Spillard Safety Systems

SPILLARD vehicle safety systems

Statistically, the highest number of fatal injuries due to work-related accidents in the UK are in the construction industry. According to the latest government statistics, 23% of these are caused by moving vehicles on site.

Flannery Plant hire will always prioritise safety on site, and we are constantly innovating our plant and training offerings in order to do all we can to ensure that both those operating, and anybody within close access of our machines, are going home safely at the end of each day.

For the last 30 years, Spillard Safety Systems have been working to provide visibility aids for construction machinery. Starting out with simple solutions, including convex mirrors (allowing 360 degree visibility), and leading to more complex items such as object detection and camera systems, they have worked closely with companies like Flannery to develop ways to tackle the safety issues with People Plant Interface (PPI).

Spillard identified a risk of humans entering 'blind spots' when machines are in operation, and this resulted in them working with their suppliers to develop a form of artificial intelligence that specifically detects the human form.

This is a camera system that is designed to relay live information to the machine operator when an individual has encroached into the pre-defined 'red zone', but to also sound a directional external audible alarm that can be heard by the individual approaching that dedicated area.

The aim of this is to give operators a system that they can rely on and to show them exactly where a person may have encroached .

Spillard and Flannery are continuing to work together and, through the power of data, give clients the visibility to accurately report on trend analysis, correct behaviours where necessary and alert safety managers to any causes for concern.

FIND OUT MORE ABOUT SPILLARD SAFETY SYSTEMS

OVERVIEW

Flannery and Spillard have been working together to identify opportunities that will drive better safety measures on construction sites across the UK, especially those using plant.

Spillard have been on a journey to drive greater awareness of the risks involved in PPI for over 30 years and, over this time, one of the greatest challenges has been communicating with clients and capturing their feedback.

Together with Flannery, the company are now able to deploy their systems in multiple real-world scenarios and can use machine intelligence to capture trends on site. These offer an invaluable source of information that will help inform future training and site set-up parameters.

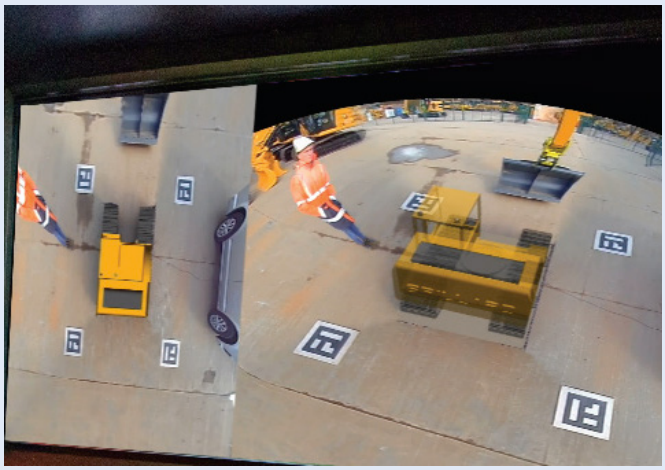
BACKGROUND

Traditional PPI technologies have focused on object detection. This was primarily through radar devices that are designed to detect anything from street furniture and cars through to other machines and equipment.

Whilst object detection can be useful, there was a need to develop it further to remove the risk of false positives and reduce the amount of alerts the operator receives in a shift. Ultimately, the objective is always to highlight to an operator when a person is in danger and encroaching on the 'red zone'.

Now immediate video evidence in human detection can be captured within dedicated exclusion zones. This enables us to highlight where more safety training is required on site for individuals so they know what zones they should and should not be entering.

Spillard have collaborated with Flannery to share insight of working practices on site and investing in a support team of twenty-eight engineers that are on the road and specifically trained to carry out installations. These engineers are fully trained through a six month development and mentorship programme, allowing Spillard to respond to any fit or repair requests within 96 hours.



TECHNOLOGY

This new system uses 'Spillard Live', an intuitive cloud-based platform that captures and streams real time video and analytics simultaneously from multiple cameras fitted plant equipment.

It connects with other Spillard technology and can also integrate with other platforms to report all th data in one, easy-to-find place, making the sharing of information from Spillard and Flannery to clients a seamless, automatic process.

With the ignition switched on, these cameras can virtually map out a five-metre 'red zone', a further away 'amber zone' and a 'green zone' that indicates a safe distance as defined by the client. The data for that machine can be accessed from the platform and the live journey of that vehicle can be checked.

This system means that a machine can track patterns and help highlight where changes need to be made on site. For example, a machine could detect that a person has encroached on the dedicated 'red zone' around fifty times at around three o'clock each day.

This data would then go to an appointed person who would see a clear pattern forming and be able to change site parameters to accommodate the need to enter that area at that time of day.

The technology also allows for other elements, such as if a seatbelt has been worn, to be taken into account and reported on.

Spillard Live can also report back on slips, trips and falls and even how often the vehicle is entered (through how often the door is opened).

Safety risks are immediately flagged as a potential concern, with the data and video footage from 10 seconds before to 10 seconds after the encroachment being available to view by an appointed person through the platform.

OPERATOR PERFORMANCE

Other benefits of the Spillard system are that the footage could be used for evidence-based training. Managers can review the footage to see where further training may be required when operating plant on site, and operators can be shown the footage to see first-hand where improvements can be made.

