

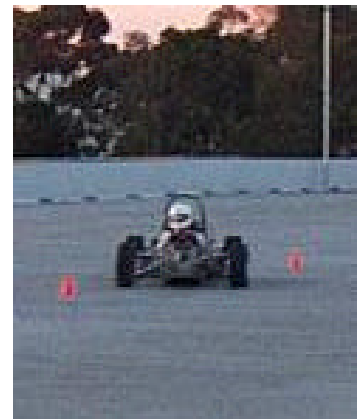
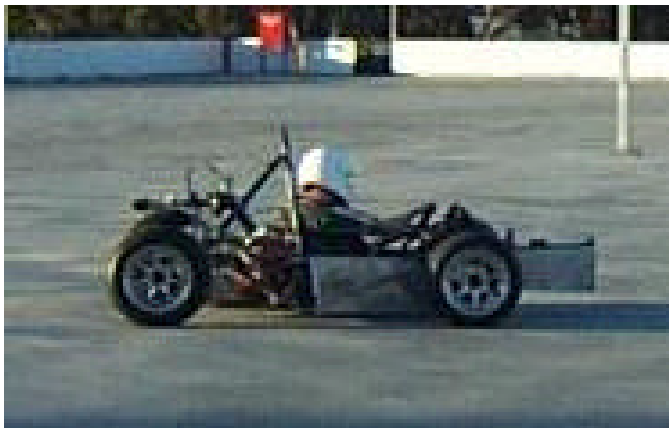
Monash Formula SAE Newsletter October Edition Progress Report

Yes it has finally happened! The Monash Formula SAE team has hit the track and begun the all important task of testing and tuning the car prior to the event, being run in just under a month. In this edition we highlight the first tentative runs along with some intriguing wind tunnel test results gathered from our time in the Monash University wind tunnel.

Not only have the team been busy testing, we have also been showcasing our car at events around town. Appearances at the PLM Expo at Melbourne Park, and the YATE conference at the Carlton Crest Hotel generated significant interest from those who attended. More on these events later.

Testing Report

In an exciting development the new car has been fired up and run for the first time. After proceeding cautiously, to ensure all systems ran as planned, speed has been gradually increased and the car is now functioning at close to full capability. Early reports suggest the car is well balanced with consistent handling features. Unfortunately, the electronic gear shifting experienced problems that while probably curable, have led to the idea being abandoned in favour of a more traditional/reliable manual method. Other than this area however, the car has been reliable and shows significant promise.



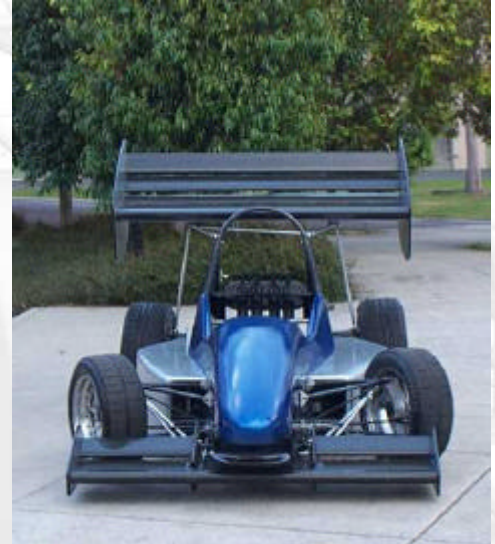
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Monash Motorsport Around Town

PLM Expo

Major sponsor Product Life Cycle Management Australasia (PLM) invited the team to attend their annual users conference at Melbourne Park in mid-October. With the car reaching 'lock-up stage' late the night before, the team were ecstatic at the response generated by the patrons (~ 120) of the event. The presentation delivered by Alistair McVean (on the importance of product life cycle management tools to the team) was well received by those who attended.

