SUPERSONIC SPEED AIMS TO INSPIRE

A supersonic land vehicle, currently in development in Britain, aims to go faster than 1 000 mph. More importantly, it seeks to inspire the next generation to get involved in science, technology, engineering and mathematics. Atlas Copco's equipment proves invaluable in the project.

TEXT BJÖRN RAUNIO PHOTO STEFAN MARJORAM, FLOCK LONDON, FISHER STUDIOS

THE BRITISH BLOODHOUND SSC (Supersonic Car) project is a global engineering adventure that aims at not only setting a new world record for land speed, currently at 763 mph (1 228 km/h), but actually breaking the dream barrier of 1 000 mph (1 610 km/h). An even more important objective of this iconic research and development project, however, is to inspire the next generation of scientists and engineers.

Atlas Copco is providing an array of products to the project, including wrenches, grinders, pneumatic drills, compressors, air receivers, filtration and pipework.

"Atlas Copco got involved in the Bloodhound SSC project because we felt that its primary values matched up with our own," explains Jamie Buckling, Marketing and Communications Coordinator at Atlas Copco Tools in the UK. "It's a highly innovative project committed to inspiring young people around the globe with the awe of science and engineering. The project is also helping to develop the local area in the Hakskeen Pan, a South African desert where the record attempts will take place."

THE SUPERSONIC CAR itself is the result of mixing car, aircraft and rocket technology. It is 13.4 meters long and weighs eight tons. The front section reminds you of a racing car, while the back looks more like an aircraft. It's powered by both a jet engine and a rocket. As Atlas Copco's tools are already used to manufacture automobiles, jet planes and spaceships, they fit perfectly for building the Bloodhound SSC.

THE BLOODHOUND CAR

- Designed to go faster than the speed of sound (supersonic), and even over 1 000 mph (1 600 km/h).
- Will cover a mile in 3.6 seconds.
- Powered by both a jet engine and a rocket, which together will produce more than 135 000 horsepower.
- 13.4m long and weighs 7.5 metric tons.
- Wheels will be able to rotate at 10 200 rpm (170 times per second), generating 50 000 radial G.

Read more: bloodhoundssc.com

"We have supported the project by providing their workshop in Bristol, England, with a full range of assembly tools, as well as compressed air equipment," Buckling says. "Our top-of-the-line equipment gives their engineers the accuracy and control needed for this kind of extreme technology. For instance, our smart tools ensure that you get the right torque values every time. One of the compressors is used to 'dry' actuate the car's jet engine."

Chris Dee, Lead Assembly and Build Engineer for the Bloodhound SSC project, says Atlas Copco's contribution to the project's workshop equipment has proved invaluable. "We have been using their tools for over four years to apply the precision loads required to build a car that will travel at 1 000 mph," he says. "This has extended not only to the headline items like the wheels, but also in the systems area to torque printed circuit boards that will see heavy vibrations. We have also used

SOME OF THE ATLAS COPCO EQUIPMENT USED

- GA VSD+ and GX screw compressor
- Air receivers
- ST wrenches in various sizes
- CWR 'click' wrenches in various sizes
- Pneumatic drills
- Material removal tools (grinders)

Our top-of-the-line equipment gives the engineers the accuracy and control needed for this kind of extreme technology.

JAMIE BUCKLING, MARKETING AND COMMUNICATIONS COORDINATOR, ATLAS COPCO TOOLS

Atlas Copco compressors and air tools to allow us to precision fit the panels of the car, some of which will see exceptional loads."

At the end of October 2017, the project's driver, Andy Green – incidentally, the holder of the current land speed world record – took the Bloodhound SSC for its first test runs held at Cornwall Newquay Airport, in the South of England. The tests went well and marked an important milestone for the project. The current timeline states that 500 mph high-speed runs will take place in the South African desert in October 2018, record-breaking 800 mph runs will follow in 2019, and finally the 1 000 mph barrier will be broken in 2020.

"The biggest challenge for a project of this nature is to raise the funds to do it. Because we have a team of some of the best engineers and technicians, the technical challenges are surmountable. That is not to say it is easy to design a wheel that will rotate at 10 200 rpm and generate 50 000 G, but with the right research, design and testing it is achievable," says Tony Parraman, Sponsor Liaison, Bloodhound SSC. "The other major challenge is keeping the car on the ground, but not making it the world's fastest plow. The aerodynamic team at Swansea University and the project's chief aerodynamicist Ron Ayers have done a fantastic job in developing the shape of the car to be stable throughout the speed range, while developing as little drag as possible." ■