



Driveline

Case Study

Suspension and mobility upgrades to British Army protected patrol vehicles

Significant improvements to vehicle mobility, reliability and safety

Re-engineering of suspension sealing and CTI-enabled wheel hubs

About CTI Wheel Hubs

In military applications, vehicle reliability is paramount. Wheel hub assemblies are among the driveline components where optimal sealing is essential in order to deliver this reliability and longevity of performance. Among a wide range of other dynamic and static sealing elements, wheel hub assemblies can incorporate Central Tire Inflation (CTI) sealing components.

CTI systems enable the driver to inflate and deflate tire pressures from their driving position, which for military vehicles is critical for continued vehicle mobility and operational efficiency across variable terrain. CTI seals, located within CTI-enabled wheel hubs, work by facilitating the transfer of air between static and rotating parts within the vehicle axle and wheel hub.

Wheel hub assemblies have to be robust enough to handle a series of critical sealing challenges, including the threat of external contaminant ingress, water ingress from river fording, and extreme variability of operating temperatures.

The Client

On this project, FTL worked with key contractors in support of the British Army and the UK Ministry of Defence (MoD).

The British Army is comprised of over 120,000 personnel, tasked with protecting the United Kingdom and its dependent territories, preventing conflict and dealing with disaster at home and overseas.

The British Army is currently deployed in over 80 countries, upholding a reputation as one of the most highly regarded and best equipped armies in the world.



Wheel hub of Mastiff Protected Patrol Vehicle (PPV)

The Challenge

The Mastiff and Ridgback platforms are two of the most prominent of the British Army's range of Protected Mobility Vehicles. The Mastiff is a heavily armoured 6x6 Protected Patrol Vehicle (PPV), with the Ridgback being a smaller 4x4 variant.

Both vehicles had been used in various operational theatres, including Afghanistan, but they had been identified for removal from the Army's force structure until a new Urgent Capability Requirement (UCR) arose in Mali. In May 2020, the MoD initiated the Protected Mobility Engineering & Technical Support (PMETS) program, to cover the re-engineering of over 2,200 vehicles required for this new deployment.

The core challenge within this contract was to make significant improvements to vehicle mobility while retaining heavy armour. These mobility improvements would enable the Mastiff, Ridgback and other named vehicle platforms to operate safely and reliably, protecting British Army personnel in challenging terrains and environments.


The Solution

FTL sealing solutions have played a major part in the success of recent mobility upgrades to a number of wheeled vehicle platforms operated by the British Army.

FTL worked in partnership with other key contributors to the PMETS program, with the end goal of increasing mobility and enhancing safety through the provision of new capabilities.

As driveline sealing experts, FTL was asked to develop and deliver a sealing solution which addressed the need for upgraded independent vehicle suspension. Additionally, FTL was tasked with enabling central tyre inflation through work on CTI-enabled wheel hubs which demonstrated high resilience to ingress from external contamination.

FTL's involvement with the PMETS program is a reflection of the proficiency of our work developing sealing solutions for critical applications, and the international reputation FTL has earned for its work with key partners across the military sector.



Exceptional sealing support for the highest profile upgrade programmes

The Benefit

FTL involvement in the MoD PMETS project has had several notable benefits.

FTL's expertise in suspension sealing and CTI-enabled wheel hubs has enabled the Mastiff and Ridgback armoured vehicles to operate in environments which had previously been deemed inaccessible. The British Army has the option to engage in theatres of operation which previously hadn't been considered achievable.

Mastiff and Ridgback vehicles can now match or in some cases exceed the manoeuvrability of their strategic counterparts, and furthermore, with their improved field reliability, they can also support the recovery of disabled platforms in the Protected Mobility Vehicle fleet.

The key benefit is in improving the working experience for British Army personnel. Reduced vehicle vibration has reduced driver and passenger fatigue, but critically, improvements to both vehicle mobility and operational reliability are ensuring that British soldiers are safer when performing their duties.

Additionally, by optimising existing vehicles rather than developing new platforms, delivery timescales have been reduced substantially, enabling these benefits to be realised and deployed on the field in less than a year.

**In-depth
Solutions** 

For more in-depth solutions

T: 0113 252 1061

E: sales@ftl.technology

W: ftl.technology