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ICHCA INTERNATIONAL PRESENTS

TT CLUB INNOVATION IN SAFETY AWARDS 2026

A digest of entries received & winners announced

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All the entries

First Published 2026

Original

ICHCA International
TT CLUB INNOVATION IN SAFETY AWARDS
Published Feb 2026

TT Club Innovation in Safety Award Foreword

Now entering its second decade, the TT Club Innovation in Safety Award continues to demonstrate why it has become such a valued initiative across the global cargo handling community. Safety remains the foundation of our industry's responsibility: protecting people, safeguarding cargo and equipment, and ensuring resilient supply chain operations. While the sector has made impressive progress, the need for continual improvement is ever-present. TT Club and ICHCA therefore remain committed to identifying, encouraging, and sharing meaningful innovation wherever it emerges.

This 2026 Digest builds on the success of previous editions by showcasing the full breadth of entries submitted for this year's Award. Alongside the winners and highly commended projects, it presents a wide spectrum of practical ideas, technologies, procedures, and concepts designed to enhance safety in real operational environments. The variety and quality of these submissions illustrate both the depth of expertise within the industry and the strong determination among organisations to address evolving safety challenges.

While the achievements of the Award's top entrants naturally attract attention, the quantity of high-calibre innovations presented to our judges deserves equal recognition. This Digest provides an important platform for those contributions, allowing their value to be seen, shared, and - most importantly - applied.

TT Club continues to see its role as that of an enabler: promoting new thinking, connecting innovators with operators, and offering a space where ideas can be refined, tested, and adopted. We aim to help bridge the gap between those seeking effective safety solutions and those developing them, as well as supporting collaboration with academia and regulators to enrich understanding of key risks.

This year's entries span four principal themes. Data-driven insights and the expanding use of learning technologies - particularly virtual and immersive training - feature prominently. Practical engineering solutions that enhance the safety of cargo-handling processes form another major category. And, critically, the long-standing challenge of effective people–machine segregation remains a central focus of innovation, reflecting its status as a serious incident risk across supply chain operations.

Beyond this publication, both TT Club and ICHCA will continue to champion these ground-breaking ideas through discussion forums, conferences, exhibitions, and further technical papers. By maintaining this

Mike Yarwood
Managing Director Loss Prevention
TT Club
February 2026

momentum, we aim to help ensure that promising innovations transition from concept to common industry practice, raising safety standards for all.

TT Club's commitment to safety, security, and the long-term sustainability of the supply chain extends far beyond this Award. Throughout the year, we produce a wide range of guidance, risk insights, and practical tools shaped by the real-world experiences of our insured. We remain proud to support the global logistics community in managing and mitigating the risks it faces every day.

I commend this 2026 Digest to all those who share our commitment to continuous improvement in safety. The relevance, creativity, and determination shown by this year's entrants reflect an industry that understands both its responsibilities and its capacity to innovate for the benefit of all.

THE WINNERS

learning and engaging

2026 Winner

att...
Real Drama. Real Learning.

highly commended

UKMPA

safer operations

2026 Winner

SIBRE
Sure to be Safe

highly commended

lpc Lyttelton Port Company

people and equipment

2026 Winner

LONG BEACH CONTAINER TERMINAL

highly commended

shoreham port

turning data into insight

2026 Winner

SICK
Sensor Intelligence

highly commended

LASE
Industrielle Lasertechnik GmbH

winner learning and engaging

Active Training Team (ATT)

real drama; real learning

the challenge

The construction of Ørsted's Hornsea offshore wind projects involved hundreds of people working across terminals, fabrication yards, vessels and offshore sites. At Hull's Alexandra Dock, personnel were operating in high-risk environments involving heavy lifting, cargo movement, simultaneous operations and tight production schedules. In an industry where multiple contractors, differing safety cultures and commercial pressures converge, Ørsted recognised that traditional briefing-based training would not create the behavioural consistency required to prevent serious incidents.

The challenge was twofold. First, Ørsted needed a way to give every person—irrespective of job role, employer or previous experience—a shared understanding of what safe work looked like in this complex environment. Second, they needed a training approach strong enough to influence real attitudes and actions: the confidence to intervene; the ability to recognise deteriorating conditions; the willingness to challenge unsafe norms; and a clear sense of personal accountability.

Crucially, Ørsted wanted to set a new benchmark for offshore and port-side safety leadership while creating a legacy that would benefit the wider Humber region and its growing renewables sector. They required a solution that would reach large numbers quickly, resonate emotionally, cut through organisational hierarchies, and deliver measurable improvements in behaviour.

This is the challenge that led to the creation of Thrive: a purpose-built Safety Leadership Centre designed to transform how people understand risk, how they communicate under pressure, and how they take responsibility for themselves and others in real cargo-handling and offshore construction operations.

the innovation

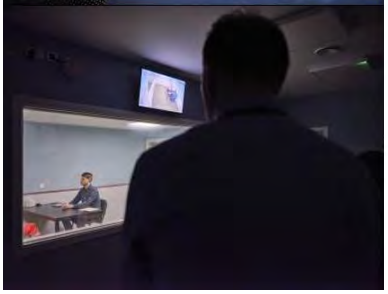
Thrive represents a new kind of safety leadership training for offshore wind and cargo-handling environments. Rather than relying on conventional instruction or compliance-based briefings, ATT created a deeply immersive learning experience that brings the human, organisational and operational factors behind incidents into sharp focus.

The innovation lies first in **the learning design**. Thrive uses a hard-hitting narrative told across multiple rooms, each depicting a different stage in an unfolding offshore construction scenario. Thrive 1 focuses on an offshore load-out; Thrive 2 depicts an onshore civils environment. Both examine how everyday decisions, miscommunications and production pressures accumulate into a life-changing incident.

Second, the programme uses **live actors, film and facilitated interaction**. Participants witness and engage with realistic workplace conversations, the emotional aftermath of an incident, and the perspectives of families, colleagues and managers. This drama-led approach builds empathy, reveals the complexity of decision-making across all levels of an organisation, and creates powerful memory anchors.

Third, Thrive integrates **Practical Safety Leadership Skills (PSL)**. The workshop is "theory-light and practical-heavy", equipping participants with communication tools and intervention techniques they can apply immediately back on site, docksides and vessels.

The programme's core innovation is its use of **emotional and sensory engagement** to embed learning. By experiencing the consequences of decisions rather than simply hearing about them, participants gain a deeper understanding of their personal responsibility for safety and



their capacity to influence outcomes. Thrive reframes safety training from rule-based instruction to a behaviour-changing experience enabling every participant to act as a proactive safety leader.

how it was implemented

The implementation of Thrive required a close, long-term collaboration between Ørsted and ATT. Ørsted committed £1.4 million to establish a dedicated Safety Leadership Centre at Immingham Docks, converting a disused engineering shed into a permanent multi-room immersive facility equipped with advanced AV and production technology.

ATT led the creative, technical and operational development. Working with Ørsted's project and safety teams, ATT designed the offshore load-out narrative to reflect genuine cargo-handling and construction risks encountered across the Hornsea projects. They then built the theatre set, lighting, sound and film infrastructure required to deliver a seamless, high-impact immersive experience inside an active port environment.

A key part of implementation was building a skilled local workforce. ATT recruited and trained a team of actors, facilitators, technicians and operational support staff, generating over 60 jobs and contracts in the region. This ensured the centre could run daily programmes at the scale required to induct every Ørsted and contractor employee prior to deployment.

Thrive opened in September 2020; a critical point in the Hornsea Project 2 construction timeline. ATT delivered the programme under strict Covid-safe procedures, maintaining continuity of essential safety training despite pandemic-related pressures. Thrive's implementation has since informed ATT's wider portfolio of bespoke centres and mobile programmes across the UK and internationally. See the Thrive Centre in action: https://vimeo.com/706875269/28b07a5510?share=copy

result

Over a two-year construction period, every Ørsted employee and contractor working on Hornsea 2 attended Thrive before starting work. Hornsea 2 was completed and began generating clean electricity for 1.4 million homes per year with no Lost Time Incidents during construction.

Lutuf Shah, CEng, Programme Manager for Ørsted: "We have been able to keep

our people safe. Hornsea 2 has been delivered with absolutely no LTIs."

To date, 8,200+ people have completed Thrive, with 97% of Ørsted participants giving positive feedback on the programme and wider results:

- 94% now see themselves as a safety leader
- 96% will apply what they learned
- 95% feel more confident to challenge unsafe behaviour

Thrive's impact is highly recognised with awards including:

- Renewables UK Global Offshore Game Changer Award (ATT 2023)
- Humber Renewables Award for Excellence in Renewable Skills and Training (ATT 2022)
- Energy Institute's Health and Safety Award and the Gold Award for Best Training Event at the EVCOM London Live and Film Awards (Ørsted 2021)

Benj Sykes, Head of UK Region, Ørsted: "Thrive has helped embed our safety-first culture across Ørsted and the wider Humber business community. The immersive experience brings the consequences of decisions into sharp focus and drives the behavioural change that keeps people safe. We're proud of what our partnership with Active Training Team has achieved – from the Hornsea 2 legacy to continued support through Hornsea 3 – and we look forward to seeing more organisations at Thrive as we continue raising the bar for safety leadership across the UK."

conclusion

Thrive demonstrates how immersive, actor-led and facilitated training can deliver tangible safety improvements in complex cargo-handling and offshore construction environments, and then scale far beyond a single project.

From the beginning, Thrive was designed not just as a Hornsea asset but as an industry legacy. Ørsted and ATT opened the centre for wider sector use during spare capacity making the Humberside Centre a safety leadership resource for the wider renewables, ports and maritime sectors. It has since been adopted by organisations including Siemens Gamesa, Siemens Energy, SSE, Equinor, Ocean Winds, RWE, Scottish Power Renewables, Associated British Ports and DP World as part of their safety leadership programmes.

ATT's methodology is proven and repeatable. The same immersive principles underpin EPIC (Tideway London for civils, construction and infrastructure), TRUST (Network Rail partnership in Huddersfield for rail safety) and Faskally (SSE partnership in Scotland for utilities) Safety Leadership Centres, as well as mobile programmes worldwide.

In 2024 ATT launched our US operation with Thrive USA, a mobile iteration based on the offshore load-out narrative (Thrive UK), but re-developed for the USA, with pilots delivered to leading offshore wind developers and safety organisations at ports and load-out facilities along the US Northeast coast. Click here to see our mobile, Thrive USA programme in action:

https://vimeo.com/1103161377/2263c6ae8b?ts=0&share=copy

Active Training Team are recognised by Ørsted and other global organisations as innovators in safety leadership, using emotional and sensory engagement to improve learning, memory, recall and behaviour.

LINK: https://activetrainingteam.co.uk/

att...
Real Drama. Real Learning.

APM TERMINALS CALLAO

emergency-stop–type switches, strategically located on the right side and at the rear of the semitrailer

the challenge

During the container tallying process at the pinning station area, personnel must position themselves on the steps of the semitrailer (rear and/or side), which exposes them to the risk of falls or being struck if the equipment moves before they have fully stepped away from the tally points.

The challenge is to ensure the immobilization of the Terminal Truck (TT) during this task, preventing any risk of equipment movement caused by the operator unintentionally engaging the gear lever, which could result in serious accidents involving the tally personnel.

the innovation

The implemented solution consists of installing two manual emergency-stop–type switches, strategically located on the right side and at the rear of the semitrailer (for tallying in both twin and single modes).

When activated by the tally personnel, these switches block the TT's transmission, fully neutralizing it. This eliminates the possibility of the operator engaging the gear lever while personnel are still within a risk zone.

how it was implemented

The electrical circuit of the Transmission Control Module (TCM) was analysed, identifying the lines and signals that originally operate through a bridge-type connector. These lines and signals allow the gears to be locked by opening the circuit.

Both lines were routed through a 7-pin connector to the semitrailer, where the two manual emergency-stop switches were installed. These must be activated by the tally personnel before approaching the equipment and deactivated upon completing the task, thus ensuring full immobilization of the TT during the tallying process.

Additionally, a visual confirmation system (LED lamp) was installed on the exterior of the TT cabin (red = equipment locked // green = equipment unlocked), providing clear status indication to both the operator and tally personnel.

what was the result

Functional tests were carried out under real operating conditions, verifying that activation of the switches effectively blocks the TT's transmission.

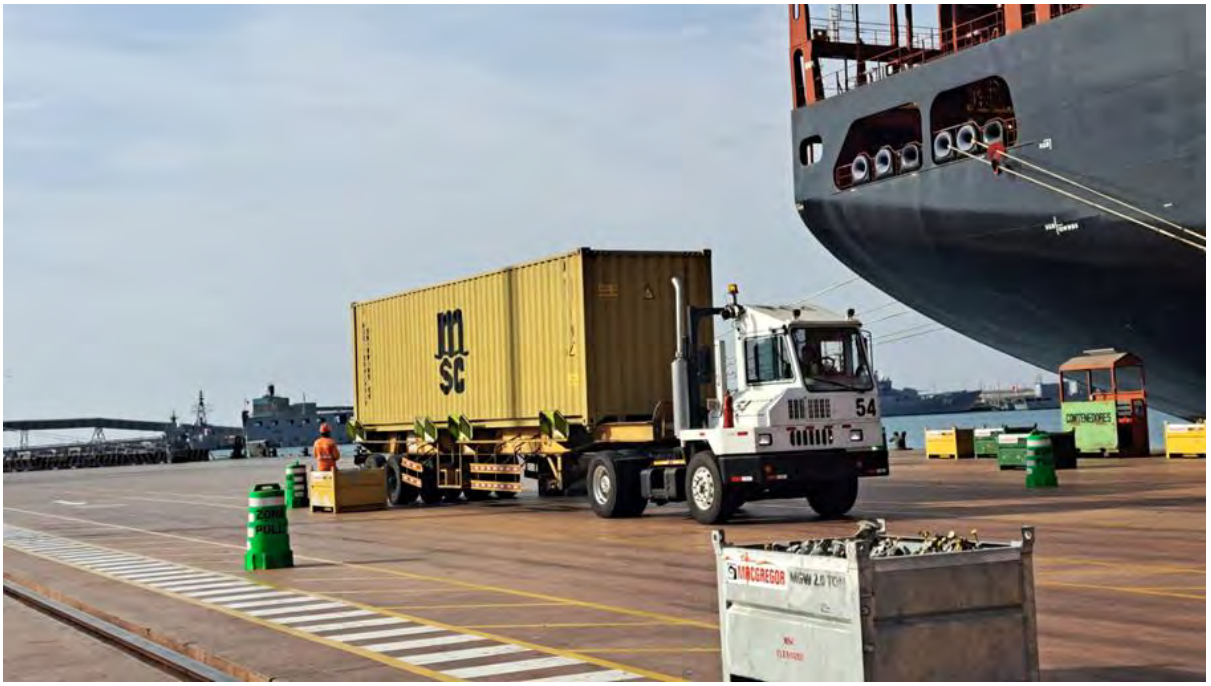
This innovation has proven to be effective in preventing unintentional equipment movement, eliminating the risk of accidents during the container tallying process.

conclusion

This implementation is simple, low-cost, and significantly enhances operational safety in the tallying area, protecting personnel from critical risks.

As a maintenance department, we are focused not only on the proper upkeep of machinery but also on promoting an active safety culture, where workers participate directly in risk management. We encourage them to contribute to safety through the application of

technical and/or technological improvements, implementing these enhancements across the various systems of our machines according to each area's needs, with the objective of preventing accidents.



LINK: https://www.apmterminals.com/en/callao

Lifting Global Trade.
APM TERMINALS

AQABA CONTAINER TERMINAL

single, global reference for all Personal Protective Equipment used in APM Terminals

the challenge

Personal Protective Equipment (PPE) is one of the most critical layers of protection in terminal operations. However, before this innovation, PPE standards and specifications varied widely across APM Terminals' global network. Terminals often sourced PPE locally based on cost or availability, leading to inconsistent protection levels, reduced comfort, and limited durability. This inconsistency created confusion among employees and contractors, decreased compliance with international standards, and occasionally resulted in workers using PPE that did not fully match the risks of their tasks. A unified global standard was needed to ensure all workers regardless of country or supplier receive the same high-quality, task-appropriate protection.

the innovation

The PPEs Standard Catalogue establishes a single, global reference for all Personal Protective Equipment used in APM Terminals. It defines a clear baseline for quality, performance, and international compliance, referencing EN, ANSI, and ISO standards. The catalogue provides detailed selection criteria, technical specifications, and visual guidance for every PPE category—from head and eye protection to fall arrest systems. It also highlights special PPE requirements for high-risk tasks such as lashing operations. This comprehensive guide ensures that every terminal and contractor can easily identify and procure PPE that meets the same safety and durability standards, creating consistency, efficiency, and trust across the organization.

how it was implemented

The project was developed collaboratively by the global HSSE team . Technical data and feedback from multiple terminals were collected to identify variations and challenges in PPE sourcing. The team consolidated all requirements into a single document aligning with international standards and APMT safety policies. After review and endorsement by HSSE leadership, the catalogue was officially launched in 2025 and distributed digitally to all terminals. Awareness sessions and visual training materials were conducted to ensure understanding. And the procurement systems will be updated to align supplier approvals with the new standards, ensuring only compliant PPE could be purchased globally.

what was the result

The implementation of the PPE Standard Catalogue will deliver measurable improvements in safety and operational efficiency. Terminals will use consistent, high-quality PPE, reducing incidents related to equipment failure or poor fit. Procurement will become more streamlined, with faster approvals and reduced variation in supplier products. Audit results are expected to show higher compliance with PPE standards and improved worker satisfaction. Employees will report greater confidence in the protection provided by their equipment, while management will benefit from simplified monitoring and purchasing processes. The catalogue is expected to become a model for standardization and has received appreciation from APM Terminals.

conclusion

The PPEs Standard Catalogue is a simple yet powerful innovation that transformed the way APM Terminals manages personal protection. By combining technical precision with visual clarity, it ensures every individual - employee or contractor - is protected by equipment that meets the same international benchmarks. The project reinforces the company's commitment to "Safety of One" and directly supports ISO 45001 objectives for control of

procurement and hazard prevention. Beyond improving PPE quality, the initiative has strengthened safety culture, improved trust among workers, and provided a scalable framework that can be adopted across the logistics and transport industry.

LINK: https://www.apmterminals.com/en/aqaba

AUTOLASH™ CORNER CASTING AND SHIP-TO-SHORE SPREADER

eliminates the need for twistlocks improving the safety of dockworkers

the challenge

Securing containers onboard of ships is crucial for safe maritime transport globally. Today this is done using twistlocks, which are manually handled, to lash one container to another on the decks of vessels. Shipping Lines demand that their ever larger container vessels are handled faster in port to compete better, while the container terminals are under pressure to make their wharfs a safe and secure working environment. Current container terminal lashing practices impede both productivity and especially, safety.

Twistlock handlers are some of the most exposed workers in a port because locking and unlocking twistlocks into or out of containers is still done manually at the quayside during loading and discharging container vessel operations. They are exposed to the area under the ship-to-shore gantry cranes where there is congestion from the movement of heavy equipment, to falling twistlocks, to working at heights unlocking semi-automatic twistlocks on the decks of vessels, among other risks. This frequently results in accidents at terminals or onboard of vessels with injuries to dock workers and crew.

As twistlock handling is considered unsafe and unproductive, there have been many attempts to find solutions to this operational pain point, without success.

The AutoLash solution completely eliminates the need for twistlocks and therefore improves the safety of dockworkers, as there is no further need to have twistlock handlers working in the port area while containers are being handled between the ship and shore.

the innovation

The critical part of the AutoLash solution consists of four newly designed corner castings on top of a container. To handle these AutoLash-equipped containers a modified ship-to-shore spreader is required.

The new AutoLash Corner Casting (ACC) integrates the lashing functions directly into the top container corners. The ACC has three functions, which are activated by an actuator built into the crane spreader:

- pin – secure stacking of containers on-deck
- guide – secure stowage of containers below deck
- hidden – retracts the pin so that containers can be handled in the same way they are today, if necessary

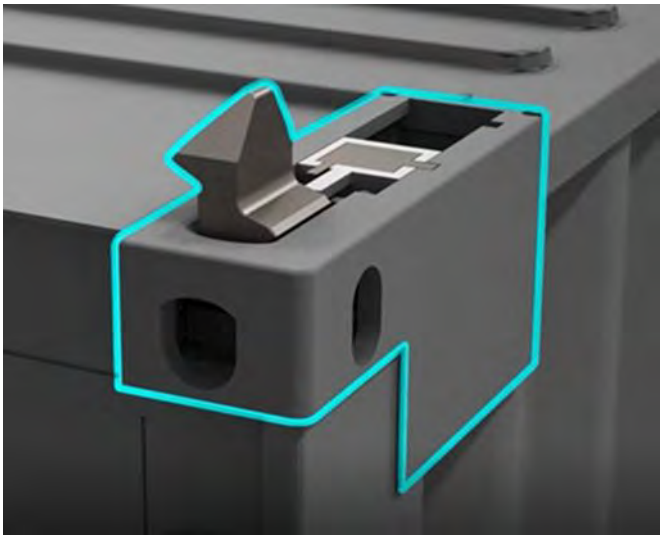


Figure 1: ACC in "Pin" mode

Engineered for durability, the ACC experiences up to 50% less wear and tear than traditional twistlocks, as it is used less frequently. This extends the lifespan of the lashing parts and significantly reduces maintenance.

The **AutoLash ship-to-shore spreader** was co-designed with Stinis and features an actuator that controls the lashing functions within the AutoLash Corner Casting. The actuator conceals the lashing pin, allowing the spreader's hammer lock to engage for normal container handling.

Figure 2: The inter-operable gantry crane spreader

These spreaders are inter-operable with both ACC-equipped and standard ISO containers within the same crane cycle. This is crucial for the gradual and seamless adoption of the ACC equipped container. Apart from the ship-to-shore spreader, no other terminal equipment needs to be modified to handle ACC equipped containers.

Removing twistlocks from container operations increases safety, reduces accidents, brings down emissions, and speeds up vessel turnaround times in port. Container terminals can now become 100% automated.

how it was implemented

In close cooperation with the Dutch spreader manufacturer Stinis, the AutoLash team has developed the AutoLash solution. While spreaders need some relatively minor modifications, the corner castings designed by AutoLash eliminate the need for manual (un-)fixing of twistlocks in the bottom four corners of containers while being handled on or off the vessel.

The AutoLash corner casting has been designed by industry veterans with firsthand operational terminal experience and acquainted with the challenges of twistlock handling at the quayside. The AutoLash corner castings are slightly larger than current corner castings but the number of moving parts within an AutoLash Corner Casting is similar to those in a Semi Automatic Twist Lock (SATL).

A prototype of both AutoLash corner castings as well as a modified spreader has been assembled and can be visited for a demonstration to show how it works.

what was the result

Based on numerous meetings and interviews with industry stakeholders (shipping lines, terminal operators, insurance, classification societies, container owners and manufacturers), all parties see the benefits of the AutoLash lashing solution.

Shipping Lines and Shortsea Operators clearly see benefits as follows:

- Safety Improvements (less LTI)
- Faster Vessel Turn Around time in Port
- Savings in Bunker Consumption
- Service Loop Flexibility/Reliability
- Lashing Cost Savings
- Sustainability Gains
- Elimination of Twistlock Management (note: up to 40,000 twist locks on a 24,000 TEU ship)

Container Terminal Operators are also clear about their views:

- Safety Improvements (less LTI)

- Improved Berth Productivity
- Cost Savings
- Improved Berth Occupancy and thus larger revenues
- Sustainability Gains
- Option for full Terminal Automation
- Elimination of Twistlock Bin Operations

AutoLash is currently approaching parties to run a pilot.

conclusion

By building an automated lashing function into the top corner casting of the shipping container, AutoLash has designed a concept that no longer needs the manual intervention of twistlock handlers.

This means that container terminals can free the quay apron of dock labour below the ship to-shore crane and reassign them to safer, more productive tasks.

Furthermore, adopting the Autolash Concept and particularly the AutoLash Corner Casting significantly reduces the deterioration of the lashing equipment during its lifetime. Today, twistlocks are used, ...and used, until they fail and are rarely maintained. Conversely, a container is used between 3 and 7 times a year on deep sea trades, more often on shortsea routes. As the lashing functions are built into the AutoLash container (used less frequently than a twistlock), their exposure to attritional wear and tear is much reduced.

Safety innovations, such as the AutoLash Solution, are workable if there are financial and productivity gains to be made in parallel. The AutoLash innovation not only delivers real improvements in safety but also gains in vessel operational efficiency in port, together with major returns on investment – for both shipping lines and container terminal operators.

As a consequence of adopting the AutoLash Concept container vessels can be turned around faster in port in an environment that is safer and more secure for dock workers.

LINK: https://www.autolash.co/the-solution

BOLLARD PROOF LTD

non-destructive mobile test device, capable of pulling in combined vertical and horizontal angles

the challenge

Unfortunately, there are increasing examples of bollard failures globally, events which create significant safety challenges for ship owner/operators and ports alike. Mooring bollards are critical pieces of port infrastructure, designed to safely hold vessels during loading and unloading, be it cargo or passengers. The failure of any one mooring point presents two significant safety issues.

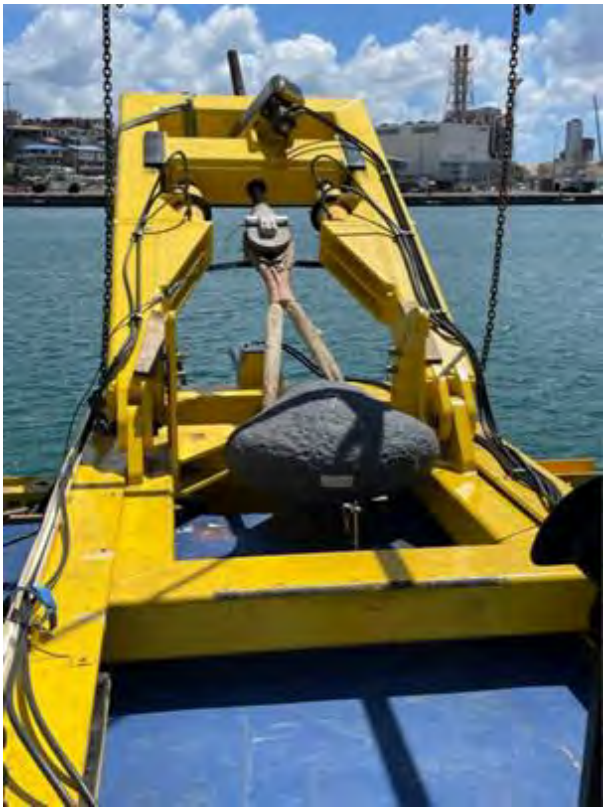
The first relates to the bollard itself which, if failing under load, will launch ship ward, either striking the vessel's hull and rebounding, or in some cases clearing the vessel and going airborne for potentially hundreds of metres. It goes without saying that a heavy casting travelling uncontrolled at speed has the potential to inflict serious damage to vessels and surrounding infrastructure, as well as catastrophic injury to people in the flight or debris path. Secondly, the failure of any one mooring point immediately puts additional strain on remaining bollards, creating further jeopardy of overload failure. In both of these scenarios, with bollards becoming compromised a vessel is vulnerable to drift and allision with other nearby marine traffic or infrastructure.

More generally, busy ports have bollards in use on an almost constant basis, inducing normal wear and tear. A bollard is no more invulnerable than any other mechanical system to degradation and therefore over time ports must factor in routine inspection, maintenance and testing of this equipment to make sure it is both safe and fit for purpose. The challenge, until recently, has been how to do this in a manner which accurately reflects 'real-world' conditions.

the innovation

The Bollard Proof test rig is a non-destructive mobile device, capable of pulling in combined vertical and horizontal angles (30° in plan and at 15° vertical increments to a maximum of 75°). The test rig is able to pull bollards to a working load limit of 165t, monitored and measured using a load pin (in the path of the pull). Additionally, a laser monitors the substrate to detect for signs of deflection during the test. At 1.5m, the synthetic rope used for the test is relatively short, with minimal elasticity and therefore minimal stored energy. This means the test is totally safe, preventing sub-standard bollards from moving, even in the event of a failure under load.

The rig accurately simulates mooring line loads on a bollard and its foundations, producing the required load by reacting against the dock structure. This methodology is equally at home on new or old linear quay structures and, as well as for old/legacy type bollards, can be used to test new bollards as a means of non-origin factory product quality verification and for post-installation commissioning.



This is a significant and demonstrable advancement on other methods, such as tug pulls, bollard to bollard pulls or modal analysis, none of which are able to fully replicate the working conditions of a mooring bollard or verify working load limit.

This capability will be further enhanced in 2026 with the introduction of our next generation rig, capable of pulling to 250t.

how it was implemented

Initially our innovation was championed by a handful of UK ports, who were able to look ahead and see both the regulatory need and safety benefits of engaging with a specialist firm like Bollard Proof for the inspection, maintenance and testing of their mooring equipment.

Early work in the UK was focussed with clients such as ABP, Forth Ports and Port Of Tyne, all of whom were enthusiastic supporters of our new test equipment and methodology. We were engaged to carry out multiple tests across their sites in the UK, with a particular focus on operationally significant bollards. Testing and verifying the safety of the mooring bollards was an important step for each of these clients in building up a history of asset type, condition and suitability for daily mooring operations. Recent successful tests can give the asset owner, harbour staff and ships' crews the confidence that mooring arrangements are in good order, mitigating as much as possible the likelihood of damaging failures.

Andrew Hallam, Project Engineer, Associated British Ports:-

"*Bollard Proof have assisted ABP Southampton, undertaking bollard load testing to verify expected safe working loads. The rig is transported on a Hiab lorry allowing for easy transportation and offload into the test position. Working around a busy operational port, the Bollard Proof team were able to work quickly to test multiple bollards in a day. The rig is able to apply a load in multiple vertical and horizontal directions away from the quay to mimic vessel lines*.".

what was the result

Those early clients and test contracts allowed Bollard Proof to hone the equipment and design additional rigs and componentry, enabling us to test more bollards, in innovative new ways.

