

**PARTNERSHIP
PROGRAM**

Vehicle Technology Safety Features

DID YOU KNOW: It is estimated that occupants have twice the chance of being killed or seriously injured in an ANCAP 1-star rated vehicle compared to an ANCAP 5-star rated vehicle. Therefore, if everyone bought the safest car in its class, including older cars, overall safety across Australia would improve by 25%. So do your part and try to buy a 5-star safety rated vehicle (Office of Road Safety, Western Australia).

Fleet Managers

Commercial vehicles account for over 50% of new vehicles sold. As a result, “every new vehicle purchased without the best safety rating and features is an opportunity lost, as that vehicle will be operating at an increased risk to its occupants for its life on the road, which can be up to 20 years” (Truong & Cockfield, 2013). As a result, fleet managers play an important role in increasing their fleet’s safety in Australia. This is because their cars will eventually become second hand cars, which other users, especially young drivers will buy. It is in the interest of your company (not just the fleet managers) to ensure that your fleet has the best safety features installed to maintain safety for all road users.

Vehicle Safety Features

There are three different categories of safety features – crash avoidance features designed to prevent a crash (sometimes known as primary or active safety), crash protection features designed to protect occupants in the event of a crash (sometimes known as secondary or passive safety) and post-accident features that are used for obtaining emergency assistance.

All new vehicles on the Australian market are required to comply with the [Australian Design Rules](#), which specify minimum performance requirements for safety. However, the level of protection offered by vehicles can and does vary.

The [Australasian New Car Assessment Program \(ANCAP\)](#) provides consumers with transparent advice on vehicle safety through its safety rating program. ANCAP awards a star rating from 1 to 5, the more stars the better the safety rating. The [ANCAP](#) website contains star ratings for all of the vehicles assessed, as well as information on the testing and rating system.

The [Used Car Safety Ratings \(UCSR\)](#) provides consumers with information on the safety of used vehicles. The UCSR are based on statistics collected from car crashes in Australia and New Zealand between 1996 and 2011, where someone was killed or seriously injured. The UCSR use a star rating from 1 to 5, the more stars the better the safety rating. The [howsafeisyourcar](#) website, published by the Victorian Transport Accident Commission contains information on the Used Car Safety Ratings.

Still can't find the information you're looking for?

Unfortunately not every vehicle is crash tested or rated, in particular commercial vans and delivery vehicles are not commonly tested, therefore the following key safety features you should be looking for include:

- [Electronic Stability Control Systems](#) which help maintain control of the vehicle in emergency situations
- [Anti-lock Braking System \(ABS\)](#) is a system which prevents the wheels from locking while braking.
- [Emergency Brake Assist \(EBA\)](#) is a safety system in motor vehicles designed to ensure maximum braking power is used in an emergency stop situation.
- [Seat belt Reminder System](#) is a system alerting the driver by means of sound and visual indications when a seat belt should be worn.
- [Head Restraints](#) limit the backward movement of the head during a rear-impact crash, reducing the chance of neck injury commonly referred to as whiplash.
- [Side and Curtain Airbags](#) protect occupants in a side impact crash.
- [Daytime Running Lights \(DRLs\)](#) are bright headlights that are illuminated during the day in order to make vehicles more visible.
- Safe car colours. Colours higher on the visibility index, such as white and bright tones such as red, yellow are recommended to reduce crash risk.

Some of the emerging technologies that are becoming widely available features on many new car models include:

- [Rear, rear radar sensors and blind-spot radar systems](#). The blind spot radar system warns a driver when a vehicle enters their blind spot, helping avoid lane-change accidents and in some cases take some steering control if a driver is about to hit another car.
- [Cross-traffic alert systems](#) are similar to blind spot radar as they also warn the driver of oncoming traffic except from either side of the vehicle when reversing out of a driveway or a parking spot.

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- **Forward Collision Avoidance** technology allows the car to detect an impending collision and sound an alarm or even apply the brakes. Some car models will tighten safety belts, close windows and adjust seat positions or head restraints when a crash is about to occur.
- **Active Cruise Control** (ACC) is a form of forward collision avoidance and similar to regular cruise control except the adaptive version adjusts the vehicles speed if it senses that the vehicle is getting too close to traffic ahead.
- **Adaptive Headlights** respond to steering input and provide a brighter, wider beam of light when you're rounding a dark curve.
- **Lane Departure Warning and Prevention** systems use cameras to track the car's position in the lane; when the car crosses the lane markings without a turn signal, the steering wheel or seat will vibrate or the car will issue audible or visual warnings. Some advanced systems even direct the vehicle back into the lane via light braking or steering modifications.

