In the realm of engineering, Paul Acchione has seen it all. And that says a lot.

A professional engineer as well as president and chair of the Ontario Society of Professional Engineers, Mr. Acchione has been involved in so many projects that Canadian engineers are playing increasingly influential roles in society.

With experience in the innovation of technology and engineering, engineers bring their expertise to an array of applications—from developing the technology behind the smartphones we can’t live without to revolutionizing healthcare and monitoring potentially hazardous areas on the planet. Consequently, engineers must collaborate with a variety of specialized fields to find solutions to complex problems.

“The old blackboard—can’t be created by one person who knows about electronic devices,” says Mr. Acchione. “It’s a seemingly simple product that’s not actually simple and requires so much cooperation.”

For Engineers Without Borders, one seemingly simple product bringing together innovations in many areas, including 3D printing, integrated chip design, communication protocols, and signal conditioning and analysis—all of which require specialized skills. There’s not just one expert required to bring a project to life, but many.

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By Jennifer Flanagan, President and CEO, Engineers Canada

Innovation is key to shaping Canada’s industries forward, our country’s economic prosperity will rely on talent with a niche set of skills and abilities. To that end, we need more people interested in engineering.

To meet this demand, young Canadians still need to be prepared today for the wealth of economic opportunities of tomorrow.

As Canada’s fastest-growing population, our country’s Aboriginal youth will play an important role in balancing this highly skilled workforce. Their role as young engineers, leading awareness and creating sustainable infrastructure to support a resource-based economy, is vital.

The challenge lies in ensuring Aboriginal youth connect with the engineering profession at an early age. In 2013, the National Aboriginal Outreach Program, a transformational, barrier-breaking program that now engages over 20,000 Aboriginal youth each year in over 200 Aboriginal communities. Many of the communities we reach are remote; some are far away. All have limited access to education outreach programs.

Undergraduate engineering students lead the delivery of off-school workshops and week-long camp experiences. Annually, Actua reaches 10,000 communities nationwide.

ACTUA

The University of Toronto hosts a range of outreach initiatives, some specific to young women, others to serve the immigrant community, and one open to girls only.

The University of Toronto is proud of DEEP, an enriched summer academy with the desire to solve large-calculus problems, exceptional analytical abilities, and not typically associated with the profession.

The Department of Chemistry of McGill University partnered with Actua in 2013 to create the Borders’ Global Engineering Outreach Venture. They work with us to provide a duality of experience is essential to the health, safety and well-being of our society. This is what will make engineers more interesting for young girls approaching their after-school events, interested in engineering.

As the profession's diversity is important, the role of engineers in creating opportunities for innovative solutions—ones that would not otherwise be tested or executed—is essential. That is the essence of engineering.

Two great reasons to celebrate!

1. Congratulations to the 2013 Engineers Canada Awards winners for outstanding achievements in engineering. You make us proud to be your partners for 65 years!

2. We’re celebrating the 65th anniversary of the Engineers Canada-sponsored Term Life plan. To mark the occasion, we’re offering all Members 50% off Term Life rates until March 31, 2014!

We also collaborate with Fast Nation organizations, friendship centres and community centres to inspire the sharing of traditional knowledge, connecting Aboriginal youth of innovation with engineering and science, and connecting communities to build an outreach team and instructors.

An excellent example of this is an off-the-leash experience that happened in Nanaimo. Campers were learning about GPS technology and an off-the-leash activity. An Elder accompanied the youth, teaching traditional ways of navigation using the stars and the land. One of the girls said, “We thought you guys were the best, but the markswall was the best and the waterproof phone was the greatest when the butterflies ran out.”

Benefits of these experiences are also passed on to the community who are a better understanding of Aboriginal culture. They then begin to focus forward in their professional and personal lives.

The quality of experience is “As much as an off-the-leash experience can give back to the Elder, at the end of the day nothing gives back to the community. Bringing the best of what everyone has to offer to build an innovation’s message. Our goal also rests on your partnerships and connections with industry and with post-secondary institutions that make it possible for you to connect youth to current innovations in engineer- ing, combine STEM, (science, technology, engineering and math) and local economic development, and find key partners to support the development of an engineering workforce.

Our impact, as measured by the changes in youth’s confidence and attitudes toward future education, is a strong and the empirical evidence of these shifts is clear. We believe that if we do is to close the engineering gap, it is possible to connect youth to current innovations in engineering, combine STEM, (science, technology, engineering and math) and local economic development, and find key partners to support the development of an engineering workforce.

