Reward 2011

Mercedes-Benz Attention Assist

Mercedes-Benz's Attention Assist is a system intended to help drivers recognise when they are drowsy or inattentive and to encourage them to take a break. When drivers are alert, they constantly, and subconsciously, monitor the position of their car and make continual small steering adjustments to keep the vehicle on a safe path. However, when drivers are fatigued, there are periods of inattentiveness, during which there is little steering input, followed by sudden and exaggerated corrections when the driver regains attention. Attention Assist uses a sensitive steering angle sensor to monitor the way in which the driver is controlling the car. At speeds between 80 and 180km/h, the system identifies a steering pattern which is characteristic of drowsy driving and combines this with other information such as time of day and duration of journey. If a sequence of such events is identified, the system warns the driver to take a break by showing a coffee cup signal in the dash and by an audible tone. The driver may acknowledge the warning and make it disappear from the display. If the driver does not take a break and the driving style continues to indicate drowsiness or inattentiveness, the warning will be repeated after 15 minutes at the earliest.

What is the safety benefit?

It is estimated that drowsiness is a major cause of around 20 percent of all serious accidents in Europe. Attention Assist depends on the driver responding to the warning and taking a sufficiently refreshing break. However, even modest assumptions regarding the numbers who are likely to respond leads to an estimation that a system like Attention Assist could prevent 1,875 injury accidents involving a passenger car every year in Europe.

How was Attention Assist® assessed?

Mercedes-Benz conducted extensive trials using driving simulators to determine the steering pattern which characterises drowsy driving. Road trials were also conducted, under tightly controlled conditions, with supervised drivers assessing their own level of drowsiness. In some cases, Electroencephalography (EEG) was used as an objective method to assess driver strain and drowsiness. In this way, the level at which Attention Assist issues a warning could be set at an appropriate level. Road trials were conducted in extreme environments to ensure the steering angle sensor performs reliably and robustly in all conditions.

What are the limitations?

Attention Assist can only warn a driver that he is drowsy. It is the responsibility of the driver to take a break and to ensure that the break is sufficient to restore his levels of attention. Attention Assist cannot judge the quality of the break taken by the driver. However, after a break, the system will continue to monitor the driving pattern and will warn the driver again if drowsiness is detected. It is anticipated that the warnings will provide the incentive needed to make drivers take a break. In extreme weather conditions such as very high cross-winds, the system may incorrectly characterise the steering pattern as that of a drowsy driver.