

# Broadsword® Spine®

## Light Weight Technology

Gary Bryant explains BAE Systems new vest system

**O**n the modern battlefield, a soldier's advantage gained through technological superiority is offset by the load burden of a cumbersome soldier system.

The variety of equipment and devices a soldier carries – ranging from night vision goggles, electronic counter-measures, radios and GPS devices – are often integrated onto an unwieldy cable harness, which must

also accommodate a dedicated power source for each individual device.

The modern military is looking to reduce this burden whilst maintaining a technological and combat edge.

BAE Systems' Broadsword® Spine® is a power and data network that replaces wires and cables with a patented conductive fabric, bringing about a potential weight saving of 40%. The Broadsword® Spine® is inserted directly into the



- ▶ load carriage, where the ergonomic shape of the product allows it to curve around the body such that it blends into the kit and is invisible to the wearer. The product can accommodate and manage power sources in the range of 9 to 36 volts allowing most of the in service batteries to be connected to the system. These connected power sources then act as a central energy store for the entire system, simplifying mission power and further reducing weight and logistics burden.

This revolutionary e-textile based product distributes power and data between eight fully protected connectors. Each of the connectors are identical and offer the same level of functionality, allowing the user to tailor the position of their equipment as desired. This ability to wear anything anywhere builds battle tolerance as equipment can be switched between connectors should one get damaged and allows the user to distribute the weight of attached equipment to suit themselves.

At the core of the Broadsword® Spine® is a power and data manager. This autonomously manages the power and data distribution by identifying where and what equipment is attached; reconfiguring and switching each connector on or off where required. This reduces the cognitive burden on the user and allows them to spend less of their time managing equipment and more time to solely focus on their mission.

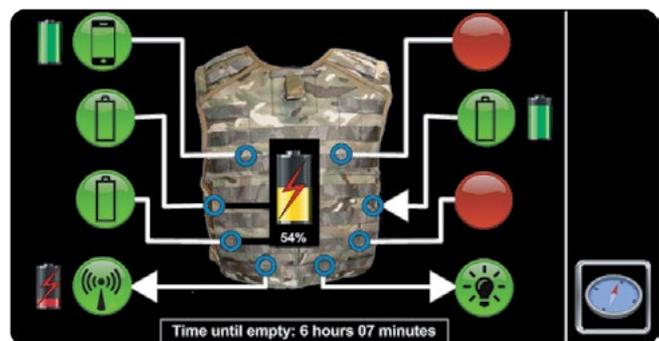
Multiple batteries can be connected to the system to accommodate differing mission durations. These batteries will be autonomously managed by the power and data manager and will form the central energy store. This prevents the opportunity for soldiers to carry just one type of spare battery.

The flexibility and compatibility of the Broadsword® Spine® benefits not just the individual wearer, but entire military forces. The system has been designed using open architecture, unrestricted interface specifications and open standards, providing customers with the freedom and flexibility to own their own system and integrate any equipment that they desire. The product conforms to the Generic Soldier Architecture Standard being developed by the UK Ministry of Defence and provides a universal solution for all armed forces that encounter integration and 'vendor lock in' issues.

The unique combination of the e-textile, connectors and power and data manager creates a product which is:

- More flexible.
- More robust.
- Highly capable.
- Lighter.
- Lower profile.
- Eliminates snag and tangle hazards.

The benefits of this technology have applications beyond the military arena. There is potential for these benefits to be developed for non-military customers that also rely on



carrying electrical equipment in a lightweight, snag-free garment, such as fire and rescue services, law enforcement or security.

BAE Systems has agreed an exclusive partnership with world-leading e-textiles developer, Intelligent Textiles Limited (ITL), to deliver this ground-breaking wearable product. The arrangement exploits the international reputation and footprint of BAE Systems, whilst retaining ITL's agility and innovation allowing the team to continue to support all customer requirements from Research & Development through to large scale manufacture or systems integration. This puts Broadsword® Spine® on a fast-track to delivering real benefits to customers.

Following a number of years of development in the technology, the partnership is now at a stage where it is ready to deliver on our customer's requirements. BAE Systems can supply Broadsword® Spine® as a standalone component or as part of an integrated solution to commercial or military customers at all supply chain levels.

The first theatre-ready variants of Broadsword® Spine® will be rolling off the production line at the end of 2016, with high rate production commencing in early 2017. ■

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