For example, a smaller capacity compact rig was introduced, capable of testing mooring bollards on remote dolphin structures via Multicat vessel.

For bollards set further back from the quay edge or in obstructed areas, additional methodologies allow us to test these types too, following the same techniques and with the same level of accuracy.

New and innovative methods bring wider exposure, and Bollard Proof has continued to build its client base, with multi-year contracts for testing and increasing levels of testing overseas. To date we have proof load tested in excess of 2,000 bollards across the UK and overseas, in locations as diverse as Guadeloupe & Corsica. The next step is to have our new 250t rig stationed permanently in mainland Europe, with others to follow globally.

Bollard Proof produces a certificate for each test, detailing visual inspection, test parameters and results, plus recommendations for maintenance. With the quantity of testing and certification involved, a further innovation has been the introduction of a proprietary software application for customers to use in recalling bollard and test information. The app geo-locates each bollard and holds a photographic record of each test, along with the accompanying certificate. This acts as a valuable asset register for clients and provides an early warning system for bollards which are approaching their next scheduled test date.

conclusion

The demand for in-situ proof load testing of bollards is increasing across the globe at a rapid pace. It is not operationally practical, financially prudent or environmentally justifiable for ports to routinely swap out bollards and their anchorages, and therefore a safe and truly meaningful method for in-situ testing gives port asset managers and ship operators invaluable confidence in the mooring capabilities of berths that have undergone recent testing.

For old bollards or those of unknown provenance, testing can provide ports with the opportunity to upgrade working load limits for use with larger vessels, thereby avoiding costly and disruptive replacement, whilst also establishing their safety and fitness for purpose.

As bollard testing becomes the norm and ultimately becomes mandated through new standards and guidelines (such as that under preparation by PIANC Working Group 231), so ports will need to engage in long-term scheduled maintenance and testing, all of which will contribute to secure maritime operations, ultimately benefiting marine safety and infrastructure integrity. Bollard Proof Ltd is proud to be a key part of the solution to this pressing issue.

A final word from one of Bollard Proof's early proponents:-

"*Bollard Proof have been supportive in developing an enhanced periodic testing regime of existing port bollards and proof testing of any new equipment. The system allowing for simulation of mooring configurations is a positive from previous testing mechanisms and ensures we have documented data around the asset integrity of bollards and certified SWL's*" (Barry Heeps, Port Engineer, Forth Ports Limited).

LINK: https://bollardproof.com/

BOLLARD PROOF LTD

CM LABS SIMULATIONS INC.

comprehensive, data-driven simulation training management system enabling high-fidelity, zero-risk operator development

the challenge

Ports worldwide continue to struggle with a persistent safety-performance paradox: growing cargo volumes demand faster operations, while operator inexperience increases the likelihood of high-risk incidents and subpar operational performance. At Hanseatic Global Terminals' San Vicente Terminal Internationale (SVTI), located in Chile, this challenge was amplified by a workforce composed of 49% temporary labour and a steady inflow of new operators with limited experience on Mobile Harbour (MHC) and Ship-To-Shore (STS) cranes. In addition, equipment failures and a lack of standardization in operator training put pressure on productivity and threatened safe execution of cargo handling during vessel operations.

SVTI needed a solution that would:

- Build operator competency rapidly without compromising operational safety
- Reduce inexperienced operator errors
- Move mid-level (Tier-2) operators into higher-level Tier-1 roles safely
- Provide a consistent training methodology that accounted for individual learning curves
- Reduce over-reliance on high performers to meet productivity goals
- Improve reliability and customer trust through a standard, measurable training program

Installing the Intellia Training System with CM Labs' high-fidelity crane simulation training technology allowed SVTI to confront these challenges head-on. Intellia's data-driven operator assessment and structured curriculum transformed training from reactive and experience-based to proactive, measurable, and safe.

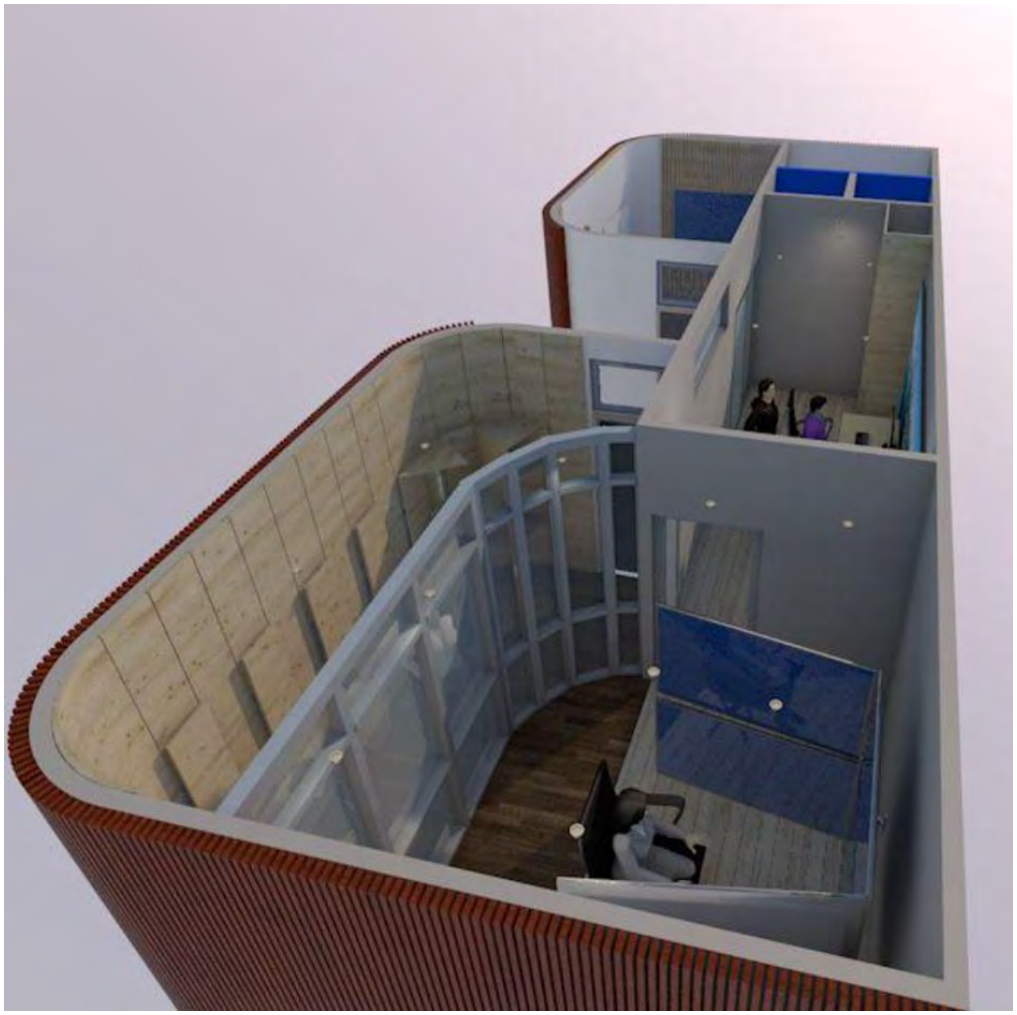
the innovation

SVTI deployed CM Labs' Intellia Training System, a comprehensive, data-driven simulation training management system enabling high-fidelity, zero-risk operator development for MHC and STS cranes. The innovation integrates three core elements:

- **A Scalable, Structured Training Program** – The curriculum established by SVTI and CM Labs reinforces safe operation first, followed by progressive productivity gains. Intellia's data engine ensures that improvement is documented objectively and shared easily with internal stakeholders.
- **Intellia Training Management** – Analytics that provide detailed operator scoring, learning-path tracking, competency benchmarking, and error detection, all enabling

instructors to tailor training to each operator's profile. Intellia provides measurable, consistent evaluations of productivity, safety behaviours, and quality of execution.

- **Advanced Training Simulators** – CM Labs' true-to-life crane physics and immersive environments mirror the operational behaviour of the heavy equipment, enabling operators to train safely on complex manoeuvres and hazardous scenarios that cannot be introduced in live operations.



Together, this innovation allowed SVTI to train new and cross-trained operators in a controlled, measurable way, reducing risk, accelerating learning, and reinforcing a culture of safe, reliable crane operation. The focus on mid-tier operators ensured the biggest operational gains, elevating the performance of the workforce segment that drives day-to-day productivity and safety outcomes.

how it was implemented

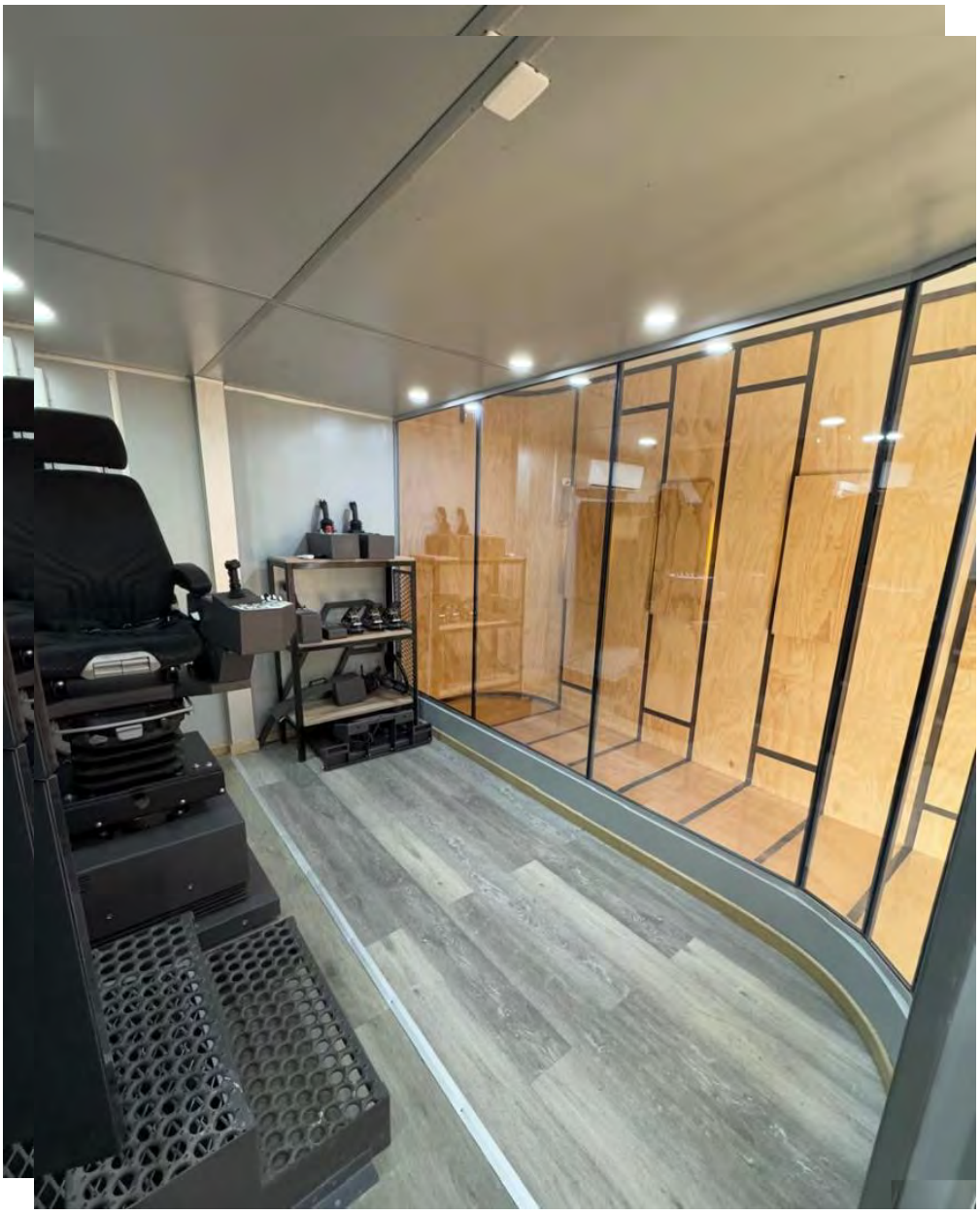
SVTI collaborated with CM Labs Simulations experts to deploy the Intellia Training System as the foundation for a multi-phase operator-development initiative. Implementation included:

- Designing a training progression that prioritised safe execution and high-level performance
- Installation of Intellia simulators and crane simulation curriculum for MHC and STS

- Configuration of operator profiles, training paths, KPIs, and performance analytics
- Running baseline assessments for all participating operators
- Establishing regular simulator sessions aligned with vessel schedules and shift rotations
- Using Intellia reporting to compare performance to planned productivity and safety benchmarks

SVTI implemented training for both inexperienced operators and those transitioning from MHC to STS. Intellia's analytics made it possible to identify regressions early, track differences in individual learning rhythms, and confirm operator readiness before stepping into live operations.

dubThis structured, data-informed approach ensured that the training effort aligned directly with SVTI's operational needs, maintenance realities, and productivity targets.



what was the result

The Intellia-enabled simulator training program produced clear, measurable safety and productivity improvements:

For MHC operators:

- 16 new operators trained
- 41 targeted simulator exercises completed
- 5.13% productivity improvement
- 11% improvement in first-operation quality (zero-error rate)

For STS operators:

- 7 operators trained (new to STS)
- 8 simulator exercises completed
- 14.5% productivity improvement
- 14% improvement in zero-error quality

The program also reduced performance variability between operators, enabling SVTI to confidently elevate Tier-2 operators into Tier-1 roles — directly supporting safe, consistent vessel operations.

Business outcomes were also substantial:

- 2024 container transfer volume increased 43% YoY
- Export traffic rose 30%
- Import traffic rose 26%
- Simulator-based training reinforced customer confidence by demonstrating a commitment to operational safety and performance reliability.

Overall, Intellia established a permanent, scalable training capability that continues to reduce errors, shorten learning curves, and safeguard operations in one of the region's busiest terminals.

conclusion

SVTI's adoption of the Intellia Training System represents a decisive shift toward a safer, more data-driven workforce development model in the ports industry. By combining high-fidelity crane simulation with deep operator analytics, SVTI created a training environment where safety is measurable, reproducible, and directly connected to business results.

This innovation not only improved operator readiness but also strengthened terminal reliability during a period of rapid cargo growth. Intellia's structured insights help SVTI

continuously refine training plans, reduce operational variance, and maintain alignment with service-level expectations from global shipping partners.

The system is now a permanent component of SVTI's workforce strategy. It is a scalable asset that supports long-term operator development and strengthens day-to-day safety across the terminal. Its consistent use has also created a more sustainable approach to training: one that reduces operational strain, preserves equipment, and provides a dependable path for building skills over time. As a result, SVTI can demonstrate to its customers that it has the people, processes, and capacity to handle their cargo safely and reliably, reinforcing trust in the terminal's performance.

LINK: https://www.cm-labs.com/en/

CORDSTRAP RE-TENSIONABLE LASHING SOLUTION

replaces traditional steel chains, 10 ton ratchet and wire ropes with a safer, more efficient solution

the challenge

Securing heavy and irregular cargo for transport has long relied on steel chains, 10 ton ratchet and wire ropes—methods that pose significant safety risks. These traditional systems demand high manual effort, expose operators to pinch points, and often lack consistent pre tensioning, increasing the likelihood of load shifts during transit. Inadequate tension control can lead to catastrophic cargo movement, endangering personnel, damaging goods, and causing severe financial and reputational losses.

The challenge is amplified in industries where compliance with international cargo securing standards is mandatory. Operators face pressure to balance speed, cost, and safety, yet existing solutions often compromise one for the other. Frequent injuries from handling heavy chains, coupled with time-consuming application processes, highlight the urgent need for innovation.

The Re-tensionable Lashing Solution addresses this critical gap by introducing a lightweight, ergonomic, and adjustable system that delivers superior pre-tensioning without excessive effort through the use of the Cordstrap battery tooling (CBT). By reducing physical strain and eliminating common failure points, it significantly lowers the risk of accidents while ensuring full compliance with global safety standards. This innovation transforms cargo securing from a high-risk task into a controlled, efficient, and safe process—protecting workers, cargo, and the supply chain.

the innovation

The Re-tensionable Lashing Solution is a breakthrough in cargo securing technology designed to replace traditional steel chains, 10 ton ratchet and wire ropes with a safer, more efficient solution. The system combines a high-strength textile lashing with a re tensionable element and a battery powered tensioner, enabling precise and repeatable pre-tensioning without excessive manual force. This innovation delivers the strength and reliability of conventional methods while dramatically reducing operator risk and physical strain.

Unlike fixed-length chains, the Re-tensionable Lashing Solution can be used with an endless lashing length, offering flexibility to secure a wide range of cargo types and sizes with minimal effort. Its lightweight design improves ergonomics, reducing handling injuries and fatigue, while the re-tensionable mechanism ensures consistent tension for maximum load stability during sea transport if necessary. The system is fully compliant with international cargo securing standards, making it suitable for global supply chains across industries such as steel, and heavy machinery & equipment manufacturing.

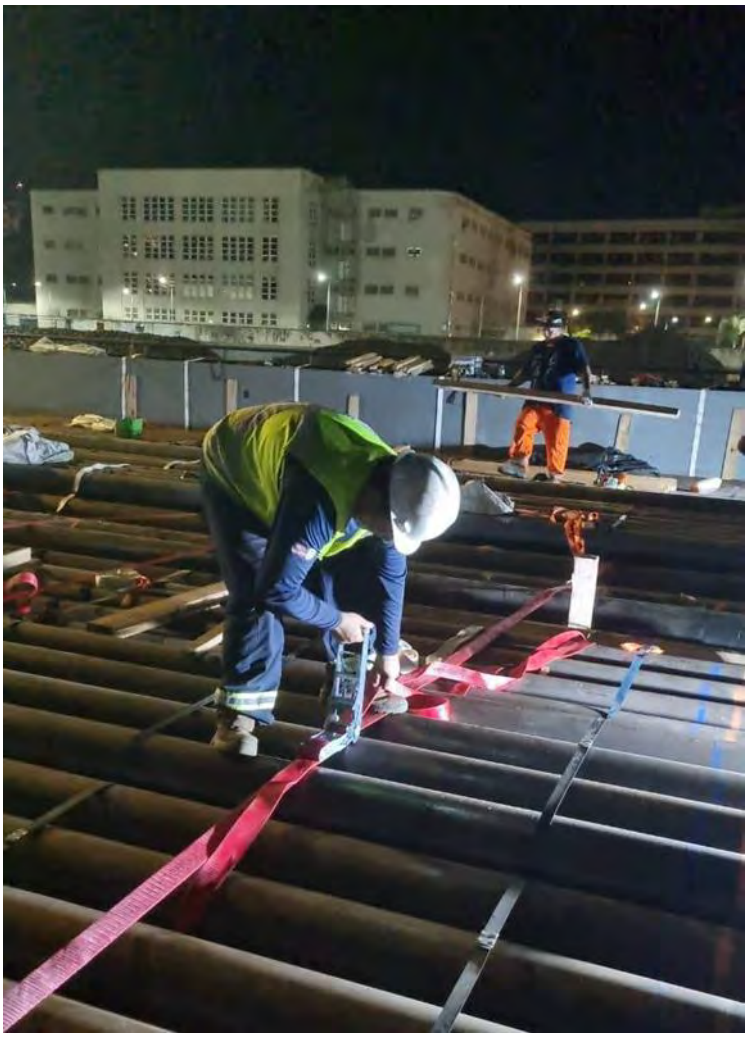
By combining safety, speed, and simplicity, the Re-tensionable Lashing Solution transforms cargo securing from a labour-intensive, high-risk process into a controlled, efficient operation. It not only enhances worker safety but also improves operational productivity and reduces downtime—delivering measurable value to both logistics providers and their customers.

how it was implemented

The Re-tensionable Lashing Solution was implemented through controlled field trials with logistics partners handling heavy and irregular cargo. Initial deployment involved replacing steel chains and wire ropes in real transport scenarios to validate performance under operational stress. Operators were trained on-site to apply the system correctly, ensuring safe pre-tensioning (using a battery powered handheld tool) and proper anchoring.

The trials were conducted across multiple environments—steel pipes, and machinery—where securing reliability is critical. Each test measured tension consistency, application time, and operator feedback. Results confirmed that the Re-tensionable Lashing Solution reduced manual effort significantly while maintaining or exceeding required securing standards.

Following successful trials, continuous monitoring included load inspections after transit and feedback sessions with crews to identify any adjustments needed. The lightweight design and re-tensionable mechanism proved intuitive, reducing fatigue and improving safety compliance without disrupting workflow.



This hands-on, iterative approach ensured that the Re-tensionable Lashing Solution was not just a theoretical improvement but a practical, field-ready solution delivering measurable safety benefits in real-world conditions.

what was the result

Field implementation of the Re-tensionable Lashing Solution delivered measurable improvements in safety and efficiency. Across multiple trial sites—steel, and machinery transport—the system consistently achieved secure pre-tensioning without excessive manual force, reducing operator strain and lowering the risk of injury, thanks to combining it with a battery operated tool.

Application time decreased by up to 40% compared to steel chains, enabling faster loading and turnaround without compromising compliance. Operators reported significantly improved ergonomics, with the lightweight design reducing fatigue during repetitive securing tasks. Post-transport inspections confirmed zero load shifts in all trial shipments, validating the system's reliability under real-world conditions.

Safety compliance was enhanced through consistent tensioning and simplified handling, eliminating common failure points associated with traditional methods. Feedback from crews

highlighted increased confidence in securing processes and reduced physical stress, contributing to a safer working environment.

These results demonstrate that the Re-tensionable Lashing Solution is not only a technical innovation but a patented, practical solution delivering tangible benefits: improved operator safety, reduced application time, and reliable cargo stability—setting a new benchmark for secure, efficient transport.

A quote from one of our steel customers, Vallourec, in Brazil: “The Re-tensionable Lashing Solution offers extended lashing capacity and superior pre-tensioning compared to standard systems, providing secure and consistent fastening, optimizing operational efficiency with the aim of reducing human error and protecting the integrity of the load. It was very satisfactory.”.

conclusion

As a patented solution, the Re-tensionable Lashing Solution sets a new benchmark for safe, efficient cargo securing. By replacing heavy, injury-prone chains and wire ropes with a lightweight, ergonomic system, it addresses one of the most persistent risks in logistics: operator strain and inconsistent tensioning. Field implementation has proven that this solution not only meets but exceeds international safety standards, delivering reliable load stability while reducing physical effort and improving compliance.

The innovation is simple yet transformative—combining proven ratchet technology, high quality lashings, the benefits of a specific buckle integrated in the solution and using a battery powered tensioner to create a system that is intuitive for operators and adaptable to diverse cargo types. Its ability to be used with an endless lashing length ensures flexibility without compromising safety or efficiency.

The Re-tensionable Lashing Solution demonstrates that safety and productivity can go hand in hand. It empowers logistics teams to secure loads faster, safer, and with greater confidence, ultimately reducing accidents and protecting both people and cargo. This award would recognize a practical innovation that is already making a measurable difference in the field and has the potential to set a new standard for safe cargo securing worldwide.

LINK: https://www.cordstrap.com/en/

cordstrap
The Passion to Protect

DUBLIN PORT COMPANY – DUBLIN SAFEPORT INITIATIVE

innovative and collaborative approach to transform safety culture across the Port

the challenge

Before the launch of the SafePort initiative, Dublin Port faced significant safety challenges stemming from a lack of an aligned and shared safety culture across its multiple independently operated terminals. Each terminal operated its own safety procedures, leading to inconsistent standards in key areas such as signage, personal protective equipment (PPE) requirements, and vehicle speed controls. This fragmentation made it difficult to manage hazards port-wide, with safety practices varying between operators. Communication and collaboration were largely limited to individual terminals, which hindered the establishment of a uniform approach to risk management and safety awareness. Without a cohesive safety culture shared across all operations, workers faced increased risks from uncoordinated procedures and unclear expectations. This environment exposed the port to higher operational risks and complicated efforts to proactively address safety threats. The separation of operations inhibited the development of a unified safety mindset that could foster mutual care and prompt intervention across the entire port estate.

the innovation

The Dublin SafePort initiative is an innovative and collaborative approach led by Dublin Port Company (DPC) to transform safety culture across the Port. Recognising the complexity of operating multiple independent terminals, DPC sought to engage terminal operators as partners in a unified endeavour to create a shared foundation for safety that went beyond enforcing rules. DPC focused on fostering a safety culture centred on supporting workers, empowering them to actively participate in safety improvements rather than imposing regulations upon them.

Central to this effort was the creation of inclusive relationships between DPC and the seven main terminal operators, forming a collective partnership built on trust and mutual commitment. This collaboration enabled the alignment and standardisation of safety practices across the entire port estate, covering training, communication, and operational procedures. The initiative encouraged open dialogue and learning, sharing lessons and experiences port wide.

By establishing these relationships as the basis of progress, DPC and terminal operators created a broad and sustainable foundation for safety culture. This approach shifted the narrative from purely compliance to collective responsibility and continuous improvement. The result has been a positive cultural change across the Port, where shared commitment and ongoing collaboration enable safer working conditions and sustained progress for all port personnel.

how it was implemented

Dublin Port Company (DPC) took a strategic and inclusive approach in implementing the Dublin SafePort initiative by leveraging strong industry and terminal support, backed by expert consultant advice. This collaborative framework engaged the seven main terminal operators, who together represent the majority of port workers, ensuring that all voices were included in shaping the safety culture.

Figure 3 - Port workers attending a SafePort Engagement session. The sessions are led by SafePort Champions – trained port workers. Each session is visited by a terminal manager or member of the SafePort Executive Group, to listen to the group and provide management commitment to safety. In this photo a terminal manager is providing this management commitment to an audience of staff of 6 terminals.

Figure 4 - SafePort Executive and Workgroup members engaging in a team training exercise hosted by the RNLI. The event focused on teamwork, and communications and involved a great deal of fun.

DPC enjoyed the support of key stakeholders including the Health and Safety Authority (HSA) and the Irish Congress of Trade Unions (ICTU), which reinforced worker participation and aligned the initiative with regulatory standards and labour rights.

DPC worked closely with terminal partners and these supportive bodies to align and standardise safety practices across the port. Early initiatives such as consistent speed limits and standardised personal protective equipment (PPE) provided tangible safety improvements and empowered partners to believe in their ability to improve the overall safety landscape.

This partnership approach ensured the development of shared ownership of safety culture, moving to aligned standards and a collective commitment to safer working conditions. The involvement of experienced consultants (jmj.com) further helped embed safety leadership principles.

Once established, SafePort reached out to infrastructure and transport providers to learn and share everything learned on the journey so far. SafePort has engaged with Dublin Airport, Irish Water, PSS, IHMA, Irish Port Safety Forum and UK Chamber of Shipping amongst others.

SafePort has hosted safety leadership and training events, including reflective events of SafePort to identify what is working / what is missing to ensure SafePort continues to grow and support the Partners.

what was the result

Dublin SafePort has successfully unified Dublin Port's terminal operators and stakeholders into a trusted safety network of partners. With collaborative working groups and broader engagement of stevedores and state agencies, it has established a proactive culture focused on worker safety.

The result of the SafePort initiative has been highly successful, earning international recognition for Dublin Port. It has established a strong, trusted safety culture across the port's extensive estate, with close collaboration between terminal operators, port authorities, and key stakeholders like An Garda Síochána, Revenue, and HSE. This unified effort has fostered productive and collaborative working groups that promote ongoing safety awareness, training, and best practice sharing port wide.

The initiative has significantly improved safety relationships and procedures, with aligned standards around PPE, speed limits, and operational practices. These collective efforts have led to a measurable increase in health and safety awareness, creating a safer working environment despite the port's high activity levels—managing around 50 ship movements and 17,000 vehicles daily.

Figure 5 - SafePort engagement with transport and infrastructure providers – Dublin Airport

Figure 6 - SafePort Executive Group visiting a Dublin Terminal – Doyle Shipping Group - to view AI CCTV system

This commitment aims to ensure continuous improvement, maintain high safety standards, and foster a culture of long-term safety and trust amongst port partners and workers.

Dublin Port Company plans to build on this success by allocating further resources and expertise for ongoing SafePort leadership.

conclusion

The SafePort initiative has successfully established trusted safety relationships between Dublin Port's terminal operators, supported by productive and collaborative working groups. This network has expanded as the initiative engages a growing number of partners, including additional stevedores and key state agencies such as An Garda Síochána (Police), Revenue, and the Health Service Executive. These partnerships have broadened the initiative's influence and reinforced a unified commitment to safety across the port estate.

The collaborative environment fosters open communication, shared procedures, and joint responsibility for safety outcomes, creating a resilient safety culture recognised internationally. Building on this success, Dublin Port Company plans to appoint further resources and expertise to support the ongoing leadership and development of Dublin SafePort. This investment will ensure continued momentum, enabling the port to adapt to evolving challenges and maintain its position as a leader in port safety.

Figure 7 - SafePort using local billboards with terminal and EHS managers to demonstrate commitment to safety

Through these sustained efforts, SafePort continues to transform Dublin Port into a cohesive, proactive community focused on protecting its workforce and visitors, setting a benchmark for safety culture in the maritime industry.

Figure 8 - SafePort Executive Group visiting a challenging road construction site project within Dublin Port

Figure 9 - SafePort commitment workshop - 14 organisations and 50 persons attending to collaborate and to identify what's working / what's missing

LINK: https://www.dublinport.ie/

ESLI SCHOOL OF LOGISTICS & GLOBAL SUPPLY CHAIN CLASSROOM

enhancing cargo handling operators' cyber risk sensitivity and management through a maritime/port-dedicated cyber risk management qualification

the challenge

Cargo handling is now using a wide range of cyber-physical assets. Cyber attacks are therefore a threat to cargo handling operations, and safety.

Unlike other supply chain members, ports are networks' actors which are themselves networks of actors. Cyber risk management strategies are therefore more difficult to design and implement as they require a proper alignment of a great variety of local stakeholders' financial and technical resources, as well as of cultural approaches of cyber security issues.

