DATA IS KEY

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Extended abstract

The Bloodhound education programme is available to any school or teacher in South Africa and we will be sharing all the research, design, build and testing of the car, including where the engineering team got it wrong the first time!

This motivation to share all the project information is unique in the field of advanced engineering and will ensure schools around the world have access to all the car run data. Thanks to MTN and Poynting Antennas this data will be available in virtual real time as they have developed new technology to capture and communicate all the sensor data and HD camera material via the World Wide Web. Graphs in school will never be the same again!

'Data is key to pushing the boundaries – work out what you need and build it in from the start'. That was the advice we received from former NASA astronaut Neil Armstrong when he visited the BLOODHOUND Technical Centre back in 2010. This was very much our plan, but it was great to hear it confirmed by the first man to walk on the Moon. The reality seemed a long way off at the time, but suddenly it's here and we're building a myriad of sensors into BLOODHOUND SSC.

The plan for BLOODHOUND SSC involves around 400 high-speed sensors, measuring everything from air pressure in over 100 places to validate the airflow modelling, through to structural loads, and even Andy Green's heart rate while he's driving at 1 610 km/h . Each one of these sensors will be recorded at 500 Hz (500 times a second), so that the engineering team can analyse the data in incredible detail.

At peak speed in BLOODHOUND SSC, the air will be tearing past Andy's office window at 450 metres/second, so working out what happens on each run will be vital. It was this sort of approach that got Neil Armstrong to the moon in 1969.

The previous World Land Speed Record, back in 1997 when Thrust SSC went supersonic, was the first time that this sort of data-intensive approach had been used for record breaking. The technology was a bit more basic, with just over 100 sensors measuring temperatures, pressures and loads at only 80 Hertz, or less. That was however enough for the Thrust team to be able to keep the car safely on the ground, and to set the first supersonic World Land Speed Record.

Data helps with more than just keeping the car on the ground. The straight line performance of the car – in other words, how fast it will actually go – can also be determined from the data. Since this is the whole aim of the World Land Speed Record, it's important stuff. But it's more even than that. The BLOODHOUND team's performance expert, Ron Ayers, has spent over 2 decades analysing performance data from every available source, going back to the 1920s. As a result, he can predict more accurately than anyone alive just how fast a Land Speed Car will go, and how long it will take to stop.

Technology has moved on considerably since the team's last successful attempt at the World Land Speed Record and this allows us to share the run data with education across the globe. What is crucial however is that teachers in South Africa are aware of this exciting adventure that is taking place on their doorstep and help us to identify the best way of using all the run data in the classroom. The development of a car capable of 1 690 km/h (1 050 mph) is down to the use of mathematics and the real world data obtained from BLOODHOUND SSC will hopefully aid the demystification of the subject in the classroom. As a result of this presentation we hope to have many more maths teachers registered to the BLOODHOUND education programme.

REFERENCES

http://www.bloodhoundssc.com/

http://www.bloodhoundssc.com/news/ten-astounding-facts-about-bloodhound-ssc

http://www.bloodhoundssc.com/project/facts-and-figures