VOLVO

Press Release

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Volvo Safety Concept Car - the car that catches the eye

For Immediate Release

The car that catches the eye

ROCKLEIGH, NJ -- January 8, 2001 -- The car driver's eyes play the main role in the bid to ensure ever-safer traffic. The Volvo Safety Concept Car (SCC) has therefore been equipped with a range of future-generation systems designed to give the driver increased control and better preconditions for making the right decisions in difficult traffic situations. The interior of the SCC automatically adapts to the location of the driver's eyes and his or her body size, and advanced technology provides improved vision in every direction, both in daylight and when driving at night.

Roughly 90 percent of all vital driver information takes the form of visual input through the car's windscreen and windows. If the quality of this visual information improves, the driver also improves his or her chances of avoiding a collision. With its Safety Concept Car, the Volvo Car Corporation and Ford Motor Company are demonstrating the viability of the latest vision-enhancing safety technologies in cars of the future.

Fixed eye position

Sitting properly is very much a matter of safety. The concept car therefore has a range of advanced systems that help ensure a proper seating position.

The Volvo SCC automatically sets the appropriate seating position on the basis of the eyes' location, irrespective of individual build. Sensors scan the precise position of the driver's eyes and then adjust the driver's seat to offer optimum vision. After this, the steering wheel, floor, pedals and centre console are all adjusted to suit, promoting the best possible ergonomics and comfort. Naturally, the driver can fine-tune the various adjustments to suit individual tastes.

The entire system is based on a Volvo idea that has been further developed and implemented in a concept car, bringing together the expertise of researchers, engineers and designers from Volvo Cars and the Ford Motor Company. The system has also had considerable input from external suppliers such as Johnson Controls, Inc. (driver's seat, pedal-box/floor), Sarnoff (eye sensor based on video technology), BMG (capacitive eye position sensor that pinpoints the driver's head and calculates the position of the eyes on the basis of this data), Presta (steering column) and ItalDesign (who built the car).

Since the system also encompasses adjustments to the steering wheel, pedals and centre console, all the controls are always ideally positioned so that the driver has full control and the best possible conditions for responding to emergencies. A relaxed driving position also boosts comfort, so the driver can be more alert behind the wheel.

New design for the A-post and B-post

The Volvo SCC also offers a better field of vision owing to the redesigned A- and B-posts.

In the SCC, these posts are of a new design. The driver can see through the A-posts, which have been rendered partly transparent through the use of a steel box construction combined with see-through Plexiglas.

The B-posts curve inwards at the top to give the driver an unobstructed field of vision to the offset rear. In terms of passive safety, these B-posts are at least as safe as conventional B-posts in a roll-over or side-impact scenario since they are integrated with the front seat frames.

Active rear-view mirrors and rearward-facing cameras
Embedded in the door mirrors and rear bumper are sensors that alert the driver of approaching traffic in the "blind spot" to the offset rear.

The driver is alerted via visual signals in the door mirrors or a combination of visual and acoustic signals as the situation becomes more dangerous.

There are also rearward-facing cameras to supplement the door mirrors. When necessary, the driver can view information from the cameras located in the door mirrors on both sides of the car, and this information is relayed in the form of video pictures to a display monitor in the instrument panel.

A camera in the roof bar at the rear shows the area to the rear of the car and also provides good visibility to the rear when the interior luggage compartment is loaded all the way up to the roof. Another camera points downwards to help the driver see if for instance a small child is concealed just behind the car when reversing. When the driver engages reverse gear, the display monitor automatically shows the area immediately behind the car.

Adaptive lights
The headlamps monitor the car's road speed and steering wheel movements and adjust the lighting to suit progress:

- When driving at high speed, on a highway or motorway, the light beam can be given a longer reach.
- When driving at low speeds, for example in the city or when approaching a crossroads, the light beam can be made shorter and broader to light up a larger area close to the car.
- When the driver steers the car into a curve, the beam can be directed along the track of the curve to light up the entire road as the car changes direction.

Traditional bulbs have been replaced with fibre optic technology. The light itself is generated by a light engine located elsewhere in the car, and is led to the headlamps via fibre optic cables. This makes it possible to alter light intensity and beam patterns at lightning speed in response to changing conditions.

The new headlamps have been produced in close cooperation with lighting experts Hella.

Enhanced night vision
In order to improve safety when driving at night, the car is equipped with an infrared (IR) light enhancer. IR technology gives the driver both a longer and a broader field of vision in the dark. The system, which further boosts night-vision capability, has been developed by Swedish safety experts Autoliv.

When driving at night, a black and white image is projected onto a glass display located at the top of the instrument panel. This image shows what is concealed in the area that is not lit up by the headlights, for example if there is a wild animal in the ditch alongside the road. It is also possible to see what is hidden in the blacked-out area between the SCC's own headlights and the usually dazzling lights of an oncoming vehicle, such as a pedestrian without reflectors on his or her clothing.

When driving in daylight, the glass display is retracted so it does not disturb the driver.

Collision warning sensor
The SCC also features a collision warning device that senses if the distance to the car in front is too short or the gap is closing too fast. In this case, the driver is alerted with a red warning signal, and there is also the option of an acoustic signal.

Remain in lane...or change lanes
Forward-facing cameras monitor the position of the car in relation to the road's centre-marker and side-marker lines 20 metres ahead of the car. If the car shows signs of veering to either side without activation of the turn indicators, the driver is alerted via an acoustic signal.

The rearward-facing cameras give the driver a view of what is going on behind the car. In addition, there is a radar unit that measures the distance to the traffic behind the car and its speed in relation to that of the Volvo SCC.

At a specific distance, or if traffic approaching from the rear is in the blind spot, the driver is alerted via yellow LEDs that glow in the rear-view mirror. If the driver still activates the turn signal indicator in preparation for changing lanes, an additional warning is given in the form of an acoustic signal and red LEDs in the rear-view mirror.

Flashing brake lights
If the driver has to brake particularly firmly, the SCC's brake lights start flashing to alert following traffic. The system automatically selects the flashing mode when the brakes are applied severely. Cognitive studies show that the human eye finds it easier to observe pulsating light, which in turn may reduce the risk of a rear-end collision. In this context, however, it should be noted that flashing brake lights are still forbidden by law in many countries.

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