

HANDCYCLE WITH PLYMOUTH UNIVERSITY

On a remote road in Nevada in September 2015, Plymouth University will attempt a world human powered speed record. You could be part of it...

Our World Record Attempt

Handcycling is a major Paralympic discipline which gained significant public attention in London 2012. But how fast can a handcycle actually go? The answer lies in how streamlined it is. Greg Westlake (right) holds the current men's arms-only world speed record – at 45.68mph, and the women's record is 21.39mph.



Greg Westlake sets men's record September 2011

In Battle Mountain, Nevada, annual speed trials are held on a long, flat, straight, high altitude road, where competitors try

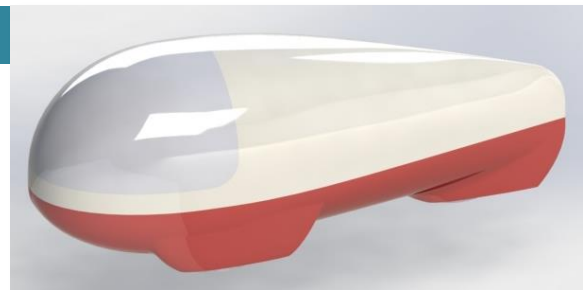


Liz McTernan

to set new speed records. Speed is measured over a 200m distance, but an unlimited (often several miles) run-up is allowed. Plymouth University have teamed up with world-class handcyclist Liz McTernan to design, build and race a streamlined handcycle at Battle Mountain, September 2015, with the aim of bringing a world record home with us.

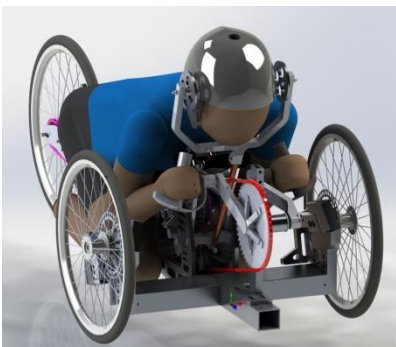
Our Handcycle Design

Getting the aerodynamics right is key to designing a fast handcycle. Using our aerodynamics expertise, we've developed a shell that we believe has significantly lower drag than those of previous record holders.



Virtual model of our streamlined handcycle shell

Coupled with the aerodynamics is the packaging of the rider and all the components within the shell to ensure that Liz can produce the maximum power possible. This layout requires some innovative design thinking, such as the steering system operated by small movements of Liz's head.



Handcycle layout – inside the shell

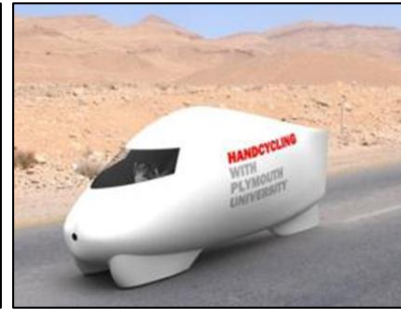
How our Design Evolved

For the past 3 years, Engineering Students at Plymouth University have worked on a wide range of aspects of handcycle design, such as the mechanism for steering and power transmission, the structural design of the frame, and the shape and manufacturing methods for the shell. They've done wind tunnel testing and Computational Fluid Dynamics (CFD) simulations to optimise the aerodynamics, and built various prototypes to test steering and optimise riding position.

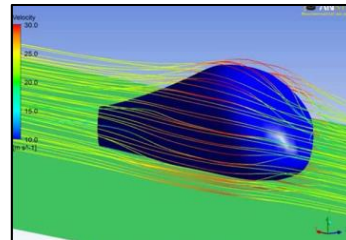
Our current design draws on aspects of the work that all those students have done; Plymouth students past and present have made the design a real team effort.



Steering prototype



An earlier design iteration



Computational Fluid Dynamics



Wind Tunnel Tests

Can You Help?

We need around £11,000 to complete the build, and to get the team and handcycle out to the competition in Nevada. The main costs are:

- About £4500 in airfares and transportation
- About £1500 for bicycle components
- About £3500 for the material to build the shell mould
- About £600 for raw materials such as aluminium

Sponsors willing to supply goods, services or funds to help with the above are urgently needed.

Benefits of Sponsorship

- Your company logo on our handcycle. Available advertising space will be divided up in proportion to value of sponsor's support
- Your company publicised as a result of all the media coverage we aim to generate (TV, radio, press and on-line)
- Unlimited rights to all the images that we generate (photos, computer images, etc.) for use in your own company publicity
- Chance to form close ties with Plymouth University, drawing on the skills and enthusiasm of our staff and students
- Involvement in a truly exciting challenge, both sporting and technical

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