



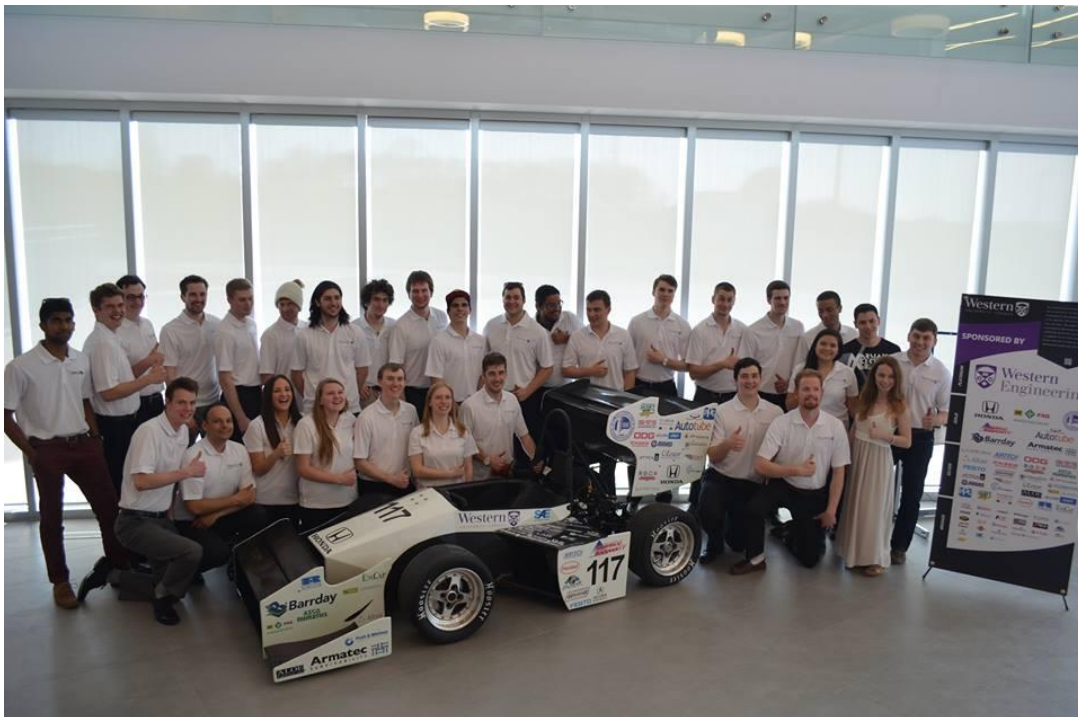
Western Formula Racing

A YEAR IN REVIEW

By Chris Kornas and Sameh Khan
September 20th 2015

The Western Formula Racing Team is thrilled to report that the 2015 competition season was our most successful ever. We are very proud of the results we achieved at each of the highly competitive international events we entered, including Formula Student Germany, leading to the following international rankings in 2015:

- **Top Canadian team**
- **Third place team in North America**
- **World ranking of 13th out of more than 500 teams**



The 2015 Western Formula Racing Team – Car Unveiling 2015



2015 car at Michigan International Speedway

However, these results don't mean the season was without hiccups. We lived by the phrase *"It ain't over till it's over"* and showed tremendous drive and persistence to overcome challenges encountered at each competition. More on challenges later, but suffice it to say we never anticipated we'd be rebuilding a suspension system overnight mid-competition, or rebuilding an engine the night before a grueling endurance event.

FSAE MICHIGAN | USA - 10th place

WFR was very pleased to finish **tenth overall in a field of 118 teams** at Michigan, the largest FSAE competition. It was the first event of the 2015 season, and the fast autocross course layout represented our first chance to test the car at high speeds. It immediately became apparent that the aero balance was causing some high speed instability but our vehicle dynamics team was able to devise an effective solution in short order. The car worked like a charm and managed to finish **8th in endurance**, notwithstanding some significant time penalties which pushed the team out of 4th place. The team was extremely proud of this finish and of the proven reliability of the car. Michigan 2015 was also the first time our team got more than 100 points in design; a clear indicator of things to come in the season!



