Commercial vehicle refinishing

Harmand & Fils

A Butting resistant plastic structure

Harmand & Fils successfully managed to use charged polypropylene to create a lighter and less expensive plastic livestock vehicle that helps to increase the number of livestock transported.

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OUR CLIENT

Corporate name
Harmand & Fils

Turnover
EUR 4.5 million

Activity
Commercial vehicle refinishing, solution for livestock transport

Turnover
EUR 3 million

Workforce
40 employees

In order to remain competitive, Harmand & Fils tackled the challenge of providing the market with a less expensive and lighter livestock vehicle. The vehicle body constructor decided to explore the possibility of replacing the aluminium walls with a plastic that could adequately withstand the impact caused by horn butting. *"We called on Cetim and set them three goals: lowering costs by 20% with respect to the aluminium livestock vehicle, reducing its weight by 20% while retaining the current dimensions and geometry of the shell and using a recyclable material"*, explained Jérémy Harmand, the company's CEO

Simulating an extreme case

Firstly, Cetim started by selecting six plastic materials depending on their density, stiffness and price per kilogram. The feasibility study helped to identify three solutions.

Next, Harmand & Fils asked Cetim to analyse the impact resistance of these three materials. The experts at the Centre propose the drop tower test that simulates the horn by a hammer falling from a certain height. By adjusting the weight and the drop height, the quantity of energy required is selected. In fact, the impact energy is the product of the weight, the drop height and gravity. The test must simulate the most extreme case, that is a horn impact in emergency braking. In the end, the impact resistance of the plastic materials tested is better than aluminium in particular for polypropylene. Building on this study, Harmand & Fils developed a unique vehicle with a polypropylene shell that can transport three cows.

Cetim's asset

Cetim boasts solid experience in material analysis. It also possesses tools like the drop tower which offers a drop height of 100 to 1,000 mm, with a drop weight of 2 to 11 kg and energies ranging from 2 to 110 J.

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