Electro interest rekindled



Marmot

Given the speed of development in both the electronics and garment industries it is disappointing to consider the paucity of onward developments in the 'wearable communications' sector. A couple of years ago we reported the potential in 'communicating' T-shirts, in flexible solar cells, in pressure-sensitive fibres and biometrics in apparel.

In signing off that particular feature we commented that it was obviously a sector that generated enormous enthusiasm for future developments. There was 'a consistent air of excitement'.

And yet the excitement seems to have evaporated. Market forces will have played their part of course; development funding has been diverted into survival programmes as both the USA and the EU retrenched in the face of falling consumer demand, and fresh enthusiasms governed by military necessities will have overtaken the fun in electronic magic.

Not all is lost, however. The collective editorial spirits were recently lifted on receipt of the news that some of the world's leading technical brands are channelling development energy into a series of garments that will communicate, entertain and provide an electronic utility. Not necessarily all at the same time, of course, but it is a step forward.

"Come in, Nike. Talk to me."

Nike's ACG off-shoot is managing its high-tec brief into the outdoor clothing sector with a range of garments that does what it says – Commwear.

Developed with the co-operation of mountain rescue teams and ski patrols from the American North-West, Commwear outer shells are manufactured in 3-layer Gore-Tex XCR fabrics. The jacket is based on the existing Nike ACG Spec garment, but has the facility to incorporate radio communications hardware into its architecture.

Solid-state connections wind through the seams, linking the collar-mounted microphone to the fully-protected transceiver and to the 'push-to-talk' control button mounted on the front zipper tab.

No mention is made of a voice-actuated option, but that is surely one facility that should be available – or at least incorporated into the second-generation specification.

Commwear was launched simultaneously at the recent Winter ispo and Outdoor Retailer shows in Munich and Salt Lake City respectively.

The centre of a small universe

O'Neill Europe has unveiled the Hub, which it describes as an 'innovative contribution to technologically advanced snowboard apparel'. Given its intended market sector, it is hardly surprising to find that this is all about pure entertainment, blending an MP3 audio player, a mobile phone connection and a functional snowboard jacket into one.

Solid-state wiring is sewn into the construction to link the communications centre with a removable 128Mb MP3 player with an 8-hour playback feature, a Bluetooth technology mobile telephone connection, a standard headphone jack incorporated into the chest pocket and a microphone that is engineered into the collar. O'Neill says that the major benefit of the collar-mounted mic is that voice recognition dialling features allow the user to remain totally hands free.

The electronic operation of the Hub is controlled by a sleeve-mounted pad concealed in the fabric of the left arm. In addition to pre-recorded music, more tracks can be uploaded via a USB port while the wearer monitors the input via the headset. The appliance itself is invisible to the user and observer.

O'Neill's latest jacket, the Hub, offers wearable entertainment for board riders everywhere.

O'Neill



The mobile communications centre has been developed by specialist semiconductor company Infineon, which first introduced its concept of 'wearable electronics' in 2002. O'Neill is one of the first to implement Infineon's technology into a wearable garment.

Hub is constructed from a modified breathable stretch fabric using O'Neill's stitchless seam technology.

Lighting up wearable technology

It has taken a three-way collaboration between the project team from California-based Marmot, the W.L. Gore Advance Development Group and the R&D department of Novatech Electro-Luminescent Inc. of Chino, California, to develop a new, wearable



The electroluminescent panels on the sleeves of Marmot's Phenomenon EL jacket ensure visibility and illumination for rescuers and rescued. Marmot

Emergency and entertainment

Nike ACG's CommBackpack incorporates a communication system into a snowboard pack, enabling outdoor enthusiasts to stay in contact when hauling gear in the backcountry. It also features automatic compression, the latest innovation in Nike load management technology. This biomechanical breakthrough allows the weight of the bag to automatically compress against the body for the best possible carrying position providing superior comfort.



