

INTENSIFICATION OF THE MARINE RISK :

**FIRE ON BOARD – MEGA CONTAINER SHIPS CASE, BATTERIES AND ELECTRICAL VEHICLES
TRANSPORTED BY “RO/RO” AND CAR CARRIERS**

27. Januar 2021

Uwe-Peter Schieder, GDV et Vice-Président Loss Prevention Committee IUMI

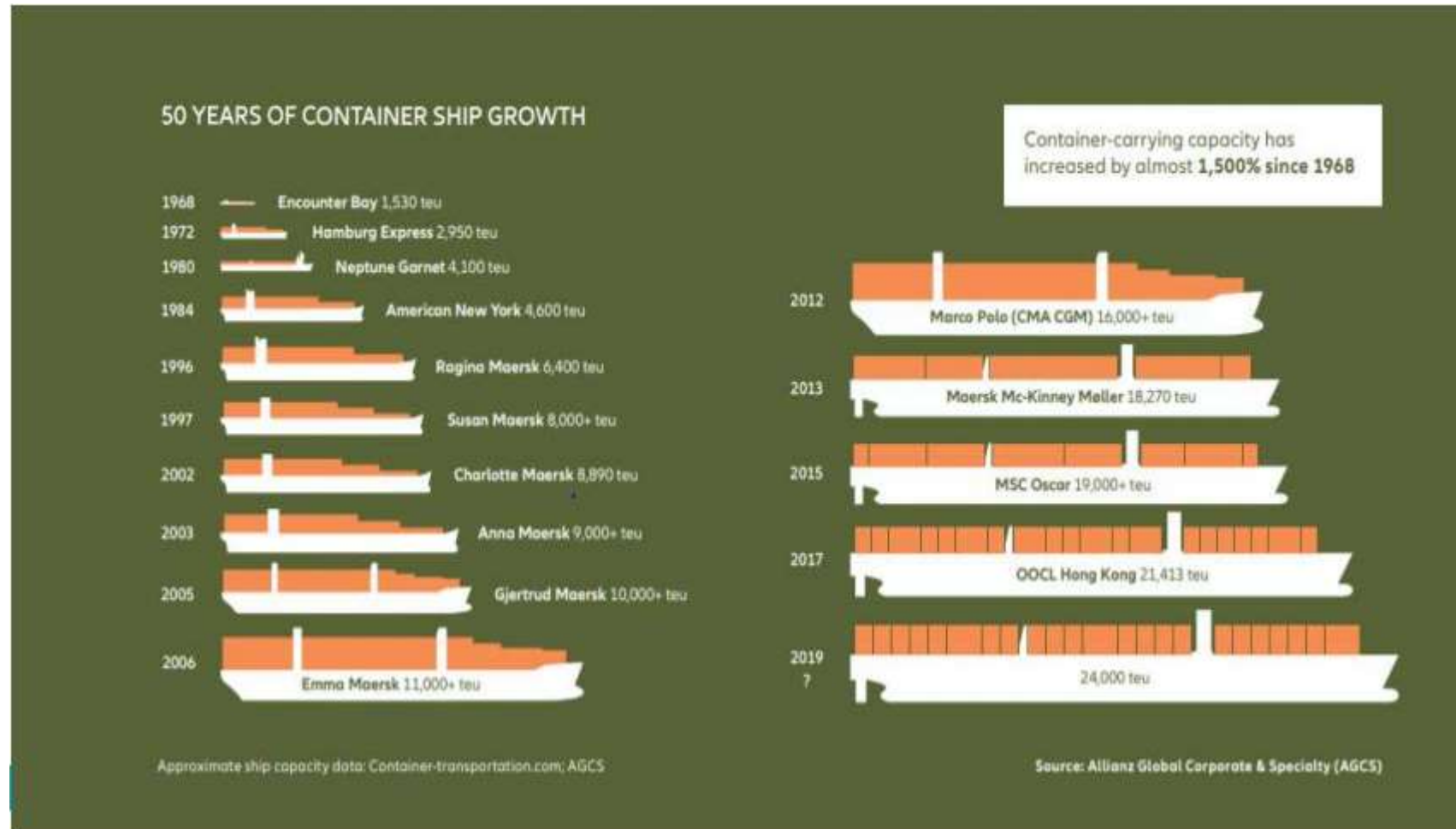
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- 2 Statistics**
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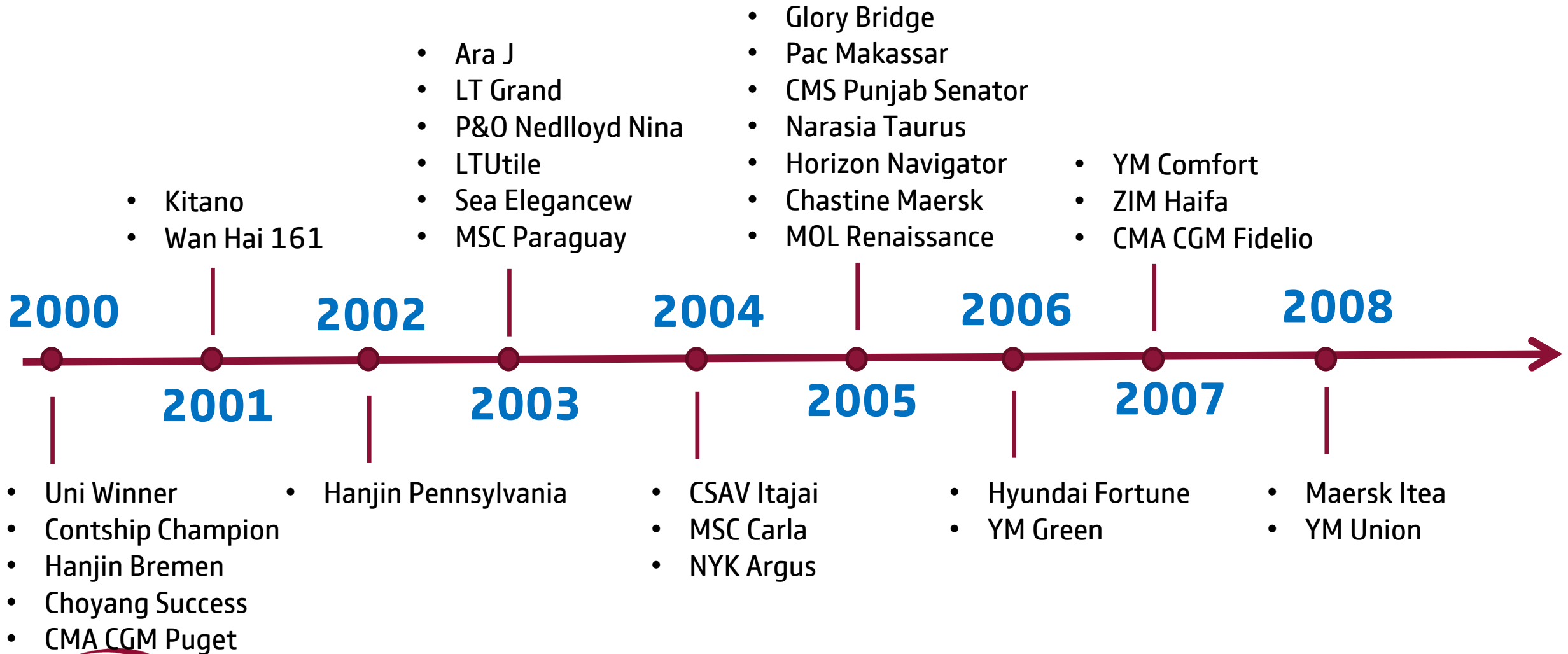
Development of Container Ship Sizes



