



Keeping the power up

Body-worn cameras have quickly become an essential resource for first responders on the front line – but if the battery is not up to the job the technology will fail, writes Dan Worth.

As the demand starts to grow for body-worn cameras, manufacturers will be keen to get battery weights and sizes down as much as possible.

There's a video doing the rounds on the Internet at the moment of a skier, moments after setting off into a section of fresh snow, being suddenly engulfed by a mini-avalanche, and being trapped several feet below the surface. Some five minutes later he is rescued by his friends after they spot one of his gloves in the snow, which alerts them to his position. The entire ordeal is captured on his body-worn camera – from the moment he sets off to the relief as he's rescued and the sky is suddenly visible once again. If his battery had cut out it would have deprived the world of the video of his remarkable escape, but it wouldn't have been the worst thing in the world.

However, in the emergency services, for those wearing a body-worn camera, filming an incident unfolding in

front of them, or sending back live transmission feed of a rescue incident to a command post, if the battery were suddenly to give out, it would be a different matter entirely.

Mark Calkin from 802 Global underlines this when he says it is the worst case scenario for those wearing body-worn cameras: "For first responders on the front line it is vital their technology works when they need it. If the batteries don't last long enough to cover a shift, they're not much good." As such 802 Global's range of cameras come with both Li-Ion batteries and Nickel Metal Hydride (NMH) batteries that have an average life of five to six hours. Furthermore, given that a user can stop and start the device to only film when necessary, this means the length of use of the batteries could be as much as 20

hours. However, in most instances batteries are charged off shift, irrespective of their remaining power levels.

"Power management is a major issue for the emergency services and one that we give a lot of thought to," continues Mark. "Cameras are becoming smaller and smaller, which helps to decrease the overall size of a unit a wearer will carry, but batteries remain an issue in terms of size and space."

However, as Warrick Kernes from Action Cameras points out, body-worn cameras are still a relatively new technology in this market and as such demands for improvements to batteries – in terms of lifespan, size and weight – are relatively new too. "The body-worn camera market has only been a mainstream technology since around 2007, and so there hasn't been much call from the industry to create better, smaller batteries until now. As the demand starts to grow, though, manufacturers will be keen to get weights and sizes down as much as possible."

This is something that Paul Jarvis from Video Vest – a manufacturer of cameras that are in turn supplied to police by Sycron, the security and surveillance services company – believes will be the case too, but only because of the popularity of the mobile phone market. "With four billion handsets on the market there is far more innovation in the battery world with regards mobile phones. However, these developments will ultimately filter into the body-worn camera world, so over the next few years we do anticipate there will be improvements in this areas."

Sergeant Julian Bonsall from Derbyshire Police, who use a body-worn camera system, explains that battery life is not the major issue for them but instead it is the management of batteries that causes the most problems: "We currently have around 25 camera units, with around five or six being used at any one time. Currently, due to faulty batteries needing replacing, or ones being damaged, we have only four or five working batteries. The supplier in the United States doesn't have the necessary components to manufacture new ones so we are somewhat helpless when it comes to getting hold of new ones for the time being. It seems very strange that this should be the case but the trouble is there are so many different makes and models around that we are unable to source the batteries we need from anywhere else. Given the growing use of the technology – and its usefulness – it would perhaps be a good move if the technology became standardised, perhaps via the Home Office, so that police forces could ensure they were able to get what they need at all times."

Within the fire and rescue services the use of body worn-cameras is growing too, as Calkin from 802 Global points out. "For firefighters in rescue situations, particularly those involved in confined space scenarios, the use of streaming cameras can provide excellent footage for those managing the incident, and for those firefighters who will be entering too, or replacing the firefighter currently inside. Sending the video back live is a massive advantage and allows for a greater understanding of the situation as it is unfolding. Obviously as this requires a unit to be used continuously it will wear the batteries down faster but the incident commanders on the surface, or back at the mobile C&C,



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can see the battery life on their screens and make sure the firefighter is aware of this, or send in a replacement to ensure the feed isn't lost."

Because firefighters work in conditions where heat could be detrimental to a battery's operation, and there is the possible risk of injury to the firefighter, NiMH batteries are more commonly used than Li-Ion batteries, as they do not contain compounds that can cause the battery to rupture in high temperatures. While in the past Li-Ion have replaced NiMH in most areas, in recent years the gap of size, space and weight between the two has reduced – as the "energy density" of NiMH has improved – so that the use of NiMH is an acceptable alternative.

There is even a use for the workhorse AA batteries in body-worn cameras. Kernes from Action Cameras notes that the company's VIO POV 1.5 camera can last a whole day's use on a set of rechargeable Ni-MH AA batteries, and the use of features to power the device down, or control use remotely, can help provide good power management too. He also notes: "AA batteries are good as they can be easily replaced and recharged and carrying a spare set, or even buying sets on the street, is more easily done than with bigger Li-Ion batteries."

There is little doubt the use of body-worn cameras will continue to grow, with big orders coming in from the likes of the Metropolitan Police Service. Jarvis from Video Vest notes the success of body-worn cameras is currently not generally recognised. "They are so good at getting offenders to enter a guilty plea, due to the evidence they capture, that they are not often seen in courts or in the media. As they continue to become more popular the power management side of batteries will also improve."

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*Mark Calkin,
802 Global.*