Epic Success at Formula West!

The team is back from the Lincoln Airpark, and we’re excited to be bringing back all of our successful moments with us! Formula West was the most successful competition in our program’s history, resulting in a 12th place finish! We were even the highest ranked team from Michigan! Turn to page 2 to read the story of our incredible and unforgettable journey!

Overall - 587.69 / 12th
Cost - 84.5 / 2nd
Presentation - 51.8 / 37th
Design - 71 / 38th
Acceleration - 51.29 / 4.614s / 27th
Skid Pad - 22.68 / 5.394s / 26th
Autocross - 87.52 / 66.569s / 31st
Endurance - 149.1 / 1665.558s / 15th
Efficiency - 69.8 / 0.998g / 20th

Competition Dynamic Event Videos

Our latest YouTube video is quite the thriller! Buckle your seatbelt and ride in the cockpit of Road Warrior 9 as she races through the dynamic events at Formula Michigan and Formula West! Some of the footage is missing due to the GoPro running out of juice, but the majority of our runs are there! Check out the video by clicking the link below!

https://youtu.be/2dYoQt5J6X4
Our journey to Formula West began the day we got back from the Michigan International Speedway. Technically we were still on the waitlist for the competition, but that didn’t dampen the team’s hopes. Finally we saw our name on the roster, a few weeks before Formula West, and the team exploded with energy and excitement. There’s no doubt that Formula Michigan was a very successful competition for our program, but we knew we could do so much more with Road Warrior 9. Lincoln was that chance to do better than any of our program’s previous teams had done before.

To prepare for Formula West we took RW9, aka Lily, out to the lot to test constantly. She already had plenty of run time logged and the captains had worked out the minor issues to be found in their subsystems. For the first time in the program’s history we were able to set up courses from competitions to do legitimate time trials and practice runs, and our drivers gained invaluable experience. We were less than two weeks from departing to Nebraska when our demons from MIS compromised Road Warrior 9’s engine. At Formula Michigan we were forced to use a makeshift dual muffler design that created unwanted back pressure to pass noise. We witnessed some damage to the subsystems at competition (which we corrected) and after additional hours of running we figured everything had sorted itself out. After additional hours of testing on campus we then discovered a new problem, shrapnel in the oil pan. This was a substantial setback, but thankfully we had an extra engine in our shop in addition to the one we tune on the dyno. Still there was plenty of work to be done to switch the engine, finish the new exhaust, and tune the powertrain for competition.

The day before we planned to leave we took Lily up to our good friends’ (Kettering) chassis dyno. Plenty of tuning was accomplished but in the process we discovered a slight problem. The clutch mechanisms of this engine did not function. Time was not on our side, and due to the twelve hour drive ahead of us we had no choice but to pack up RW9 and head to Lincoln, Nebraska. We made sure to pack our dyno engine, just in case. The team arrived very early Wednesday morning and laid down for a few hours of sleep before getting to the Lincoln Airpark bright and early to face this daunting problem.
We set up our paddock Wednesday morning and secured a spot in line for the pre-tech process. Everyone at the paddock began discussing the plan of action. The clutch could be repaired but we weren’t sure if there was any additional damage to the engine. The team decided to install the dyno engine, which had quite a few miles on it but performed consistently. In record time, roughly less than 2 hours, we swapped the engines. That entails taking apart all of the powertrain subsystems, dropping the engine, removing the oil pan, cleaning the replacement engine, sealing the oil pan, lifting the engine in place, reassembling the powertrain systems, and addressing all of the little issues that pop up in the process. When the team was done everyone took a step back and was impressed at how efficiently and quickly we worked. But that moment didn’t last long as we were soon called to tech inspection once we dropped Lily back on the ground.

Unlike our competition at MIS we weren’t able to get through full tech the first day. We were sent back with some minor fixes but regardless there wasn’t enough time in the day to get back to tech. More importantly we needed to be sure the Powertrain systems were functional with the dyno engine. Teams aren’t allowed to turn on their car until after full tech, fuel, and tilt, so we had no choice but to take the Penske offsite to do some work. Even though everyone was exhausted from the last few days the team pulled together, fixed the issues from tech, fired RW9 up, and did some tuning to the Powertrain systems. The engine swap was a success, and the team got a few hours of sleep in before day two of competition.
Thursday is the hectic day, where teams have to try and get through all of tech and each of the static events. Thankfully we had marketing in the morning, followed directly by cost, and then design at the end of the day. This was a very nice schedule that allowed us to get the most out of our time. As the team headed to the paddock to prep Lily for tech, Niner, Krissy, and Filippo traveled to the site of the presentation event. Niner and Krissy presented a well rehearsed investment pitch, going above and beyond previous presentations. The three left the site confident about their performance and pulled into the Lincoln Airpark.