APPENDIX

Citations

Alvin, J. (2011, 06 15). Active Safety Features: What your next car needs to have. Retrieved 06 24, 2014, from Autoweek: <http://www.autoweek.com/article/20110615/camnews/110619920>

ANCAP. (2012, June). ANCAP Rating Road Map 2011-2017. Retrieved May 21, 2012, from ANCAP: <http://www.ancap.com.au/admin/uploadfiles/RoadMap2017.pdf>

Bob Jane T-Marts. (n.d.). Run Flat Tyres. Retrieved June 5, 2013, from Bob Jane T-Marts: <http://www.bobjane.com.au/info/run-flat-tyres/>

Bosch. (n.d.). Chassis Systems Control: Driver Drowsiness Detection. Germany.

Disc Brakes Australia. (2013, March 1). Will Driverless Cars Ever Rule the World. Retrieved June 6, 2013, from Disc Brakes Australia: <http://www.dba.com.au/will-driverless-cars-ever-rule-the-world/>

Ford. (2012, June). MyKey. Retrieved June 24, 2013, from Ford Media Centre: <https://media.ford.com/content/fordmedia/fna/us/en/asset.download.document.pdf.html/content/dam/fordmedia/North%20America/US/2013/07/19/Safe/MyKey.pdf>

Ford. (2012, June). Upgrades to MyKey Let Parents Set the Speeds, Block Explicit Radio. Retrieved June 24, 2013, from Ford Media Centre: <https://media.ford.com/content/fordmedia/fna/us/en/asset.download.document.pdf.html/content/dam/fordmedia/North%20America/US/2013/07/19/Safe/MyKey.pdf>

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Ford. (2013, June 11). Ford mykey, now on 6 million vehicles, helps parents keep teens safe this summer. Retrieved June 24, 2013, from Ford Media Centre:
<https://media.ford.com/content/fordmedia/fna/us/en/news/2013/06/11/ford-mykey--now-on-6-million-vehicles--helps-parents-keep-teens-.html>

Ford. (n.d.). Ford MyKey Edge. Retrieved June 24, 2013, from Ford Media Centre:
http://media.ford.com/images/10031/MyKey_Edge.pdf

Ford. (n.d.). Ford MyKey Explorer. Retrieved June 24, 2013, from Ford Media Centre:
http://media.ford.com/images/10031/MyKey_Explorer.pdf

Ford. (n.d.). MyKey. Retrieved June 24, 2013, from Ford Media Centre:
http://media.ford.com/pdf/081006_MyKeyFinal.pdf

Holden. (n.d.). Holden Innovation. Retrieved May 31, 2013, from Holden:
<http://www.holden.com.au/about/innovation/safety/vehicle-safety-systems>

Insurance Institute for Highway Safety. (n.d.). Crash Avoidance Technologies. Retrieved November 7, 2013, from Insurance Institute for Highway Safety: <http://www.iihs.org/iihs/topics/t/crash-avoidance-technologies/qanda#crash-avoidance-technologies>

Kelion, L. (2013, October 9). Ford car takes control of steering to avoid collisions. Retrieved October 11, 2013, from BBC News Technology: <http://www.bbc.co.uk/news/technology-24464480>
KPMG & Center for Automotive Excellence. (2012). Self-driving cars: The next revolution.

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Minister for Roads. (2013, 11 27). World first study finds speed alert devices do slow leadfoots down. Retrieved 11 28, 2013, from Premier of Victoria: <http://www.premier.vic.gov.au/media-centre/media-releases/8541-world-first-study-finds-speed-alert-devices-do-slow-leadfoots-down.html>

RACV. (2009). In-car Safety Technologies. Retrieved May 20, 2013, from RACV: https://www.racv.com.au/wps/wcm/connect/0d2aff004ee9070cbf6cff62fe2be49b/Fact+sheet+2_In-car+safety+technologies+.pdf?MOD=AJPERES&CACHEID=0d2aff004ee9070cbf6cff62fe2be49b

Rio Tinto. (2013, September 27). In Vehicle Monitoring System Benefits Report. Rio Tinto.

TAC. (2013). Brochures. Retrieved December 18, 2013, from [howsafeisyourcar.com](http://www.howsafeisyourcar.com): <http://www.howsafeisyourcar.com.au/Rating-Process/Brochures/>

TAC. (n.d.). Safety Features. Retrieved May 17, 2013, from [howsafeisyourcar.com.au](http://www.howsafeisyourcar.com.au): <http://www.howsafeisyourcar.com.au/Safety-Features/>

Truong, J., & Cockfield, S. (2013). TAC Safecar Project - Demonstration of New and Emerging Vehicle Safety Technologies. Transport Accident Commission.

