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Electronic safety systems and recent heavy vehicle mandates – is it working?

application, engage engine brakes and apply foundation brakes to reduce or mitigate the severity of a heavy vehicle incident. There is no replacement for competent driving and the systems cannot prevent every incident, but they assist the driver in maintaining vehicle stability, reducing speed and giving feedback when vehicles are driving too close to the limit. At the beginning of 2010, it is believed that fitment rates were as low as 5 per cent for both heavy vehicles and trailers. Now the current proportion of trailers fitted with RSP is estimated as 27 per cent and for heavy vehicles likely between 30 per cent and 50 per cent, depending on the technology. Given mandatory fitments on new vehicles/trailers, a 95 per cent coverage is likely to be realised some time in the 2030s as the rate increases year-on-year.

Have the number of deaths and serious injuries decreased in the past decade?

Yes if we look at the National Road Statistics which found the average number of deaths per year from 2008-2010 was averaged at 1426, now from 2018-2020 averaging 1106 per year. This is even with an overall increase of 17 per cent in the yearly number of tonnes per kilometres travelled by freight vehicles.

Given a reduction in deaths, can some of the recent reduction in deaths on our roads be attributed to the fitment of electronic safety systems for braking?

From a data driven perspective, no. Anecdotally, yes. The data we require to be certain of the impact of the electronic safety systems for braking is not easily obtainable and in most cases, not tracked at all. There is additionally no national road data or insurance level data allowing the operational status of the safety system to be confirmed for each incident. Anecdotal evidence and case studies support that there is a measureable positive safety impact of fitting electronic safety systems for braking to heavy vehicle combinations. In the logging industry, the number of rollovers for VicForest went from 40 trucks per year to virtually nil following the introduction of EBS in 2010. The Monash University Accident Research centre conducted a study estimating that VSF or RSP would result in a 4 per cent reduction in fatal crashes and a 7 per cent reduction in serious injury crashes. This report analysed real road and crash data from varying jurisdictions between 2000 – 2013. Weighting factors were utilised to determine the likelihood of ESC preventing a crash based on location, nature of incident, road quality, speed and weather conditions. This estimate does not take into account the 'learning potential' of ESC systems and the gains in driver awareness which could also assist in the human factors portion which is quoted as accounting for the root cause quoted by one insurer to be of at least two thirds of all road incidents.

In preparation of this article the collective view from industry was that, 'The fitment of ESC on heavy vehicle combinations contributes significantly to reduction in serious injury or fatality on our roads if the system is powered and operational and the driver is working with the system to complete their trips safely.' What this means is, there is still work to be done. NTI's Major Accident Investigation 2021 report stated that on average 35 drivers have been killed every year in heavy vehicle crashes over the past decade and many more are seriously injured. This makes heavy vehicle driving one of the most dangerous work places in Australia. Given this, how can we better work with and educate our drivers to give them the tools they need to get home safely? What can we do with respect to electronic safety systems and ensuring the mandates allow them to work and positively impact the cause? Recent discussions with industry point to the below:

Know what is fitted — Ensure that there are adequate visual cues to the driver via stickers/dash communication that safety systems are fitted. When jumping into a vehicle for the first time, fleets need to ensure drivers are taken through the safety systems fitted and understand the warning lights, tell tales and ways to use the features. Positive education and a shift in culture is required to encourage drivers that the systems are there to help, not to hinder.



A close circuit rollover test takes place.

Plug it in — Education on the trailer EBS power connection and ensuring that operators know this is a legal requirement to plug in, combined with regular checks by fleet managers to ensure that its plugged in. Warn and educate drivers on first offence.

Ensure its operating — Education for drivers on the VSF/RSP warning lights on the dash. Look for visual and audible indicators (chuff test, power lights). Regular downloads to be taken (minimum of every single trailer service) from the VSF/RSP systems to check that the system is functioning and fault free, including observance of intermittent faults.

Learn from near misses — Create a positive work place culture where near incidents are reported and discussed, rather than hidden. Consider driver reward programs where Truck and Trailer downloads are used to assess good driving patterns. For instance, looking for lower numbers of RSP interventions, lower number of high

pressure brake applications and rewarding drivers for improving their data as a sign they are improving their driving. Many good operators have already adopted these processes and are seeing tangible results in incident reduction, reduced brake wear and better equipment condition generally. We believe that pairing the ADR mandates and increases in electronic safety system fitment with the above four key points, will make a measureable impact on heavy vehicle safety. We, the safety systems providers, are dedicated to working with industry to communicate these important messages. What is the point of fitting a life saving system if it's not plugged in? There is an urgency for those of us involved in safety and the heavy vehicle industry to do our jobs, do them well and see our drivers home safely.

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We've come a long way in Australia in the last decade with our collective focus on road safety and the role our heavy vehicles play. All levels of government and industry including work safe, large fleets and insurers have contributed to numerous programs in an attempt to reduce the number of serious incidents and deaths. These reductions don't just benefit the public in saving lives, but also reduce the significant cost burden currently estimated as A\$30Bn every year. Over the past decade, one of the key strategies taken by the federal government in consultation with industry was to mandate the fitment of electronic safety systems:

- Antilock Braking Systems (ABS) (Truck and Trailer)
- Vehicle Stability Functions (VSF) (Heavy Vehicles) and
- Roll Stability Programs (RSP) (Trailers) also known as Trailer Electronic Braking Systems (TEBS)

Both RSP and VSF features are often referred to in generic terms such as Electronic Braking Systems (EBS) or Electronic Stability Control (ESC). The mandated features allow for measurement of speed, lateral acceleration, yaw rate, mass, vehicle COG and others to determine when to automatically reduce throttle