Along the whole process of cyber risk identification, assessment and mitigation, people's understanding of the, especially port-specific, dangers associated with cyber attacks, and their cyber risk mitigation capabilities are of the utmost importance for the global efficiency of this process.

Education and training programs fully dedicated to port cyber risk management can therefore usefully contribute to the enhancement of local operators' cyber risk sensitivity and management capabilities, ultimately improving cargo handling resilience and safety.

the innovation

The purpose of MAPO-CYM (MAritime & POrt CYber risk Management) curriculum is to train managers to:

- understand the challenges and specificities of cyber risk in maritime and port organizations;
- carry out audits of maritime and port processes, design and manage action plans;
- conduct risk analyses, identify vulnerabilities;
- apply methods and tools to anticipate, detect and mitigate cyber risks;
- define business continuity plans / disaster recovery plans;
- lead safety / security management within a maritime and port environment.

The program can be offered to professionals such as cyber risk professionals looking to extend their operation to the maritime, port industry and maritime professionals looking for education in cyber risk management. It can be used for people with no pre-knowledge both of the topic and of the industry, though some level of experience in risk management will be required.

The program is made of 5 modules:

- Marine industry

- Port communities
- Driving digital transformation in the maritime and port sectors
- Design and conduct a cyber risk management project in the maritime and port sectors
- Securing maritime transport and port transit operations and infrastructure

how it was implemented

The 1-year, 288-hr program can be operated on a hybrid mode: pre-recorded modules + online live sessions + 1 week on-site (participants who cannot attend on-site session will attend live online); modules can be validated separately with a specific certification; full certification is obtained when all modules are validated.

what was the result

MAPO CYM is an ongoing project, benefiting by the contribution and support of professional institutions and individuals to its design and operation.

conclusion

MAPO CYM is intended to open Q4 2026.

EUROPORTS GROUP BV / NOTRA OY

automated pulp handling system that eliminates the risk of personnel being struck by forklifts, being exposed to eye, limb or facial cuts as well as associated musculoskeletal risks during pulp bale transportation wire removal

the challenge

We handle paper pulp in several of our locations; loading/unloading from sea going vessels and other modes of transportation (barges, trucks and trains). This paper pulp is transported in bales of approximately 200 kg each. These bales are in turn bundled into packages of 8 (2 by 4) bales, kept together by several thick metal wires with which these packages are lifted in and out of the vessel. The imported pulp is transported by truck to the nearby paper factory of the client for use in their production process.

The factory does not have the equipment onsite to remove the heavy lifting wires and turn the bales in the correct orientation to enter the production line. For this reason and per customer demand, the heavy lifting wires are removed, the bales rotated on to their side and repacked with smaller, lighter wires that will merely keep the bales together and are not needed for lifting purposes.

Previously, this re-wiring was done manually. The cutting of the heavy lifting wires involved risk of wire-ends causing cutting injuries to arms, legs or face. Despite safety goggles being mandatory, in the worst case there was risk to operators' eyes. Operationally, wire removal required the assistance of a forklift which needed to be in close proximity to the employees removing the wires. This added person-machine interface risks to the mix. Finally, the whole process and especially the re-wiring at the end, was a strenuous and demanding activity for the personnel involved giving rise to manual handling risk..

the innovation

The newly introduced automated pulp handling system features a robotic arm that removes the existing wiring for sea transport. The robot operates within a fully fenced and protected area, ensuring a clear separation between personnel and machinery. The system is equipped with automatic shutdown protection, which activates in case of any breach, further enhancing safety and preventing unintended human-machine interaction.

The robot removes lifting wires from pulp bales and rolls them into bundles for metal recycling. It also inspects the integrity of the strapping wires on the individual bales using a dedicated program and finally rotates the pulp units into a horizontal position for further processing, i.e. automated re-wiring. The entire process is overseen by an operator outside the fenced area who ensures a smooth and safe operation.

how it was implemented

The machine was constructed on site, the supplier working closely together with Euroports' local technical and operational team to design the process in line with the operational demands. The local team in turn coordinated with the customers needing this add-on service,

to gain a good understanding of the exact needs and requirements as well as the correct dimensions, weight and other specifications (like wire thickness, positions, etc.).

Following initial construction, a test phase commenced, were problems created by deviations in real life bale configurations were identified and subsequently solved.

what was the result

With intact pulp units, the system can process up to 60 units per hour, requiring only a device operator and a machine driver to move the bales to the line and into storage. Previously, the manual operation required 3 employees, a lot of physical and high risk work. By handling lifting and strapping wires already at the port, the process becomes faster and easier for our customers at the paper mills. The automation also reduces the risk of injuries associated with manual wire cutting and handling, further improving occupational health & safety for our stevedores.

conclusion

This innovation enables Euroports to carry out modification and repair work on pulp units from all pulp mills safely, efficiently, and cost-effectively.

LINK: https://www.euroports.com/

FIRE-CONTAINERS LIMITED - FIRE SAFETY CONTAINMENT UNIT

unit equipped with built-in detection system, fire suppression system and water supply, allowing it to safely contain and extinguish flame immediately on detection and prevent further fire spread

the challenge

Transporting lithium-ion batteries (Lib) or Electric vehicles by sea freight presents several dangers, including the risk of fire and explosion due to thermal runaway, especially if the batteries are damaged or defective. This is exacerbated by the confined environment of a ship, where a fire can spread quickly and cause catastrophic damage leading to total loss scenarios. Lithium-ion batteries are also prone to overheating, which can be triggered by physical impact or exposure to high temperatures during shipping.

The Fire Safety Containment Unit (FSCU) and Electric Vehicle Containment Units (EVCU) developed and patented by Fire Containers limited have been specifically designed to mitigate these risks by providing a secure fully self-contained containment system with integrated fire detection and recirculating fire suppression. It safely stores, monitors and transports Lib batteries (or other flammable substances). Both the EVCU and FSCU contain onboard water tanks and high-pressure water misting systems which filter and recirculate the onboard water back into the firefighting systems.

It is vitally important to detect these fires at an early stage of development and the units fire suppression capabilities rapidly extinguish flame development and cool all cargo within the unit preventing any fire spread inside the units and ensuring the safety of the ship and crew.

The FSCU and EVCU significantly reduces the dangers associated with transporting lithium-ion batteries and electric vehicles by sea freight and provides early warning to crew in the event of an incident.

the innovation

The FSCU is designed to enhance operational tactics by providing a specialised solution tailored to the unique challenges posed by Lithium-ion battery (Lib) incidents.

The Fire Safety Containment Unit (FSCU) offers significant safety benefits in detecting and managing Lib fires. One of the primary advantages is its ability to prevent the spread and reignition of fires, which is a common risk with Lib fires. The unit is equipped with a built-in detection system, fire suppression system and water supply, allowing it to safely contain and extinguish flame immediately on detection and prevent further fire spread.

Additionally, all firefighting water is contained within the unit protecting emergency responders, crew and the environment from further toxic hazards.

The EVCU, specifically designed for vehicles, provides a secure environment to transport, and store electric vehicles, minimising fire risks and providing immediate deployment of firefighting capabilities on detection of a fire.

Both units enhance safety and operational efficiency by addressing the unique dangers of lithium-ion batteries. Also, current firefighting tactics on ships relies on applying hundreds of thousands of litres of water to try and contain these types of fires but due to the early detection and recirculating capabilities of the units then very little onboard water is required to control a fire as the principal firefighting tactic is the production of steam to control fire development.

In summary, the FSCU and the EVCU offer a comprehensive solution for safely managing and mitigating the risks of Lithium-ion battery fires.

how it was implemented

In 2023 I was getting regular requests from fire services across the United Kingdom asking how they could effectively deal with electric vehicle (EV) incidents which were becoming more frequent.

Following research, we noticed a disconnect in what vehicle manufacturers were stipulating and what companies were producing to deal with the problem. Namely, vehicle manufacturers were saying do not submerge their Lithium-Ion batteries (Lib) and equipment manufacturers were building 'Submersion' type units to submerge vehicles in water if they had been involved in fire.

The Electric Vehicle Containment Unit (EVCU) was designed by a team combining expertise from the fire and rescue services, design engineering, and the vehicle recovery industry. We aimed to address the unique challenges posed by electric vehicle fires, particularly those caused by lithium-ion battery failures. The design incorporated a mobile containment system with fire suppression and a water supply to provide high pressure water misting to fight the

flame front without submersion of the battery packs whilst also cooling the battery packs at the same time and slowing the thermal runaway process.

The EVCU was designed, built and implemented for first responders and vehicle recovery teams to mitigate fire risks during incidents and now remains the only operational unit of its type in the UK and is deployed on a regular basis for the removal of electric vehicles following accidents or fires.

Since the implementation of the EVCU the Fire Safety Containment Unit (FSCU) has also been developed for safe transport of Lithium-ion batteries.

what was the result

The benefits of Electric Vehicle Containment Units (EVCUs) and Fire Safety Containment Units (FSCUs) are substantial for both safety and operational efficiency. EVCUs are specifically designed to handle electric vehicle (EV) fires, particularly those caused by lithium-ion battery malfunctions. They provide a controlled environment to recover and transport damaged EVs, reducing the risk of fire reignition and ensuring safe handling during and after an incident.

FSCUs are more versatile, addressing the challenges of safely transporting lithium-ion batteries, especially by sea freight. With built-in fire suppression systems and secure containment, FSCUs prevent the spread of fires during transit, mitigating potential hazards to the ship, crew, and cargo. Both units safeguard responders, recovery teams, and the surrounding environment by isolating the fire risks, providing essential protection in high-risk situations.

In addition to improving safety, these units enhance operational efficiency by offering a specialised, reliable solution tailored to modern challenges posed by electric vehicles and lithium-ion batteries. This minimises downtime, reduces the potential for secondary incidents, and ensures that fires are swiftly controlled.

Overall, EVCUs and FSCUs play a crucial role in modern fire management, ensuring the safety of personnel, infrastructure, and the environment.

conclusion

As global lithium battery use rapidly increases, driven by the rise of electric vehicles (EVs), renewable energy storage, and consumer electronics, the roles of the Electric Vehicle Containment Unit (EVCU) and Fire Safety Containment Unit (FSCU) become increasingly crucial. Both units help manage the unique safety challenges posed by lithium-ion batteries, which are prone to thermal runaway and fire risks.

The EVCU ensures safe containment, recovery, and transportation of EVs after accidents, minimising fire hazards caused by damaged batteries. As EV adoption expands, the EVCU provides essential protection for first responders and the public.

The FSCU plays a key role in safely transporting lithium-ion batteries, particularly in sea freight and storage applications, preventing battery fires and ensuring safe transit across global supply chains. Both units contribute to creating safer, more secure battery transport and management systems, addressing the growing risks associated with the widespread use of lithium batteries.

With the continued proliferation of battery-powered technologies, the EVCU and FSCU are essential to mitigating fire hazards, protecting lives, and ensuring the safe and efficient handling of lithium batteries worldwide.

LINK: http://www.fire-containers.com/

FIRECONTAINERS
LIMITED

FREDERIK ELTING – SEATAG FLOAT

a compact, autonomous safety device for shipping containers, that makes them visible and identifiable if they are lost at sea

the challenge

Every year, containers are lost at sea due to storms, structural failures, or handling errors. According to the World Shipping Council, 576 containers were lost in 2024, more than double the 221 lost in 2023. While this represents only a fraction of the 250 million containers transported annually, each incident carries disproportionate risks:

Collision hazards: drifting containers can remain afloat just below the surface, invisible to ships and particularly dangerous for smaller vessels.

Environmental risks: depending on cargo, losses may result in hazardous material spills or persistent plastic pollution.

Financial uncertainty: insurers and cargo owners face complex, often lengthy disputes due to lack of reliable evidence of container loss and location.

From 2026, the International Maritime Organization (IMO) will require mandatory reporting of container losses, reflecting the importance of transparency and safety in this field. However, the industry currently lacks a low-cost, scalable method to reliably identify drifting containers once they are in the water.

For insurers, this gap creates both direct costs through claims exposure and indirect costs through disputes, reputational impact, and uncertainty in underwriting. Addressing this challenge requires a solution that is simple, robust, and economic enough to be deployed across millions of containers worldwide – without relying on electronics or complex handling procedures.

source: https://www.ttclub.com/news-and-resources/news/article/tt-talk-industry-reports-shed-new-light-on-container-losses-at-sea/

the innovation

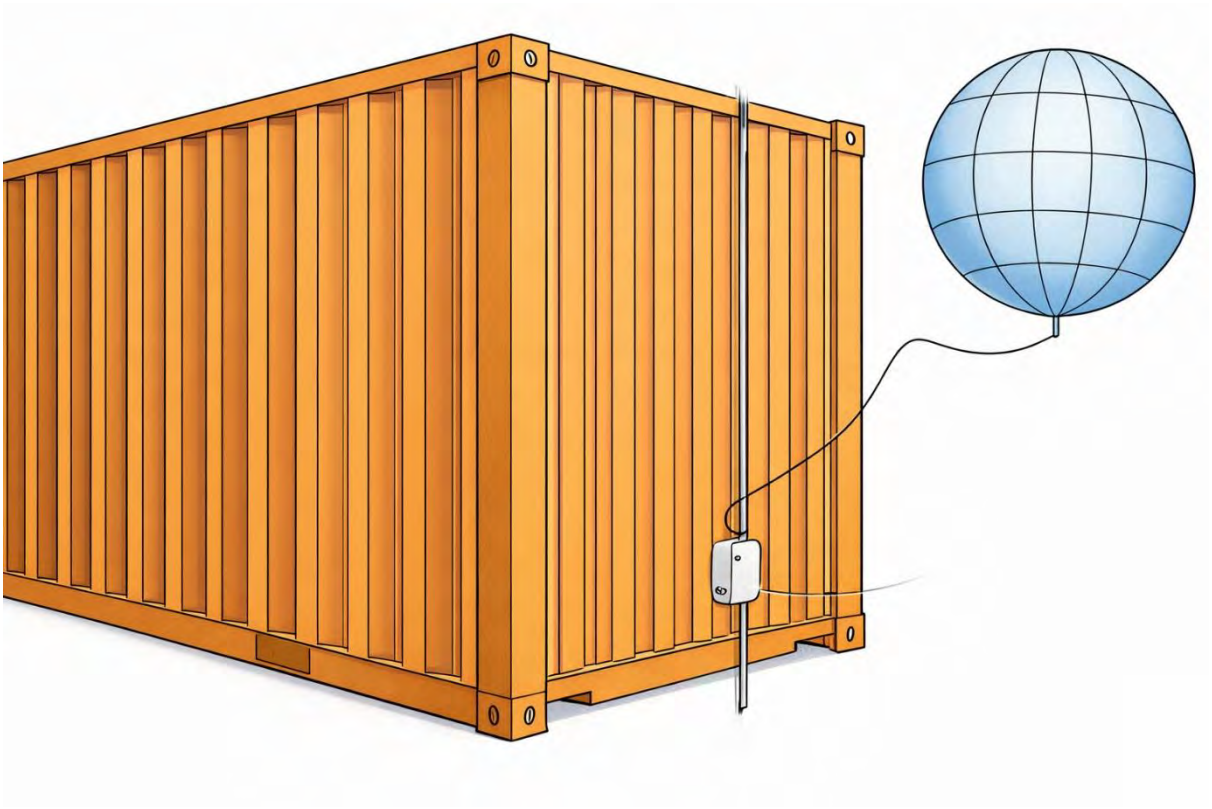
SeaTag Float is a compact, autonomous safety device designed to be attached externally within the recesses of standard shipping containers. Its purpose is to make a container that is lost overboard visible and identifiable on the sea surface.

When activated by immersion, the device releases a lightweight, radar-reflective marker balloon of approximately one metre in diameter. The balloon remains tethered to the container by a short floating line, ensuring it stays near the surface and can be detected both visually and by ship radar. Two units can be fitted per container to provide redundancy.

Key attributes of the system include:

Passive and self-contained: no electronics, no crew intervention, no external power.

Maintenance-free: designed to remain effective for several years without servicing.



Compact and secure: integrated into container recesses, resistant to handling damage.

Low-cost: estimated production cost per unit in the low double-digit euro range, allowing large-scale deployment.

For insurers, SeaTag Float provides a practical means of reducing uncertainty in claims by establishing clear evidence of container loss and location. For the wider maritime sector, it helps mitigate collision risks, supports recovery operations, and reduces the environmental impact of undetected drifting cargo.

By combining mechanical simplicity with scalable economics, SeaTag Float offers a new tool for managing a long-standing gap in maritime safety and insurance risk management.

how it was implemented

SeaTag Float is currently at the pre-prototype stage. The concept has been translated into a practical design based on widely available, proven technologies that are already familiar in the maritime safety sector. The device is conceived as a sealed, compact unit that can be mounted in the corrugated recesses of a standard container without affecting lifting or stacking operations.

The functional principle is simple: once the container is lost overboard, immersion activates the unit and deploys the surface marker. The marker balloon inflates to approximately one metre diameter and remains connected to the container by a floating tether. This ensures the drifting container is identifiable by radar and visually.

Implementation at scale would follow standard container handling practices. Units could be attached in depots during container turnaround, or integrated by manufacturers at the point of production. The design requires no crew training, external power, or software, making adoption straightforward.

To date, engineering assessments and cost modelling have been completed, confirming feasibility of the design in terms of size, durability, and unit economics. The next step will be the construction of working prototypes and controlled water tests, followed by pilot deployments in cooperation with insurers and shipping partners.

what was the result

The results to date come from analysis of established technologies and their application to the container loss problem.

Marker visibility: Radar-reflective balloons are a proven concept in maritime search-and-rescue, where similar devices have demonstrated visibility to ship radar over several nautical miles. This provides confidence that a one-metre reflective marker can serve as an effective surface signal for drifting containers.

Tether durability: High-strength, floating lines are widely used in marine operations. Engineering data confirm that modern synthetic fibres provide more than sufficient tensile strength and long-term saltwater resistance for this application.

Cost feasibility: Component-level cost modelling shows that units can be manufactured at a low double-digit euro cost, enabling large-scale deployment without imposing unsustainable expenses.

Operational integration: The compact design concept fits within standard container recesses and does not interfere with handling equipment. Feedback from preliminary stakeholder conversations confirms this as a critical requirement for acceptance.

While no live sea trials have yet been conducted, these results indicate that the principle is technically and economically feasible, with a clear pathway to prototyping. The outcome at this stage is a validated design framework that is sufficiently developed to present to insurers and shipping stakeholders for consideration as a practical safety and risk management tool.

conclusion

SeaTag Float addresses a safety and liability gap that has long been recognised but not effectively solved. While electronic beacons and satellite trackers exist, their cost and maintenance requirements prevent adoption at scale. By contrast, this concept is designed to be low-cost, passive, and maintenance-free, enabling widespread deployment across the global container fleet.

The primary value lies with insurers and reinsurers. For them, drifting containers represent not only collision and environmental risks, but also significant financial uncertainty. Claims arising from lost cargo are often prolonged by the absence of clear evidence of when and

where a loss occurred. A simple surface marker can provide the objective evidence needed to clarify liability and reduce dispute costs.

For the wider maritime community, the benefit is secondary but still significant: increased visibility of drifting containers reduces collision risks for commercial vessels and small craft alike, and supports recovery or clean-up operations.

The next step is to move from validated design to prototype development and pilot projects in cooperation with insurers and shipping stakeholders. Participation in this award provides an opportunity to highlight the concept, attract interest from relevant partners, and initiate the practical steps needed to bring the system into operation

G2 OCEAN MONTHLY SAFETY BULLETIN

a monthly 2-page safety bulletin, focusing on a specific safety topic with real-world incidents that connect with port workers because they are about their real workplace and experiences – driving behavioural change

the challenge

The challenge is the number of stevedores getting injured in ports all over the world, while handling cargo. Our breakbulk segment requires a lot of manual handling for hooking up, securing and lashing cargo, and this increases risk, and it is reflected in the stats for our segment.

the innovation

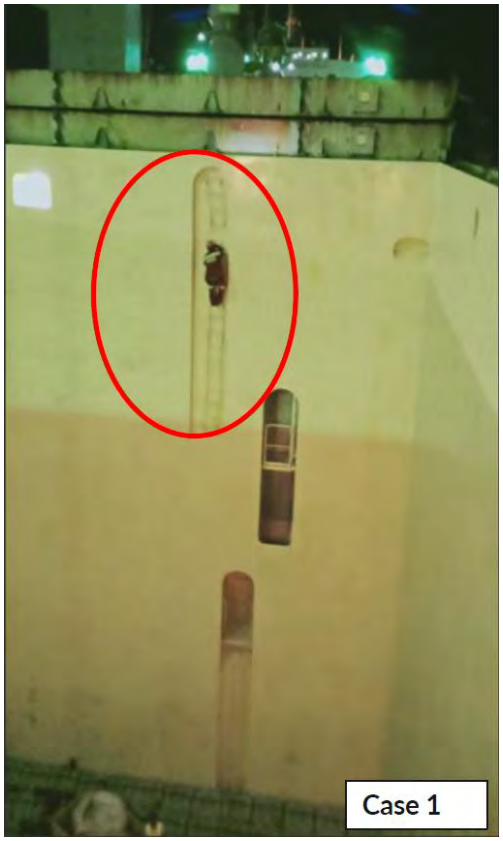
Each month we issue a safety bulletin, a 2-pager focusing on a specific safety topic. We always refer to an actual incident, we use a lot of pictures and occasionally we add a QR code with links to short videos. In every bulletin we refer to one of our "5 I's", our defined safety behaviours (Insight, Innovation, Intervention etc). By making this connection to behaviours we make the bulletin about more than just the isolated incident, it is about behaviours of the people involved.

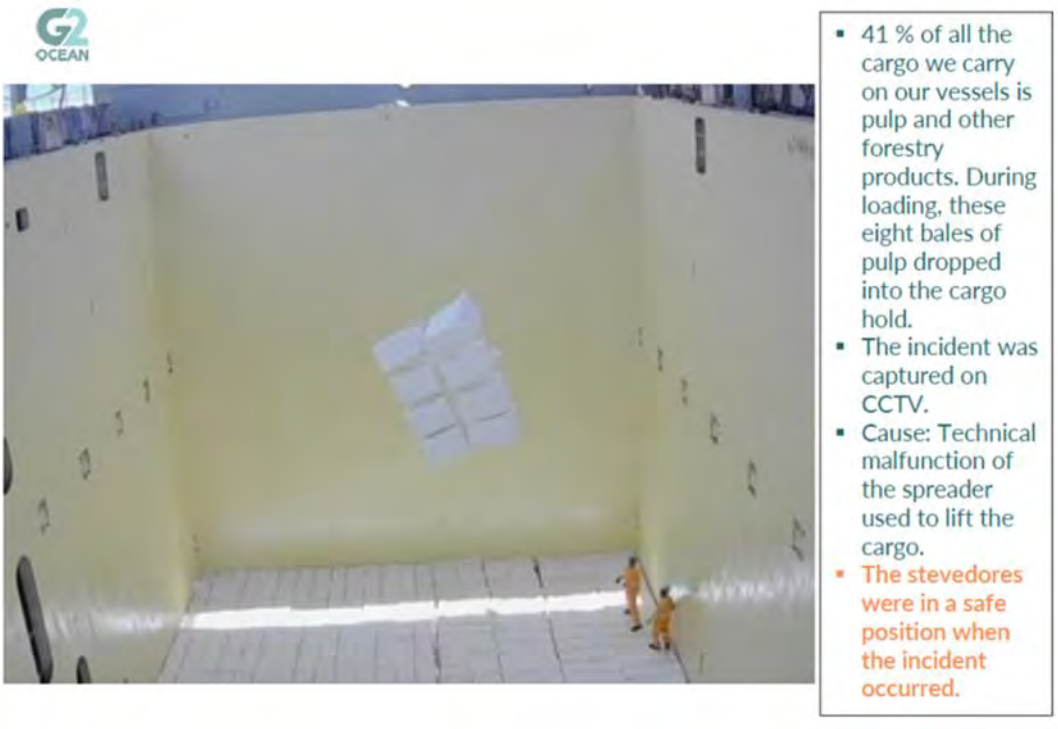
We in G2 Ocean, as the commercial operator of vessels with about 3500 port calls per year, are in a unique position to do this for our breakbulk segment. We share safety insights across country and company borders, between all stakeholders involved in cargo operations: Vessel

crew, stevedores, terminal operators, ship agents and not least our own Port Captains, who are on board vessels every day.

how it was implemented

The idea came up during an informal talk with a stevedore foreman in Verbrugge. We realised that we in G2 Ocean sit on a lot of information which he could use to raise safety awareness among the stevedores. We started in July 2022, and since then we have issued a new bulletin on the 15th of every month. The list of recipients have been growing ever since. We have started to translate it to Portuguese, as we have many readers in Brazil. And ICHCA and others have made sure we reach a wider group, by redistributing it in their channels. It is up to the receivers to use it as they see fit, but we know many use it at meetings, both on the quayside and in office settings. And we find it in break rooms everywhere, where both crew and stevedores can read it.

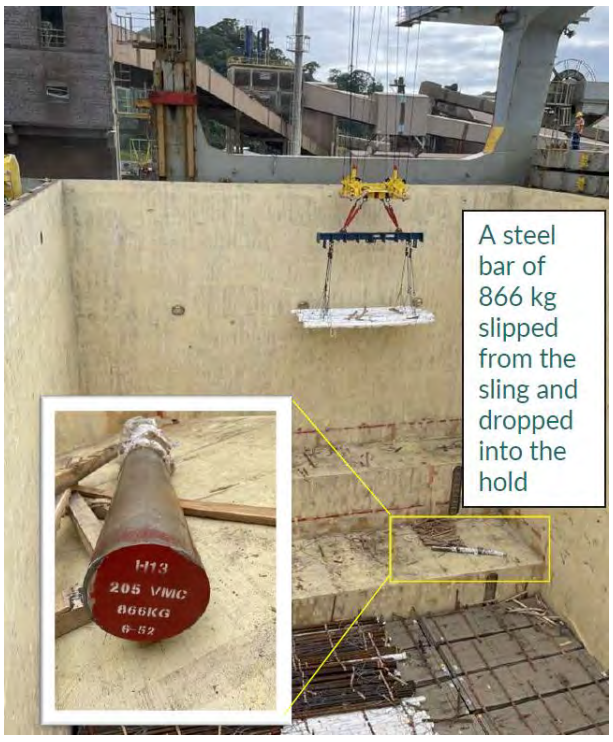




This drill bit was partly embedded in a granite block. It came loose during loading and and hit a stevedore below.

what was the result

You can present injury statistics to people to document that they are exposed to very real safety risk in their daily work, and you can give them procedures instructing them to work safely. But stories about real incidents tend to have a stronger impact. Safety must be created every day, the bulletin can raise awareness and make people reflect on their own actions and that is the first step towards changing behaviour. It is impossible to document that the bulletins have led to x fewer incidents, but we believe it has a positive impact and certainly



A steel bar of 866 kg slipped from the sling and dropped into the hold

we have had a lot of positive feedback and many find it refreshing that we are so transparent about the challenges we face and the incidents we see.

LINK: https://www.g2ocean.com/

INDIVIDUAL INNOVATOR, EDMUND GREENWOOD

a customs seal across the container doors - that must be broken, to gain access to the cargo space

the challenge

In 2005, as a response to the World Trade Centre terrorist attack in New York, European Ministers of Transport met at a conference titled " Container Transport Across Modes ". The meeting was called to address security, as it was feared a container could be used to deliver a bomb.

In the meeting's Overview and Analysis, Section 2 titled : Securing Container Integrity it says, "However it should be stressed that the vast majority of seals only indicate whether the seal itself has not been tampered with - not that the containers integrity has been compromised".

My conclusions are therefore:

- the customs seal fastening point is in the wrong place, it does not block entry
- advances in door design and configuration have improved manufacturing, but have been less successful from a security perspective and a security rethink is required

Unfortunately though, even after the advent of the "SecuraCam", at the bottom of the right hand side door inner lock rod, covert theft and smuggling continue.

These crimes rely on the fact - as revealed in the quote above - that twenty years later, the Customs seal still does not block entry. It can be side stepped, left intact and untouched - to be displayed after the crime as a "red herring".

the innovation

A customs seal across the container doors - that must be broken to gain access to the cargo space. The example shown is a 3-d print of the prototype.

The Customs seal fastening point, above, will bring about real change in the global supply chain, where criminal activity will have to be accounted for and responsibilities met, at the source of the problem.

The device replaces the much tampered right hand side door overlap plate, also known as the TIR plate. It also makes the use of an internal TIR plate redundant and stops door hardware fastener tamper.

The invention would be a component of the welded construction, and as such, it has the lost permanence of first generation containers, that is essential to security.

If adopted the device would become a conclusive focal point for security agencies or Customs examination and as such “any tampering will be clearly visible”, as demanded by TIR regulation.

Alpha-numerically identified with the container fleet number and prefix on display. The device enables one-shot, close up photographic evidence of the fastened Customs seal after cargo loading. Recording the seal number, its type and colour as well as the pre-trip condition of the mountings with container number.

The photo could be made available on the internet for verification anywhere in the global supply chain.

Bar code identified, when used in combination with bar coded Customs seals it would enable scanned gate movements at automated ports.

Definitive control of both doors provides the ideal e-seal fastening point.

how it was implemented

The device, commonly termed a ‘Customs sealing TIR plate’, features industry tried and tested anti-racking engineering.

When a container is being transported, the doors alternately move vertically in opposite directions. The device has clearance to accommodate this movement and anti-racking design to limit it. This safely ensures that a fastened Customs seal has no impingement or shearing forces exerted upon it.

The device would be located in the lower quarter of the doors to aid fastening of a Customs seal when the container is on a trailer and to aid check-point inspections.

The Customs seal fastening points are both components of the welded construction, which is the preferred method of attachment of Customs seal fastening points in the TIR convention.

The invention is still yet to be implemented. It was designed to protect the left hand side door and put an end to door hardware fastener tamper.

