Project: McGill University Quarter Scale Tractor Pulling Team

Location: Peoria, Illinois

Coordinator: Connor Miller

The McGill University Quarter Scale Tractor Pulling Team (also known as Mutrac) is a newly developed team on the Macdonald Campus of McGill University that was formed by fourteen Bioresource Engineering Students in 2011. Teams from McGill University had previously participated in the competition from 2000 to 2005. The goal of µtrac is to demonstrate and develop the knowledge obtained in the Bioresource Engineering courses, as well as gain valuable experience in a 'real life' situation by constructing a tractor, analysing costs and promoting the idea to a market.

This year, as in previous years, a team from the Macdonald Campus of McGill University participated in the Quarter-Scale Tractor Competition located in Peoria, Illinois. This year was particularly challenging for the team due to the fact that there were large changes in the rules of the competition. These rules changes outlawed the use of certain tried and true systems that had been used in previous tractors and forced a total re-design of the tractor. Some of the main elements that were re-designed include the implementation of a 4-wheel drive system as well as electronic continuously variable transmission (e-CVT) without a helix.

The weeks leading up to the competition were full of work and sleepless nights but the delegation (Connor Miller, Ann Pille, Shamus McGuire, Marie-Christine Marmette, John Lan and Victoria Tseng-Paepcke) was very excited to be on their way. Once in Peoria, the team participated in both performance events (tractor pull, durability testing, maneuverability) and events aimed at judging the teams familiarity with their tractor (marketing presentation, design presentation). In addition to these events, the team was able to network with professionals from leading agricultural companies as well as other future engineers.

While the team was not able to perform at their best this year due to several issues with both their electronic system and an issue with their drive-train, the competition judges and organisers were impressed by their resilience and unwillingness to give up in the face of adversity.

Thanks to the funding from SEEF the team was able to meet their main goals for the year. Firstly, we were able to make modifications to our transmission design that allowed us to deliver more power to the ground. Secondly, we were able to construct a new 4-wheel drive front end that performed very well during the pulls. Lastly, we were able to send a larger delegation to the competition. This last goal was very important to us. We want to have the ability to send a large delegation so that everyone who is interested in participating in the competition can do so. It also makes the experience more enjoyable if there are a lot of people available to share the workload. An additional advantage to being able to send a large delegation is that a larger proportion of girls tend to go which promotes women in engineering.

In conclusion we are extremely grateful to SEEF for giving us funding and therefore allowing us to reach our goals. Thanks to the developments made and the goals achieved this year we hope to have continued success in the future.