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/

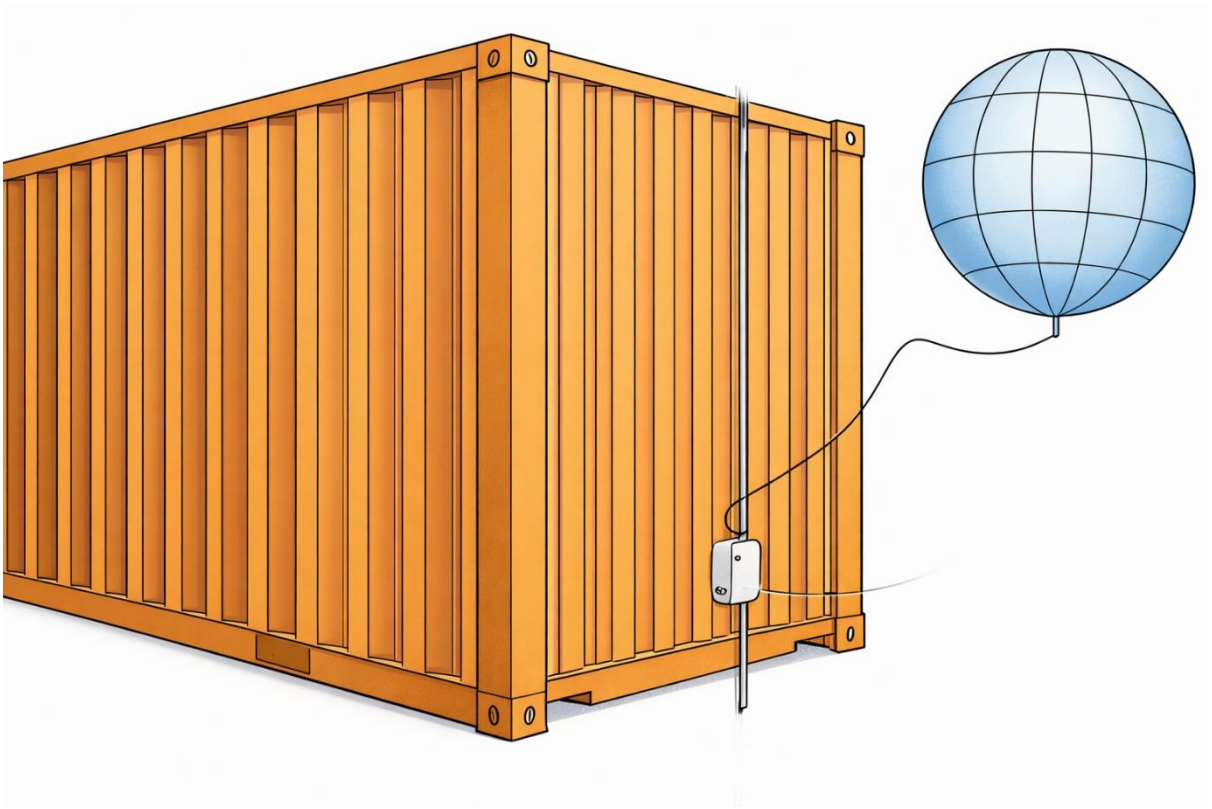
the innovation

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

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