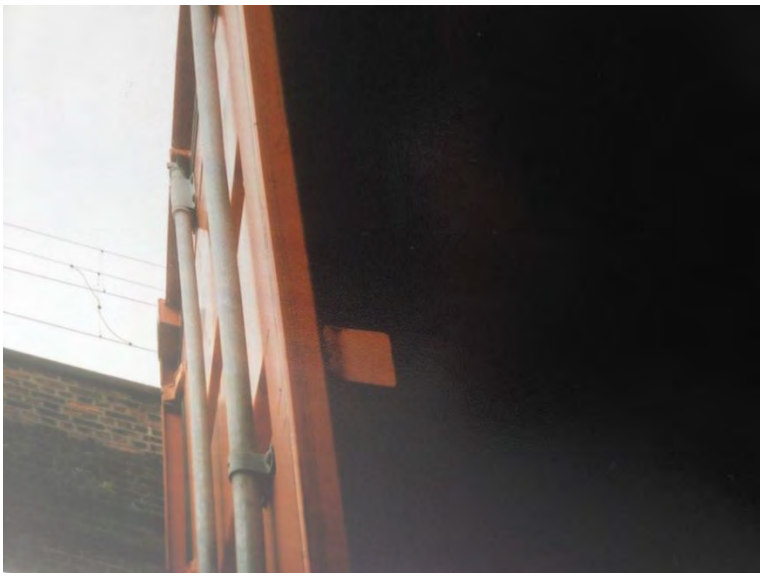
It can also to help to avoid the scenario where - arguably - the Customs seals signpost the way for criminal access by the left hand side door.

It can also prevent the bending of the external TIR plate and then re-straightening to cover criminal acts such as theft or smuggling.

This picture shows an external TIR plate in a state of half tamper. It will be straightened again, after theft or smuggling is completed via the generally unsealed left hand side door

This picture shows the internal TIR plate or Customs plate in state of tamper. It cannot be seen from the outside when the doors are closed.

I would argue that the implementation of this design goes against TIR regulations 1.2.1 in the TIR Handbook.



This picture shows the type of external look-a-like fastener that may be used in tampers which break the approved lock bolts. The nut is sealed on to the inside of the door before closure. Door hardware can then be refitted, while in the closed position, with the original, intact Customs seal still attached.

Finally, this picture shows how interior sealing of doors at manufacture could introduce a vulnerability to tampering. This hardware bolt was unscrewed with the nut left on the inside of the door, ready for refitting.

These are some examples of how door hardware fastener tampering has been affected by criminal actors.

conclusion

The ”SecuraCam” is **reliant** upon door hardware fasteners and mainly nuts and bolts for a significant part of its security. Bad actors have been found to have removed door fastener hardware quickly with little to no visible sign of entry.

The e-seal investment into RFID tracking, port systems etc. can also provide a great step forward for cargo security. That is, if the e-seal is mounted upon welded terminals on each door and has to broken to gain access to the cargo space.

The invention is a component of the welded construction and painted with the door, it has the permanence of first generation container manufacturing that is fundamental for security.

If adopted the device would become a conclusive focal point for security agencies or Customs examination, and as such, as demanded by International Law “any tampering will be clearly visible” (TIR January 2025). Which can be confirmed by photographic verification.

This Customs Seal Fastening Point could bring about real change in the global supply chain. Helping to ensure that criminal activity will be accounted for and responsibilities met, at the source of the problem.

This innovation is protected by UK and Chinese patents. For more information please contact: edmund.greenwood@icloud.com

KALP GmbH AUTOMATIC LASHING PLATFORM

system that can insert and remove twistlocks and stackers fully automatically, eliminating the need for personnel to work near or under suspended loads

the challenge

Even in the most modern container terminals, twistlocks and stackers are still removed from or inserted into container corners by hand. And this despite the fact that the manual lashing process has long been identified as one of the last major safety risks in terms of work safety.

Both work in the travel area of horizontal transport under the gantry crane and work under suspended loads repeatedly result in serious injuries to stevedores, including death.

Numerous attempts to develop technology to eliminate the need of personnel working in the vicinity of suspended loads have been made during the years but with no or limited success.

the innovation

The ALP (Automatic Lashing Platform) is the only system on the market that can insert and remove twistlocks and stackers fully automatically, eliminating the need for personnel to work nearby or under suspended loads. The ALP operates independently of external power supply through an internal hydraulic system that utilizes the weight of the container and spreader. It has magazines that store over 1,000 twistlocks or 2,000 stackers (depending on sizing). This is equivalent to a bay of an Ultra Large Container Vessel.

The ALP can also be monitored and operated from a safe distance by integrating it into the terminal's own network and the corresponding integration software, or by using a handheld device.

how it was implemented

The ALP was integrated into German terminals in 2021 and 2024 and was used there in real operations.

To ensure error-free handling, the relevant terminal employees (gantry crane and horizontal transport drivers) were instructed by KALP GmbH in the use of the ALP.

what was the result

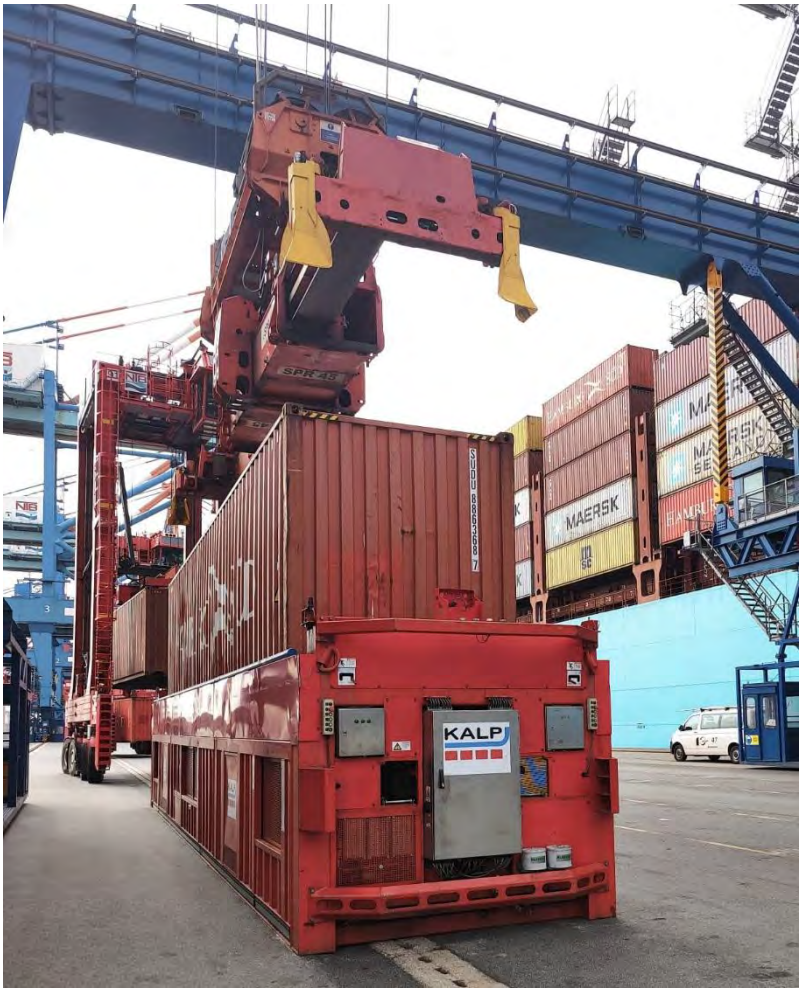
During the deployment of the ALP, there is no longer any need for personnel to be on duty under the gantry crane with suspended loads. In addition, an increase in productivity was observed during operation.

The general acceptance of terminal operators and employees working with the ALP (gantry crane and horizontal transport drivers) was also observed.

conclusion

In order to really fully automate a modern container terminal and, above all, to fulfil all safety aspects, the use of employees in the hazardous area under the gantry must be eliminated. The ALP has shown that it is possible to operate without the need for employees to be next

to suspended loads. This means that the ALP closes the last remaining gap in terminal automation and one of the last major risks for terminal employees.



In addition, the ALP can be used in any terminal. In modern greenfield as well as existing brownfield terminals. For running the ALP no changes in the terminal infrastructure are required.

The ALP is the missing link in terminal automation and a huge upgrade for each terminal safety concept!

LINK: https://www.kalp-gmbh.eu/

KALP
Autonomous Quayside
Twistlock Handling

LASE INDUSTRIELLE LASERTECHNIK GmbH - LaseASTO

area surveillance system designed to enhance operational safety around trucks below container cranes using precision 3D multi-layer laser scanning technology

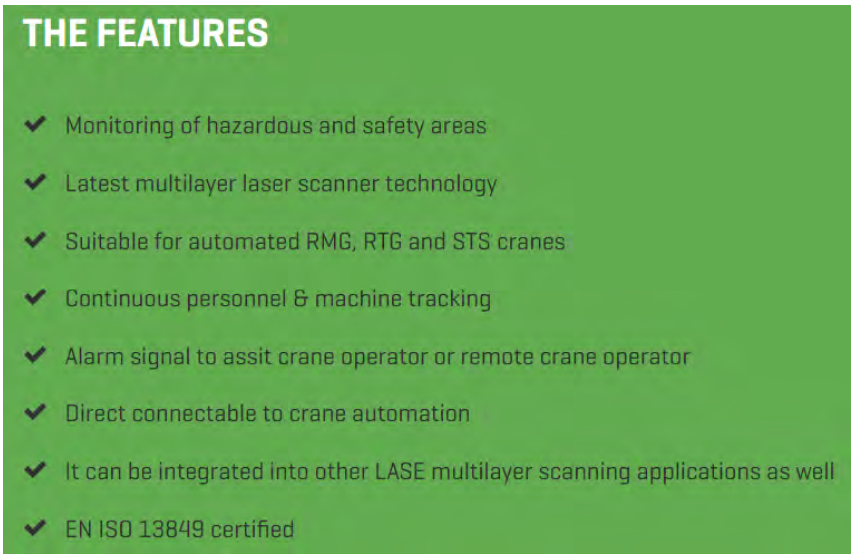
the challenge

LaseASTO addresses a critical safety challenge in modern container handling environments: the persistent presence of blind zones around trucks and heavy equipment. In container terminals and industrial yards, crane operators often operate in complex, fast-paced settings with restricted visibility, creating a high risk of collisions involving pedestrians, vehicles, or infrastructure.

Traditional mirrors and camera-based systems are limited by environmental conditions such as glare, darkness, dust, and weather. At the same time, safety regulations increasingly demand certified solutions that actively monitor danger zones and trigger reliable interventions. Despite these pressures, few technologies on the market meet the rigorous requirements of EN ISO 13849 Cat.3 PLd, leaving operators without a certified, high-integrity system. LaseASTO fills this gap by providing continuous, automated, and standards-compliant area surveillance, significantly reducing human error and improving situational awareness.

the innovation

LaseASTO is an advanced area surveillance system designed to enhance operational safety around trucks below container cranes. Using high-precision 3D multi-layer laser scanning technology, the system continuously monitors defined safety zones around the vehicle in real time. When the person, object, or obstruction enters a hazardous area, LaseASTO generates a certified safety signal compatible with EN ISO 13849 Cat.3 PLd, enabling automatic intervention such as controlled crane operation stop. The solution is robust against harsh conditions including darkness, dust, rain, and heavy traffic. The system seamlessly integrates into existing cranes and new cranes and provides consistent, maintenance-friendly performance. With its combination of certified safety, reliable people detection, LaseASTO sets a new benchmark for preventive risk mitigation in mobile industrial operations.



The scanners are mounted on the container crane above

The sensors scan a predefined area above the transfer

If the target person is outside the safety zone, the yard crane stops

how it was implemented

LaseASTO was implemented through a structured development process combining industrial field experience, advanced sensor technology, and certified safety engineering. The system was first designed to ensure compliance with EN ISO 13849 Cat.3 PLd, including redundant architecture and validated safety functions. High-resolution laser scanners were configured to monitor customizable protective fields around trucks, with precise detection logic tailored for terminal operations. Field testing was carried out to validate performance under real-world conditions such as tight manoeuvring, varying weather, and high equipment density. The system passed formal validation and certification procedures, ensuring full compliance with the required safety category. Finally, training and documentation were provided to operators and maintenance teams, enabling smooth adoption.

what was the result

The implementation of LaseASTO has delivered measurable improvements in operational safety and efficiency. Terminals equipped with the system report a significant reduction in near-miss incidents involving trucks, particularly in blind-spot scenarios and pedestrian interaction zones. Operators benefit from enhanced situational awareness and confidence, knowing that the certified safety function provides an additional layer of protection. The automated stop function reduces reaction time and ensures consistent responses independent of operator fatigue or distraction. Maintenance teams also appreciate the durability and low service requirements of the laser-based solution. Overall, LaseASTO has helped customers achieve higher safety compliance levels, reduce operational risk, and progress toward more automated, standardized processes. Its certification has been particularly valuable for operators seeking reliable, audit-ready safety technology.

conclusion

LaseASTO demonstrates how certified sensing technology can meaningfully enhance safety in demanding industrial environments. By combining precise 3D laser measurement with EN ISO 13849 Cat.3 PLd certification, the system provides a dependable, automated safeguard for truck operations below container cranes. Its success in real-world deployments underscores its potential for wider adoption across terminals, logistics hubs, and other industrial settings where blind zones and human–machine interaction present persistent risks. LaseASTO stands as a strong example of innovation delivering tangible improvements in safety performance.

LINK: https://lase-solutions.com/products/ports/laseasto/

LASE
Industrielle Lasertechnik GmbH

LOKISTIX GmbH - LOKI-Pack

modular and configurable system for compliant, safe, and monitored transportation and storage of batteries

the challenge

Transporting and storing high-risk batteries—such as non-certified prototypes, damaged or defective units, critically defective batteries, and end-of-life or waste batteries—poses significant safety challenges due to their elevated likelihood of thermal runaway. These batteries may have unknown internal faults, compromised separators, mechanical deformation, contamination, or unstable chemistries, making them far less predictable than certified products. The primary hazards include self-heating, off gassing of toxic and flammable electrolytes, internal short circuits, and the potential for rapid escalation into fires that are extremely difficult to extinguish.

Once thermal runaway starts, it can spread to nearby cells and modules, releasing dense smoke, high heat, and hazardous gases such as HF, which endanger workers, equipment, and the environment. Especially maritime transportation amplifies these risks. Ships carry large quantities of cargo in confined, metal-enclosed spaces where ventilation is limited and fire suppression options are restricted. Lithium-ion battery fires at sea can overwhelm conventional extinguishing systems, reignite repeatedly, and jeopardize vessel integrity and crew safety. Additionally, long transit times, stacking of containers, and exposure to vibration, humidity, and changing temperatures increase stress on already unstable batteries. Misdeclared or improperly packaged high-risk batteries further heighten the danger.

These challenges require specialized packaging designed to contain thermal runaway, filter hazardous gases, limit oxygen access, and prevent propagation between battery units. Robust testing, clear regulatory compliance, and transparent documentation are essential to ensure safe maritime transport and storage of these high-risk energy systems. It is our mission to provide a safe, smart, and future-proof solution for the industry.

the innovation

Lokistix provides a portfolio of assets to improve safety, transparency, and convenience throughout the battery supply chain. The LOKI-Pack is our modular and configurable system for compliant, safe, and monitored transportation and storage of batteries. It comes in various sizes and variants, meeting the requirements of all existing transport regulations (ADR, IMDG, RID, IATA) and beyond. The right product can be configured for the respective use case, ensuring optimum cost-benefit ratio. The inlay ensures high flexibility. We are using straps, cushions, and flame-retardant bags (LOKI-Bags) to allow battery cells, modules and packs of different sizes. LOKI-Bags are made of passive cooling materials, entirely wrap the battery, and have a roll-top closure. Like all our materials in contact with batteries, they are highly temperature resistant, non-conductive, and non-flammable. In combination with proven insulation technology, an over-pressure relief valve and an integrated filter, LOKI-Pack is the perfect asset for high-risk battery logistics.

An integrated sensor module enables essential, digital features. To improve safety, we implement LOKI-Alert, which notifies operators as soon as high temperatures or characteristic gases are detected. For transparency and convenience, we offer LOKI-ADC, an analogue to digital converter, that allows required shipping documents like the shippers declaration for dangerous goods, to be digitally attached to the shipment. To improve product quality, we implement LOKI-Inspect, a condition monitoring system that gives recipients as well as stakeholders along the way information about position, temperature, and humidity of batteries within the supply chain.

how it was implemented

Start of LOKI-Pack mass production is scheduled for Q1 of 2026. It is intended for logistics providers, recycling companies, R&D centres and basically everyone dealing with batteries, who is not forced to use disposable packaging. It is reusable packaging with an expected lifetime of 7 to 10 years.

Lokistix digital assets are launched as a beta in Q2 of 2026 and will be fully available 2027. It includes real-time features like alerting and digital shipping documentation as well as a condition monitoring platform, where shipments can be managed.

LOKI-Bags are already available and can be used for safe storage of batteries in offices, warehouses, and homes. It improves safety during charging to a great deal and can be conveniently applied to existing batteries. No matter whether a forklift, an e-bike, an e-scooter or just a notebook battery, LOKI-Bags come in various sizes and can be applied as easy as a bag pack.

what was the result

The intended result of LOKI-Pack in action is a significant reduction of battery related incidents. Moreover, our digital assets should achieve transparency along the entire supply chain, enabling traceability and compliance with the EU battery pass.

The result of the utilization of LOKI-Bags is a significant reduction of the impact of thermal runaway. No flames will be affecting nearby people or equipment.

conclusion

The production of batteries plays and will continue to play an important role in decarbonisation. Demand as well as the requirements to power- and energy-density will increase, which consequently leads to more incidents with bigger impact. Regulating bodies such as the national fire protection agency in the United States, or the United Nations in Europe, are constantly working on stricter regulations in regard to safety along the entire battery supply chain. All these trends and developments point towards a huge market to be addressed by the Lokistix battery packaging solution. We are eager to contribute to a safer, more transparent as well as more efficient future of logistics in an uprising industry.

LINK: https://www.lokistix.com/

LOKISTIX
Packaging Pioneers

LONG BEACH CONTAINER TERMINAL - OVERHEAD LOAD PROTECTION SYSTEM

this system creates a safer work environment for personnel in the rail yard by restricting cranes from passing over head

the challenge

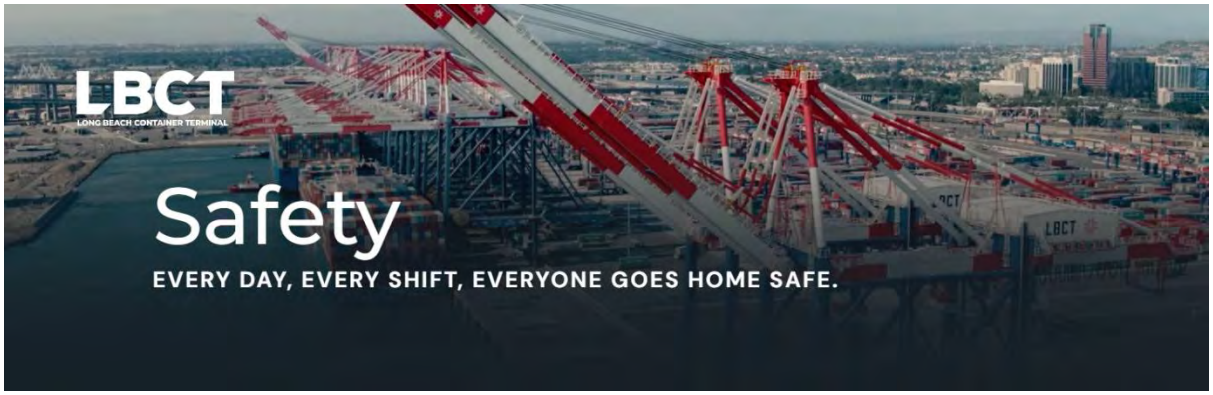
Long Beach Container Terminal (LBCT) has over 48,000 feet of rail tracks, making it one of the largest on-dock rail yards in North America. The rail yard is active around the clock, with many of these activities occurring at the same time: BNSF/UPRR delivering and departing trains, PHL switching railcars, TTX inspecting and repairing railcars, and operations discharging and loading containers. Containers are moved via 6 Intermodal Yard Cranes (IYCs) spanning 8 working tracks each covering a length of ~4,300 feet. Personnel on the ground operate Inter-Box Connectors (IBC) Carts, pickup trucks, forklifts, Kubotas, switching carts, and locomotives.

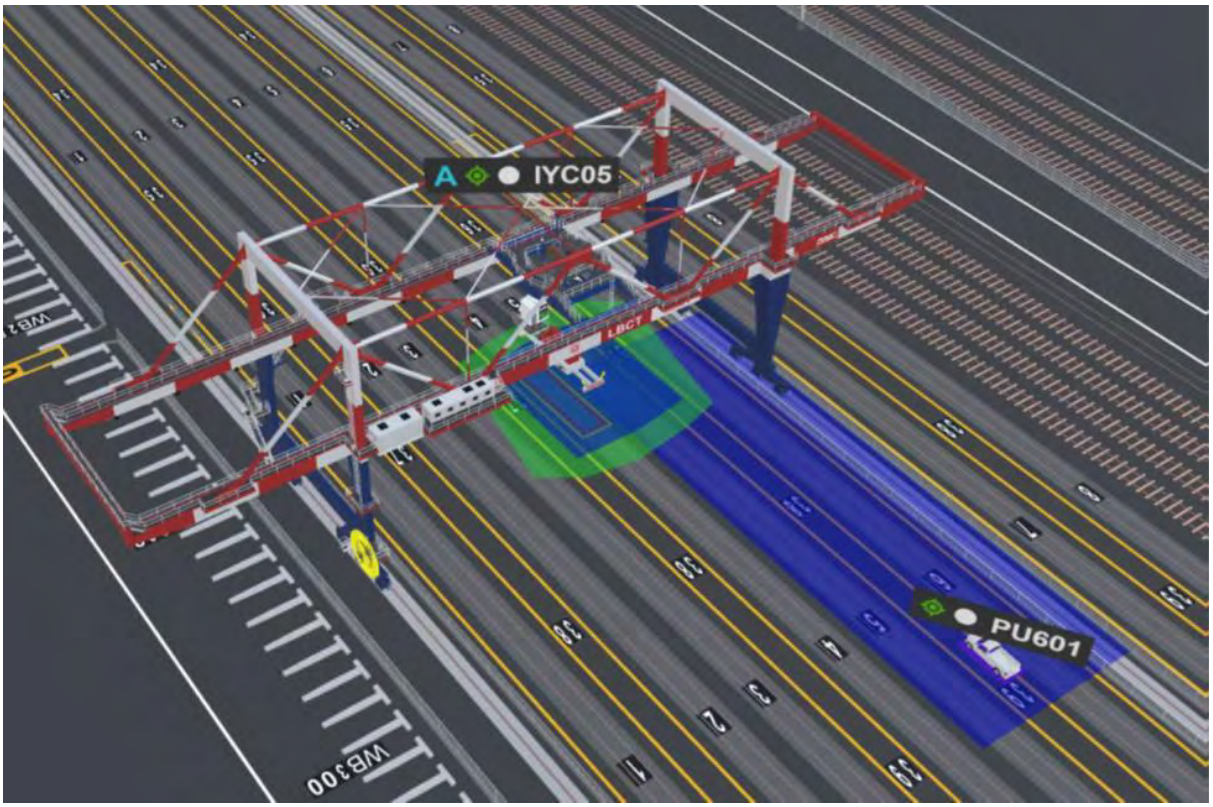
There is significant risk to ground personnel when cranes are operating and passing over head. These overhead risks include objects falling from containers, such as twist locks and debris, as well as the container itself. Cranes have thousands of assembly pieces also creating falling hazards should they come loose, such as nuts and bolts, cables, electronic and containers, instruments, and general tools used to conduct repairs. Vendors, maintenance and service providers, and locomotive crews had standing policies to not enter the working railyard while cranes were moving to ensure all personnel safety. This provided difficulties in operational planning and limited overall production.

the innovation

LBCT drastically reduced the risk of injury by implementing an Overhead Load Protection System. This system creates a safer work environment for personnel in the rail yard by restricting cranes from passing over head.

This Overhead Load Protection System physically prevents cranes from going over ground crews, thereby significantly reducing the risk of falling objects to those ground crews. This solution also increased the level of safety for all jobs and personnel in the rail yard by providing operations live monitoring of all personnel and vehicle locations. Before, somebody's location would only be known if operations had eyes on the person or vehicle.

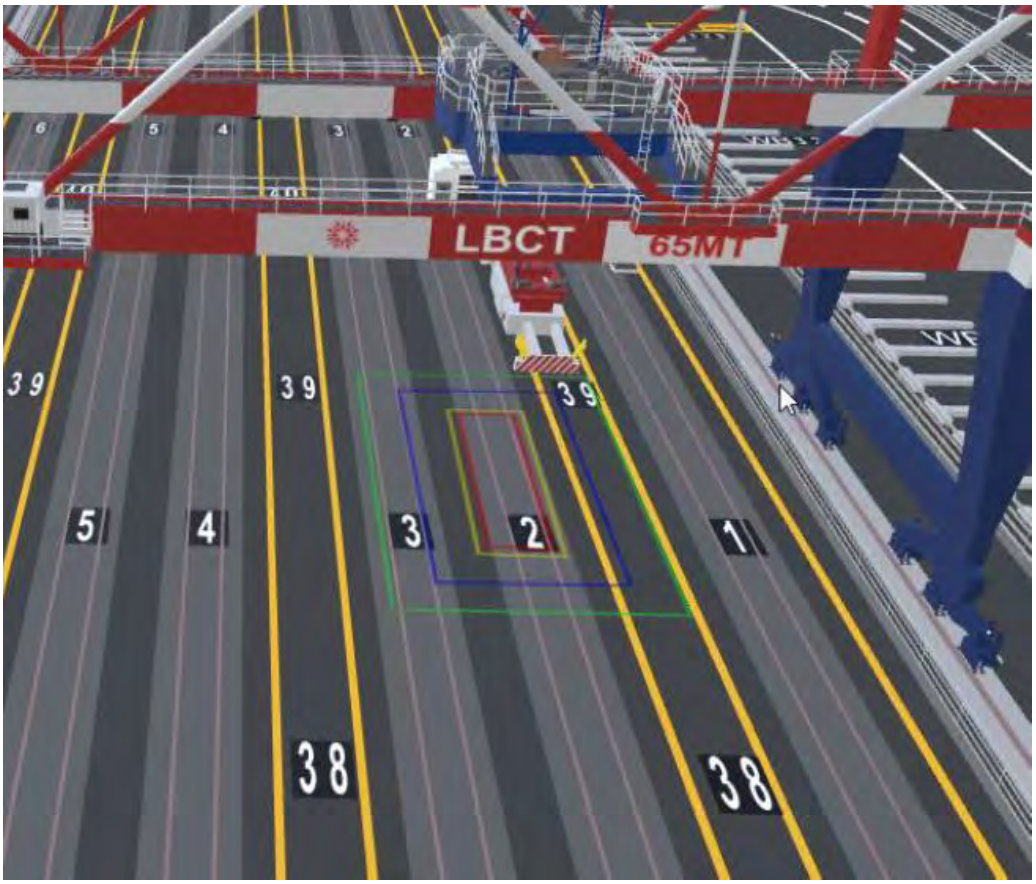




Exclusion Zones Vehicles equipped with a Mi-Jack system are contained within a vehicle exclusion zone that follows the vehicle around the working rail yard. Manual exclusion zones can be drawn anywhere within the working rail yard to permit vehicles and personnel without Mi-Jack systems to safely work. Finally, train motion exclusion zones allow tracks and adjacent tracks and wide aisles to be blocked off from overhead crane movement when trains are inside the working rail yard.

how it was implemented

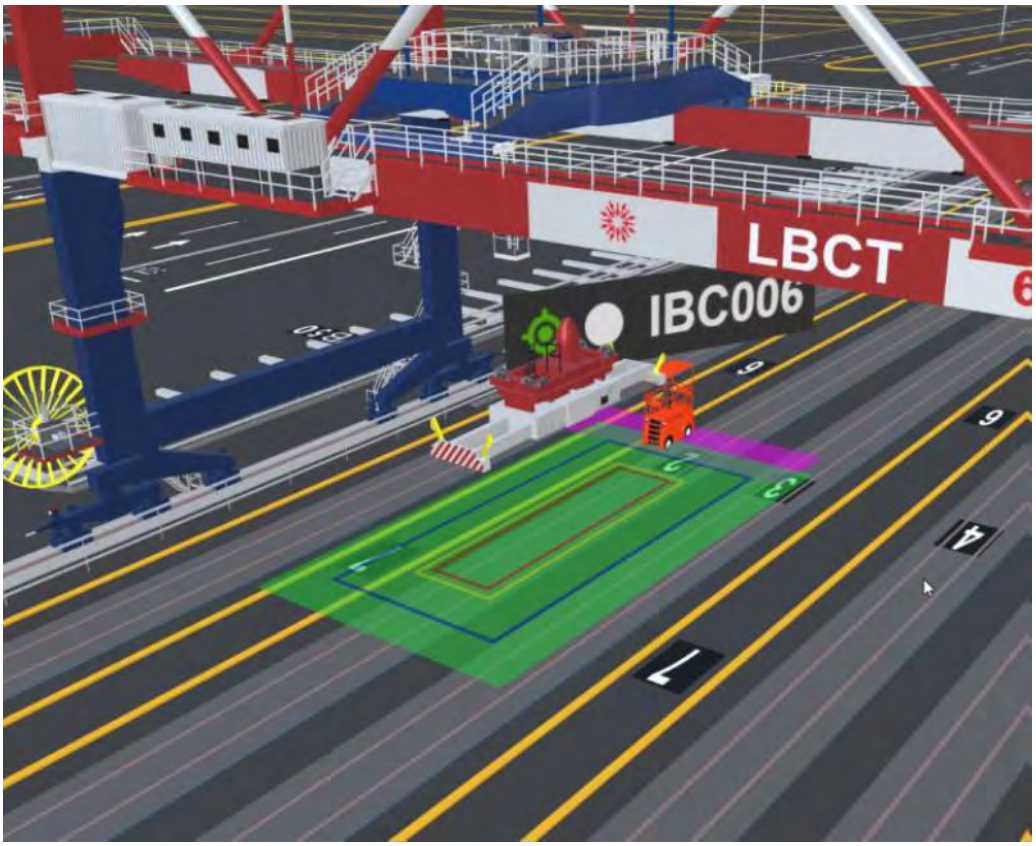
Considering the overhead risk in a large scale on-dock rail yard, LBCT began research for a solution close to 10 years ago. Yardeye was selected in 2022 to achieve this eventual safety milestone. Yardeye is based in Germany and developed the initial tracking technology, and was later acquired by Mi-Jack. The project kicked off with identifying locations on the cranes and vehicles to mount the tracking equipment, as well as mapping out geographic boundaries of the working railyard and designing the operational process flows. Next was the installation of various computers, wireless clients, custom fabricated mounts, including GPS, RFID, wireless antennas and ancillary devices. Each crane includes over 20 antennas, sensors and readers, while vehicles belonging to both LBCT and vendors were outfitted with the tracking technology. Once the equipment was installed, and testing of both the hardware and software finished, training was conducted to ensure all personnel were familiar with the system to ensure a successful launch. The Overhead Load Prevention System went live in April 2025.



