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**ICHCA INTERNATIONAL presents**

**TT CLUB INNOVATION IN SAFETY AWARD 2016**

A digest of entries received & winners announced

**#makeitsafe**

#makeitsafe



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All images have been supplied by the entrants.

## ICHCA INTERNATIONAL PREMIUM MEMBERS



# 1 | FOREWORD

Promoting safety and good practice through collaboration and sharing is at the heart of TT Club's mutual ethos. As a result, TT Club was delighted to partner with ICHCA International to launch the TT Club Innovation in Safety Award, which forms part of the ongoing ICHCA International and TT Club #makeitsafe campaign.

It was a genuinely difficult task to evaluate the entries for this first Award. The judges were seeking something that had a proven record of improving safety, was original in its approach, conception and implementation, and was transferable between operations globally, whether small or large. What is presented here demonstrates breadth and depth through the industry, responding to a diverse range of issues. What was most clear overall was a widespread passion to improve safety and efficiency.

TT Club believes that safety is fundamentally as much about protecting and enhancing sustainable business as about saving lives. While a 'winner' and 'highly commended' were ultimately chosen, TT Club and the other judges heartily commend each entry and trust that others may benefit from the sharing of this digest.



Peregrine Storrs-Fox  
Risk Management Director  
TT Club



# 2 | ABOUT THE SAFETY AWARD

The TT Club Innovation in Safety Award was presented by ICHCA International in 2016 to highlight the importance of safety at a time of increased operational demands on cargo handling infrastructure and operations worldwide. Our goal was equally to champion and celebrate the many companies and individuals around the world who are 100% dedicated to 'making it safe' every day, and to acknowledge and foster innovation to improve safety in cargo operations and logistics.

Both ICHCA International and TT Club, the Award Sponsor and a Premium Member of ICHCA, have a fundamental commitment to risk reduction throughout the supply chain industry and, in particular, to safety within cargo handling operations. This is paramount to the philosophy of the two organisations and the Award reflects this commitment.

The 2016 Award was open to anyone – an individual, team or company – involved in cargo logistics. Entrants were required to show that a product, idea, solution, process, scheme or other innovation had resulted in a demonstrable improvement to safety.

Empirical evidence or corroborative support was required to illustrate that the entry enhanced safety in a defined situation or provided a solution to a defined issue. Among other criteria, the judging panel was looking for originality and the possibility for applications in wider industry circumstances.

Applications were received from a wide range of industry stakeholders, including individuals, companies and teams. The geographic scope of entries was also diverse, including Africa, Australia, North and Southern Europe, Indian Sub-Continent, Middle East, South America and South East Asia. Entries covered both new technology developments

and examples of 'on-the-ground' innovation to influence safety culture, behaviour and processes positively. The standard of entries was overall extremely high and the judges were impressed by the thought and time that had gone into many of the applications. It is clear that a passion for safety is prevalent, which is very encouraging.

As detailed on the following pages, entries covered technologies, processes, systems and approaches to deal with a variety of safety topics, at sea and on land, including:

- Incident data gathering and analysis
- Collision detection and prevention
- Container lashing and securing
- Container weight and load eccentricity detection
- Dangerous goods declaration and compliance
- Equipment maintenance
- Fire/smoke detection
- Packing of containerised dangerous goods and heavy project cargoes
- Port personnel safety
- Working at height

The winner of the TT Club Innovation in Safety Award 2016 was announced at the ICHCA International Conference in Barcelona in March 2016 and awarded by Kitack Lim, Secretary-General of the IMO.

In 2017, the award will be presented in October to coincide with ICHCA's 65th Anniversary Conference in Las Palmas.

**If you would like to enter the awards in 2017, please contact [secretariat@ichca.com](mailto:secretariat@ichca.com) for more details.**

# 3 | AND THE WINNER IS...

## APM TERMINALS BUENOS AIRES FOR THE MOBILE PORT EQUIPMENT SAFETY LOGGING SYSTEM

**APMT Buenos Aires was the winner of the TT Club Innovation in Safety Award 2016, for its mobile port equipment Safety Logging System. This innovation produced measurable proven results in incident reduction and behavioural responses from the workforce.**



### The problem

Back in 2012, APM Terminals started to roll out its 'Global Minimum Requirements', part of which required the mandatory use of seatbelts in all cargo handling equipment (CHE) such as forklifts, reach stackers, RTGs and mobile harbour cranes.

As the HSE team at APM Terminals Buenos Aires started to look at enforcing this and other requirements (35 in total), it became very clear that CHE operators at the facility commonly displayed a lack of awareness for their own safety. With mobile equipment constantly working across the eight acres of the terminal, enforcing the new global requirements meant setting up a constant patrol to check on driver behaviour.

*Javier Daffada, Health Safety and Environment Manager at APM Terminals Buenos Aires, accepts the 1st ICHCA International TT Club Innovation in Safety Award from IMO Secretary General Kitack Lim at the ICHCA International Conference 2016, introduced by Peregrine Storrs-Fox, Risk Management Director at TT Club*

The HSE team looked into the option of installing a system capable of controlling the use of seatbelts. But the challenge here was that the system would be easy to bypass and difficult to enforce, especially as any operative could drive any reach stacker (for example) since they all come with the same starting key.



From left to right: Eduardo Autelli (vendedor, CAE SISTEMAS), Miriam Arcuri (vendedor, CAE SISTEMAS), Aluhe Autelli (vendedor, CAE SISTEMAS), Juan Pablo Lloret (HSSE supervisor APM Terminals), Javier C. Daffada (HSSE Manager APM Terminals), Roberto O. Diaz (HSSE supervisor APM Terminals)

### The solution

The team went back to the design table, with the help of a developer who was already working with the terminal on a GPS tracking device for CHEs, and designed a system with the following capabilities:

**Live GPS positioning** for all equipment, including but not limited to RTGs, reach stackers (full and empty), forklifts, pickups and internal buses.

**An ID Touch key** with selective logging system for each previously authorised operator. In order to be authorised, drivers first need to take an official training course and be certified. Operatives might get certification for a forklift but maybe not for a reach stacker, for instance, so the touch key only allows them to work on that specific equipment.

**Speed tracking.** With the GPS APMT set the max speed inside the terminal at 30km/h and 100km/h outside for pickups, whenever a vehicle or equipment exceeds this limit, an alarm sounds inside the cabin until the speed is reduced.

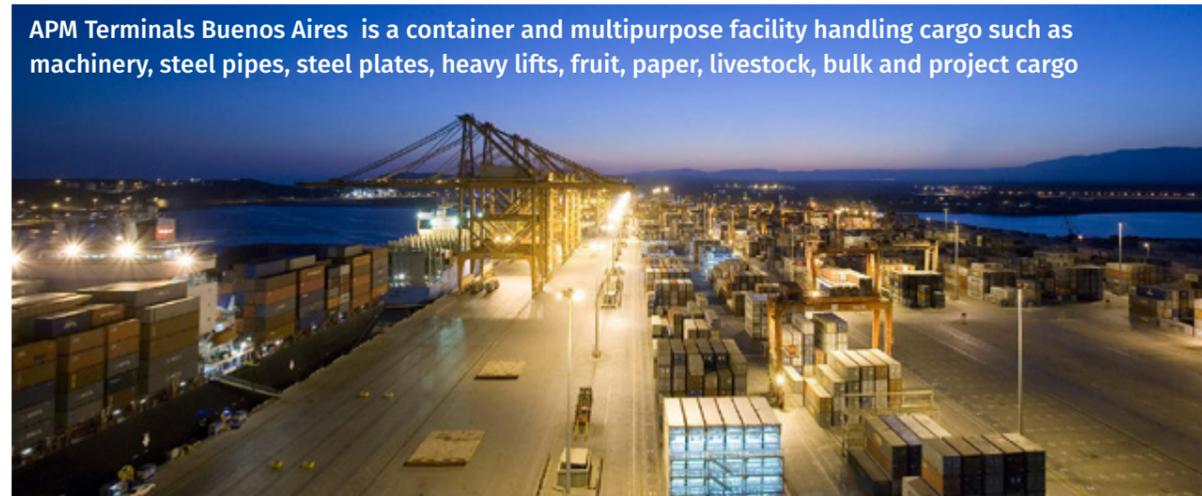
**Real time tracking.** The technical department was having trouble getting this information so the decision was taken to provide this technology on all equipment to enhance preventive maintenance.

**No man on cabin.** The Buenos Aires team also observed several operators who stepped down from their equipment but left engines running while the vehicle was unattended. If this happens now, the equipment will shut down automatically after 10 seconds.