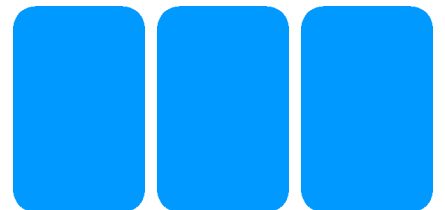


YATE Conference

The Young Automotive and Transport Engineer's conference at the Carlton Crest Hotel showcased research projects from students across Australia. Our entrant, Scott Wordley (assisted by Roan Lyddy-Meaney and Shaun Johnson), discussed the development of the Aerodynamic package of this years racecar. Through a combination of an excellent presentation and the skillful rebuttal of others conclusions, Scott managed to take the first prize (undergraduate section) of a study travel grant. After initially indicating he would use it to study female physiology on the beaches of Brazil, Scott has decided to use the prize on a trip to the 2003 US Formula SAE event. We hope to have the car competing there as well.



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**Feature Sponsors:
Honda**



Honda MPE are a critical contributor to the success of the Monash Motorsport team. The powerplant of the car is a Honda CBR fireblade engine. As part of their support Honda provide rebuilds of the engines at periodic intervals. The importance of this help was demonstrated recently. After several days of dyno testing the number one engine suffered a piston failure (a consequence of the ever increasing quest for more power). Fortunately Honda MPE rebuilt the engine in an extremely short period of time and as a result we are testing the car earlier. The support of Honda MPE goes further than just engine rebuilds. The car also features a Honda ATV differential and CV joints. These combine into one of the tightest and lightest drive-line packages at the competition and feature an exceptional torque bias ratio of 5.5:1. Honda MPE are an important contributor to the success of the team and we are in debt for their support.



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Capral



Capral Aluminium supply the team with an extensive range of Aluminium alloy. As an any racer knows Aluminium is one of the lifebloods of existence. The high strength to weight makes Aluminium ideal for a substantial number of structural applications. Capral stock a huge range of billet, channel, angle, bar and tube, and should be your first port of call when you require Aluminium products. The Capral product can be seen in the front and rear uprights, wheel centres, throttle body, pedal box and engine plates to name but a few. The team are grateful for Capral's contribution, without them the car would be heavy and uncompetitive.

Sponsorship Info?

If your company is interested in supporting Monash Formula SAE you can get our Sponsorship Brochure by contacting Scott, Alistair or Tim

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Alistair McVean - 0404 294 210
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Tim Roney - 0409 181 122





Technical Feature: Wind Tunnel Testing



Thanks to the superb facilities of Monash University, the team have been able to extensively test the aerodynamic package developed for the car. With access to the largest wind tunnel in the southern hemisphere, the team have been able to utilise the full scale car in testing, virtually eliminating any scaling problems. Using wool tufts for flow visualisation, and the in situ force measuring systems the team have been able to gather physical downforce numbers, while also gaining extremely valuable insight into the flow around critical components. Critical components in this instance include the roll hoop and nose cone interactions with the flow over the wings. By doing this we have been able to dispose of some concerns while highlighting others. One such area are the wing end-plates. These components play a critical role in controlling the flow over the wing. Due to the pressure differential generated by the wing surface, the flow attempts to spill over the wing edges, reducing efficiency. Wing end plates prevent this, and according to our tests we require even bigger ones both front and rear!

The next phase of testing involved running the rear wing through each of its settings with and without Gurney Flaps (the vertical strips on the final wing element). This provided the team with a comprehensive aero-map which will be used to select the appropriate wing setting for each event at the competition.

Front wing development is complicated by the phenomenon of ground effect. When a wing is placed in close proximity to the ground the downforce produced is magnified over what would be produced by a wing in free air. Without a moving ground plane tunnel (very rare) the real life flow characteristics cannot be accurately replicated and hence further front wing flow visualisation will be performed on track with video cameras.

What about numbers I hear you say, well our data suggests 70 kg of downforce at 70 km/h without diffusers. This adds up to an expected 40% increase in wheel loads implying massively increased cornering power. We are confident this will prove a competition killer come the event.



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