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Abstract:

Automotive manufacturers have intensified their efforts to decrease the vehicle drag coefficients and weight in order to optimize fuel consumption, in all light commercial vehicles segments. The sump guard is an important component to be evaluated; it has significant influence in drag and in the total weight of vehicles.

The present work intends to evaluate the sump guard component replacing steel - more commonly used in the Brazilian market - for polymeric materials.

A complete study of feasibility under the light of the aerodynamics and structural analysis is made. It also considered the benefits of applying polymers instead of steel.

In the structural analysis, an impact and its consequences over the integrity of the component are verified using the finite analysis method.

As for the aerodynamics, a complete car in a wind tunnel is replicated, using the finite volume analysis, to verify the influence of drag and pressure coefficients over the sump guard.

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[1] <http://dx.doi.org/10.4271/2010-36-0302>