Weber, A. (2013, 03 27). The latest and greatest auto technology innovations. Retrieved 06 24, 2014, from Eriesense: <http://www.eriesense.com/the-latest-and-greatest-auto-technology-innovations/#.U6iuef7NuUk>

CRASH AVOIDANCE FEATURES

Name	Description	ANCAP
Intelligent Speed Assist (ISA)	<p>ISA alerts drivers to when they exceed the speed limit. It uses GPS to cross reference the location of the car with a digital road map containing speed limit information for each road. It then analyses the speed of the car and issues a visual and audio warning to notify the driver if they are travelling at a defined amount or more over the speed limit.</p> <p>If it is used as an active speed limiter, then it can physically prevent the driver from exceeding the posted speed limit by reducing the throttle signal going to the car's computer. If it is used with a speed limiting function, it can increase the pressure on the accelerator when the driver exceeds the posted speed limit, making it harder to accelerate. If all cars in Australia were fitted with ISA, then serious injury crashes could be reduced by up to 13% and fatal crashes could be reduced by up to 24%.</p> <p>If an active speed limiting ISA was uniformly fitted to all cars in Australia, then serious injury crashes could be reduced by up to 36% and fatal crashes could be reduced by up to 59% (TAC). However, this is a new technology and is still being refined.</p> <p>Its functions include:</p> <ul style="list-style-type: none"> • Kick Down System Override Feature • Smooth Speed Limit Transitions • Over speed Warning • Vehicle to Vehicle Database Updates • Re-locatable Temporary Speed Limit Zones • Fixed & Variable Speed Limit Updates • Emergency Service Vehicle Proximity Warnings • Level Crossing Warnings - Rural Australia <p>VicRoads and MUARC have conducted a trial using speed limiting technology to improve speed behaviour in a group of repeat speeders. The results of the trial were supported by the Victorian Minister for Roads, The Hon. Terry Mulder MP (Minister for Roads, 2013). The research estimated that ISA can reduce fatal and serious injury crashes by up to eight percent.</p>	Counted as an SAT
Driverless Cars	<p>Driverless cars are cars that are driven by computers. They can potentially reduce fatal accidents by 90%, since they won't get distracted and reflex time is reduced. They will be able to drive faster and closer together, and potentially remove the need for airbags and seatbelts. Google believes that driverless cars may be available in three to five years, but 2020 is more realistic.</p> <p>(Disc Brakes Australia, 2013)</p> <p>http://www.youtube.com/watch?v=gP29ycYm8LE&list=PL192VO-BZ56jLa0wTQ74v-Z4q97YFca02</p> <p>http://www.youtube.com/watch?v=0D0ZN2tPihQ&list=PL192VO-BZ56jLa0wTQ74v-Z4q97YFca02</p>	
Obstacle Avoidance System	<p>Ford is working on new technology that, if the car detects an object in front of the car, then it will warn the driver, and if no response, steer the car to avoid the object.</p> <p>(Kelion, 2013)</p>	
Vehicle to Vehicle and Vehicle to Infrastructure Communication	<p>This allows wireless communication between vehicles and infrastructure (I2V) and between vehicles (V2V) to warn the drivers of upcoming hazards, such as accidents, approaching emergency vehicles, bypass routes and traffic lights.</p>	Counted as an SAT

CRASH PROTECTION FEATURES

Name	Description	ANCAP
<p>Airbags</p> <p>Return to main document</p>	<p>There are different types of airbags available:</p> <ul style="list-style-type: none"> • Curtain airbags • Thorax airbags • Drivers' or frontal airbags • Front passenger airbags • Driver's knee airbags • Passenger Knee Airbag <p>Crash sensors detect the sudden reduction in speed, or a side impact, and send a signal to the airbags to inflate. It takes a 50 litre driver airbag 50 milliseconds to inflate, while a 120 litre front passenger airbag takes 54 milliseconds to inflate. Front and side airbags are standard on all new cars and most light commercial vehicles. Curtain airbags are an option on most new cars. There can also be additional airbags, for example, centre console between the front seats, rear seat frontal airbag, rear seat thorax side airbags and seat cushion airbags.</p> <p>http://media.smh.drive.com.au/cars/drive-safe/airbags-are-not-so-soft-and-fluffy-4918573.html</p>	<p>Side airbags required for front seats for 5-stars (head protecting technology – HPT). To be extended to other stars and rear seats. The following airbags are counted as SATs:</p> <ul style="list-style-type: none"> - Additional occupant protection airbags - Driver knee airbags - Side airbags with head protection
<p>Bonnet for Pedestrian Protection</p>	<p>When the vehicle detects a collision with a pedestrian, the vehicle will either deploy an external airbag or raise the bonnet to decrease the impact</p>	<p>This is now part of Euro NCAP's pedestrian protection assessment and is not counted as an SAT.</p>
<p>Crumple Zones</p>	<p>These absorb crash energy to protect drivers and passengers in frontal, rear and offset crashes, which means that the car absorbs the impact of the crash.</p> <p>http://media.smh.drive.com.au/cars/drive-safe/cars-designed-to-crumple-4935959.html</p>	
<p>Head Restraints</p> <p>Return to main document</p>	<p>These are designed to protect an adult from a collision from the rear, and are on all seats.</p>	<p>Active Head Restraints move forward and other actions to reduce the risk of whiplash. Electronic detection of a collision may offer better protection than mechanical systems. They have been superseded by dynamic whiplash tests and are not counted as an SAT. Non-active head restraints are counted as an SAT.</p>
<p>Roll-Over Occupant Protection Systems</p>	<p>If the system detects a roll-over, then it deploys the occupant protection systems, for example, inflatable curtains, or in some sports vehicles activates a pop up roll over bar</p>	<p>Counted as an SAT</p>

