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Enhanced Protection for People on the Move: Integrated Vehicle Safety Technology from ZF

- **ZF enhances safety and comfort for manual, assisted, and automated driving**
- **The world's first pre-crash protection system with an external side airbag can help reduce side impact intrusion by up to 40 percent**
- **Active and passive safety technology to better protect vehicle occupants and other road users**

Friedrichshafen / Klettwitz (Germany). For ZF, safe mobility means helping to protect road users as effectively as possible both inside the vehicle and in its surrounding area utilizing newly developed and enhanced comfort and safety functions. Examples include "Automated Front Collision Avoidance" for automated departure from a lane in emergencies, or the world's first pre-crash protection system with an external side airbag.

Safety technology from ZF can help to prevent accidents and, when a collision is inevitable, to mitigate its consequences. This applies to manual, assisted, and automated driving. ZF Group offers the most comprehensive portfolio of all automotive suppliers to help achieve this – comprising sensors monitoring the vehicle exterior and interior, powerful signal processing, actuator systems for vehicle motion control and occupant safety systems.

Advanced assistance systems are designed to relieve the workload for drivers, actively prevent accidents, and save lives. This starts from getting into the car, with an active buckle lifter seatbelt system making it easier to fasten yourself in, then ensuring that the seatbelt fits safely and comfortably. During standard driving situations, ZF systems allow the driver to operate the vehicle in a relaxed manner while enhancing safety during critical driving maneuvers. This is especially true of transition scenarios between automated and manual driving modes. "Our interaction concept places the person center stage, and fosters



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simplicity”, states Uwe Class, Head of Safe Mobility Systems, an Advanced Development department.

Automated negotiation of a danger area

In highly dynamic driving situations such as emergency braking or emergency avoidance maneuvers, high-performance driver assistance systems are there to help. For example, the “Automated Front Collision Avoidance” system can automatically perform avoidance maneuvers when manual braking or evasive action in the face of oncoming traffic fails to take place in time. Here, the Driver Assistant system evaluates whether emergency braking is still possible and whether there may be free space available for an evasive maneuver.

More crumple zone during a critical side-impact collision

Accidents cannot always be avoided and side impact collisions can be particularly dangerous for vehicle occupants. Roughly one in three fatalities in Germany in passenger car accidents are caused by the lack of crumple zone in this area, compared to, for example, a head-on collision. The world’s first pre-crash occupant protection system with an external side airbag is capable of reducing the consequences of a side impact accident by up to 40 percent. This is achieved by the external airbag creating an additional crumple zone in the door area between the A and C pillars. The system is only deployed if high-performance sensors detect an unavoidable side impact collision and activate the protection system in response.

Captions:

- 1) The ZF Integrated Safety cockpit is an innovative vehicle concept designed to demonstrate how an intuitive interior design can enhance safety, in particular during the transition from automated to manual driving.
- 2) The “Automated Front Collision Avoidance” assistance function can command the vehicle to change lanes automatically in critical situations if the driver fails to react in time.



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- 3) ZF presented the world's first pre-crash-triggered occupant protection system with an external side airbag. It can reduce occupant injury severity for side impact collisions by up to 40 percent. [Images and TV footage]

Images: ZF

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#MobilityLifeBalance

For most of us, mobility originally meant personal, self-determined freedom. More recently, due to congestion, emissions, accidents, and a lack of availability, it can now be an ever more present cause of stress. It is becoming more and more challenging to determine the best solution for each individual among the range of mobility solutions currently available. ZF is highlighting this challenge with its **#MobilityLifeBalance** campaign and featuring its range of solutions that contribute to a better and more sustainable mobility offering. The objective is to enable clean, safe mobility that is automated, comfortable, and affordable. For virtually everyone, everywhere.

Find out more about the topic through the **#MobilityLifeBalance** hashtag in social media, or online at <http://www.mobilitylifebalance.com>.

ZF Friedrichshafen AG

ZF is a global technology company and supplies systems for passenger cars, commercial vehicles and industrial technology, enabling the next generation of mobility. With its comprehensive technology portfolio, the company offers integrated solutions for established vehicle manufacturers, mobility providers and start-up companies in the fields of transportation and mobility. ZF continually enhances its systems in the areas of digital connectivity and automation in order to allow vehicles to see, think and act.

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In 2018, ZF achieved sales of €36.9 billion. The company has a global workforce of 149,000 with approximately 230 locations in 40 countries. ZF invests over six percent of its sales in research and development annually.

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