

Blaxtair Pedestrian Proximity Detectors

The Innovation

The Blaxtair Pedestrian Detection System utilises Artificial Intelligence (AI), allied to a smart 3D camera, to recognise pedestrians if they enter a predefined detection zone around a machine. The system alerts the operator to the incursion, allowing preventative action and better management of the people/plant interface (PPI). The Blaxtair system is unique in its application of this technology in the field of pedestrian detection. Arcure, which designs and produces the Blaxtair system, has been working with Flannery Plant Hire for over six-months, to integrate this technology into the Creep Control System from XWatch. Creep control will hydraulically slow down a machine to 'creep' speed, if a person is detected.



Why is this innovation important?

The HSE reported that in 2019, 11% of fatalities and 12% of non-fatal injuries on construction sites, were caused by a collision between a moving vehicle and a pedestrian. This means there were over 5,000 incidents between people and machinery or vehicles on UK construction sites.

Pedestrian detection systems are an emerging technology in the construction sector. Many rely on a tag system using RFID (radio-frequency identification), which requires everyone on site to wear a tag correctly; such a system can be difficult to monitor, manage and control. Other approaches such as 'dumb' ultrasonic/radar systems, cannot and do not differentiate between objects and pedestrians. This approach risks "alert fatigue" for operators who are subjected to frequent alarms from systems which detect inanimate objects, such as building materials and infrastructure. The Blaxtair system utilises embedded AI and military grade stereoscopic cameras (see side-bar), to enable pedestrian-only detection and significantly reduce 'nuisance' alarms.

A feature which many systems have in common, is that they automatically cut power to the machine, in the event of an incursion into the work zone. Whilst this offers protection and benefit, there is a clear risk of making the machine unstable with a sudden stop, particularly where the bucket is fully loaded or if the machine is mid-lift or mid-slew.

Working collaboratively with XWatch and Blaxtair to integrate their respective technologies, means that as well as a visual and audible alert, if there is a risk of collision the machine slows down to a gradual, not sudden stop.

Definition:

Stereoscopic Camera.

A type of camera with two or more lenses with a separate image sensor or film frame for each lens. This allows the camera to simulate human binocular vision, and therefore gives it the ability to capture three-dimensional images, a process known as stereophotography.

Scan this QR Code to view Flannery videos & case studies



Innovation Partners & Background



BLAXTAIR Pedestrian Proximity Detection

Since 2009 ARCURE has been committed to increasing the safety of workers in the industrial workplace. The Blaxtair pedestrian detection system significantly mitigates the risk of pedestrian injury at the people/plant interface, in a variety of sectors, including recycling, industry, logistics, public works, mines, tunnels or urban clean-up.

Xwatch Safety Solutions

Xwatch have been raising the bar for safety in construction, mining and transportation for 100 years. With a keen focus on developing simple, easy to use control systems that are revolutionising the safety market. The range includes height control, slew control, rated capacity indicator (RCI) and stability monitoring. Xwatch consistently deliver products that support clients growing demand for site safety, and data management, via an easy to use operators' screen. Whichever system the Xwatch solution provides "feather touch" proportional hydraulic control, producing a safe and comfortable working environment.



What makes this solution different?

- Integration of a unique, Industry 4.0 pedestrian detection system with creep control, height and slew technology
- Combines AI with machine automation, to support operators on site
- Proven ability to combine innovative technologies, to reduce "in cab noise"
- Embedded video recording (optional) ensures that in the event of an accident or near-miss, the system can provide a dispassionate, objective view of what has happened, creating the opportunity for review and further training/learning opportunities
- Military grade system with stereoscopic cameras which offers intelligent pedestrian-only detection, without the need for tags

Benefits

1. On detecting a person, Blaxtair communicates with the Xwatch system and the machine will be brought to a gradual stop. Detection and communication take less than 300 milliseconds. It thus provides a simple solution, which helps to manage the people plant interface on site and allows operators to focus on being productive and safe.
2. By integrating the Blaxtair pedestrian detection system with the Xwatch safety control system, we are reducing the need for additional screens inside the cab.
3. Both systems deliver easy-to-use and understand interfaces and processes, reducing the need to provide additional training or familiarisation to operators.
4. Easily retrofitted to a wide range of mobile plant, this system requires limited hardware, making it a highly cost-effective solution, both from an investment and a time perspective.
5. If the Blaxtair system detects an internal system fault whilst in operation, it will provide a visual indication of this via the in-cab, operator alert system. The system will show the letters 'ECU' and will indicate which processor/sensor head has produced the fault.

Scan this QR Code to view Flannery videos & case studies



Project Team Feedback



Gavin Tull,
Blaxtair
International
Sales Manager

“The main benefit of the Blaxtair

technology, is the AI which is embedded within the system. This technology allows for machine learning via the intelligent sensors and internal algorithms. This enables it to filter out inanimate objects and site obstacles, such as piles of building material, other vehicles and site infrastructure and just focus on pedestrian detection. In turn, this significantly reduces the number of alarms an operator will hear in the cab and consequently, an operator will be much more likely to take notice of an alarm.”

“In terms of supporting Flannery and its clients, this technology is focused on keeping plant operators productive and getting the job done, whilst also giving them peace of mind that while they are working, the area around the machine is protected. They also know that they will be warned, if anyone should come into that area and be at risk.”



Dan Leaney,
Sales &
Operations
Director
Xwatch Safety
Solutions

“Combining

the technologies proved to be a relatively straight-forward task because of the flexibility our systems deliver. By connecting the Blaxtair system to ours people who have entered the working area are quickly detected and the machine responds by slowing to a stop. This takes the human element out of the decision-making process and provides a safe, controlled response to an incursion.”



Arnold Prescott,
Operations
Director (North)
Flannery Plant
Hire

“Combining

this technology will support our objectives to better manage the people plant interface onsite. Both Blaxtair and X Watch are keenly focused on creating simple solutions for operators and I believe that this approach makes adoption of the innovation a much easier process.”

“As construction sites are rapidly moving towards smart machinery and taking a digital approach it is really important that we push for better integration across these

technologies and fully understand and demonstrate the benefits of automation. From a safety perspective this integration and the element of machine control has significant advantages and I look forward to seeing it rolled out onsite.”



Future Developments

Going forwards there are currently three main areas of focus and development:

1. Providing a cloud-based solution, which will allow the review and management of plant across a larger site and provide detection data and still images via a web portal.
2. Google Maps overlays, to allow machine geolocation and remote pedestrian detection zone configuration, to enable dynamic adjustments based on site feedback, thus providing additional safety and security benefits.
3. Developing the combined technology to work on wheeled excavators, dumpers and other plant, where the stand-alone Blaxtair system already features strongly.

Case Study

If you or your site are interested in trialling this system Flannery Plant Hire, Blaxtair and Xwatch would be delighted to work with you, to develop an appropriate test environment and further case study to develop this system further.

Please email innovatewithus@flanneryplant.co.uk

If you have an innovation you would like to share with us, use the email above to get in touch.

Scan this QR Code to view Flannery videos & case studies

