary firm, Canadian Gas and Electric Company, to build and operate a co-gen facility at the sawmill in Grande Prairie.

Tony Kryzanowski is a St. Albert-based freelance journalist and ASTech Award winner.

U of A Engineering alumni are making an impact across Canada and around the world. "Virtual Engineer" features on-line interviews with alumni working outside of Edmonton.

Virtual Engineer

Tim Ragan

Strategist at C-LE

Here we meet Tim Ragan (Electrical '83), president of C-View Strategies in Ottawa

What has been your career path from graduation to now?

After graduating, I worked at the U of A Laser Lab with a seven-person team building a medical laser system. After a couple years there, I decided to move to Ottawa to continue in high tech in what was starting to be referred to as "Silicon Valley North."

I spent the better part of two decades in the telecoms industry working for Mitel, Nortel, Newbridge Networks, and Alcatel.

After leaving Alcatel, I was brought in as CEO of an eight-month-old start-up company that had some interesting technology, but no commercial focus. This was March 2001, just as the high-tech meltdown was hitting with a vengeance. Over the course of the next year or so—as much better funded companies crashed and burned all around us—we managed to hang on as we re-developed our product offerings to be commercially viable in the new reality and re-size the business around a significantly reduced cost profile. I handed over the CEO reins to my CFO in mid-2002 as part of my final cost-reduction exercise for the company. Certainly a measure of success of that challenging period is to be able to report that this company is alive today, has a growing customer base, and is cash-flow positive.

By early 2002, it was increasingly clear to me that much of the foundation that the Ottawa high-tech scene was built on—specifically the telecoms space—was going through a fundamental, industry-wide restructuring that would take many years to work its way through.

My response was to launch my own company—C-View Strategies—to provide strategy facilitation services to technology company CEOs and their executive teams, and work with them to re-engineer their business strategies to maximize their success.

What has been the most memorable/exciting/disappointing/challenging/rewarding aspect of your career thus far?

My most memorable experience to date was as a member of a small strategy team that had a critical role in aligning the Newbridge executive management team and key board members around the criticality of carrying out a significant restructuring. This activity consumed much of the latter half of 1999, and directly led to a significant restructuring activity and the follow-on successful sale of Newbridge to Alcatel.

It was a major learning experience for me—not only in terms of building a compelling platform for change, but also in terms of team alignment, perseverance, selling skills, and the importance of facing up to realities and being brutally honest with yourself and your peers. A lot of those experiences are built into the ethos and operating philosophy of C-View Strategies.

What have been your greatest disappointments or lessons learned?

The biggest lesson that I have learned throughout my career is that everything starts and ends with people, and ultimately people make things happen. It sounds pretty obvious, but it still amazes me how often we pay lip service to the concept, but don't really build it into our business strategies and operational game plans. The high-tech industry is very engineering oriented, and unfortunately we often get wrapped up with the elegance of the technology rather than truly focusing on the problem we are attempting to solve. And most often—if not always—there is some human element to that "problem" which we don't pay enough attention to and which often limits the business success.

VEL

How did your education or experience at Faculty of Engineering/University of Alberta equip you for your consulting practice?

My engineering education really taught me to solve problems in a disciplined step-wise manner, using whatever "tools" were most appropriate, whether those were calculus, differential equations, principles of thermodynamics, or what have you. The starting point was always a well-defined problem statement, and there was always an emphasis on "state your assumptions" and "show your work."

It is exactly the same approach I use in addressing business issues. You can't really move forward if you are unable to accurately articulate the "business problem," whether that is a desire for more revenue per customer, new channel development, new products and services, better market intelligence, organizational challenges, or the like. Often, it takes quite a bit of client engagement to get the client to the stage of having a well-defined problem statement that is actionable.

The "tools" I use are obviously different than much of my original engineering tool kit (although those are certainly still quite useful) and have been learned and developed through my experiences over the past two decades. Suffice it to say that in large part they are analytical frameworks and models for thinking through specific business issues.

I always push my clients to understand the importance of "stating assumptions." Business approaches are very often built on incomplete data sets and unproven beliefs about the external and internal environment. Explicitly stating and recording assumptions allows us to go back and review our progress against goals and understand what was different than we had thought. It is this "feedback loop" that allows us to learn over time and to improve the clarity of our business insights.

Given your foundation in mathematical/scientific/technical skills, how did you make the transition to business consulting?

During the course of my early work experiences, I discovered that, while I was reasonably competent with detailed engineering problems, I naturally gravitated towards more "big systems" challenges. The bigger the systems involved, the more interest they held for me.

The combination of my engineering training with the MBA—and two decades of operational experiences across multiple organizations and multiple business functions—has provided me with an excellent platform for my business consulting practice.

What are the greatest challenges facing business in Canada in 2005? Are the business challenges of high-tech companies unique/different from those faced by traditional industries?

