

PREVENTION ENGINEERING FOR DANGEROUS PROXIMITY TO MOVING VEHICLES



PREVENTION ENGINEERING

We believe that risks can be better managed when they are measured. For over 20 years we have seen our clients easily and quickly achieve compliance, while gaining absolute control of their operations and improve productivity



COMPLIANCE



ABSOLUTE
CONTROL

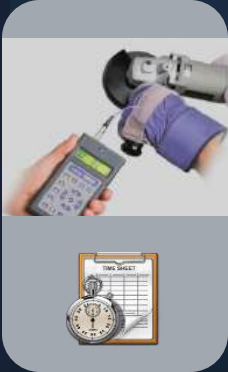


PRODUCTIVITY

OUR JOURNEY INTO PREVENTION ENGINEERING

2005

HAV regulations released. Organisations introduced tool testing and timesheet logs



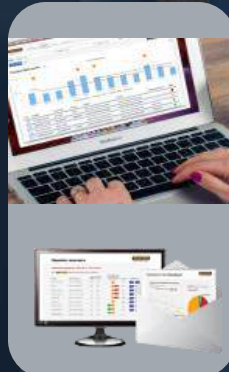
2008

Digital tool mounted trigger timers with HAV exposure calculators



2014

Automatic data collection to hosted Analytics



2016

HAVWEAR Wearable sensor technology



2019

BLE enabled IoT gateway for live field data



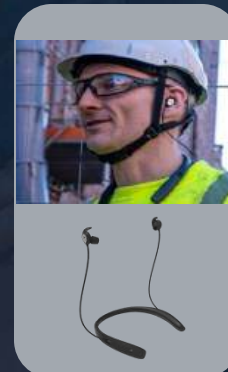
2020

Proximity detection for social distancing and exclusion zones.



2021

A revolutionary ear protection wearable that monitors noise levels in the work environment



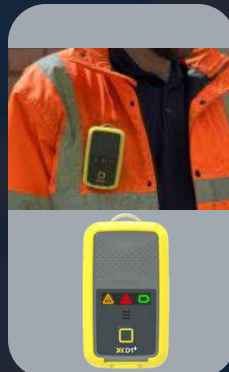
2022

R-Link, the third generation workplace wearable for multi-health risk prevention



2023

Personal connected dust monitor with data analytics



ADVANCED FUNCTIONALITY



- Vibration monitoring and protection for dangerous proximity to vehicles **available now**
- Reimagine and simplify workplace safety with a single wearable to manage multiple risk
- Generate big data efficiently to drive decision making

WHY PROXIMITY ALERTS



People Plant Interface
top fatal injury in
construction



1,300 forklift
accidents per year in
the UK



3 trackside workers
killed in 2020-21 (ORR)

- 2021/22 Fatalities
- 23 Struck By Moving Vehicle
- 15 Contact with moving machinery

- 2021/22 RIDDOR Injuries
- 2,000 Struck Moving Machinery
- 1,000 Struck moving vehicle

REGULATIONS AND GOOD PRACTICE

The Workplace (Health, Safety and Welfare) Regulations 1992;

- These regulations require that workplaces are organised to ensure that vehicles and pedestrians can move around safely

Inadequate planning and control has shown to be the root cause of many of the failures to comply;

- Ensure visibility of people, mobile plant and vehicles.
- Adequately define working areas
- Adequately manage high risk areas

REACTEC PROXIMITY DETECTION



R-LINK BEACON

- Creates an exclusion zone around plant
- UWB technology
- Device can be hardwired or battery powered
- Detection zones can be configured in the field



R-LINK WATCH

- Alerts user in real time of proximity breach
- Haptic, audible and visual feedback
- Monitor multiple risks on one wearable
- Personalised watch allocation system



