Defence Science and Technology Laboratory

[dstl]

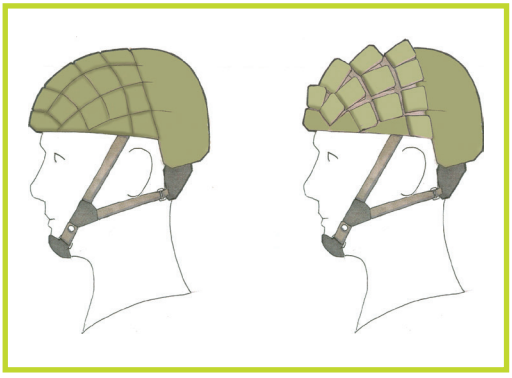
Licensing opportunity

A helmet comprising air vents

Overview

Military helmets offer extensive protection from fragmenting munitions. They are generally metal or polymer composite matrix materials. As such they are impervious to evaporative cooling which once the core temperature of the human is above a certain level this is the only method humans have to cool. As such the military helmet contributes to the thermal burden of a soldier.

This invention seeks to offer the opportunity to allow evaporative cooling of the head by providing openable vents in the helmet structure. This will allow airflow through the helmet and so allow evaporative cooling. The vents could be opened by a number of means such as by solid state actuators using dielectric elastomers or shape memory polymers.



Key benefits

- The vented helmet with active vents will allow evaporative cooling in low threat environments
- The vents could be opened or closed by the user (e.g. open for marching but closed as contact with the enemy grows near) or could be linked to sensors such as acoustic shot detectors and closed to raise the level of protection in an ambush
- Reduced thermal and cognitive burden on the individual

Applications

This is relevant to the military environment where ballistic protection of the head is required. The technology could be incorporated into future military helmet designs, which would significantly increase the comfort and safety of personnel operating in hot climates.

Civilian applications could be:

- In cycling where a variable airflow is desirable depending on the weather (Alpine routes)
- Law enforcement. Police officers on patrol would have the vents open and would only close them in high risk situation.

IP status

Patent title - Helmet comprising air vents

Patent abstract - There is provided a helmet comprising air vents and covers for opening and closing the air vents. The covers are configured to hinge outwardly from the helmet to open the air vents. Since the covers are configured to hinge outwardly from the helmet, the covers still provide protection against projectiles that emanate from a direction towards which the covers pivot when hinging, even when the air vents are opened.

Country	Status	Application no.	Filing date
GB	Pending	1321652.8	09-Dec-13
WO	Pending	GB2014/000488	26-Nov-14

Commercial opportunity

The technology has been designed for military helmets, but could be applied to other types of helmet, e.g. motorcycle helmets, emergency services, industrial and sport and leisure. The technology is innovative but at a conceptual stage.

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Ministry of Defence

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