The long-term challenge facing all businesses is to proactively build the means to continually adapt to an increasingly global environment. In this environment, advances in information technology, international trading frameworks, and capital mobility increasingly accelerate competitive pressures and customer alternatives. Developing a high level of agility to re-tune your business continuously will be the key determinant between long-term successful businesses and businesses that are ultimately taken out or taken over.

The general business challenges facing high-tech companies are the same, but because most of these companies start out as global in scope and ambition, and because their offerings are based on rapidly evolving technologies, they are arguably moving faster along the "agility and adaptation" curve than many of the more traditional Canadian industries. But there is much these businesses can learn from more traditional industries, especially in terms of customer focus, segmentation, and relationship management.

Explicitly stating and recording assumptions allows us to go back and review our progress against goals and understand what was different than we had thought.

What emotional/sentimental/intellectual/professional connections/associations still remain with the Faculty of Engineering/University of Alberta?

My family recently endowed a scholarship, the H.S. Ragan Prize in Structural Engineering, awarded annually to a fourth-year undergraduate in Civil Engineering. The recipient will be selected on the basis of superior academic achievement obtained on the aggregate marks in the third- and fourth-year structural analysis and design courses. Donations to the scholarship are most appreciated.

What fosters pride for you as an alumnus?

Overall, I believe I got a first-rate education at the U of A, and I certainly believe it set the stage for me to be able to truly appreciate and deliver on the various opportunities that have presented themselves to me through all these years.

Designed for Success

The National Institute for Nanotechnology

When completed in early 2006, the National Research Council's National Institute for Nanotechnology (NINT) at the University of Alberta will be one of the world's most technologically advanced research facilities.

An integrated, multi-disciplinary institution, NINT will involve researchers in biology, chemistry, engineering, informatics, medicine, pharmacy, and physics. This interdisciplinary collaboration will be on the nanoscale, a billionth of common and basic unit of measure.

NINT is unique because it is a partnership between the National Research Council and the University of Alberta. It will include researchers from the Faculties of Engineering, Science, Medicine, Pharmacy, and Business and will offer office and laboratory space to like-minded private sector partners.

There were many challenges to the up-front project planning processes for this technically-complex facility. Benchmarks and standards were hard to come by because of a paucity of finished designs or construction precedents. While six other institutes of nanotechnology of this size have been started around the world, many are still in the design and construction phase or have only recently been completed.

Further, as any architect or engineer will testify, no two projects are alike. NINT offered unique challenges, among them a constrained budget, a dense campus construction footprint, and security and access issues.

Early and key decision-making criteria were that the Institute be robust and "change-flexible." The organization of the floor plates needed to be established before all the infrastructure requirements were defined. In fact, in this fast-track process, equipment and researchers are still being requisitioned and recruited. Research environments require great flexibility to support interdisciplinary research. The basic structure will accommodate these variable and evolving demands.

The governing principles for the project team were to create a space to accommodate a critical mass of scientists and engineers, while at the same time providing maximum flexibility in allocation of working space and an optimum amount of collaborative and social space.

Who is to be credited for such an elegant and flexible prototype? NINT was brought to life and nurtured by the core project team composed of the right people, with the right talents, and the right level of decision making. The design team was led by Dr. Lynch with Cohos Evamy as prime consultant. And at what a commitment of time! To date, there have been 86 steering committee meetings, 53 site meetings, 50 engineering meetings, and multiple cross-functional single-topic-specific meetings. These involved standard tools—minutes, project reports, spreadsheets, an electronic workspace, drawings, bulletin boards, workshops—and nonstandard tools—a decision matrix and schedule.

Changes that occur post-occupancy will be equally flexibly and elegantly handled. Because the basic building block of the structure is the lab module, space can be re-dedicated to new disciplines and even emerging disciplines.

In fact, the true test of the robustness of NINT's design will be carried out by future generations of researchers. If the structure accommodates an unprecedented shift in how scientists and engineers work together, the design team will have achieved its ultimate legacy.

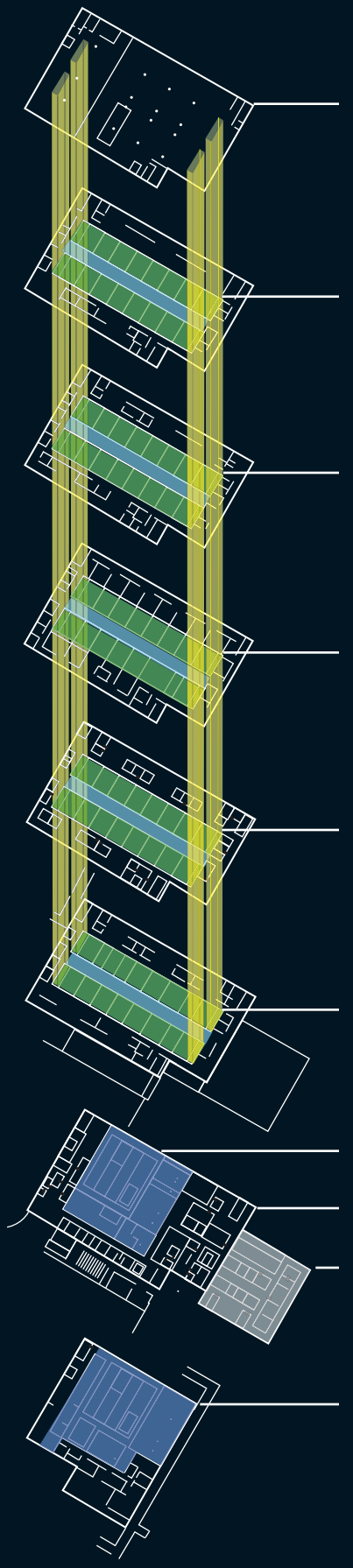
Content provided by Phil Haswell, Director of Facilities for the Faculty of Engineering, and Donna Clare, Partner, Cohos Evamy.

