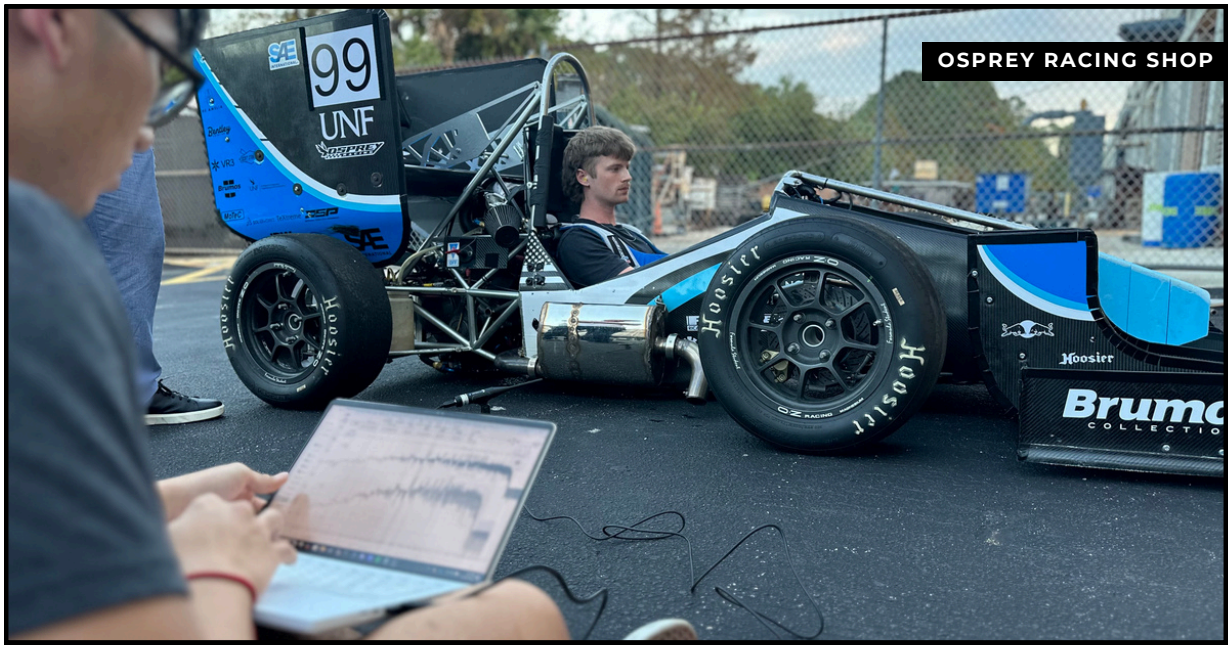
ISSUE #3

TEAM NEWSLETTER

OCTOBER-NOVEMBER 2024



SOUND TESTING

One of our major focuses this month has been sound testing for our new muffler design. We took the car outside the shop to measure its current decibel output using a microphone connected to a computer. This setup allowed us to evaluate sound levels both with and without the muffler, at idle and at 11,000 rpm. These tests gave us a clear baseline of the car's sound profile, crucial for designing a new muffler.

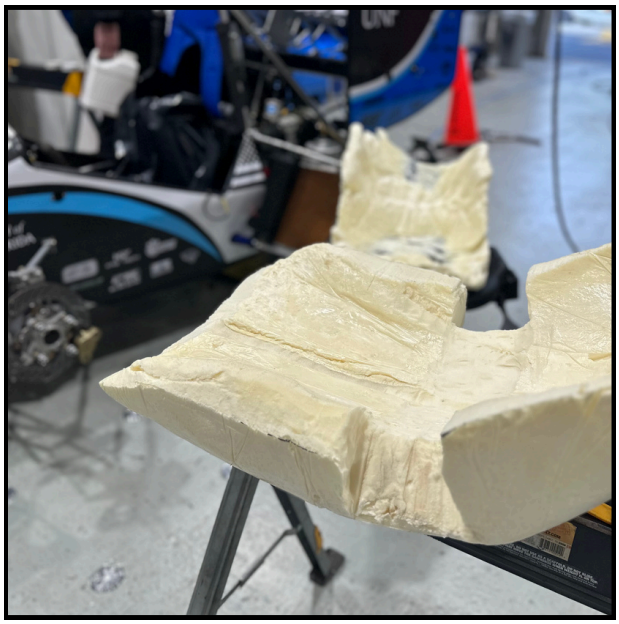
Our goal is to develop a muffler that's not only more efficient and easier to manufacture, but also capable of keeping our car quiet enough to meet competition sound regulations. This step is essential as we aim to balance performance with regulatory compliance.

IN THIS NEWSLETTER YOU CAN EXPECT:

CUSTOM SEAT INSERTS

Our ergonomics lead, Alex Skigen, has been working on creating custom foam seat inserts for our drivers. This process involves the driver sitting in the car with a bag positioned behind them, into which polyurethane foam solution is poured. As this foam solution expands and solidifies, it molds perfectly to the driver's body, resulting in a tailored insert that provides both comfort and security during hard cornering.

This was not without its challenges—multiple iterations and some initial failed attempts taught us valuable lessons. Through careful refinement, we developed a method to consistently produce inserts with just the right amount of foam. This marks a significant step in ensuring our drivers are as comfortable and secure as possible in the cockpit.



SUSPENSION UPDATES

Our suspension team has been hard at work not only recharging our Öhlins dampers but also developing specific setups tailored to different events. Now, with a better understanding of our suspension, we can fine-tune our dampers and swap out springs to optimize for better acceleration. Afterward, the setup can be readjusted to suit the demands of endurance and autocross events.

BRUMOS SATURDAY SOCIAL

This month, we had the privilege of attending the Brumos Saturday Social, a car show hosted at the Brumos Collection. Surrounded by a stunning array of historic and iconic cars, we set up a booth to showcase our race car and share insights about our team and what we do with the enthusiastic crowd.

As the event began to wind down, we were honored to have two motorsports legends, Pikes Peak Hill Climb and 24 hours of Daytona winning driver David Donohue, and renowned car and motorsports journalist Randy Pobst, take our car for a drive. It was an incredible opportunity to gain their insights and showcase the capabilities of our vehicle to such esteemed figures in the automotive world.

MAXIMIZING GRIP, FINDING THE LIMIT: A SUSPENSION ANALYSIS

After the excitement of the Brumos Saturday Social, the team stayed on Sunday for additional testing of the car's launch control system. During these tests, we encountered a critical failure that provided valuable insights into the limits of our car's design. Below, our suspension system lead, Von Wilhite, provides a detailed analysis of the incident and how we're using it to improve the car moving forward:

"During testing of our vehicle's launch control system, we experienced the first critical failure with the D12 when a rear suspension tab broke during a launch. The launch control system and suspension setup were tuned to maximize mechanical grip, generating an impressive amount of traction. However, the force was so significant that it yielded the suspension tab, causing it to fail. This incident highlighted the limits of our suspension tabs under peak loading conditions.

After the failure, we conducted a thorough FMEA [Failure Mode and Effects Analysis] to determine the root cause. First, we performed stress calculations to evaluate if the failure was due to fatigue, a manufacturing defect, or another issue. Next, we examined the broken tab under a microscope, which revealed a clean break without signs of fatigue. This confirmed that the failure was due to a single, high-magnitude force rather than wear and tear over time.

We've taken this experience as an opportunity to improve our tab design, both with tear out distance and strength. By understanding the failure mechanism, we can reinforce critical components to withstand higher loads while maintaining the performance we expect out of the car."

Thank you for reading!

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