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**IHS™ Automotive**

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traffic tailbacks, roadworks and closed roads, and recommend an alternative route.

BMW has developed the following technologies to advance driver assistance systems and will incorporate the technology in the near future:

**Intersection assistant and traffic light assistant**

Aid the art of “driving with foresight” and are based not purely on onboard systems, but communications with the environment around the vehicle. The intersection assistant detects vehicles approaching the intersection – motorcycles in particular – when they are concealed or still out of the driver’s field of vision.

**Traffic light assistant**

Sees the car communicating not with other vehicles, but with the traffic lights themselves – i.e. with the traffic network infrastructure. The system evaluates the latest data collected on tailbacks and the duration of the various traffic light phases, and compares it with the car’s current speed. Like an electronic co-pilot, it then recommends to the driver at what speed he should approach the lights in order to arrive at the intersection with the signals still on green, or if he should coast smoothly and economically to a halt at the lights.

In 2012, and in addition to the BMW 6 series, BMW also launched multiple new vehicles with the updated Mobileye-based feature set. These included the 7 Series, as well as the X range of vehicles.

The ConnectedDrive package from BMW includes: ACC, Forward Collision Warning, Lane departure warning, Speed limit information, and Intelligent headlight Control, all vision features running on Mobileye EyeQ2 processor.

The new BMW 5 series builds on its leading position in terms of driver assistance technology with the introduction of glare-free High Beam Assistant and the BMW Night Vision System, which includes human and animal detection and the Dynamic Light Spot function. From November 2013, the optional Traffic Jam Assistant will also be available. Fully automatic Parking Assistant will also be available towards the end of 2013.

**Daimler/Mercedes Benz**

Daimler ADAS technologies are available across its range of vehicles and are offered under the Assist programme. These are summarised in the following diagram.

![Figure 6: Daimler ADAS technologies](image)
The main systems in the diagram above are described below:

**Attention Assist**

Observe the driver’s behaviour and, at the start of every trip, produces an individual driver profile that is then continuously compared with current sensor data. This permanent form of monitoring is important for detecting the floating transition from being awake to drowsiness and for warning the driver in plenty of time. The system is active at speeds of between 80 and 180 km/h. At the heart of the Mercedes system is a highly sensitive sensor which allows extremely precise monitoring of the steering wheel movements and the steering speed.

Based on these data, Attention Assist calculates an individual behavioural pattern during the first few minutes of every trip. This pattern is then continuously compared with the current steering behaviour and the current driving situation, via the vehicle’s electronic control unit. This process allows the system to detect typical indicators of drowsiness and warn the driver by emitting an audible signal and flashing up an unequivocal instruction on the display in the instrument cluster: “ATTENTION ASSIST: Break!”

**Active Lane Keeping Assist**

For passenger cars addresses the situation by warning the driver or even taking corrective measures automatically via ESP® as soon as the system detects the fact that the vehicle has left its lane. A camera in the windscreen films the lane in front of the vehicle and passes the data to an electronic control unit that detects the lane and markings using differences in contrast. At the same time, it determines the position of the vehicle itself. If the control unit detects that the vehicle has left the lane unintentionally, a vibration motor in the steering wheel warns the driver. There is no warning if the driver accelerates before overtaking or joining a motorway, brakes heavily or enters a bend, for example. If the vehicle is about to drive over a solid line and the driver does not react, the system intervenes and attempts to move back into the lane using targeted, one-sided braking. As soon as the system detects a manual driving manoeuvre, it ends the automatic intervention.

**The Crosswind Assist**

Crosswind Assist detects sudden, strong gusts of wind which can act on the side of the vehicle, and helps to prevent the car from “drifting” out of lane by means of targeted braking on one side of the vehicle.

Crosswind Assist makes use of the precision sensors of the Electronic Stability Program (ESP®).

They record gusts of wind and ensure that course-corrective brake application occurs to prevent the car from being pushed out of its lane. To achieve this, the brakes are applied on the wheels on the side of the vehicle facing the wind, depending on the situation. In such cases the braking force is based on the strength of the crosswind. This results in a so-called “yaw motion” – a rotational movement of the vehicle against the flow of the wind – which reduces the lane displacement of your vehicle. The Crosswind Assist is presently available for the Mercedes-Benz GL-Class, the Mercedes-Benz S-Class and the Mercedes-Benz Sprinter.

In the case of vehicles with MAGIC BODY CONTROL, on the other hand, Crosswind Assist makes use of the advantages afforded by the ABC (Active Body Control) active suspension to keep the vehicle in its lane. To do so, the suspension strut forces are regulated according to the strength of the crosswind, thus damping the vibrations affecting the vehicle and reducing vehicle body oscillations which can arise as a result of steering, braking and accelerating. This ensures that you remain in control of your vehicle in critical wind conditions.
Active Blind Spot Assist

Has been developed by Mercedes-Benz to help drivers change lanes safely. It employs short-range radar sensors fitted on either side of the rear bumper which monitor the area directly alongside and behind the car. On detecting another vehicle which is moving in the parallel lane in the exterior mirror’s blind spot, it alerts the driver by means of a red warning signal which appears in the glass of the exterior mirror. If the driver overlooks this warning and indicates to change lane, the red warning signal will start flashing and a warning tone will sound. In addition to warning the driver with visual and acoustic alarms, Active Blind Spot Assist can also help to avoid accidents by means of specific autonomous braking intervention. The system indicates in the exterior mirror when cars or motorcycles are located in the blind spot and takes evasive action automatically in the event of danger, e.g. during lane changing.

Traffic Sign Assist

At the core of Traffic Sign Assist is a camera on the inside of the windscreen. This uses optical means to identify no-entry signs and to send the information it receives to the computer processor of the on-board electronics. If this detects that the vehicle is about to drive past the prohibition signs and enter the slip road onto a motorway, the system warns the driver. In this case the system emits three loud warning signals and a red no-entry symbol lights up in the display to alert the driver to the danger. The on-board electronics also compare the data from the camera with the data from the navigation system. The other functions of the new Traffic Sign Assist system also benefit from this feature. These include the recognition and display of speed limits and no-overtaking restrictions as well as the signs indicating the end of such restrictions. In the event that poor visibility should limit the capability of the optical systems, the system reports to the driver that it is “temporarily unavailable”.

The new Traffic Sign Assist system, which can prevent so-called “phantom drivers” from inadvertently driving on the wrong carriageway, will be fitted initially in the S-Class and in the new E-Class launched in 2013. It will then be gradually introduced in other model series. The system has been designed for Germany to begin with, but Mercedes-Benz is working intensively on adapting the system for use in other countries as well.

DISTRONIC PLUS adaptive cruise control

Inadequate following distances, inattentiveness on the part of the driver and unexpected, abrupt traffic standstills are the most common causes of rear-end collisions. Radar-based DISTRONIC PLUS adaptive cruise control with integrated BAS PLUS Brake Assist is designed to keep the driver at a distance from the vehicle in front and minimises the risk of rear-end collisions by identifying potentially dangerous situations and responding accordingly.

The radar technology employed by DISTRONIC PLUS monitors the situation ahead of the car and is able to recognise an impending accident. Behind the front bumper panels there are two short-range radar sensors covering a range from 20 cm to 30 metres and a scanning angle of 80°. The long-range radar is concealed behind the radiator grille. In the latest version