Intelligent Light System

The right light for every driving situation

- **Bi-xenon-headlamps: with variable low beam for improved safety**
- **Country mode: better verge illumination than with low-beam headlamps**
- **Motorway mode: visibility increased by around 50 metres**
- **Enhanced fog lamps: brighter illumination of road edges**
- **Active light function: increased swivel angle for tight bends**

The Mercedes-Benz E-Class has been a trailblazer in the field of lighting technology for more than ten years: in 1995 the Saloon was one of the first cars to feature the newly-developed xenon headlamps. These were standard equipment for the AVANTGARDE line and made the striking twin-headlamp look even more interesting. In spring 2003 the E-Class was the world's first car with the active light function, and from mid-2006 this Mercedes model series will follow up with the next world premiere in lighting technology – the Intelligent Light System.

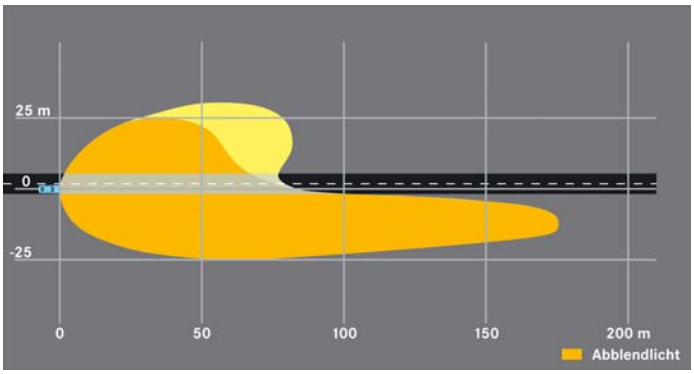
The system incorporates no less than five different lighting functions, which are configured for typical driving and weather conditions and provide the driver with a significantly longer range of visibility. Accordingly the Intelligent Light System makes a further, important contribution to accident prevention and helps to reduce the high risk of accidents when driving at night.

This new, adaptive lighting technology is made possible by a regulation on the part of the UN Economic Commission for Europe (ECE), which will also apply within the European Union from mid-2006. Mercedes-Benz plans to combine the Intelligent Light System with the bi-xenon headlamps offered as an option in the E-Class, becoming the first manufacturer to provide its customers with the best lighting technology currently available.

Four of these five lighting functions are new in the Mercedes-Benz E-Class. The engineers in Sindelfingen have developed and improved the already familiar and well-proven active light function.

Country mode: better illumination of the road edge

Driving on country roads in the dark is set to become even safer thanks to the new country mode. The ECE/EU directive covering "intelligent car headlamps" will enable low headlamp beams to be distributed in such a way that the left edge of the road is illuminated more brightly and widely than before. The driver's range of vision is increased by around ten metres, which gives him a good view of both sides of the road, improves orientation and allows him to respond more rapidly when other road users cross his path. In E-Class models equipped with the Intelligent Light System, the new country mode will replace the existing low-beam headlamps.



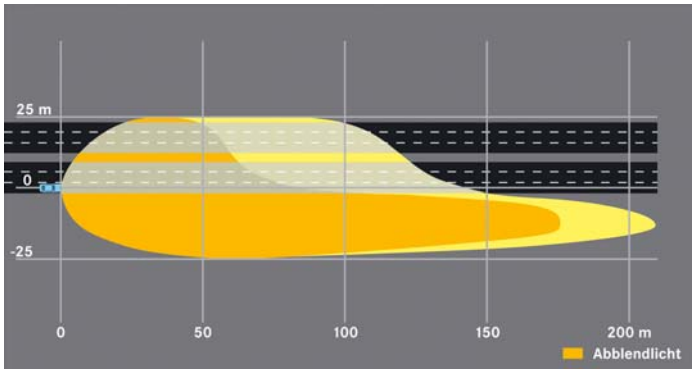
Country mode: More light on the left edge of the road.

Motorway mode: up to 60 percent better visibility in two stages

From a speed of 90 km/h the Intelligent Light System activates the new motorway mode and provides the driver with a significantly longer range of visibility than conventional low-beam headlamps. The range of visibility is increased by up to 60 percent.

Motorway mode is automatically activated in two stages: from a road speed of 90 km/h the system first increases the output of the bi-xenon lamps from 35 to 38 watts to provide more lighting intensity, which leads to noticeably better illumination of the road surface and edges. From a speed of 110 km/h the range of the nearside headlamp is also increased, producing a uniform cone of light, which illuminates the entire road width to a range of up to 120 metres. This means that

vehicles or objects in the distance can be recognised across the entire width of the road, and at the centre of this cone of light the driver is able to see around 50 metres further than with conventional low beams.

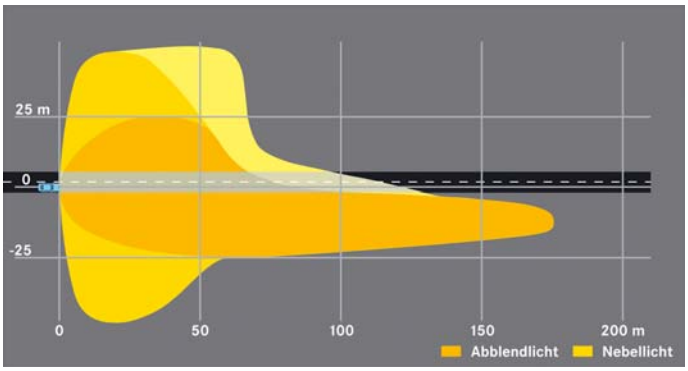


Motorway mode: Even, wide light distribution ensures safe driving.

