



TM

SEEN SAFETY



SEEiNg the unSEEN

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SEEN SAFETY



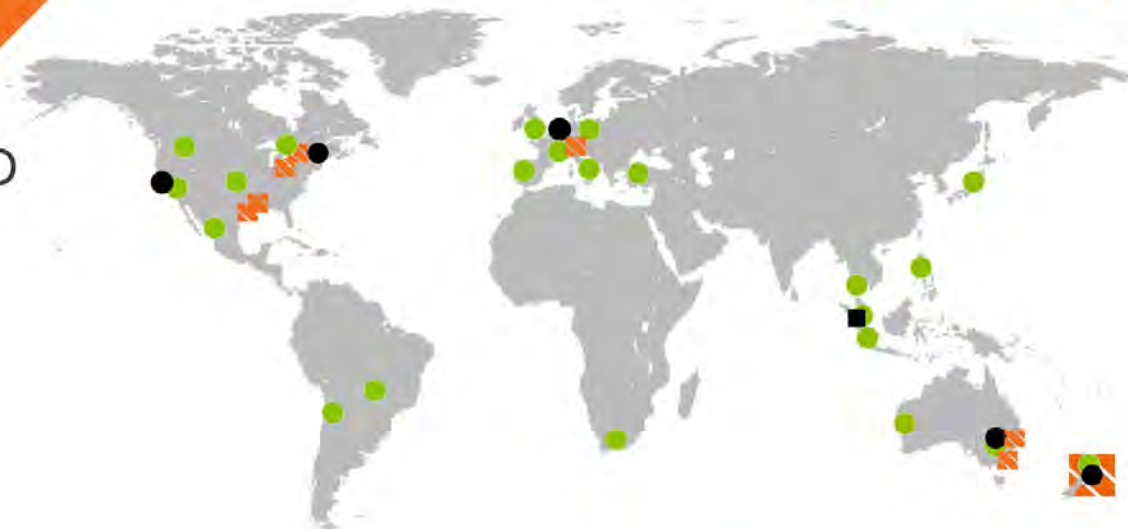
**Dedicated to protecting pedestrian workers
in critical risk zones around heavy mobile
equipment, since 2018.**



SEEN SAFETY



- Head office and R&D in New Zealand
- Made in Thailand
- International team.



- SEEN sales team location
- SEEN stock location
- SEEN dealers location



Best Design Awards
Best of Discipline



WINNER OF THE
NZ HI-TECH AWARDS 2022

(Puhakaki Fund Hi-Tech Start-up Company of the Year)

SEEN's award-winning industrial designer founders bring a user-centred perspective to SEEN's products.

Customers include



Installation Partners include



MHE is dangerous

**Every worker has the right to safety.
But MHE is a leading cause of workplace injury and death.**

USA OSHA data shows 63% of all workplace person-machine collisions involve a forklift.

The National Safety Council estimates the average cost of a forklift incident is \$188,000, not including reputation damage.

Pedestrians are particularly at risk, accounting for 57% of those injured or killed in forklift accidents.¹

The British Safety Council estimates that 14% of all workplace injuries involve a forklift hitting a pedestrian worker.

**Forklift accidents cause
5 life-changing injuries
every day in the UK.**



¹ <https://www.britsafe.org/publications/safety-management-magazine/safety-management-magazine/2017/very-costly-forklift-accident/>

Costly consequences

- Severe injury or death
- Operational downtime
- Increased insurance premiums
- Fines and compensation
- Reputation damage.



Company fined after worker's leg crushed by forklift truck

3rd April 2023



A manufacturing company has been fined £600,000 after a worker's leg was crushed by a forklift truck.