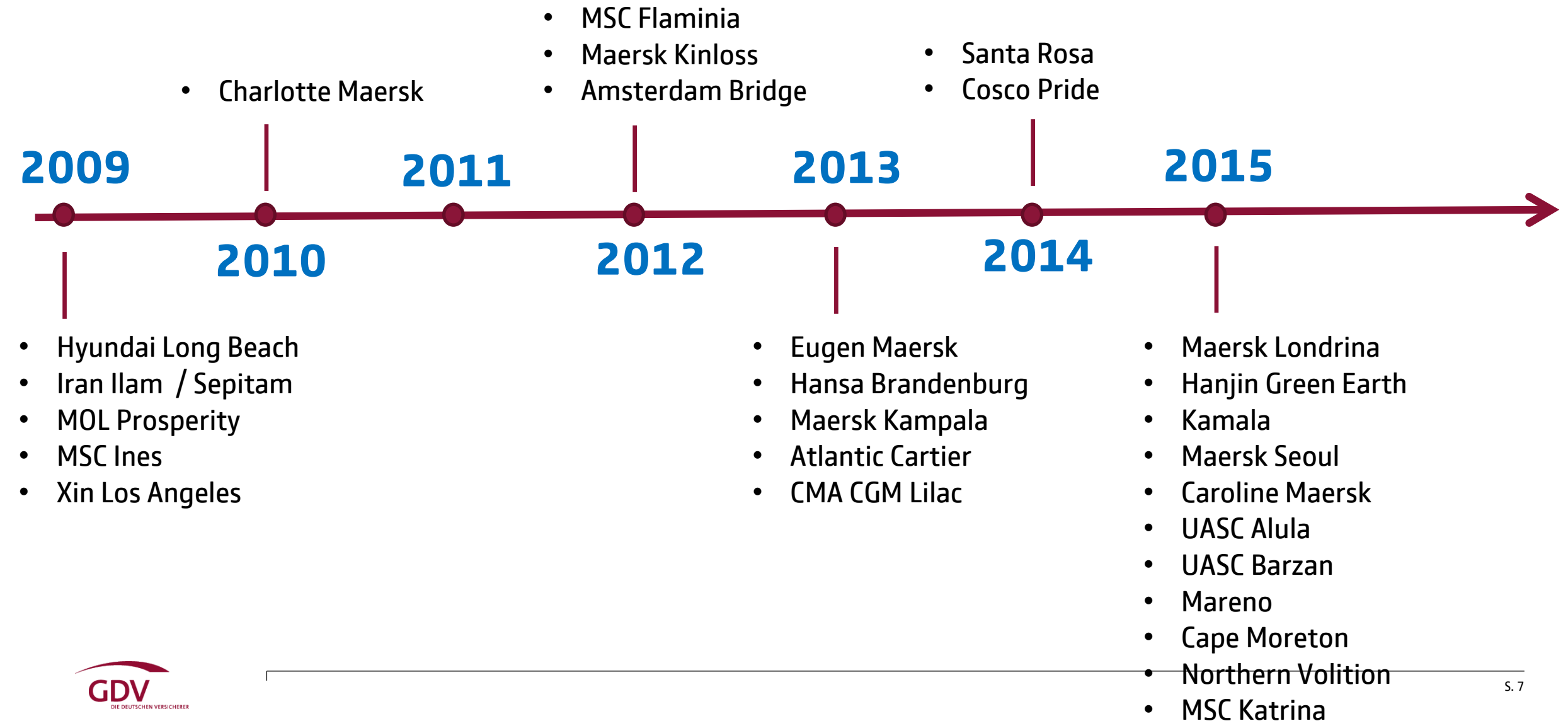
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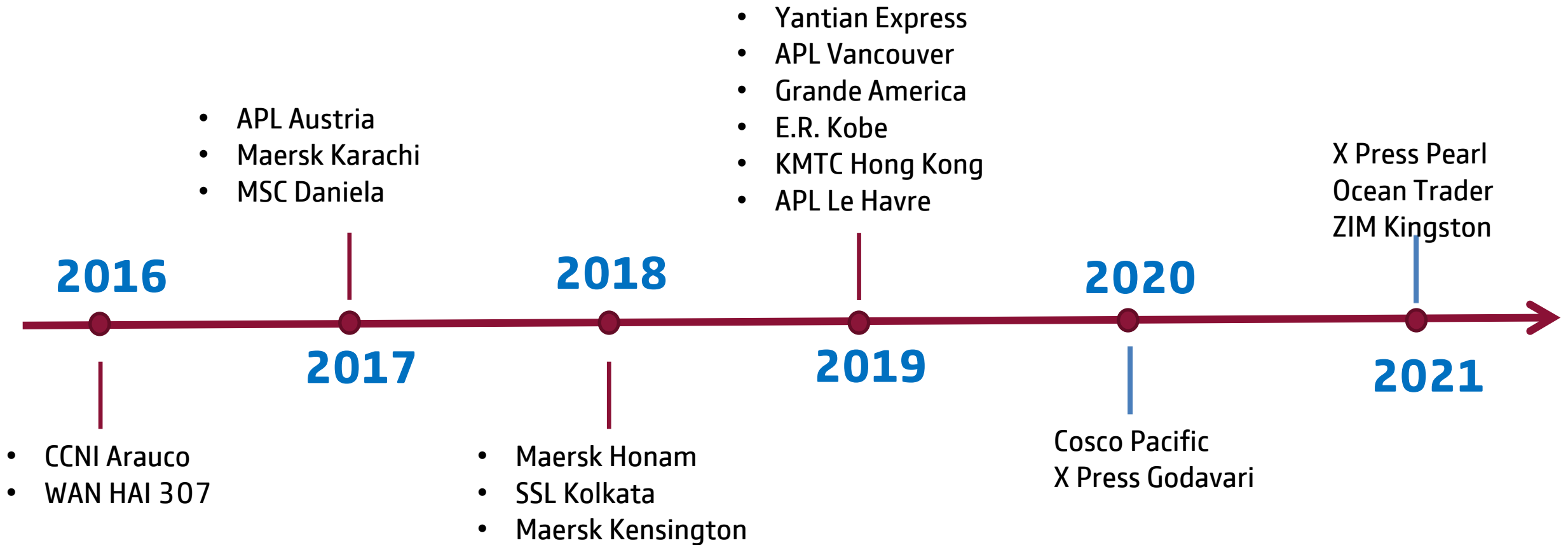
Container Ship Fire Time Line