The team celebrating the Michigan Results

FORMULA NORTH | BARRIE, CANADA - 2nd place



Awards Presentation at North

Formula North is a local competition held in Barrie, Ontario featuring many of the top teams from across Canada and the Northern United States. Our team was excited to finish **second overall in a field of 19 cars!** This competition was also the first time WFR made design finals in the history of the team! However, things took an interesting turn during the autocross event, just before design finals. After putting down the third fastest lap of the day on just our first run, the rear left suspension broke. Ironically, as a result the car had to roll up to design finals with "3 legs". Embarrassing as it was, the team still managed to place second in the design finals. Immediately after, a crew of 12 team members drove back to London and worked through the night to build a completely new suspension system. They returned to Barrie with just enough time to assemble it on the car and get ready for endurance. Remarkably the team managed to **win the endurance event**, cementing our 2nd place finish in the competition!

FORMULA SAE LINCOLN | NEBRASKA, USA - 2nd place

WFR was thrilled to finish **second in a field of 79 teams** in its first appearance at the Formula SAE Lincoln competition. It was also the team's first experience driving on a concrete surface, which we soon learned provided superior grip compared to the typical asphalt. The extra grip helped us pull over 2.5 lateral g's during autocross and put down a skid time of 5.068! However, the most impressive aspect of WFR's performance wasn't the max g's, but



The Lincoln Hardware

rather the consistency of results achieved across the dynamic and static events. **A 3rd place finish in design, a 5th place business presentation**, together with spectacular results in the dynamic events and flawless endurance driving, set the team up to finish second overall! The team was stoked to receive a huge trophy, which will be proudly displayed in the shop for years to come.

FORMULA STUDENT GERMANY (FSG) | HOCKENHEIM - 6th place

WFR finished **sixth in a field of 110 teams** at Formula Student Germany, the most prestigious Formula Student competition in the world. Skidpad was the first dynamic event in Germany, but it was unlike any event the team had seen before. This track was intentionally soaked wet by a sprinkler system to reduce grip and create a greater driving challenge. On the very first lap, with no prior wet driving experience, our driver managed to put down a lap good enough for **6th place in the skidpad event**. Like many of



WFR with our hosts Dynamics e.v.

the competitions this year, FSG came with challenges. This time the car's reliability was an issue with a chain breaking during pre-competition testing, multiple electrical short circuit problems, and a broken gear tooth that resulted in a late night engine rebuild to restore the powertrain system.

However the team managed to stay optimistic and effectively resolved these issues within the serious time and technical constraints of competition, resulting in an **incredible international showing**. Special thanks to *Dynamics e.v.* and *Regenics* at OTH Regensburg for hosting us before and during the competition.



All of the teams at FSG 2015

DESIGN FINALS



Judging at Formula North

Perhaps the accomplishment the team is most proud of is qualifying for design finals at both Formula North and Lincoln. This demonstrated that not only are we fast, but that we understand why we are fast, and what we need to do to get even faster. We were also described by one of the head judges at Formula North as “The 100-80 team”. You have developed **100% of the car 80% of the way to perfection**”. This statement really resonated with us and we are very proud that our team has developed as a whole. We understand that there is lots of room for improvement and that motivates us to work harder.

COMMUNITY OUTREACH

Helping build a positive engineering community and giving back to Western has always been a passion of the team. This year WFR was happy to help Western Engineering **promote science and engineering** to high school and elementary students in and around London. As an example, the team hosted the Thames Valley Physics Teacher Panel, and participated in judging a Discovery Western competition. The team was also actively involved with the University to help increase the **participation of women in engineering** fields. Working with Discovery Western’s Girls Club and Engineering’s Go-Eng girl have been incredible opportunities to further this cause, and the team is looking forward to more events like these in the upcoming season.



