

HEARING THE WARNINGS

HUMMINGBIRD ELECTRONICS' WARNING SYSTEM TECHNOLOGY IS HELPING TO IMPROVE SAFETY THROUGH CUSTOMISABLE VERBAL MESSAGES AND VISUAL CUES FOR TRUCK, BUS AND HEAVY MACHINE OPERATORS.

Flashing warning systems, monotonous buzzing alarms – the heavy machine operator's dashboard can light up like a Christmas tree to warn them of any imminent dangers. However, are these visual and audible warnings getting through in time before an accident occurs?

For Australian safety electronics manufacturer Hummingbird Electronics, clear verbal messages present a number of safety benefits that can help build on and improve the warning systems already in place for heavy machine operators.

Part of the REDARC Electronics group since May 2015, Hummingbird specialises in bespoke sensor products focused on driver safety, both for trucks and construction equipment operators in the Australian civil

construction and transport market.

"Everything from the angle, pitch, temperature and force to the speed of the vehicle – Hummingbird products encompass all aspects of driver safety," Mark Bruce, Hummingbird Electronics' National Sales and Marketing Manager, explains.

The company's latest product releases epitomise how an effective warning system can be the difference between a near miss and an accident for operator and machine.

The Hummingbird Elite HMDS8000 Dual Axis Inclinometer – an in-cab monitor and sensor kit – enables an operator to monitor the pitch and roll of their machines, namely large equipment and customised vehicles such as earthmoving machinery, water

trucks and heavy transport vehicles.

"These are large machines and can be very dangerous on civil and mining sites because they tend to inherit a high centre of gravity," Mr. Bruce says.

The higher centre of gravity means a large portion of the machine's weight is carried high up off the road surface, making them top-heavy and vulnerable to roll overs, especially on the varied terrains of civil worksites.

"Once you start putting loads in the back of a dump truck or the earthmoving boom/bucket of an excavator, the centre of gravity can also dramatically change," Mr. Bruce explains.

"The driver could be sitting in an air-conditioned, pressurised cab, so they can be quite oblivious to how dangerous these angles are."

Articulated dump trucks, for instance, can be especially susceptible to rolling from slight angles, according to Mr. Bruce. "A wheel may drop off an edge that could take the trailer with it, the weight of which could also take the cabin with it," he says.

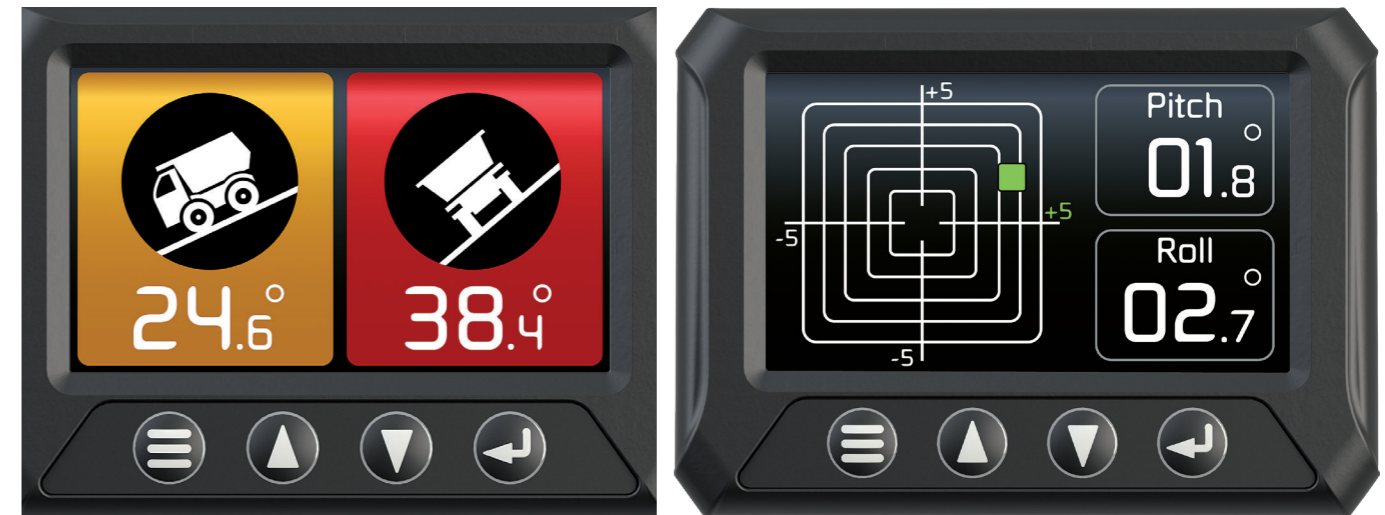
The Hummingbird Inclinometer kit provides the operator with a visible pitch, roll and speed measurement display that shows the angle of the machine and when a potential danger is imminent by way of a unit sensor on the vehicle.

"The screen will show an image of the machine, which will turn yellow and emit a repeating beep to warn the operator when they come close to a dangerous angle. If the driver goes further, the screen goes to red and it emits a continuous beeping noise," Mr. Bruce says. "The Inclinometer also gives you the ability to customise the angle at which the warnings start for both pitch and roll."