Container Ship Fire Time Line



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Problems with Cargo Fires



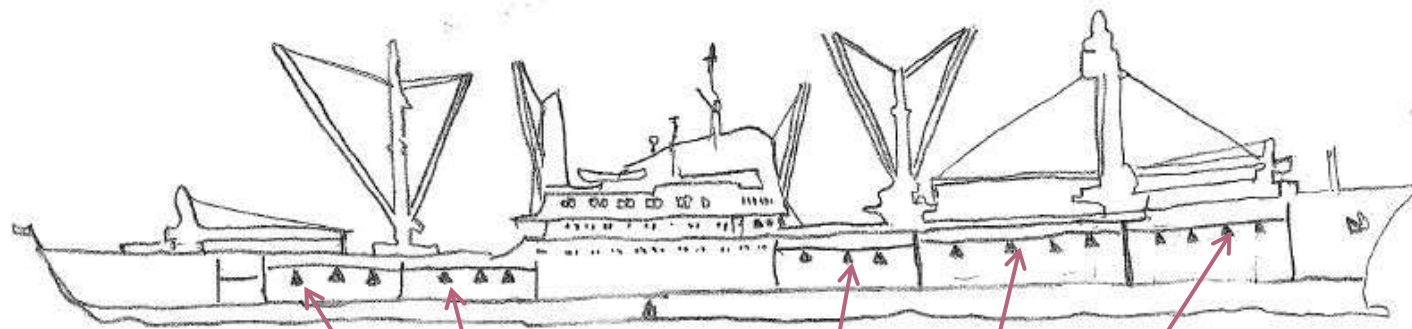
Problems with Cargo Fires



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Development of Firefighting Systems



CO₂ – Systems on a Freighter

Hatch Covers on Modern Container Vessels Are Not Air Tight



GDV in Berlin



Analogy to Buildings



Sprinklers in Every Room



Time is the Essential Factor



Fire ignites



after ca. 5 sec.



after ca. 20 sec.



after ca. 40 sec.



after ca. 60 sec.

