




Rendered by Emil Hewage 

Dear Supporters,

Thank you for your interest and messages of support for CUER.

This term has been a fast paced period of development for CUER, in all aspects of the project, both business and technical. We have learnt a lot quickly and have been taking steps to become the team to beat in the World Solar Challenge in 2013.

Concept Development - Daphne

For months, our concept for the World Solar Challenge has been a closely guarded secret. No one outside the team, the advisory board and a few of our sponsors knew what we were developing.

We realised from the beginning that we would be unable to beat the best teams in the world with copycat technology so we went back to the drawing board with a simple question: 'How can you make a car go fast?'

The two basic philosophies for speed are either to put in a bigger engine or to make the car more efficient. The approach by solar teams (including ourselves) for the past 10 years has always been to go for the bigger 'engine': virtually all cars have been large table-top designs, aiming for the maximum amount of solar area. The problem is that the shape of car that is good for aerodynamics is not the same shape that is good for solar performance, and with traditional designs, it is impossible to improve one without adversely affecting the other.

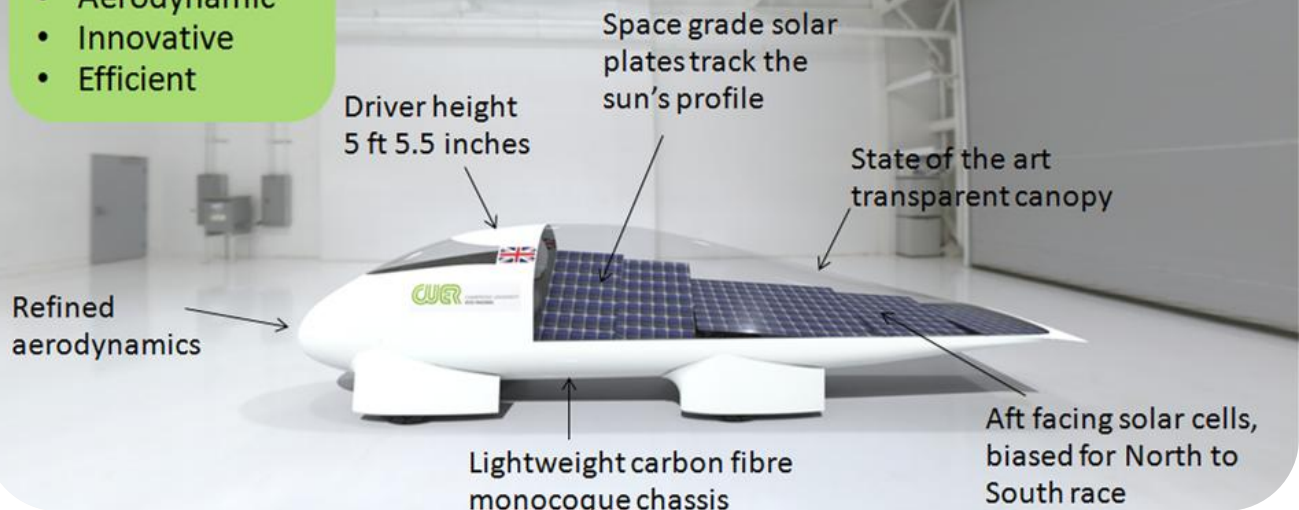
To win, we have to be innovative in our design. Our concept evolved over a series of discussions, sketches and calculations. We chose to design the most aerodynamically efficient shape permitted by the rules - mimicking a cross between a bullet and a tear drop - and then to maximise the solar performance of that shape.

Because the sun moves during the day, the optimum shape for solar performance changes with time while the optimum shape for aerodynamics doesn't. Our game-changing idea, a series of flat plates which track the sun whilst being housed in an aerodynamic canopy, allows us to decouple aerodynamics and solar performance so that they can be improved independently. Using solar modelling software, which was developed within the team, we were able to quantitatively analyse several different concepts; we saw that tracking the sun gave a 20% increase in solar performance compared to fixed solar cells on the outer surface. We were overjoyed when running the results through the race model gave us a predicted speed which was fast enough to win.

The Winning Formula

Winning Formula

- Small
- Lightweight
- Aerodynamic
- Innovative
- Efficient



Concept Launch

As well as working around the clock on technical development, we've focused on developing the business side of the team: the CUER brand, image and communications. The thirteen-strong multifunctional team, which covers sponsorship, PR, media, logistics, recruitment, outreach and communications, has been instrumental in turning things around this year. We have now built up a regular online following of over 1500 people per week.

The fluidity of roles within the business team has helped us move manpower to where it is needed, when it is needed. This was especially handy in preparation for the Concept Launch.

November 23rd, the day before the launch, was a landmark day in CUER history. We had our first ever press conference in Cambridge with twelve publications present, including the BBC and FrontSeat Driver.





On November 24th, five months and a week after the new regulations were released, we launched our 2013 concept, Daphne.

During the day, there was an event in the Engineering Department showing the design and ideas to members of the public and well-wishers. A model of our concept was kindly produced for us by Oxford Diecast. Dr Ivor Grayson-Smith, a WSC Judge, gave a presentation about the challenges of racing across Australia. Alumni team members from as far back as 2007, including our founder Martin McBrien, came to find out about our concept.



In the evening, there was a black tie dinner in Queens College Old Hall with speeches from Tony Purnell, Ivor Grayson-Smith and our Team Manager, Keno Mario-Ghae to officially launch our concept and bid for the World Solar Challenge.





