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

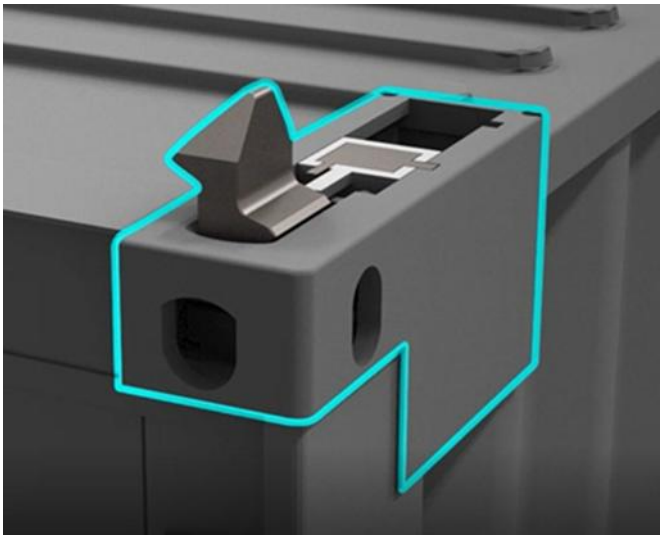

Figure 1: ACC in "Pin" mode

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

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