**Use of seatbelt.** This was of course the primary objective. However, as the project moved forward the APMT Buenos Aires team noticed that many operators were bypassing the system, or simply not logging onto it at all. The company therefore made the following enhancements:

- The equipment will not start if the driver is not logged on
- An alarm will sound if the seatbelt is not used and the equipment then turns off automatically
- If the seatbelt is activated before the seat sensor is activated this means it has been bypassed. In this case, the CHE will not start and an alarm will sound

APMT Buenos Aires also observed that many technicians were bypassing the wiring so that they could disable the alarms. The company therefore created a specific high visibility light to ensure all equipment can be seen to be working properly



APM Terminals Buenos Aires is a container and multipurpose facility handling cargo such as machinery, steel pipes, steel plates, heavy lifts, fruit, paper, livestock, bulk and project cargo

either at a certain distance or with the CCTV system. If the lights are not blinking, the company knows that the operative has bypassed the system and can respond quickly. All the above information is recorded and analysed and individual reports with hard statistics are generated for every non-compliant employee.

**The results**

This system was implemented on APM Terminals Buenos Aires in 2012 and has been working there ever since. The results have been remarkable.

**First step:** Like all systems requiring changes to human behaviour, this project involved a lot of discussions with union representatives, operatives and even with the technical department, who were worried about the equipment draining the batteries (it was not).

**Second step:** After the operatives saw that the

company was not going to give up on the cabin alarm system, they began to work on their behaviour and change the way they used the equipment.

**Third step:** Once APM Terminals Buenos Aires was able to reduce the bypass and sabotage of the equipment, the company started to control the reports, calling the operatives in one by one and showing them the statistics resulting from a decrease in rule breaking. By doing so the company was able to combine this with its Behaviour Based Safety Training System to effect real change.

**Next steps:** The next step will be to combine this equipment with a digital safety checklist of the equipment so that each operative needs to run through the checklist before starting the equipment. The aim is to complete this work by the end of 2016.

*“Although we still have a long way to go, this award has encouraged the team to face all the upcoming challenges.”*

**Javier Daffada, Health Safety and Environment Manager  
APM Terminals Buenos Aires**

# 4 | HIGHLY COMMENDED

## ANDREW RYAN AS NOMINATED BY ASCIANO FOR THE RYAN KEY

Entries for the TT Club Innovation in Safety Award were numerous and varied, and the judges were pleased also to award a Highly Commended prize to Andrew Ryan, as nominated by Asciano Australia, for the concept of the Ryan Key. This simple tool enables container twistlocks that have partially failed or been incorrectly installed to be locked in the open position, eliminating the need for operatives to remain in the danger zone to hold them whilst the container is discharged.



Andrew Ryan, a crane operator, safety facilitator, workplace trainer and HSE representative working at Patrick's AutoStrad terminal in Brisbane received the Highly Commended prize for the Ryan Key, a twistlock handling safety tool he invented in his shed

**The problem**

For decades, stevedores all over the world have been putting their lives at risk due to jammed twistlocks on shipping containers.

Crane operator Andrew Ryan recalls how frightened a worker had become at Brisbane's Fisherman Islands Terminal in March 2013. Containers were being unloaded when a team leader called for help with multiple snagged twistlocks and the worker had to enter the restricted work zone as containers were moving.

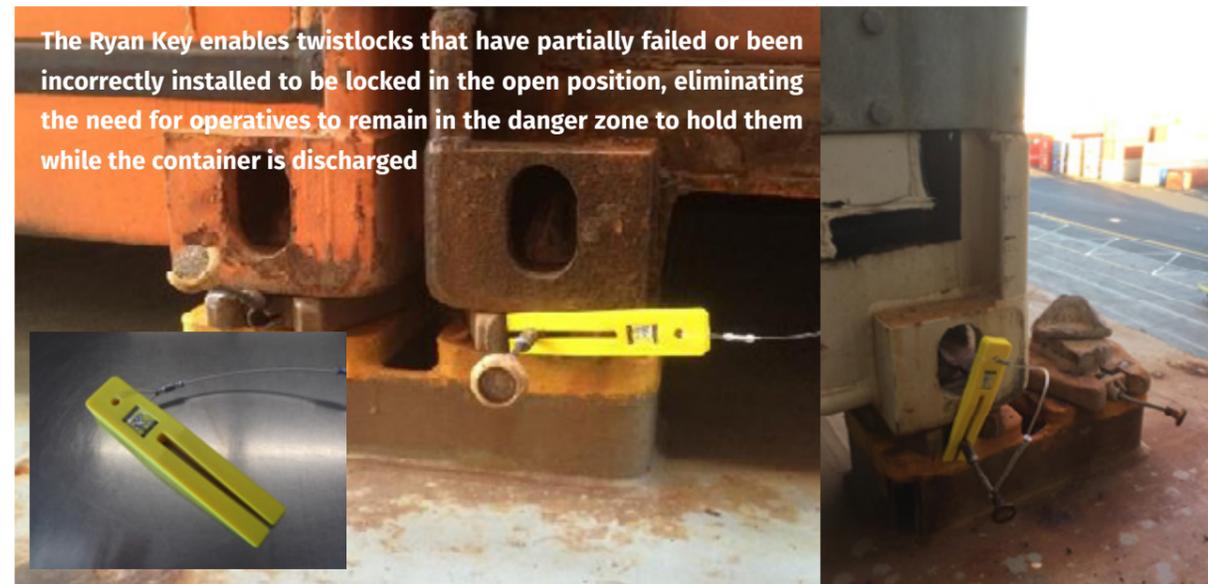
Afterwards, this man was visibly shaken and adamant that no-one should have to face that danger. Seeing the worker's fear was the turning point for Andrew.

**The solution**

That night, in his shed, Andrew came up with a simple but effective idea to prevent this danger. He invented the Ryan Key, now used across Asciano's Patrick Container Terminals group. Patrick manages about half of all containerised cargo that enters or leaves Australia, handling more than 3m TEU annually through four container terminals in Brisbane, Sydney, Melbourne and Fremantle.

Andrew followed the "hierarchy of control" to come to this solution. It was obvious that the potential risk was injury and death:

**Level 1:** Firstly, he identified the main hazard that needed to be eliminated: faulty twistlocks. Andrew concluded that he could not eliminate the faulty twistlocks, as they are not owned by Asciano.



The Ryan Key enables twistlocks that have partially failed or been incorrectly installed to be locked in the open position, eliminating the need for operatives to remain in the danger zone to hold them while the container is discharged

**Level 2:** He could not substitute the hazard with something safer for the same reasons. Employees have to step into the Restricted Work Zone to unlock a faulty twistlock, therefore he could not isolate the hazard from employees. So Andrew developed an engineering control: the Ryan Key. Using the Ryan Key to keep faulty twistlocks open means that employees are not in the restricted work zones while a container is lifted.

**Level 3:** The crane operator and the person entering the Restricted Work Zone to apply the Ryan Key have to follow the amended communication protocol that ensures no containers are lifted while a person is in the restricted work zone.

**The next steps**

Once Andrew decided that he had to find a solution to working with faulty twistlocks, he developed the initial concept of a plastic fork wedged device enabling the twistlock head to remain in the open position for the container to be unloaded.

After approval from the Terminal’s Safety Manager, Andrew made prototype keys in his shed. He returned to work the next day to trial the first prototypes – with instant success. He then took the idea to senior work colleagues for their thoughts on the idea. Their response was 100% positive.

The Ryan Key is now implemented in work practises at all Patrick terminals and the results speak for themselves: worker morale is much higher, safety culture has improved, productivity is up, and most importantly: no fatalities have occurred.

**The results**

Implementing the Ryan Key has removed a significant amount of stress from workers who don’t have to enter the restricted work zone anymore, and from the crane operator lifting the container, who feels responsible for the wellbeing of his work colleagues, says Asciano. Opening faulty twistlocks with the Ryan Key is also faster, having a positive impact on productivity as the 12 million dollar crane does not sit idle anymore. In some cases several twistlocks can be jammed at the same time on each corner of a container.

“Andrew Ryan took the initiative to solve a major safety issue that had been an everyday work practise for many decades. His idea is amazing in its simplicity and effectiveness,” adds Asciano.

Andrew is now talking with container terminal owners worldwide to have the Ryan Key implemented. [More information on the Ryan Key can be seen on YouTube.](#)

# 5 | ENTRIES

Entries are presented in alphabetical order and comprise those that have granted permission for the details to be given.

## APM TERMINALS – PROJECT STACK

**The problem**

The industry has experienced numerous incidents and fatalities in connection with containers being knocked down from stacks on RTG yards.

