

case study

military applications

The Brief

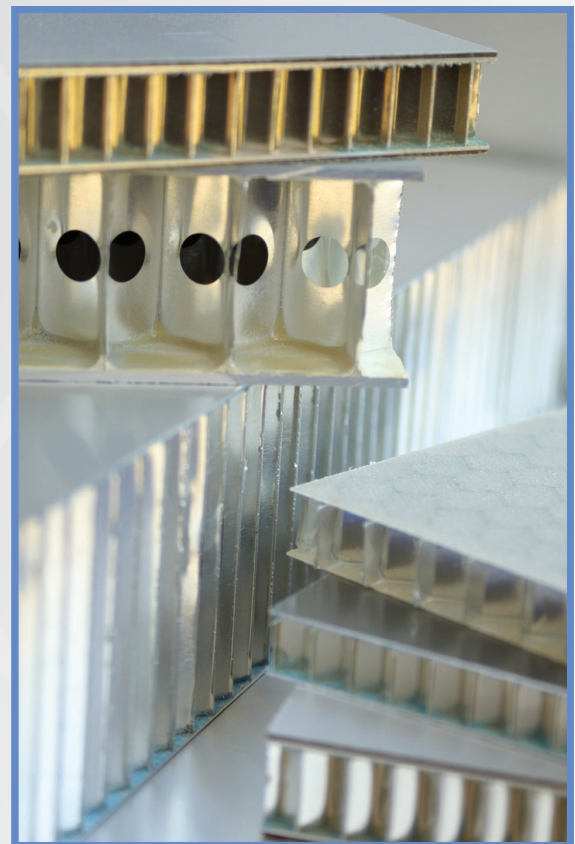
One of the key priorities for armed forces around the world is how to protect their soldiers when being transported in and out of conflict or high risk areas.

Soldiers and auxiliary personnel tend to be targeted when transported by road from their base to a task zone and back.

Armoured vehicles seem to offer very good ballistic protection, not allowing penetration of bullets or shrapnel. However, if they travel over a land mine they don't seem to be adequately equipped to protect against the shock of the explosion. The explosion is so severe that it may lift an armoured vehicle some distance from the ground.

This primary shock, as well as the force from the impact of the vehicle when it hits the ground, expose the personnel to injuries that in some cases may be fatal.

Customer testing had shown that the critical area in this vehicle was the floor. It was predicted that if it went over a land mine, the soldiers were likely to sustain leg injuries. Cellbond was asked to develop energy absorbing panels that would be fitted into the footwell of the vehicle. They should absorb enough of the energy in order to reduce the forces on the soldiers' legs and therefore minimise the risk of injury. The part needed to be reasonably lightweight and at the same time hard wearing for military use. This last part proved to be the major challenge as these two criteria tended to work against each other.



The Solution

After completion of energy absorption calculations, Cellbond provided prototypes that were tested at an independent test centre. Following successful testing of a range of energy absorbing prototypes supplied by Cellbond, the end customer chose the version that they felt best satisfied their criteria.

Cellbond has worked on a variety of energy absorbing projects with one of the leading UK suppliers of military systems. Cellbond took responsibility for the production of the complete aluminium honeycomb energy absorbing panel, including edging, fixing points, painting, certification, etc.

case study

military applications

This provided the customer with a ready to install part for the deployed vehicles. As an additional feature, these panels were easy to fit into the vehicle allowing their usage during any high risk operation areas, therefore prolonging the operational life of the energy absorber and increasing the safety levels of the army personnel.

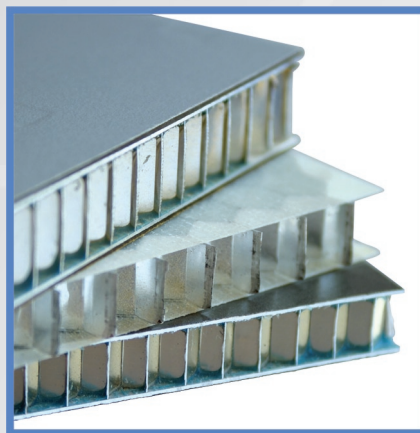
In this case, aluminium honeycomb was chosen because of its excellent energy absorption characteristics.

Why Cellbond?

Cellbond has a great wealth of experience in energy absorbing projects where, through attenuating impacts, protection is offered to the end user and reduces the number of fatalities as well as the level of injuries which is a key requirement in military vehicles.

Consultancy service is also available where the customer can benefit from Cellbond's extensive experience in energy absorption as well as the in-house component testing and Finite Element (FE) modelling facilities.

Typical applications of these parts include: vehicle flooring, seats, etc. Due to the complexity of the design of such vehicles, these solutions are usually custom-made and developed by working closely with our customers to suit the specific impact attenuation needs of each particular model. This ensures optimum performance under extreme operational conditions.



This means that complete turnkey solutions are also offered. Cellbond has the expertise and resources to assist in designing, virtual testing, prototyping, component testing and of course manufacturing serial production parts for almost any energy absorbing application.

This means that complete turnkey solutions are also offered.

Cellbond has the expertise and resources to assist in designing, virtual testing, prototyping, component testing and of course manufacturing serial production parts for almost any energy absorbing application.

Cellbond also offers a range of standard products that can be used in more generic applications, offering significant energy absorption at a reasonable cost. Typically, these energy absorbing products are aluminium honeycomb based.

Cellbond, 5 Stukeley Business Centre, Blackstone Road, Huntingdon, Cambridgeshire, PE29 6EF, U.K.
Tel: +44 (0)1480 435302 Fax: +44 (0)1480 450181 Email: sales@cellbond.com Web: www.cellbond.com

Cellbond is a division of Encocam Ltd.
Company Registration 1944904