



What is wrong with container cargo?

Discussion about container losses is started after the MSC Zoe accident in 2019.

This discussion lives formally in the Netherlands. The very vulnerable nature of World Heritage Wadden Sea and the shore beaches are dramatically spoiled by remnants of lost containers. The responsible companies covers these losses by insurance and shows further more too less responsibility. It is very urgent to stop this behavior as soon as possible!

Wake up call at the coast of the Netherlands

For many other countries it may be a “far from my bed” problem but in the Netherlands this disaster has lead to a formal investigation and claims to MSC. It is stated the the shipowner is liable for all costs.

An intermediate statement is that the TE- German Bight way is to shallow for large ships in bad weather conditions. This is no news. One side did the assertion of grounding of the MSC Zoe while the other side, the ship owner, pretended that it did not happen.

Important in this is that grounding cannot be proved! Remarkable is, that the risk of grounding is lager east of Borkum, but MSC Zoe was waiting west of Borkum until the vessel could continue the voyage in the norther deep water way!

In my opinion the loss of containers where not caused by serious grounding, because this should lead to immediatly docking an necessary bottom repair. But is not done. The grounding statement distracts from the general problem of container cargo.!

Don't forget that worldwide large losses of deck cargo including contains happens! The discussion of the waterway is save or not in particular circumstances will not solve the worldwide problem of container losses. Also containers lost in the deep water route will spoil the sea an will reach the Waddensea and the coast if afloat caused by the common winds.



Logical conclusion regarding losses of deck cargo

Is it really necessary to keep in mind the fact that losses of container at sea only concern deck cargo? These world wide large losses must be lead to the statement that something is generally fault with the system of stowing containers on deck!

By the way, that Vessels are sailing with deck cargo is a matter of tonnage measurements and fees. The hold of vessels below the weather deck is to small for cargo with a low density. It is already known from the old days on that cargo exposed to wind and weather is a higher risk.

Like as in the past with the unsafe shelter deckers, in IMO context one should consider a solution to no longer exclude deck cargo from ship measurement. Fothermore the sytem of container handling should be improved

The limits of the manageable

In our former article some statements are done which are important for a general solution.

The strength of container cargo on deck is based on several unsustainable assumptions:

- No elasticity of lashings and the hatches as base of supporting whole bays and the tension force of lashing roods unknown
- Applicable racking forces are too large. See the collapsed FEU containers on the of the MSC Zoe.



- No elastic deformation of containers
- No dynamic displacements of corner points neglecting tolerances between container corners and other fittings
- Safety margins are reduced in the history of container shipping

Applicable dynamic force are bases on empirically behavior at sea. They are applied quasi static on the whole container load. Design data are used outside the range of the history of built vessels

Is there a possibility to execute a strengths analysis taking into account those above mentioned neglects? Of course it is, but it is a hell of a job only to be executable by a very restricted number of analysis tools used by experienced experts. At all the reliability of the result are in doubt even if these calculations are executed excellent!

Movements by behavior at sea may cause unpredictable dynamic forces taking into account the total elastic behavior and tolerances of fittings.

It might be clear that such an analysis is not realistic to execute for every load case on board of every container vessel. I think that such analyses will not contribute to saver container shipping at sea!

Critical consideration of the historic development from the first generations Container vessels until now it is clear that container transport on seagoing vessels is extremely grown, throwing over board much approved old rules reducing also security. One may put a question mark after the practice of lashing containers prior to departure under high load on workers.

The ways how to make stowage container cargo saver

In my opinion there are only two way's to improve stowage and handling container cargo:

1. A ship design with can carry all containers in hold on the design draft of the vessel. It may result in a totally different container ship like Car carriers.
2. containers stowage on deck in strong cell Guides only without need of the nowadays usual lashing system

Additional it is necessary to reduce the admissible loads on the corner posts of containers. These profiles are extremely vulnerable while handling containers. Small damages can result in an extremely reduction of the carrying capacity of a container corner.

- Determining admissible forces on a corner post applying the rule of Euler results in much lesser values than . One should take into account that for a lot of containers also the side walls are in bad condition, see photo's
- It should be wise to take this fact into account by determining admissible loads.
- Also in cell guides the number of containers directly stowed on container below should be restricted by support brackets of the cell guides