Tiny Facts *with Tremendous Potential*

- The "nano" in nanotechnology derives from the Greek word for dwarf.
- Ten hydrogen atoms arranged in a straight line is approximately one nanometer.
- The diameter of a red blood cell is approximately ten thousand nanometers.
- A nanosecond is the amount of time it takes Bill Gates to make .0000003 cents US.
- The head of a pin is approximately one million nanometers in diameter.
- There is nothing small about the interest or potential of nanotechnology. Revenues from nanotechnology-enabled products and services are estimated at approximately $1 trillion US by 2015.

An inside look at the National Institute for Nanotechnology (NINT)

NINT's robust design process has resulted in a technically-sophisticated and flexibly-assigned space for advanced research.



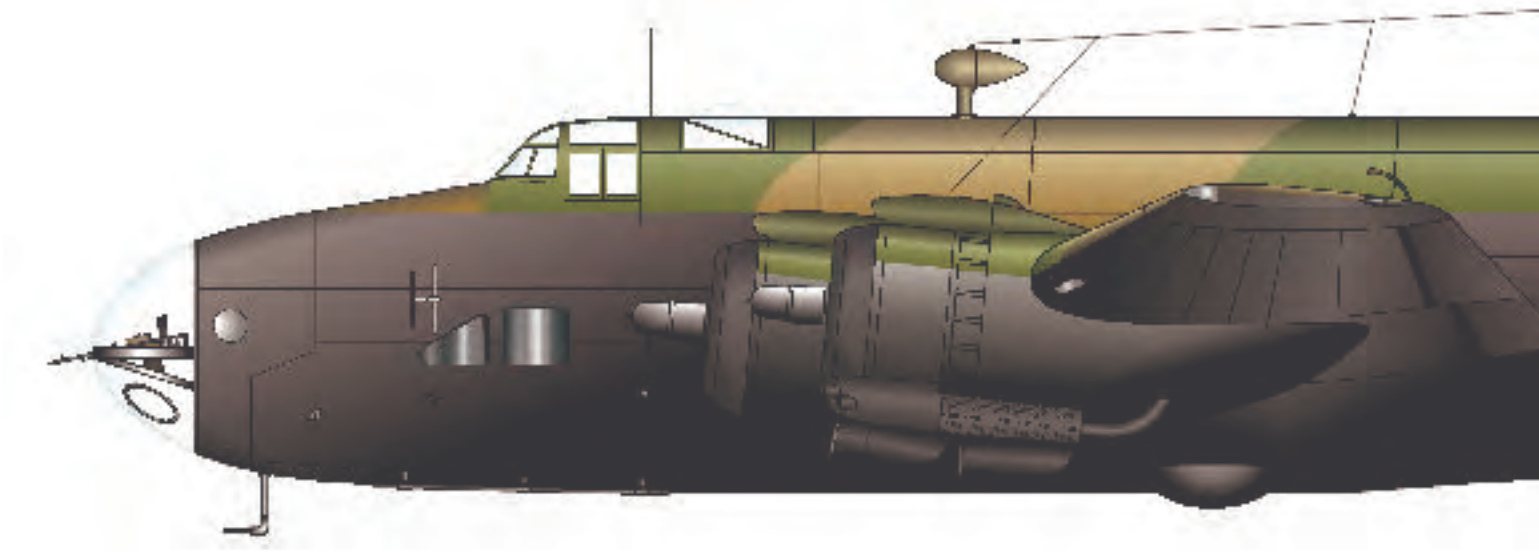
LEGEND

Black and white
Offices

Turquoise blue
Laboratory service corridor

Green
Laboratories

Yellow
Service shafts



RESTORING NA337

A Labour of Love

BY LOIS HAMMOND

The Second World War Norwegian underground report to the Royal Air Force (RAF) on April 23, 1945, consists of a single, barebones page.