Driving through the parking lot painted an eerie picture, as there was not a soul present on the grounds. But that was because everyone was taking shelter from the impending hailstorm, which soon pelted the grounds for the next hour and a half. Finally the skies cleared and the team set up the paddock and once again prepared Lily for tech. Due to the storm the events were delayed by an hour and with our schedule we were not able to get all of our drivers through the egress check. Cost was the next event, but by that time Lily rolled into the main tent with her first tech sticker and her data from scales. Krissy handled cost like someone whose been doing it for six years. So needless to say the event went very well.

Immediately after we headed to fuel with our only egress certified driver, Mike. He took us through fueling and tilt without any issues, and we then faced our nemesis from MIS: the noise test. Despite the changes we had made to Road Warrior 9, we failed noise. Thankfully our team brought everything and more in case noise stopped us again, so we quickly designed an extension to absorb some of the noise from the exhaust. Even with the sound logic and quick engineering, this actually made our results worse when we went back to the inspection. Baffled, we brought Lily back to the paddock and prepared to install an additional muffler. Due to our experience from MIS, there was some hesitation to do so but thankfully the two stock mufflers did not create the same kind of back pressure we dealt with before. Once we secured the assembly we took Lily back to noise and passed it just under the mark. Needless to say the team was ecstatic.
When we set up our paddock and prepared Lily for the day we would have never guessed what Friday would have in store for our program. To optimize our time we prepped Lily for egress testing while the drivers were at their morning meeting. After a few quick tests all of our drivers were cleared to hit the pavement, but before we could do that we would need to pass brakes. On the first run of the day the brakes locked up and the engine kept running. Just to be sure they made us do one more run, which confirmed the results. All that work from the night before paid off. Now, Warrior Racing headed to the dynamic events. Something the program had not done for several years.

There was less than an hour left in the day so we hustled over to the brakes test to get that last sticker. Many of our veteran members’ hearts stopped for a second when Lily failed the test due to the front left not locking up. That, along with several other issues, ended our time at Formula West in 2014 so it was terrifying to hear those same results again. But Lily was also having problems running, and would stall after each hard stop. Some quick adjustments were made but there wasn’t enough time left to see if they would impact the test. The team had to get to design, which had been pushed back an hour due to the hail storm.

Our engineers took the floor and presented their designs to the judges. It had been a long day, and definitely a few long weeks before this competition, so our members did not have a chance to fully refine their presentations as much as they would have liked. Either way the overall feedback our members received was positive, so we looked forward to the results and the design review. That ended day two at Formula West, and after a few quick tweaks on RW9 we departed from the airpark.

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We started the fun with the acceleration event, and we were the first team present for any dynamic event! That was definitely a first for our program. Ty took the wheel and raced Lily down the track. Between his two runs he broke the school record and held the top rank for most of the morning. To make sure we got points in both events we headed over to skidpad. Richard took the wheel first, navigating the figure eight at a pace that would tie our team’s record. Brandon was up next, and thanks to his constant practice back on campus he made the record his own. Finally we headed back to acceleration to make the final run of the morning. Justin had a great start off the line and on his first run took down the record that was just broken from Ty’s run before.

Before the afternoon autocross event the team wanted to tune Lily a little bit more, so we headed over to the practice track. Around that time we also found out the results of two static events. Marketing was quite a shocker, as we ended up in 37th place despite building upon our very successful top 20 presentation at MIS. Cost lifted the spirits with another 2nd place finish, meaning Warrior Racing would be taking another trophy home! We finished testing and fueled up, eager to get back to racing.

Unlike the Michigan International Speedway, which has narrow straightaways, Lincoln is a wide open area. The courses are a little bit longer and feature many more elements. This makes it more fun for the driver but definitely more challenging. Mike started off our autocross runs with a solid performance. His second lap bested his first, but he couldn’t resist hitting a cone on his final approach. Mo raced next and decided to shave a few seconds off Mike’s time. Unfortunately he faced several delays, as other cars on the course were breaking down and stalling. But despite having to wait and roast in the car, Mo finished the autocross runs with record setting performances. The team then took a second to think about what they had just done today. Warrior Racing had completed every run of each dynamic event, and Lily was performing better than ever! All that was left was the endurance race on Saturday, and there wasn’t a doubt in our minds that Road Warrior 9 wouldn’t finish.
After getting some much needed sleep, for the first time all week, our team drove out to the Lincoln Airpark one last time. We were 24th in the endurance line up of the 45 teams that made it through the events yesterday. Some final adjustments and checks were made and then we rolled Lily over to her last race. Mike took the first seven laps of the event, and achieved a mini-goal for the team by being the first driver to pass a competitor in the race. RW9 was performing exceptionally well and Mike was keeping up a good pace. It then was time for Mo to switch in, and he raced out of the pits to complete endurance. Sadly he faced a lot of yellow flags, as other teams were breaking down on the course. At one point our car was the only running vehicle on the track. Time raced by and before we knew it Mo crossed the finish line. Our team finished endurance!