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In March 2013, Engineers Canada (now Engineers Canada) partnered with Professional Engineers Ontario and the Ontario Association of Registered Engineering Technicians to run 2,000 outreach events for National Engineering Month, promoting the message that engineering is essential to the health, safety and well-being of our society. This is what will make engineers more interesting for young girls approaching their after-school events, interested in engineering.

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What Have Trade Unions Done For You Lately?

By Don MacKinnon
President
Power Workers' Union

Sometimes we get so used to our institutions we forget how important they are to us. We take democracy for granted in Canada, but a moment’s thought about life in countries without it should be enough to convince you of the importance of a democratic political system. Absent democracy, “might makes right”—tyranny and inequality prevail. If our democratic institutions aren’t preserved, we risk falling back into a state of affairs where people live politically impoverished lives.

Trade unions have been around longer than representative democracy in this country. It’s easy to take them for granted and, particularly now when they are under persistent public attack, to forget why they are important for all of us. Here’s a reminder.

Trade unions have been around longer than representative democracy in this country. It’s easy to take them for granted and, particularly now when they are under persistent public attack, to forget why they are important for all of us. Here’s a reminder.

First, trade unions transformed workplaces for the better. Before trade unions, working conditions were often deplorable and workplaces dangerous, and this in the most prosperous countries in the world. Twelve or even sixteen hour workdays without breaks in workplaces that were literally a threat to the lives of workers were not unusual. There was no minimum wage, medical coverage, insurance, or workers’ compensation. A worker could have wages cut, be laid off or fired without warning or explanation. Women were paid less than men doing the same job and children were put to work in dangerous conditions.

Once working people formed trade unions, however, workplace conditions improved. Unions struggling to achieve these gains, which we now take for granted, had to fight against many employers and governments, who claimed that any improvement to the lives of workers was unaffordable and would render industry uncompetitive. Unions persevered, however, to the point where people came to see their benefits for everyone and governments decided to acknowledge and regulate their existence by law. Unions, traditionally democratic organizations, were now required to be democratic by law and to represent all workers fairly. By the same token, all workers in the workplace were required to pay dues to the democratically selected trade union because they all got the equal benefit of the union’s representation (the “Rand formula”). But the benefits of union activities went beyond the workers they represented to all workers: minimum wage rules, health and safety laws, eight hour workdays, mandated breaks and paid time off are all the direct or indirect result of the union movement and its commitment to better the lives of all working people, whether or not they are union members.

Even more, the union movement benefited the economy as a whole. One reason for the establishment of labour laws in the early part of the 20th century was to promote economic expansion by increasing the purchasing power of workers. What ensued was a long period of great prosperity through to the late 20th century in which the middle class expanded, sharing in the wealth it helped create, but also spending its new income and so driving economic expansion. The expansion of unionization parallels the expansion of the middle class and the reduction of income inequality, the improvement in private pension and benefits plans, and the better treatment of women and minorities in the workplace.

The last 20 years or so have seen a rapid increase in the income of the wealthiest people in the country and a decline of the middle class. It’s not a coincidence that this has been a period of sustained attack on trade unions, culminating in “right to work” laws in many US states. Unions tend to equalize wages among workers and ensure that fewer people are left in low paying jobs. They protect the vulnerable and ensure that workplaces are safe and that workers are treated fairly. As long as there is unionization in an industry, non-unionized employers can’t afford to fall too far behind in the treatment of their workers.

In the short run, some might believe that reducing wages and benefits will increase profits, but this ignores the long run: lower paid workers have no money to spend in the economy and as the middle class disappears, so does prosperity for everyone, including business.

Those who live through a period of history often don’t reflect on it while it’s happening, and don’t realize what they’ve got until it’s gone. This is why it is important to look back and understand.

We are again hearing that businesses can’t afford good wages and working conditions, pensions and benefits. It wasn’t true a century ago and it’s not true now. “Right to work” laws do not create jobs—they diminish the quality of existing jobs by stripping workers of the benefit of trade union representation. In a race to the bottom, the worker and society as a whole always lose—and income inequality returns.

As a country that attacks its democratic institutions courts political poverty, one that attacks the expansion of the middle class, the reduction of income inequality and for the preservation of trade unionism courts economic poverty.