File 2016: At 0145 hrs. Aircraft Handley Page Halifax NA 337, code 2P-X, crewed by British Squadron 644, was on its way to drop supplies at Codename "Tinsel" when it was hit by anti-aircraft fire from Minnesund Bridge. A/C was on fire when ditched in lake.
CREW NAME/FATE
145071 Flt/Lt Turnbull, A, pilot RAF, 27, found dead in lake
(Three others listed dead in lake)
F/Sgt Bassett, Fl/Eng not found
F/Sgt Weightman, T. found alive in lake, taken POW by the Germans

Fifty years after the fatal flight report, the Halifax bomber was raised out of its watery grave 224 metres deep. It was tricky business, requiring 13,000 kilograms of force to lift the plane in two pieces. At one point, lightning struck the remote operating vehicle and it tangled with the lifting cables.

Once the plane was on shore, it was dismantled and then transported in eight Hercules airplane loads to the RCAF Memorial Museum in Trenton, Ontario, for reassembly and restoration.

This rescue operation was the dream of the Toronto-based Halifax Aircraft Association (HAA). The HAA was founded in 1995, with the goal of restoring a Halifax in honour of the men who flew bombers in the Second World War, especially those who never came back. HAA raised the funds and found the best man to direct the ambitious project, Bill Tytula, LCol (retired) (Mechanical '60).

Ten years, $1.5 million, and 350,000 volunteer hours later, Halifax NA337 is almost completely restored to static display condition. Already it's made an impact on the veterans and their families who make the pilgrimage to see it.

An impressive portion of the funds came from the 4,000 HAA members, often in small cheques written by old, shaking hands. Apart from one salaried manager, the 60 core restorers are retired volunteers, including some who serviced or flew Halifaxes.

Hundreds of others have contributed goods and services, often through Tytula's persuasion.

Why restore a Halifax? Most Canadians associate Second World War bombers with the Canadian-built Lancaster, but the majority of Canadians flew in British-built Halifaxes for the RAF or the RCAF. Halifaxes flew 29,000 of the 38,000 bombing missions Canadians crewed.

The only other Halifax in the world sits unrestored in the Royal Air Force Museum in Britain. "None exist intact today and this makes NA337 very, very special," says Tytula. "Eighty percent of those who served in the air force flew in a Halifax. All you have to do is find an air force veteran and he will have flown in one. They are all over and they just love what we're doing."

Why give Tytula the project? Well, like NA337, he's a one and only, a laughing whirlwind of energy, engineering expertise, and people savvy. You can't talk to him without getting drawn in. Just ask all of his ex-field aviation employees who work on the plane. Tytula admits that almost everybody he's ever worked with is somehow connected to the project.

A retired air force engineer, Tytula has been around planes one way or another for 60 years. He has always combined formal

Bill Tytula, LCol (retired) (Mechanical '60) standing in front of the No.3 engine of the Halifax bomber.

education with practical experience. He was admitted to the U of A in 1956 as a "mature student" because he'd been in the RCAF for six years, having trained at the Clinton, Ontario, Radar and Communication School. "That impressed me, to be called mature at 26," recalls Tytula, laughing.

With his experience and summer air force training in TechAeronautical Engineering, Tytula says, "I smoked through my courses." He also got a little more hands-on experience as one of Dean George Ford's students recruited to work on outside contracts. Tytula helped build Groat Road and the power plant behind the Jubilee Auditorium.

After getting a Master's degree in Human Factor Engineering at Purdue University, Tytula held various air force senior officer positions, overseeing transport aircraft, aerospace maintenance development, and fighter and trainer aircraft. He officially retired after a long term as manager of Field Aviation East Ltd., a private firm working at Trenton, Ontario.

Halifax NA337 being re-assembled in the RCAF Memorial Museum.

HAA gave Tytula the mandate to make the restored plane technically authentic with all the thousands of parts it would need to operate. Moreover, only 80 percent of NA337 is original because the rest was destroyed. That means the team must fabricate missing pieces according to blueprints obtained from the Imperial War Museum. Either that, or scrounge parts from other crashed Halifaxes.

Fortunately, Tytula is famous for being "a great, bloody scrounger." Tytula honed the skill first as a Saskatchewan rural kid and later polished it when he often found himself in the middle of nowhere with a downed plane and no parts. Now the Tytula network of talented, dedicated Halifax friends scrounge for him around the world. As an example, Tytula points to the valuable contribution of Rescue 57, a group of

These excerpts written by Tytula (from the January 1998 *Halibag Newsletter)* demonstrate the "scrounge-and-create" style of engineering needed to restore a piece of Second World War history.

authentic restoration? NO PROBLEM!

GUNS AND TURRETS: Dennis Tugwood and his sidekick, Gary Webster, are moving right along with this. Much of the glass has been re-installed and it is beginning to look like a turret again. As you know, we have manufactured 13 beautiful new replica guns. I say replica to keep the cops off our tails. We did not bore the barrels all the way through: only six inches into either end ....