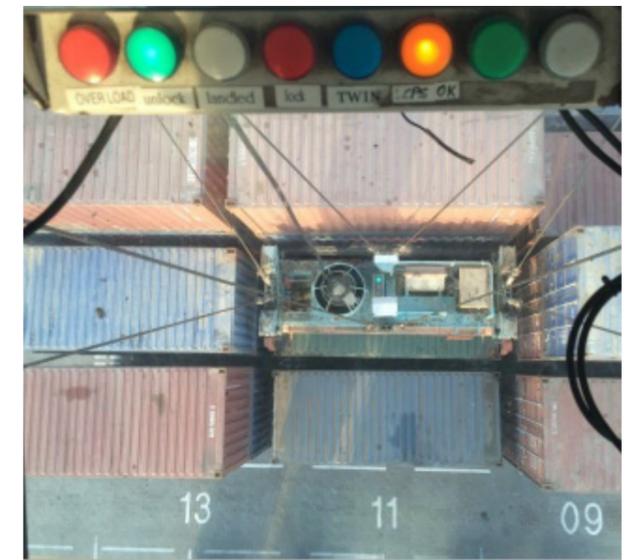
**The solution**

Project STACK – Systems to Tackle Accidents with Container Knockdowns – is a company-wide initiative at APM Terminals. The project was structured as a staged, collaborative process involving a multidisciplinary team, and resulted in the development of fully innovative functional specifications for a Load Collision Prevention System (LCPS).

LCPS is currently being retrofitted on existing RTGs and is also now part of the specification for new RTGs. The retrofit package has as a principle a simple design, minimum interaction with the RTG controls and “plug & playability” for integration with all different combinations of RTGs and control systems brands. It consists of one 2D scanner and one 3D scanner to generate the stack profile, and a small control box in the cabin.

From the start, says APM Terminals, there was a clear focus on the problem to solve and on the analysis to be performed. All RTG knockdown incidents were analysed and tools such as stack position heat-maps, risk assessment and Failure Mode Effects Analysis were used to identify root-causes, failure mode, consequences, frequency and controls.

This resulted in a two-step approach, where initially immediate-containment Standard Operating Procedures (SOPs) were rolled out for minimising safety risks, based on motion interlocks on the RTG trolley that prevent trolley movement at hoist heights where there is the risk of knocking down



containers. APM Terminals then developed its LCPS as a medium-term, engineered solution, having determined that current off-the-shelf solutions didn’t address all main risks. For instance, data analysis showed that knockdowns of containers on adjacent bays are a considerable risk, but no existing system catered for this. “Adjacent bay detection” was therefore incorporated into APM Terminals’ LCPS as one of the innovative new features.

**The results**

Results of STACK are evident both in terms of lagging and leading indicators. Since the start of the project, deployment of the SOPs has decreased container knockdowns towards the service lane by 70%. Analysis shows that not only have incidents decreased, but also variability: this shows higher control over the process and that improvements are the outcome of the control measures, rather than a “lucky strike”.

APM Terminals is rolling the system out across its global network, and will also make LCPS available to other operators with no exclusivity or IP claims.

# APM TERMINALS AQABA CONTAINER TERMINAL - SAFETY AWARENESS AND TRAINING CAMPAIGN

## The problem

The team at Aqaba Container Terminal (ACT), part of the APM Terminals group, realised that although it had conducted significant risk assessments, these had not been fully comprehensive or involved the right teams to have the desired impact.

As a young terminal, opened in 2006, and with significant new hires, the ACT team realised that it needed a greater focus on building a robust safety culture along with 'hard' safety features related to traffic layout, signage, line marking and infrastructure improvements.

## The solution

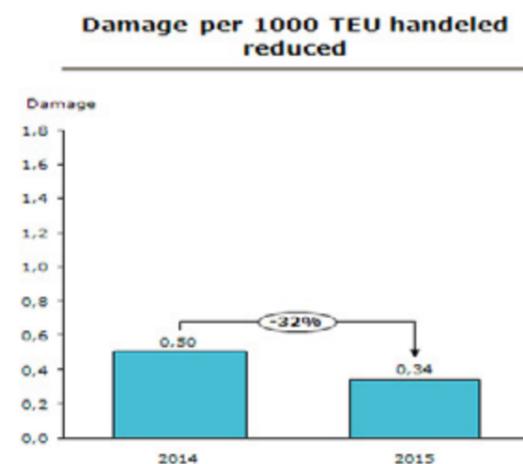
ACT implemented a full awareness and training campaign for all employees, including operators, clerks and foremen. Employees were given the time and resources needed to review each operational activity in the business, placing their Safe Operating Procedures (SOPs) "to the side" and reviewing the activity from a risk perspective only. This process involved collaborating between departments to

provide "fresh eyes" along with technical experience to innovate control measures.

SOPs were updated as a result and teams were briefed on the new processes and reasons why these changes were made, by colleagues and peers who conducted the risk assessments. Through this process, not only were the main risks identified but "we enabled our workforce to enhance their awareness, own the process, understand why and provide them the tools to consider the same approach in the way that they work daily," says ACT.

## The results

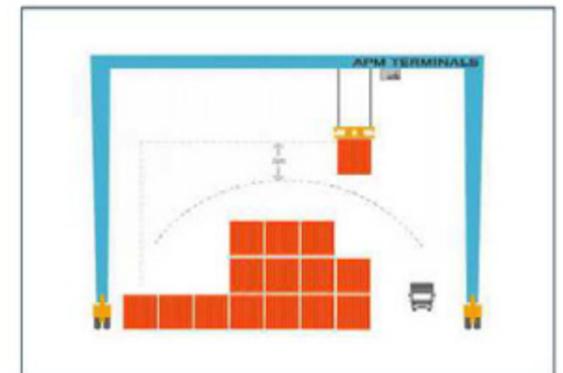
Safety awareness has now risen significantly, as illustrated by a 13% increase in the number of safety observations reported by teams on the ground, along with their greater ownership of intervention and awareness. Observations are reported more intensively and solved immediately. There has also been a significant reduction in the number of incidents per 1,000TEU, which is one of the terminal's key indicators.



# APM TERMINALS BAHRAIN – TECHNICAL SAFETY SOLUTION FOR RTG YARD CRANES AND REACH STACKERS

## The problem

APM Terminals Bahrain, operator of Khalifa Bin Salman Port, had experienced several incidents due to blind spots facing operators, of rubber tyred gantry cranes (RTG) and reach stackers (RS). Additionally, there had been some container toppling incidents involving RTGs while in reverse mode, which caused damage to the container and could potentially have led to a fatality for truck drivers. The terminal therefore wanted to find a technical solution to mitigate these risks and address a number of related safety concerns for RTG and RS operations.



## The solution

A range of technical solutions was developed and implemented on RTG and RS equipment, including:

### RTG

- Six-camera CCTV system installed on RTGs to give operators a clear view of the blind spots, with four cameras fixed above the 4 RTG legs for right and left gantry, one fixed to monitor the truck lane and another to monitor the rear side for cross gantry (90 degree travel) from one block to another.
- To address container topples in the reverse mode, the existing RTG PLC program logic was modified to disable the hoist function in cases of unsafe height. A green light indicator in the cabin notifies the operator once the hoist reaches the safe height.
- Fitted a gate lock system, interfaced to the crane PLC, to prevent the cabin door from opening during operation.

### RS

- Two rear lock pins were installed to prevent

accidental movement of RS cabins, with a proximity switch added to determine the position of the lock pin. This was linked directly to the gearbox controller to prevent any motion in cases where the lock pins are not secured. A light indicator in the operator cabin indicates when the lock pin is in the correct position.

- A camera was fixed on the back of the RS, with a screen fixed inside the cabin, allowing the operator to overcome the blind spot on the screen while in reverse. The camera also operates under night vision, giving the operator better visibility during night shifts.
- A mechanical switch was mounted to open/close RS cabin door.

## The results

RTG container toppling incidents have been reduced and operators now have clear visibility, with no blind spots. The risk of RTG doors accidentally opening when the trolley is not in a parked position has been eliminated.

RS cabins now remain in a secure position even in case of incidents, and operators' blind spot in reverse has been overcome, lowering the risks of back-up collisions.

## APM TERMINALS SENEGAL – SAFETY NETS FOR TRUCK OPERATIONS

### The problem

Working at height has significant potential for fatal and serious incidents, due to people and objects falling during unloading operations or packing of goods. These need to be prevented.

### The solution

APM Terminals Senegal developed and implemented safety nets as a collective protection device that does not prevent falls, but does impede them and minimises the consequences when incidents occur.

The nets are now deployed to help protect personnel whilst working on trucks during unloading activities. The company says that the nets simplify systems of work and protect both workers and others, such as supervisors.

