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Stop, Revive, Survive – Part Two

In my column last month, I detailed how a world-first study into heavy vehicle driver fatigue, instigated by the National Transport Commission and headed by the Cooperative Research Centre for Alertness, Safety and Productivity (Alertness CRC) may change how we as an industry view and address heavy vehicle driver fatigue. The two-year scientific study used eye monitoring technologies to evaluate alertness and the impacts of work shifts on driver awareness. The project was headed by Alertness CRC Associate Professor Mark Howard, who detailed that slow eye and eyelid movements, longer blink duration and prolonged eye closure were reliable predictors of drowsiness and fatigue. The study also confirmed the scientific link between alertness and drowsiness patterns associated with specific work shifts for heavy vehicle driving. I also detailed some of the key findings of the study and noted the web link where the summary report containing all of the key findings could be found, listed again here: <https://www.ntc.gov.au/current-projects/heavy-vehicle-driver-fatigue-data/>

The eye monitoring technologies used in these trials and research are commercially available and can be retrofitted to most trucks. The systems appear to be very effective, however can be somewhat expensive and typically don't work if the driver wears sunglasses. Such eyewear can be considered something of an occupational health necessity for a truck driver in Australia given our high levels of sunlight during daytime driving.

Some truck manufacturers are offering their own "built-in" driver fatigue and distraction warning systems, while others are currently developing such technologies. I would like to outline some of these developments here. The most basic of these fatigue systems is simply a warning to the driver to take stock of their alertness, fitness to drive, after a fixed time at the wheel. These time based fatigue reminders occur typically after an hour or two from the start of driving. The "stop, revive, survive", after a fixed time message that we are used to hear being promoted by road safety agencies. Generally, such basic warnings are not used by truck OEM's, opting instead for more advanced systems. The next level of sophistication are warnings based on steering and/or brake inputs. The truck's computers use these steering/brake inputs, via sensors, to detect irregular driving patterns such as harsh and erratic brake applications, or steering inputs that are either hard and sharp, or at the other extreme, almost non-existent. The former indicating a lack of concentration, or potentially awakening from a micro-sleep and correcting vehicle speed or direction with fast, hard brake and steering inputs. The latter being a likely indication that the driver is drowsy, may be falling asleep and not providing the small, but constant, steering corrections required to maintain correct vehicle tracking. An even higher level of detection and

warning sees the above inputs combined with data from Autonomous Emergency Brake (AEB), Lane Departure Warning (LDW) or Lane Keep Assist (LKA) systems, where fitted. If some, or all of these systems, are “kicking-in” and frequently over-riding the driver’s control, indications are that the driver is becoming increasingly distracted, or fatigued.

When any of these technologies recognises a potential fatigue or distraction event, a suitable warning would be deployed. This could be in the form of visual and/or audible warnings directly to the driver, or another warning that is increasing in popularity and is proving very effective, is a vibrating driver’s seat, a mild version of grabbing the driver and giving them a shake. If the truck was fitted with a back-to-base telemetry system, the truck’s onboard systems could send a message to the company’s fleet controller, or similar person, who could personally contact the driver, via the telematics system or by phone (“hands free” of course) questioning if the driver is alright and if concerns exist, suggest a rest break.

While these fatigue and distraction systems are developing technologies and are yet to be fitted to the majority of new trucks, be assured that Truck Industry Council (TIC) members, the truck manufacturers and importers are hard at work to bring these and many other safety technologies to market, in a cost-effective manner. Aids that will lead to ever safer trucks, assist drivers and offer tangible safety outcomes for all road users.

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