Perfect packaging

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Corrugated cardboard is an excellent packaging material that is widely used for transporting, storing and protecting goods. Through the new process developed by EUREKA project, corrugated cardboard can be transformed into a new honeycomb core that offers reduced weight, uses less raw material and achieves better crash absorption and higher compression resistance than double flute corrugated cardboard.

Honeycomb cores are already used in a variety of applications, including the aerospace and automotive industries, because of their outstanding performance in providing structural support and reducing weight. They are also recyclable and can even be produced from recycled paper.

"However, current paper honeycomb production involves many distinct steps, making it too slow and too costly to target the corrugated cardboard market," explains Jochen Pflug from the Department of Metallurgy and Materials Engineering at the project's lead partner, the Katholieke Universiteit Leuven (K.U.Leuven).

To overcome this weakness, the project partners created an innovative and cost-effective process to produce the packaging material from a single continuous sheet of corrugated cardboard.

The new folded honeycomb material, developed and patented by K.U.Leuven, is produced by successive in-line slitting, rotation and glueing steps, and can be produced at a rate of 100 metres per minute. This allows for a continuous high-speed, low-cost production process that can compete in the double flute corrugated cardboard market worth

Ъ4.5 billion a year in Europe alone.

In addition to the new packaging material, the project partners have sandwiched thin (5 -10 mm), cost-efficient paper honeycombs between natural fibre mat skins for use in structural applications such as in cars and furniture – wherever there is a need for cost and weight savings. "The honeycombs also have good impact properties and can be recycled," adds Pflug.

Despite the proven production speeds of the new honeycomb material, the transformation process for the structural materials currently works off-line, and with a board width limited to 1200 mm. Although production is already economically viable, work is continuing to optimise production and maximise profitability.

A spin-off company is expected to market the technology and to produce the structural honeycomb products.

"Being a EUREKA project helped bring together companies from many different industrial sectors to develop new materials with many different potential applications," says Pflug.

Source: EUREKA