REACTEC ANALYTICS

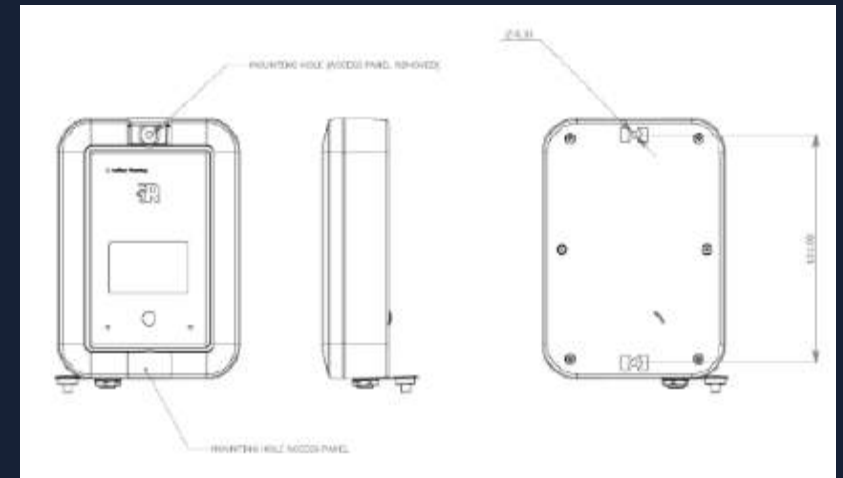
- Data is automatically uploaded
- Intelligent trend analysis
- Manage proximity data alongside HAVS, noise & dust exposure
- View record by person or machine

