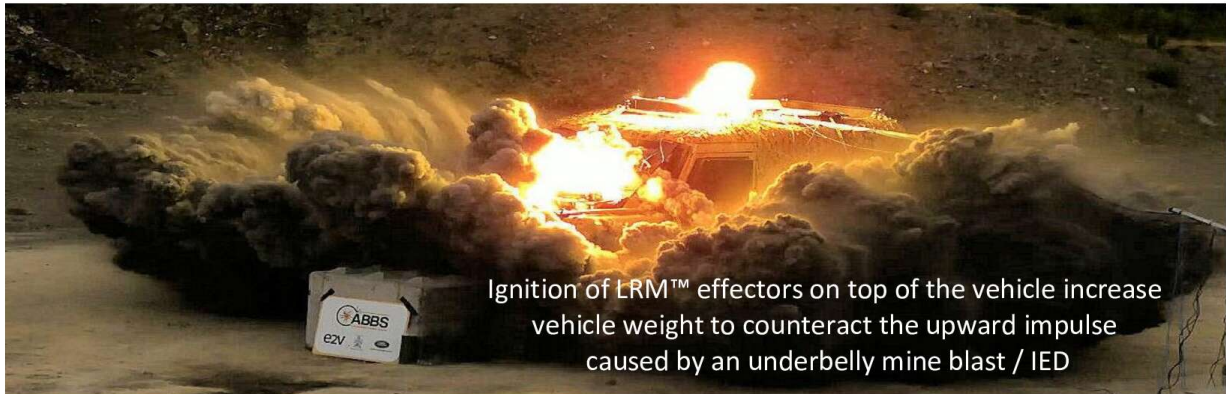


Advanced Blast & Ballistic Systems Ltd
Vehicle Global Acceleration
Mitigation (VGAM™) for
Ground Vehicle Protection



Leading Edge Technologies for Vehicle Protection from Mines and IED's



Land mines and IED's present an enduring threat in both active and legacy scenarios.

- Whilst initial threats to the occupants from blast effects can all be dealt with by current conventional methods the **Global Acceleration of the entire vehicle** remains a fundamental problem that remains un-solved in current production vehicles.
- Stroking blast seats can mitigate the initial launch and slam-down effects up to a certain level but the technology and space/stroke limitations within the vehicle design lead to a limited overall capability. As a simplistic guide any vehicle global vertical velocity above about 9m/s is likely to result in acceleration injuries to the occupants.

The ABBS VGAM™ Solution

The rapid application of VGAM counter-impulse (downforce) to the protected vehicle dramatically reduces its jump height in response to an under-belly blast event.

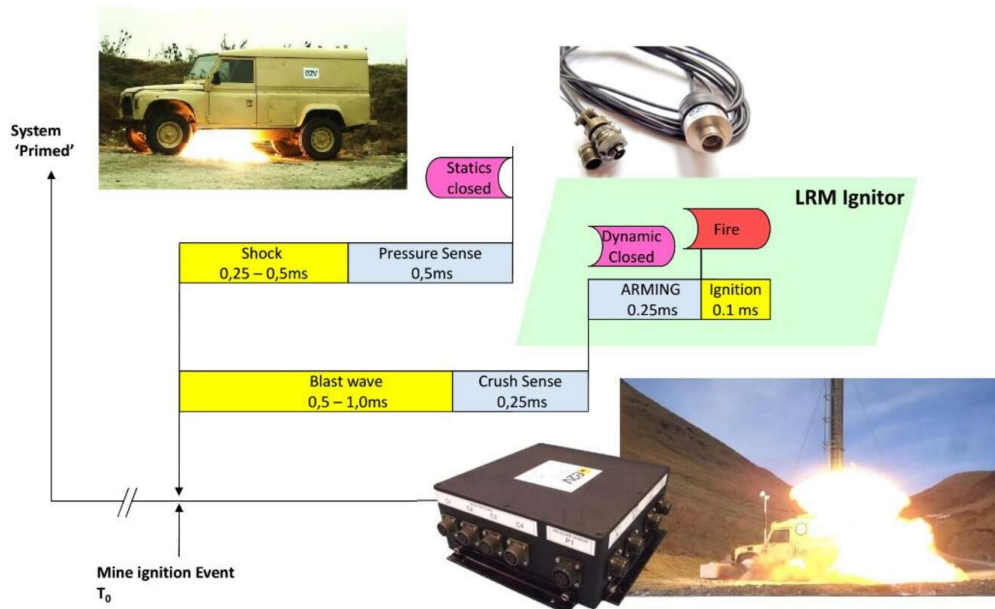
- The VGAM system remains in 'Safe' mode and is therefore un-armed when in active service until an explosion occurs under the vehicle.
- The dual sensor system reacts to the mine blast forces and measures the strength of the explosion in about 2ms.
- If the blast forces are large enough to warrant activating the system it arms and fires in less than a further 1ms, the Linear Rocket Motors (LRMs) starting to deliver impulse in less than 4ms after the mine explodes.
- Impulse delivery by the LRMs can be adjusted by design from about 20ms to over 150ms as required by the vehicle threat analysis.
- Effective vehicle "weight" can be increased up to 1,000 tonnes for the 30-100ms required to counteract the mine/IED impulse loads.
- Solid-propellant LRM effectors have a low Insensitive Munition (IM) signature when combined with ABBS's electronic safety, arming & ignition sub-system

The technology is demonstrated in full scale vehicle firings in the UK with a Snatch Land Rover subjected to a 6kg NATO AEP-55 STANAG 4569 blast test, and in the USA.

The technology is judged to be at TRL6.

Further Options to improve performance and provide protection against larger threats and reduce injury:

- ABBS Shockwave Mitigating, Energy Absorbing Composite Reinforced Sandwich Belly Plate
- ABBS Vehicle Active Floor System (VAFS™)
- ABBS Blast Seats (provided in partnership with a leading blast seat supplier)



Advanced Blast & Ballistic Systems Limited
Unit 1 Hazelhurst Farm, Mercaston, Ashbourne, Derbyshire,
United Kingdom DE6 3BH
www.advanced-blast.com

Contact Roger M. Sloman (Managing Director)
r.sloman@abbs-usa.com
Tel. +44 7989 381057