

Fall 2013

Authored by BEA members, Prepared by Madeleine Tierney



We are closing in on the Fall 2013 term and we all have a sense of accomplishment. Our student enrollments in both the undergraduate (approximate total of 175 students in the B.Eng.) and graduate programs (approximately 125 students in our Graduate Programs) are keeping up and our cohorts are vibrant, energetic and motivated. We are looking forward to 2014 with great new research projects in all are fields of activities including urban agriculture, precision farming, food and bioprocessing, bio-energies and novel biomaterials, ecological engineering, soil and water and bioenvironmental engineering, just to name a few. On this note, I wish you all a Happy Holiday Season and a very Healthy and Joyful 2014.

Valérie Orsat, Associate Professor and Department Chair

2013 QEC:

The Quebec Engineering Competition is the largest student engineering competition in the province, regrouping 12 teams from all around Quebec. It is an opportunity for participants to be given an academic experience that challenges them, putting their knowledge to test in real engineering situations. It is an occasion for students to meet and connect with the whole engineering community as well as important companies and people from the industry such as Bombardier, Hydro-Quebec and MDA. This unique competition promotes the quality and competence of engineering in *la belle province* by exhibiting the hard work of engineers to be.

Last year, the students of our department sent a full delegation to represent Bioresource Engineering in all 7 categories of competition: Junior conception, Senior conception, Oral debating, Consulting engineering, Innovative design, Scientific communication and Re-engineering.

After 2 days of intense competition, it was announced that Macdonald campus won 5 awards in total and came very close in several other categories.

- 2nd place Innovative design (Lucas McCartney, Polina Fativa, Leandra Langlois) for the natural ventilating greenhouse
- 2nd place scientific communication (Quinn Burke-Anderson, Dzuy-Tam Tran) for precision agriculture

- 3rd place consulting engineering (Mehdi Bihya, Julien Bouchard, Cameron Butler, Antony Glover)

Plus 2 special awards:

- Social Issues Awareness (Quinn Burke-Anderson, Dzuy-Tam Tran)
- Energy Efficiency Awareness (Lucas McCartney, Polina Fativa, Leandra Langlois)

Year after year, it is always interesting to hear other students ask us how we can perform so well in this competition when we are only composed of one type of engineering whereas all other teams are made up of a combination of different types of engineering such as civil, chemical, mechanical, electrical etc. Maybe this just goes to show what bioresource



engineering really is; a discipline of the future, combining different types of engineering into a variety of specialties, ranging from agriculture, water, and soil to food, environment and energy all interconnected to each other.

This year's theme for QEC is *The energies of tomorrow* and will be held in Trois-Rivières where the MacDonald team hopes to exceed last year's performance.

Mac Robotics Club:

MacRobotics is dedicated to teaching students in the Agricultural and Environmental Science Faculty the basics of coding and building robots. At weekly hands-on tutorials focused on current tech like Arduino and the RaspberryPi, students are encouraged to get involved and create. Tutorials have shown to be very popular, and MacRobotics has seen a large growth in membership from all ages, undergraduates up to post-doctoral students. MacRobotics also acts as the ASABE Robotics Competition Team for McGill University, where last year at the annual competition in Kansas City we placed 3rd. This year, MacRobotics will act as the host team at the ASABE Robotics Competition, which will be hosted in Montreal at the joint ASABE/CBSE Conference.



Mutrac :

Mutrac is a team of students who design and build a pulling tractor to compete in the ASABE Quarter Scale Tractor Pulling Competition each year in Peoria, Illinois. The team restarted in 2011 after 6 years of dormancy and we are

currently working on our 3rd design since 2011. Each year we travel to Peoria Illinois with our tractor and tools to compete in a 3 day competition that tests our design to the fullest. We are not asked to simply build the tractor that can pull the most weight; we are asked to build a tractor that meets all safety, technical, as well as design specifications and present this design to judges from the agricultural field. Every inch of our tractor is critiqued from its functionality to manufacturability.

Our team works year round to prepare for this single competition and countless hours are invested by our members. As the fall semester of 2013 has come to a close we are finishing all

design modifications and preparing to begin building within the first 2 months of the new year. We plan on having our tractor running before the snow melts so that we can get the most out of the warmer weather to test the tractor and make final modifications. Last year we presented a completely new design and placed 15th out of 30 competing teams. This year, we have improved and perfected a similar design to last year's and are looking forward to a very interesting competition in June.

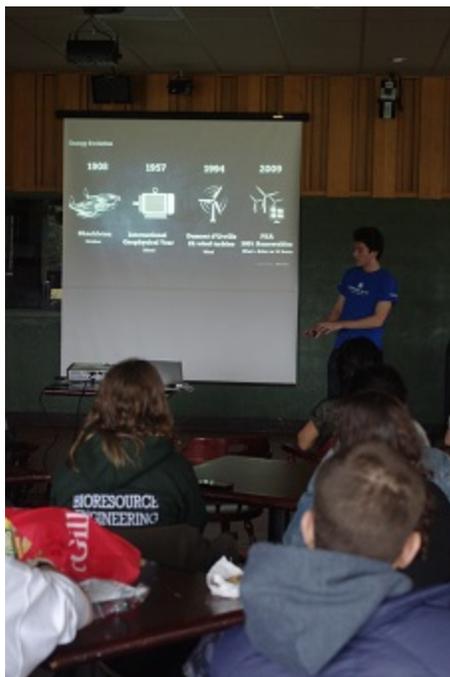
Even though our team is funded partly by McGill we do rely on private and corporate sponsors to fund the vast majority of our project. If you would like to contribute to, or learn more about our work, please contact us at Scalectractor.bree@gmail.com or visit our website at mutrac.com.

Oktoberfest:

Donning their finest lederhosen, members of the Bioresource Engineering Association, along with handfuls of energetic volunteers, hosted the annual Oktoberfest in everyone's favorite Biergarten, the Ceilidh. Highlights include a succulent Bavarian Meal, a menacing Stein-Holding Competition, and a merry Bagpipe/Dance Performance.



The BEA organized two guest lectures for the Bioresource Engineering Community this semester.



On November 11th, Louis-Philippe Dury, a Mechanical Engineering student, gave a talk about his non-profit organization, Carbon Neutral Antarctica. Inspired and passionate about renewable energy, our 21 year old guest lecturer spoke about how we can make Antarctica the world's first carbon neutral continent. Students actively participated in discussions about the feasibility of his

idea in Antarctica and possibilities of spreading it to more populated areas.

Frédéric Wiper came to MacDonald Campus to spread the word about self-sufficient housing that uses primarily recycled materials in its construction. Students learned the stages of design and construction of an “Earthship” and were encouraged to discuss the feasibility of installing more of these sustainable residences.

WW Treatment Plant field trip



An important part of the engineering student’s academic experience is to on field trips, to see how things are working, to go beyond the formulas and the models. In this line of thought, the BEA organized a visit to the Vaudreuil Dorion Waste Water Treatment Plant. Our guide showed us the different steps by which the waste water goes before being released into the Saint Lawrence River. We saw the pumps, the filtering process, the four-stage biotreatment, the densification process of the sludges and attempts made by the facility to limit odor in the surrounding areas. Severely grossed out by the lingering smell of effluent, but enthused about the experience, students left with firsthand knowledge of an application of their studies in fluid mechanics, biological waste treatment, and waste water processing.

Internship Info Session

The BEA organized an internship information session, during which about ten current bioresource students talked about their internship experiences in the fields of agriculture, waste management, water quality, both in academia and industry sectors. The event was attended by more than 50 U1, U2 and U3 students.