The nets function to:

- Provide protection to workers in respect of falling and suffering injuries
- Prevent falling objects
- Protect people working underneath from falling objects



## APM TERMINALS SOUTH ASIA INLAND SERVICES - BIODEGRADATION FOR SAFE DISPOSAL OF AGRICULTURAL GOODS

### The problem

APM Terminals Inland Services (IS) owns and operates container freight stations (CFS) which are customs-bonded spaces for the storage of Exim trade containers. Sometimes containers are disputed, not cleared by customs, or the owner doesn't claim the goods. When a containerload of agri cargo is abandoned by its owner, it ends up being stored for a very long time in the CFS and the decaying cargo may need to be disposed of.

The only traditionally available solution for disposing of these abandoned cargoes involves a lengthy process of approvals from Government agencies and finally transporting the goods to an incineration site. This is a very high cost operation and does not make any use of the resulting by-product. APM Terminals Inland Services' Team wanted to find a safer, better and simpler approach.

### The solution

The team came up with the idea of biodegradation as an alternative to incineration. Next, it needed to find a viable way to perform biodegradation, as conventional approaches could take several months and the equipment was extremely expensive.

The team therefore decided to try out an in-situ biodegradation, using cultures (inoculums) to treat the organic matter inside the container while stored at the CFS. The culture would treat and convert the agricultural commodities into organic matter which could then be used as manure. On evaluating various biotechnological institutions, the team approached Bhabha Atomic Research Centre (BARC)

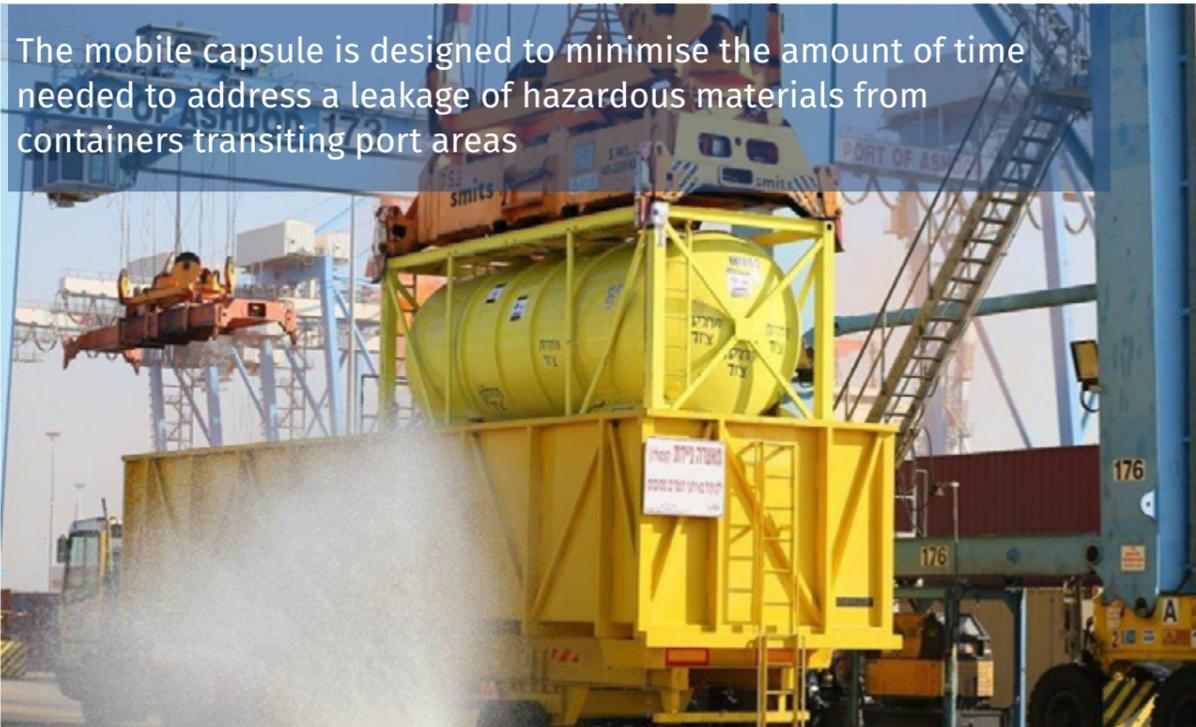
as a partner for the project. The BARC team came up with a brand new culture, which enabled growth of bacterial and fungal consortium (inoculums) and made the biodegradation process faster. The new culture proved so effective in fact that the biodegradation of 203 metric tons of potatoes contained in 7 refrigerated containers at the APM Terminals CFS in Mumbai took just one month, versus three months as originally planned.

### The results

Biodegradation converted the unwanted potatoes into manure fit for agricultural and gardening purposes, which were distributed to neighbouring businesses and villages free of cost.

Having pioneered this innovative biodegradation technique, the company is now committed to extending it to similar commodities and has identified more than 150 such containers belonging to other similar organisations in the vicinity that can be similarly biodegraded.





The mobile capsule is designed to minimise the amount of time needed to address a leakage of hazardous materials from containers transiting port areas

## ASHDOD PORT COMPANY – MOBILE CAPSULE FOR DANGEROUS GOODS

### The problem

Leaks of hazardous materials from containers in the port area.

### The solution

The mobile capsule is a unique invention of Ashdod Port Company, developed by the port's safety engineer, Meir Amar. It allows the port to minimise the amount of time needed to address a leakage of hazardous materials from containers being transported through or stored by the Israeli port.

The mobile capsule is a large sealed tank, with the capacity to hold an entire 40ft container inside it, in order to prevent the spread of toxic or flammable liquids and vapours from a leaking container.

As soon as there is a suspicion of leakage from a container, the mobile capsule is quickly brought to the site. The leaking container is inserted into the mobile capsule until it is completely sealed.

The capsule, together with the leaking container, is then transferred to a safe area for further treatment.

The capsule is equipped with faucets to drain liquids and gases or to add neutralizing materials (water or other chemicals).

The advantages are:

- Reducing the risk of damaging the environment and endangering human life
- Taking control of the situation and containing the event as quickly as possible
- Quickly returning the port to its usual work routine
- Effectively treating an event by significantly reducing economic damage to the port and its customers, as a result of work interruptions and evacuation of employees from the area that are at risk
- Avoiding fines imposed by regulators

## BISON – CONTAINER WEIGHING JACKS

### The problem

Complying with the new IMO SOLAS verified gross mass (VGM) container weighing regulations, which from 1 July 2016 stipulates that all laden containers should have their total weight verified by one of two approved Methods prior to loading on-board ship.

### The solution

Bison Weighing Jacks allow complete grounded laden containers to be weighed at the packing location (Method 1), avoiding the need to weigh individual cargo items, packaging materials and confirm container tare weight (Method 2) and eliminating cost and delays from diverting containers to off-site weighbridges.

In operation, a scale is attached to each of the four container corners and the container is then jacked up.

Weight data is captured and can be viewed immediately on a smart phone via an app. The system provides users with an accurate VGM in electronic format, confirms safe load distribution and communicates the weight record immediately by email.

The scales used in the system are rugged industrial versions capable of weighing all grounded ISO container types, sizes and weights up to 35,000kg, providing a portable and accurate way for shippers and packers to weigh containers at point of load.



## BROMMA - AUTOMATED LASHING PLATFORM

### The problem

Manual fixing and removal of container twistlocks during ship load and discharge is a dangerous job and many incidents are reported every year. Stevedores work close to suspended loads and moreover in the same area as horizontal transport by straddle carriers and trucks. The handling of centre twistlocks on twin and twin-tandem lifts is particularly dangerous because stevedores have to step between the containers to access them.

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 solution

The Automated Lashing Platform (ALP) is the first system on the market capable of handling twistlocks fully automatically, eliminating the need for personnel working close to or under suspended loads. The technology was invented by Rainer Kapelski and developed over the last few years within the Bromma organisation. Rainer is a former straddle carrier driver who during his service in the Port of Hamburg saw the dangerous environment the stevedores were facing. He even experienced friends and colleagues getting injured on the job.

