



CASE STUDY: **SMART ENVIRONMENTAL**

SMART ENVIRONMENTAL HELPS PIONEER SAFER WASTE COLLECTION.

One of New Zealand's largest waste management companies, Smart Environmental, has completed the first Australasian trial of an active safety solution for side-arm waste vehicles that vastly improves public safety around their trucks.

MAX-SAFE Side-Arm Pedestrian Protection™ is a new camera-based AI solution designed to detect and protect pedestrians and other vulnerable road users (VRUs) from the unique operations of side-arm waste management vehicles.

MAX-SAFE ✓ | MAXIMUM SAFETY
MADE BY **SGESC** ✓ MAX





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Less than 45 minutes into day one of the trial, the system prevented what could have been a potential accident with an adult. It highlighted how close a near miss it was and how vital this type of solution was.

JONATHAN DICK | General Manager Fleet & Systems
Smart Environmental

BUSINESS OVERVIEW

Smart Environmental is a New Zealand waste company that focuses on maximising resource recovery and minimising waste to landfill. It has 25 council contracts across the country and serves more than half a million households each week as well as commercial customers.

Established over 25 years ago, the 100%-owned New Zealand business employs 400 staff plus owner drivers. The company has approximately 500 vehicles in its fleet including Side Loaders for suburban wheelie bin collection, front and rear loaders, as well as trucks for skip bin collection.

The health and safety of staff, contractors and other stakeholders including the public are paramount to Smart in the fulfilment of every contract. The Board and Senior Management Team are committed to continuously improving Health and Safety systems and outcomes within the company, and also the broader industry.

Their “Work Smart, Home Safe” campaign seeks to remind staff of the important connection between working safely and going home safely each day.



...we wanted to remove the pressure and stress on our drivers...

THE SAFETY CHALLENGE

Smart Environmental had identified a heightened and alarming safety risk around kerbside operations of their municipal vehicles – particularly Side Arm Waste Management Vehicles – and Vulnerable Road Users (VRUs).

JONATHAN DICK,
General Manager Fleet & Systems
at Smart Environmental

Typical residential wheelie bins are 240L and once full can be of a reasonable weight. If the arm or the bin (empty or full) were to collide with a person, it can cause serious injuries.

According to Smart Environmental’s General Manager Fleet & Systems, Jonathon Dick (Jonny), this increased risk was due to several factors:

1. COVID-19 had seen more people at home and subsequently staying at/around home during waste collection times.
2. Technology has made people more distracted with less peripheral awareness (watching or listening to content on smartphones, distracted with conversations, earphones on to quieten exterior noise).
3. The rise of e-scooters often on footpaths.
4. Recycling trucks were more sophisticated with drivers often relying on in-cabin camera monitoring rather than looking outside.

Jonny noted that while there had been no major safety incidents, risk assessments all pointed towards a perfect-storm scenario – one they wanted to avoid.

To date, Smart Environmental had addressed this risk with traditional mirrors and cameras. Keeping people safe, however, required drivers identifying a risk and responding in time to manually stop the movement of the hydraulic side arm.

“Aside from protecting the public, we wanted to remove the pressure and stress on our drivers facing this more prevalent safety risk – and worse having to deal with a disastrous aftermath,” said Jonny. “A better solution was needed.”

THE HUNT FOR THE RIGHT SOLUTION

Smart Environmental contacted various New Zealand suppliers and in the process met AED (Autokraft Electrical and Diesel), the NZ distributor of MAX-SAFE solutions from Australian company, SGESCO-MAX.

After discovering the MAX-SAFE Side-Arm Pedestrian Protection solution, which only became available in 2023, Jonny co-ordinated with SGESCO-MAX and AB Equipment (representing BUCHER MUNICIPAL in New Zealand) to develop an integrated solution. SGESCO-MAX in turn worked with BUCHER MUNICIPAL Australia to deliver a completely integrated safety solution for the trial.

The MAX-SAFE Side-Arm Pedestrian Protection solution includes dual cameras mounted on the cabin and body of the vehicle in the optimal position to cover the operation of a recycling truck's Side-Arm.

Using the latest advances in Artificial Intelligence (AI) and Machine Learning (ML) the solution detects VRUs within a defined work zone along the left side of a vehicle including a few metres to the front and rear. The zone is fully configurable.

With all safety modules included, the solution identifies when a pedestrian(s) is within the zone where the side-lift arm operates and:

- Warns the operator via an in cabin audible voice alert and flashing light.
- Warns the pedestrian(s) via audible voice alert and an external flashing LED light bar.
- Stops the side-lift arm from operating and, if safe to do so, raises it to its highest position, thereby removing the arm as a safety hazard.





In any given day, accidents could be moments away from happening. The MAX-SAFE Side-Arm Pedestrian Protection solution safeguards drivers and the public.