BELGIUM HALIFAX PARTS: You may be aware that No.426 Squadron Association, Jay Hammond, and our own Karl Kjarsgaard collaborated in the digging up of the Halifax LW682 in Belgium. While the aircraft sustained heavy damage in the crash, they did manage to dig up a ton and a half of bits. This will be coming to Trenton in early March ....

ENGINES: We have engine No. 3 turning over powered by a small electric motor. People are intrigued to see a sleeve valve engine in motion.

STRINGERS: For the past several years we have been hustling, trying to find a source or a company that would or could make stringers the old-fashioned way: rolling out of the sheet metal. Ian Gilbert of Ideal Metals in Mississauga found a company that manufactured extrusion dies and extruded the shapes for about $4 for every pound of aluminum that they squeezed through these dies. We had 5,000 feet extruded.

PROPELLERS: We couldn't afford the huge cost of making nine propeller blades of aluminum (about $20,000). So we will make them out of wood and epoxies for use in the restoration on a temporary basis. They will be replaced with real blades as we find them .... Ian Foster, our man in England, has news of an engine, gear box, and propeller that was retrieved by a fishing trawler. The engine is in poor condition but two blades may be useable ....

British Halifax devotees who search Europe for old crashed plane parts.

Rescue 57 delivered a chicken shed to fill a gap in NA337's fuselage. That's right, a chicken shed. The Canadians were stunned to hear that a chicken shed, on Scotland's Isle of Lewis, was made from a crashed Halifax. They made a template from the shed to craft the missing piece. Similarly the NA337 team made copies of bomb bay doors from some that Rescue 57 recovered from Pluscarden Abbey in Northern Scotland. The monks had been using the doors as a garden wall.

A photo of the rotted metal carcass that first arrived at Trenton dramatizes what the team has accomplished. NA337's original undercarriage of cast magnesium was totally degraded; volunteer engineers had to figure out how to fabricate one that could bear the weight while following the original design. Restorers have 8,000 drawings to work from, but many are for other Halifax models.

Then there's Lloyd Wright's work in the machine shop. He's a retired civil engineer who flew 33 missions in Halifaxes and sometimes still wakes up dreaming he's flying one. Wright personally changed 600 flat-headed screws from a 75° angle to the required 100°, thereby saving HAA the $1,500 cost of specialized screws.

When people first see the plane, its size surprises them. NA337 has a 32-metre wingspan. "When I first looked at it, I thought, 'Did I fly that thing? My God, I was just a kid!' It brings back memories," noted a recent visitor.

Often, vets walk up and silently touch the plane, weeping as memories float to the surface. Wives, children, and grandchildren look on.

"These encounters inspire the HAA team even more than the engineering challenges," says Tytula.

"I'll give you an example. One Saturday, the power was out so the Museum was closed, and I got a call from a woman who said, 'I'm from Mississauga. My Dad was a Halifax pilot, and he's got cancer with four or five weeks to go. We've packed him in the car with his grandchildren and now we find the Museum's closed. Can you help us?'"

Of course, he could. He opened the doors manually, distributed flashlights, and the family spent three hours with NA337.

"The old guy talked and he talked," recalls Tytula. "He sat in the same seat he flew in 50 years ago and said, 'I never thought I'd see this plane again.'"

The same Saturday, Tytula witnessed a new chapter in the life of a woman named Diana DeLuca. DeLuca's father, Flight Sergeant Donald Campbell, a British RAF bomb aimer, was killed on a Halifax mission. She never knew him, so several years ago, she began researching war records for information. That led her to the squadron records at the Trenton Museum, to NA337, and to Bill Tytula. On DeLuca's first visit, the plane was still in pieces.

On this Saturday, DeLuca's second visit, she escorted Sid Scott, the only survivor of the Halifax crash that killed her father. After DeLuca discovered Scott was alive and living in Australia, she visited him and learned that Scott was her father's crewmate and friend. Scott gave DeLuca the first photograph of her father she ever saw. Now it is DeLuca's turn to give Scott a gift from the past. After 55 years, he sits in a Halifax's wireless operator's seat and studies the side of the aircraft where he was exploded out of the plane before parachuting into the arms of the Gestapo.

"This plane is part of the resurgence of interest in WWII, long overdue," says DeLuca.

When the men came back from the war, they were told not to talk about their experiences because it was thought they'd get over them faster that way. So a lot didn't. Now, all of a sudden, they are starting to talk. The plane is the catalyst.

"Look at my experience. It gave me knowledge of my father and brought me together with a couple of surrogate fathers who have sort of adopted me," DeLuca says. "Sid Scott has told me, 'You'll always be one of my daughters now.'"

Tytula isn't just directing a challenging engineering project. He's overseeing a collective labour of love—love for planes, for people, for peace.

Go to www.halibag.com for more information on the NA337 project.

The rear gun turret and tail of the Halifax NA337.

Lois Hammond is an Edmonton-based freelance journalist.

