

Hybrid lightweight construction technology for commercial vehicle cabs

Affordable, structural lightweight design through innovative multi-material construction is the aim of the HylightCab research project

The one-piece medium-high roof for heavy trucks developed in a multi-material approach demonstrates that a significant and at the same time affordable weight reduction can be achieved. Sandwich construction combined with fiber-reinforced plastics and metallic elements made this achievement possible.

A polyurethane-based composite material, which can be processed in large-scale production processes, such as long fiber injection (LFI) and molded foam manufacturing. This allows the potential for a short-term industrialization of the developed multi-material design as it can be integrated into conventional serial production lines.

Foam-in-place processing of deep-drawn rigid foils sheets enable maximum exploitation of the technology's potential. This saves costly painting work and logistics, while at the same time the process provides excellent surface qualities. In addition, a weight saving of up to 50% has been achieved compared with conventional steel construction.

In terms of sustainability, the use of polyurethane-based composites ensures that future environmental requirements can be met in a timely manner. The currently used PU system can be chemically recycled by solvolysis and partly substituted by recycled material or PU systems based on renewable raw materials.



1 One-piece medium-high roof with excellent surface quality. Photo: Fritzmeier Composite.

2 Illustration of the medium-high roof structure. Photo: Greening.

Projektkonsortium:



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