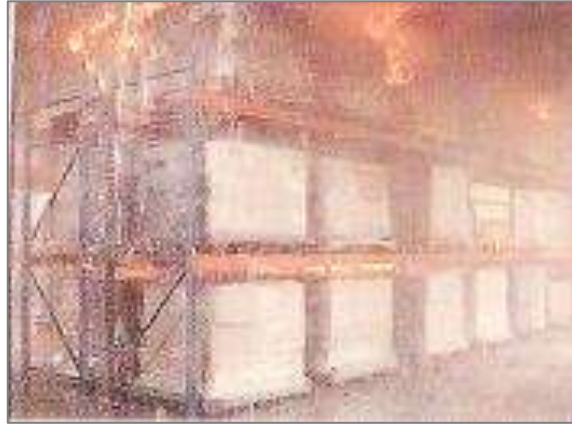


Sprinklers go off

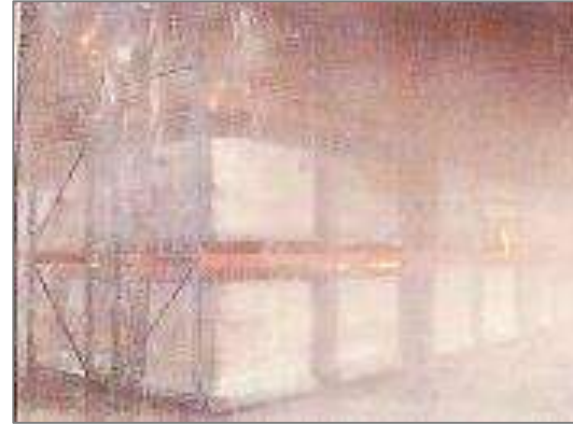
Time is the Essential Factor



after 70 sec.



after ca. 80 sec.



after ca. 90 sec.



after ca. 100 sec.



after ca. 110 sec.