There was nothing but celebration from that point on. Our team did not even know the results but we were beyond excited for what we had accomplished. After the awards ceremony we were making our way to dinner when the results were sent out to our team. Everyone asked the people they were with “did we really just get 12th place?”. The numbers on the page never changed but our excitement only grew. Words truly cannot describe the happiness and satisfaction felt by our team members, especially our veteran leaders. And finding out that we were the highest ranked team from Michigan was only icing on the cake.

So what’s next for our program? Since Road Warrior 9 attended both Formula Michigan and Formula West she can no longer compete at an SAE event (due to the one year rule). That being said you can expect to see an even better car roll out of the Warrior Racing shop next year. And the team that will be behind it will be breaking these records all over again! A huge thanks to all of our sponsors that made our success possible, and all of our supporters that cheered us on during our final competition of the 2015 season!
Warrior Racing’s New Record Board

We’ve taken down so many records this season and were so close to wiping the record board clean with our performance at Formula West. To better represent these accomplishments we’ve updated our record board to display both competitions. But even these don’t include our other 2015 program achievements such as earliest design freeze in history, quickest frame assembly, largest number of active team members, most logged hours of testing before competition, largest number of sponsors, and many more. Twelve years of hard work have lead to this success and it is only going to grow from here. Seventeen members are returning to design the next Road Warrior, and that will be the first record broken on the new season. This crew has plenty of ingenuity and experience to make history, and they’ll have the support of a growing base of Warrior Racing alumni. Here’s to the 2015 - 2016 season!!!

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<tr>
<th></th>
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<th><strong>Formula West</strong></th>
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<td>1.425 gallons / 5.39 L</td>
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<td>0.998 gallons / 3.777 L</td>
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**Race Day in the Motor City!**

Our team just wants to do nothing but race! So we’re going to host a public race day on our own campus to showcase our Road Warriors. Even better is we’ll be going up against local SAE teams! We’ll also be saying farewell to our four veteran members; Krissy, Mo, Richard, & Niner. Join us on Saturday, July 25th, from 11:00 to 7:00 at Lot 50 on WSU’s campus. If you have any questions, please email adam.niner@wayne.edu

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**Becoming Part of Warrior Racing**

Interested in joining Warrior Racing? Soon the team will be opening its doors to all new recruits, giving students a chance to earn their spot in our successful program! If you’re interested in joining please email the team leaders below. But please keep in mind the team is in the process of transitioning between seasons, so it may take a little time before you get fully acclimated and involved with Warrior Racing.

**Tirath Matharu** - tirathamatharu@wayne.edu

**Filippo Caro** - filippo.caro@wayne.edu

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**WR Midtown Race Day**

Date - July 25th
Location - WSU Lot 50
Time - 11:00 am to 7:00 pm
Join our team as we race against other local SAE programs and say farewell to our veteran members!
Huge thanks to new sponsor Traffic Safety store for providing our team with a fresh supply of cones! We've been in need of these cones to help us safely mark off our practice courses for not only our drivers but our spectators as well. Be sure to check them out at trafficsafetystore.com!

Thanks to our sponsor Clinton Aluminum for providing us with additional stock material. It came in handy when we had to make some quick replacement parts before heading out to Formula West!
Our team’s success is made possible through the generous donations and support from the following companies. Without them our team would not have the resources needed to provide invaluable hands on experience and to manufacture our formula cars. From all members of our team, thank you Warrior Racing sponsors!

Detroit Legacy

Engine Lab

Command Machining LLC

Monster Tool Company

Huntsman

Liberty’s Gears

Motor City

Michigan Fiber Glass Sales

Synergeering Group

Bolton Works

FCA

North American International Auto Show

Opus Mach

Ford
Special Thanks

Brian Geraghty
Dr. Michele Grimm
Dr. Marcis Jansons
Dave Preston
Phil Hughes
Carl Occhialini
MOOG

The Royce Family
Andrew Murrell
Sanket Sripotdar
Jim Vito
Angela Childrey
The Niner Family
Dave Chegash

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