WFR at Discovery Western’s Dragon’s Den program

SPECIAL VISITORS

The shop is always a busy place but this year we were especially pleased to welcome a few remarkable people who made special contributions. **The NASCAR VP of Innovation and Racing Development, Gene Stefanyshyn**, came to tour the shop and give advice on team leadership. It was also exciting to have the **Lead Computational Fluid Dynamics (CFD) Engineer at Multimatic, Kattie Smilovsky**, come by to give some guidance to the aerodynamics team on what next steps to take to continue innovative development. Finally, a **vehicle dynamics specialist from Chrysler, Gene Lukianov**, came to give a full day seminar on advanced damper theories and applications in racing. It was a fascinating seminar and we are excited to apply the new knowledge to the 2016 suspension system.



Gene Stefanyshyn with the team seeing the shop

CAR SHOWS

To increase our visibility in the local motorsports community for both the team and our sponsors, Western Formula Racing took part in both the Speed and Custom Car Show and the Plunkett Fleetwood Country Cruize In. It was a great opportunity to meet people from around Ontario with similar interests in the automotive industry and motorsports in particular. We may have lacked some of the heritage of the classic Cadillacs cruising around but we did not lack the passion for our car.



The Speed and Custom Car Show

UNVEILING

This year Western Formula Racing held an unveiling event to showcase the new car and to **officially kick off the 2015 racing season**. The event was held at the Collider Building in the Advanced Manufacturing Park, right here in London Ontario. The event was very well-attended by sponsors, supporters, media, alumni, faculty, friends, and family who were all finally able to see what the team had been so diligently working on for the past year.



The 2015 car about to be unveiled

TEAM KARTING DAY



The karting team

To take a break from all of the design work, and to find out if our best drivers were as good as they say, Western Formula Racing spent a day at the Cameron Motorsports Racetrack for a day of Karting organized by Brendon Bain. Brendon *coincidentally* won all of the events that day cementing his position as one of our go-to drivers!

MONOCOQUE

The 2015 race season marked the team's **foray into structural composites** with our very first carbon fibre monocoque chassis. The team was thrilled with both the fit and finish of the monocoque, which simultaneously reduced mass and increased stiffness relative to the 2014 design. It is also interesting to note that we used the unique fabrication method of infusion which allowed us to do all fabrication work in-house while producing high quality parts.



The monocoque out of the mold!

AERODYNAMICS

An area of innovation on the 2015 car was the aerodynamic package. The team explored the use of upper-decker wing elements, side pod wings, and a drag reduction system that could change the angle of the wings while in motion. In addition, for the first time Western Formula Racing had the opportunity to **use the Boundary Layer Wind Tunnel** on campus to test and validate the aerodynamic design of the vehicle. The testing day was as intense as it was useful and the data gathered helped **validate the simulation** that the aerodynamics team had spent many long hours developing.



The 2015 car in the Boundary Layer Wind Tunnel

CROWDFUNDING

To help fund the team to compete in Germany, WFR worked in conjunction with Western University to create a crowd funding campaign. We were thrilled by the generosity of our sponsors and of the community, as we were able to raise an **additional \$8665 towards our mission** to become a world class racing team. Thank you again to all of our wonderful supporters!

Racing Against the Best:
Send the Formula SAE Car to Germany

How We're Doing
\$8665 raised
This project is 87% funded
Fundraising Goal \$10,000

Time Remaining
0 days left

Get Involved
Donate to this project
Tweet Share

DETAILS UPDATES (4)

About our project
Western Formula Racing (WFR) is a team of students from Western University who design, build and race a new formula-style race car every year. We compete against more than 500 other university teams from around the world as part of the Formula SAE series.

Our crowd funding page

LOOKING FORWARD

The 2016 season is already fast approaching. Design of the 2016 car is now underway and the excitement and anticipation of another racing season is already starting to build around the shop. The 2016 design will focus on improving mass properties, modifying engine internals, and developing and validating simulations. It will be a great year to improve upon a proven car and to develop an even stronger team. Stay tuned to see what Western Formula Racing has in store for the coming year.



The 2015 car looking in to the distance

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