Driver assistance technology: what really matters?

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ACC combined with FCW could be a significant contributor to reducing injury accidents on motorways, according to a euroFOT study.

A major report on the advanced driver-assistance systems that are fitted to vehicles—and that really matter in terms of safety, efficiency and driver behavior—has been issued by the euroFOT (European Field Operational Test) project, which started in 2008 and has involved 28 companies and organizations. Its cost totaled €22 million.

Forward collision warning (FCW), adaptive cruise control (ACC), blind-spot information systems (BLIS), speed-regulation systems (SRS), lane-departure-warning (LDW), and curve-speed warning (CSW) all received positive feedback from users throughout Europe involved in the project. Safe human/machine interface (HMI) and fuel-efficiency advisor (FEA) applications were also part of the study.

Some of the systems, notably CSW, scored more highly after drivers had gained some experience, indicating that new technology may take time to be fully appreciated by the end user and that its benefits need to be better explained at the moment of vehicle purchase.

The report's findings indicate the growing necessity to thoroughly correlate engineering, ergonomics, sales, and marketing to provide the greatest returns both in terms of driver support as well as OEM and supplier R&D financial investment.

The project was led by Aria Etemad, a Senior Research Engineer at **Ford**'s Aachen, Germany, Research Center. The study focused on existing technologies and their potential with regard to safety and environmental effect in general but also on driver behavior (more than 90% of accidents across Europe are reported to be due in some way to driver behavior), fuel efficiency, traffic safety, and cost savings.

The project has included 12 months' monitoring of some 1000 cars and trucks traveling the roads of Europe equipped with advanced driver-assistance systems, with every turn, acceleration phase, and lane-change action recorded. More than 100 terabytes of data were collected and analyzed.

Using the ACC and FCW systems for cars and trucks, euroFOT researchers determined that the costs of equipping passenger cars and heavy trucks with the combined system leads to annual savings of approximately €1.2 billion for passenger cars and €180 million for heavy trucks. Therefore, they recommend that drivers should consider such functions when buying a new vehicle and follow the ongoing development of advanced driver systems.

Cars with both ACC and FCW could potentially affect up to 5.7% of the injury accidents on motorways, and trucks potentially 0.6%. Navigation systems demonstrated a positive effect on driver behavior in terms of lane keeping, distance to the car ahead, and harsh braking events.

Some 80% of drivers felt that BLIS increased safety without any perceived workload rise and complemented visual checks but was not a primary source of information.

Over-speeding and harsh braking were reduced by use of a speed limiter, it was found, while cruise control also reduced harsh braking and improved critical time gaps between vehicles.

As for CSW, 75% of users monitored felt that it increased safety, that it was most useful on rural roads, and that it contributed to defensive driving techniques—but that drivers only came to trust the system after usage. The scores were statistically significantly higher after some experience with the system.

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