ADAMS, DR. PETER

(Professor emeritus)

has retired as chair and managing director of the Canadian Petroleum Institute (CPI) after 12 years with the Edmonton-based, nonprofit, international training, consulting, and networking agency for oil industry professionals. Adams will continue to hold a seat on the CPI board of directors and will keep on working as chair of Churchill Corporation. His retirement from full-time management follows a long career as a leader in the professional community. Adams was a professor and Faculty Dean for 25 years.

BALDWIN, MATTHEW

(Petroleum '51)

was named one of Alberta's Curling Athletes of the Century at the 2005 Brier. Baldwin's team was in the all-time top three Alberta curling teams. This selection was based on a public vote and final selection by sports media.

BHASIN, SUNNY

(Computer '02) EIT

presented his award-winning MBA business plan at a prestigious competition at Rice University in Houston. Bhasin was one of three Canadians whose entries were selected for the final field of 36 chosen from over 150 applicants. His team presented a plan to complete a software system enabling restricted sharing of confidential educational information. His software application supports the sharing of transcripts and letters of references. Users would be post-secondary educational institutions, students, and employers.

CAMERON, EVAN

(Electrical '64) PEng

was appointed by Sturgeon County to serve on the Board of Edmonton Airports for a four-year term commencing January 1, 2005. Cameron has a 40-year engineering background and currently operates Cameron Labs Ltd., a private practice providing communications engineering consulting services to industry and governments in both international and domestic markets.

DOOLEY, RON

(Civil '61) PEng

has been appointed to the board of directors of the Gemini Corporation. Dooley is a retired oil industry executive and most recently was vice president, finance, and chief financial officer of NAL Resources Services Ltd., a management company that manages NAL Oil & Gas Trust and the oil and gas assets of a major financial institution. Dooley has had extensive experience in the oil and gas industry, with numerous senior management responsibilities including corporate finance, financial reporting, treasury, tax, investor and public relations, and international banking.

LEWYCKY, DON

(Civil '81) PEng

has been awarded the Canadian Pacific Railway Engineering Medal for 2005 by The Engineering Institute of Canada. This award recognizes many years of leadership and service by members of the societies within the institute at the regional branch and section levels. Lewycky is senior geotechnical engineer with the engineering services section of the City of Edmonton, Transportation and Streets Department.

MCDONALD, KEN

(Computer '91)

is president and CEO of Collaborative Learning Network Inc. (CLN). He was selected as runner-up worldwide for the IBM award entitled "Best Lotus Software Solution." This follows the IBM award for "Best Portal Solution." Both awards recognize CLN's education portal solution. Collaborative Learning Network is an Edmonton-based information technology company.

MORGAN, GWYNN

(Mechanical '67) PEng

is president and CEO of EnCana Corpration. EnCana was voted 12th in Canada's Most Respected Corporations Survey conducted by Ipsos-Reid. EnCana was valued on its financial performance and corporate social responsibility.

READY, LEE

(MEng Electrical '98) PEng

received an Award of Excellence in Studies, Software, Special Projects, one of the 2005 Showcase Awards from the Consulting Engineers of Alberta. The award was for the ABACAS (automatic blending and coal analysis system) at TransAlta's Sundance Plant. This automated control software interfaces with coal stockpile feeders to control their output and meet the targeted blend. ABACAS was one of the steps taken to increase plant performance at Sundance. Judges praised Ready Engineering's ABACAS as an excellent example of top quality engineering. Further, judges noted that the project exceeded all customer requirements, used technology innovatively to address a complex problem, and made excellent use of metrics to assess performance and assure quality.

ROSS, BRIAN

(Civil '78) PEng

has received The Environmental Excellence Award, one of The Summit Awards awarded by the Association of Professional Engineers, Geologists and Geophysicists of Alberta (APEGGA). Ross's project was the Deerfoot Trail South Extension Project. The project team incorporated numerous design innovations to significantly reduce traffic congestion, maximize traffic safety, and preserve the world-renowned Bow River trout fishing area and the Bow Valley wildlife corridors.

STANFORD, DR. JAMES M.,

OC (Petroleum '60, LLD [Hon] '00) PEng

has been appointed an Officer of the Order of Canada. This award recognizes Stanford's role in building Canada's energy capability for over 30 years. While at the helm of Petro-Canada, he used his innovative spirit and keen insight to lead the company through a major restructuring that positioned it as an industry leader. Stanford also imbued the company with a strong set of values, demonstrating a deep commitment to the environment.