So what have trade unions done for you lately? They’ve protected good jobs, wages, benefits and working conditions for you and your children. They’ve ensured that all people, including women, minorities and the disabled—you, your friends and family—are treated fairly in the workplace. They’ve fought against growing income inequality and for the preservation of the middle class—the only sure way of guaranteeing economic prosperity for all of us in the future.
Growing demand for engineers challenges cleantech sector

The renewable energy sector is among the most exciting for engineers, given its ever-changing technology and potential for growth. Yet the industry is faced with a shortage of experienced engineers, particularly in strategically important areas such as clean technology, according to sustainable Development Technology Canada (SDTC).

With global competition drying up, organizations have under-employment in the engineering profession as well as unfilled specialized jobs, according to Paul Acchione, president of Engineers Canada (OSPE) and president of the Ontario Society of Professional Engineers (OSPE). Engineers Canada and OSPE show that businesses have little ability to come by highly qualified engineers, particularly those with specialized skills. The mismatch that hurts the profession as well as unfilled specialized jobs creates a shockwave that darkens when exposed to the film.

"Unless businesses re-engage in providing on-the-job training for their specialized skills needs, we will continue to have underemployment in the engineering profession as well as unfilled specialized jobs. That's a mismatch that hurts our profession and the national economy," says Acchione.

Technology developed by SWITCH Materials will allow drivers to control the tint of their windows with the push of a button, thanks to a new technology being developed by chemists and engineers at a small B.C.-based firm. The company is working with glass manufacturers and has programs to set up a joint university-industry research lab and then design a series of "cutting-edge concepts to equip existing and growing engineers for this emerging field." The film blocks unwanted infrared light from hitting the film.

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PHOTO: SARA COLLATON

"This is a truly exciting time," says Acchione, who is also chair of SDTC’s energy task force. "Firms are re-considering the need for specialized training in providing on the job training for their specialized skills needs. As we will continue to have under-employment in the engineering profession as well as unfilled specialized jobs. That’s a mismatch that hurts our profession and the national economy," says Acchione.

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Investments in infrastructure and training essential

Q&A with John Gamble, P.Eng., president of the ACEC

How are changing demographics affecting the consulting engineering industry?

The industry has a finite demand as chasing something of a demographic tail. Back in the recession of the early 1990s, there was significant contraction, leading to mass layoffs and diminishing enrollment in engineering programs. This has created a gap in the number of senior staff available to take on leadership positions. It’s quite a challenge, as there is fewer supply than demand.

Theresa Foley is the human resources adviser at Urban Systems.

Has the hiring process and criteria changed in recent years?

Yes, there has been a shift in perspective. For example, we no longer hire just junior staff and facilitate knowledge transfer.

What are engineering firms doing to address this challenge?

There is a critical problem that we're working through. The current leaders of firms are asking junior staff to step up out of nowhere. The potential candidates have had a lot of experience, but they lack the confidence in the business environment. They can be reluctant to invest in recruitment and training and retaining employeess – be they junior or senior, domestic or foreign trained.

Does the current business environment inspire confidence?

No, we have a commitment to a 10-year infrastructure program with the renewal of the federal infrastructure program. This is a significant amount of money for stimulus and growth. It was renewed for 10 years, which was quite significant – that's a long horizon for a government program. This will help strengthen firms confidence to invest in employee training and development. The continuing strength of our resource sector is also very important.

Your organization advocates for improvements to infrastructure. How does this affect the public infrastructure benefit to everyone, including in the engineering industry?

We are seeing an infusion of public infrastructure in our country's prosperity. We need to think of infrastructure in terms of individual projects – a road here, a bridge there, but it's that more than that. Collectively, that's what creates economies and connects communities.

Can you offer an example?

Take the Detroit-Windsor border crossing. The trade that crosses the Ambassador Bridge on a daily basis is equal to the entire $1 trade volume for the year.

What role do engineers play in infrastructure development? Engineering is a critical part of the lifespan of any project, from the initial concepts to the long-term operation and maintenance. This phase of project development is where engineers can make significant contributions.

What is the ripple effect of engineering?

The ripple effect of engineering happens on a global scale. Engineering firms are responsible for planning, designing and implementing all types of engineering projects, and providing advice on how to use resources and natural capital in a sustainable way.

Mr. Gamble.

The company, which employs about 350 people across Canada, has a strong corporate culture, which is funded jointly by the federal and provincial governments.

With a strong corporate culture, the company has a pipeline of people that want to work for the long term, company to train and develop its employees for the long term. The company to train and develop its employees for the long term.