Final extinguishing efforts

Quelle: Zentex

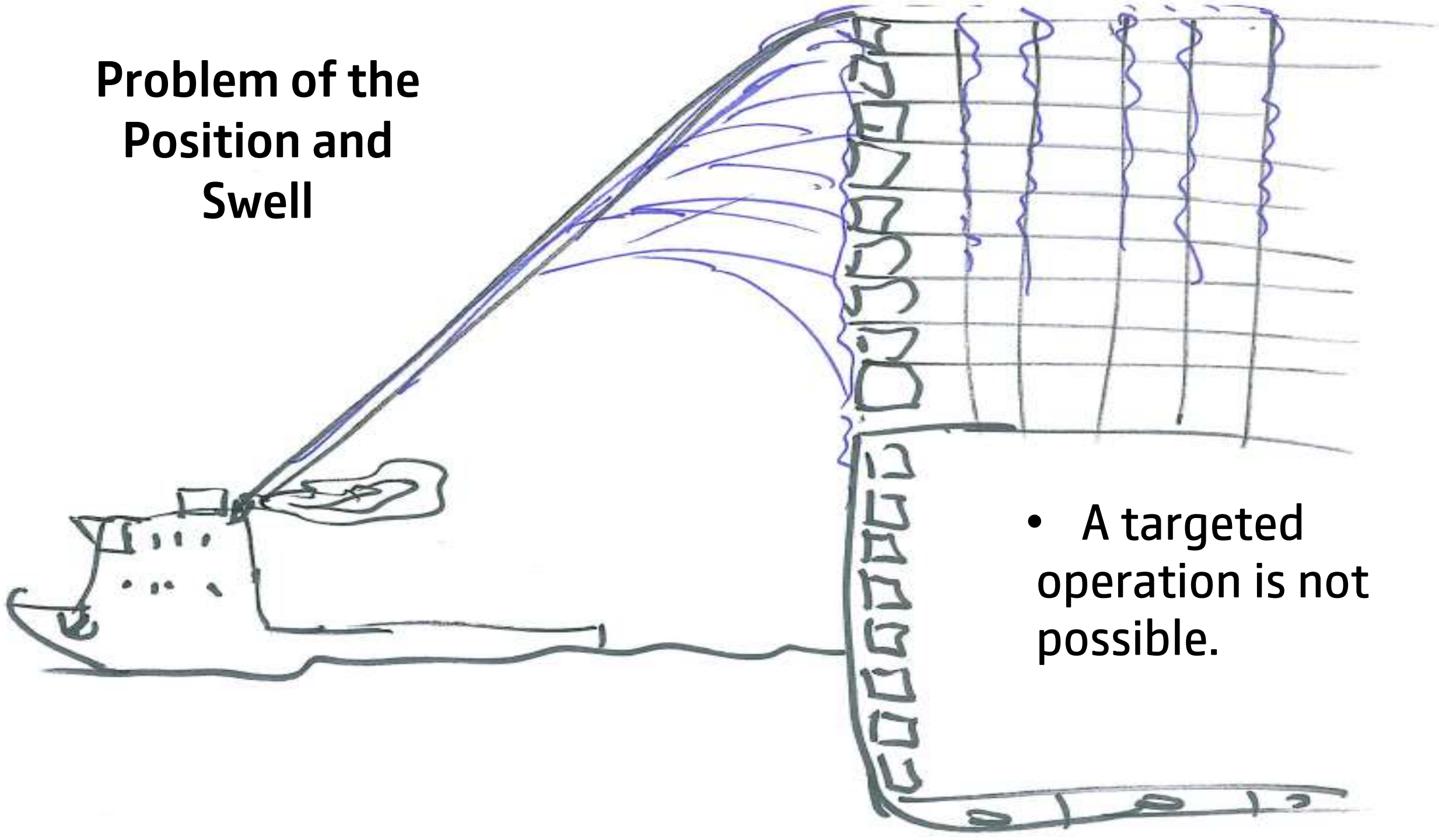
A Targeted Extinguishing Method ?



A Targeted Extinguishing Method ?



Problem of the Position and Swell



- A targeted operation is not possible.

23 Members... is this too few?



Captain

Nautical Officers

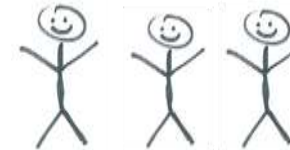
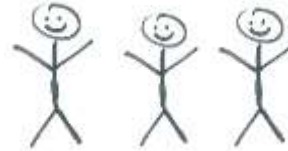


Crew



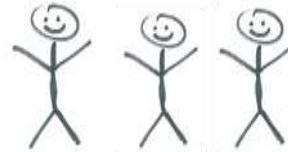
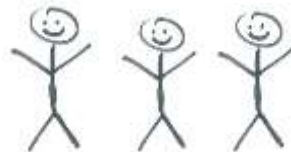
Engineers