BEACON MOUNTING ARRANGEMENTS

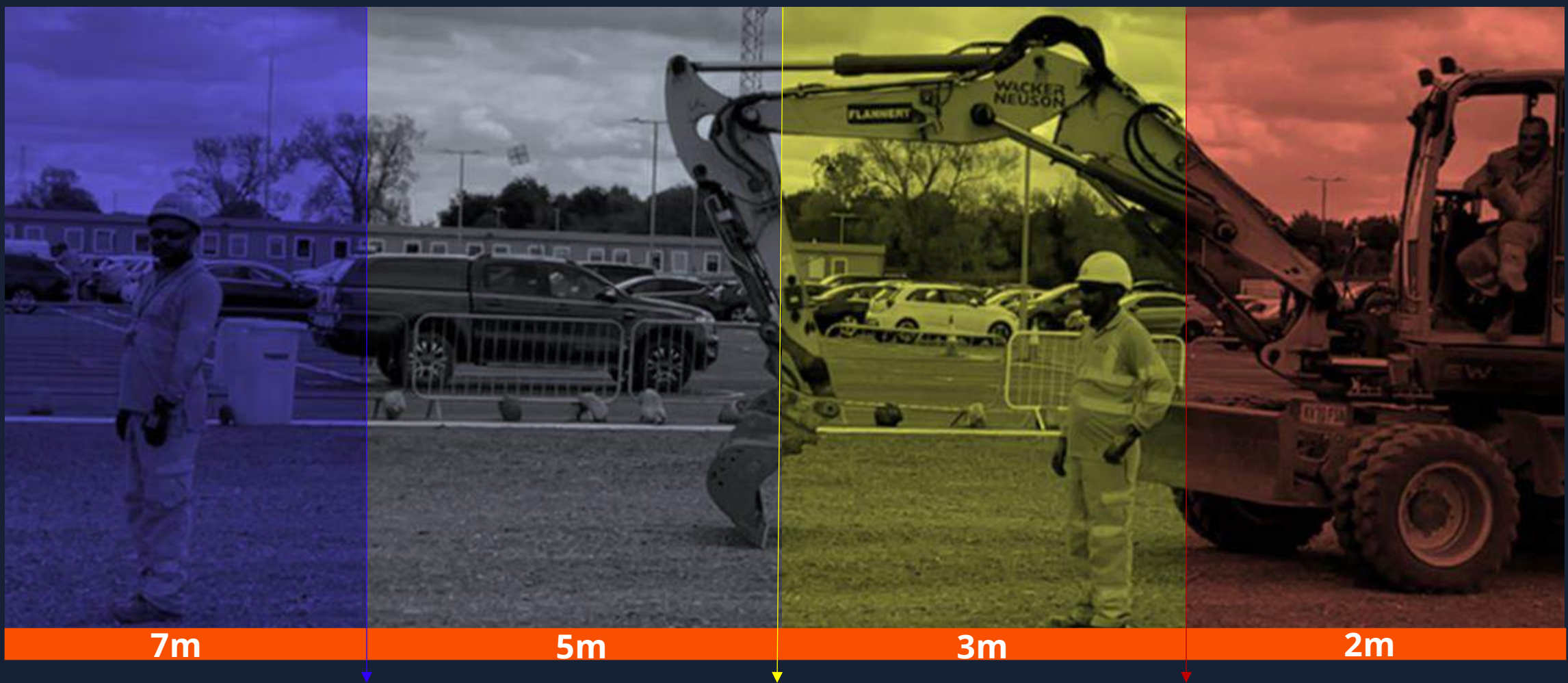


REACTEC BEACON ATTACHMENT

- Robust stainless-steel bracket plus fixings screws to attach beacon to bracket
- High strength magnets for non-invasive attachment to plant
- Removes the need to drill, tap threads and weld – avoiding OEM warranty issues
- Battery version omits need for flying lead for hardwiring



FIELD CONFIGURE BEACON RANGE



PROXIMITY RANGE ADJUSTMENT

- Authorised individuals can configure the proximity detection range to suit changing site layouts
- Interactive watch screen permits real-time beacon adjustment between 2m-10m
- Visual confirmation that desired zone distance is set

REACTEC BEACON POSITIONING



Excavator



Dumper



Mini-Digger



Roller



Telehandler



Bulldozer



Forklift



Reach truck

THE KEY COMPONENTS



1. R-Link watch

The watch module is independent to the strap. R-Link is electronically assigned to individuals using RFID cards

2. R-Link beacon

UWB and GPS enabled beacon to create configurable radius of exclusion for proximity detection



3. Charging Station & Gateway

Charging station exists to charge watches and the gateway automatically sends data back to the analytics (via GSM, NBIoT, CAT-M1 or Wi-Fi)



4. ID Cards

Each pedestrian would have an ID card to personalise data. RFID writer used to assign to individuals



HOW IT WORKS



1. Collect

Unclip any R-Link with a green LED, indicating it is ready for use



2. Assign

Follow the instructions on the screen and place an ID card against the screen to assign to the watch to a worker



3. Protect

Insert R-Link module into a holder, snugly fit the strap around the wrist



4. Detect

Position beacons on all equipment around which an exclusion zone is desired. Watch wearers automatically alerted.



5. Return

At the end of a shift return the R-Link to a charging station to recharge. A gateway within 30m collects and transmits data



6. Reduce

View reports online or by email of individual and overall unsafe behaviour and work ways.

DRIVER ALERTS

FLEXIBLE ALERTING STATUS

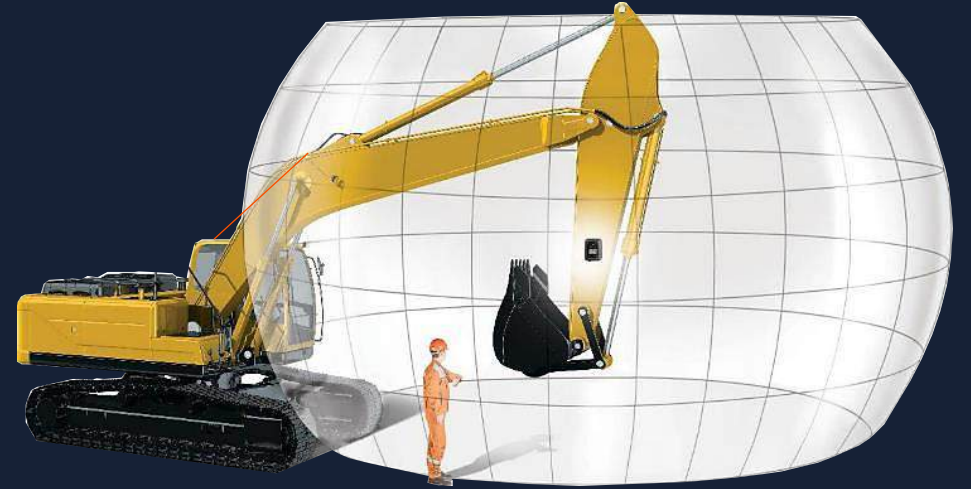
- Client can choose whether drivers are alerted to proximity incursions
- If switched on, driver watch would beep and vibrate when someone comes into their **exclusion zone**
- Ideal for scenarios where operators are working in driver blind spots