IY Collision Zone - IY Cranes have concentrically smaller square collision zones around their spreaders that determine the crane's speed when overlapping with vehicle exclusion zones

what was the result

Since going live in April 2025, the system has operated successfully, and LBCT hasn't experienced a single overhead incident as a result (nor any safety incidents related to the system). LBCT has also reduced down time and improved planning strategies since vendors, maintenance and service providers now work in the railyard safely while the cranes continue moving. Instead of limited time between operational periods, all ground personnel have the flexibility to conduct critical fixes and maintenance in a single visit, rather than stopping the service midway and waiting for the next window. The system automatically monitors and provides LBCT full visibility of all equipment in the railyard, while protecting all ground crews and vehicles.



An IY's green collision zone overlapping with any exclusion zone will slow the IY down to 20% of its top speed (gantry, trolley, slew, and hoist) , while the IY's blue collision zone will slow the crane down to 5% its top speed. The crane will stop moving in the direction of a vehicle once a yellow collision zone touches a vehicle's exclusion zone.

LINK: https://www.lbct.com/

LONG BEACH CONTAINER TERMINAL

LYTTELTON PORT COMPANY (LPC), CHRISTCHURCH, NEW ZEALAND

eliminated the need for working at height and exposure to person vs plant risk through the use of high-resolution camera drone inspections

the challenge

Across our Inland Ports and Empty Container Depots we have a range of work that is required to be performed at height. This includes Container Roof Inspections as part of the inbound Container Survey process, Container Stack Inspections post High Wind Events and Structural Roof Inspections as part of Building Compliance. This requires staff to access work at height via an Elevated Work Platform (EWP) which requires a range of manual handling controls, as well as adding significant time to various processes. LPC handles approximately 500,000teu per year and Container Survey staff are required to ascend and descend an EWP each time an Empty Container is received into the Yard so that the Roof could be checked for any damage.

Container Stacks are also checked for stack integrity post a High Wind event (>32knots). This requires staff travelling into the Yard to check for any stack collapses or dislodged containers so that operations can safely resume. If stacks are found to be damaged or dislodged then the Supervisor conveys this information to Container Handler Drivers advising that Stack that need to be rectified. This adds significant time and effort and presents a safety risk to personnel on the ground should another Wind Gust dislodge a container.

Structural/Building Roof Inspections also require staff to work at height via an EWP or Ladder, erect scaffolding/edge protection in certain situations.

Ideally, any at height work is eliminated rather than managed with controls, however this isn't always practical.

the innovation

Quite simply, we have introduced the use of drones fitted with advanced, high-resolution camera technology to carry out a wide range of visual inspection tasks. By completing these inspections remotely, our operational personnel remain safely on the ground and completely removed from the operational area. This approach eliminates the need for working at height and exposure to person vs plant risk.

The drone's powerful zoom capability and manoeuvrability allows surveyors to clearly identify potential damage to containers and quickly assess the scale of repairs required to maintain IICL compliance. Images can also be shared directly with clients, providing clear visibility of container roof areas that may need maintenance or repair.

Furthermore, drones enable safe inspection of 7high container stacks post high wind events - areas that cannot be viewed by the human eye without significant safety risks or high resolution CCTV spanning large areas.

By removing people from hazardous environments, the use of drone technology has delivered major safety improvements, while also supporting greater operational efficiency.

how it was implemented

We are unaware of any other Empty Container Depot / Port Operators across New Zealand utilising drone technology for this purpose so the introduction into our operations was carefully planned with safety as the top priority. Our Site Operations Supervisor led the initiative, engaging directly with the operations team to assess a wide range of factors critical to both safe use and long-term success. These discussions covered training requirements, system testing, battery performance, equipment suitability, durability under operational conditions, and how the technology would enhance engagement with our customers.

Before the drone was deployed, our surveyors undertook comprehensive training to ensure safe and competent operation. All necessary approvals were obtained from the Civil Aviation Authority (CAA), reinforcing compliance with aviation regulations and safe airspace management. In parallel, a detailed Safe Work Method Statement (SWMS) and Risk Assessment were developed, ensuring that potential hazards were identified, assessed, and controlled prior to implementation.

what was the result

The results speak for themselves: the team has fully embraced this innovation, recognising not only the operational efficiencies it delivers but, more importantly, the way it significantly reduces personal exposure to risk. By removing the need for staff to physically climb onto

LPC GM Inland Ports Sean Bradley (left) presenting MidlandPort Site Supervisor Dan Johnson (centre) with an "LPC Safe Mate" Award for his Drone initiative, alongside MidlandPort Site Manager Rob Pape

container roofs, we have eliminated a critical risk and created a safer working environment.

The efficiency improvements are equally compelling. Previously, surveying a single container roof (including setup time) could take up to 5 minutes. With the new technology, the team can now complete inspections of 5 - 10 container roofs within that same timeframe - representing a tenfold increase in productivity without compromising accuracy or safety.

We are also exploring further applications. For example, inspecting site perimeter fencing - a task that traditionally requires up to 2 hours of manual effort - could now be completed in just 15 - 20 minutes, with improved coverage and consistency. This means faster compliance checks, less downtime, and more time available for critical operational tasks.

The introduction of this technology demonstrates our ongoing commitment to protecting our people, driving continuous safety improvements, and embedding smarter, more efficient ways of working across our operations.

conclusion

The introduction of drone technology has delivered a step-change in how we manage safety and efficiency on site. By eliminating the need for people to work at height, we have removed one of the most significant risks faced by our workforce, while simultaneously improving the speed, accuracy, and consistency of critical inspections. What once required time, manual handling of Working at Height equipment, and personal exposure to hazards can now be achieved in minutes - safely, reliably, and without compromise.

This initiative reflects our commitment to a culture where safety comes first, innovation is embraced, and smarter solutions are applied to protect our people. The measurable improvements in both safety outcomes and operational efficiency show that this is not just a technological upgrade, but a genuine transformation in how we work.

Importantly, this success has not gone unnoticed. Other New Zealand operators have expressed strong interest in the initiative and are keen to visit our site to see the technology in action. This demonstrates the potential for the approach to deliver wider industry benefits by raising the standard of safe work practices across the sector.

Through this initiative, we have set a new benchmark in safety leadership, demonstrating that eliminating risk at its source is the most effective approach. Importantly, meaningful improvements in safety need not be complex or costly. Our drone, purchased for approximately NZ$900, has delivered substantial enhancements in both safety and efficiency - outcomes we are proud to showcase through this Safety Award programme.

LINK: https://www.lpc.co.nz/

MODALINTA

new net system and deployment method for accommodation ladders that engineers out risk in both positioning and use

the challenge

Most of the world's cargo vessels have the familiar accommodation ladder and net for accessing the ship. These ubiquitous devices:

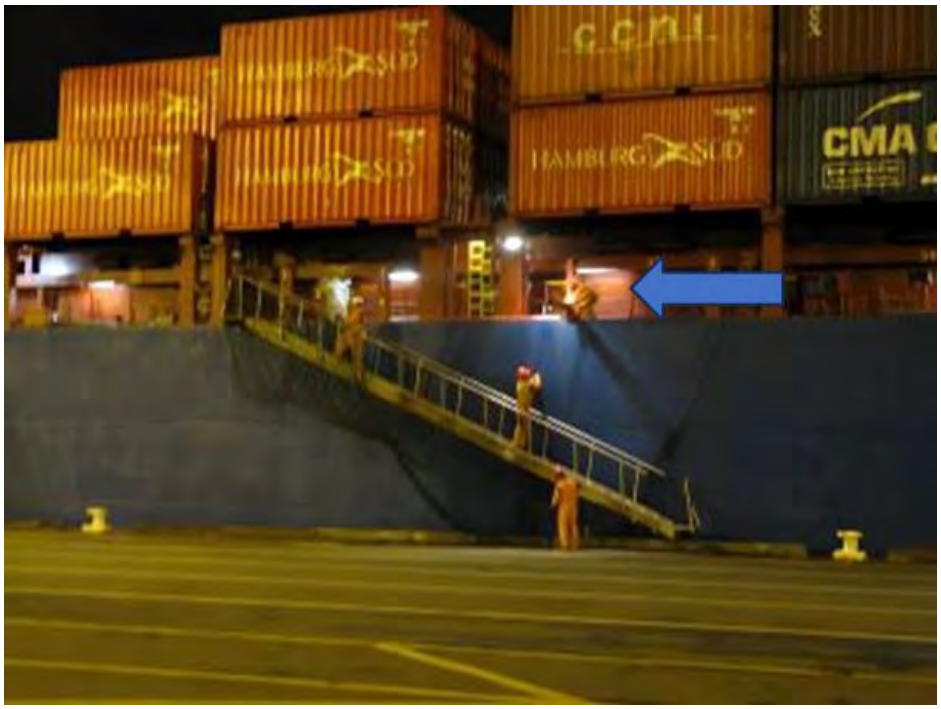
- expose workers to an unnetted ladder during deployment
- have dubious functionality as a safety device if incorrectly deployed and/or poorly maintained
- are limited in their ability to prevent a fall
- can take 3 to 6 people, between 20 and 60 minutes to deploy, prolonging the ship's visit with a slow and unpredictable process
- poor design leads to unsafe behaviours such as working outside the safety rails

Worker exposed to an un-netted ladder during deployment

Working outside of the ship rail while deploying net

Standing under a suspended load

Net hanging from a bracket. Not tied off and potentially damages the net



Crew person hanging on the outside of the handrail to help guide the net. There were 6 people involved in this deployment. Only 5 are shown in this picture

Vessel crew are often under pressure to reduce the time from All fast to Labour aboard and from Labour ashore to last line. Rushing is often ineffectual and, more importantly, potentially dangerous. An engineered solution addresses the problems at the root.

the innovation

We have patented a new net system and deployment method that:

- properly prevents people from falling over the side even when carrying shoulder-mounted items, such as lashing poles
- never exposes the crew to an unnetted ladder, even during deployment
- reduces deployment to approx. 2-3 minutes
- is maintenance-free and can be safely and effectively repaired if damaged
- improves the presentation of the vessel, sending a strong safety message

The system is available for retrofit to most vessels and will be offered for newbuilds. Retrofitting can be done during a normal port stay.

how it was implemented

Basic creation of the Saf.AXS system was developed in our Sydney workshop, but Prof Mah and a cross-disciplinary team of bright engineering students from OPTIK at the University of Technology, Sydney greatly assisted its development.

Numerous mock-ups and test pieces were made during development. We were also helped with site visits by vessel operators and container terminals.

We rigorously checked published safety requirements and conferred with the regulators in multiple jurisdictions.

what was the result

The solution reduces the time required to deploy a net, making it fully operational in just 3 minutes after the ladder is deployed. The process eliminates most manual handling while deploying the net and does not depend on seafarers and port safety officers “working out" how to do it, as most functions are “preset”

The Auslegers (second rail) sit above the handrail, effectively preventing individuals from accidentally falling over the side.

Working with a partner shipping line, we have estimated that for a small (1700 TEU) vessel making 4 port calls/week, the savings are approximately. $US250K per annum based on fuel savings resulting from slow steaming.

Accounting for time-constrained ports, the extra benefit possible for the same vessel can double if it can load extra cargo in the same window. A 60 minutes saving with 3 cranes at 30 boxes per hour crane rate is 90 extra revenue boxes loaded in the same time.

We are about to conduct production sea trials in Australasia with a well-known vessel operator. We have conducted multiple feedback sessions with seafarers and expect to launch the system at TOC next year.

conclusion

The gangway net problem is so ubiquitous that people don’t see it. It is “just the way we do things”.

A major shipping line did try to fix this problem a few years ago, but the solution was prone to catching, damage, and sometimes was even slower and more difficult than the traditional method.

Saf.AXS has multiple patents and based on the trial estimates will repay itself in months.

Apart from the benefits in duration and safety, it relieves busy crews during a critical time, results in a neater and more professional appearance (housekeeping and safety messaging), and makes labour scheduling easier for the terminals (when to send the lashing gangs).

LINK: https://www.modalinta.com/

NATIONAL CARGO BUREAU - GLOBAL RESTRICTED CARGO DATABASE

a centralized restricted cargo database designed to consolidate and standardize restrictions across the maritime supply chain

the challenge

NCB's decades of experience operating the global Hazcheck Restrictions system proves carriers can confidently manage restrictions provided they have access to accurate, authoritative data. Restricted cargo includes Dangerous Goods, Military Cargo, Sensitive Cargo, Self-Reactive Cargo, and Hazardous and Non-Hazardous Waste. These cargoes are vital to global trade, yet they carry significant risks when misdeclared or mishandled, leading to incidents that endanger lives, property, and the environment. Through years of supporting major carriers, NCB has seen firsthand that even minor inconsistencies in restrictions can cause operational delays, misdeclared shipments, and preventable safety hazards.

Current industry practices for managing cargo restrictions data are fragmented and inconsistent. Variations in acceptance criteria and documentation requirements across carriers and ports leads to miscommunication, delays, and operational errors such as improper stowage. These gaps increase the likelihood of accidents and often result in abandoned containers, cargo degradation, and costly disruptions. The lack of standardization makes it challenging for frontline workers to handle cargo safely and efficiently. Without a real-time unified platform, stakeholders rely on manual updates and inconsistent communication, making it difficult to track evolving requirements. This reactive approach undermines safety and efficiency across the supply chain.

The centralized database now being implemented by NCB expands the proven Hazcheck Restrictions model to ports, terminals, and other supply chain stakeholders, providing a single authoritative source for real-time restriction data. This improves safety, reduces voyage disruptions, minimizes delays, and enhances compliance. It also supports better coordination between shore-side facilities and vessels, ensuring safer and more efficient logistics operations.

the innovation

While attention often focuses on vessel incidents, shore-side facilities such as ports and terminals face equally critical risks. This initiative extends the established Hazcheck Restrictions capability already used by most global carriers. Complex global logistics and varying restricted cargo acceptance criteria across carriers, ports and terminals have created a fragmented compliance landscape.

This fragmentation causes delays, inefficiencies, and sometimes container abandonment due to improper documentation or misaligned restrictions. These issues are exacerbated by the absence of a centralized system capturing cargo restrictions across the global network and by limited visibility into whether regulations originate from governmental authorities or private terminal operators.

Recognizing this need, NCB has built the foundation for a centralized restricted cargo database designed to consolidate and standardize restrictions across the maritime supply chain. The platform is built on a secure, scalable infrastructure, integrating seamlessly with existing terminal and carrier systems, enabling stakeholders to access accurate data during booking, planning, and compliance checks. The database is intended to be continuously updated by ports, terminals and carriers, ensuring users always have current information.

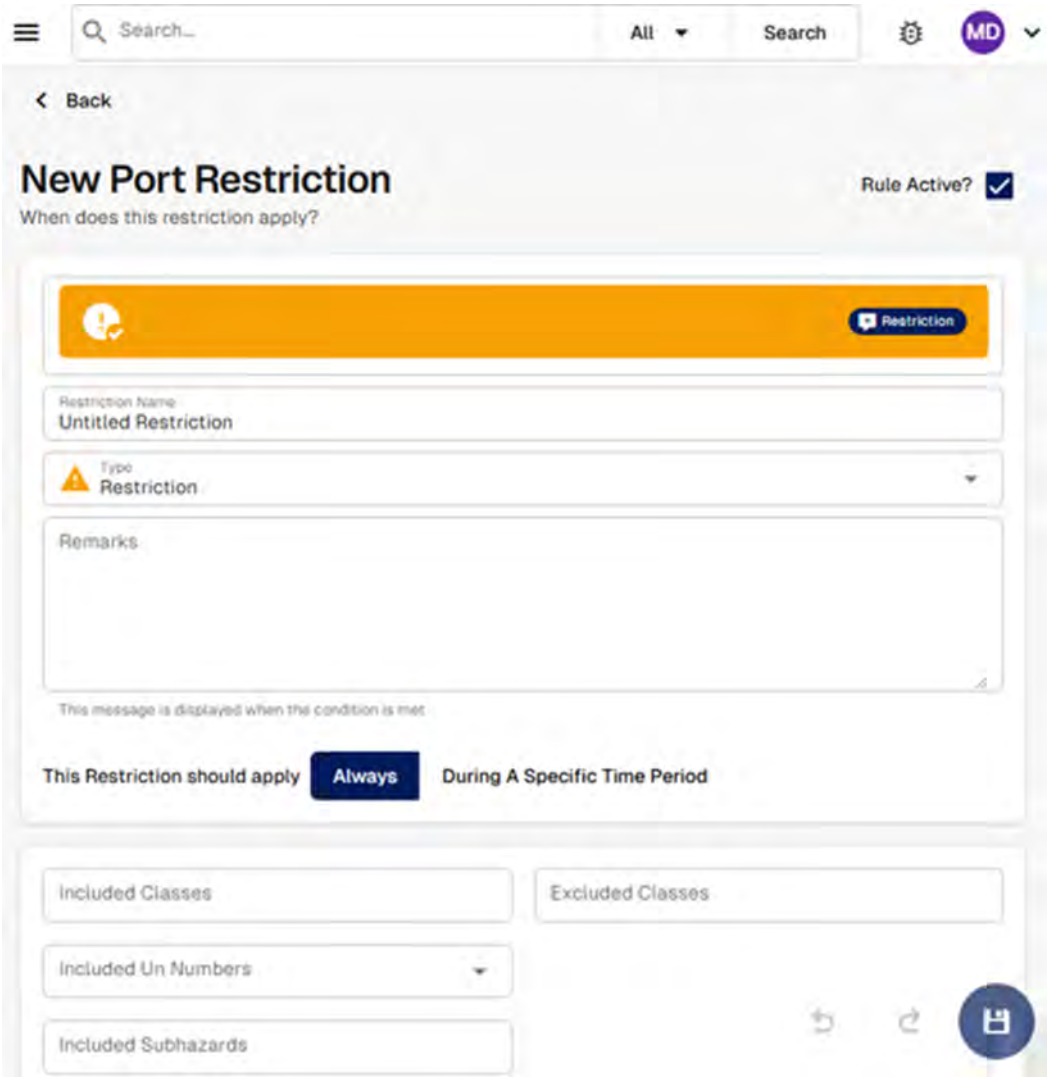
Aviation has long shown that centralized restrictions systems provide clarity and safety benefits, and applying this proven model to maritime operations is essential given the complexity of port, terminal and carrier requirements.

Early collaboration with carriers and terminal operators is underway. By adopting this approach, stakeholders can move toward a safer and more connected method of managing restricted cargo, supporting modern logistics while protecting people, property and the environment.

how it was implemented

The implementation builds directly on the Hazcheck Restrictions infrastructure already integrated into the systems of most major carriers. Stakeholders have consistently expressed the need for port and terminal restrictions to be available in the same structured format, and this extension now delivers that capability.

With the database being built on existing software used by the majority of carriers, the platform is live and operational with a secure, scalable architecture supporting global data ingestion. It uses ISO 27001-compliant security protocols and role-based access controls to ensure data integrity. API integration enables carriers and terminals to embed the database into booking and compliance workflows, reducing manual outreach and errors.



To drive adoption, NCB has conducted workshops and feedback sessions with carriers and terminal operators to refine usability and align with operational needs. Early trials are underway with carriers and terminals, and participation is offered at no cost to encourage industry-wide collaboration.

The Global Restricted Cargo Database, while fully functional, depends on ports, terminals and carriers to contribute and maintain current data. For the Database to reach full coverage and operational and safety benefits, the participation of the parties in the maritime supply chain is essential. This collaborative approach ensures the system evolves with industry input, driving a culture shift toward transparency and proactive risk management.

what was the result

Although the initiative is still in its early implementation phase, the work completed so far has delivered several clear results. Engagement with carriers, ports and terminals confirms strong agreement that a centralized restrictions database is needed to reduce uncertainty and improve safety. Stakeholders recognize that the current fragmented approach, where each organization maintains its own restrictions independently, leads to operational inefficiencies, inconsistent decision-making and avoidable safety risks.

The consultation and design work has created alignment on the benefits of centralization and has clarified the practical challenges of sharing restrictions data across different systems, regulatory requirements and operating environments. These discussions have helped refine the data structure, establish governance expectations and define the principles required for secure and trusted information sharing.

Early technical validation, using representative sample data from key partners, has shown that the platform can successfully consolidate restrictions from different sources into one structured and consistent format. This provides a clear proof of concept that the maritime sector can achieve the same level of clarity that centralized systems already provide in aviation.

The main remaining challenge relates to commercial and data sharing considerations. This is normal for a new industry-wide resource and work is underway with stakeholders to address these points. While full global adoption requires continued collaboration and resolution of commercial and data-sharing considerations, the results so far confirm that the concept is sound, the technical approach is viable, and there is strong industry commitment to progress.

conclusion

The centralized database delivers clear operational efficiency by reducing manual communication, streamlining checks, and supporting faster yard and vessel planning. It enhances safety and compliance by providing ports, terminals, and carriers with a single authoritative, continuously updated source of restrictions. The platform also strengthens risk mitigation by reducing exposure to fines, legal issues, abandoned cargo, and mismanaged consignments. In addition, it improves inventory and throughput management by supporting more accurate forecasting and cargo flow planning, including for time-sensitive classes such as Class 1 explosives.

Building on the proven Hazcheck Restrictions model already used across the global carrier community, the database expands this capability across the wider supply chain. The technical platform is operational, early adoption is underway, and NCB is now working with a growing group of partners as part of the proof-of-concept phase. As participation increases, the system will continue to enhance safety, consistency, and decision-making across the industry. The foundation is proven; the next phase focuses on broad adoption to deliver industry-wide benefits.

LINK: https://hazcheck.com/

PASSIFY GMBH

hardware-free, app-based truck handling system that combines secure driver authentication with streamlined gate and yard processes

the challenge

Port and terminal operations are among the most safety-critical environments in global logistics. Yet truck handling and gate access have long relied on manual processes, paper documents, or physical access cards. These systems are prone to error and create significant safety risks:

- unverified identity: access cards and RFID tags can be lost, shared, or cloned. In many cases, terminals cannot be certain who is actually entering the site - exposing them to accidents, misuse, or even organized crime.
- congestion and unsafe queues: trucks waiting at terminal gates create dangerous traffic build-up, block critical infrastructure, and hinder emergency access.
- lack of transparency: without real-time visibility, drivers and operators make last-minute decisions under pressure, increasing the likelihood of unsafe situations.

International frameworks such as the ISPS-Code require ports and terminals to maintain strict access control and verifiable identification of every individual entering the facility. Traditional manual or card-based systems often fail to consistently meet these standards.

Our innovation addresses these gaps by ensuring that only the right driver, at the right time, at the right place can gain access. By replacing insecure manual checks with biometric verification, and by eliminating unsafe queues through digital slot booking, we enable terminals to meet ISPS requirements while fundamentally improving safety and operational resilience.

the innovation

Passify is a hardware-free, app-based truck handling system that combines secure driver authentication with streamlined gate and yard processes.

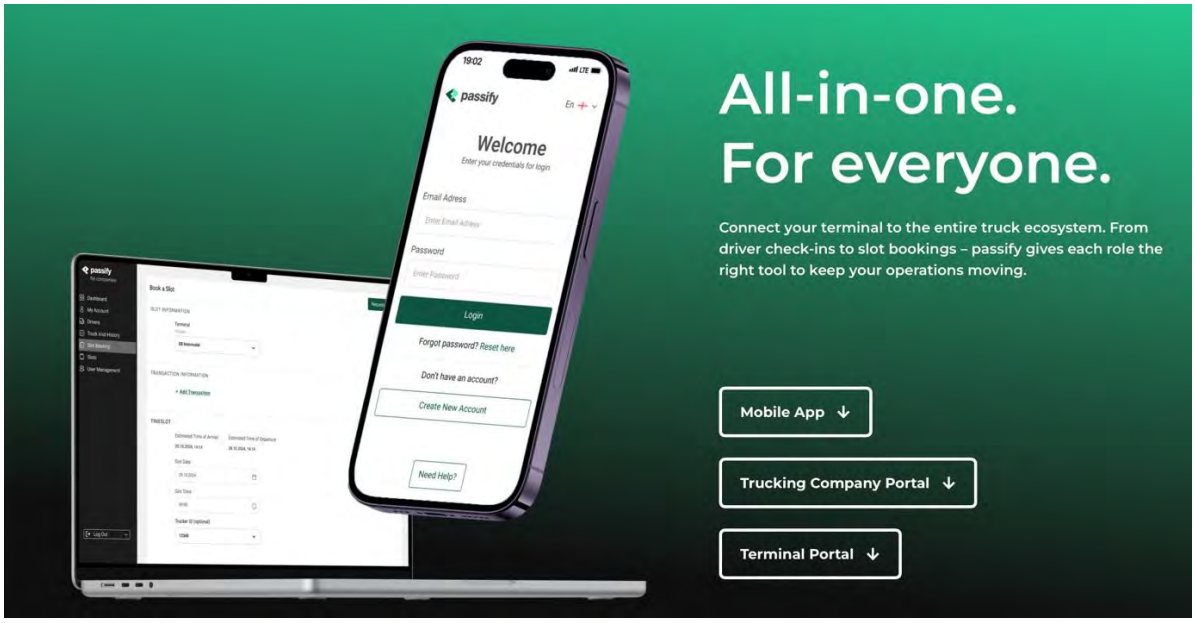
Unlike legacy RFID or access card systems, passify leverages what every driver already carries: their own smartphone as the authentication device. This eliminates the vulnerabilities of cards or tokens, while making adoption simple and cost-efficient.

Key features include:

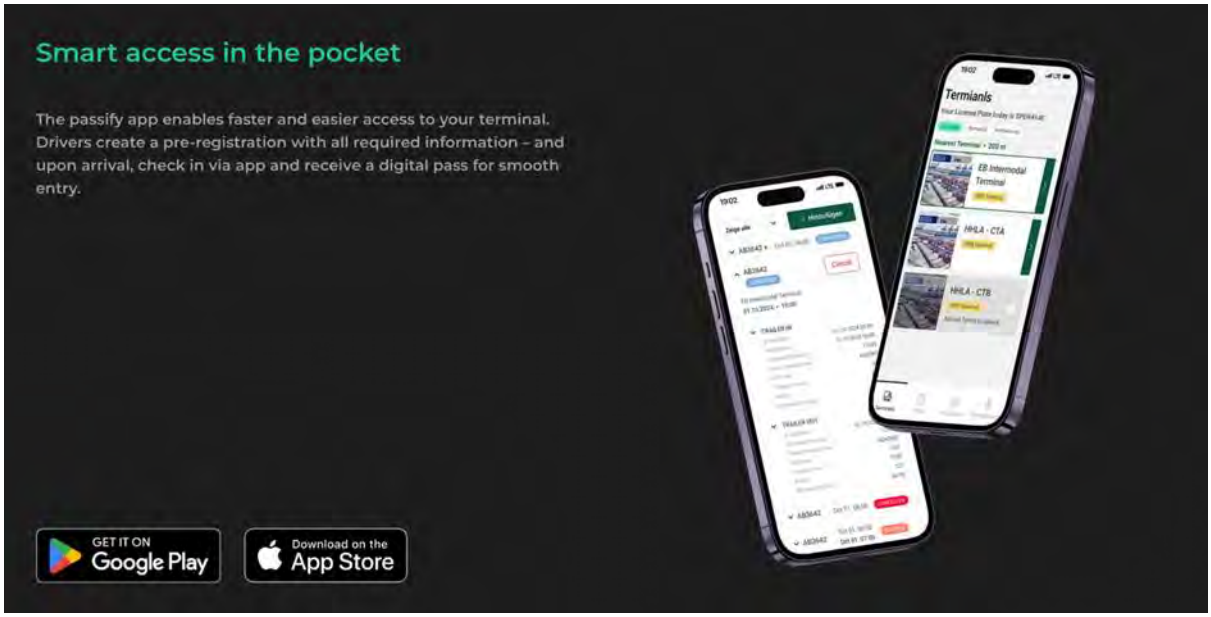
- biometric multi-factor authentication for non-transferable, 100% verified driver identity.
- GDPR-compliant face verification, ensuring maximum security while protecting personal data.
- digital slot booking to prevent congestion and minimize the risk of unsafe waiting areas.

- QR-based location validation inside the terminal, guiding drivers seamlessly and securely.

By removing dependency on physical infrastructure and enabling direct, verifiable driver validation, passify makes access safer, faster, and fully traceable. It provides terminals with the confidence that every entry is secure, authorized, and compliant with the highest safety standards.



how it was implemented



Implementation followed a step-by-step, collaborative approach with terminal operators, trucking companies, and drivers as equal stakeholders.

Our first large-scale rollout took place at the three HHLA terminals in Hamburg within the first year of our founding. Initial pilots involved selected trucking companies, whose drivers tested the app in real operating conditions. Our team was on-site to personally support onboarding, registration, and first use ensuring smooth adoption and building trust.