As with the CommJacket, SOFTSwitch electronic fabric technology, attached with seam sealing tape, is used to provide users with lightweight, unobtrusive communications technology. Fully integrated communication components feature a microphone, speaker and push-to-talk switch mounted on the chest strap and an easily accessible hip radio pocket. It is compatible with most 2-way radios with single-pin accessory jacks.

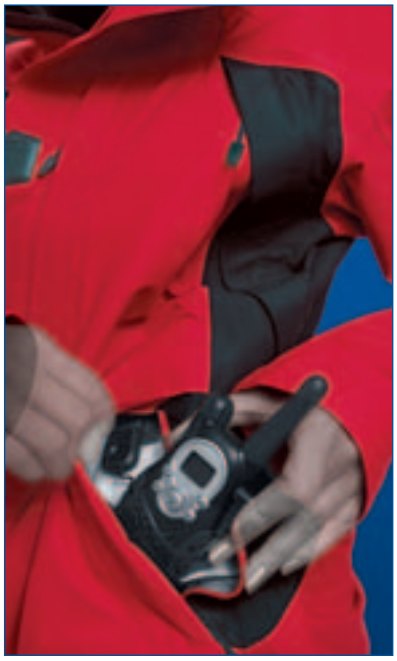
For use in emergencies an "SOS" panel snaps out of the back system. The specification also includes a snow shovel pocket and handle attachment, ski carry straps, vertical and horizontal snowboard mount, internal avalanche probe sleeve and a hydration sleeve and port.

Situation control



The CommanderPack from California-based Network Anatomy Inc. is a completely self-contained field-deployable system that contains radio, cellular and satellite technologies, combined with mapping, weather, Internet access, GPS, full flat panel tablet PC, with interlaced audio/video camera and integrated power systems. In addition, the system comes with survival gear, wound management and extreme lighting for all scenarios. The system floats, is waterproof to one atmosphere, and has been constructed to combat all harsh environments.





Nike's Commwear – switch on the front flap – microphone in the collar – 2-way radio in a pocket. Nike

technology concept garment. Given the emotive tag Phenomenon EL, this jacket features a fresh departure for wearable electronics by building electroluminescent panels into the sleeves and shoulders as a development offering additional visibility and close proximity illumination for the wearer without any adverse weight penalty.

Using micro-cabling, the panels are hard wired into the Marmot all-weather Gore-Tex XCR performance shell to provide visibility and identification at a great distance at night. The power source is a battery pack located in a pocket on the upper chest. The intention is to provide greater safety and illumination potential during storms for mountaineering professionals such a mountain guides and ski patrollers, and quicker, more accurate location and identification for emergency service units such as mountain rescue, fire and the police. The panels on the garment sleeves can be used to illuminate an immediate area around the wearer to read maps, affect repairs, and perform tasks. The panels can also be used in children's garments to provide greater safety and visibility. In addition, there are many other military, industrial and consumer applications.

Electroluminescence (EL) is the conversion of electrical energy into light. It was developed in 1936 and found commercial application in the early 1960s in illuminated aircraft instrument dials. Since then, it has been applied to a broad range of products, ranging from consumer housewares to telecommunications, automobiles, safety equipment and functional architectural applications.

In 1987, US Coast Guard research concluded that EL lighting is more conspicuous than point source navigation lighting. EL light is shadowless, homogeneous, can be shaped to fit into small places, is available in many colours, does not produce heat, is insensitive to shock, is weatherproof and is flexible. Despite its relatively lengthy history, this is the first time that the technology has been integrated as wearable technology into high performance waterproof/breathable outerwear.

Disappointment alleviated

So perhaps we are being unduly pessimistic about the speed and level of development. It is clear that micro-cabling is proving to be the most effective and durable in providing links between electronic elements – and of course it is much more easily repaired than a tear in a section of EMF (electro motive force) carrying polymer.

As an activist perhaps one finds the safety and utility facilities of greater value, but the growth in the requirement for entertainment to alleviate boredom has as much value in its own way.

Tom Wilkinson