THE TRIAL

Following months of R&D, including full factory testing, at the start of November 2023, the side arm safety solution was installed on one of Smart Environmental's Recycling vehicle operating across north Auckland.

Phase one of the trial ran for one month with the vehicle operating from 7 am to 5 pm Monday to Friday on busy urban streets. The school traffic window and children being about was a major concern for Smart Environmental and something they wanted to monitor.

As part of the trial, a camera was set-up whereby the driver could instantly tap a button to record what was happening outside the vehicle once an alert went off.

This vision was then uploaded and shared with Jonny and his team.

"For consistency of feedback, we wanted to limit the trial to one driver," said Jonny, "however, the trial involved other staff members joining the driver in ride-alongs to monitor what was happening, and to evaluate the system's effectiveness."

JONATHAN DICK,
General Manager Fleet & Systems
at Smart Environmental

FINDINGS

Less than 45 minutes into day one of the trial, the system prevented what could have been a potential accident with an adult,” said Jonny. “It highlighted how close a near miss it was and how vital this type of solution was.”

“Fortunately, the trial also far exceeded our expectations on the technologies’ ability to actively remove the arm and bin as a safety hazard.”

“While we had used different technologies and cameras in the past to reduce this risk, the safety difference the MAX-SAFE BUCHER solution made was like being on steroids in comparison. It actively alerted pedestrians and removed the arm risk much faster than any driver could manually do.”

Removing the possibility of delayed human reaction or error, could be the difference in preventing an accident or even saving a life, Jonny said.

FUTURE PLANS

For Smart Environmental, one of the key learnings of the trial has been the value of a fully integrated active safety system over a passive one. There was no disputing the life-saving value in it, with no impact on productivity, he said.

“The integrated MAX-SAFE BUCHER solution prevents the arm from entering the area and removes the arm from the hazard error. It combats the risk of drivers becoming de-sensitised to humans around the vehicle and accidents not happening, when, in reality, they are moments away from happening. It safeguards drivers and the public.”

Jonny also noted that with the alerts to pedestrians, they were able to educate the public on the risks they were placing themselves in by being too close to operating vehicles.

Following the trial, Smart Environmental plans to begin work with various councils across New Zealand to appraise them of the risks and findings of the trial so they can collectively plan the way forward for safer kerbside collections.



The solution combats the risk of drivers becoming de-sensitised to humans (the public) around the vehicle.

JONATHAN DICK, General Manager Fleet & Systems at Smart Environmental

KEY BENEFITS

The **MAX-SAFE Side-Arm Pedestrian Protection Solution™**

- ◆ PROVIDES SAFETY ASSISTANCE to the driver.
- ◆ SAFEGUARDS BLINDSPOTS around the Side Lift Arm.
- ◆ PROTECTS PEDESTRIANS, and VRUs.
- ◆ HIGH ACCURACY – detects people (stationary and moving).
- ◆ AFFORDABLE solution.
- ◆ Provides ALERTS and AUDIBLE WARNINGS
- ◆ GREATER SAFETY and PEACE OF MIND – for drivers and Fleet Managers.
- ◆ Part of the MAX-SAFE SAFETY ECO-SYSTEM.

OTHER SAFETY SOLUTIONS FOR WASTE MANAGEMENT

SGESCO-MAX has worked closely with the waste management industry for over two decades providing innovative safety solutions for national and international resource management companies and local councils.

As an equipment supplier to the sector our involvement has driven our creation of world-class heavy vehicle safety solutions in the areas of anti-rollaway, reversing sensors and more recently, blind spot monitoring to protect vulnerable road users (VRU's).

These solutions – used in over 20,000 vehicles – are designed to keep staff and the public safe around waste management and recycling vehicles – at all times of the day – in all types of weather – and in all types of locations.

Our vehicle safety solutions provide advanced and affordable safety to people in and around vehicles, security for drivers operating the vehicles, and peace of mind for fleet managers and business owners.

Other Solutions that are designed to protect VRUs from the unique operations of waste management vehicles include:

- MAX-SAFE Rear-Loader Pedestrian
- MAX-SAFE Front-Loader Pedestrian

These camera-based solutions protect pedestrians and VRUs in the vicinity of a Rear or Front Loader waste vehicle when it is lifting and lowering bins. These solutions can be fully integrated to actively halt the vehicle's lifting arm or move it to a safer position – thereby preventing collision with a person or object.





+61 7 3715 3715



info@sgescomax.com.au



www.maxsafe.com.au



17 Rodwell St, Archerfield Q 4108
PO Box 998, Archerfield Q 4108



Monday to Friday, 7.30am to 4.30pm



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MAX-SAFE SIDE-ARM PEDESTRIAN PROTECTION

IMPROVING SAFETY OF KERBSIDE WASTE COLLECTION VEHICLES

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With thanks to Smart Environmental for provision of images of fleet vehicles and waste management operations.

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