

UJ solar vehicle wins Technology and Innovation award

Ilanga II, the University of Johannesburg's (UJ) solar vehicle, was awarded the Technology and Innovation award at the end of the 2014 Sasol Solar Challenge in Cape Town on Saturday, 4 October.



The solar cells, used in the array of Ilanga II are commercial cells imported from Germany for space grade applications. The car has Gallium Arsenide (GaAs) solar panels, which are the same type of panels as those used on the Mars Rovers.

Due to the efficiency of these panels, the team could build one of the smallest solar vehicles to participate in this solar challenge. At 185kg, Ilanga II was the smallest and lightest vehicle that participated in the challenge. It was also the first time that a GaAs array has been raced in a solar challenge.

Ultra-lightweight materials such as carbon fibre, Kevlar and Airex foam core were used for the body and suspension system of the vehicle. The battery pack, consisting of over 400 individual lithium-Ion cells weighed less than 20% of the total weight of the car.

Power output

Ilanga II also featured an axial flux brushless DC hub motor which is designed for solar racing and was chosen for its efficiency as well as a high peak power output. The car's 3D printed steering wheel included a unique electronics board and LCD display and several buttons, including a booster button, for a quick boost of acceleration when needed.

The vehicle also contains a full telemetry system, which allows the team member responsible for the race strategy and

optimisation of the vehicle to monitor the power output of the solar panels and the available power in the battery pack remotely. Considering the terrain and weather conditions, he could then advise the driver on how to manage the available power optimally.

Sasol Solar Challenge race convenor, Winstone Jordaan, praised the UJ Solar team for their advanced technology and their willingness to show other teams and interested people how this technology works.

Flagship project

The technology and innovation award was partly voted for by other participating teams. It is the second time the UJ Solar team was recognised for their innovation. They also received the innovation award in the 2012 Sasol Solar Challenge.

"We are very proud of the excellent team work and achievement of the UJ Solar Team in this year's challenge," said Nickey Janse van Rensburg, programme manager of the UJ Energy Movement. The solar car project is the flagship project of the UJ Energy Movement, a programme promoting research, education and industry participation on alternative energy issues at UJ in collaboration with Resolution Circle - a UJ owned research, development and training initiative.

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