Beat: Automobiles

Highway Pilot - World premiere on public roads

Shaping Future Transportation

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USPA NEWS - Mercedes-Benz Actros with Highway Pilot is the first series-production truck to drive on a partially automated basis on the motorway. Highway Pilot: more alert and attentive than any driver. Automated driving functions promote safety and efficiency in road traffic.

On the A8 between Denkendorf and Stuttgart airport Daimler Trucks is today having the world's first series-production truck to operate on an automated basis drive on the motorway. Together with the state of Baden-Württemberg's Prime Minister Winfried Kretschmann, Dr Wolfgang Bernhard, Board Member of Daimler AG responsible for Trucks and Buses, is undertaking the maiden journey in the Mercedes-Benz Actros with Highway Pilot system.

With this permit the truck is allowed to drive on motorways on an automated basis. The truck used for the premiere is a standard Mercedes-Benz Actros equipped with the intelligent Highway Pilot system for this test of autonomous driving on public roads. The truck is approved as a test vehicle in accordance with §19/6 StVZO (German road traffic type approval law). The Rhineland German Technical Inspection Authority had inspected the vehicle and issued an expert opinion. On this basis the Baden-Württemberg regional council granted an exemption in accordance with §70 StVZO.

Today's premiere is a further important step towards the market maturity of autonomously driving trucks "“ and towards the safe, sustainable road freight transport of the future“, said Daimler Board Member Dr Bernhard.
Sven Ennerst, Head of Development Daimler Trucks, commented: “žWe are delighted that Baden-Württemberg has approved these tests for us. In so doing the state is demonstrating true pioneering spirit. And we are of course also delighted that the German Technical Inspection Authority has so clearly confirmed the safety of our system.“

The multi-sensor fusion, i.e. the combination of proven new-generation assistance and safety systems and sensors, enables the truck with the Highway Pilot system to continually observe the entire area in front of the vehicle and to take control itself in certain situations. This gives Dr Wolfgang Bernhard the opportunity to take his hands off the wheel without incurring any risks.

Dr Wolfgang Bernhard drives the Mercedes-Benz Actros from the service station onto the motorway towards Karlsruhe. As soon as the truck has entered the flowing traffic in the right-hand lane, it's “žHighway Pilot On“ and the system now offers to take over vehicle operation. The driver can confirm at the press of a button. The Actros meticulously keeps to its lane and maintains the optimum distance to the vehicle in front of it. Should the distance become too small or if a vehicle cuts in front of it, the truck brakes. Both vehicle occupants are sitting comfortably in the functional and modern cab and are chatting in a relaxed fashion.

At the airport/trade fair exit the system again asks Wolfgang Bernhard to take control and the truck reverts from automated driving mode to manual control "“ “žHighway Pilot Off“. He steers the Actros off the motorway and then drives directly back onto the A8 again, this time in the opposite direction. The scenario is exactly the same: the Actros steers and brakes independently in the flowing motorway traffic.

If it approaches an obstacle, such as roadworks here on the A8, the system asks the driver to take over the vehicle. If the roadworks are behind the truck, the Highway Pilot can once again take over control of the vehicle. The system safely assists both occupants up to the Wendlingen exit. Here Wolfgang Bernhard again takes over the driving and steers the truck off the motorway.

The machine is a safer driver than any human being
The Mercedes-Benz Actros is fitted with the 12.8 l engine, OM 471 and all the proven assistance and safety systems, such as Mercedes PowerShift 3, Predictive Powertrain Control (PPC), Active Brake Assist 3, proximity control, drowsiness detection and a Fleetboard vehicle computer. These systems are linked with the sensors of the Highway Pilot "“ radar and stereo camera.

So all the technology of the Actros with Highway Pilot is in the vehicle, and the truck does not need the internet for its automated driving function. The system is ideal for the motorway: it maintains the correct distance to the vehicle in front and brakes in good time if

another vehicle cuts out onto the road in front of it. The Highway Pilot does not replace the driver, but supports and relieves the strain on them by dealing with monotonous stretches for them and taking care of annoying stop-and-go driving in a traffic jam. In automated mode the driver has control over the truck at all times and in tricky situations can take over driving of the vehicle again.

