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Press Information

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Date of Issue 2008-01-13

Volvo Car Corporation presents new technologies to avoid collisions with cars and pedestrians

Recently, Volvo Cars has presented new smart solutions that will help to avoid collisions. They include a feature that brakes automatically if a pedestrian steps out in front of the car. Another, Collision Avoidance by Auto Steering, detects risk for a frontal collision caused by lane departure, and steers back automatically to avoid a frontal collision. The features are part of Volvo Cars' preventive safety development programme and they will be introduced onto the market within a few years.

The Volvo V70, XC70 and S80 can currently be equipped with a collision warning feature that brakes automatically if a rear-end collision with a moving or stationary vehicle is imminent. Collision Warning with Auto Brake will be introduced in North America in the beginning of 2008 (see separate release).
The next development stage is a function that can also detect pedestrians and brake automatically if a pedestrian suddenly steps out in front of the car and the driver fails to react.
Like the newly-introduced Collision Warning with Auto Brake, the future function will use radar and a camera to detect objects in front of the car. The radar unit has been upgraded with a wide-angle search area so that it can also detect pedestrians coming from the road side.

First a warning – then automatic braking
If the car approaches a pedestrian, a red warning light will come on first on the windscreen's head-up display. A warning signal will be heard at the same time. This helps the driver to react and, in most cases, an accident can be avoided.
If the risk of a collision increases further, the assisted panic braking is activated. The distance between the brake pads and the brake disc is reduced to provide a shorter reaction time.
The hydraulic pressure in the braking system is also increased so that the most effective braking takes place even if the driver does not press hard on the brake pedal.
If the driver still doesn't brake, and the collision is still imminent, the car's brakes are activated automatically.

The automatic braking is designed to reduce the speed as much as possible thereby reducing the risk of injury to a pedestrian if a collision cannot be completely avoided despite braking. The automatic braking has the capacity to reduce the car's speed by up to approximately 25 km/h (15 mph). Depending on the situation and the car's speed, this may mean in certain cases that a collision cannot be completely avoided.

"Accident statistics show that the risk of a passenger being killed increases dramatically if the collision takes place at speeds above 30 km/h (19 mph). That is why it is so important for us to reduce the speed as much as possible when a collision is unavoidable," says Jonas Ekmark, Manager for Preventive Safety at Volvo Cars Safety Centre.

To avoid automatic braking in situations when the driver has the situation under control, Volvo Cars has programmed the technology to activate automatic braking only when it becomes impossible to steer away from the collision. This could mean that it can be too late to avoid the collision completely, even if the maximum braking force is used, but it is still important to reduce the impact speed as much as possible. "But in most scenarios, the warning signal will be given in time to help the driver to completely avoid the collision, and this is of course the best outcome," says Jonas Ekmark.

Steering automatically to avoid a head-on collision

Collision Avoidance by Auto Steering is a further development of Lane Departure Warning that is also available in the Volvo V70, Volvo XC70 and Volvo S80 (introduced in North America in the beginning of 2008).

Lane Departure Warning uses a camera to monitor the car's position between lane markers. If a car wanders across any of the lane markers without using the lane change signal, the driver is warned by an audible signal.

Collision Avoidance by Auto Steering is significantly more advanced. The feature is designed to help prevent a frontal collision caused by temporary distraction by using both a camera and radar to monitor the position of the car itself and the oncoming traffic.

If the car is about to move into the opposite lane and an oncoming vehicle is on a collision course, the car is automatically steered back to a safe position in the original lane.

Collision Avoidance by Auto Steering is being developed and the high demands for reliability mean that Volvo Car Corporation's experts are still assessing which degrees of steering wheel intervention are relevant and the exact speed range it can operate within.

Communication between cars results in fewer accidents

Cars that can communicate with other vehicles and the surrounding traffic environment should enhance the potential for safer driving and fewer traffic accidents.

For communication to work, it is necessary to have a standard "language" which makes it possible for all vehicles to talk to each other irrespective of make. There are currently several international projects that endeavour to contribute to this standardisation. Together with other car manufacturers, Ford Motor Company is participating in the American CAMP (Collision Avoidance Metric Partnership) collaboration and the PReVENT project funded by the European Commission. Volvo Car Corporation is in above projects assessing the potential for car-to-car communication which could provide:

- Information from a car in front that the road surface is slippery a couple of miles ahead.
- A warning that the traffic is at a standstill further on.
- Coordination of automatic evasive measures if there is the threat of a collision.
- The potential for of driving "in convoy" where coordinated communication would allow the vehicles to be driven exceptionally close to each others on a motorway to provide an effective traffic flow and reduced fuel consumption.

Volvo has a number of test vehicles from the CAMP collaboration that can communicate with each other. The driver in one car can receive information that another car has come across an obstacle and has slammed on the brakes – this makes it possible to brake in good time.
“With communication between vehicles, and between vehicles and the traffic environment, a large number of today’s accidents could be avoided. The major challenges are to find a standard “language” and the particular applications that are most urgent and effective,” says Jonas Ekmark.

For further information, please visit Volvo Cars Newsroom at www.media.volvocars.com
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