An innovative and safe active light weight design chassis suspension system - An enhanced development methodology

Need for a new chassis

Lightweight Design is still important for electric vehicles

<table>
<thead>
<tr>
<th>Small vehicle with recuperation</th>
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<tbody>
<tr>
<td>~21%</td>
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<tr>
<td>100%</td>
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<tr>
<td>75%</td>
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<tr>
<td>50%</td>
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<tr>
<td>25%</td>
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<tr>
<td>0%</td>
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<tr>
<td>Increase of range</td>
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<tr>
<td>Mass reduction</td>
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Current regulations and a lack of crash compatibility in reality

Deflection: a possible solution

3 steps to a safe active chassis system

The orbital wheel concept
- Direct force distribution from road to body
- Simple parts due to direct force routing
- Reduced number of parts and mass

(a) conventional MacPherson suspension; (b) orbital wheel with MacPherson

Two axis independent steering system
- Reduced energy consumption
- Better driving performance
- High active safety potential
- Better grip & Enhanced cornering stability

GFRP transverse leaf spring
- New development process for reinforced leaf springs
- Closed loop in the automated development of CAD model and fiber layup
- High optimization potential at an early design stage

The wheel as deflection shield is enough

Reduction of intrusion by turning of the wheel by 30°:
- >30%
- 20-30%
- 10-20%
- <10%

More information

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