



Unfinished safety business with Vehicle Stability Control

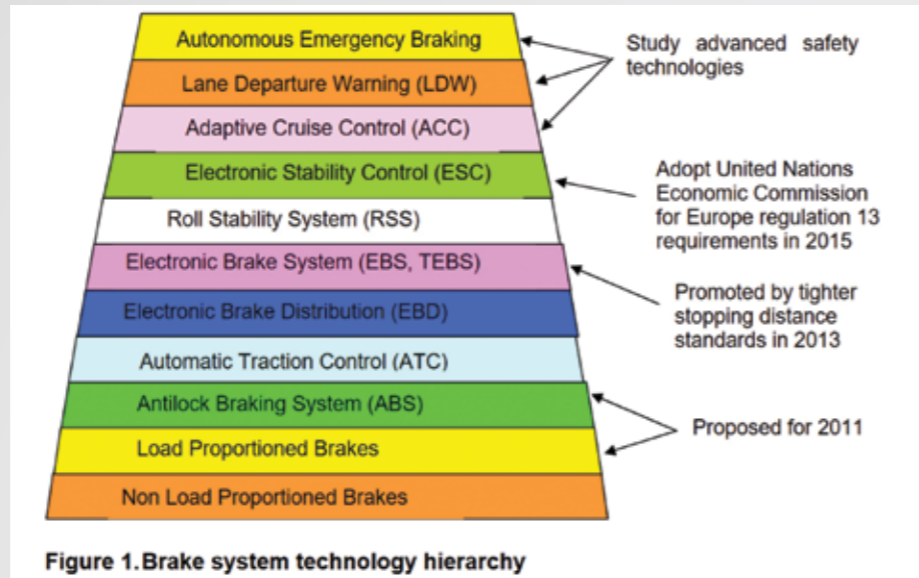


Figure 1. Brake system technology hierarchy

In 2008 the then National road Transport Commission released the National Heavy Vehicle Brake Strategy. This project was jointly sponsored by the NRTC and the Federal new-vehicle regulator called Vehicle Standards Section, inside then the DoTARS. The strategy proposed that Vehicle Stability Control – then called Electronic Stability Control – be mandated on all new heavy vehicles starting in 2015. Figure 1 in the strategy is shown below. So how far have we got with this strategy?

The Australian Design Rules ADR 35/06 mandates Vehicle Stability Control (VSC) on:

- heavy prime movers (category NC);
- heavy omnibuses (ME) but not route service buses; and
- heavy duty Cab-Over-Engine trucks with a wheelbase not exceeding 4.5m.

VSC is not required on all other category NC vehicles with a wheelbase that exceeds 5m. The mandate applies from 1 July 2020 for all new vehicles and from 1 July 2019 for new models. The Vehicle Stability Function must have two aspects, which are: roll-over control and directional control. Roll-over control must automatically control the wheel speeds on at least two wheels in each axle group based on evaluation of actual vehicle behaviour that may lead to roll-over. Roll-over controls reduces the speed of the vehicle to reduce the risk of roll-over. Directional control must automatically,

selectively and independently brake left and right wheels on an axle in each axle group when the evaluated vehicle behaviour differs significantly from that demanded by the driver. The VSC can be manually disabled by the driver for speeds below 40 km/h to account for off-road operation.

Directional control must be implemented with the following functions:

1. The ability to adjust the engine torque to assist the driver to maintain control.
2. The ability to automatically apply the service brakes of a trailer, if applicable, via the trailer service air coupling.
3. The system must have sensors to measure the actual vehicle dynamic performance and cannot rely upon GPS information. Australian Design Rule 38/05 mandates roll-over control on heavy trailers except for dolly converter trailers and trailers with four or more axles or four or more wheels in a row of axles. This requirement applies from 1 July 2019 for all new models and from 1 November 2019 for all new vehicles. Trailers can also have a directional control scheme but this is not mandated. The roll-over control must operate at speeds at and above 20

km/h unless an off-road mode selector switch is fitted, in which case operation below 40 km/h can be disabled. If the trailer brake system is equipment with electronic communication then the trailer brake system must signal the truck brake system when interventions occur. Additionally, trailers for which roll-over control is mandatory, must have an antilock brake function. Motor vehicles in categories MD4, small omnibuses, ME, large omnibuses, NB, mid-sized trucks, and NC, heavy trucks, with not more than four axles must be equipped with an antilock brake system. The antilock brake system requirements are pre-existing.

