Ottawa PEO Chapter (oPEO) Entrepreneurship Program - Update

Tapan Das M.Sc. Ph.D. P.Eng.

The Reason for the Entrepreneurship Program

Innovation and entrepreneurship are key to a nation's competitiveness, hence Canada's. Our productivity and economy are closely linked to it. But, we continue to lag behind our international competitors. According to a 2013 Conference Board of Canada report (www.conferenceboard.ca/hcp/details/innovation.aspx), Canada remains near the bottom of its peer group on innovation, ranking 13th among the 16 peer countries. The report says countries with the highest overall scores have successfully developed national strategies around innovation, giving them a substantial lead over their peers in one or more areas. Ireland has seen enormous success as a host for leading innovative companies; the US fosters a combination of top science and engineering faculties, broad and deep capital markets, and an entrepreneurial culture; and Switzerland, the top-ranked country, is a leader in the pharmaceuticals industry.

In Silicon Valley innovation and entrepreneurship are a part of its culture. Brilliant graduates from the US and all over the world work there with only one mantra: be innovative and risk failure. There, failure is not shameful but an achievement that proves courage and entrepreneurship. Entrepreneurs gather and discuss their failures. There are investors and companies who also take risks to help the innovators– the number of seed investment deals in Silicon Valley is increasing. Even if they fail, they keep moving forward because if and when one attempt turns out successful, it could well outweigh the losses. We need to develop this kind of culture in Canada to stay competitive in the world market. Natural resources like oil, woods and minerals will run out and cannot sustain our development. Innovation and entrepreneurship have no limit and are the best way to stay developed and competitive.

Our university students and graduates are the best resource for innovation and entrepreneurship. Those olden days, when after graduation they get a job in a company or institution and retire there, are over. They have to create their employment by innovation and be entrepreneurial to start a business. With this in mind, Ottawa PEO chapter started an entrepreneurship program in April 2015 to support individuals, including women engineers and entrepreneurs, university graduates and immigrant engineers, in all sectors for development of products and services.

The Ottawa Chapter Initiative

Following a successful three-month pilot, the program was officially launched as PEO's Ottawa Chapter Entrepreneurship Program in a meeting on September 30, 2015. The chapter

welcomed PEO's then President Thomas Chong, P.Eng., FEC, PEO Registrar Gerard McDonald, P.Eng., Ontario Society of Professional Engineers (OSPE) CEO Sandra Perruzza, OSPE then Vice Chair Michael Monette, P.Eng., and Ottawa Councillor Marianne Wilkinson at the meeting. President Chong hailed the program as one that will help shift our economy into high gear again by restoring growth, boosting employment, bringing back Ontario's leadership in high technology, and moving the country away from resource dependency. Councillor Wilkinson praised it as a "lead to win" entrepreneurship program. The entrepreneurship program team and Ottawa Chapter board were excited with the results of the pilot program and the encouragement and support from the PEO president and Ottawa councillor.

Tapan Das, P.Eng. (second from left), chair of the Ottawa Chapter's Innovative Entrepreneur Leadership Program, outlined the program details at a September 30 launch reception. Also attending were (left to right) OSPE Vice Chair Michael Monette, P.Eng.; Ottawa Chapter Treasurer Joe Podrebarac, P.Eng.; PEO Councillor Ishwar Bhatia, P.Eng., FEC; PEO President Thomas Chong, P.Eng., FEC; Registrar Gerard McDonald, P.Eng.; and OSPE Executive Director Sandro Perruzza.

The 2017 Innovation Challenge – Reduction of Existing CO2 in the Atmosphere

Nine entrepreneurs in the program have launched successful startup business. In 2017, the program has added a different turn. The entrepreneurship program team aimed to involve university students and graduates to be innovative and entrepreneurial. A challenge was given to them to solve an environmental crisis. The looming crisis of global warming caused by CO_2 in atmosphere is threatening our very existence. The recent dangerous flood in Quebec and BC, melting of arctic ice, alarming rise in sea level, etc., show how fatal global warming is. Sea level is projected to rise 1 to 4 feet by 2100 threatening low-lying areas. The current CO_2 level in atmosphere is more than 400 ppm and rising at a rate of 2 ppm/year. Ottawa PEO Chapter entrepreneurship program team challenged the engineers and students in Ottawa to innovate a solution which would quickly eliminate the very high level of CO_2 in the atmosphere in a controllable, economic and environmentally friendly way.