After a successful pilot, the system was gradually made mandatory across all three terminals. Since then, passify has been running with 100% uptime, processing more than 1.7 million truck visits per year at these sites alone.

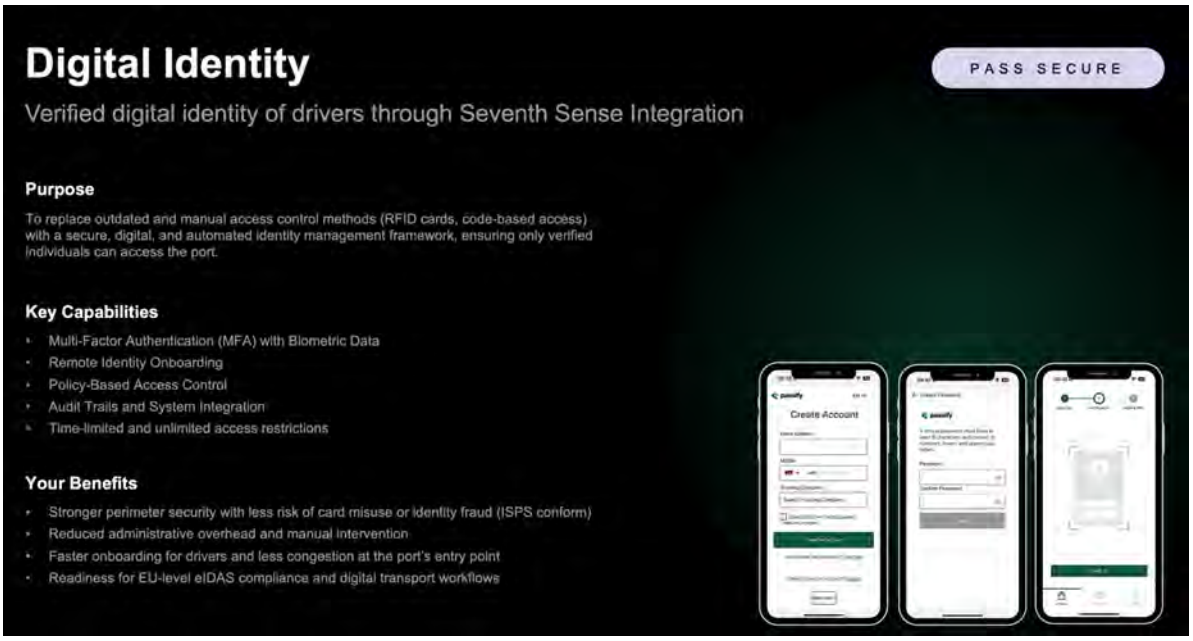
Today, every new deployment follows the same proven process: pilot → staged rollout → full adoption. Drivers are treated not just as users but as safety partners whose feedback directly shapes the system.

On the technical side, integration is simple: only a few key interfaces with TOS/GOS are required, with optional connections to external TMS. With no kiosks, cards, or hardware required, deployment is fast, cost-effective, and disruption-free.

result

The results have been both quantifiable and transformational:

- scale: now live at 6 terminals, with more than 900 trucking companies and 20,000 drivers actively using the system.



- safety: 100% verified driver identity has eliminated card-sharing, impersonation, and unauthorized access. Every entry is fully traceable by person, time, and location - a critical advantage in safety investigations.
- compliance: Terminals consistently meet ISPS standards and internal safety protocols. Also passify ensures IT-security by being ISO 27001 certified.
- operations: Waiting times reduced by up to 40%, eliminating unsafe congestion. At a hinterland terminal in Romania, manual processing was reduced by 60%. In Hamburg, HHLA terminals report significantly safer operations and improved compliance since adopting passify.
- resilience: Average support response time under 7 minutes, issue resolution within 60 minutes, and zero downtime - even at volumes exceeding one million truck handlings annually.

In short, passify does not just optimize efficiency - it establishes a new safety culture in port and terminal logistics.

conclusion

Passify transforms safety from a vulnerability into a baseline for every terminal operation: no entry without verified identity, no unsafe queues, no reliance on insecure cards.

Core safety benefits:

- 100% verified, non-transferable driver identity via GDPR-compliant biometrics
- significant reduction of unsafe queues through slot booking & guided flows
- proven resilience: over 1.7 million handlings annually with zero downtime
- simple, cost-efficient integration without hardware requirements

- scalable and trusted: already in use across multiple countries and terminals

Looking ahead, we are extending this safety-first approach beyond ports. Through SYMO, our collaboration with railsync, we are synchronizing truck and rail operations to reduce bottlenecks, improve predictability, and create safer intermodal flows.

Passify demonstrates that true innovation in safety is not about more hardware - it is about smarter, digital-first solutions that protect people, assets, and operations.

Our Story

It all started at the terminal gates

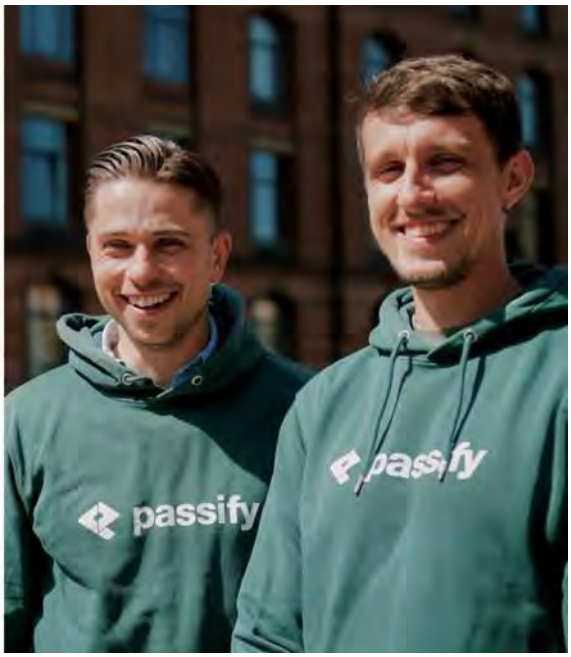
"It all started at the terminal gates. After years in port operations and logistics, we kept seeing the same problems: trucks stuck in queues, paperwork everywhere, and systems that didn't talk to each other.

We knew there had to be a better way. So we built passify, a digital access solution that connects everyone involved in truck handling. No more clipboards. No more guesswork. Just a smarter, faster, and more secure way to manage logistics.

We're here to help terminals unlock efficiency, give drivers a better experience, and bring real-time visibility to the yard. This is just the beginning."

Nico & Marcel

Founders of passify



LINK: https://www.passifyapp.de/

PEEL PORTS GROUP

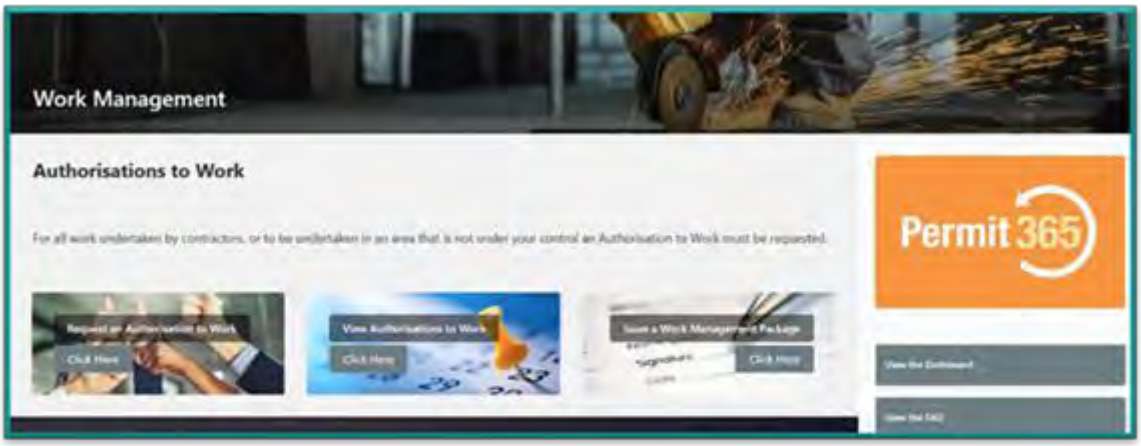
fully digitalised bespoke in house designed permit system to manage authorisation to work, permit to work and marine consents

the challenge

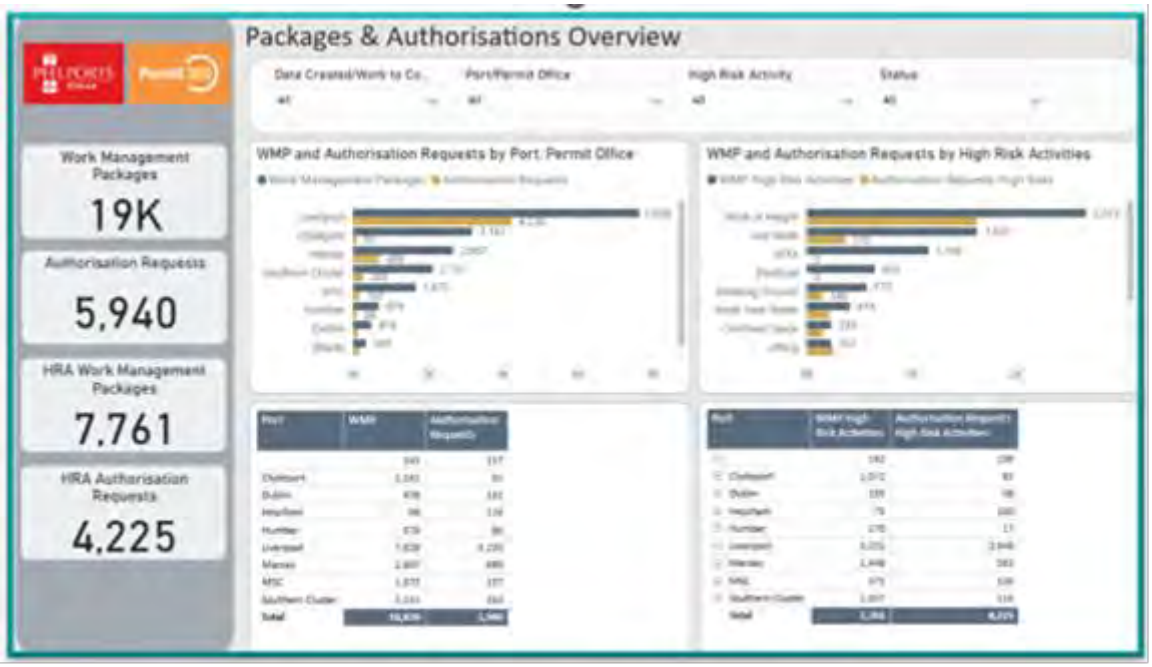
Recognising a business need to update our approach to permitting work on our Ports, we embarked on a cross-business collaborative project to design a new authorisation and permit to work system to enable us to manage high-risk activities across our ports. The historical approach to permitting had been paper-based, variable in quality and content with no digital interface. A workshop was established to understand the business needs incorporating engineering, operational, EHS, marine and safety rep colleagues with the primary focus on designing a process for permitting which would prioritise safety and streamline the process and documentation.

the innovation

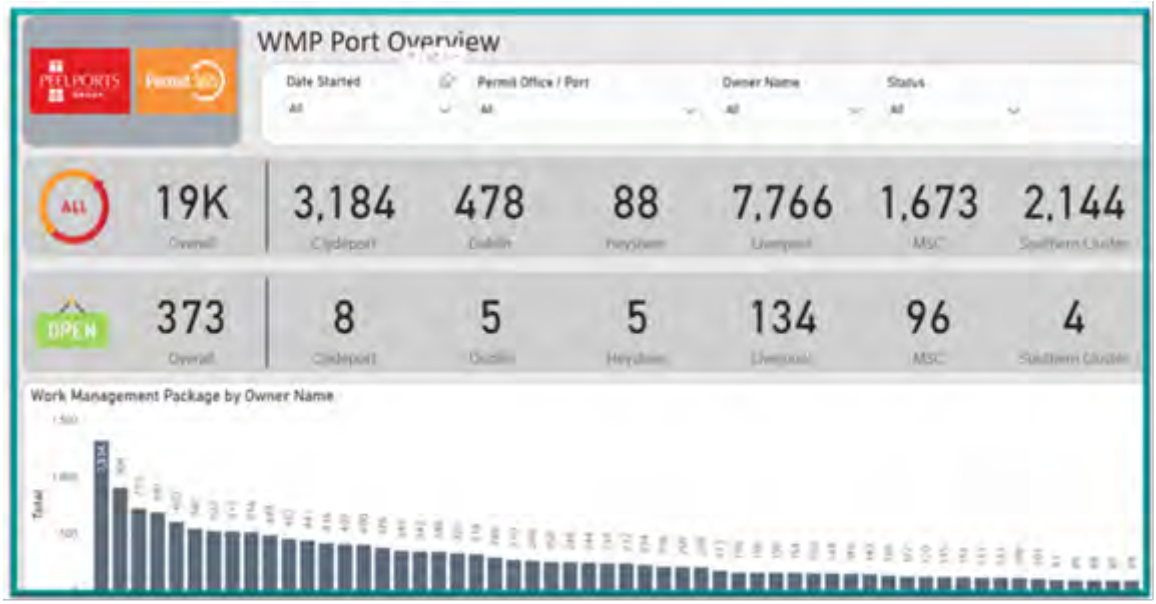
A fully digitalised bespoke in house designed permit system to manage authorisation to work, permit to work and marine consents. Utilising the knowledge within the business and an understanding of permitting requirements we designed the system on paper and then utilised 'Safety Culture' as the software to build our system on the audit platform (covering permits such as hot work, work at height, breaking lines, isolation, electrical, confined space etc). The total project time from concept to launch was in the region of 18 months. The complexity of port operations, numerous stakeholders and interface with marine consents and byelaws created challenges in finding an off the shelf solution and is why we decided to utilise the flexibility of the safety culture platform to build our own. The system is available on mobile device, tablet, laptop and desktop computer and we utilise Power BI reporting to interface with the software to provide detailed information on open and closed permits and also mapping on activities which are under permit control.



The Permit to Work System can be accessed via the company intranet homepage, providing a central entry point for employees to create, manage, and review permits



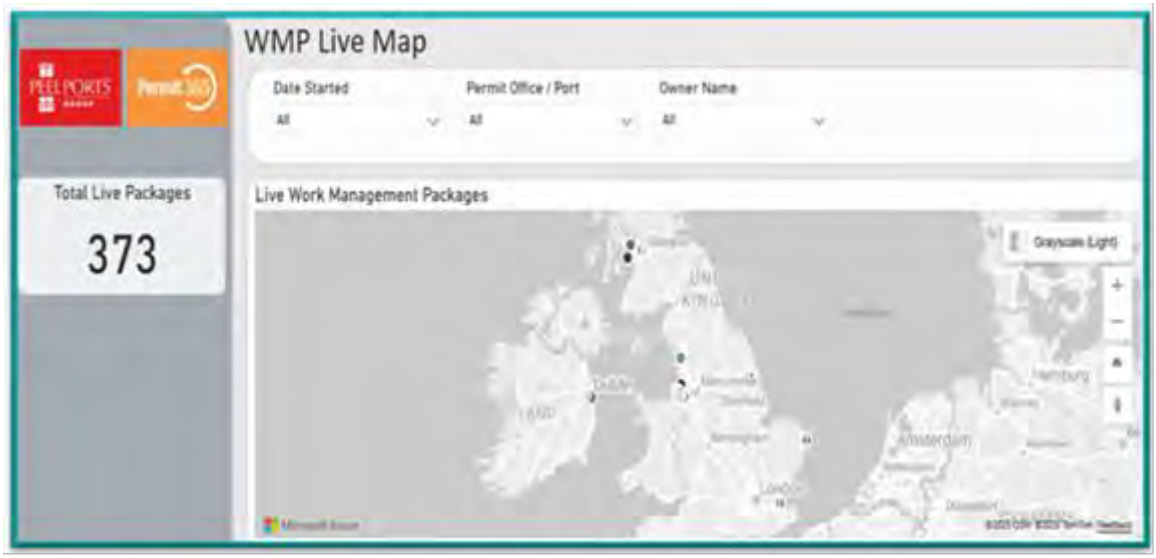
Power BI dashboard displaying permit data



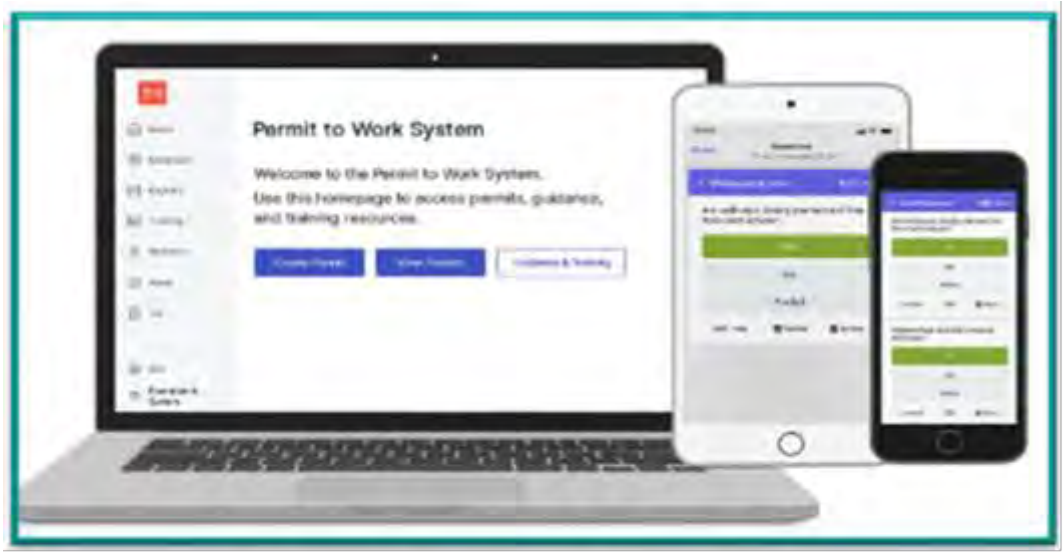
Power BI dashboard displaying permit data with 19,000 permits completed

how it was implemented

The success of this project was built on engaging a wide range of stakeholders with experience of managing the existing paper-based permit system. Recognising its limitations, including inconsistent quality and standards, was key to gaining support. Ownership of the design was led by the business, ensuring teams were invested from the outset. With sponsorship from the Group EHS Director, the project team was empowered to innovate and develop a system tailored to business needs rather than adapting an off-the-shelf product.



Power BI dashboard displaying live location map



Available on laptop, tablet, and mobile phone

Using an in-house IT design team, testing was critical to progress. The Biomass Facility, with its well-established paper system and high-risk activities involving multiple contractors, was selected as the pilot site. Over a three-month period, the team conducted extensive User Acceptance Testing, incorporating regular feedback and system enhancements. This included supporting complex activities such as Biomass Hopper cleaning, which required managing numerous contractors under a variety of high-risk permits. Following this testing phase and resolution of key improvements, the system was successfully launched across the business in early 2024.

To embed the new approach, we worked with our insurers to design an accredited IIRSM course for permit issuers, ensuring alignment with the system. Over 250 employees have now completed this training and achieved accreditation. To complement this, we developed a suite of targeted training courses covering each category of high-risk permit, all combined almost 900 courses have been completed in total. Together, these measures have driven consistency, improved safety management, and ensured the new digital permit system meets both business and regulatory requirements.

result

Since launching (early 2024) the new permitting software has been used to create over 19,000 work management packages (Authorisation to Work and Permit to Work). The business has clearer control of high risk permit activities at a local and group wider level. The interactive and intuitive 'Safety Culture' platform interface allows consistency in application and accuracy, which in turn leads to a safer business. It also has the ability to provide further configurability as the business changes, such as adding new sites, locations and permitted activities. The ability for permits to be provided through a link to contractors on the day of the works so they can have a version available at the point of work is critical to maintaining safe engineering and operational activities. Throughout the work activity contractors can take photos, can communicate with the permit issuer and can demonstrate the site has been left safe and tidy at the end of the task prior to the permit being signed off. Utilising Power BI to manage open and closed permits, locations where permitted activities may interact and identifying works which have had permit request rejected due to poor quality risk assessments and safe systems of work has created additional confidence in the benefits the new system has brought to the business.

Permit system in use

conclusion

The work management package system developed by Peel Ports has significantly strengthened the management of high-risk activities across the business. By providing greater assurance that such activities are controlled effectively, the system has enhanced confidence among the Board and stakeholders in meeting legal compliance requirements, while ultimately reducing operational risk.

LINK: https://www.peelports.com/

PSYCHOLOGY APPLIED LIMITED & ENERGY INSTITUTE

a free, practical guide developed by experienced practitioners to help organisations embed human factors into everyday task-based risk assessment

the challenge

Across industry, very few organisations have a clear and practical way to embed human factors into task-based risk assessments such as JSAs and start-work checks, or into the risk-assessment components that sit within processes like permit to work. While there is well-established guidance for safety-critical task analysis (SCTA) in major accident hazard scenarios, this applies to only a small proportion of overall work. For daily tasks where risk still exists and conditions can shift quickly, teams often lack simple methods for recognising human-performance issues, understanding what to look for, or knowing how much detail is appropriate.

Incident and accident reports illustrate this capability gap. They frequently note that human factors "were not identified during the risk assessment". This is largely because existing tools offer very little practical support for identifying error traps - factors that increase the likelihood of errors and, in turn, raise the level of risk during normal work.

The guidance developed by Psychology Applied and the Energy Institute tackles this challenge by showing how human performance can be integrated directly into existing task-based risk assessment processes.

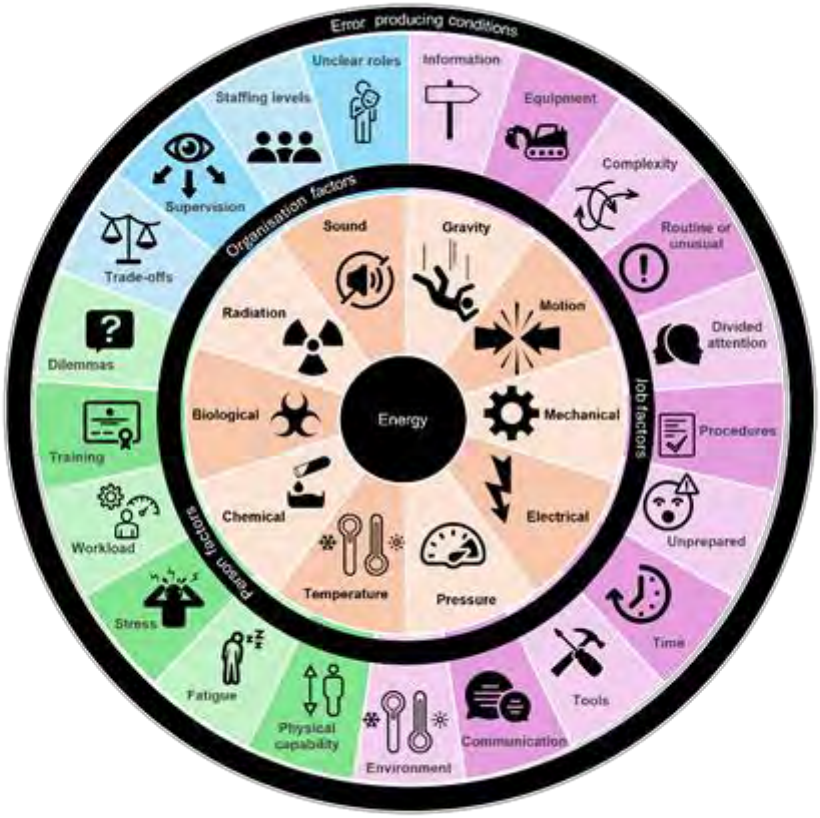
It sets out practical, step-by-step advice for incorporating HF considerations at each stage of the assessment. The guidance also includes examples and a range of tools that frontline teams can use before, during and after the job, acknowledging the dynamic and often changing nature of risk. Finally, it sets out what organisations need to have in place- appropriate training requirements, ways of aligning key stakeholders, and a feedback loop that ensures findings are fed back into the wider risk management process

the innovation

EI 3579 is a free, practical guide developed by experienced practitioners to help organisations embed human factors into everyday task-based risk assessment. It is written for non-specialists and for the people closest to the work: supervisors, frontline workers and managers- so that human performance can be considered in a straightforward way without adding unnecessary complexity.

The guide fills a long-standing gap. Although human factors are well established in safety-critical task analysis and major accident hazard studies, most organisations lack a usable approach for applying the same principles to the kind of daily work and normal operations that make up the majority of activity on site. EI 3579 addresses this by providing tools and methods that fit directly into existing safety processes.

A key innovation is the guide's step-by-step structure and practical focus. It explains how to adapt task-based risk assessments to address both hazards and error traps, and how to apply the right type of control for each, recognising that physical hazards and error traps require different approaches. It also includes examples of human factors across different categories, helping users understand what to look for at each stage of the assessment. The guide offers concrete examples of how existing tools can be strengthened and provides new, ready-to-use tools such as the Energy and Error Wheel, Last Minute Risk Assessment, the 15-Second Scan, and Look–Point–Call Out. These tools are organised into three categories that support the full cycle of work: planning, execution, and learning after completion allowing crews and supervisors to improve situational awareness and decision-making without added complexity.



energy and error wheel

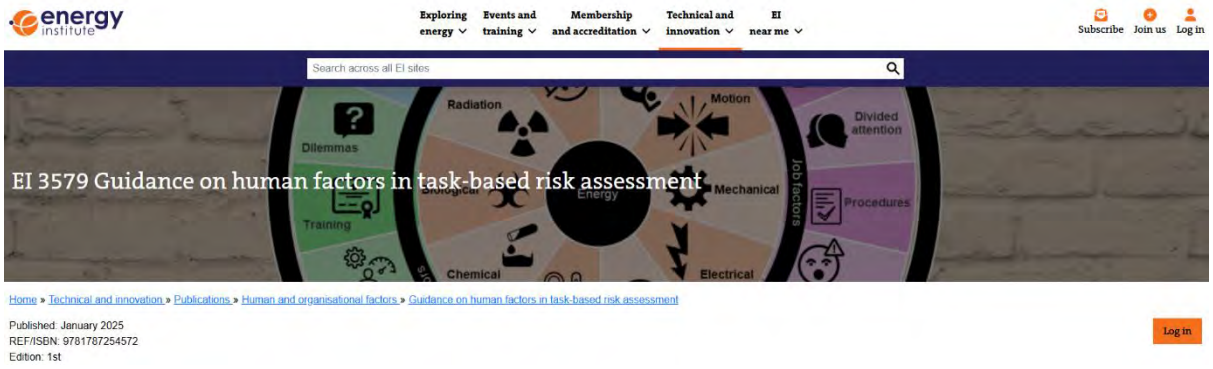
how it was implemented

Because this safety innovation is delivered in the form of a practical guide rather than a system or software, its implementation ultimately depends on organisations choosing to adopt it within their own work-planning processes. For that reason, we focused our efforts on supporting users as much as possible through the way the guide is made available and the additional resources that accompany it. EI 3579 is free to download from the Energy Institute website, removing cost and access barriers and allowing any organisation—large or small—to begin using the ideas and tools straight away.

To help organisations make an informed decision about adopting the approach, the guide contains a dedicated business case. This section sets out why integrating human factors into task-based risk assessment matters, how it strengthens operational risk management, and what organisational arrangements need to be in place. Many companies have already used this material to support updates to their procedures and training requirements.

To further assist with implementation, the authors produced a publicly available video hosted by the Energy Institute. In this discussion, we share practical examples from different industries, showing how the tools have been applied and how the approach can be scaled within existing work-planning systems. These real-world examples help users understand what implementation actually looks like on the ground.

All supporting materials—the guide itself, the business case, and the video—are openly available. The guide can be accessed here: **Link** giving organisations instant access to everything they need to begin using EI 3579.



result

Because EI 3579 is a guide rather than something that can be rolled out like a system, the best indication of its impact is how many people choose to use it. One of our main goals was to make human factors easier to access and more practical for everyday work planning, and the early interest suggests that this is working.

The guide was released around the turn of January and February, and since then it has been downloaded over 600 times from the Energy Institute website. For this type of specialised publication, that is a strong number and a good sign that organisations are actively looking for practical help with human-performance issues.

Another clear indicator of demand came from the webinar that the Energy Institute organised with the authors. More than 1,000 people watched the session, which given how niche this area of safety is, was a very positive response. The questions and comments afterwards made it obvious that many organisations want to strengthen their risk assessment processes and are looking for straightforward ways to weave human factors into them.

There was also interest from countries where English is not commonly used in safety work. For example, the guide was translated into Portuguese and published this month. Early

feedback suggests it is already helping organisations in Brazil and other Portuguese-speaking regions who previously had limited access to this type of material.

LEARNING FROM NORMAL WORK

EI 3579 author - Dr Marcin

conclusion

Human factors knowledge is still scattered across specialist programmes, academic studies and advanced regulatory guidance. For many HSE professionals especially outside the UK- this material is difficult to access, interpret or apply to day-to-day operations. As a result, human factors has not yet become a mainstream part of safety practice, despite decades of evidence showing its importance. Many practitioners know of human factors, but have little practical guidance on how to use it within the processes they already own, such as work planning and task-based risk assessment.

This gap matters. Across industries, companies continue to face recurring incidents, often involving similar patterns of assumptions, miscommunication, workarounds or task conditions that were not recognised during work planning. Despite significant investment in procedures, technology and training, the same types of accidents still happen. We argue that a contributing factor is the limited integration of human factors into the core safety processes that shape daily work. If these processes do not prompt teams to recognise error traps or understand how performance is influenced, important vulnerabilities remain invisible.

The guide turns what is often abstract human factors theory into something people can actually use on the job. Because the tools sit comfortably alongside JSAs and other planning steps, organisations can introduce human-performance considerations straight into their day-to-day decisions, without new programmes or lengthy training.