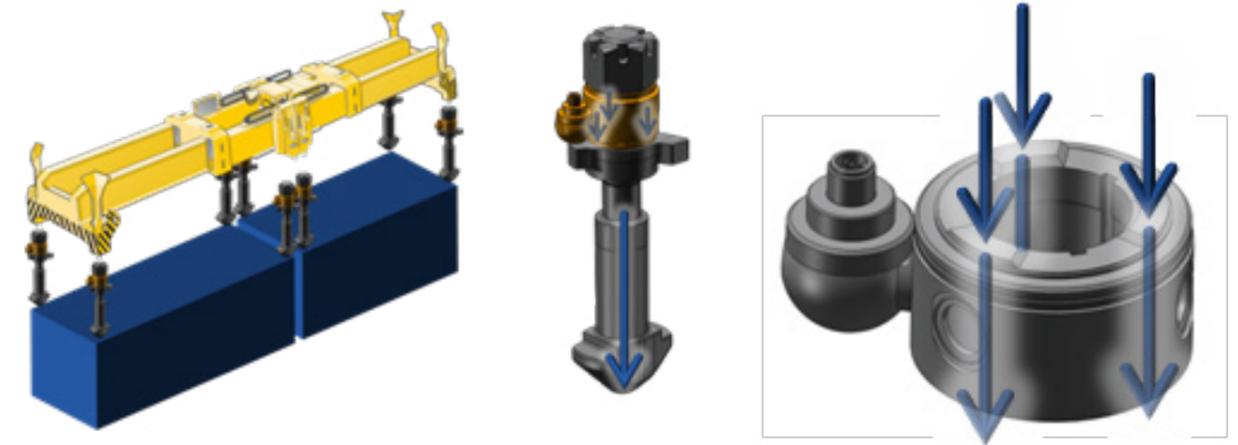
This triggered him to start thinking about how to get people away from the dangerous area under the gantry crane. The basic development of the first prototype took about three years, including cooperation with Eurogate Hamburg, a terminal which saw the need and wanted to support the initiative. The first phase was followed by many years getting the product ready for operational use.



The system enables fully automatic removal and mounting of twistlocks during discharge and loading of containers. Twistlocks are stored in revolving magazines to enable reattachment during the ship load cycle without manual intervention. Each magazine holds 2,400 twistlocks. The ALP can be installed on the lanes under the crane legs or on quay crane lashing platforms, as well as in empty-stacks for vertical tandem operations, depending on terminal logistics.

In addition to the safety benefit, the ALP also introduces the potential for productivity improvement as the quay crane and spreader do not need to wait for the twistlocks to be manually handled.

Prototypes of the system have been tested in several container terminals over the last few years, including Eurogate Hamburg, NTB Bremerhafen and DPW Southampton. The ALP was officially launched in February 2015 and the first commercial order for six units was due to be delivered to Victoria International Container Terminal in Q3 2016.



## BROSA – CONTAINER CRANE SAFETY SNAG LOAD SYSTEM

### The problem

Container handling safety regulations have become more stringent over past years and tolerances for safety systems have become tighter. Load sensors with a high degree of accuracy are now needed to monitor static and dynamic loads on the crane and detect and prevent potentially dangerous lift situations.

One of the most important of these is “snag load”, an inadvertent increase in the load on a crane, for example when a container or spreader catches in a ship during lifting. Snag loads can lead to severe damage to crane and ship and may be the cause of injuries. Basically, the quicker a snag load is detected, the safer the crane operation.

### The solution

Brosa addressed this issue early on, developing a system for dynamic detection of snag loads with flexible cut-off thresholds plus the use of force sensors for detecting corner loads.

A combination of corner load and dynamic detection is a reliable method for approaching the problem of snag load through targeted measurement. It is quicker in comparison to cut-off via the overload relay, a common approach, as the container generally only snags at one corner.

A major increase in load always occurs as the container is lifted, but of course no snag load should be registered at this point. Having the information that the lifting gear is currently lifting a load, it is possible to detect how long this procedure has been conducted, so that a load increase after the time ‘x’ can always be attributed to a snag load, and the system can suppress this immediately. Quick but accurate detection is crucial.

The Brosa system has already been applied successfully in the SOS System from Pintsch Bubenzer. Applications include Jebel Ali 3 container terminal in Dubai, where all of the ship-to-shore cranes are now equipped with this system.

## CINS – THE CARGO INCIDENT NOTIFICATION SYSTEM

### The problem

An increasing number of incidents were happening in the containerised maritime supply chain with the potential to jeopardise human life, environment, cargo and property. Container shipping lines wanted to find a way to collect and share knowledge that could drive safety improvements, without compromising commercial confidentiality.

### The solution

The Cargo Incident Notification System (CINS) is a container shipping line initiative, launched in September 2011, to increase safety in the supply chain, reduce the number of cargo incidents on-board ships and highlight the risks caused by certain cargoes and/or packing failures.

The idea for CINS was originally conceived by MSC. Five founding carriers then came together in 2011 to launch the initiative: CMA CGM, Evergreen Line, Hapag-Lloyd, Maersk Line and MSC. Today, CINS members account for more than 65% of the world's

containerised shipping capacity, measured by the carriers' share of the global liner fleet in TEU terms.

Via a neutral web platform, CINS members report on cargo and container incidents which lead to Injury or loss of life, loss or serious damage of assets, and environmental concerns. This information is then collated, analysed and shared to improve understanding and help focus prevention efforts. Among other activities, CINS publish analytics twice yearly, including an abbreviated public version at [www.cinsnet.com/resources/analytics](http://www.cinsnet.com/resources/analytics).

### The results

CINS is still a young organisation. A number of Best Management Practices and Guidelines are under progress in dedicated CINS workgroups. For the future, broader interaction with the industry and more touch points with maritime authorities and legislative bodies is anticipated, together with extended cooperation between the participating carriers.



CINS allows container shipping lines to report and share information neutrally on cargo and container incidents to help improve industry understanding and loss prevention efforts

## CINS – GUIDELINES FOR THE TRANSPORT OF COILED MATERIALS IN CONTAINERS

### The problem

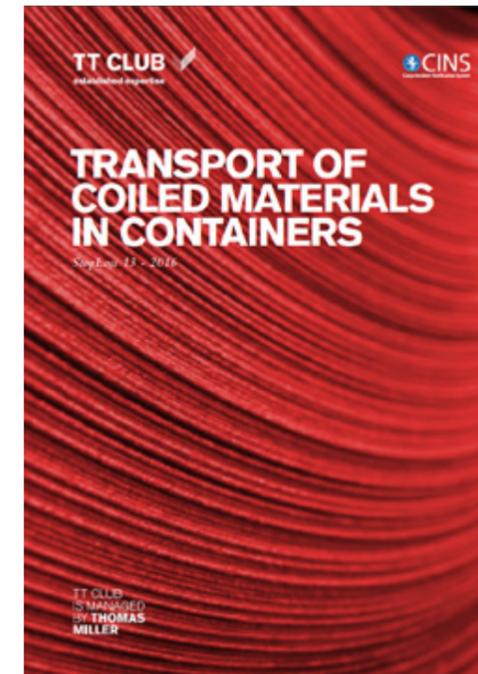
Coiled materials can be safely carried in containers, so long as they are properly packaged, packed and secured. However, members of the Cargo Incident Notification System (CINS) reported an increasing number of incidents caused by the transport of steel coils in containers – mainly due to poor packing.

### The solution

With the aim of reducing the number of incidents and increasing safety, a project was launched in 2015 to develop CINS Guidelines for packing coiled materials in containers. A work group was established by CINS members and the project was sponsored and supported by the TT Club, building on the Club's earlier advisory document on this topic.

Consultation took place with a wide range of stakeholders, resulting in a set of guidelines that provides practical advice on safety and risk prevention through correct packing arrangements, securing and protection. The guide applies to coiled materials of all dimensions and materials, but is specifically aligned to metallic products such as:

- Sheet steel, galvanised and stainless
- Slit steel, galvanised and/or stainless
- Coiled wire rod



- Aluminium sheet
- Tin sheet

Among other key topics, the Guidelines cover:

- Forces
- Load distribution
- Cradle or support arrangements
- Packing and securing
- Blocking and bracing
- Lashing
- Material protection
- General handling damage
- Handling at the destination
- Climatic considerations

The information in the Guidelines conforms with the IMO/ILO/UNECE Code of Practice for Packing Cargo Transport Units (CTU Code) and provides supplementary information to assist in the safe transport of coiled materials by any mode.

A short summary was also prepared in the form of "Process Cards" for easy reference by personnel responsible for container packing. The Cards include diagrams giving guidance on correct procedure to ensure safe transport.

### The results

The Guidelines and Process Cards were published in January 2016 and can be downloaded from the CINS website: [www.cinsnet.com/resources/documents](http://www.cinsnet.com/resources/documents).

## CORDSTRAP – THE CORNERLASH SYSTEM FOR CHEMICAL CARGOES

### The problem

Many products developed by the chemical industry are toxic or dangerous, not just during manufacturing but also in transit. Safety is the paramount requirement during shipping, but chemical companies also need to ship their containers as efficiently and effectively as possible.

This means that any securing system should not only protect the cargo during its voyage, but also be easy to apply and pass inspection in port without issue. However, securing heavy chemical drums and IBCs safely in freight containers can often be complicated, time consuming and expensive.