THURSTON, DON

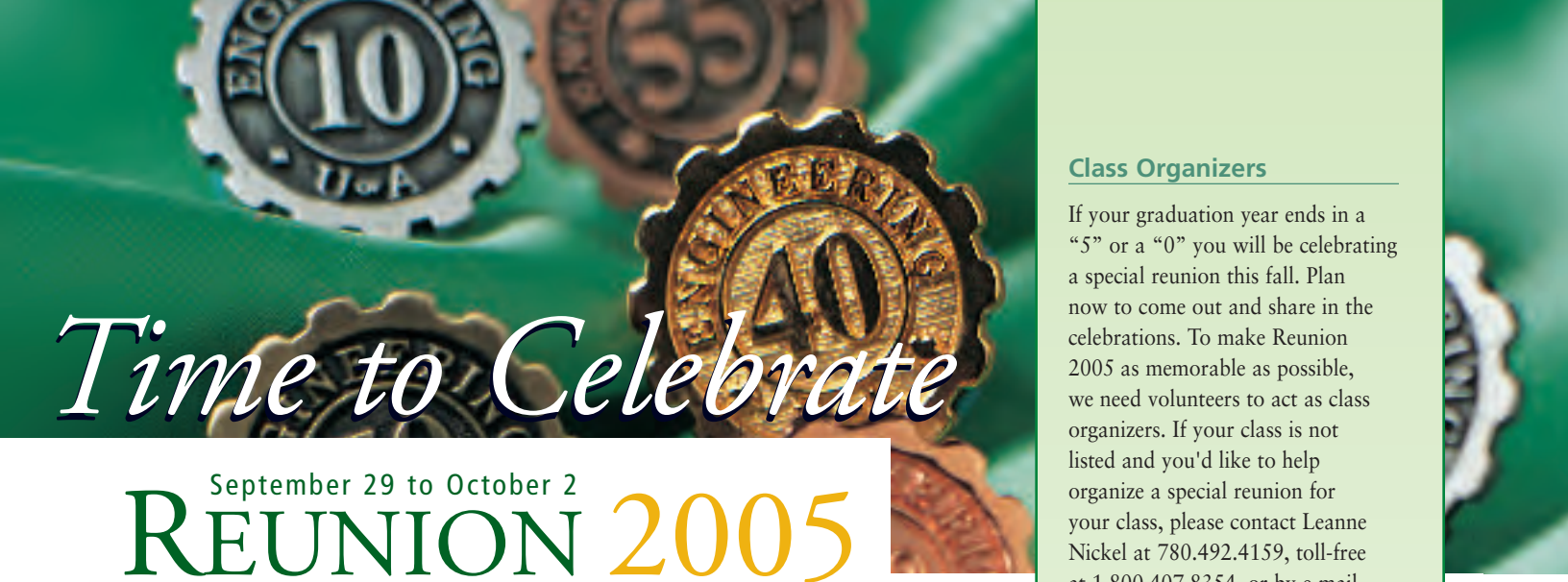
(Chemical '58) PEng

has been appointed to the board of directors of Engineers Without Borders. Thurston is the president of Selkirk Portfolio Management Inc.

TRUFYN, DARCY

(Civil '79) PEng

has been appointed president and CEO of Lockerbie & Hole Inc. Trufyn joined the company as chief operating officer in 2000.



Time to Celebrate

September 29 to October 2
REUNION 2005

This year, as the province of Alberta celebrates its 100th anniversary, U of A Engineers who graduated in years ending in "5" or "0" will be celebrating too!

Join us on September 29 to October 2 for Reunion 2005 and see how much has changed in Alberta, in Edmonton, and on the U of A campus. Reunion 2005 is a perfect opportunity to reconnect with classmates, professors, friends, and neighbours, as we reflect on the past and look forward to the future.

In addition to the campus-wide events that have been planned, the Faculty of Engineering will host several complimentary events specifically for engineering alumni and their families. Plan now to join us for an unforgettable Reunion 2005. We look forward to seeing you in the fall!

Friday, September 30

Dean's Reception
4:30 – 7:00 p.m., ETLC Solarium
2nd Floor, Engineering Teaching & Learning Complex (ETLC)

Start off Reunion Weekend by reconnecting with Engineering classmates and colleagues. Dean David Lynch and Mrs. Lynch invite all Engineering alumni and their guests to join them for complimentary hors d'oeuvres and refreshments.

Saturday, October 1

Dean's Brunch
9:00 – 11:00 a.m., ETLC Solarium
2nd Floor, Engineering Teaching & Learning Complex (ETLC)

All Engineering alumni who graduated in 1960 (or earlier) and their guests are invited to a complimentary hot brunch, hosted by Dean David Lynch and Mrs. Lynch. Dr. Lynch will celebrate the accomplishments of our alumni and will speak on the past, present, and future of the Faculty of Engineering at the University of Alberta.

Engineering Open House, Tours, and Lectures
10 a.m.– 2 p.m., Engineering Teaching & Learning Complex (ETLC)

The Faculty of Engineering is pleased to welcome alumni, prospective students, and guests to Engineering Open House 2005. Take in displays from the four Engineering Departments and numerous student groups, and attend free lectures on engineering-related topics. Tours of the Engineering buildings, including the new Allan P. Markin/Canadian Natural Resources Limited Natural Resources Engineering Facility, will be available. The Alumni Hospitality Lounge will be open to provide a quiet place to enjoy a coffee and catch up with old classmates.