MANAGING CLOSE PROXIMITY

CONTROL BEACONS

- Driver or banksman can take control of the proximity zone
- They pair to the machine, keeping their alerts silenced and data relevant
- Data is recorded on who is driving the machines



INTELLIGENT ACCESS PERMISSION

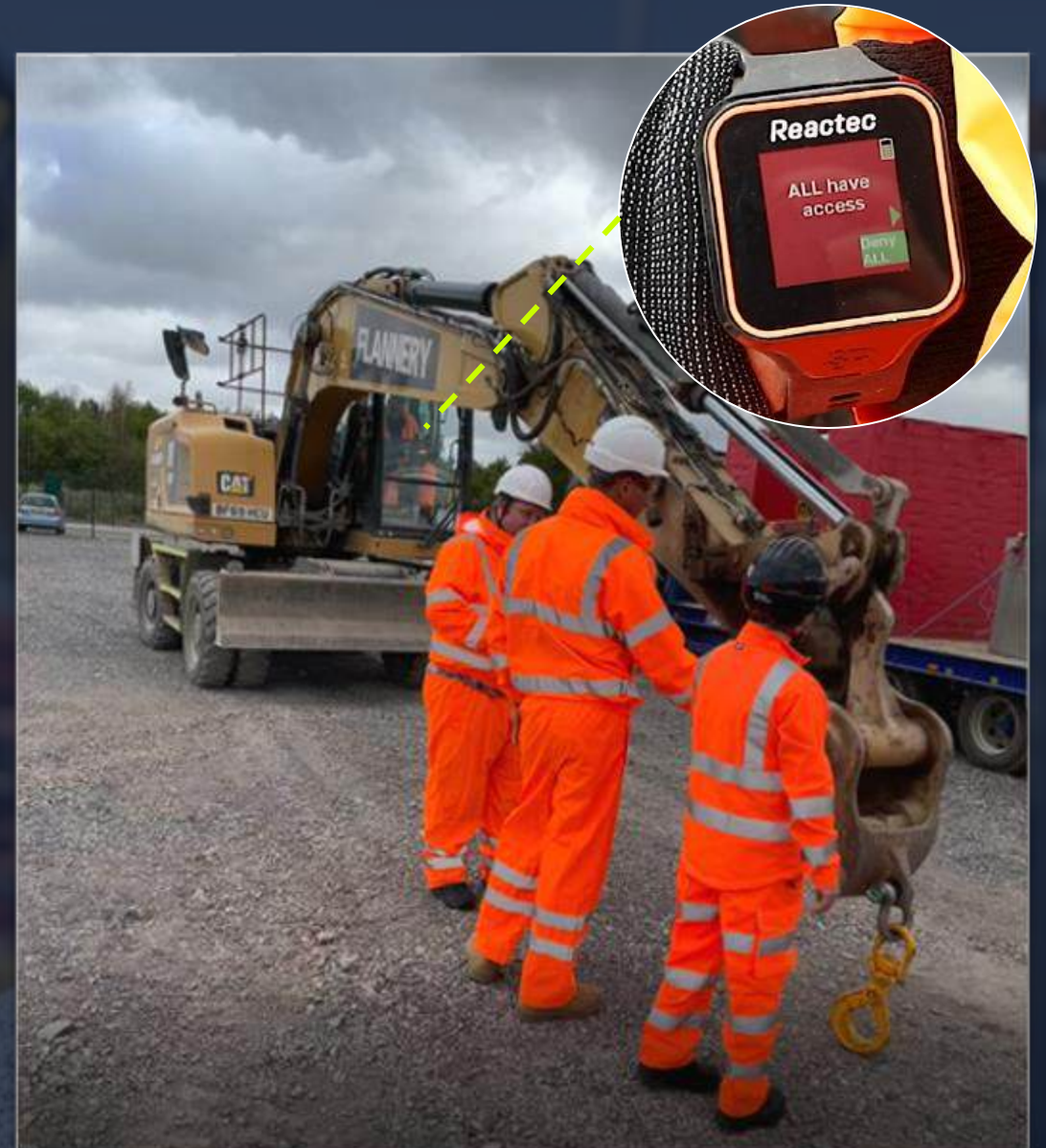
- Pedestrian approaches machine for thumbs up
- This creates a real time alert requesting access
- **Driver / banksman can approve or deny**
- Audit trail kept of approved close proximity



