



“The new kit felt lighter and gave me a lot more movement”



THIS TIME IT'S PERSONAL

The Army's new body armour system is about more than just protection

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INFANTRY personnel have been required to carry more and more equipment into battle in recent years – on Op Herrick average loads reached around 56 kilograms.

However, burden is not just about weight because comfort and flexibility are also important factors.

Even if a load can be reduced, if it is carried in an uncomfortable and rigid manner it will not help the agility of the soldier and, ultimately, could compromise the Army's ability to gain superiority on the battlefield.

The Virtus system, the result of a three-year project overseen by the Combat Capability Directorate in Army Headquarters and delivered by Defence Equipment and Support, has been designed to address the shortcomings of the Service's existing body protection and load carriage solutions which are, primarily, weight and bulkiness.

Virtus employs new materials that provide at least as much protection as the existing Osprey system but are lighter, move with the body more easily and produce a slimmer profile.

The amount of protection employed can also be scaled up or down to match the type of threat by adding or removing soft armour pads and hard ballistic plates.

"Commanders can select a level of armour using a combination that they think is sufficient for the situation," explained Lt Col Rob O'Connor (Yorks), commanding officer of the Infantry Trials and Development Unit.

"This allows them to scale back the amount of protection in favour of agility if they want."

Crucially, Virtus is 4.7 kilograms lighter than Osprey and will become lighter still once new armour plates in development are introduced, but for now the existing items remain.

The system also employs a new quick-release mechanism – a pin positioned on the chest that when pulled releases the entire body kit – to aid safe extraction from hazardous situations such as burning vehicles or water.

This replaces the numerous Velcro straps that soldiers currently have to rip open to release their body armour.

A new, lighter helmet will provide increased blunt impact protection, face and mandible guards for certain roles and a shape that is designed to work with the armour and daysack so weapons can be comfortably used even in a prone position.

The headgear also features a permanent universal mount for the night vision scope and a scalable counterweight that is attached to the helmet's rear when the system is in place to ease strain on the wearer's neck.

Arguably, the most radical innovation is an integral spine, the so-called dynamic weight distribution (DWD) system.

This is a world first and likely to be copied by other armies around the globe.

The device is linked to the user's waist belt and helps spread the load of the body armour, a Bergen or daysack across the back, shoulders and hips.

The wearer is able to adjust the weight bias to his or her preference with one hand via a small controller in the small of the back.

So on long marches, for instance, troops can opt for the most efficient set-up where most of the burden is towards the hips and away from the shoulders, increasing comfort and stamina.

"The new kit felt much lighter and gave me a lot more movement," commented one of the troops who trialled the gear, Pte David Thomas (1 Mercian).

"The DWD system is definitely effective, it supported my natural spine alignment and you can really notice the transfer of weight from the shoulders to your hips when carrying a heavy load on long tabs.

"The helmet is also easy to adjust and it feels a lot more secure on the head."

Pte Ratu Lum (1 Mercian) added: "All the kit felt comfortable to carry.

"This was mainly due to the DWD but also the vest was smaller than the old version and that made me more manoeuvrable."

Virtus will be developed and updated over the next few years with lighter components to increase the mobility and agility of the wearer to an even greater degree.

Also in the pipeline is the incorporation of a central power supply and data system that will reduce the battery burden and allow the introduction of new digital situational awareness tools.

All these features are the result of extensive consultations with personnel from the Defence Science and Technology Laboratory, the Infantry Battle School, Support Weapons School, Armoured Combat Service Support, Joint Air Despatch Trials and Evaluation Unit and Institute of Naval Medicine as well as the Defence Chemical Biological Radiological and Nuclear Centre.

The Royal Engineers, Royal Artillery, The Yorkshire Regiment, The Rifles, The Parachute Regiment, The Mercian Regiment and Royal Marines also vigorously tested the new system and provided input on its design.

With lots of feedback and experiences from troops who served in Iraq and Afghanistan taken into account, this huge collaborative effort should ensure that British Army personnel go into future conflicts better equipped than ever before. ■

VIRTUS in detail
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■ The Scalable Tactical Vest (STV) can be used for load carriage without any armour; as a fragmentation vest with soft armour padding consisting of a composite granular material but no hard plates; as a plate carrier with no soft armour; or as a full body armour system with soft and hard armour. It is compatible with both Osprey and Enhanced Combat Body Armour. Any combination of front, rear or side plates can be employed.

■ The STV comes in seven different sizes that allow for a much more tailored fit. Chest size and torso length instead of height are now used for measuring. Modified lower profile soft armour further reduces the bulk when compared with Osprey, allowing for more agility.

■ The quick-release pin allows the STV to be removed in a couple of seconds with one pull. This applies when it is used in any of its configurations.

■ A lightweight webbing system is designed to be worn under and integrated with the body armour.

■ Both the daysack and Bergen are fully integrated with the rest of the torso sub-system. This ensures that they are carried close to the body preventing excessive movement of the load but without pushing the rear ballistic plate into the body. Both can be used in conjunction with the dynamic weight distribution system.

■ Pouches are now made from one piece of fabric and fold flat when empty, minimising the soldier's profile and the possibility of snagging.

Vest's quick release pin

Protection levels can be altered

Side protection with flap only, soft padding added, and with soft armour plus ballistic plate

TORSO



■ The dynamic weight distribution system contains a hard spine that takes the load and is linked to a hip belt. This allows the soldier to transfer the weight of his load from the shoulders to the hips or the other way via an adjuster positioned in the small of the back.

It is essential that both the troops and equipment are sized correctly otherwise the DWD will not be as effective as it should be. It is estimated that personnel will need a day's worth of training and familiarisation with the kit.

Dynamic weight distribution system

■ The Virtus helmet has a fixed shroud for the mounting of night vision goggles and a counterweight for neck comfort.

■ Its fit can be easily adjusted in the same way as modern cycling and climbing helmets.

■ The sculpted rear (see above) prevents interference with body armour or daysack when adopting a prone fire position.

■ It provides more protection to the side of the head and is 350g lighter than the Mk7 it succeeds.

■ The helmet can be fitted with both mandible guard and visor, or either, which provide face protection for crews in open vehicles such as Jackal or WMIK.

HELMET