We believe EI 3579 represents a significant step toward raising the baseline of human factors understanding across industries and reducing the recurrence of preventable accidents. It makes a long-needed area of knowledge accessible, practical and ready for immediate use.

LINK: https://www.energyinst.org/technical/publications/topics/human-and-organisational-factors/guidance-on-human-factors-in-task-based-risk-assessment

LINK: https://learningfromnormalwork.com

DR MARCIN NAZARUK
PSYCHOLOGY APPLIED

energy institute

ROMBIT EUROPE

wearable technology combining gas sensors with an existing safety platform - unifying safety data, simplifying hardware management, ensuring faster response to calamities

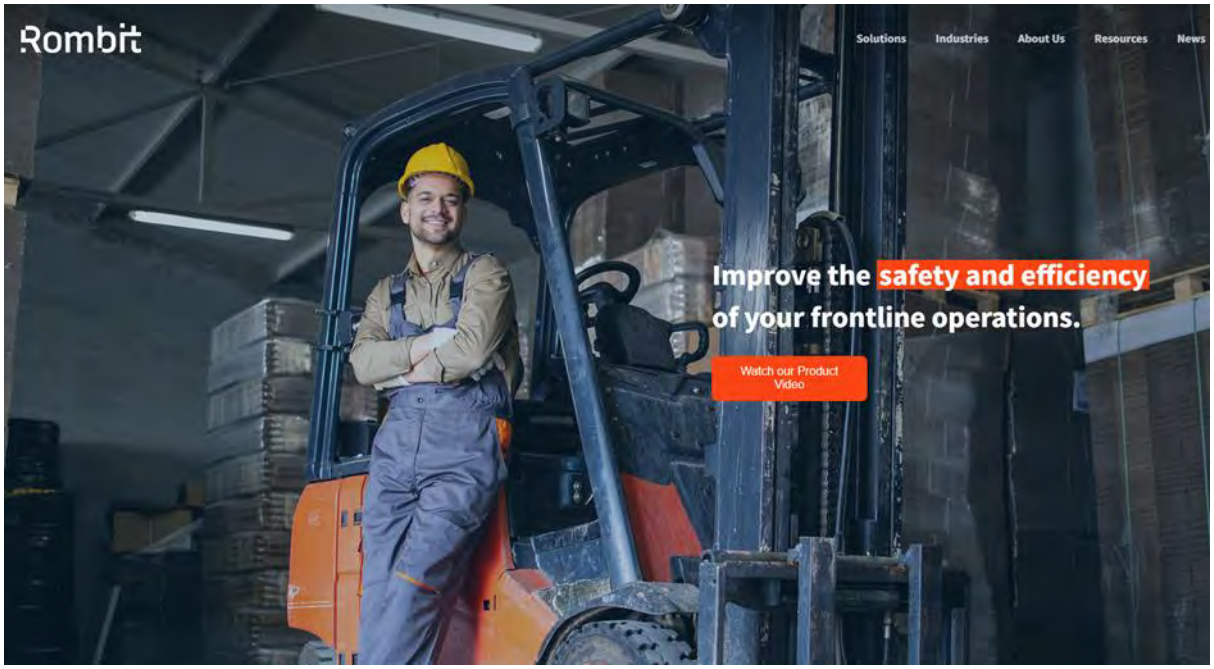
the challenge

In high risk industries, safety monitoring relies on a multitude of specialised tools, such as gas detectors, environmental sensors and other protective hardware. Each device reports to its own platform, creating data silos and fragmented oversight. This fragmentation makes it harder to get a complete picture of risk in real time. Instead of one unified source of truth, safety managers face many dashboard, delayed responses and inefficiencies in decision making.

Complimentary technologies are essential, but without integration their combined value is diminished

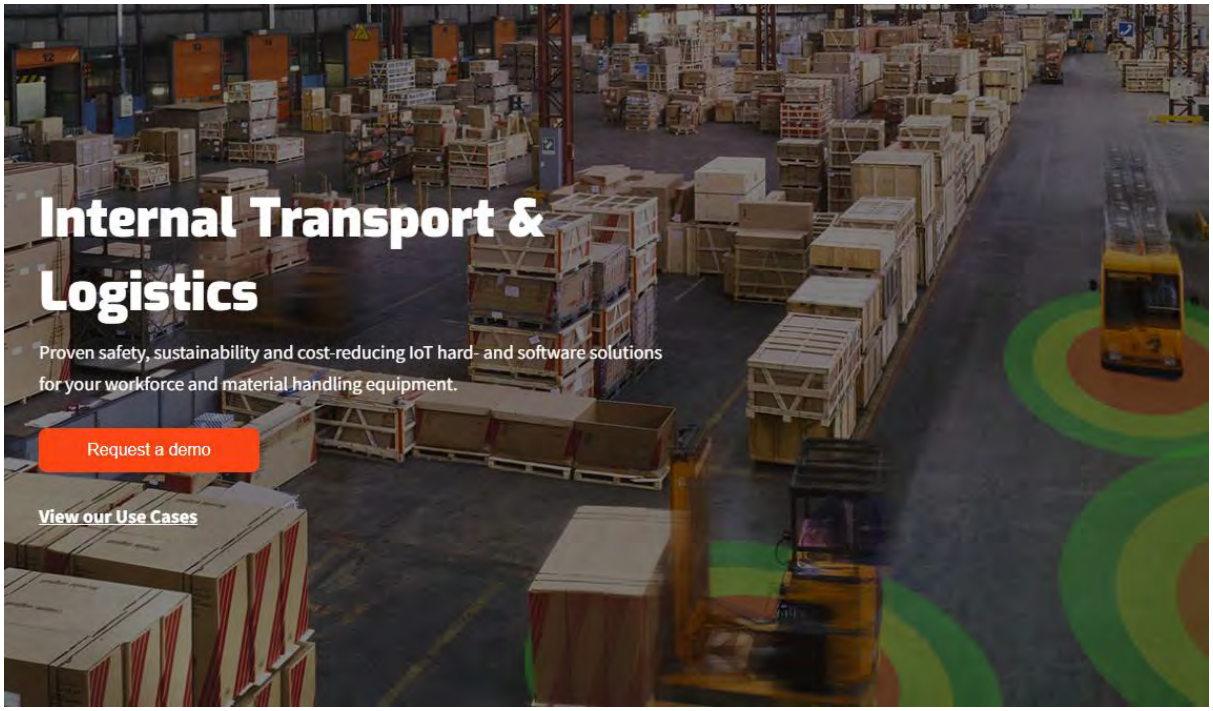
the innovation

Rombit enhances safety through technology. We use wearable technology to combine gas sensors with our existing safety platform. We unify safety data, simplify hardware management and ensure faster response to calamities. We offer a single centralised hub where all industrial monitoring systems converge for lone worker tools to gas detection.



how it was implemented

Our connected worker solutions are being implemented on industrial sites to enhance personal safety. Lone worker solutions, immediate calamities and gas detection integration. There are several use cases in LATAM and in EU we can demonstrate.



result

Workers prefer to work with our devices rather than having no PPE. Both in industrial environments, mining, offshore operations and others.

conclusion

By consolidating gas detection, lone worker monitoring and safety alerts into a single platform, sites gain real-time visibility of risk. This improves response times, reduces operational blind spots and supports more consistent safety decisions across high-risk environments.

LINK: https://rombit.com/

Rombit

SHOREHAM PORT AUTHORITY

'dunnage placement tool' that holds dunnage at exactly the right angle at the end of a lightweight pole, enabling dunnage to be positioned exactly where needed with precision and ease

the challenge

Shoreham Port has been operating as a Trust port for over 260 years. Our purpose remains to continually 'improve our port for everyone'. First and foremost, this means getting everyone home safe and well daily. This is the primary aim on our Masterplan, which we hold each other accountable to every day.

One of our areas of highest risk is our landside operations. A team of around 40 Port Operatives are responsible for the safe and efficient discharge of around 150 vessels a year. In 2023, this small team then loaded the imported timber onto over 12,000 lorries, ready for its onward journey. Whilst the majority of timber packs can be loaded with dunnage attached, occasionally this has to historically required adjustment or supplementation, requiring our colleagues to work at height.

The Port is acutely aware of the risks of working at height. The risk of injury or fatality as a result of a fall from height is significant and this is reflected in the HSE statistics each year. In the latest HSE accident statistics for 2024/25, falls from height remain the leading cause of work related fatalities and the fifth greatest cause for non-fatal injuries in the workplace. We also have had first-hand experience of the life changing impact they can have within the Port, which further motivates us to constantly review our practices to see how we can fulfil our commitment to getting everyone home safe and well daily.

the innovation

We designed a 'dunnage placement tool', a piece of equipment that holds dunnage at exactly the right angle, at the end of a lightweight pole, enabling an Operative to stand on the ground close to a lorry and use the tool to position the dunnage exactly where it is needed with precision and ease. Removing the need to work at height and minimising any manual handling challenges. The tool also holds a sufficient portion of the dunnage to prevent it from accidentally falling out and striking anyone.

We collaborated with our Operations colleagues on the project; as the end users, their feedback throughout was invaluable. We worked with a local welding firm, converting a sketch into our first prototype. Our first model, made from steel, was too heavy to be used safely. Our second prototype was constructed from aluminium, which overcame the weight issue. Our in-house workshop then adjusted the angle of the tool to optimise it for the task. After several trials, we commissioned the third protype, with improved ergonomics and by our fourth prototype, we were happy we had got the design right.

We then brought all the team together, to share the updated procedure for lorry loading and demonstrate the new tool, and to revisit why we had placed so much energy and focus on this in the first place. Keeping health and safety relevant and engaging our colleagues in our mission to make the Port safer is of primary importance to us.

how it was implemented

The tool was implemented in close collaboration with our Colleagues to ensure that it met their requirements for regular use and did not introduce any additional risks.

The tool itself went through several iterations to ensure the ergonomics were suitable and colleagues were consulted throughout the process.

We also ensured that the tool was sufficiently robust for use in the Port by having its safe working load independently assessed.

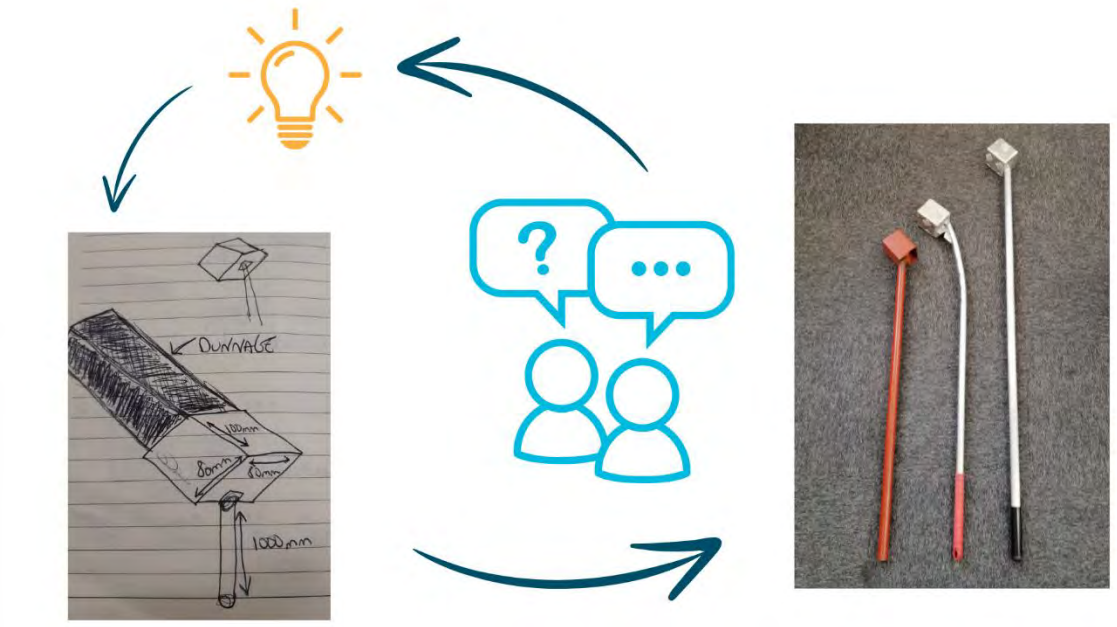
Once introduced, we brought all the team together, to share the updated procedure for lorry loading and demonstrate the new tool, and to revisit why we had placed so much energy and focus on this in the first place. Keeping health and safety relevant and engaging our colleagues in our mission to make the Port safer is of primary importance to us.

result

The immediate and primary result of introducing the dunnage placement tool was the complete elimination of the need to work at height while loading lorries. This single innovation made the Operations team substantially safer by removing the hazard responsible for the most common cause of fatal workplace injuries.

On an operational level, the tool allows for the necessary placement of dunnage with high precision and ease while standing on the ground, without impacting the operational efficiency required to load over 12,000 lorries per year, and without introducing other manual handling challenges.

The success of the implementation is evidenced by the safety data: since the new process was introduced, there have been no reports of accidents, near misses, or safety observations related to the updated lorry loading procedure.



conclusion

The Shoreham Port dunnage placement tool is an example of a "grassroots innovation"—an effective solution developed by the front-line team to solve a specific problem with a tool which is not available on the commercial market.

We view the tool as a success story that demonstrates our commitment to a risk-based approach and constant improvement in health and safety, ensuring our mission to improve H&S and make sure everyone goes home safe and well daily.

The result is an improvement that has made our colleagues safer and reduced the risk profile whilst maintaining operational efficiency

LINK: https://www.shoreham-port.co.uk/

SIBRE – SNAG LOAD PROTECTION AND GUARDIAN

combines Snag Load Protection and its add-on Guardian, to deliver the world's first preventive protection system against snag-load events

the challenge

Port terminals operate in some of the most demanding and risk-intensive environments in the industrial sector, where Ship-to-Shore (STS) cranes routinely handle heavy loads under strict time pressures. One of the most critical safety challenges is the occurrence of snag-load events - situations where a container becomes unintentionally caught during hoisting or lowering. These events generate extreme dynamic forces within milliseconds, causing structural damage, sudden crane stoppages, wire-rope failures, and severe risks to personnel both on deck and beneath the crane. Traditional detection technologies - based on load cells or hydraulic pressure - are reactive, detecting anomalies only after harmful tension has already propagated through the hoisting system.

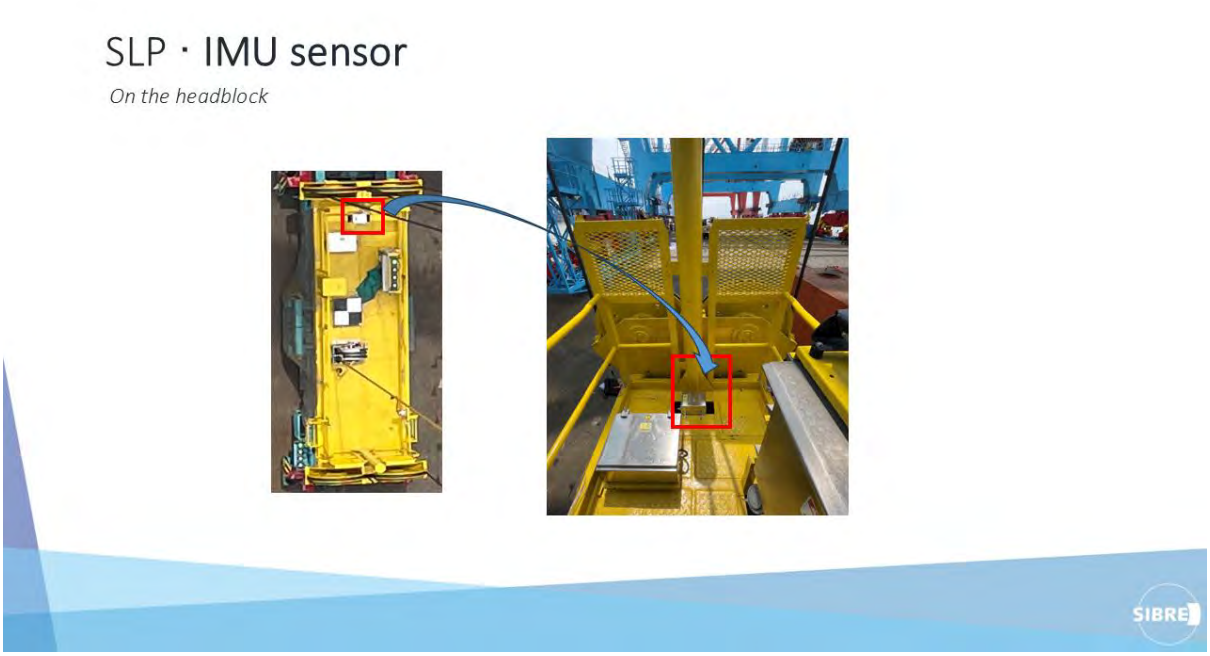
snagged load

impact with vessel cell guides

the innovation

SIBRE innovation combines Snag Load Protection (SLP) and its add-on Guardian, establishing a groundbreaking safety ecosystem for Ship-to-Shore cranes. Together, these technologies deliver the world's first preventive protection system against snag-load events - one of the most damaging and high-risk incidents in port operations.

SLP leverages a high-precision Inertial Measurement Unit (IMU) installed directly on the headblock, capturing real-time acceleration and angular speed data at the source of potential entanglement. Advanced machine-learning algorithms, trained on thousands of hours of crane operations and real collision scenarios, interpret this data to detect hazardous motion patterns before dangerous tension occurs.



When a risk is identified, before snags occurs, SLP automatically ultra-fast brake activation within milliseconds, preventing structural damage, wire-rope failures, and risks to personnel. This proactive approach represents a fundamental shift from traditional reactive technologies.

The Guardian add-on elevates this innovation further by providing continuous IIoT-based monitoring of crane behaviour. It introduces a new KPI—Motion Intensity—which quantifies the softness or abruptness of crane movements, enabling predictive maintenance, operator performance analysis, and improved operational efficiency. Guardian also detects 360° impacts and automatically synchronizes video footage, offering immediate situational awareness and data-driven decision-making.

Together, SLP and its add-on Guardian create a comprehensive, intelligent safety layer that enhances crane resilience, significantly reduces incidents, supports automation, and improves productivity while extending the lifespan of critical components. This holistic approach positions the system as a leading innovation shaping the future of safe and efficient port operations.

how it was implemented

It has been successfully deployed on more than 50 STS cranes at leading container operators worldwide, including APMT, TIL, DP World, PSA, SSA Marine, and Evergreen, as well as on cranes from OEMs such as ZPMC, Konecranes, Liebherr, Kocks, Paceco, and Mitsubishi.

The system has been integrated across various crane architectures, interfacing seamlessly with crane PLCs from OEMs such as Siemens, ABB, TMEIC and Toshiba. It supports both fibre optic and copper-based reeling cable technologies and is compatible with all crane configurations, including single-hoist, dual-hoist tandem, and single-hoist tandem setups.

SLP during test

result

Initially, the system underwent a two-year data capture phase, collecting inertial movement data from the headblock to develop robust algorithms for the early detection of snag-load events and impacts. Subsequently, the first unit (as POC), it was subjected to rigorous testing by the end user, ensuring not only accurate detection of true positives and true negatives but also minimizing to nearly 0% the false positives and false negatives.

Its deployment across multiple operators and OEMs further validates its effectiveness and reliability. Positive results are also reflected in the inclusion of the system in the specifications for new cranes by several operators.

The system has demonstrated the ability to prevent approximately 90% of snag-load incidents, while significantly mitigating the impact of the remaining cases on both vessels and cranes, as well as reducing operational downtime.

Additionally, by preventing or minimizing the stress caused by snag-load events, the system has been shown to extend the service life of crane components, increasing lifting cable longevity by over 30%.

Finally, operators have calculated a return on investment of less than two years, with some reporting immediate cost savings due to the avoidance of expenses associated with just one snag-load incident.

conclusion

SLP and its add-on Guardian represent a transformative advancement in crane safety, operational efficiency, and predictive maintenance. Their combined capability to detect and prevent snag-load events before harmful tension occurs sets a new industry benchmark, shifting port operations from reactive protection to true anticipation and prevention.

The system has already demonstrated exceptional robustness and scalability. It has been successfully deployed on more than 50 STS cranes across major global operators—including APMT, TIL, DP World, PSA, SSA Marine, and Evergreen—and integrated into cranes from leading OEMs such as ZPMC, Konecranes, Liebherr, Kocks, Paceco, and Mitsubishi.

Following a two-year data capture phase and rigorous end-user validation, SLP achieved near-zero false positives and false negatives. Field results confirm its ability to prevent approximately 90% of snag-load incidents and significantly mitigate the remaining cases—reducing vessel and crane damage, minimizing downtime, and extending component life, including a 30% increase in wire-rope longevity.

In summary, SLP and Guardian deliver a proven, scalable, and future-ready safety innovation that materially enhances crane resilience, operator protection, and terminal productivity—setting a new global standard for safe and intelligent port operations.

SIBRE team with end user team during commissioning

LINK: https://www.sibre.de/en/slp-snag-load-protection/

SIBRE Sure to be Safe

SICK AG - MULTISCAN100-S

first safety-certified 3D LiDAR sensor for safe collision avoidance in automated container terminal operations

the challenge

Automation in container terminals has always involved balancing safety, productivity, and system availability. While automated operations promise efficiency and reduced human intervention, ensuring safe collision avoidance introduces significant challenges.

Container Handling Equipment (CHE), such as Rail Mounted Gantry Cranes (RMGs), illustrates these issues clearly. Automated RMGs typically operate in restricted zones with physical access barriers or rely on collision avoidance systems based on safety sensors. These sensors are designed to detect obstacles and prevent accidents, but they often face limitations: environmental conditions can trigger false alarms, and restricted detection ranges force slower operating speeds. This leads to reduced productivity and availability, as equipment may stop unnecessarily to maintain safety.

Safe collision avoidance is therefore not just about installing sensors—it requires highly reliable detection technologies, robust algorithms to minimize false positives, and seamless integration with terminal control systems. Achieving this balance is critical: overly conservative safety measures can compromise throughput, while insufficient safeguards risk accidents.

In short, safe collision avoidance is the cornerstone of automated container handling, demanding continuous innovation in sensor accuracy, system design, and operational strategies to harmonize safety with performance.

the innovation

multiScan100-S: Redefining Safe Collision Avoidance

The challenge of balancing safety, productivity, and availability in automated container terminals has long been driven by sensor limitations. The multiScan100-S addresses this head-on as the first safety-certified 3D LiDAR sensor with focus on industrial applications.

Unlike conventional systems, multiScan100-S introduces Safe Multi-Echo Technology, enabling it to filter out environmental disturbances such as rain, fog, or dust. This means the sensor can “see through” these conditions and still detect the actual object behind them—maintaining its full safety-rated detection range. This capability eliminates false positives that typically slow down operations, ensuring both safety and maximum process speed.

Its innovative certification concept sets a new benchmark: compliance with ISO 13849 (Performance Level b) and IEC TS 62998 (Performance Class C) for outdoor detection. Furthermore, the sensor is “Performance Level c ready”, as proven detection reliability for higher safety levels is already certified. When integrated with standard safety controllers and well-known diagnostic methods—such as cyclic field set switching—systems can easily achieve enhanced safety performance.

With up to 20 meters of safety-rated range, multiScan100-S enables high-speed operations for mobile machines in container handling environments. Combined with exceptional availability and flexibility for application-specific designs, it delivers what the industry has been missing: safe collision avoidance without compromising productivity.

how it was implemented

multiScan100-S: Customizable Safety Functions for Advanced Collision Avoidance

The multiScan100-S sets a new standard in safe automation by combining two certified safety functions: **Safe Measurement Data** and **Safe 3D Object Detection**.

Safe Measurement Data goes beyond traditional sensing. Instead of limiting data to internal decision-making, the sensor provides both raw and pre-processed measurement data via a standard **UDP Ethernet interface**. This enables any processing unit to access safety-rated data, giving system integrators advanced capabilities for creating customized, high-performance safety solutions and enhanced situational awareness. While ensuring transmission integrity through the well-known black channel principle, Safe Measurement Data **extends far beyond conventional approaches** - enabling safety-related localization and mapping, as well as point cloud aggregation for developing classification or tracking algorithms.

Complementing this, Safe 3D Object Detection is an on-device decision-making function. It detects objects within defined zones and communicates status through a switching signal to the control system. This approach combines the innovative advantages of multiScan100-S—such as cutting-edge LiDAR technology and its unique certification concept—with the proven principle of protective fields. As a result, it ensures compatibility with virtually all existing Safety PLCs commonly used in RMGs and other Container Handling Equipment.

For demanding applications, both safety functions can operate simultaneously, delivering maximum flexibility and reliability. Together, they enable integrators to design systems that meet stringent safety requirements without sacrificing productivity.

With this dual-function architecture, multiScan100-S bridges the gap between **next-generation sensing technology** and **industry-proven safety concepts**, making it the ideal solution for safe collision avoidance in automated container terminals.

result

With its powerful measurement technology and safety certification tailored to real-world requirements, the multiScan100-S successfully addresses the long-standing challenges in automated container terminals. Issues such as false positives caused by environmental factors, limited detection ranges, and reduced process speeds are now significantly mitigated.

The sensor's **Safe Multi-Echo Technology** ensures reliable detection even in harsh outdoor conditions like rain, fog, or dust, maintaining full safety-rated range without unnecessary stops. This directly improves availability and productivity while preserving uncompromised safety.

Beyond solving these core challenges, multiScan100-S introduces **true 3D detection capability**, delivering advantages that conventional solutions cannot match. It can identify **overhanging objects**, such as containers carried by reach stackers, and perform **full-body detection of persons**, enabling higher safety ranges and supporting faster machine speeds. These features are critical for complex environments where traditional 2D systems fall short.

Combined with its dual safety functions - **Safe Measurement Data** for advanced integration and **Safe 3D Object Detection** for on-device decision-making—the sensor offers unmatched flexibility. It integrates seamlessly with existing safety PLCs while providing future-ready options for demanding applications.

The result is a solution that not only meets but exceeds industry expectations: **maximum process efficiency, robust safety, and adaptability for next-generation container handling systems**.

conclusion

Within the last 12 months Künz GmbH has run a successful test installation with multiscan100-s for collision prevention on a rail mounted gantry crane. iSAM AG has also completed a successful 9 month intensive testing programme of the multiscan100-s.

The safety certification of multiScan100-S includes explicitly validated and broadly defined usage limits for all relevant environmental factors. This means the sensor can operate with its full safety-rated detection range under certified conditions—without requiring any additional validation by system integrators or end users.

LINK: https://sickconnect.com/

SICK
Sensor Intelligence

TrafficAngel - DRIVERPROTECT

low-cost, simple-to-fit, multi-functional AI human detection camera system designed specifically to protect drivers in their cabs

the challenge

If you were looking through 'Situations Vacant' and you saw a job described as driving 200 miles a day minimum, often sleeping at night in a tin box in laybys out in the middle of nowhere, the driver vulnerable to intruders and prowlers and possibly violent confrontation, would you apply for this job? Probably not. Yet this is what thousands of HGV drivers face each day and night as they carry out their vital delivery work keeping the country on its feet. Despite the importance of driver welfare, reliable statistics show us that freight crime is on the increase. And even when vehicles are parked up in designated, well-lit parking areas, drivers are still reporting attempted break-ins, diesel theft and cargo theft. So, what can be done to help drivers in such circumstances?

DriverProtect is a low-cost, simple-to-fit, multi-functional AI human detection camera system designed specifically to protect drivers facing such situations. From suspicious loitering around a stationary vehicle, migrants gaining entry into trailers at European ports, right up to organised crime thefts from moving trailers, DriverProtect can be tailored to meet each customer's individual requirements

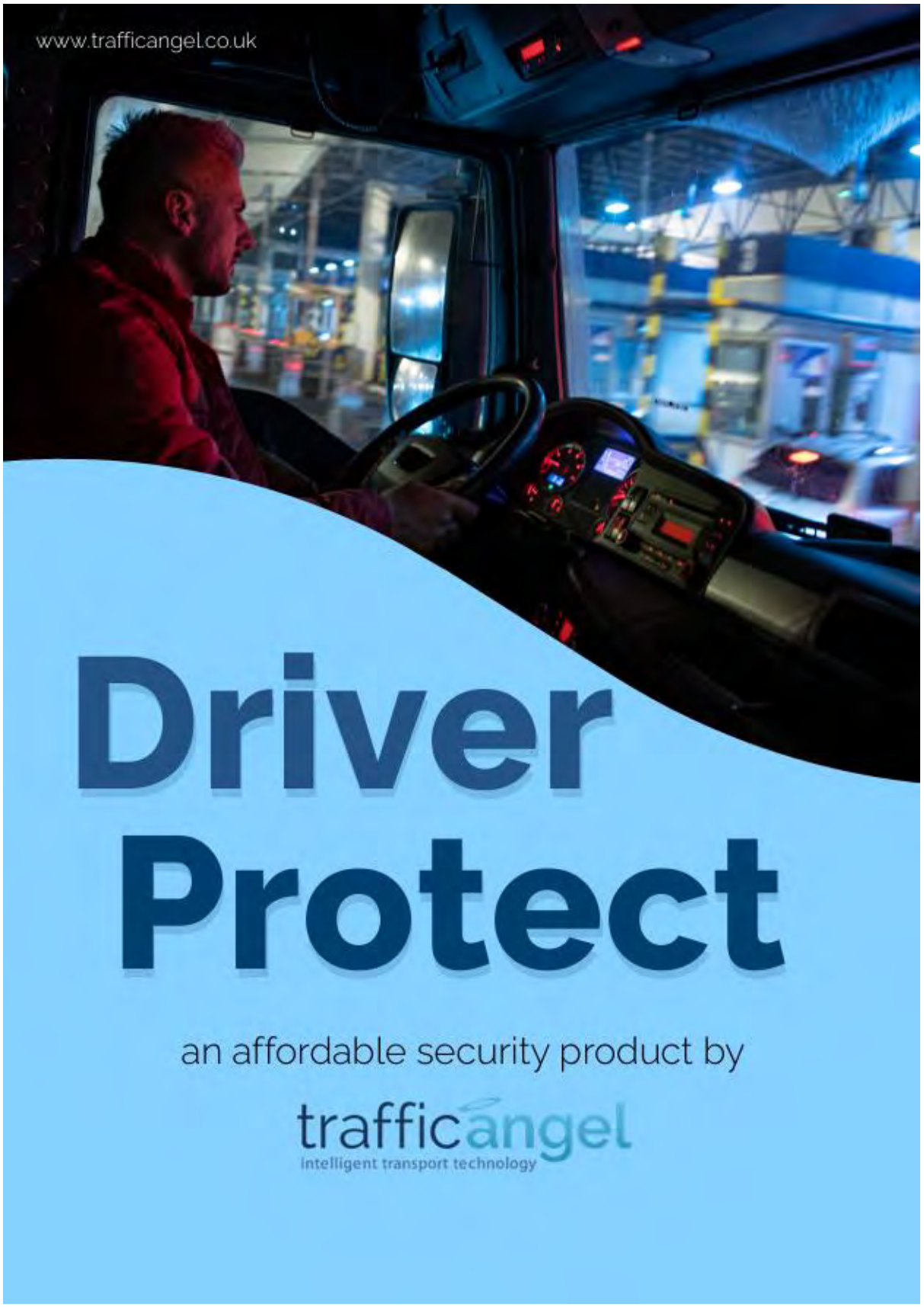
the innovation

The solution comprises carefully designed electronics working in conjunction with human detection ai cameras that deliver a positive voltage out upon detecting human activity. TrafficAngel utilises that voltage out to power various deterrents. For instance....

