



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



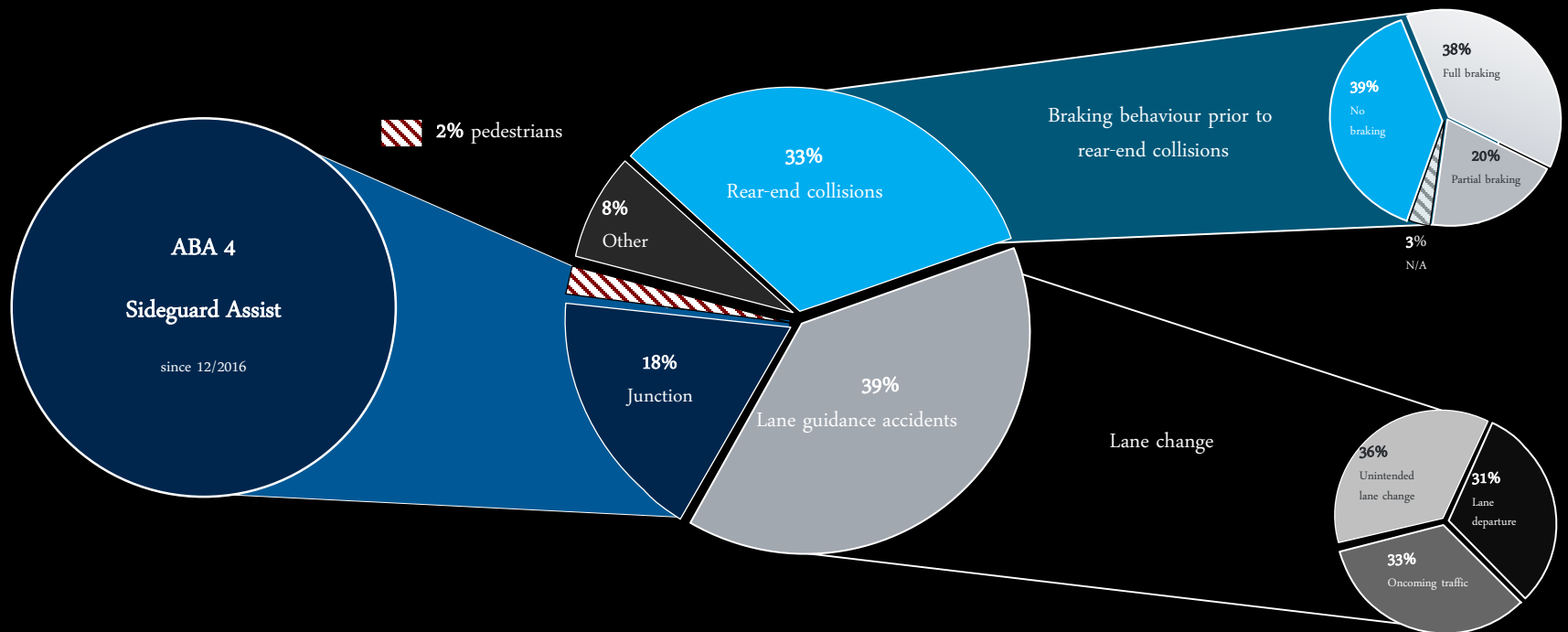
- 24 Serious incidents reviewed (1967 – 2018)
- 14 (58%) – potential benefit from “modern” technology
 - EBS (4)
 - Vehicle Stability
 - Auto shut down facility
 - Overfill prevention
 - Fatigue/distraction detection (4)
 - Anti – drive away
 - Telematics (2)
- 4 others related to sabotage/ arson

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



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)

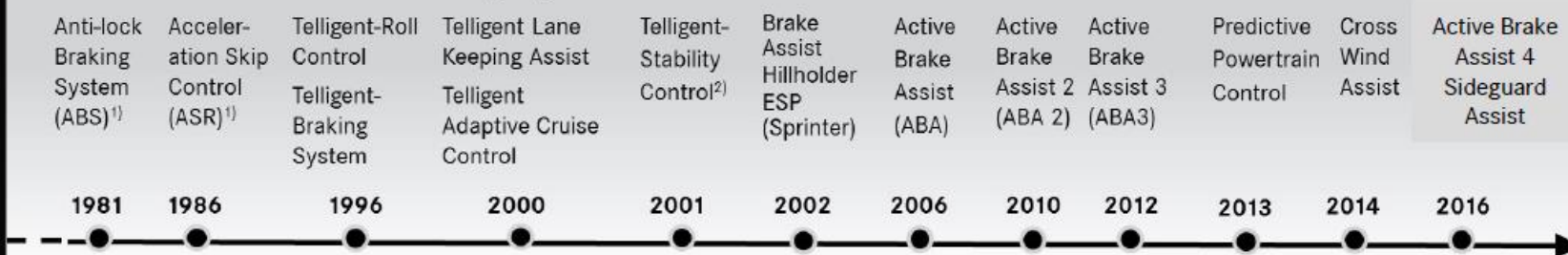
Passive safety measures:

- 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





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.

1



Distance becomes critical

The truck approaches a **moving** or **stationary** vehicle in front

2



Warning stage 1

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

3



Warning stage 2

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

4



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

Telematics with GPS
for fuel efficiency and
vehicle tracking

Blind side proximity sensor
and camera for cyclists and
vulnerable road users

Tyre pressure
monitoring

Consolidated
display for the
driver

Forward
facing camera

Driver fatigue
detection /
inward driver
facing camera

- **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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European LPG Association
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