Improved helmet

Patent Status

World Intellectual Property Organization (WIPO), patent granted
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Intellectual Property Owners

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Abstract

To use an honey-comb shaped item, in the helmet body, aimed to absorb the maximum impact energy rate. The target is to get the highest possible level of protection in the case a frontal impact occurs. The honey-comb element has been modelled as per two symmetric side inserts, that are integrated in the helmet external shell structure. The new monocoque shell is made by: jaw, honey-comb side inserts, backside helmet external shell (see Picture 1). This solution (side honey-comb inserts introduced in the helmet external shell structure), can be used even to realize modular helmets, with movable flip jaw. In this case the side inserts will be fixed on the back-side helmet external shell.

![Picture 1: Traditional helmet sectioned (on the left), patented new helmet structure proposal sectioned (on the right)]
Picture 2: Frontal impact case simulated: direct impact on helmet jaw. Traditional helmet (left), new helmet structure proposal (right).

Picture 3: Front impact on helmet jaw simulation. Conventional helmet (left), new helmet structure proposal right. Maximum acceleration instant. prosposta (left).

Picture 4: Head accelerations comparison (above), chin-strap transmitted forces-strengths (below). Traditional helmet (blue curve), new helmet structure proposal (red curve).
The Technology and its advantages

Apart from the helmet kind (monococque or modular external shell) this invention allows to significantly increase the frontal impact energy rate, compared to currently commercialized helmets, getting reduced at the same time the accelerations and forces (strengths) transmitted during the impact itself. The honeycomb structure is light and well adjustable on the motorcycle helmet external shell design and style. The higher rider safety obtained corresponds to a slightly increased helmet mass value. The helmet fitting performances are kept undiminished. Helmet ergonomics, perception and safety are not affected nor worsened.

Market opportunity

The main applications of this invention interest the Transportation Safety sector, the Prevention and Healthcare National sector and Institutes, in order to reduce motorcycle riders traumas related to incidents and falls into which frontal impacts onto obstacles occur. The geographic areas that could get the highest interest in developing such an innovative solution shall be the European and EFTA Countries, the North America Region and Japan. In those regions there are Multinational Companies (owing to the interested industrial sectors) capable and encouraged (pushed, boosted, stimulated) to manufacture safer protection devices. Those Industrial Groups can get commercial benefits by pushing on their own the new/safer helmet on the market, trying to capture the interest by the "early adopters" customers. This can get a flywheel effect for the rest of the consumers. Anyway the high rate of powered two wheelers vehicles diffusion in the emerging Countries, it permits to imagine a progressive potential widening of safer devices even in their markets. This can be seen as per a sale growth opportunity for the Multinational Motorcycle Apparel and Protection Manufacturers interested in the new technology, due to the market trends and diffusion.

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