ALLOW CLOSE PROXIMITY WORKING TO ALL

SILENCE BEACONS

- Driver can choose to temporarily 'silence' beacons
- This caters for workers such as banksman, slingers and fitters
- Applicable **when thumbs-up protocol has taken place** and worker is in safe line of sight for driver
- This removes false alarms and allows work to commence without distraction
- Beacons alarms reactivate when close proximity work has ceased
- Digital audit trail of thumbs up and close proximity approval



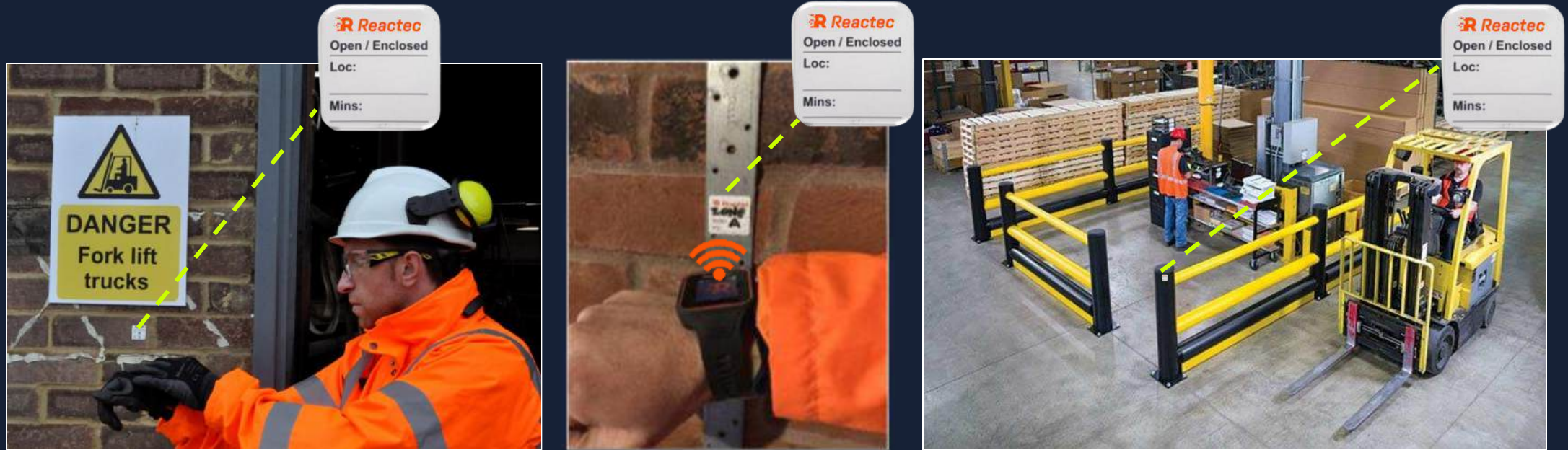
AUTO DETECT DRIVER'S BEACON

AUTO-DETECT

- R-Link feature enables a driver to automatically pair to a beacon based on approved credentials and 5m proximity distance
- This allows driver watch alarm to be silenced whilst they are driving
- Alarm becomes active again when driver leaves the vehicle



SAFE-ZONE RFID TAGS / BEACON



SAFE-ZONE TAGS

- Passive RFID tags are positioned at zones where workers are allowed to work safely within close proximity to machinery (such as walkways)
- Operators scan to tag to enter and exit a safe-zone area
- Tags are pre-programmed **with a time-out function** as a safeguard
- **Safe- Zone Beacon** – 10 meter inclusion range

