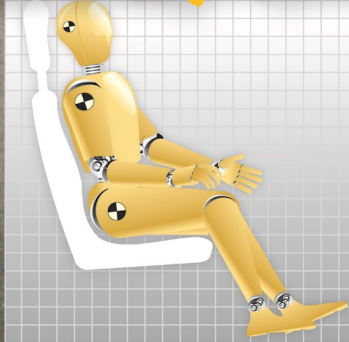


CRASH TALK

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Advanced Driver Assistance Systems (ADAS) - What's New?

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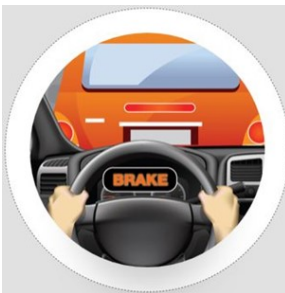
By: James W. Graham, P. Eng., Principal Engineer

If you are getting the feeling that the vehicle is making as many decisions as the driver these days, you may be right.



With all of the new technology packed into contemporary vehicles today, the driver is along for the ride in more ways than one.

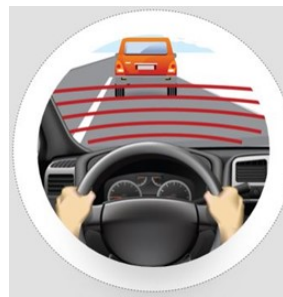
Here's a list of some of the technology that makes decisions for the driver:



Automatic Braking: This may occur during cruise control when a vehicle is on a long downhill grade (gaining too much speed). It may also occur as part of a collision avoidance system. There is no guarantee that a collision will be avoided by automatic braking but the

vehicle may be slowed so as to reduce damage and the crash severity. This is especially useful for distracted or inattentive drivers. See **Forward Collision Warning**.

Automatic Parking: Depending on the manufacturer, the vehicle may parallel park all by itself, or it may provide information to the driver when to turn the steering wheel and when to stop.



Forward Collision Warning:

Depending on the system design, this can continuously monitor the roadway in front for vehicles, pedestrians and even bicycles. In the event where the system determines that there is a high probability of a collision, a visible, tactile

or audible warning may occur as well as automatic braking.

Blind Spot Detection: Sensors provide a driver with a warning light on the left or right rear-view mirror and/or an audible warning that an object is within a blind spot. This is useful when contemplating a lane change and a vehicle is behind and to the right or left in the classic "blind spot".



Lane Departure/Keeping:

A variety of sensors provide driver feedback or make automatic steering corrections to maintain a lane if the vehicle drifts to one side or the other.

The feedback may be in the form of an audible warning or a slight steering wheel vibration. Our experience is the warning or correction occurs when the vehicle is near or on the lane dividing line, without the signal first being activated.

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Adaptive Cruise Control:

A vehicle will automatically slow down or speed up in response to the vehicle ahead. There are typically multiple settings for this control, allowing the driver to select a greater or

slightly lesser following gap. In some vehicles, the adaptive feature cuts off when slowed to around 40 to 50 km/h, while others will slow all the way to a halt, and even resume when the vehicle ahead moves (e.g. stop-and-go traffic).



Tire Pressure Monitoring:

This is not so much an automatic action taken by the vehicle, as it is a feedback of the tire pressure status. This allows the driver to make tire pressure corrections before they cause a problem. Some manufacturers capture tire pressures in the Event Data Recorder (EDR) which provides the reconstructionist with important information regarding possible compromised vehicle handling due to uneven tire pressures leading up to a crash.



Driver Drowsiness Detection:

While “test driving” a newer vehicle recently, my lane departure tests required I take my hands off the wheel and allow the vehicle to make minor steering corrections to maintain the lane. The vehicle sensed

that my hands were not on the wheel for a long enough time warranting the flashing of a warning on the dash – an image of a **coffee cup** with the words “**TAKE A BREAK**”.

Automatic High Beam: The system responds to oncoming headlamps or preceding taillamps, automatically switching from high-beam to low-beam and back again once the situation clears. At times, highly illuminated or reflective objects such as large road signs can be misinterpreted by the system as oncoming headlamps, resulting in the low beams being activated even when another vehicle is not present.




Rear Cross Traffic Alert:


This system can detect traffic that might be crossing behind the vehicle as you back up. The system we tested also warned of a pedestrian walking across the intended path of our reversing vehicle. A warning light or an audible tone may be used to alert the driver.


The above list will increase as vehicle manufacturer’s move more towards autonomous vehicles, taking most or all control of the vehicle driving away from the driver. So now, who is at fault in a crash? The driver or the vehicle? The driver potentially has another “excuse” for a crash. “It wasn’t ME. It was the vehicle’s fault!” Did the vehicle system function as designed? Luckily, we are seeing some manufacturers incorporate the activity or function of these “systems” into the Event Data Recorder (EDR) so that the reconstructionist can see whether, for example, the **Adaptive Cruise Control** was “engaged/not engaged” at the time of the crash, or whether the **Collision Mitigation Braking System** was “engaged/not engaged” leading up to the crash. Now factor Alberta weather into the equation – blowing snow, fog or freezing rain. These systems may not function exactly as intended, putting the fault back into the driver’s hands.

Your local accident investigation engineer can probably assist with any questions or cases involving Advanced Driver Assist Systems (ADAS).

Recalls

 **2018 Mazda CX-9:** A problem with a wiring harness connector could cause the air bag system, turn signals or engine starting system to not work properly. It could also cause false warning lights to come on in the instrument cluster after starting the vehicle.

 **2017-2019 Chevrolet Silverado 1500 & 2017-2019 GMC Sierra 1500:** A problem with the engine-block heater cable or the terminals that connect the heater cable to the block heater could cause a short circuit and could result in a fire—this problem only affects trucks equipped with a Duramax diesel 6.6 L engine and the optional engine-block heater cable.

 **2018-2019 Audi Q5:** Incorrect brake master cylinder. Cylinder may be too short, which could cause a complete loss of braking.

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