For more information on any of these events, contact Leanne Nickel by e-mail at leanne.nickel@ualberta.ca or by phone at 780.492.4159 (toll-free 1.800.407.8354).

Engineering Alumni Receptions

On Tuesday, May 17, Hal Kvisle (Civil '75) helped the Faculty of Engineering host its fifth annual Calgary Regional Alumni and Friends reception at the Sheraton Suites Calgary Eau Claire.

We will be continuing our popular regional alumni receptions this fall in Toronto (date to be confirmed), and in Vancouver and Victoria on October 27. If you live in one of these areas, watch your mailbox in the late summer and early fall for your invitation.

On the Move?

It's important you keep your address up-to-date with the Faculty of Engineering so you can keep receiving your copy of *U of A Engineer*, your annual Engineering Perspectives wall calendar, and invitations to events such as alumni receptions and class reunions. Address changes can be e-mailed to engineer.alum@ualberta.ca or phoned in to 780.492.7050 (toll-free 1.800.407.8354).

Class Organizers

If your graduation year ends in a "5" or a "0" you will be celebrating a special reunion this fall. Plan now to come out and share in the celebrations. To make Reunion 2005 as memorable as possible, we need volunteers to act as class organizers. If your class is not listed and you'd like to help organize a special reunion for your class, please contact Leanne Nickel at 780.492.4159, toll-free at 1.800.407.8354, or by e-mail at leanne.nickel@ualberta.ca to find out more on how you can get involved.

List of Class Organizers
(to date of publication)

1945 All Disciplines – *Jack Longworth, Winston Stothert*

1950 Civil – *Charlie Weir*

1955 Civil – *Bill Weir, Charles Grant, Keith Bowers, Al Pasini*

1955 Electrical – *Ken Townend, Jim Nisbet*

1960 Chemical – *Chrys. Dmytruk*

1960 Mechanical – *Jim Gunderson*

1965 Chemical – *Murray West, Dick Farwell, Graham Lock*

1965 Civil – *Bill Hibbard,*

1970 Mechanical – *Darryl Martin*

1975 Mechanical – *Warren Kmicik*

1980 Chemical – *Ken McCagherty, John Carroll, Ray Tomcej*

1980 Civil – *Mark Timmler, Murray Johnson*

1980 Electrical – *Jeff Bannard*

1980 Mining – *Al Brown*

1990 Civil – *Wade Zwicker*

1995 Civil – *Tony Spagnolo*

1995 Mechanical – *Vincent Duckworth*

1995 Metallurgical – *Coral Lukaniuk*

2000 Electrical – *Sean Verret*

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University of Alberta
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Edmonton, AB T6G 2V4

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Want to make a lasting impact? Your estate, whatever the size, can play a transformational role, assisting students and researchers for years to come. A planned gift is a charitable donation arranged during your lifetime, but not available until the end of your lifetime, payable after your family and other obligations have been met. A bequest to the Faculty of Engineering may serve to reduce, by means of a tax credit, the income tax payable by your estate. A planned gift may eliminate or reduce tax on capital gains on property you leave to your family. Help shape the future of your Faculty.

For further information contact:

David M. Petis, Assistant Dean
External Relations
Faculty of Engineering, University of Alberta
E6-050 Engineering Teaching
& Learning Complex
Edmonton, AB T6G 2V4
Tel: 780.492.5080
Fax: 780.492.0500
e-mail: david.petis@ualberta.ca

Sheldon (Bob) Comfort (Mining '33) has given a gift of a lifetime to Faculty of Engineering

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I wish to make a gift of:

☐ $100 ☐ $500 ☐ $1,000 ☐ $2,500 ☐ Other $_____

☐ cheque (made payable to the University of Alberta) ☐ VISA ☐ MasterCard

_____/_____/_____/_____/ expiry date: _____

Name (please print): _____

Signature: _____

I have also enclosed:

☐ a corporate matching gift form from my (or my spouse's) employer

If you were an Alberta resident on December 31, 2004 and have already given $200 elsewhere, your combined income tax savings will be:

Your donation to the U of A	$100	$500	$1,000	$2,500
Your tax savings for your gift:	$42.00	$209.00	$418.00	$1,045.00

* To best meet Faculty of Engineering's needs, donations may be directed to endowed funds.

I would like my gift to support:

$ _____ Faculty of Engineering in support of undergraduate student projects, new educational initiatives in all disciplines, and general student life enhancement activities.

$ _____ Chemical and Materials Engineering Fund*

$ _____ Bridge to the 21st Century Fund

$ _____ Civil and Environmental Engineering Fund*

$ _____ Electrical and Computer Engineering Fund*

$ _____ Mechanical Engineering Fund*

$ _____ Mining and Petroleum Engineering Fund*

☐ 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.

☐ 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.

Please return to: Office of the Dean, Faculty of Engineering, University of Alberta, E6-050 Engineering Teaching & Learning Complex, Edmonton, Alberta T6G 2V4