

# STEM goes Supersonic

What better way to get students fired up with enthusiasm for STEM subjects than with a supersonic car?

**B**loodhound SSC is a supersonic car (SSC) currently in development that aims to set a new world land speed record of 1,000mph. Powered by a jet and a rocket, the car is approximately 14m in length, weighs over 7 tonnes and produces more than 135,000 horsepower - more than 6 times the power of all F1 cars on a starting grid put together.

The Bloodhound SSC mission is to confront and overcome the impossible using science, technology, engineering and mathematics, and to motivate the next generation to deal with global 21st century challenges.

Bloodhound SSC aims to set a new world land speed record of 1000mph in South Africa in 2016. It is currently under construction at a facility in Bristol. Far from the secretive nature you'd normally associate with the design and construction of potentially the world's fastest land vehicle, the project staff have made all of their information public.

The project has been sponsored by Delcam for more than a year. Delcam is one of the world's leading suppliers of advanced CAD/CAM solutions for the manufacturing industry and a wholly-owned, independently operated subsidiary of Autodesk, Inc. As well as providing funding and work in kind for the project, the company has formed an active team of five Bloodhound ambassadors. They have been involved with activities with local schools promoting the project and STEM subjects as a whole. The Bloodhound project gives the ambassadors an interesting and exciting topic to use to engage the students, one that can introduce them to the challenges they may face in a career in the STEM fields.

## **The mission...should you choose to accept**

The Bloodhound SSC team's mission is not simply about building a car capable of achieving the design speed of 1050mph. The more important aim is to complete an engineering adventure that will inspire, prepare and motivate the next generation of engineers and technologists, similar to the way in which the space race encouraged young engineers in the 1960s. Bloodhound is a UK-based engineering project that has been specifically targeted at encouraging young students to take up the STEM subjects, so helping to provide the skilled workforce needed for the country's future prosperity.

It's a bold statement to say you are going to inspire and prepare people for unspecified future challenges. Bloodhound has followed up on this aim by developing a series of practical activities designed to mimic genuine problems faced by the team during the design process, including lessons in frame design, thrust, drag and control systems. All the information about the solutions used by the team, demonstrating how Science, Technology, Engineering and Maths can be applied to achieve the apparently impossible, are also available on the project's website. The Bloodhound team has made the information about the project not just accessible but easily understandable for students of all ages.

## **Bloodhound ambassadors**

To compliment these web-based activities, the Bloodhound team has joined forces with the existing network of STEM ambassadors to help pass on their knowledge and passion for the STEM subjects. The combined group comprises a large number of Bloodhound ambassadors spread throughout the country with a range of skills and subjects, all

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Four of Delcam's Bloodhound Ambassadors with the cockpit and fuselage of the Bloodhound SSC.

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connected to the STEM network. The ambassadors have been trained, not only to assist with the prepared material but also to be able to deliver comprehensive introductions to the Bloodhound project.

There are a number of statistics and facts that have been presented in different ways using excellent analogies to aid the understanding of school children and to help them comprehend the scale of the problems faced by the team. The project provides an excellent example of how the development of new technology allows people to achieve objectives previously considered impossible for a long time.

Richard Pedley, who recently joined Delcam on a full-time basis after completing a year on a student placement, is one of the company's Bloodhound ambassadors. He has given talks at a number of local schools already. *"The basic structure of my presentation covers examples of British engineering, the history of the land speed record and Richard Noble's [holder of the land speed record between 1983 and 1997] involvement, then goes on to talk about the project itself,"* explained Richard.

*"I describe some of the problems faced by the team and the solutions used to overcome them. The end of the talk then focuses on where the project is now, how to find out more information etc."*

*"The bits that really grab the attention of the children are the comparisons, for example that the car will be travelling faster than a bullet from a .357 Magnum and the air at that speed has a similar consistency to custard,"* said Richard. *"They are always surprised that the first land speed record was set at 39mph, slower*

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*than the speed of a modern-day Olympic cyclist."* After the talk, the ambassadors are able to advise on the resources available and how best to continue if the staff and students are interested in taking part in a range of activities available through. There are a number of resources and exercises designed for children at each key stage that have been developed to give a hands-on introduction to scientific principles and challenges facing the Bloodhound team. The ambassadors are available to assist with these activities.

#### Get involved

Schools that are interested can arrange the introductory talk by contacting the Bloodhound education team via the website. The opportunity will be advertised to Bloodhound's existing ambassador network. The introduction will usually consist of a presentation lasting around half an hour briefly covering the history of British engineering and of the land-speed record, before going on to talk about the Bloodhound project and the problems faced by the team. This information will be presented using interesting analogies and simple comparisons designed to aid the understanding of the students and to engage them with the project, although actual content will depend on the individual ambassador.