2016 Annual Conference & Innovation Awards

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Case Studies

Dr. Ing. Wim Van den Bergh, Ass. Prof Infrastructure, Research coordinator EMIB, Faculty of Applied Sciences, University of Antwerp

Dr José Manuel Menéndez, Director of the G@TV Research Group at the Technical University of Madrid

Mr. César Bartolomé, Director for Innovation at the Spanish Institute for Cement and its Applications

Mr. Patrick Asimus, President & CEO, Movea SAS
How to Increase Road Safety
“Smartness”:
Focus on Safer Roadsides through Passive Safe Road Infrastructure

Patrick Asimus
Some numbers and facts...

- Every year, 1.3 million people die as a result of a road traffic collision.
- 3,000 deaths each day.
Some numbers and facts...

- In Europe, about **26,000 people killed** per year and **200,000 people injured**.

- **30%** of road deaths involve single vehicle accidents and **1/3** of people die by driving into obstacles close to the road.
Some numbers and facts...
Some numbers and facts...
Some numbers and facts...
2. Consequences of hitting an obstacle

- Driving into an obstacle can be deadly at 65 km/h in case of a frontal impact.
- 35 km/h in case of a side impact.
2. Consequences of hitting an obstacle

Machine factors

3 pillars of ROAD SAFETY

VEHICLE

Physical factors

ROAD SAFETY EQUIPMENTS

DRIVER

Human factors
2. Consequences of hitting an obstacle
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The obstacle is too rigid and the slowing down is too abrupt. The shock to the people into the vehicle is then too big and may be fatal.
3. What are the solutions?

When the car hits an obstacle:

- Deformation by the car to absorb partially the impact

When the passenger hits the cockpit of the car:

- Well fastened seatbelt to avoid hitting the steering wheel or the window & activation of the airbag

When the organs bump into each other and human tissue threats to implode:

- Creating a longer slowing distance in a controlled way minimises the forces exerted on the occupants
3. How to treat obstacles on the roadside?

Solution 1: designing safe roadsides

This philosophy of a “forgiving road” is the mere recognition that road users sometimes leave the running carriageway for explainable or unexplainable reasons.

Safety zone = recovery zone + Stop zone

This is OK for new roads (if enough space) but what happens on existing roads?
3. How to treat obstacles on the roadside?

**Solution 2: remove all the obstacles?**

If the obstacle has no use in being close to the road, remove it.
Solution 3: make the roadsides forgiving

In many cases, traffic signs, lighting columns, camera mast, need to be there to improve traffic safety or for some other reason.

So make it forgiving in 2 ways:

- If something is installed in the clear zone, it should be forgiving, so approved according to EN 12767.
- If you cannot design the road as being “forgiving”, isolate it with a guardrail certified EN 1317 in respecting the installation manual regarding the working width and the total length.
4. The EN 12767: Safe Pole Performance and Testing

- Dedicated to passively safe street furniture and road equipment: mainly signpost, lighting column and traffic light

- Describes the crash tests methodology and sort the products by performance.

- Depending on their design, safe poles will either yield (bend over) or fail (break or shear off).
The pole breaks or comes out of the ground. The speed of the car is not really reduced so no energy is absorbed. There might be the risk of having a second accident.

The pole bends slightly and then breaks or comes out of the ground, there is some energy absorbed so the speed is slightly reduced.

The speed of the car is slowed down, the energy of the impact is highly absorbed.
4. The EN 12767: Safe Pole Performance and Testing

- 35, 50, 70 and 100 km/h
- 2 impact tests minimum:
  - 35 km/h (mandatory) + 50 or 70 or 100 km/h

### Speed Classes

<table>
<thead>
<tr>
<th>Speed classes</th>
<th>Impact speed in km/h</th>
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<tbody>
<tr>
<td>50</td>
<td>35 and 50</td>
</tr>
<tr>
<td>70</td>
<td>35 and 70</td>
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<tr>
<td>100</td>
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</table>

900 kg
4 levels of safety for car occupants

<table>
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<tr>
<th>Level of safety for occupant</th>
<th>Comments</th>
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<tbody>
<tr>
<td>1 to 3</td>
<td>Increased safety</td>
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<tr>
<td>4</td>
<td>Without any risk</td>
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</table>

- These levels are determined from ASI and THIV values measured during the crash-tests.
- No intrusion into the passenger compartment
### Table 5 — Occupant safety

<table>
<thead>
<tr>
<th>Energy absorption categories</th>
<th>Occupant safety level</th>
<th>Speeds</th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>Mandatory low speed impact test 35 km/h</td>
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<td></td>
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<td>Maximum values</td>
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</tr>
<tr>
<td>NE</td>
<td>4</td>
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Best practices with safe poles

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Best practices with safe poles

Vertical road infrastructure and equipment improve road safety for sure. BUT the poles should not be an obstacle when hit in an off road accident.

The European standard EN12767 is there to approve products for their passive safety.
The only place where safe poles don’t work
4. The EN 12767: Safe Pole Performance and Testing

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Thank You for Your Attention

Patrick Asimus