Isle of Wight - Inspiring Innovators

In the week before Michaelmas term began, we went on a four day outreach tour to the Isle of Wight in partnership with Eco Island, sponsored by ARM. Our aim was to inspire the innovators of tomorrow by giving them a flavour of what it's like to be an engineer, solving problems and challenges. The trip turned out to be far more successful than we had hoped for. Staying in a cottage in West Wight we soon settled in, enjoying the

joys of Island life: sailing, beautiful sunsets across the water and stunning scenery.

Each day, various schools from around the Island each brought 10-14 pupils to us to take part in a series of engineering challenges such as the Marshmallow Challenge, newspaper bridges and model solar car racing.

The highlight of the trip was the newspaper bridge challenge on day one. After having had thirty minutes to build a structure out of newspaper capable of carrying tins of mushy peas, all the teams brought their bridges to Chief Engineer, Peter for testing. Most of the structures made could carry one or two tins of mushy peas before failure; the CUER team effort carried seven tins of mushy peas.



The true stars of the week, however, were a team of four twelve-year-old girls who designed and built an unconventional structure (pictured left) that carried thirteen tins of mushy peas! This was phenomenal!

Better still, they later said that they thought engineering was "cool".

If twelve-year-old girls from the Isle of Wight could build better bridges than Cambridge students, can you imagine what would happen if they went on to careers in Engineering?

At the end of each day's outreach, we were very happy when over half the pupils thanked us, saying that engineering was great.



Word of our outreach activities spread quite quickly and we soon had schools who hadn't replied to us earlier calling up and wanting to join in. The MP for the Isle of Wight, Andrew Turner (pictured sitting in Endeavour), heard about the project and decided to stop by to see it for himself. He kindly agreed to hand out prizes to the students for us.

Word spread even to the media: we got in the Isle of Wight County Press and were lucky enough to get interviewed on Isle of Wight Radio.

On the ferry back to the mainland, the Captain called us all up and let us steer the ferry to Portsmouth!





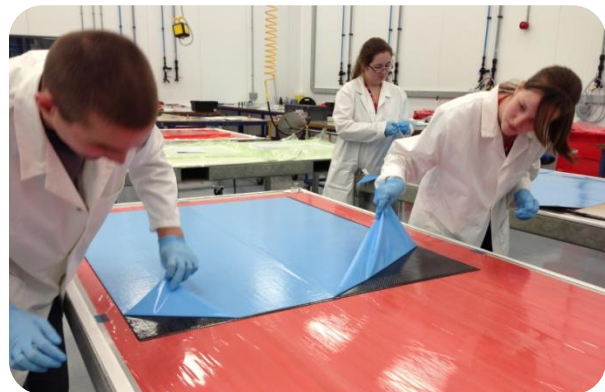
Building Daphne

All technical teams have been busy this term but none more so than the mechanical team. Following a good recruitment campaign, we welcomed thirty new recruits into the mechanical team alone! The progress made since then has been astonishing: designing, prototyping and building the chassis, tracking plate and suspension concurrently. Members of all levels of experience, from fresher to Ph.D., have all contributed to the success.

The chassis has been the great achievement of this term with the design being led by Chief Engineer, Peter Mildon, and the build being led by Systems Designer, Alex Robinson.

We are very grateful to JLR who machined the patterns for us according to our designs. The quality of the pattern finish was world class, giving us a good step towards a fine aerodynamic finish.

We spent a weekend at Ricardo's garage building the fiberglass moulds. After a week of sanding and preparing the moulds, we then took them to the National Composites Centre. Here a seven-strong build team (pictured left) worked around the clock to build the chassis, bulkheads and cockpit in just five days.



Kickstarter

We've come a long way so far: from a clean sheet to a built chassis in just over five months. There is still a long way to go though. As we enter the manufacture and assembly phase, we need to purchase vital components, such as the transparent canopy.

We've started a Kickstarter campaign to help us raise the money we need to win.

Please, if you could support us on Kickstarter, no matter what the amount, it would be greatly appreciated. We have till January 5th to raise a £10,000.

<http://www.kickstarter.com/projects/704143762/cuer-the-uks-number-one-solar-car-team/>



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CUER: the UK's number one solar car team

by CUER

Home Updates **2** Backers **71** Comments **6**

Cambridge, Cambridgeshire, United Kingdom Technology



Rendered by Emil Henning

71 backers

£4,191 pledged of £10,000 goal

13 days to go

Back This Project
£1 minimum pledge

This project will only be funded if at least £10,000 is pledged by Saturday Jan 5, 7:00pm EST.

Project by **CUER**
Cambridge, Cambridgeshire, United Kingdom
Contact me

First created · 0 backed

Andrew Zhao 600 friends

Website: cuer.co.uk

[See full bio](#)

Like You, Peter Mildon and 254 others like this.

Tweet Embed <http://kck.st/UWaj0>

Launched: Nov 27, 2012

Funding ends: Jan 5, 2013

Remind me

A game-changing new solar car design in a 3000km solar marathon across Australia. Support Cambridge University Eco Racing.

Thank You

As a student organisation, we don't receive funding other than what we get from sponsors.

Thank you to all our sponsors & partners without whom this project would not be possible.

To find out how you can support CUER, contact our Team Manager or Sponsorship team

Email: captain@cuer.co.uk or

: sponsorship@cuer.co.uk

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