The ability to customise the response time of the sensor gives more flexibility in various applications, such as vehicles travelling over rough surfaces, which could trigger a false alarm.

The Inclinometer Elite model incorporates GPS technology, which provides speed readings and the ability to log over-speed events.

"It can then provide a time stamp of



Operators can use the system to view the pitch and roll of their vehicle.

The Inclinometer and Audio Alert System can work in tandem.

where and when an event occurs. All that information can be accessed straight from the password-protected device without the business having to use a third party," Mr. Bruce adds.

Traditionally, heavy machine operators have used a ball-in-tube type warning system using gradients on a curved tube to alert them to a potentially dangerous angle. However, Mr. Bruce says this system has become antiquated.

"With the Inclinometer system in the cab, the driver is getting training every day. It's painting a really precise picture of what angle and gradients they are getting close to," he says.

The Hummingbird Inclinometer is also the only product of its type that can incorporate two sensors, making it perfect for articulated machines, according to Mr. Bruce.

A second sensor can be installed and monitored simultaneously via the in-cab screen, providing independent pitch and roll information for a second vessel, such as a prime mover and its trailer.

Like the Hummingbird Inclinometer kit, the manufacturer's 16 Channel Audio Alert System is designed to alert vehicle and machine operators of safety warnings, albeit in a uniquely vocal way.

"If you think about buzzing noises or alarms on cars and vehicles, they all sound the same. We've somewhat become complacent with these alarms – we ignore them and don't acknowledge them as much," Mr. Bruce says. "All of these buzzers

and warnings can become very ineffective for heavy machinery operators."

Hummingbird identified the need for an alarm system that went beyond the traditional 'buzz' and visual light warnings. Through comprehensive product development the Audio Alert System was born.

The system is designed to give vehicle and machine operators clear and precise audible, verbal alerts when an input trigger has been detected, rather than receiving an alert via a dashboard full of warning lights, symbols and buzzers. It can be programmed for up to 16 individual input triggers, which come in the form of prerecorded audio files loaded onto an SD card and put into the device on installation.

If one of the triggers is for low oil pressure, for instance, the device could emit a preset verbal message such as: "warning, oil pressure low".

"We could have messages playing every time you turn a machine on: 'have you done your pre-starts?', 'please fasten seatbelt', or even 'apply handbrake' when shutting down," Mr. Bruce explains. "It could be anything from a machine alert to a message saying: 'please contact site manager', including their mobile, to a 'door open' warning."

He says other examples of warning messages could cover high engine temperature, headlights on, tailgate open or even over-speed detection.

The system can be customised to prioritise different warnings for the

operator, as well as the frequency and volume of certain verbal messages. "There could be an instance where a 'door open' and 'low oil pressure' alarm is triggered, and the low oil pressure verbal warning would take precedence over the door, for example."

It also features a 9- to 36-volt input range, enabling it to be used in both 12- and 24-volt vehicle applications.

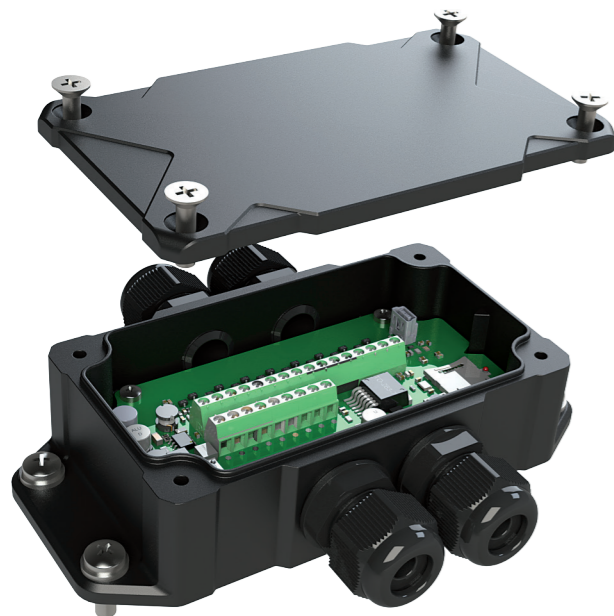
Both Inclinometer and Audio Alert System devices can work in tandem – the Elite Inclinometer can issue a verbal message when a roll warning is detected, for instance.

Mr. Bruce says the system not only helps to improve operator safety, but it can help guide the operator on the tasks at hand.

"It can even apply to machines for hire companies. It could provide basic and straightforward guidance for those who aren't using these machines every day," Mr. Bruce explains. "It can tell the driver to complete certain tasks. They need to be trained and a machine fitted with the Audio Alert System is essentially verbally training the operator."

Mr. Bruce says there are a number of bus companies using the system as standard, as well as waste management firms and OEMs adopting the Australian designed and manufactured safety devices.

"It's foolproof for drivers; the Audio Alert System takes away the guess-work, ultimately improving safety and reliability by turning warnings into a clear verbal readout." ■



The Audio Alert System is designed to alert vehicle and heavy machinery operators of safety warnings in a unique way.