REACTEC ANALYTICS





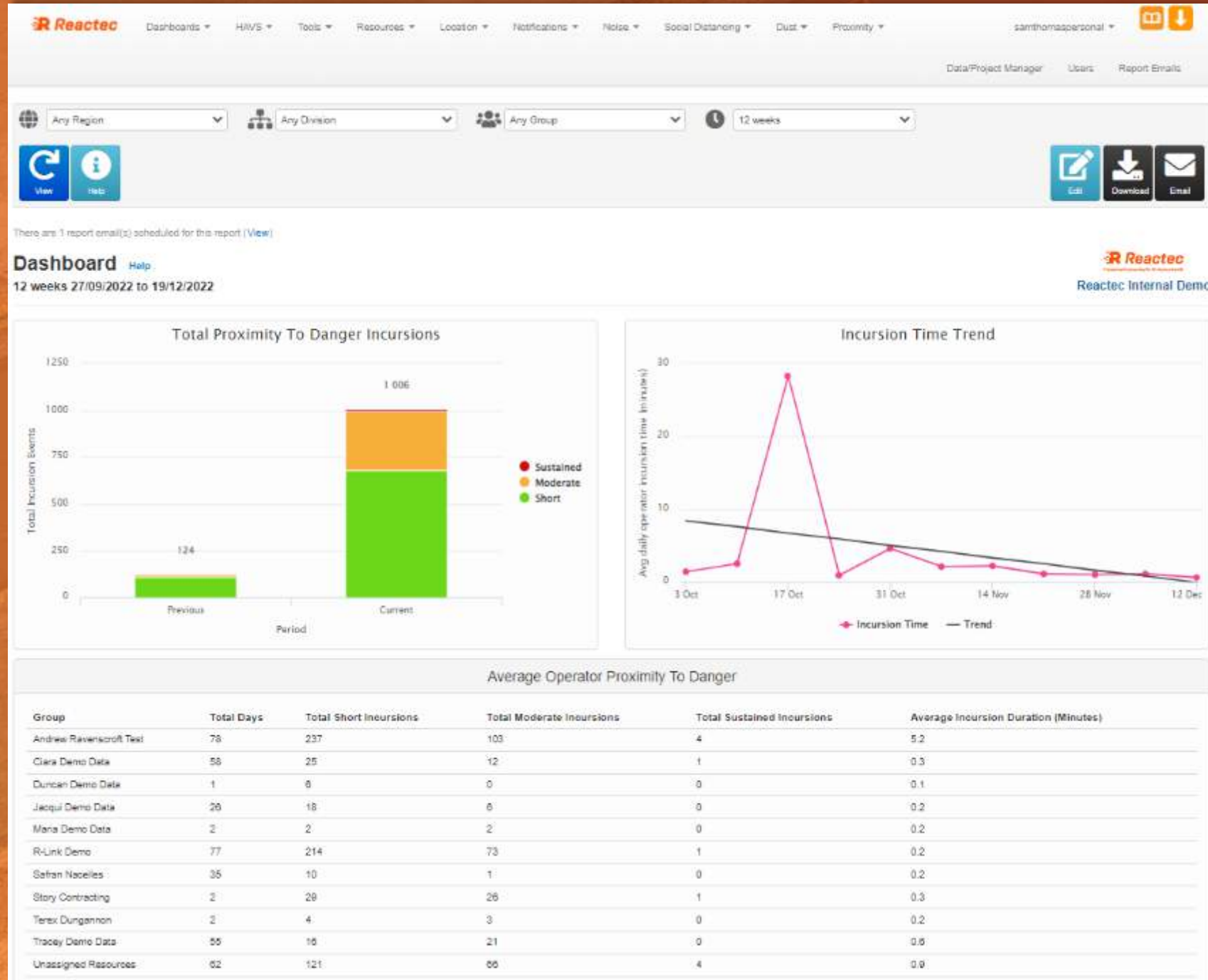
Manage multiple risks in a single location



View trend data on total proximity exposure over time



League table on proximity events by operational location





Risk profile insight per individual on a Red-Amber-Green basis



Use on a sampling basis to get a view of typical plant interactions

Incursion Details [Help](#)

Sam Thomas, 06/09/2022

Reactec Internal Demo

Operator ID	Name	Beacon	Date	Time	Duration
30221	Sam Thomas	Jungheinrich VNA Track	06/09/2022	10:06	0.2
30221	Sam Thomas	Jungheinrich VNA Track	06/09/2022	10:06	0.3
30221	Sam Thomas	Jungheinrich VNA Track	06/09/2022	10:07	0.8
30221	Sam Thomas	Jungheinrich VNA Track	06/09/2022	10:08	0.1