Health & Safety context

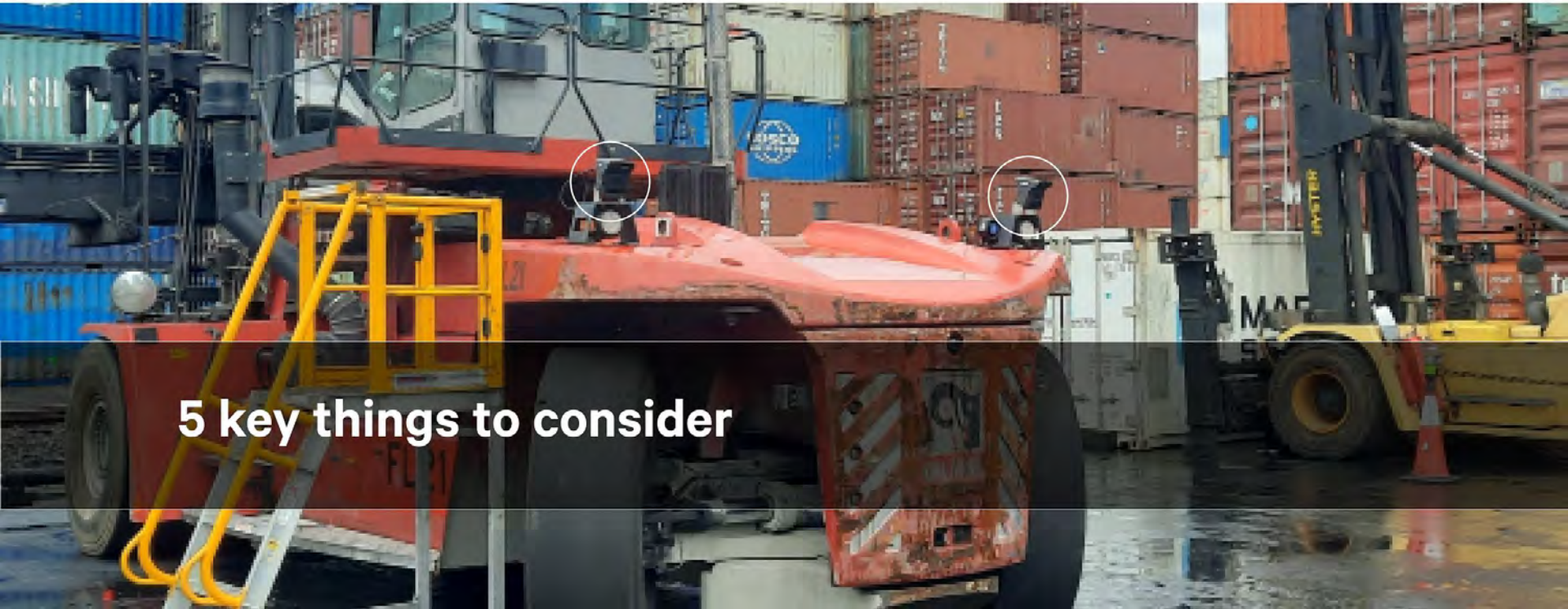


When complete separation between MHE and pedestrians is not possible, passive safety controls alone are not sufficient, **active assistance is also needed.**

Passive safety controls include **back-up alarms, blue lights, reversing cameras, PPE** and **marked walkways**. All these require people to notice and take action, making these susceptible to human-error.



Looking for an active detection system?



5 key things to consider



1. What to detect

Detect-anything systems

Warn about proximity to *any* object in the detection area.

E.g. reversing radars (ultrasonic or RF).

Good for preventing property damage.

Lots of alerts. Not safe for protecting pedestrians.

Targeted detection systems

Only detect selected objects (e.g. people) in the detection zone.

E.g. Electronic tag systems, AI cameras, SEEN IRIS system.

Necessary if protecting people is the primary objective.

2. How to detect



Electronic tag systems

Enable reliable detection and can see 'through' things.

Complicated and expensive to implement, potential RF interference from containers, over-detection issues.

Human-form detection cameras

No tags needed. Reliability challenges, expensive.

SEEN IRIS System

Best of both worlds. Simple, effective, affordable.