Not least, the existing upper and lower anchor points in the container, with rated strengths of just 500kg and 1,000kg respectively, are key limiting factors. As a result, it is often necessary to use multiple systems in order to achieve the required securing strength and comply with regulations. Users may not be willing to pay for the extra cost and time involved, leading to sub-optimal securing, possible rejections during inspection in port, and implicit acceptance of high transport and damage risk.

### The solution

CornerLash is claimed as the first and only solution that uses the strongest part of the container - the container posts - to achieve optimum security. It has been specifically designed to secure chemical drums and IBCs in containers and was developed in active consultation with the chemical industry.

The idea of using the strongest point of a container, the corner post, seems simple. However, designing a solution that revolutionises cargo securing does

not happen overnight. CornerLash developed patented corner elements that can be mounted into the corner posts, allowing the container to be equipped with 3 ton maximum securing load (MSL) lashing points. This also means that longer lashing needs to be applied, which results in more strict elongation requirements.

Extensive computer aided design (CAD) and simulation efforts were required to ensure that both the corner posts and the corner elements were sufficiently strong. Speciality lashing was also developed to ensure less than 4% elongation at lashing capacity, requiring a completely new weaving pattern. The result is a container securing solution with a breaking strength of 24,000 daN<sup>1</sup> and an MSL of 12000 daN.

### The results

CornerLash has already been adopted by large companies including BASF, Dow Chemical, Evonik, Yara and Momentive.

<sup>1</sup>daN = decanewton



## EXIS TECHNOLOGIES – THE HAZCHECK PORTAL FOR DG CHECKS

### The problem

Many container shipping lines hire out space on their ships to other carriers under 'slot charter' or 'vessel sharing agreements' (VSAs). Lines may have VSAs with upwards of 5 partner lines on some routes, using a variety of ports and terminals to manage coverage for different customer requirements. In addition, they contract with owned and third party feeder operators to connect to other ports and terminals.

In most cases, the process of accepting a shipment is the same whether it involves a direct customer booking or a partner line. But things get much more complicated when dangerous goods (DG) are involved. Around 10 per cent of containers on deep sea routes - and upwards of 1,000 containers on larger container ships - contain DG.

Most lines restrict or prohibit certain classes of DG. The booking line therefore needs to know if the partner line will accept the DG, and if the ship booked for the voyage can accommodate the relevant stowage restrictions. Many ports and container terminals also have strict rules on the classes of DG that can be loaded, unloaded or transhipped. These restrictions often apply to DG that stays on the ship while it is in port.

The management of prohibition and restriction checks during the DG booking process clearly needed to be simplified, but there was no way to share information.

### The solution

The Hazcheck Portal was developed to:

- Provide a platform where ports/terminals can upload their prohibition/restrictions data and thereby make it available to all partners on a common global platform



- Provide shipping lines with a tool to check the validity of DG shipments (with respect to prohibitions and restrictions) across their network, with the option to link to their own IT systems.

The portal started as an initiative among several major shipping lines that already used Exis's Hazcheck DG Systems for IMDG code validation checks. The Hazcheck Portal is now being implemented globally to the shipping industry in stages and as of March 2016 three major shipping companies were using it for their DG restrictions checking.

While the portal currently supports mainly the management of shipping line (operator) restrictions, the design allows users to store and share data relating to location, port/terminal and ships. Exis is working with the container shipping community to develop this part of the database with key industry partners. Especially, Exis is actively seeking engagement with the port/terminal community to encourage upload to the common database, thereby helping to improve safety in the shipment of containerised dangerous goods by sea and land.

## FIKE VIDEO ANALYTICS - OIL MIST DETECTION FOR ENGINE ROOMS

### The problem

Oil mist may form when high pressure fuel oil, lubricating oil, hydraulic oil or other oil is sprayed through a narrow crack, or when leaked oil connects with a high temperature surface, vaporises and comes into contact with a low air temperature. An explosion or spark may occur when the mist comes into contact with surfaces of over 200 °C (392 °F).

In an engine room environment on-board a ship or elsewhere, early detection of oil mist is therefore critical to avoid incidents.

### The solution

The Fike Video Analytics Server detects flame, smoke and oil mist by processing video from off the shelf IP cameras in areas such as machinery spaces or mooring decks.

The Fike Server is installed and connected to the existing camera LAN. The servers are capable of analysing video from 16 cameras and have 6TB of recording space, providing an average of 2 weeks' recording time. Detection event alarms and live video may be monitored in the engine control room and elsewhere, sent digitally to the video management system (VMS), safety management and control system (SMCS) or viewed through the Fike SpyderGuard VMS.

Software alarm or exclusion zones and alarm verification functionality, combined with Fike's unique algorithm sensitivities, allow

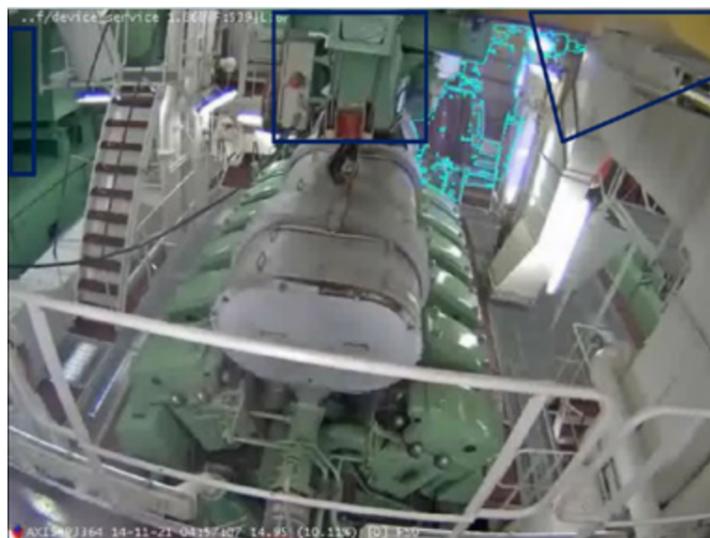
*High sensitivity smoke detection is enabled in the entire camera field of view*

for endless configuration options to suit specific fire, smoke and oil mist detection requirements.

There are three, mutually exclusive analytics algorithms used: smoke, flame and reflected flame detection. The smoke detection algorithm is used to detect smoke, oil/fuel mist or spray from a leak under pressure and oil vapour that is generated when fuel or oil leaks onto a hot surface.

Prior to installing a video analytics detection system, a hazard analysis is performed to identify areas for detection, covering engines, purifiers, thermal oil heaters and other equipment involving flammable liquids.

With these areas in mind, camera location is best if installed with a tilt of approximately a 45 degree angle looking down and approximately 20ft from the equipment. When the camera is installed and connected to the server, the analytics settings can be modified to target specific areas for highest sensitivity.



## LASE – CONTAINER YARD STACK COLLISION PREVENTION SYSTEM

### The problem

Collisions between load and stack are a recurring problem at container ports. Stack collision incidents are caused by loads that are not lifted high enough and that touch other containers in the stacking area. This can cause containers to fall into the truck lane of Rubber Tyred Gantry and Rail Mounted Gantry (RTG/RMG) yard cranes. One of the world's biggest port operators, with over 600 RTGs in use in its container yards, recorded eight truck driver fatalities in 2014 as a result of containers falling from the stacking area into the truck lane. Nearly 75% of these collisions happen in the operations bay and 25% with containers in adjacent stacks.

The challenge was to develop an automated measurement system that could detect the container profiles in the stacking area and provide a complete 3D-image of the yard to determine the load position and prevent collisions.

### The solution

Developed in cooperation with some of the world's biggest container port operators the LaseSCP-3D/2D Stack Collision Prevention System is a holistic solution that uses both 2D and 3D laser scanning



devices, which are mounted under the crane trolley platform. Before trolley travel from the truck lane into the stacking area, the 3D laser scanner measures the stack profile and the 3D profile of the stacking area is stored by the measuring system. The 2D laser scanner measures the trolley and also the load position.

A so called "surveillance cube" is built around the load. The size of the cube varies by the following factors: load position, trolley travel and crane lift direction, trolley and crane lift velocity, trolley braking behaviour as well as the load's pendulum movement during reducing / stopping motion.

In case of an overlap between the surveillance cube around the load and the profile of the stacking area, the velocity of the load will be reduced automatically. Thus the load cannot collide with the stacks anymore. Additionally, the system is also used for soft-landings of the load (container or spreader) onto other containers. As a consequence, spreader wear and noise are both reduced significantly.