The software can then be used for further assessments, tracking how effective this training has been in benefitting user performance.

FUTURE DEVELOPMENT

Spillard and Flannery are working closely with clients and operators to fine-tune the detection systems and identify any behavioural changes. These could be if an operator is showing signs of fatigue, if somebody is smoking or using their phone while operating the machine or even if a driver isn't present in the vehicle while it's on or meant to be operational. So far, testing has shown the system works for reducing incidents on sites and saving individuals from potentially life-threatening situations.

Feedback from operators working with the system on site is being factored into future development and the Spillard team are also liaising with the Operator Skills Hub to ensure that all operators - going through training - are aware of the system, what it has to offer and how to use it effectively.

As the system is used across sites, it can be altered to suit the needs of each specific client. For example, if the 'red zone' detection area needs to be of a different size, data reporting from the system on site can analyse and support this and ensure that safety hazards are accurately operated around.

Development is also in progress for this system to be used more for skills and training There is no limit to how many cameras can be added to the machine and within the cabin, so a camera can be added behind the driver and facing out of the cab so that best practice of how to operate a machine can be recorded and shown.

All data can be recorded and sent back to specified site managers, who can then use this for training purposes. This can also be sent in whatever format is most convenient for the client, as it can be exported to an Excel spreadsheet or similar programmes – meaning users are not always required to log into the Spillard Live dashboard to access their reports.

BENEFITS

Visibility	Data available on one platform, easily transferred to clients. Alert functions.
Operator Performance	Training areas easily identified. Trend analysis.
Productivity	Active operator tracking. Site planning tools.
Safety	PPI risks reduced . Support through investigations/high traffic areas.

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CASE STUDY

Improving safety with Morgan Sindall Infrastructure on the National Highways' A11 project.

Morgan Sindall Infrastructure is working on Highways England's Concrete Roads Programme - Reconstruction Works Framework.

The Concrete Roads Reconstruction Framework includes a section of road on the A11 adjacent to Wymondham, running approximately 8km from Spooner Row to Tuttles interchange.

The £60M scheme is part of National Highways' nationwide drive to revitalise the country's concrete roads, which account for around 4% (640km) of the trunk road network.

This particular stretch of the A11 was laid in the 1990s. With 45,000 vehicles a day now using the route, the upgrade is considered "vital" for safety. It will also improve ride quality and reduce noise.

Engineers from Morgan Sindall are completely removing the concrete road surface and some of the foundations. They are then rebuilding the road with recycled material and a new asphalt road surface.

The work will also involve replacing kerbs, refurbishing the drainage system, replacing the safety barriers, painting new road markings and installing new reflective road studs.

In order to undertake the works a contraflow system is in place used on one side, allowing works to take place on the other side of the carriageway.

Main works started in early summer 2021 and hit the half way point in January 2023.

Spillard's AI Camera-Powered Human Detection system is in operation on the A11 project. Morgan Sindall Infrastructure's Plant and Transport Director, Jonathan Hall, is using the system on two Flannery machines initially – a Bell B20 Dump Truck and a CAT 320 Excavator.

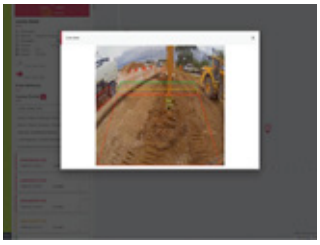
The aim is to improve statistics for People Plant Interface incursions and collect data that will enable continuous improvements.

Spillard's team will assist Morgan Sindall Infrastructure in setting benchmarks and then building a trendline using the data. It can then be interpreted to educate and train operators who face similar scenarios on site - ultimately changing behaviours and keeping everyone safer.

VISIBILITY

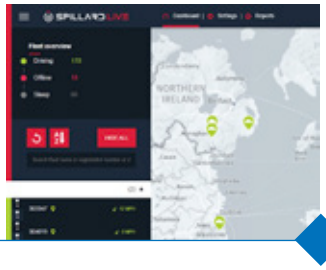
Whilst any footage can be retrieved, the Spillard camera system automatically records and saves footage from any encroachment into the dedicated 'red zone' from ten seconds before to ten seconds after the incident.

A dashboard has been produced to help appointed members of staff quickly access any footage they require and to ensure any incident is easy to navigate to and for the potential danger to be clearly highlighted. This dashboard can also read all other relevant data covered by machine telematics, such as fuel consumption and idle time.



There is a mobile app available so that visibility of these videos isn't only accessible from a web browser. This is available to appointed persons working on site through a mobile device to always ensure accessibility.

Typically, data is stored for up to ninety days, but can be stored for longer at the user's request.
All data is held securely and in line with UK GDPR policies.



CONCLUSION

Spillard's knowledge and expertise in providing safety systems has been taken to another level with Spillard Live and this technology will form an integral part of machine innovations now and into the future.

The platform has been proven to increase the safety of machine operators and other members of staff on or around the site and is fast progressing into a valuable business information system for clients looking to upskill employees and achieve greater productivity.

Flannery and Spillard are committed to working closely together with their clients and operators to develop this crucial aid.

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For more information, why not visit our website, flanneryplanthire.com, where you will also find a supporting video for this case study.

If you have any questions, please contact us by emailing:
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