CASE STUDY

Use of Safety Shield Intelligent Detection System

Overview

Flannery worked in partnership with Balfour Beatty to under take a trial on the Lower Thames Crossing enabling works utilising the Safety Shield intelligent detection system.

The project involved undertaking the excavation of numerous trial holes on the North and South of the Thames working with a team of archaeologists who were tasked with reviewing all excavated materials to inspect of evidence of historical remains.

The project involves a number of archaeologists working in close proximity to the excavators across the project site.

The Technology

Safety Shield is an advanced collision avoidance system available for vehicles and mobile plant. The system uses object recognition combined with intelligent algorithms to detect site based operatives and warns drivers if / when a person is entering the danger zone around the machine.

The Safety Shield Collision Avoidance System used in this trial was provided with an intelligent multi-camera solution. The system raised an audible and visible alert the machine operator to advise him that a person was entering the danger zone. In addition we arranged the fitting of an external siren to advise personnel when they were entering the danger zone.

PCW Display
internal cab display

Intelligent Cameras
placed externally looking backwards

DSM Camera
placed inside the cab facing the driver (eyelevel)

Intelligent Camera
placed externally looking backwards

Intelligent Camera

The system detects the human form, thus reducing the risk of a collision with a vulnerable member of the public or site operative.

Safety shield sends a visual and audio alert before an imminent collision with a pedestrian allowing the driver time to react.

With vehicles, the time to Collision (TTC) is calculated through the system and when it drops below 2-seconds, a collision warning is generated. With slower moving vehicles such as construction plant, a virtual detection zone is set around the plant using the smart app. Each camera can be adjusted separately and different zones set according to the different site environments and working procedures.

If a person encroaches into the zone then a Collison warning will be generated.

The system can also trigger various warnings for the driver and the person entering the zone such as: internal and external alarms and warning lights.

The Safety shield cameras require very little calibration (approx. 5 minutes per camera) and all calibration can be done by untrained personnel easily via the calibration APP.

Site

The system was initially installed in November 2018. It was then trialled across a number of sections of work including on the M20 and HS2.

The Trial

We have found the Safety Shield camera system to provide additional protection to pedestrians approaching working equipment.

By providing an audible alarm rather than relying on the operator seeing the person approach through the camera system there is more time for the operator to react.

The system can also trigger various warnings for the driver and the person entering the zone such as: internal and external alarms and warning lights. So the system has a dual benefit in that the operatorand the approaching person has the opportunity to react

/ change course.As a virtual detection zone is set around the plant using the smart app the operator feedback has been that it is a positive tool to support Red Zone Training.

Conclusion

We are currently working collaboratively with our customer base and the distributor of this Intelligent Detection System to develop this product. To ensure it is able to provide an effective alert to any encroachment into a machines work zone. The technology is based on the use of smart cameras which are constantly "learning" how to identify people approaching the danger zone and we feel further research in this technology will enable us to provide the most effective solution.