

OREGON TECH RACING



Volume 2
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*"To achieve anything in this game you must be prepared to dabble in the boundary of disaster."
-Sterling Moss*

Dates to Remember:

- April 15th last day for leadership submissions for the 2016 team
- More OTR4 testing. Keep up to date on the website or Facebook
- June 17-20th FSAE West, Lincoln, Nebraska

Next Month:

Build, Break, Revise, Repeat

Business of Car Building

Senior Project "In Progress" Cooling System

OTR4 Testing!

Ask a college student how they define spring break and likely there will be as wide a variety of answers as people asked. Pose this same question to a Formula SAE student and the response will be, working on some aspect of the car or team.

This spring break Oregon Tech Racing was fortunate enough to be granted access to the Deschutes County Fair and Expo Center parking lot for two days of testing and driver training as well as the Sisters Eagle Air Airport for a day of turbo testing. These days were well spent as the cars were pushed to their limits by all the drivers.



Testing in Redmond, Oregon

These days did unfortunately result in some breakages, however this is an opportunity for us as engineers to learn from what went wrong and refine our design and construction techniques accordingly.

To make light of the down time the team was still able to continue refining the laser timing system featured in last month's newsletter. Most important of all though, OTR4 started and ran on the new turbo system, and the decision has been made to continue with the turbo system. Stay tuned for more OTR4 updates!



Undertray debulking in progress!

Carbon Fiber Layups

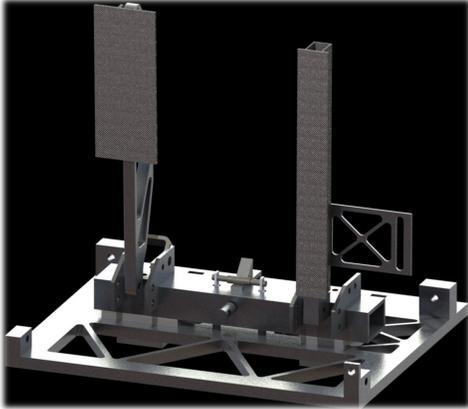
Spring term is finally here and with it comes yet another stage of manufacture on the car. So far OTR4 drives under its own power, now it is time to enhance the motion with aerodynamics. The 2015 car will employ a carbon fiber underbody allowing the car to work with the air to produce more grip at the wheels. Using these systems requires careful analysis of each panel used to cover the car along with any aerodynamic additions (e.g. underbody) made through the use of CFD computer simulations.

One of the biggest parts on this years car will be the undertray package. We hope to have sufficiently reduced the force needed to move the car through air while still maintaining the amount of aerodynamic induced grip requested by the drivers. As of now the undertray main structure is "hot off the molds" and awaits companion body panels and a nose cone to complete the new look of OTR4. Watch our Facebook for the latest developments!

TECHNICAL SECTION

Senior Projects “In Progress”: Pedal Box

When most of us think about racecar engineering our minds fill with thoughts of motor performance, suspension geometry, and tire wear, things which make the car physically faster. We seldom take the time to think about the interfaces which allow the drivers to get the most from the car. However this is a very important topic because any driver who does not work well with the controls will never consistently achieve his or her best in any car.



Solidworks Render of New Pedal Box

One of these critical driver interfaces is the pedal box. This is the source of driver “brake feel” and the point of power application. Without a good pedal box the driver will struggle to hit brake points with confidence and put the power down in a controlled and timely fashion.

This was the year for a redesign of the pedal box system. The 2015 team is the most diverse in overall stature, and design changes were requisite to accommodate all drivers. One of our seniors on the design team, Sterling Moore, tasked himself with the project of improving on the old design and incorporating adjustment into the pedal box. This became a very worthwhile project as the final product boasts not only 3.5 inches of adjustability but also increased manufacturability, improved rigidity, and a reorganized layout making it easier to maintain.

The new pedal box has been designed to move at the pull of a cord, allowing for smooth driver changes during events such as endurance. This new design also has a totally revamped brake pedal which is not only lighter but also deflects only a fraction of what the old model did at the required 2000 Newton's of loading while still achieving an overall factor of safety around 3. This will allow for better driver feel of the brake system and a higher braking threshold. The use of machined aluminum parts in place of some carbon fiber structures simplified the overall design, making it a more reliable and maintainable component.

All of these changes were made in a design that will fit the current OTR4 frame and the OTR5 frame. This leaves more time to engineer new technologies for the car and promotes happier drivers in the mean time!

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One of the many obstacles that every formula team faces is finances.

These cars cost a lot of money to produce. All of the raw materials such as steel, aluminum and composites used to craft our car are expensive and difficult to acquire without support.

Testing the car requires the use of tires which are consumed at a rapid rate and are also extremely expensive.

We are always looking for new sponsors in any form, such as machining time, purchased parts, materials, apparel etc.

If you would like information about our sponsorship program please contact us.

We would not be anywhere without sponsors and donations!

To our existing and future sponsors:

Thank You!

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