Taking safety to a new level

Mal Brown
Volvo Group Trucks Technology
Gopro film med en kort sek med mats sedan en kort när bilenstår parkerad sedan en lagom när den kommer urmörkret sedan slår i
"The basic principle behind all design work is, and always must be, safety."

Assar Gabrielsson  Gustaf Larson
Volvo Trucks Accident Research Team

Active since 1969

- More than 2,000 accidents investigated
- Specific knowledge about Volvo trucks
- Do they perform as intended?
- How can they be improved?
Severe accident on highway in Europe
Trailer back on E45 Denmark at high speed.
Rollover E6 Sweden
Safety Concern

- Something that involves all of us in our everyday life
- There is a high acceptance level in society?

<table>
<thead>
<tr>
<th>Traffic Fatalities/Day</th>
<th>Rate/100,000 Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden</td>
<td>4</td>
</tr>
<tr>
<td>Australia</td>
<td>6</td>
</tr>
<tr>
<td>Germany</td>
<td>6</td>
</tr>
<tr>
<td>Brazil</td>
<td>18</td>
</tr>
<tr>
<td>India</td>
<td>9</td>
</tr>
<tr>
<td>Worldwide</td>
<td>19</td>
</tr>
</tbody>
</table>

“More than 90% of the world’s road deaths occur in low-income and middle-income countries, while these countries only have 48% of the world’s vehicles.”
Investigations are reported from Accident Research Team to Volvo Group Truck Technology
• All collected data from the Accident Team is presented in a Volvo Safety Report every second year
• And statistics of accident are created
• Data is input into new projects
Types of Accidents

- Truck occupants: 15 – 20%
- Car occupants: 55 – 65%
- Unprotected road users: 15 – 25%

Volvo Trucks Accident Research Team
Legal safety demand on heavy trucks

ECE-R29  Cab strength
SAE J2422  Cab strength
ECE-R14  Seat belt anchorages
FMVSS210  Seat belt anchorages
Complementary safety demand on Volvo products

- **Swedish impact test**
- **Volvo barrier test**
- **Car to truck head on collision**
- **Japan barrier test**
- **Emergency exit**
- **Impact friendly interior**
- **Impact friendly front**
Rollover accident 45% of severe accidents
The most common accident type where truck occupants are injured

Swedish cab strength test: BOF 10 to secure safety in rollover

- Survival space
- Cab strength
- Evacuation

Roof 147 kN
A-pillar 29.4 kJ
Rear 29.4 kJ
Test on the new FH

ECE R29-2  Swedish cab strength BOF 10
Single truck accidents correspond to 50% of severe accidents.
Rollover is involved in 45% of all severe truck accidents.

Use safety belt!
Collision with another truck
The 2nd most common accident type where truck occupants are injured

The Volvo Barrier test – rigid barrier shaped like the rear of a trailer

> Cab strength
> Cab attachments
> Occupant injuries
> Evacuation

Extended barrier, test speed 30 km/h (~ 50 km/h into rear of trailer)
Film som visar eventet
Guarded rail test 75 km/h
35 tonnes total load
Truck front vs car corresponds to 65% of accidents
Performed tests on The New Volvo FH

<table>
<thead>
<tr>
<th>Test Type</th>
<th>Test Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Certification tests</td>
<td></td>
</tr>
<tr>
<td>Collision safety</td>
<td>14</td>
</tr>
<tr>
<td>Collision compatibility</td>
<td>14</td>
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<tr>
<td>Full scale tests</td>
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<tr>
<td>Frontal collision</td>
<td>24</td>
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<tr>
<td>Rollover</td>
<td>1</td>
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<tr>
<td>Car-Truck crash</td>
<td>21</td>
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<tr>
<td>Component test</td>
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<tr>
<td>Frontal collision</td>
<td>140</td>
</tr>
<tr>
<td>Rollover/frontal/unprotected</td>
<td>149</td>
</tr>
</tbody>
</table>

363 tests in total
26 trucks
21 cars
> 350 parts
To learn more about the next level of truck safety, check out the following features on ‘Volvo Trucks

- Adaptive Cruise Control keeps safe distance
- Collision Warning with Emergency Brake
- Electronic Stability Program prevents rollovers
- Lane Keeping Support keeps trucks on the straight and narrow
- Driver Alert Support
- Lane Changing Support monitors blind spots
Thank you and drive safely