3. Where to detect

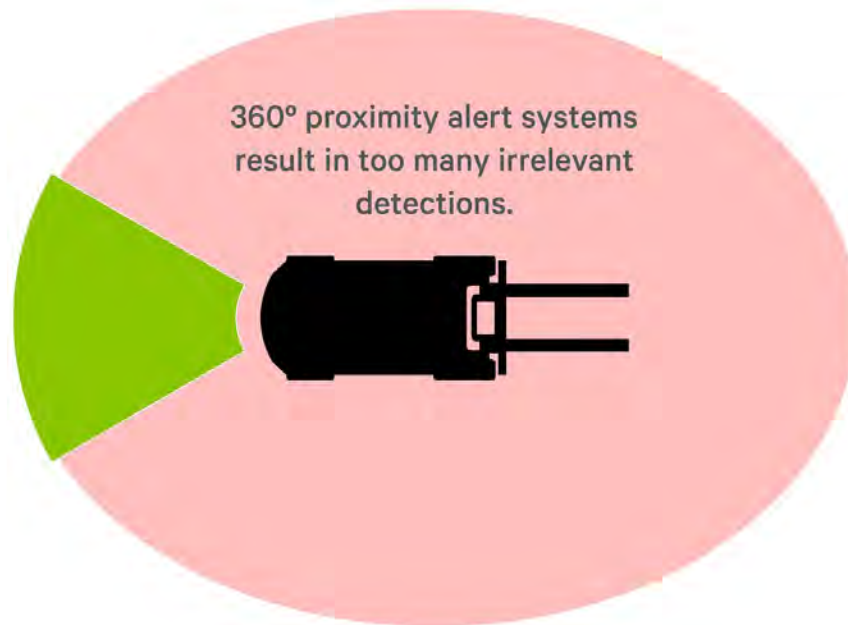
360° all around the vehicle

Good in theory, often not in practice.

Over-detection results in operator disengagement.

Critical risk zones only

Timely, relevant alerts to mitigate critical risk without annoying the operator through over-detection.



4. Operational considerations

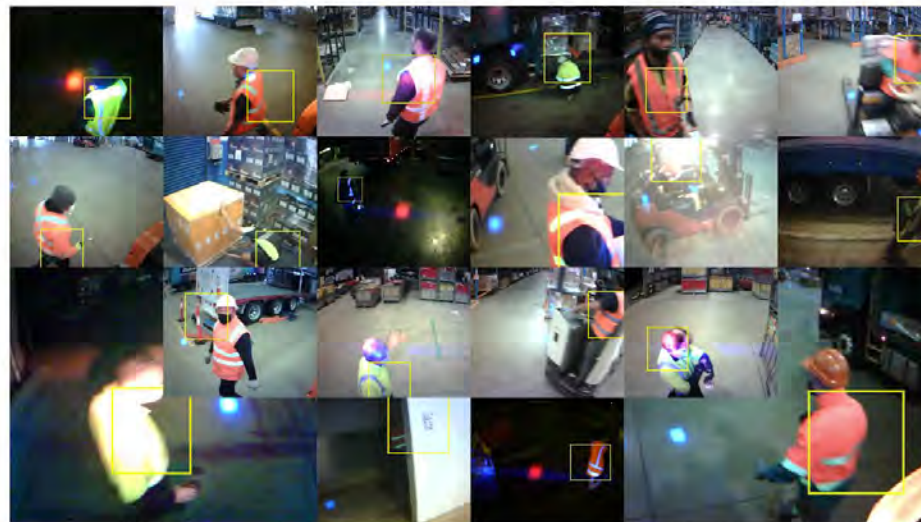


- Downtime for installation?
- Support and maintenance requirements?
- Hardware reliability and warranty?
- Upfront and ongoing cost?
- Machine interoperability?

5. Data capture



Can the system capture data allowing you to identify and prevent potentially high-risk operations and behaviours?



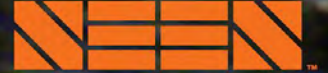
The SEEN System

Transforms the retroreflective tape on high-visibility PPE into part of an **Active Warning System**.



IRIS 860 sensor

SEEN's advanced laser technology enables reliable detection, even in wet and dirty environments with poor lighting.



