



Cornell *Racing* WINTER 2014 NEWSLETTER

ARG14 UPDATE

Following a busy JanMan period, the first month of the spring semester is already over. The team set out to complete ARG14 by February 1st to give us maximum testing time with our new aero package. However, we have since pushed this deadline back by several weeks due to monocoque complications. During the first cure cycle of the carbon fiber monocoque, we lost vacuum pressure which caused serious delamination and made this monocoque unusable. Currently, we are in the process of laying up a new monocoque and have a target completion date of April 1st.

Compensating for monocoque delays, we have shifted our focus to our engine dyno (see section below), verifying ARG14's engine package and wiring harness on our engine stand, installing our aero package on the stock car (ARG12), and completing other projects such as composite wheels and tire temperature sensors. With this additional time, we will also be able to concentrate more on aesthetics. Anodizing many parts such as the uprights and wheel centers not only improves the appearance of the car for competition, but will also increase overall durability.

As the 2014 MIS competition approaches, we are in the process of preparing our design brief, cost report, and marketing presentation for competition. (Please see the column on the following page for more information about how you can be a part of our marketing presentation!) Despite a few early setbacks, the team has learned a lot and is excited and determined to debut a very competitive racecar at competition.

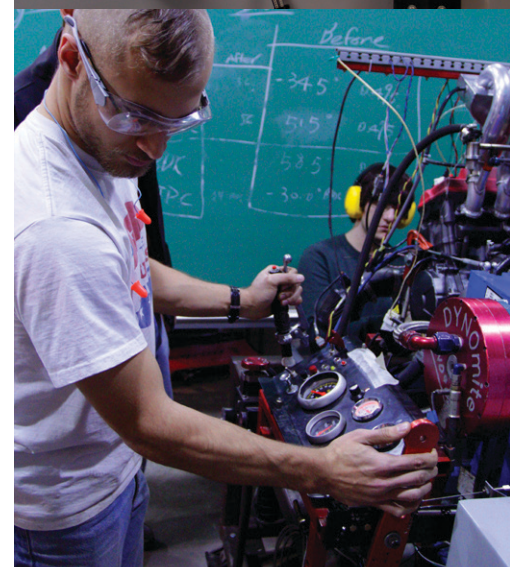
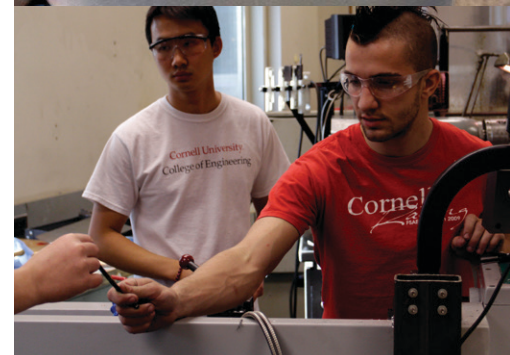
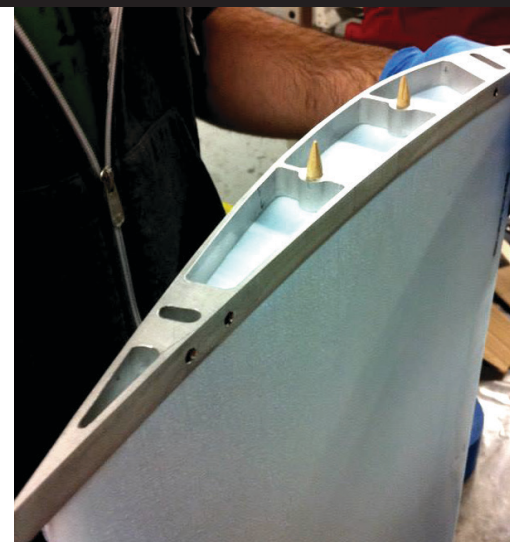
ENGINE DYNO REPORT

This past fall, we re-wired the engine dyno to be compatible with our ADL3 (the DAQ made by MoTeC). As a result, the reliability of the dyno and our data collection abilities have both increased. We have been running the engine dyno at least every other day since January 2nd, which has provided a substantial amount of data. Based on this information, we tuned the engine to increase power by 5% and decrease fuel consumption by 10%. We added a wastegate position sensor and a turbo speed sensor to aid with our boost control tuning, and a cylinder pressure sensor to help detect knock.

After iterating through different intake and exhaust cam phasings, we have determined that retarding the intake cam by 7 degrees provides a 5% increase in fuel efficiency without compromising torque. We are excited to present this at the Design Event, and hopefully improve our Fuel Efficiency point score at competition.

We are also in the process of testing three different custom turbine housings with various A/R ratios to find the most fuel efficient option that does not sacrifice response time.

These efforts are coupled with developing and verifying our Ricardo WAVE model, which we have correlated to within 5% of our dyno results. This accuracy has allowed us to guide our dyno tuning to see more advances in fuel economy and power delivery.





SPONSORSHIP SHOUT-OUT: KAMAN COMPOSITES

Kaman Composites, in Bennington, Vermont, is an invaluable sponsor who donated autoclave time necessary to cure this year's *and* last year's monocoque. Kaman Composites specializes in the design and manufacture of structural composite assemblies for flight critical applications. They have been more than willing to share their experience and expertise, which has advanced our composites knowledge. In addition to autoclave time, Kaman Composites also donated materials needed to build our monocoque this year. We appreciate the support Kaman Composites has provided and look forward to working with them in the future. Visit their website: www.kaman.com.

INTERESTED IN APPAREL?

If you are interested in our latest swag, look no further. We have the team's competition polo available for \$35, which has our current sponsors printed on the back. The soft shell jacket with the Cornell Racing logo embroidered on the front costs \$55. And our Cornell Big Red Racing Bear T-shirt can be yours for \$15. To purchase apparel please contact Nina Buchakjian (nb375@cornell.edu).



Team Polo \$35



Soft Shell \$55



Racing Bear Shirt \$15

THANK YOU TO ALL OUR SPONSORS!



...and more!

HELP US WITH MARKETING RESEARCH!

We are in the process of collecting market research for the marketing presentation at our competition. Please help us by completing our survey before March 3rd:

bit.do/CUMarketResearch

Thank you for your responses!

GET IN TOUCH

Contact Cornell Racing and update us with your current contact info.

We want to hear from you!

cufsae@cornell.edu

COMPETITION HIGHLIGHTS @CORNELLFSAE

Follow us on Twitter @CornellFSAE for live updates during our competition: May 14th to 17th at FSAE Michigan

DONATE TODAY!

To donate to the Cornell Racing FSAE team, please follow this link

bit.do/CUIDonation

or make checks payable to "Cornell Formula SAE" and mail to the address below:

Cornell Formula SAE
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100 Rhodes Hall
Ithaca, NY 14853