RID/ADR
Bleve WG Meeting

The LPG Truck of The Future

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1. Background

- Recent accidents in Italy, UK, France etc.
- Fires in the engine compartment or from tyres or other systems
- Newer technologies now wider available with scientific and technical progress in the field of vehicle equipment
- Active and advanced driver assistance systems help drivers
- Passive systems have also a significant role to play
- Objective is to prevent incidents
- LGE working with partners, EIGA, IRU, Mercedes
2. Historical Incident Review

• 24 Serious incidents reviewed (1967 – 2018)
• 14 (58%) – potential benefit from “modern” technology
  EBS (4)
  Vehicle Stability
  Auto shut down facility
  Overfill prevention
  Fatigue/distraction detection (4)
  Anti – drive away
  Telematics (2)
• 4 others related to sabotage/ arson
3. The Stats

- 10% of traffic on motorways are trucks
- Over half the fatal accidents on the motorway involve trucks
- A truck is 5x more likely, than other types of vehicle, to be involved in a fatality on A and minor roads
- Trucks make up 5% of all traffic but are involved in 23% of accidents where a cyclist dies
Types of serious truck accidents – use of safety systems

- ABA 4
  - Sideguard Assist
    - since 12/2016

- Braking behaviour prior to rear-end collisions
  - 38% Full braking
  - 39% No braking
  - 20% Partial braking
  - 3% N/A

- Lane guidance accidents
  - 39%

- Rear-end collisions
  - 8%

- Other
  - 8%

- Junction
  - 18%

- Lane change
  - 33%

- Unintended lane change
  - 36%

- Oncoming traffic
  - 33%

- Rear-end collisions
  - 33%

- Other
  - 8%

- Junction
  - 18%

- Pedestrians
  - 2%

- ABA 4
  - Sideguard Assist
    - since 12/2016
4. Available Technologies

Active safety measures:

- Automatic Emergency Braking (already required on trucks and buses)
- Intelligent Speed Adaptation (ISA) (technology that can control a vehicle within speed limits or warn a driver to comply)
- Lane Keep Assistance (corrects steering if a vehicle veers out of a lane)
- Driver Drowsiness and Distraction Monitoring (technology that identifies and warns a driver if they are falling asleep / distracted)
- Anti-lock braking system (ABS)
- Automotive night vision
- Traction control system (TCS)

Passive safety measures:

- Emergency Braking Display (flashing stop lights)
- Seat belt reminders for passengers (these are already required for the driver)
- Improvements to frontal crash testing for occupant safety
- Improvements to side crash testing for occupant safety
- Introduction of rear crash testing (there is no required test at present)
- Standardised interface for fitting alcohol interlock devices
- Crash event data recorders
- Tyre pressure monitoring
Safety Technology: Overview

Milestones of active safety systems

- Anti-lock Braking System (ABS)¹
- Acceleration Skip Control (ASR)¹
- Telligent-Roll Control
- Telligent Braking System
- Telligent Lane Keeping Assist
- Telligent Adaptive Cruise Control
- Telligent Stability Control²
- Brake Assist
- Hillholder ESP (Sprinter)
- Active Brake Assist (ABA)
- Active Brake Assist 2 (ABA 2)
- Active Brake Assist 3 (ABA 3)
- Predictive Powertrain Control
- Cross Wind Assist
- Active Brake Assist 4
- Sideguard Assist


(Images and data sourced by Mercedes-Benz Trucks)
Active Brake Assist 4 (since 12/2016)
Additional function: pedestrian detection

1. Distance becomes critical
   Detects pedestrians crossing ahead of the vehicle, and when turning
   Active in a speed range up to 50 km/h

2. Warning stage
   Driver receives visual warning in the form of red status indicator and warning triangle as well as audible warning

3. Warning stage
   Partial braking and simultaneous audible/visual warning

4. Emergency braking
   Emergency braking must be initiated by the driver.
Active Brake Assist 4 (since 12/2016)
The aim of ABA is to avoid as many critical situations as possible in the "rear-end collision with an obstacle" scenario without causing any new traffic hazards.

Distance becomes critical
The truck approaches a **moving** or **stationary** vehicle in front

Warning stage 1
Driver receives visual warning in the form of red indicator and warning triangle as well as audible warning

Warning stage 2
Partial braking by the system with 50% of the max. braking power

Emergency braking when approaching obstacles
Automated Emergency braking by the system when approaching **moving and stationary** obstacles
Active Brake Assist 4 (since 12/2016)

• Further development of ABA3
• Range, performance and availability further improved thanks to the use of the latest 4th radar generation
• Accident avoidance ideally possible up to 80 km/h (50 mph), within the system's limits
• The driver "braking" action no longer leads to the termination of the warning cascade
• Following emergency braking, the vehicle is held in a stationary position by the "Hold Brake" function
• Additional function: pedestrian detection up to a speed of 50 km/h (30 mph)
Truck of the future
Vision for new fleet

OEM safety features on new vehicles
• Fatigue detection
• Lane departure
• Collision avoidance/emergency braking
• Adaptive cruise control

GPS Trailer Tracking (With axle weight indication)
Reversing sensors / Tailguard
Reversing camera / event camera
Tyre pressure monitoring
Telematics with GPS for fuel efficiency and vehicle tracking
Consolidated display for the driver
Blind side proximity sensor and camera for cyclists and vulnerable road users
Driver fatigue detection / inward driver facing camera
Forward facing camera
IRU Report

• **The immediate situation (2016 – 2020)**
  Driver training to improve
  Incentives for vehicles equipped with ADAS

• **Medium term (2020 – 2030)**
  ADAS standard in HDV
  Driver training continues to improve
  Legislative processes authorising fully autonomous vehicles (including provision for driving/resting times)

• **Long term (2030 – 2040)**
  Fully autonomous vehicles in common use (24/7)
  Change of driver role from control to monitoring function
Liquid Gas Europe will:

- embrace new technology
- be proactive in improving safety
- work with our partners to identify best practice
Thank You

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