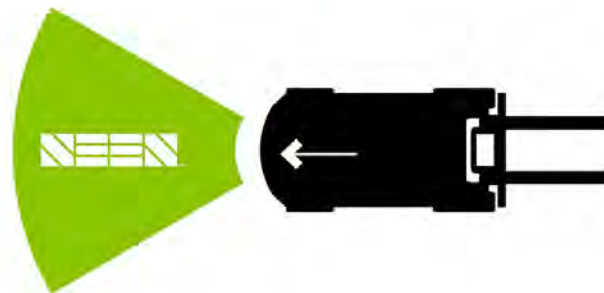
Retroreflective tape on low-cost PPE enables reliable and cost-effective detection.

Patented Infrared Retroreflector Identification System (IRIS). 8m/26ft max range, 60° field of view.



IRIS 860 sensor

- Only detects retro-reflective tape
- Only targets critical risk zones
- Only in reverse (optional).

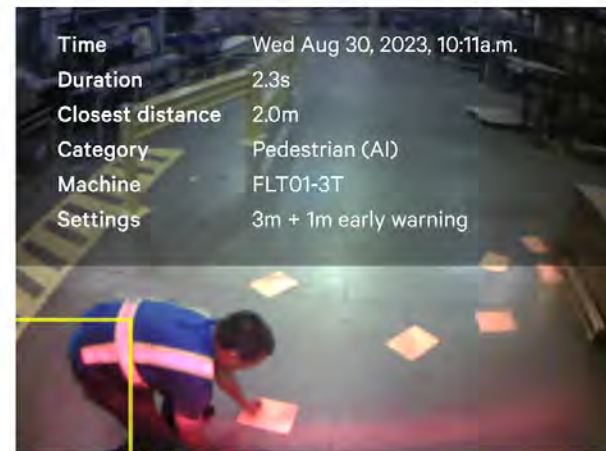


2 sensors can be used
if more coverage is
needed.

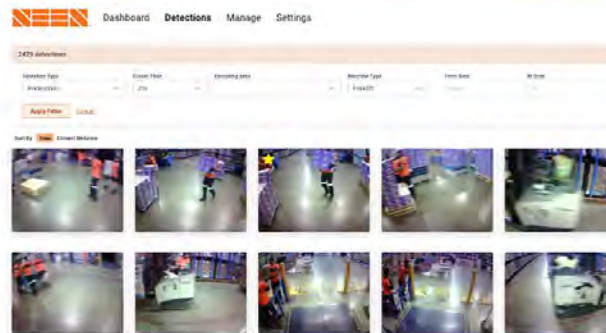


SEEN Insight

- Your eye-witness to MHE near-misses.
- Allows you to identify, quantify, and pro-actively manage critical risk areas.



Download Video



Trial Outcome Report



Pedestrian detections

- SEEN sensor provides the immediate safety impact, prompting the driver to brake
- SEEN insight identifies situations where workers are most vulnerable to accident and injury.



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Trial goals

- Risk identification and visualisation
- Determine optimal detection zone settings
- Evidence and data to support a business case.



"SEE THE UNSEEN"

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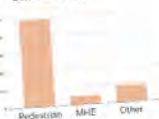
Trial detection data

Detections while in reverse gear, over a 10 week period, starting 1st September 2022:

- **1,170 people closer than 3m** (23 per day*)
- **266 people closer than 1.5m** (5 per day*)

*On average, excluding weekends and holidays. From 2 forklifts.

Detections by type



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Detection data dashboard

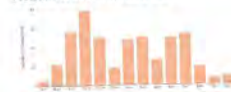
Pedestrian detections over time



Pedestrian detections by machine

FL1 counterbalance (42%)
FL2 counterbalance (58%)

Pedestrian detections by time of day



Pedestrian detections by day of week



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Thank you. Any questions?

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From the regulators



“The use of an automatic detection system that provides the driver with a distinctive, attention gaining warning would materially contribute to mitigating the risk of accidents with pedestrians occurring.”

UK Health and Safety Executive

“Passive safety controls are ineffective because people still make mistakes. If there’s an alarming system which tells the driver that they’re about to hit someone, you’re far more likely to prevent these accidents.”

Nicole Rosie—Worksafe New Zealand



we've **Got Your Back**