



## The Context

In the automotive industry; there is nowadays more and more pressure to use lighter material, responding to the same or to better requirements. Composite materials are promising because they offer interesting mechanical properties, while being lighter. Consequently, they are potential candidates.

The use of lightweight material becomes a priority as they allow weight saving and consequently decrease CO2 emission. On the other side, composites are more expensive than steel, especially if high mechanical properties are demanded. Composites present then a cost challenge and a very efficient technologies must be used to stay competitive.

Among the existing technologies, EMJ can be highlighted as it allows joining metal-to-composite in a very rapid and cost efficient way. The bottom connection of a shock absorber represent therefore an interesting case study to prove that this joining technic is cost-efficient while saving weight though the use of composite.

## Our Solution

The bottom closing of a monotube shock absorber was used as a case study. The welded steel loop was therefore replace by a composite part in PA66 with glass fibres produced by injection molding.

This solution has the advantage to produce lighter shock absorbers (15 % saving) while keeping the requirements for a structural part. The technology can be integrated easily in the manufacturing process, keeping the product at an acceptable cost for the market.

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