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Powering homeland security: Why batteries for homeland security need to adapt to a changing threat ● ●

The nature of terrorism is changing and the threat of domestic attacks in the USA and Europe has bolstered defence spending. Michele Windsor, Global Marketing Manager at global battery manufacturer Ultralife Corporation, explains why the increased focus on homeland security should prompt original equipment manufacturers (OEMs) to rethink the way they're powering their devices.

Following a peak in 2014, there has been a global decline in the number of deaths from terrorist attacks. According to the 2017 Global Terrorism Index (GTI) produced by the Institute for Economics and Peace (IEP), there were 25,673 deaths in 2016; a 13 percent decrease on the previous year.

Excluding Iraq, which experienced a 40 percent increase in deaths in 2016, four of the five countries most affected by terrorism — Afghanistan, Nigeria, Syria and Pakistan — also recorded a reduction in the number of deaths.

The less positive news is that, despite military gains in the fight against ISIL in Iraq and Syria, the group's activities have given rise to attacks in Europe and elsewhere in the world. According to the GTI's analysis: "As its battlefield losses have intensified, many foreign and domestic fighters have deserted and sought to return to their countries of origin... more troubling is the potential for many hardened fighters and leaders to leave Iraq and Syria to join new radical permutations of ISIL or existing ISIL affiliates in other countries."

Along with a fresh wave of attacks, the nature of the threat has also changed. It has moved away from sophisticated and

premeditated attacks that require a lot of people and use telecommunications networks to make things like bombs, towards simpler lone-wolf attacks, which use low-tech means such as knives and vehicles.

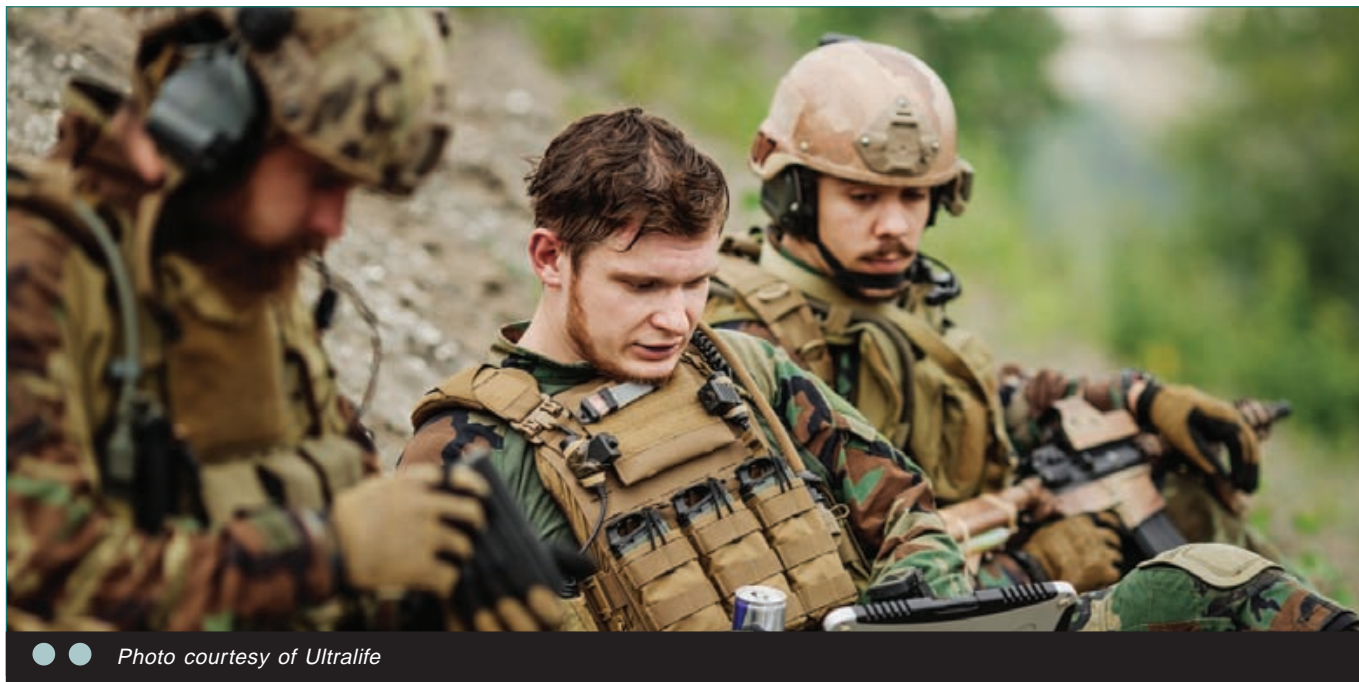
The threat to homeland security means that defence budgets have been bolstered. In February 2018, the US Department of Homeland Security (DHS) issued a statement on the President's Fiscal Year 2019 Budget that explained: "The FY 2019 Budget reflects the administration's priorities, including ensuring the safety and security of the American people. The budget requests \$47.5 billion in discretionary budget authority for the DHS, a \$3.5 billion or 7.8 percent increase from the FY 2018 President's Budget."

Changing threat to changing tech

As we begin to see this threat shift from the busy streets of Baghdad to the equally packed ones of Boston, it's important that the technology used by security professionals is up to the task. For OEMs supplying the homeland security market, this is a crucial time to review the technology and the batteries used in their devices.

Whether they are used by anti-terrorism staff, border security personnel, immigration and customs officers or cyber security experts, the range of devices used in homeland security applications is broad and varied.

In counter-terrorism operations, undercover officers may need to plant covert listening devices to surveil suspected terrorists. In first-responder situations, police officers may rely on wearable body-cameras to record vital footage from the scene, and in security applications, buildings may need to be protected using motion detectors and wireless alarm systems.



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However, the problem is that many of the devices traditionally used in these applications are not much more suited for specialist use than the consumer environments they were initially developed for. The batteries used in these devices aren't much better either and lack the crucial ruggedness, longevity and power delivery that's necessary for prolonged use in the security sector.

Batteries inspired by the military

For years, Ultralife's batteries have been specified by the US and international defence departments for use by the armed forces. They've been used in radios and military communications devices as well as vehicle-based charging systems and, crucially, in surveillance and reconnaissance equipment.

It is this specialist knowledge that has helped us to develop two batteries ideal for use in homeland security applications. The first is the M1, a non-rechargeable battery designed to support covert operations. The M1 features an integrated 1m long connector cable so that it can be hidden, along with the device, to avoid detection. It is our most energy-dense battery to date and uses lithium thionyl chloride chemistry to deliver a

238Ah, 12V battery pack in a compact size.

The second is our Thin Cell battery. When we were developing a battery for wearable devices, we were conscious of the fact that it had to be thin and light, yet cater for the most power-hungry wearable tech. What we came up with was the Thin Cell, a battery that uses high-energy lithium manganese dioxide chemistry packaged in a pouch cell that can be manufactured as thin as 0.4mm. It delivers a power rating of 3V at 700mAh and can operate at temperatures between -20 and +60 degrees Celsius.

What this means is that the Thin Cell can be used on the latest connected wearable devices worn by the police and paramilitary personnel. It is also thin enough to fit inside an ID tag or smart card worn under a close-fitting suit jacket worn by intelligence personnel to avoid detection during counter-terror operations.

As the threat from terrorism continues to adapt, so too must the technology that is developed by OEMs, device manufacturers and component suppliers. Only by rethinking the way we power our devices can we thwart terrorism with something as innocuous as the humble battery.

GMC

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