The federal regulator accepted manufacturer representations that Vehicle Stability Control not be required on bonneted rigid trucks and on converter dolly trailers. The case for excepting bonneted rigid trucks is that VSC technology is not mandated in the USA and some manufacturers could not supply it. The case for exempting dolly trailers is that they are independent of the trailer they support and it is complex to add electronic brake controls to dolly trailers. New dolly trailers will often support an old semi-

trailer and new semi-trailers are likely to be supported by an old dolly trailer without VSC so there is only a minimal gain in mandating VSC on new dolly trailers. Notice that the mandating of Vehicle Stability Control on new Australian heavy vehicles is late and incomplete. This situation is unjustifiable considering the significant safety benefits that can be confidently anticipated. The NTI Insurance Safety Report for 2017 shows, as it has in previous reports, that 'inappropriate speed for conditions' is the most common cause of the claims – at 33 per cent. The report also shows that 66 per cent of claims are single vehicle incidents. Vehicle Stability Control is relevant to loss of control events because these claims arise due to a mismatch between the vehicle and the road. The Europeans have mandated Vehicle Stability Control on heavy prime movers, heavy rigid trucks and heavy trailers, all with two or three axles, starting progressively from 2011. The US and Canada has mandated Vehicles Stability Control on prime movers and buses only (FMVSS 136). Japanese manufacturers are aligned with European standards and can deliver VSC on all heavy motor vehicles. Rigid trucks have been excluded from the VSC requirement in Australia. Why has the decisions made in Washington resulted in Australia not getting the benefits of VSC on bonneted rigid trucks and long wheelbase trucks? This is unfinished safety Australian business.

In 2014, Australia mandated Antilock braking systems for new prime movers and rigid trucks. New heavy trailers could have either an Antilock system or a load-proportioning brake system. Regrettably an electrical connector for trailer ABS was not mandated on towing vehicles. Therefore, a proportion of the prime-mover and rigid truck fleet cannot supply power to a trailer Antilock of VSC system. This is unfinished Australian safety business. There is a further problem. Many Australian drivers do not plug in the trailer braking electrical connector. Consequently the advanced braking system features on the trailer/s that need electricity will not work. The in-service regulations have not mandated that the electrical connector –

when supplied – be plugged in, although I understand that the NHVR is about to release an advisory document that will advise roadside inspectors to check that the cable is plugged in. This is unfinished Australian safety business. Vehicle Stability Control systems routinely broadcast intervention messages on the publically available braking CAN bus. This provides the opportunity for telematics systems on trucks and trailers to record intervention events together with GPS location, time of day and engine operating conditions. Additionally, the VSC systems will record detailed information about brake applications and interventions. Storage of intervention events provides operators with the potential to identify trouble spots on the fleet truck routes. This is an exciting development that could help our industry to improve its safety outcomes.

The European VCS manufacturers who supply systems in Australia: Knorr Bremse, Wabco and Haldex / BPW all broadcast intervention and other data on the braking CAN bus, pins 6 & 7, in the trailer connector. The details can be found in the European Transport Board document Road vehicle – Interchange of digital information on electrical connections between braking and auxiliary data collection systems on towed vehicles, V1.1: <http://trailercan.org/>. Operators should; talk to their telematics suppliers to determine how to make good use of the 'goldmine' data.

There are some other safety features that were proposed in the national HV Brake Strategy that regulators have not



yet seriously considered. These are: Adaptive Cruise Control with Autonomous Emergency Braking and Lane Departure Warning systems. These technologies are being progressively mandated for heavy vehicles in Europe. In the USA operator groups like the ATA and safety groups, such as Road Safety America, are calling for Autonomous Emergency Braking (AEB) to be mandated for new heavy trucks but this is yet to happen.

Australia should publish 'intention to investigate' notices to inform the supplier community that certain advanced technologies are 'on the agenda'. The good people inside the federal regulator have a tremendous workload that is exacerbated by the need to write Regulation Impact Statements and to find saving offsets for each additional mandated requirement on vehicles. Whilst these procedural requirements are justifiable, the consequence is that Australia is slow to formally mandate new safety technologies on new vehicles. There is an opportunity cost for our community. For example, it is unlikely that AEB will be mandated for new heavy vehicles in Australia before 2023 despite most operators regarding it as a 'no brainer' to mandate it. Australia should issue 'intention to investigate notices' for all the safety technologies that have been mandated on heavy vehicle by the European Union. This represents unfinished Australian safety business. The NSW EPA Mandate for roll-over control on certain categories of dangerous goods tanker trailers starts on 1 January 2019. The mandate was initiated by Duncan Gay, NSW Transport Minister, as one response to the Mona Vale tanker tragedy. This leadership should be recognised and applauded. Believe it or not, the national work-safety regulators' consultative group called the Competent Authorities Panel (CAP) cannot reach agreement on mandating DG tanker roll stability in other state and territory jurisdictions. This represents unfinished Australian safety business in the dangerous good space.

Dr Peter Hart
Chairman, ARTSA