Drill into granular detail to understand **near hit** analytics

Any Region

Any Division

Any Group

12 months

Operations: Forklifts

Click or type to select Operators

View

Help

Workforce Incursions [Help](#)

12 months 16/12/2021 to 15/12/2022

Group	Operator ID	Name	Days	Current Period					Last Seen	Actions	Analysis	
				Total	Average	Short	Moderate	Sustained				
Andrew Ravenscroft Test	123456789A	Alan Hickson	12	16.8	0.2	67	27	1	13/12/2022	View	By Date	By Beacon
Andrew Ravenscroft Test	NZ185345C	Alison Ravenscroft	12	181.6	11.5	175	74	2	24/11/2022	View	By Date	By Beacon
Ciara Demo Data	C4444	Ciara Gedlik	8	10.7	0.3	34	7	1	14/12/2022	View	By Date	By Beacon
Unassigned Resources	30629	Dave Jones	9	20.3	0.8	50	12	1	02/12/2022	View	By Date	By Beacon
Story Contracting	OP2	Dylen Maguire	3	20.2	0.2	30	23	1	28/11/2022	View	By Date	By Beacon
Maria Demo Data	291019	Maria Ferris	1	0.4	0.1	2	1		15/12/2022	View	By Date	By Beacon
Unassigned Resources	30633	Michael French	10	21.1	0.3	46	20	1	01/12/2022	View	By Date	By Beacon
R-Link Demo	RL0004	Rab Lesbit	10	6.4	0.2	40	11		30/11/2022	View	By Date	By Beacon
R-Link Demo	RL0005	Rachel London	7	9.5	0.3	40	8	1	22/11/2022	View	By Date	By Beacon
R-Link Demo	RL0003	Reggie Little	5	9	0.2	49	13		30/11/2022	View	By Date	By Beacon
Unassigned Resources	30688	Richard Norton	8	6.9	0.5	17	4		14/12/2022	View	By Date	By Beacon

Add Intervention

Category

General

Detail

Following investigation of near hit proximity data, it was identified that pedestrian segregation barrier had been moved to accommodate material loading. Operator acknowledged that they ignored proximity alert for forklift and agreed to be more cautious in future when temp walkway modification happens.

Date

11/09/2022


Operator Selection

Michael French

30633

Sam Thomas Demo Data

Signature



11/09/2022



Beacon: Jungheinrich VNA Truck		
Operator ID	Operator Name	
30521	Sam Thomas	
<div>✕</div>		
Breach Start	Duration	Range
07/09/2022 11:20:06	0.1	5 metres