### The results

After launching the product in 2014 it has now been implemented in several container terminals worldwide for major users including APM Terminals,



## LASSTEC – CONTAINER WEIGHING AND ECCENTRICITY DETECTION SYSTEM

### The problem

Overweight and poorly loaded containers can cause damage, loss and injury to cargo, equipment and people.

### The solution

After a long career in the design and production of container handling spreaders, the inventor of the LASSTEC system, Beat Zwygart, pioneered the concept of installing fiberoptic sensors in spreader twistlocks to measure container weight during handling operations in the port.

The Twistlock Load Sensing & Operational Safety System is designed to measure the load in each twistlock of single and twinlift spreaders. Each sensor measures the load of a twistlock, which is then sent into a central data processing unit from where the information is sent to the crane PLC and to the terminal operating system.

Aside from its core function to measure exact container weights without interrupting the load cycle of the crane, the LASSTEC system enables improved operational safety in a number of other ways:

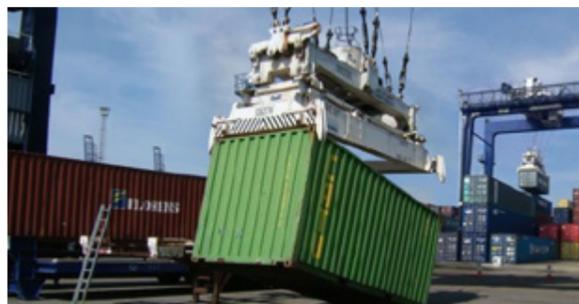
- Determines load eccentricity of single, twinlift and mobile harbour crane applications
- Ensures all twistlocks are engaged when lifting a container
- Prevents hoisting if one or more container corners are still locked to the stack on the vessel
- Provides instant snag load detection
- Detects and prevents accidental lifting of a road trailer still connected to a container in stacking yard applications
- Monitors and records twistlock load cycles to optimise replacement intervals
- Provides spreader and crane life cycle management and track overload situations

Development work on the patented LASSTEC system started in 2004 as an independent initiative. When the International Maritime Organization International Convention for the Safety of Life at Sea, 1974 as amended (IMO SOLAS) legislation for container weight verification started to be discussed, the inventor decided to align LASSTEC with a larger company. In September 2013, he signed a contract with Conductix-Wampfler, provider of power solutions for container handling operations. During the last three years they have built up a worldwide marketing support force, a production capacity to meet the demand for IMO SOLAS weighing systems and a team of trained commissioning engineers to install and service LASSTEC systems.

Several hundred systems are in operation today on a worldwide basis with major terminal operators and spreader manufacturers.



Above, trailer lifting detection. Below, the system detects if a container is lifted with two twistlocks on one end



## PEEL PORTS – CONTAINER CRANE OPERATOR TRAINING SIMULATOR

### The problem

Peel Ports Group is set to deliver the first phase of its new Liverpool2 Container Terminal in 2016. A core element of the project involves the commissioning of eight new ZPMC ship-to-shore cranes – the largest of their kind at the time of development – and significantly larger than the existing container cranes at Liverpool. The new cranes will be capable of handling two 380m length ships simultaneously and will increase the moves-per-hour capability of the terminal due to the twin lift mode. They will be able to operate safely in wind speeds of up to 60mph (96kmph).

The size and technological advancement of the cranes is a significant change from the port's historical container handling operations. This, together with the position of the cranes in the River Mersey - which has a 10m tidal range - introduced a new set of safety and training challenges.

### The solution

In summer 2015, Peel Ports partnered with ABB to create a high-tech solution to help train staff to use the new cranes. A state-of-the-art 'virtual' training simulator was constructed that interactively tests the abilities and skills of drivers by presenting them with operating scenarios. Designed to reflect the working environment, the river Mersey and the Liverpool skyline, the simulator provides a safe, controlled environment to train both new recruits and experienced operators alike.

The system allows for a variety

of scenarios to be played out in a controlled environment including handling containers in high winds, rain, snow and fog as well as specific operational conditions such as various ship sizes, jammed containers and rising or falling tides. Scenarios such as people walking in unsafe areas can be simulated in a digital environment. This is impossible to do in conventional training due to the risks involved.

A significant benefit is that training times are reduced by up to 50% with a 20% cost saving. It would normally take months of operating a crane to encounter this wide variety of environments, weather conditions, ship arrangements and operational problems, but these can be recreated and experienced in the simulator over a matter of days. This greatly increases operator confidence and competency.

The simulator is also fully customisable and with software updates can be used to train operators in virtually any container terminal worldwide. It is housed in a container for easy transport.



## PSA – PULSE LASHING SYSTEM

### The problem

Lashing work aboard container ships is an intense manual process in a dangerous environment, resulting in high incident rates for lashing workers across the globe. Today, the manipulation of lashing materials is the number one cause for incidents. 40% of these incidents are related to the handling of turnbuckles. To loosen or tighten these, lashers must put their bodyweight into the movement, risking injury to arms, fingers and shoulders.

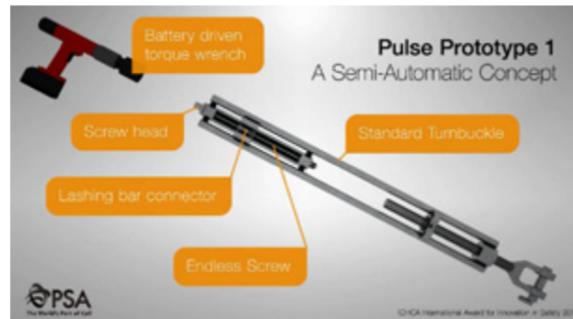
As the demands of customers increase, these incidents become more commonplace, due primarily to the shorter port stay of modern container ships. To achieve this reduced stay, more quay cranes are deployed simultaneously, thereby increasing the number of lashers needed to finish the job. With time as a major factor, lashing workers are forced to work quickly, which can lead to avoidable incidents.

The lack of innovative lashing equipment has created problems for terminal operators worldwide, with high lasher injury and incident rates affecting safety statistics negatively.

### The solution

As part of a plan to improve the situation on ships, the IMO and class societies are setting stricter rules and regulations to govern lashing work. PSA is also stepping up and taking action to reduce the number of lashing incidents at its terminals worldwide.

A team made up of representatives from PSA's operations and safety departments has been developing PULSE - PSA's Unique Lashing System Enhancement - with the goal to improve safety, decrease work intensity and increase time efficiency on-board container ships in port. After an analysis of current lashing systems, the PULSE team decided



to focus on the redevelopment of the turnbuckle. Compared to lashing rods, the turnbuckles are much more compact, don't come in different sizes and are in fixed positions on deck. The team's main goal is to avoid workers having to manually rotate the buckle.

The team began by redeveloping existing turnbuckles, creating a first prototype which is a semi-automatic concept that can be propelled by an external device such as a battery drive torque wrench. During initial tests the prototype showed its potential, eliminating the need to physically turn the turnbuckle by hand. An industrial design agency has now been tasked to start a thorough R&D program, working with PSA to investigate several options and come up with a single solution.

PSA is convinced that this way of working will reduce incidents significantly by:

- Reducing the number of manual interventions (i.e. workers turning the turnbuckles by hand)
- Working in a more upright position (human factors and ergonomics)

Success will require the support of the entire industry and PSA is confident that upon adoption industry-wide, incident rates can be reduced, while also improving the efficiency of lashing and unlashings containers globally.

## PSA VOLTRI PRA - SPREADER LIFTING MACHINE FOR MAINTENANCE

### The problem

Maintenance of the spreader in the container terminal workshop was complex, time consuming and physically demanding.

Among other issues, staff needed to put supports in place, to adjust them when lowering the spreader and to bend their backs to carry out maintenance of spreader landing pins and twistlocks.

A solution was needed to make maintenance easier and more suitable in order to prevent back problems, improve the stability of the spreader and its supports during operations, allow staff to adjust spreader position and enable the spreader to be lifted without the use of fork lifts.

### The solution

The team at PSA Voltri-Pra developed a spreader lifting machine to tackle the various issues faced by maintenance personnel. The project took a year from concept to delivery, and the cost of design, assembly, certification and commissioning was €40,000.

