In this Issue:
Over the past couple months, UBMS has been focused on increasing knowledge within the team and finalizing the completion of our vehicle. Since October, we have invited industry professionals to our University, visited machine shops to get a closer look at industry, received a grant from UB for engine research, confirmed participation in the Buffalo Auto Show this February, and completed several senior design projects relating to the optimization of our vehicle. With the semester winding down and winter break just around the corner, there is a lot more that is going to happen over the next month or two. Here is a look at some of the most recent news with UB Formula SAE.

SAE Industrial Lecture Series
During the past two months, our team has had the pleasure of hosting two speakers from industry as part of the SAE Industrial Lecture program. SAE helps teams find and arrange for industry professionals from around the country to visit their university to speak to students about their specific field of work. Dr. Sankar Mohan from Magna Powertrain in Syracuse, NY joined us in October to present his lecture on 4WD and AWD systems. Dr. Mohan gave us a great overview on powertrain technology.

We also received a presentation in November from Dr. Edward Kasprzak. Dr. Kasprzak is the instructor of the Road Vehicle Dynamics courses here at UB, and an employee of Milliken Research Associates. He shared his presentation with us on Tire Testing and Modeling for Vehicle Dynamics. Dr. Kasprzak was also recently appointed the new official faculty advisor for UBSAE.

We would like to thank both Dr. Mohan and Dr. Kasprzak for sharing their time and knowledge with us. We would also like to congratulate Dr. Kasprzak for his new role as UBSAE faculty advisor. We’re looking forward to working with him!

Local Machine Shop Tour
In November, after our Thanksgiving break, several of our team members took a tour at one of our local sponsor’s machine shops, Liston Mfg. Here Joe LaDuca, the plant manager, spoke to our members about manufacturing processes and design, as well as showing us the plant floor where chips were actually cut. Joe had some great input and advice with respect to designing parts for manufacturability.

It was a great experience for our team to actually see the manufacturing processes in full run. We also got the chance to speak with a few shop employees and see some of the work they actually do. Next semester we plan on doing a tour with another one of our local sponsors, AMC Precision.
This Month’s featured sponsor is Mike McGinnis from Innovative Tuning. Innovative tuning is a performance part shops that also does fabrication, and installs and work on your high performance vehicle. Whether your car is turbocharged, supercharged, or naturally aspirated Mike McGinnis can tune it for you, he is a factory certified tuner who is proficient with many engine management software programs. Mike has lent his valuable expertise to our team on several occasions in helping us tune our engine.

A recent highlight of Innovative’s work includes their own shop car “Project Voltron”, which started life as a 1996 Subaru Impreza. After pulling out the old drivetrain it received a whole Subaru WRX STI drivetrain along with a GT35R turbo kit, Autronic SM4 standalone ECU, and a prototype driver controlled center differential which the Autronic controls. They also run the car on E85 for fuel. This car was recently at the Toronto Motorsports Park drag strip and ran a 10.4 sec at 130mph in the ¼ mile. So if you are looking for more performance, quality parts, and top notch fabrication, Innovative Tuning is the place to go.

http://www.innovativetuning.com

A LOOK AHEAD

The next few months look to be exciting for UB Motorsports Formula. Here are some of our upcoming events:

December 13th: Many members of our team will be attending a dinner and presentation put on by David McLellan, the former chief engineer of the Chevrolet Corvette for 17 years. He will be presenting on his recent trip to Ferrari’s F1 division in Maranello, Italy.

Over winter break, December 18th- January 14th, while classes are out of session, our team plans to finalize many design decisions and make several more steps towards completing the vehicle. This includes physical parts of the car such as our intake and exhaust, new body panels, torsion tube and rear axle, as well as our cost report and design report, which will be submitted to SAE in the upcoming months.
February 6th – 10th, our car is going to be displayed at the Buffalo Auto Show in downtown Buffalo at the Buffalo Convention Center. Here will we have a space set up with our car and presentation material to gain public awareness of our program, as well as provide great recognition to all of our sponsors that have helped us accomplish what we have with our vehicle.

**CURRENT ENGINEERING PROJECTS**

**ENGINE TEAM:**

UB-FSAE has recently taken a large step forward in its engine analysis capabilities. Using funds from Ian May’s recently approved engine research proposal, the team was able to acquire a new Superflow SF-60 flowbench. The flowbench will allow the engine team to accurately measure the cylinder head flow losses and obtain data that can be fed into GT-Power, the team’s 1-D engine simulation software. This engine model can then be used to aid the design of an intake and exhaust as well as accurately predict the horsepower of the engine.

The engine team also plans to utilize the dynamometer to perform physical testing to verify the results predicted by the engine model.

**DRIVETRAIN TEAM:**

The drivetrain team is currently finishing up the manufacturing of the new jackshaft assembly which will allow us to data log information relating to CVT performance. This will allow us to accurately tune the CVT. We would like to thank Gaged Engineering for their donation of springs and weights to help us throughout this process.

The team has also finished the design of our chain/belt guards and chain-tensioner. The parts for the guards were recently cut and received from Custom Laser Inc. Thank you Custom Laser for your help!

**SUSPENSION TEAM:**

The suspension team has just finished their re-design of the Axle and Torsion tube. This new design will solve a current clearance issue with the engine oil filter while reducing the rear un-sprung weight of the vehicle by 5 lbs.

The design features a tapered carbon fiber torsion tube and a three piece axle. Manufacture will begin over the winter break.

**CHASSIS TEAM:**

The chassis team has recently completed their first stage of analysis and testing of the frame. We accurately modeled the chassis using Ansys Finite Element Analysis software and verified our results through physical testing. Our results showed that our chassis has a torsional stiffness of 1040 ft-lbs per degree. The results between our computer model and physical testing were within 5%.
The next step is to test the torsional stiffness though the suspension. The design of the testing rig is complete and the team just started the manufacturing process in our student machine shop.

This information will give us a basis to allow our team to optimize the chassis design for torsional rigidity while minimizing the weight for the next design cycle.

The University at Buffalo Society of Automotive Engineers Formula Team would like to thank and congratulate its members graduating this semester including Sponsorship and Marketing Coordinator, Ben Leitsch and Team Captain and Lead Engineer, Mike Maciejewski.

Gregory Robbins, the current Vice President of UBSAE, will be taking over Ben’s responsibilities. Please feel free to contact us with any comments or feedback that you may have. Thank you all once again, and have a great holiday season!

Thanks again!

Gregory T Robbins
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