As much as infrastructure is an investment in proximity, engineering is an investment in the long-term success of the project. There is a temptation in times of financial austerity to try and cut costs upfront. However, making those initial investments in planning and design of projects can generate significant savings over the lifetime of the project.

Any last thoughts?

That's one reason why we're so excited about the Sussex-Bison onaglobalscale.

Investing in infrastructure and training essential

Consulting engineers contribute their expertise on major infrastructure projects that improve the flow of goods, connect communities and strengthen the economy.

Lee Barbour (left) and colleague Jim Hendry are part of a team working to rebuild deforested land, but we also need to understand how to make sure the potential hire has a realistic preview of how we work.

Theresa Foley is the human resources adviser at Urban Systems.

Transferring oil sands overburden into a sustainable ecosystem

Five members of Urban Systems' office in Nelson, B.C. The engineering firm has been named one of the Best Workplaces in Canada for eight consecutive years.

Jeanine Hendry is a civil engineer and researcher at the University of Saskatchewan who was recently named Chair in Hydrogeological Characterization of Oil Sands Mines Global Leaders. It's remarkable to see the landscape recover to the extent that it has in less than 15 years.

Dr. Barbour, whose 5- to 6- million industrial research position was founded jointly by the federal government through Natural Sciences and Engineering Research Council and create oil producer Syncrude Canada, has spent a significant part of his career studying how land disturbed by oil sands mining can be restored and become sustainable ecosystems.

With a strong corporate culture, Dr. Barbour is tracking the quantity and quality of the work going through the hills of clayshale territory and how much money is being generated through the oil sands.

Dr. Barbour says his work is part of a “puzzle” and that other research is looking at various aspects of the problem, including characterizing the chemistry of soil water and coming up with best water treatment options.

Alberta's oil sands, undergoing more than 400,000 square kilometres of land and the production of oil sands, have created a need for additional research and development in the landscape, as well as what chemical cleaning will be delivered to surface water.

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When it comes to all...
The Engineers Canada scholarship program

Launched in 1973 with five $2,000 scholarships, the Engineers Canada scholarship program has awarded $6.7 million to over 2,600 students since then. This year, the program will award 20 scholarships valued at $10,000 each to Canadian professional engineers who are building on their engineering background by returning to school to pursue advanced academic studies.

Three Engineers Canada-Mamille Financial scholarships, valued at $10,000 each, provide financial assistance to engineers returning to university for further study or research in an engineering discipline.

Three Engineers Canada-TD-Melicco Women scholarships, valued at $7,500 each, support further study or research on a field other than engineering that leverages engineering knowledge, enhancing the diversity of the profession.

The Engineers Canada-TD-Meliac Women-Leopold Kudowski scholarship, valued at $5,000, supports engineering education by offering one engineering student the opportunity to specialize in any area of engineering.

The Engineers Canada scholarship program is awarded for further study or research in the area of public policy development.

For more information on the program and its eligibility criteria, visit www.engineerscanada.ca/pc_awards_e.htm.

APPONITMENT NOTICE


Engineers Canada is pleased to announce the election of W. James Beckett, FEC, P.Eng., as its president for the 2013-2014 term. In the coming year, Mr. Beckett and the Engineers Canada Board will support the organization’s constituents and its strategic priorities, specifically the use of microbial biotechnology to create biofuels,寂寞的鳄鱼...

Mr. Beckett was born and educated in Edmonton, Alberta. He attended the University of Alberta, where he obtained a B.Sc. (with distinction) in electrical engineering. He was a member of the university’s Board of Governors and the University’s Engineering Advisory Board, and has served as a faculty advisor, professor, vice-president, and faculty advisor.

Mr. Beckett was elected to the Order of Canada in 2003, and in 1997, he was awarded the American Institute of Chemical Engineers’ Gold Medal. He is a member of the steering committee for the AECO Utilities Group, a group of leading utilities in the Canadian electricity industry.

Mr. Beckett is a life member of the Association of Professional Engineers and Geoscientists of Alberta, the Association’s president in 2000, and has represented the organization on the Engineers Canada Board since 2010. He has been a member of the Engineers Canada Board since 1997, and serves as the chair of the organization’s Board of Governors and the AECO Utilities Group.

For more information on Mr. Beckett, visit www.engineerscanada.ca/wjbeckett.htm.

For more information on the program, award recipients and eligibility criteria, visit www.engineerscanada.ca.