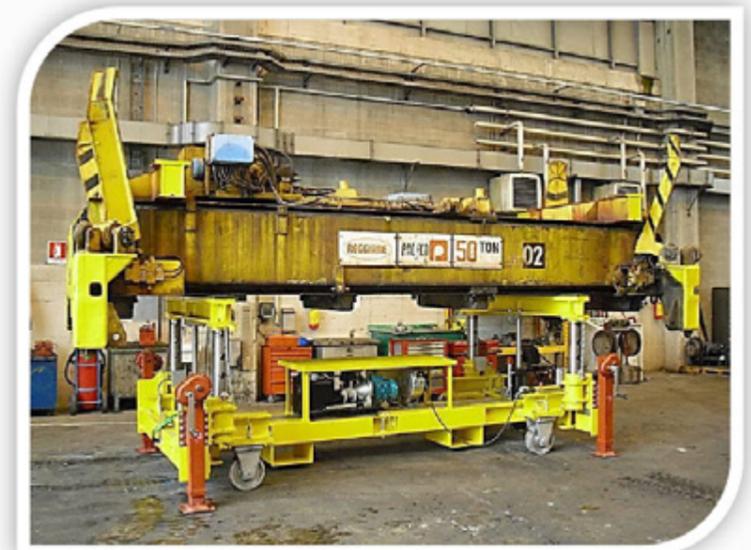
The benefits of the new machine include:

- Improved stability of the spreader and its supports during maintenance operations
- The option to adjust the spreader's position
- A solution to test the spreader's long flippers without them touching the ground
- A system to lift the spreader without the use of forklifts

- Easy access to twistlocks and landing pins

### The results

"This project has improved the health and safety aspects of maintenance activities", says the team at Voltri-Pra. "Operators work without compromising their backs and complete their tasks more quickly and safely."



The team added that the technical solution has been introduced easily into daily maintenance activities, not least because it actually requires less space than the previous system.

"PSA Voltri-Pra maintenance operators are completely satisfied with this new equipment and this technical solution has been shared within the PSA Group."

## PSA VOLTRI-PRA - QUAY CRANE TROLLEY ROPE PROTECTION

### The problem

The trolley wire ropes on a quayside container crane are subject to considerable wear and stress. If wear and tear are left undetected, ropes can snap and fall, endangering infrastructure, equipment, vessels and the people working under the quay crane (QC).

### The solution

The team at PSA Voltri-Pra, Italy, set about developing a trolley rope protection system that could detect an imminent rope break and automatically block the crane trolley from moving, thus preventing such incidents.

Crane trolley wire ropes run on pulleys and, in case of wear, ropes become bigger. The team therefore decided to focus their efforts on checking the rope on the pulley itself.

The engineering department designed and installed new sensors on the quay crane pulleys to check the wire rope's diameter at a cost of around €1,000 per QC. When the sensors identify irregularities on the rope structure they activate a protection system

that stops the crane trolley from moving before any further rope damage or breakage can occur. The QC operator is also alerted by a specific alarm installed in the cabin.

The technical components of the protection system include a mechanical sensor, electrical sensor, anti-vibration system and walk protection. When the system is activated, the mechanical sensor changes position and the electrical sensor sends a signal to the crane's programmable logic controller (PLC), which immediately stops the trolley movement. A red light is switched on in the operator's cabin. The alarm reset can be performed only by maintenance personnel after the ropes have been checked.

### The results

The new system prevents ropes from breaking and falling onto the wharf or ships. It ensures safer operations under the quay cranes and also enables faster and cheaper maintenance activities.

The team at PSA Voltri-Pra notes that this type of technical solution is suitable for any lifting equipment with ropes.



*Pictured from left to right with the quay crane trolley rope protection system they helped design are Marco Pitto, Quay Crane Maintenance and Fabio Torre, Maintenance Team Leader at PSA Voltri-Pra*

## STRANG SYSTEMS – THE STRANG SYSTEM

### The problem

Years of experience in the stevedoring industry in Australia had highlighted certain dangerous cargo that would repeatedly cause damage in shipping containers – steel sheet in coil in particular. Due to their shape, horizontal metal coils have no flat plane on which to rest, and their weight is concentrated through narrow points of contact with the container floor, placing high stress on a container's structure.

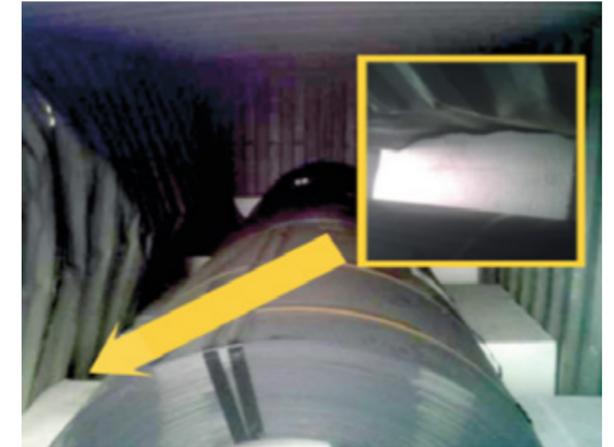
In addition, the high density of metal coils means that once they become unsecured, they are extremely dangerous. When a coil breaks free of traditional timber dunnage and strapping, it poses serious risks not only to the cargo itself, but also to the container that holds it, adjacent containers and their cargo, vessel safety and even human life.

### The solution

The internationally patented Strang System involves the tailored application of expanded polystyrene (EPS) to form a cradle that keeps heavy and bulky cargo in place within a 20ft container.

The system was first conceived in the early 2000s, when company chairman Robert W. A. Strang noticed EPS being used as the foundation in road making. Further research into the properties of EPS highlighted it as the ideal material for use as dunnage for heavy, bulky cargoes. EPS is a lightweight polymer with an irregular foam structure, making it strong and durable. It can 'absorb' external shock without substantially altering its shape, thus protecting the cargo. It is also water repellent and 100% recyclable.

In conjunction with Australian steel producer, Bluescope Steel, Strang Systems developed and tested its new system in a number of permutations, including trial shipments on rail, and across the



*An example of an extreme external force hitting a container holding coils secured with the Strang System. The container wall has been severely deformed but the cradle has absorbed the external force, holding the coils safely in place*

Tasman Sea. After the success of these trials, the Strang System was rolled out across the Bluescope business in Australia in 2009, and thereafter internationally.

### The results

The Strang System is now being implemented under licence in a number of regions including Australia/NZ, Japan, South Korea, India, South Africa and at certain European sites. It is being used for the transport of high-value metals such as stainless steel, delicate metals such as aluminium, and specialised metals for use in industries such as air conditioning and automotive manufacturing. The system can accommodate all weights of coil, and since 2014 has been successfully applied to very heavy coils over 20t/unit without damage to either the cargo or the container during transport.

Strang Systems reports that its clients have seen a huge reduction in damage to cargo and containers and that "there has been not one incident where damage has been attributable to a failure of the system."

## 6 | ABOUT TT CLUB



TT Club is the international transport and logistics industry's leading provider of insurance and related risk management services.

As a mutual insurer, TT Club exists to provide its policyholders with benefits, which include specialist underwriting expertise, a world-wide office network providing claims management

services, and first class risk management and loss prevention advice. Customers include some of the world's largest shipping lines, busiest ports, biggest freight forwarders and cargo handling terminals, to companies operating on a smaller scale but whose operations face similar risks.

TT Club specialises in the insurance of Intermodal Operators, NVOs, Freight Forwarders, Logistics Operators, Marine Terminals, Stevedores, Port Authorities and Ship Operators. TT Club is managed by Thomas Miller.

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## 7 | ABOUT ICHCA INTERNATIONAL

The International Cargo Handling Coordination Association (ICHCA), founded in 1952, is an independent, not-for-profit organisation dedicated to improving the safety, security, sustainability, productivity and efficiency of cargo handling and goods movement by all modes and through all phases of national and international supply chains.

ICHCA International holds official observer status as an NGO and has a substantive role representing the global cargo community in regulatory and policy developments at the International Maritime Organization (IMO) International Labor Organization (ILO), International Organization for Standardization (ISO), UN Economic Commission for Europe (UNECE) and other UN agencies.

ISP - ICHCA's Technical Panel - provides technical advice and publications on a wide range of practical cargo handling issues, while its Technical Advice Service provides members with recommendations on a wide range of cargo handling and transport issues, drawing on the experience and expertise of the ICHCA global member community.

ICHCA also operates through a series of autonomous national and regional chapters – including ICHCA Australia, ICHCA Japan and ICHCA Canarias/Africa (CARC) – plus Correspondence and Working Groups.

Co-operation between many different parties is critical to the safe, secure and efficient performance of today's increasingly complex cargo chains. Both internationally, and through its various national and regional chapters, ICHCA exists to co-ordinate the dialogue and build relations between the many private and public sector stakeholders, to foster greater cross-party understanding, and to shape and share good practice for the benefit of all.

ICHCA's members include other trade membership organizations, corporate enterprises, government bodies and private individuals representing all aspects of the cargo handling and transport chain: regulations and policy, cargo owners (shippers), ocean and land transport, ports and distribution infrastructure, road, rail and intermodal operations, equipment and technology, insurance, legal and finance.

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# **ICHCA**

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INTERNATIONAL

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