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Monash University wins Formula SAE-A engineering education competition

The 2009 international Formula SAE-A competition – the automotive engineering education program in a race car – was won by the winged machine from Monash University.

Hosted annually in Australia by the Society of Automotive Engineers – Australasia (SAE-A) since 2000, Formula SAE-A is an international event offering university engineering students the opportunity to work on a meaningful, complex engineering project, in a dedicated team environment, in real time. In one academic year, the students form multi-skilled teams to design, build and test small race cars – all while completing normal studies.

Second place was taken by University of Western Australia, a previous winner of Australasian and United States of America events. The University of Wollongong won third place in a return to form after winning the Australasian and the United States events in earlier years.

In addition to running its petrol fuelled racer to take fifth place this year, RMIT University also demonstrated its “green” electric powered car. This development vehicle is the prototype of the university’s challenger for the first international Formula Electric event in Germany in 2010.

Students win against the GFC

SAE-A Executive Director Max Chanter said the 2009 Formula SAE-A competition was an outstanding success, given the extremely difficult year experienced by the automotive industry leading up to the event. “In the midst of the global financial crisis, the universities and team sponsors faced testing times. We are delighted that 24 teams entered this year, although only 21 actually reached the competition venue at Victoria University Werribee Campus, near Melbourne,” he said.

“In addition to the Australian Universities, we welcomed teams from universities in India, Iran, Japan, Thailand and New Zealand. This was an excellent outcome.

“The SAE-A congratulates all teams for their hard work and determination to get their cars designed and built under these tough conditions, much less raising the funds to travel to the competition. We also thank the hundreds of volunteers that joined in the spirit of this great educational experience to help stage the competition.

“It was critical that we were able to hold Australasia’s tenth Formula SAE-A event. This education program is important to the development of keen automotive engineering students because they learn to apply their new knowledge in a real time, real world design and build situation – and they have to meet a budget. This year, their budgets were perhaps tighter than in previous years,” said Max Chanter.

The students spend about twelve months designing, building and testing their car and its components before bringing the racer to the four day competition. On the first two days the teams present their cars to design and production engineering judges. Then, to check their theories during the last two days, the students put their racers to practical tests on the track in acceleration, braking, autocross, skid pan, endurance and fuel economy events.

“Graduates” of the Formula SAE-A education program are highly sought after by employers and have been recruited to top automotive engineering roles, V8 SuperCar race teams and international Formula 1 race teams.

Monash history of wings

This is the first Formula SAE-A win for Monash University, which scored fourth place in 2008 and third place in 2007 and has entered every Formula SAE-A competition. The team included 50 students representing a cross section of study areas ranging from Mechanical Engineering to Business.

The 2009 Monash University car is powered by a four cylinder Honda CBR 600RR engine producing 80HP transferring torque to the wheels via a single reduction driveline. To save weight, the new intake and muffler have been constructed out of carbon fibre. Furthermore, to increase the fuel economy, higher compression pistons have been installed and tested on the dynamometer; preliminary tests showing a 14% increase on overall fuel economy.

Monash University operates a state-of-the art wind tunnel and this team has a tradition of high winged flyers. The 2009 vehicle benefited from eight years of aerodynamic development in the form of front and rear multi-element wings. Testing revealed the car produced about 600 N of down force at 60 km/h for representative yaw angles seen on-track.

This additional normal force seen at the tyres increases the available grip, allowing the vehicle to corner at greater velocities than otherwise possible. The benefit of the aerodynamic package is readily seen on-track, with peak lateral accelerations of 2.2g being measured on high-speed corners.

Results Table – *An Excel Spreadsheet is attached containing overall results for the 2009 Formula SAE-A competition.*

Photo caption – MonashWinner09.jpg: *The winged warrior from Monash University was victorious at the 2009 Formula SAE-A competition for automotive engineering students.*

Photo caption – WestAust2nd09.jpg: *Second place winner in the 2009 Formula SAE-A competition was University of Western Australia pictured in hard cornering on the skid pan.*

Photo caption – Wollong3rd09.jpg: *Captured in a full four wheel drift during the 2009 Formula SAE-A endurance event, the University of Wollongong car was driven well to take third place.*

Photo caption – UNSWADFA13th09.jpg: *The driver of the Australian Defence Forces Academy entry gets some airborne experience during the 2009 Formula SAE-A tilt test. This safety test is done before cars are approved for on-track activities. Checks liquid loss at 45% and the angle is increased to 57% to put components under simulated cornering stress.*

Visit the websites of the winning teams:
www.monashmotorsport.com
http://motorsport.mech.uwa.edu.au
www.uow.edu.au/~sselby/index1.html

About SAE-A

The Society of Automotive Engineers – Australasia (SAE-A) promotes excellence in automotive engineering and is committed to the protection and betterment of the environment. Its members are engineers, scientists and technicians working across the entire spectrum of the Australasian automotive industry – vehicle and component manufacturers; vehicle service, repair and aftermarket sectors; importers, insurance services, fuel suppliers, government authorities, and students. SAE-A is a Council member of the International Federation of Automotive Engineering Societies, and is linked to SAE-International and the International Pacific Conference on Automotive Engineering.

For further information:

Interviews invited on Formula SAE-A and its role in educating automotive engineers.

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