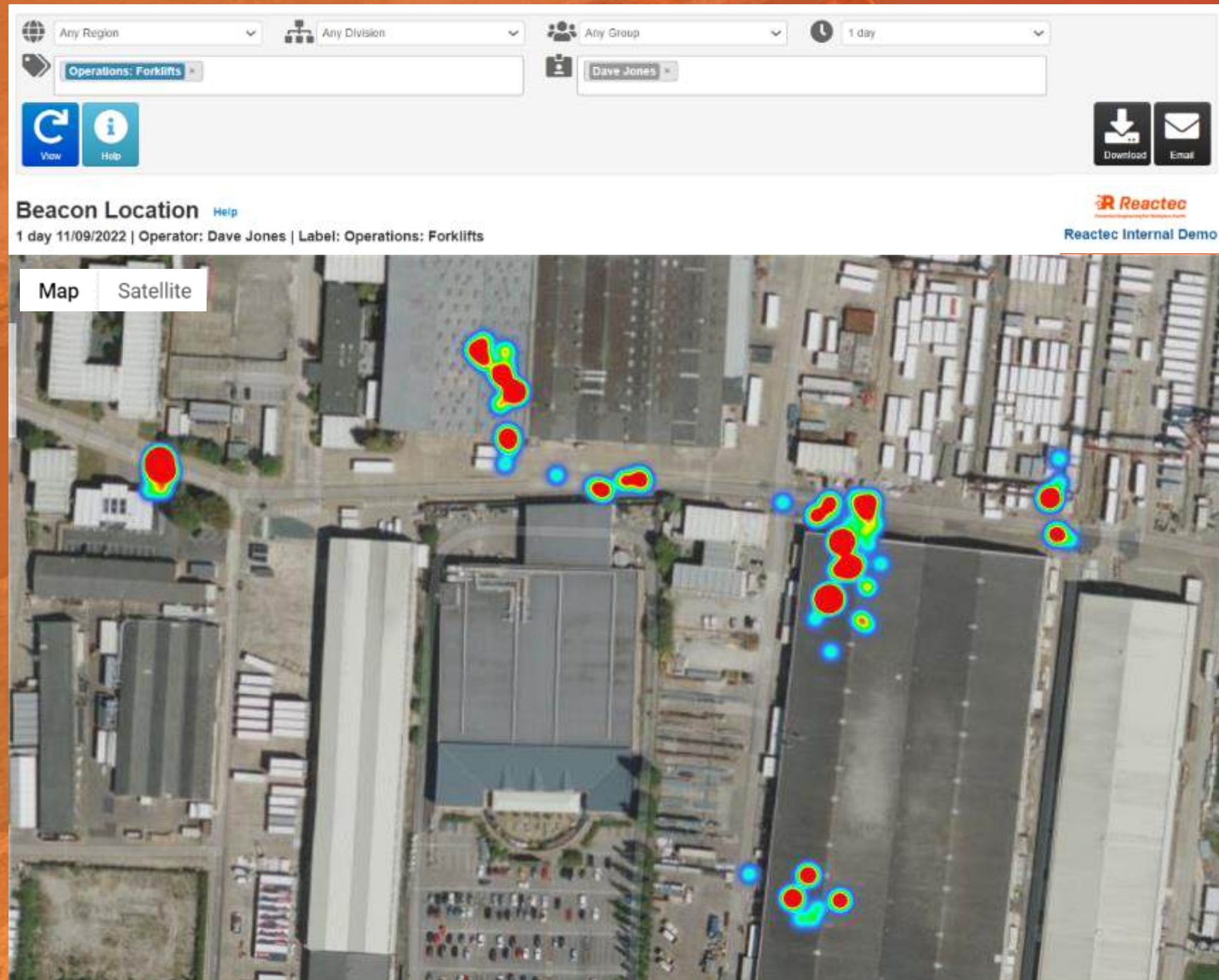
Intelligent heat mapping to show high risk incursion zones



GPS data is logged via the plant beacon



Easily filter by worker or machine



Any Region

Any Division

Any Group

Custom start and end date

25/11/2022

to

25/11/2022

View

Help

Download

Email

[Back to Workforce Incursions](#)

Incursion Details

Help

Alan Hickson, 25/11/2022

Reactec Internal Demo

Company	Group	Operator ID	Name	Beacon	Date	Time	Duration	Location
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	09:52	0.2	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	09:59	0.7	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:03	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:03	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:07	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:08	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:13	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:13	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:19	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:34	0.1	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	10:45	0.2	
Reactec Internal Demo	Andrew Ravenscroft Test	123456789A	Alan Hickson	Komatsu PW148-11	25/11/2022	11:13	0.4	

Drill into any single instance of contact with an item of machinery

Tamper proof data, showing **time duration in seconds**, **individual at risk** and **location**

View the granular details of incursion events



Reseller 1 [Stop impersonating](#)

Dashboards ▾
HAVS ▾
Tools ▾
Resources ▾
Location ▾
Notifications ▾
Noise ▾
Social Distancing ▾
Dust ▾
Proximity ▾
Data/Project Manager

Any Region ▾

Any Division ▾

Any Group ▾

30 days ▾

Click or type to select Labels

Click or type to select Operators

View

Help

Proximity Safe Zone Time [Help](#)

30 days 04/10/2022 to 02/11/2022

Operator ID	Operator Name ▲	Safe Zones	Safe Zone Time (Mins)
YXK0876L	Rob Gonk	8	40
rdouglas	rab douglas		

Audit trail of Safe-zone connections per operator

View total time & total number of Safe-zones tagged onto

Data reporting for safe-zone activity



REACTEC CREDENTIALS

140,000 + UK operators
supported
by Reactec's
system

1,300 + Customers
across construction,
rail, aviation, local
authorities

35 Million
Employee Risk
Data Records

12,000+
Reactec Analytics
Subscribers



Application Development
Application Integration