Name	Description	ANCAP
<p>Seatbelts</p> <p>Return to main document</p>	<p>Seatbelts may have pre-tensioners, which keep the seatbelt snug against the occupants to prevent occupants from rapidly moving forward until the slack in seatbelt is taken up in the event of a crash. All seating positions should be fitted with 3 point seatbelts rather than lap only belts. Cars can also be fitted with seatbelt reminders, which are common on front seats for 5-star vehicles, but it is proposed that it is extended to other star ratings and other seats. Similarly, there are also seatbelt interlocks, which require the driver to put on a seatbelt before the car can be driven. Cars should also have top tether (TT) anchorages for child restraints for at least two forward facing seats in the second row. Inflatable seat belts are also available. These contain inflatable sections, which may be shoulder-only, or shoulder and lap, and they spread the physical stress on the occupant during a crash better than a web only belt.</p> <p>Seatbelt reminders (SBR) are also used to remind drivers that seated occupants do not have their seatbelts connected.</p>	<p>Seatbelt reminders are common on front seats for 5-star vehicles. Proposed to become required and extended to other stars and to rear seats. 3-point SBs (3PSB) on all forward facing seats is also common on 5-star vehicles. TT anchorages will be required from 2017 for NA category vehicles with second row fixed seats. Inflatable rear seatbelts, TT anchorages, three-point seatbelts, seatbelt interlocks and seatbelt reminders are counted as an SAT. SBRs are mandatory SATs</p>
<p>Side Impact Protection</p>	<p>An increase in side door strength, internal padding and better seats can improve protection in side impact crashes.</p>	
<p>Strong Occupant Compartment</p>	<p>The cabin of the car should keep its shape in frontal crashes to protect the driver and passengers. The steering column, dashboard, roof pillars, pedals and floor panels should not be pushed inwards where they can injure the driver and passengers. The doors should remain closed, but can be opened afterwards. Strong roof pillars can also provide extra protection in case the car rolls over.</p>	

OTHER

Name	Description	ANCAP
Mobile Phone Functions	<ul style="list-style-type: none"> Android Road Mode App This app prevents the driver from being distracted. It silences all incoming calls and text messages while driving, and anyone calling or texting receives an automated text response to say the person is driving and can't answer. When it is switched off, the app will provide a summary of calls and messages received. iPhone Do Not Disturb Function This function blocks all incoming calls. Messages appear on the screen as they normally would, except the phone does not ring or vibrate. 	
Satellite Navigation	The benefits of sat-nav devices are that the driver knows where they are going and won't get lost. If the driver misses a turn, the route can be recalculated. As the driver does not have to take their eyes off the road, it is much safer than reading a map. It improves safety of driving at night and in low-visibility conditions by giving the driver better road awareness, and alerts the driver which lane to be in for an upcoming exit. They can be embedded into the vehicle at the factory or as an after-market system embedded professionally, or can be purchased as an after-market standalone feature that can be moved from vehicle to vehicle.	Speed limits alerts are already covered by ISA. There are no other major safety benefits and are not counted as an SAT.
Automatic Emergency Call (eCall)	eCall automatically alerts emergency services, or a third party provider when a severe collision occurs, and provides location and vehicle identification information.	Counted as an SAT
Electronic Data Recorder (EDR)	EDR records critical information in the event of a significant collision.	Counted as an SAT
Parking Assist Systems	This system automates reverse parking. Its use is primarily to reduce risk of property damage.	Is not counted as an SAT
Off-Road Assist Systems	This system is designed to assist with off-road driving, for example, hill-descent control.	Is not counted as an SAT