

## Australian – International Model Solar Challenge



### WA SUNSHINE ENSURES HIGH SPEEDS IN AUSTRALIAN MODEL SOLAR CHALLENGE.

*Paul Wellington, Chair, AIMSC.*

Thanks to amazingly bright skies and solar power of up to 1.1KW per square metre, Western Australian teams made good use of their local experience by winning both the Car and the Junior Boat events in the 2010 Australian Model Solar Challenge final held in Fremantle on November 27<sup>th</sup> and 28<sup>th</sup>.

Thirty two cars from each Australian state and the NT competed on the track with 16 entries in the Junior Boat Challenge and 11 in the Advanced. The cars included the top 4 cars from most states with extra wildcard entries being provided when the anticipated entries from Iran and Taiwan were unable to come at the last minute. There had been 3 regional events in Taiwan, but unfortunately a typhoon caused 2 of them to be postponed, leaving insufficient time for the teams to obtain visas.

The car “Mike Couanis” from Aquinas College finished the 2 lap final ahead of “Blur” from St. Paul’s Catholic College from NSW, with “Galaxy” from WA’s Girraween SHS third and The Tasmanian entry “HAZZ” from St. Patrick’s College 4th. The winning car was named in memory of a very popular science teacher with great enthusiasm for solar car racing.

The fastest time on the 94 metre figure “8” track was 16.27seconds by Blur in the second knockout round but in the finals over 2 laps “Mike Couanis” was able to catch up and pass its NSW rival, winning all 3 of the best of 5 heat final. However, Blur appeared to have the smallest of margins in at least 1 of these heats at the end of lap one but could not achieve the same speed on the second lap. Numerous races saw one car move to an early lead, sometimes by as much as five metres, before its competitor reached a higher top speed to win as they crossed the line. Poor acceleration rates off the start line may have resulted from wheel spin, with high top speeds due to good gear selection, slinky aerodynamic design or effective use of bearing lubricant. Micro cracking of cells may also have led to lower currents and hence power from some panels as the cells warmed up.

All 32 teams performed well over the weekend, with over two thirds achieving at least 1 time of under 19 seconds, a speed which would have won a number of previous events. The exceptionally bright conditions in comparison to those which prevailed in most of the other state events, saw 12 of the cars spin off in at least 1 race.

A new interpretation of the race finish caused some teams quite a challenge. The regulations required cars to be stopped in a limited length on the back straight after the right handed curve, something that at least 5 teams failed to do in at least 1 race. The most effective stopping procedure was used by the 2 Northern Territory entries, Zac’s team and Matt’s team from St. Phillips College, who placed a 3 sided cardboard box on their lane (with a 4<sup>th</sup> side of the box providing a cover), so that the solar power to the cells was cut as the car moved into the shade cast by the box. The car then impacted the further end of the box which slid several metres before safely bringing the car to rest with no chance of mishandling by the team members.

The Junior Boat Challenge turned out to be predominantly a Western Australia vs Victoria competition with “The Demon” from WA’s Gooseberry Hill Primary School too good for “Party Boat II” from Ruskin Park Primary in Victoria with WA’s Guildford Grammar boat “Tina II” third and “Sharkbite” from Victoria’s Lethbridge PS fourth. Speeds of under 4.5 seconds were achieved by both finalists with many other entries around 5 seconds for the 10 metres.

“Belmore 2” from Belmore Boys High School, in NSW was too good for QA2 from Queensland Academy of Science, Maths and Technology which also fielded the third boat, “Ben Brock”, with Pennington Primary School’s “Wave Zone” from SA coming fourth. The winners of the 2 divisions were then matched up in a series of impromptu races with “Belmore 2” winning the first, “The Demon” winning the second, the third being tied and the fourth won by just millimeters by Belmore II. This was an amazing performance by “The Demon” given the age of the students and the more limited and cheaper components used by the junior teams

In addition to the fantastic sponsorship from Engineers Australia dating back to the mid 90s, this year’s Australian-International Model Solar Challenge was made possible by Western Power who did a great job organizing and sponsoring both the WA state event and the national finals. However, in 2011, Western Power will continue as sponsor but has handed over the organization of the WA state event to the Sustainable Energy Association of Australia. The long term support of Engineers Australia is aimed at the providing a solid basis of mechanical, materials, electrical and electronic design knowledge and skills to school students who will become the engineers of the future.

The great educational theorist Jean Piaget said “The principle goal of education in the schools should be creating men and women who are capable of doing new things, not simply repeating what other generations have done.” The students involved in this year’s Model Solar Challenge will be capable of further developing the knowledge gained from this event to helping repair the environmental problems the current generation has helped to cause. It is hoped that even more students from around Australia and overseas will have the chance to demonstrate their knowledge of solar energy and ways of optimizing energy efficient design at the 2011 Challenge in late November in Hobart.