Enhanced fog lamps

When visibility is impaired by dense fog, drivers quickly lose their orientation because they can no longer recognise familiar guiding features such as road markings and the black-and-white posts at the road edge. The main task of fog lamps is therefore to project a broad beam and distribute it in such a way that the road edges in particular are well illuminated. This enables drivers to follow the course of the road more easily.

The technology of the Intelligent Light System makes it possible to assist the fog lamps with this important task. To this end the left bi-xenon headlamp of the E-Class will in future swivel outwards by eight degrees and, at the same time, lowers the cone of light. This illuminates the nearside of the road more efficiently, improving the driver's visibility in this area. At the same time this wider light distribution reduces backglare in foggy conditions.

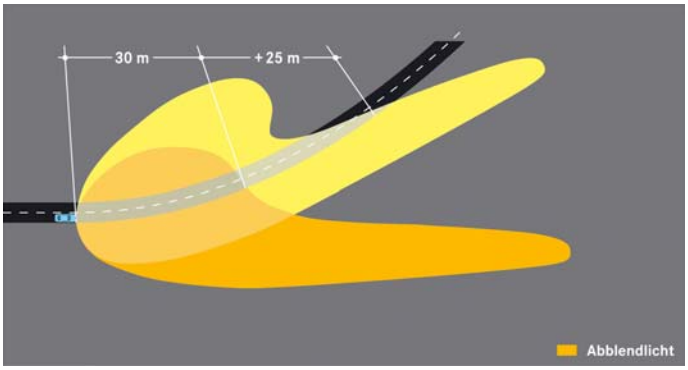


Enhanced fog lamps: Left bi-xenon headlamp swivels outwards and increases the range of vision on the left edge of the road.

The new lighting function is automatically activated as soon as the rear fog lamp is switched on if the E-Class is not travelling faster than 70 km/h. The enhanced fog lamp function is automatically switched off when the vehicle speed exceeds 100 km/h.

Active light function: well-proven technology improved even further

The active light function, which Mercedes-Benz first made available in the E-Class at the beginning of 2003, improves road illumination on bends by up to 90 percent. In other words, when taking a sweeping bend with a radius of 190 metres, the active light function enables the driver to see 25 metres further than with conventional low-beam headlamps. This represents a considerable improvement in driving safety. The active light function operates with both the low-beam and main-beam functions.



Active light function: The illumination range is increased by around 25 metres on these types of bends.

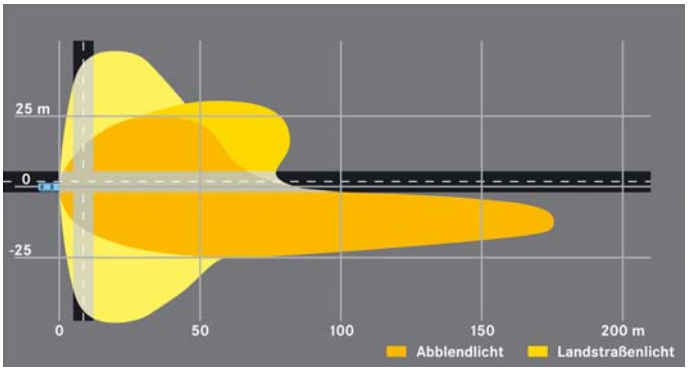
The electronic control unit of the active light function is integrated into the data network of the E-Class, which continuously provides it with current information about the steering angle, yaw rate and vehicle speed. This allows the bi-xenon modules to follow the driver's steering wheel movements and pivot sideways in fractions of a second whenever the driver enters a bend.

Mercedes-Benz has improved the technology of the active light function even further, and from mid-2006 the headlamps will be able to pivot by up to 15 degrees when negotiating a bend – three degrees more than at present. This means that tight bends will be illuminated even better than before.

Cornering light function: more safety at junctions

The cornering light function celebrated its premiere in the Mercedes-Benz C-Class, CLS-Class and SLK-Class in 2004. From mid-2006 it will be part of the lighting functions of the new Intelligent Light System in the E-Class, improving safety at junctions and on tight bends through the interaction of the bi-xenon headlamps and the fog lamps in the front bumper.

When the main headlamps are switched on, the cornering light function is automatically activated if the driver operates the indicator or turns the steering wheel at a speed below 40 km/h. The low-beam headlamps and fog lamps then illuminate the side area ahead of the vehicle to a range of around 30 metres at an angle of up to 65 degrees.



**Cornering light function:
Range of illumination to the side up to 30 metres.**

When cornering, this lighting function therefore makes road areas visible which would remain in the dark with conventional headlamp technology. In addition the cornering light function remains active even when taking bends slowly at speeds up to 40 km/h, allowing the driver to recognise the road contours more easily.

Technology: rotating cylinders in the bi-xenon modules

The two pivoting bi-xenon modules in the headlamp housings of the E-Class are at the heart of the Intelligent Light System. As before, they operate on the principle of the projection-beam headlamp, which focuses the beam through an optical lens. The light of the new, adaptive headlamps must however be precisely directed to achieve the different levels of light distribution. In the headlamps of the E-Class this is done by a rotating cylinder powered by an electric motor. The different lighting functions can be configured by precisely calculated and defined cylinder positions – also for left-hand traffic.