IN-CAB PROTECTION: Unexpected footsteps outside the cab? But the driver is fast asleep? Our ai cameras never sleep and the camera and video device have already picked up the human activity and recording the entire event. To avoid false alarms from innocent passers-by, the integrated timer relay alerts the driver only after a sustained period of activity (usually 20 seconds but this is adjustable). Once the time is exceeded, a low intensity buzzer wakes the driver who can open their device and view the surrounding scene, and if necessary, push a button in the cab triggering a floodlight plus external audio warning. At the same time, the system can automatically alert management.

REMOTE ALERTING: drivers sleeping away from their cabs can receive a text alert as soon as the same activity is detected around the vehicle, can view the scene live, and remotely trigger the same floodlight and external audio warnings on the vehicle if the activity looks suspicious. Diesel theft, curtain slashing and illegal rear door entry can all trigger the same text alerts.

THEFT IN TRANSIT: for theft from trailers whilst the vehicle is moving, the same electronics can be implemented to trigger a non-tainting fog machine, filling the trailer and rendering further criminal activity impossible.


www.trafficangel.co.uk
Driver
Protect
an affordable security product by
trafficangel
intelligent transport technology

how it was implemented

What started off purely as a cab-focused DriverProtect solution quickly developed into three key areas of freight security - driver welfare, cargo theft from stationary vehicles, and theft in transit. As a design company, we began by arranging meetings with key personnel within freight security, and with NAVCIS and the RHA. From the feedback gained, the basic DriverProtect electronics quickly took shape. The rudimentary system was fitted to a 1:12 scale truck and taken to knowledgeable people for feedback. It was the RHA we must thank for recommending a built-in delay to counter false alarms from passers-by. NAVCIS invited us to explain the basic DriverProtect system as part of its quarterly Teams outreach to 70-plus members.

Soon after this presentation, we were contacted by several interested parties, one company explicitly detailing their issues with theft of high value electronics from moving vehicles. This developed into our mobile CargoProtect system which includes full recording, full alerting,

plus ai human detection cameras which trigger audio/visual alarms plus if needed, a fog machine being triggered should a human enter the trailer/area whilst the system is armed.

After successful testing of the fog machine at 56MPH in open road conditions, CargoProtect has been recognised as making a significant and low risk contribution to theft on the move! For commercial and security reasons, we are reluctant to trumpet the CargoProtect system in the open market. But we are confident that word of mouth will soon bring customers to our door.

result

Since Driver Protect quietly launched, we have been working with TruckStopUK who has recognised the huge potential of the basic DriverProtect system and has told us we are the first company they wish to work with in this field. We are right now planning a Christmas promotional campaign with TruckStopUK and we wait to see where this takes us.

We are also hosting a meeting at our head offices in late November 2025 with a company which has already approved an early 2026 capex for numerous fog machine CargoProtect systems to help in their bid to tackle theft on the move.

The RHA is also fully supportive of many TrafficAngel initiatives and we enjoy a great relationship with key RHA personnel. We have a meeting with RHA insurance in December 2025 to discuss how DriverProtect and derivatives might help reduce insurance claims.

We are looking to begin our DriverProtect/CargoProtect supply only and supply plus install programme in early 2026 and hope for a huge success!.

conclusion

Freight crime is not going away. Innovation doesn't stop either and the TrafficAngel team has a good understanding of what makes a transport industry security product popular. Does the system do what it says on the lid? Is it driver-friendly? Is it bomb-proof/idiot-proof/waterproof/shockproof? Does the system have a competent and knowledgeable aftersales team behind it? We are confident the company and product meet all of these criteria.

LINK: https://www.trafficangel.co.uk/

trafficangel
intelligent transport technology

TURTLE FIRE SYSTEMS, LLC

system that provides continuous, targeted cooling directly to the source of a fire, whether beneath an electric vehicle, battery rack, or deck surface

the challenge

Electric vehicle (EV) fires pose unique and growing challenges across the global supply chain. On land, first responders face extreme heat, toxic gases, and complex battery designs that hinder direct cooling. At sea, these hazards are magnified.

Crews on ferries and roll-on/roll-off (RORO) cargo vessels often have limited firefighting training, minimal protective gear, and constrained water resources.

As maritime transport of EVs expands, the risk of onboard thermal runaway events grows. A single battery failure can quickly escalate, spreading horizontally from vehicle to vehicle and threatening both cargo and vessel integrity. Traditional suppression methods are often insufficient: deck sprinklers deliver indirect cooling, and manual intervention exposes crews to toxic vapors and dangerous temperatures.

There is an urgent need for a simple, effective, and adaptable solution that allows ship crews - many of whom are not firefighters - to safely control EV fires, reduce heat transfer to the vessel, and protect passengers, cargo, and the ship itself until full suppression can be achieved.

the innovation

The **Mini Turtle Fire System** - including its specialized adaptation, the **Maritime Mini**, made from stainless steel with brass couplings - was designed to meet this exact need. The system provides continuous, targeted cooling directly to the source of a fire, whether beneath an electric vehicle, battery rack, or deck surface.

VOLUME
Master stream capable of delivering 310+ GPM.

SAFE
Once deployed, the Turtle Fire System operates unmanned, reducing exposure to fire and harmful toxic gasses.

EFFECTIVE
Low-profile design easily deployed under a vehicle to deliver copious amounts of water directly onto an EV battery case.

DURABLE
The Turtle is made in the USA of 100% welded American steel.

SIMPLE
Able to be assembled and deployed rapidly with minimal manpower.

FORCE MULTIPLIER
The Turtle Fire System enables departments to repurpose manpower and do more with less.

For maritime use, the Mini Turtle Fire System can be fixed-mounted or connected to a vessel's existing 1.5" handline coupling. Its flow rate of **150 gallons per minute (GPM)** is optimized to provide effective cooling while minimizing listing risk and maintaining vessel stability. On land, the standard Mini Turtle Fire System operates up to **310 GPM**, allowing flexible response across different environments.

The patented dome shape and 360° flow pattern ensure full coverage of battery casings and surrounding surfaces. Once positioned, the unit delivers a stable, even spray without requiring constant repositioning—reducing exposure for crew members and containing horizontal fire spread. Constructed from powder-coated stainless steel with a slide plate and reinforced handle system, the device is durable, manoeuvrable, and compatible with both marine and land-based firefighting equipment.

Designed for ease of use, the Maritime Turtle can be rapidly deployed under vehicles on ferries or cargo decks, mounted as a designated EV "sprinkler zone," or positioned near high-risk areas such as welding operations to provide immediate water flow in case of ignition.

how it was implemented

The original Turtle Fire System was conceived and developed by firefighters to bring practical, real-world solutions to modern fire hazards. Since its launch, it has been adopted by **municipal, military, airport, and industrial fire departments** and integrated into emergency response plans at multiple **automotive manufacturing facilities worldwide**.

Following its proven success in land-based operations, the Turtle Fire System is now being adapted for **maritime environments** in collaboration with ship safety professionals, marine fire brigades, and Coast Guard representatives. These industry subject matter experts (SMEs) are exploring the use of fixed and portable Maritime Mini units aboard vessels carrying electric vehicles.

These discussions have identified several viable configurations:

- Fixed installations in designated EV cargo lanes on ferries or RORO vessels
- Portable handline deployment for vessel crew or fire watch personnel
- Stationary units near hot work zones to contain sparks or flare-ups immediately

This adaptable implementation reflects our focus on bridging the gap between land-based firefighting innovation and maritime cargo safety.

result

Turtle Fire System products have already proven their effectiveness in multiple controlled EV burn tests and **several real-world deployments**. Results demonstrated rapid heat reduction, decreased firefighter re-entry time, and improved safety outcomes.

In early trials and demonstrations for the maritime sector, the **Maritime Mini** has shown equal promise. The system enables crews with limited firefighting experience to apply cooling water directly to the ignition source without entering hazardous areas. It also reduces deck surface temperatures and slows horizontal flame spread between vehicles - critical advantages for preventing escalation and protecting both cargo and hull integrity.

These outcomes directly support the goals of the freight and logistics industry: preserving vessel stability, reducing cargo loss, and protecting human life. Ongoing engagement with vessel operators, ship safety teams, and marine fire brigades continues to show how the Maritime Mini provides a simple, reliable method for improving safety across varied maritime operations.

conclusion

The Turtle Fire System was created to make firefighting safer, smarter, and more accessible. Its evolution into the Maritime Mini exemplifies our commitment to adapting proven technology to emerging hazards in global transport. By empowering vessel crews to act quickly and confidently during high-risk incidents, the system safeguards personnel, passengers, cargo, and the ship itself.

Beyond the immediate firefighting application, the Turtle Fire System contributes to the broader goals of the TT Club Innovation in Safety Award: collaboration, learning, and continuous improvement in safety culture. We are proud to share our work with the international cargo and logistics community and remain committed to refining our technology in partnership with the maritime industry.

We believe that innovation is only meaningful when it saves lives, protects assets, and makes the world safer for those who move it.

LINK: https://www.turtlefiresystems.com/

UNITED KINGDOM MARITIME PILOTS ASSOCIATION

interactive digital poster to translate technical Pilot Transfer Arrangements regulations into a clear, visual format with step-by-step illustrations of compliant and non-compliant arrangements

the challenge

Pilot transfer remains one of the most hazardous operations in shipping, with an average two fatalities per annum. Each year, over 100,000 vessels call at UK ports, requiring pilots to board safely in all conditions, day and night. Deficiencies in Pilot Transfer Arrangements (PTAs) - particularly ladders - pose serious risks to pilots' lives and threaten port efficiency. Until recently, performance standards under SOLAS V/23 were inconsistently understood and applied, resulting in widespread non-compliance. Unsafe arrangements create a dual challenge: pilots cannot board without endangering themselves, and vessels face costly delays or detentions until issues are resolved. The International Maritime Organisation's adoption of revised standards (MSC 110, June 2025) strengthened accountability, requiring non-compliant PTAs to be reported and rectified.

However, compliance relies on clear understanding at every level - from shipmasters and crews to port authorities. The safety challenge therefore lies not only in tightening regulation, but in equipping a global industry and multinational workforce with accessible, practical tools that help crews identify risks, understand requirements, and implement safe practices consistently.

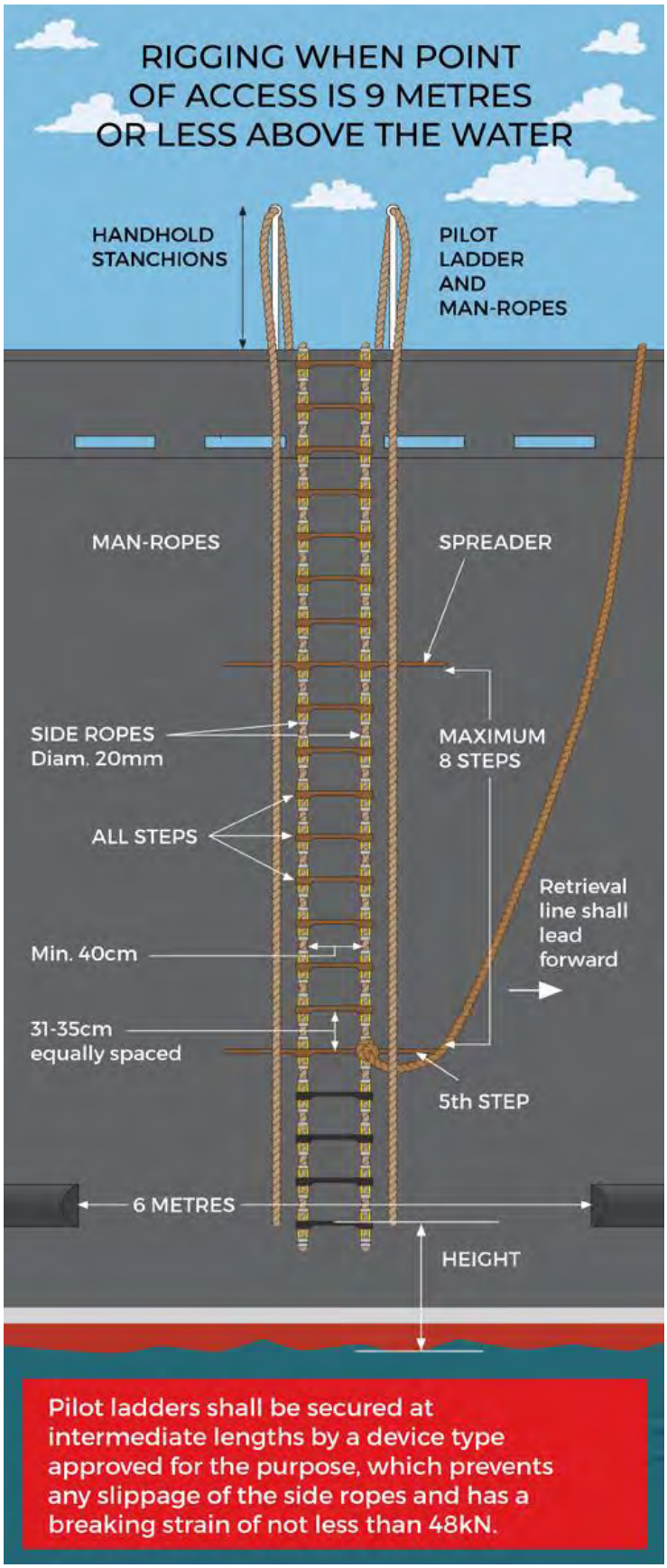
the innovation

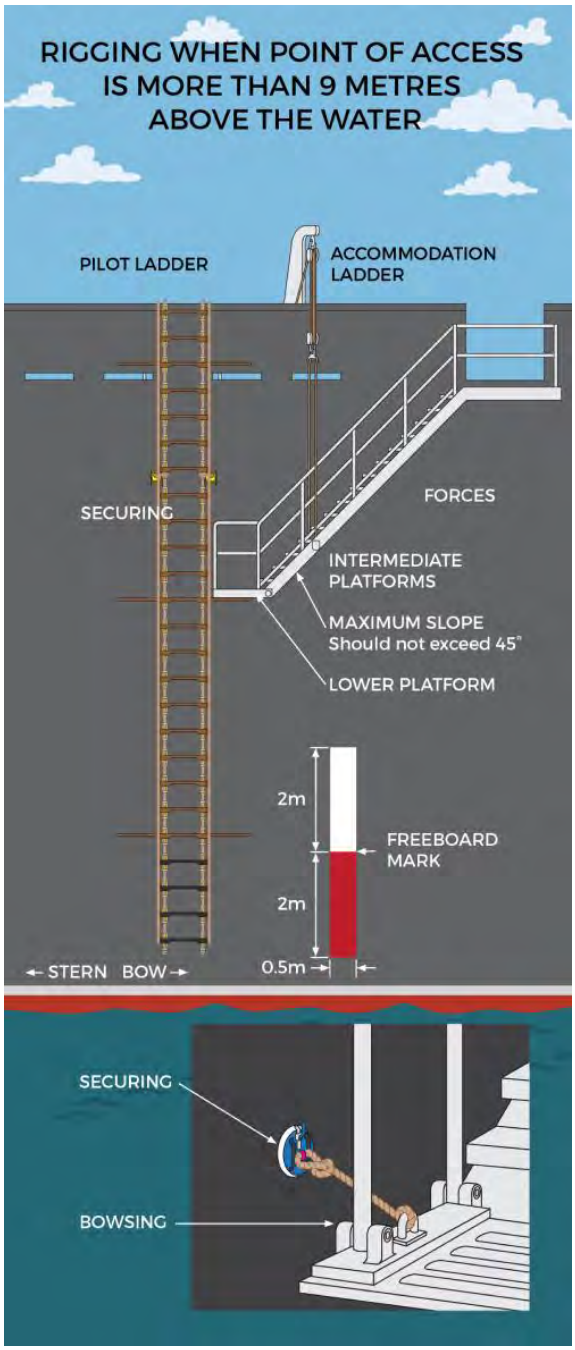
In response, the United Kingdom Maritime Pilots' Association (UKMPA) developed an interactive digital poster to translate technical regulations into a clear, visual format. The tool provides step-by-step illustrations of compliant and non-compliant PTAs, enabling instant comparison and understanding. Unlike static guidance, it is interactive: users can click through diagrams to explore specific arrangements, highlighting common failings versus best practice. Highly visual and designed for universal accessibility, it is freely available online, making use of the now mandatory internet access on ships under the Maritime Labour Convention.

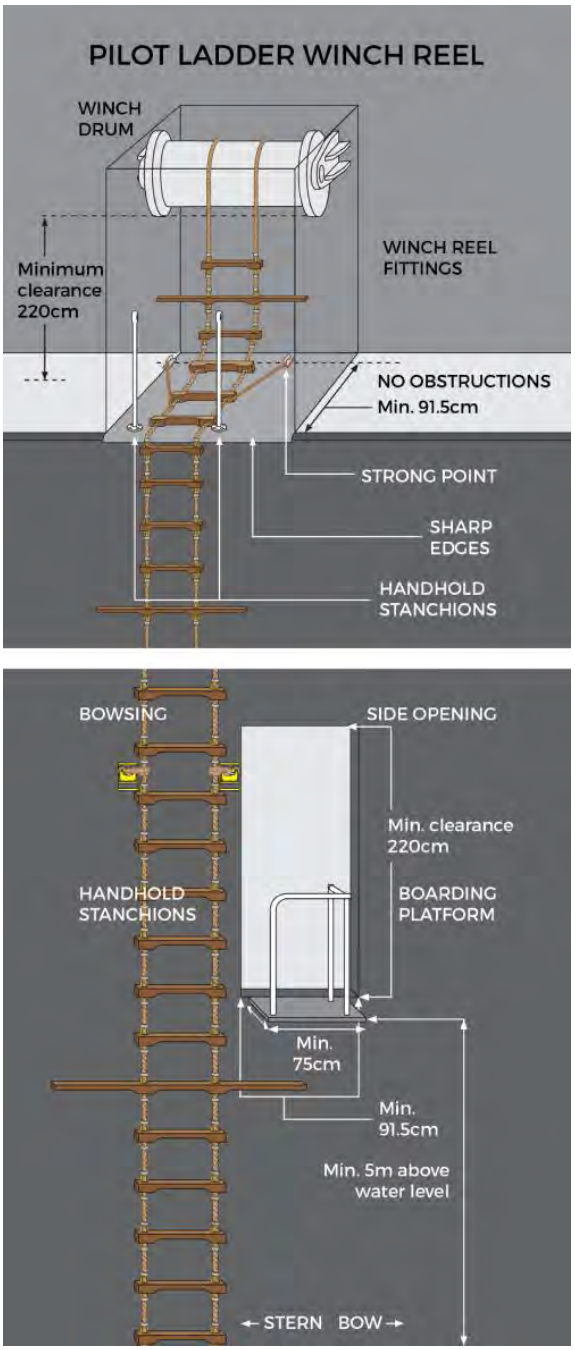
The poster is a life-saving tool with wide application:

- **training resource** for seafarers, naval architects, and pilots.
- **inspection aid** for port authorities, surveyors, and classification societies.
- **operational checklist** for crews preparing vessels for port calls.

By simplifying complex regulation, it bridges the gap between policy and practice, empowering frontline crews and decision-makers alike to reduce risks.


RIGGING WHEN POINT OF ACCESS IS 9 METRES OR LESS ABOVE THE WATER
HANDHOLD STANCHIONS
PILOT LADDER AND MAN-ROPES
MAN-ROPES
SPREADER
SIDE ROPES Diam. 20mm
MAXIMUM 8 STEPS
ALL STEPS
Retrieval line shall lead forward
Min. 40cm
31-35cm equally spaced
5th STEP
6 METRES
HEIGHT
Pilot ladders shall be secured at intermediate lengths by a device type approved for the purpose, which prevents any slippage of the side ropes and has a breaking strain of not less than 48kN.

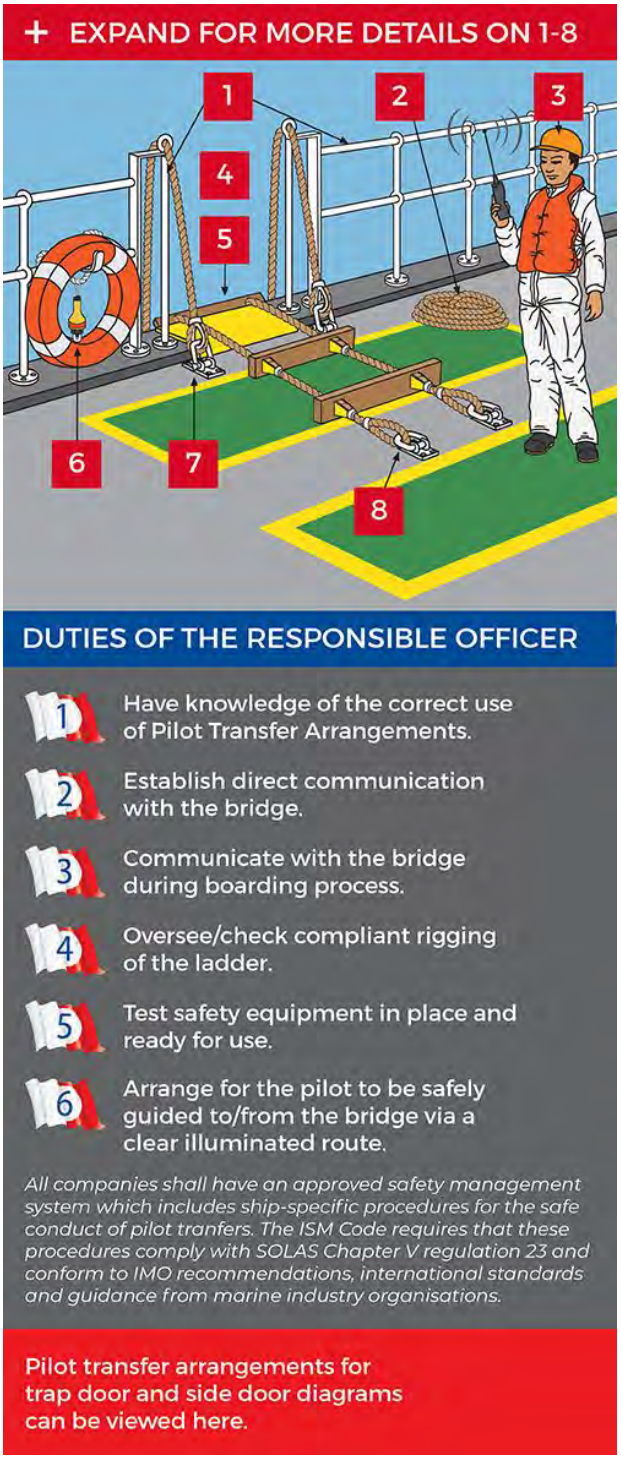




how it was implemented

The tool was conceived and developed by the UKMPA Technical & Training Committee, led by expert maritime pilots with decades of operational experience. Contributors included Technical Chair John Slater, Committee members Jonathan Smith and James Musgrove, and Kevin Vallance, author of The Pilot Ladder Manual. The team distilled updated SOLAS V/23 requirements into an intuitive, visual design, then collaborated with digital specialists to create the interactive functionality. The project was launched publicly on the UKMPA website, ensuring free global access. Key stakeholders - including pilots, masters, port and harbour authorities, naval architects, classification societies, and relevant trade associations - were targeted for engagement. The interactive poster was designed for immediate

operational use but also to support early adoption ahead of new compliance deadlines (2028-2030). Implementation was underpinned by strong advocacy and communication: press releases, presentations at maritime safety forums, and outreach to industry stakeholders helped embed awareness. Importantly, the format was designed to integrate seamlessly into daily vessel operations - accessible from the bridge, training rooms, or handheld devices - without requiring specialist software. This low-barrier, high-impact approach ensured rapid uptake.



result

Since its launch in July 2025, the interactive poster has been recognised as a practical, life-saving tool by industry stakeholders. Pilots and crews report that the visual, clickable design enables immediate recognition of compliant versus unsafe arrangements, reducing ambiguity in decision-making. Its use has already prevented unsafe boarding by giving pilots and crews a clear, shared reference point. For ship operators, the tool helps minimise costly delays: deficiencies can be identified and corrected before a vessel arrives in port, reducing the risk of inspections or costly detentions. As a training resource, it supports consistency in safety practices across diverse crews and vessel types. Beyond immediate benefits, the poster reinforces cultural change: by clearly showing "what good looks like," it raises expectations of compliance across the industry.

Feedback from port authorities and insurers indicates that the tool is strengthening accountability and trust between ship operators and pilots. In short, it addresses the safety challenge at scale - supporting both lives and supply chain continuity.

conclusion

The UKMPA's interactive poster represents a low-cost, high-impact innovation with far-reaching benefits. It tackles a critical safety challenge with a solution that is accessible, practical, and universally scalable. Unlike traditional regulatory documents, which can be complex and text-heavy, this tool communicates essential information visually and interactively, ensuring clarity in high-pressure multinational operational contexts. Its success lies in its simplicity: a global resource that can be accessed by any vessel, anywhere, at any time. By bridging the gap between international regulation and frontline practice, the poster has accelerated early adoption of new SOLAS V/23 standards ahead of the 2028-2030 enforcement deadlines. The initiative also highlights the leadership of UK maritime pilots in driving safety innovation, while recognising the vital role of the International Maritime Pilots' Association (IMPA), whose advocacy laid the groundwork for these regulatory changes. Ultimately, this innovation protects lives, safeguards port efficiency, and strengthens the resilience of global supply chains- making it a model of best practice in maritime safety.

LINK: https://ukmpa.org/public-documents/interactive-pilot-transfer-arrangements/

WARRENPOINT HARBOUR AUTHORITY

cameras on a mobile harbour crane provide live safety coverage of activities on the vessel during discharge as well as of the cargo set-down area on the quayside

the challenge

The majority of recorded accidents/incidents in 2023 and 2024 had occurred inside the hold of vessels. Whilst there is excellent CCTV coverage throughout the port, this does not cover the inside of holds of vessels. We believed that, if we could fit CCTV cameras to mobile harbour cranes, this would give us great insight to the activities within the holds and would be invaluable in assisting with accident prevention and incident investigations.

the innovation

We liaised with our CCTV camera system supplier and arrived at a solution for installing five cameras on a mobile harbour crane. These cameras provide live coverage of activities during vessel discharge. Due to the positioning of the five cameras, this also provides coverage of the cargo set-down area on the quayside

how it was implemented

We consulted with the crane operators and ran a number of trials with “Go-Pros” to ascertain the optimum positioning of the fives cameras. It had already been decided that five cameras would be required to ensure 360o coverage whilst the crane is in operation. Additional

booster aerials were installed both on the crane and on the highest point on an adjacent silo, thus ensuring constant signal. Captured footage is stored on the port server.

result

We have already been able to review one incident where a stevedore was injured whilst discharging steel cargo. Also, we have been able to routinely monitor operations within the hold remotely. We now intend to roll these out on the remaining mobile harbour cranes.

conclusion

We have already been able to review one incident where a stevedore was injured whilst discharging steel cargo. Also, we have been able to routinely monitor operations within the hold remotely. We now intend to roll these out on the remaining mobile harbour cranes.

LINK: https://warrenpointport.com/

About TT Club

TT Club is the established market-leading independent provider of mutual insurance and related risk management services to the international transport and logistics industry. TT Club's primary objective is to help make the industry safer and more secure. Founded in 1968, the Club has more than 1100 Members, spanning container owners and operators, ports and terminals, and logistics companies, working across maritime, road, rail, and air. TT Club is renowned for its high-quality service, in-depth industry knowledge and enduring Member loyalty. It retains more than 93% of its Members with a third of its entire membership having chosen to insure with the Club for 20 years or more.

International Cargo Handling Coordination Association

Established in 1952, ICHCA International is an independent, not-for-profit organisation dedicated to improving the safety, productivity and efficiency of cargo handling and movement worldwide. ICHCA's privileged NGO status enables it to represent its members, and the cargo handling industry at large, in front of national and international agencies and regulatory bodies, while its Technical Panel provides best practice advice and develops publications on a wide range of practical cargo handling issues. Operating through a series of national and regional chapters, including ICHCA Australia, ICHCA Japan and Correspondence and Working Groups, ICHCA provides a focal point for informing, educating, lobbying and networking to improve knowledge and best practice across the cargo handling chain.

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Further Advice and Information

ICHCA International also offers a technical advisory service, with input from ICHCA Technical Panel, to answer member regulatory and operational cargo handling queries. For more information contact secretariat@ichca.com or visit www.ichca.com