At an event held at the RA Centre, Ottawa on May 25, six engineers and graduate students pitched their product ideas and solutions to a panel of six judges. Taking the challenge were Ahmed Sharoodi, PhD student and Mohammad Aghaji PhD; Brent Weatherall, Mathieu Tousignant, and Phillip Williams, PhD students of U Ottawa; David Carter and Sean Wilson, PhD students of U Ottawa, Sam Yakoub, PhD student of U Ottawa; Sushanth Sankaran P.Eng.; and Zachary Jacobson, statistician. Judges were Professor Anh Pham and Professor Mojtaba Ahmadi of Carleton University; Professor Stephen Daze of Ottawa University; Ms. Ivette Vera-Perez, Manager OCE; Mr. David Mann, inBay Technologies Inc.; and Ms. Camille Taylor, Golder Associates Ltd.

The event was organized by Tapan Das, PhD, P.Eng., Chair Chapter entrepreneurship program and assisted by Joe Podrebarac, P.Eng., Chair Ottawa Chapter, Ray Barton, PhD., Vitesse, and Omar Chaudhry, P. Eng, YP Data. Dr Bob Doni, PEO President sent the following greetings and best wishes for the competition.

"*As PEO President I would like to bring greetings and best wishes for your "Environmental Challenge" competition. Unfortunately, I am unable to attend as I am attending the Engineers Canada AGM, representing PEO, during this event. The safeguarding of the environment is now a direct responsibility of licensed professional engineers. It is included explicitly in the definition of professional engineering under the Professional Engineers Act. The future of our planet's ecosystems should permeate all our engineering thinking.*

Over the year as President, I want to focus on bringing the next generation of practitioners into the profession to bring fresh new perspectives into the conversation – especially as all three of my children have gone into engineering! Competitions like this which celebrate the innovations of this new generation are a perfect example of how we, together, can accomplish this.

Congratulations to the originators of this event for organizing this competition. And best of wishes to all the competitors."

A large audience was present at this event on a raining evening during the Stanley Cup Playoff. Three winners were selected with the first prize winners of $500 were David Carter and Sean Wilson. The next two winners tied for second place were Ahmad Sharoodi and Mohammad Aghaji ($250); and Brent

Weatherall, Mathieu Tousignant, and Phillip Williams ($250). Ottawa MPP Mr. Jack Maclaren gave the prizes.

Mr. David Carter and Mr. Sean Wilson proposed to convert CO_2 to ethanol by high-selectivity electrochemical conversion using a Copper Nanoparticle/N-Doped Graphene Electrode. Mr. Ahmad Sharoodi and Dr. Mohammad Aghaji proposed Adsorption-based Air CO_2 Capture & Application (ABACA) that captures and stores CO_2 in a container that can be diffused into concrete making it a much stronger. Mr. Brent Weatherall, Mr. Mathieu Tousignant, and Mr. Phillip Williams proposed design of solar powered vertical algae farming using woven Nylon membrane with a pore size of 10-180 μm used for algae retention. Mr. Zachary Jacobson proposed ocean fertilization with volcanic ash stimulating phytoplankton growth that will absorb CO_2 from air, sequestering carbon and releasing oxygen. Mr. Sushanth Sankaran proposed electricity generation by piezo electric devices for joggers, walkers, and piezo blankets for highways (cars). Mr. Sam Yakoub proposed new tall towers with thousands of wind turbines to generate electricity and storing in as hydrogen, ethanol and others.

The event brought together local PEO members to an event reminiscent of a university lecture series to examine the approaches to address the challenge of reducing existing CO_2 in the atmosphere. This will not only benefit Ontario, but Canada and the world as well.

The current plan of the oPEO entrepreneurship program team is to give another challenge to the engineers and mainly the university students and graduates a software project in March 2018. The last challenge was mainly focused in chemical engineering. This new challenge will be in software area. This will not only create innovation in Ottawa but increase PEO membership since this will be sponsored and financially supported by PEO. It is a 'win-win' situation for all. It might be good idea for PEO to encourage other chapters to start this kind of program.