The redundancy in the sensor system and fail-safer components such as the steering and brakes ensure an extremely high safety standard. If the minimum prerequisites for the system are not present due to bad weather or missing road markings, the Highway Pilot issues acoustic and visual impulses to ask the driver to take over. The driver has sufficient time to take over the task of driving. If there is no reaction from the driver, the truck brings itself to a standstill independently and safely.

Around two thirds of all accidents in road traffic are rear-end collisions and accidents resulting from unintentionally leaving the lane. Often the causes are drowsiness, distraction and driving errors. This is where the Highway Pilot is superior to any human being. It is alert, concentrated and relaxed. Without exception, round the clock, seven days a week.

oday Daimler Trucks is already developing solutions for the transport of tomorrow
The growing transport volume has an enormous influence on changes in the world of traffic. As a pioneer in the automotive industry Daimler is taking responsibility and is constantly working on ways of meeting the complex challenges of traffic density, bottlenecks and cost pressures in the transport sector.

Long-distance transport trucks in particular are predestined for autonomous driving. It enables a considerable increase in the efficiency of the transport sector, especially through the reduction in TCO. Increasing road safety and cutting fuel consumption are hugely important aspects in particular in long-distance transport.A long-distance transport truck drives an average of 130,000 km per annum.

The autonomously driving truck supports the driver by taking care of monotonous stretches of road and tiring stop-and-go traffic in a tailback for them. Tests carried out by Daimler Research on the driver's condition during automated driving have proven that the driver takes longer to become tired as a result of this relief. Their attention rate is around 25 percent higher than when driving in the conventional Actros if they have the opportunity to attend to other tasks.

Connectivity increasing in importance in the traffic of the future
The use of digital networks in traffic is on the threshold of a major development. Connectivity means not only the combination of all assistance, safety and telematics systems with the new sensor systems; it also encompasses intelligent networking between vehicles themselves and with the transport infrastructure. If a truck is informed at an early stage about traffic incidents occurring far in front of or behind it, appropriate action can be taken.

This means that in autonomous driving mode the handling adapts to the characteristics of the route ahead. Through the more homogeneous flow of traffic, fuel consumption and emissions fall. At the same time the transport times will become more calculable and the major assemblies of the trucks concerned will also be subjected to less wear thanks to a consistent driving style. This also reduces the truck's downtimes due to maintenance and repairs. Relieving the transport infrastructure and optimising the flow of goods are important prerequisites for our customers, to ensure success when on the roads in the future, too.

Step by step to autonomous driving
In July 2014 Mercedes-Benz had its Future Truck 2025 driven on a test track near Magdeburg and in May this year the world premiere of the Freightliner Inspiration Truck caused a sensation. Daimler was presenting the first truck with a permit for operation on public roads to drive in a highly automated fashion. Both the Future Truck 2025 and the Inspiration Truck are concept vehicles which are equipped with further functions.

The mirror cam, swivelling seat and integral tablet are elements which are not present in the Actros with Highway Pilot. The reason for this is that the vehicle is approved according to automation level 2 (partially automated driving). This means that the Highway Pilot can assist the driver in certain situations both for longitudinal and lateral guidance. However the driver must constantly monitor the vehicle and the road and traffic conditions and at all times be in a position to take control of the truck again. For this reason, activities such as the use of a tablet during the automated journey are not currently allowed.

On the test track in Magdeburg the Future Truck 2015 already demonstrated automation stage 3 (highly automated driving): this means that the system independently detects the system limits and accordingly asks the driver to take over the task of driving. And at this automation level the driver no longer has to monitor the system on a permanent basis and could also carry on with other activities

during the journey.

Daimler Trucks is focusing on constantly developing mobility solutions for the future and readily assumes the leadership role for automated driving in the truck, Dr Bernhard emphasises: “žOur claim is 'Shaping Future Transportation'. And with today's premiere we are once again impressively backing up this claim. We are shaping the future of transportation with the first autonomously driving production truck.“

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