AB's, Deck's Hand



Oiler, Technician, Bosun,
Store Keeper

Cook, Steward



Trainee



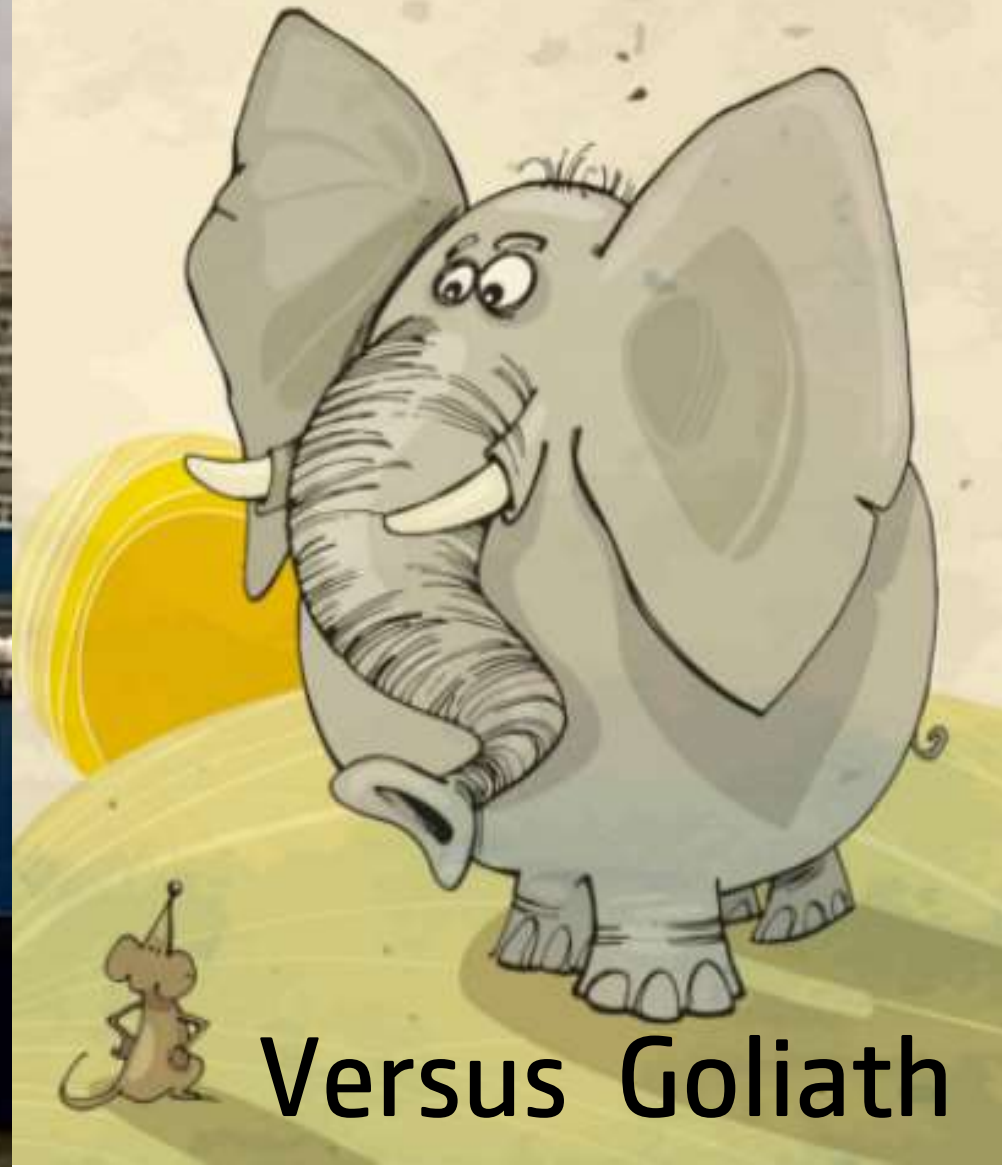
**CCNI Arauco burning
in Hamburg**



**Firefighters
Fighting a Fire on
Board a Container
Vessel is Like...**



David



Versus Goliath

Problems with Cargo Fires

- **The fire was extinguished when the hatch was flooded with water**
- **The effect of 300 fire fighters ???**

Nill!



Maersk Karachi Burning in Bremerhaven

23 Members... is this too few?



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Nautical Officers

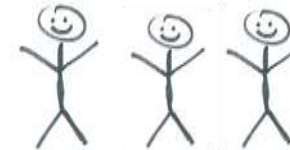
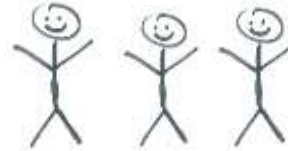


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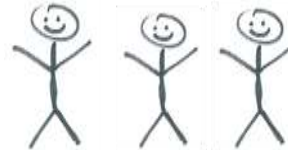
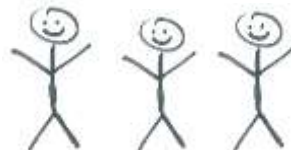
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Example „MSC Flaminia“



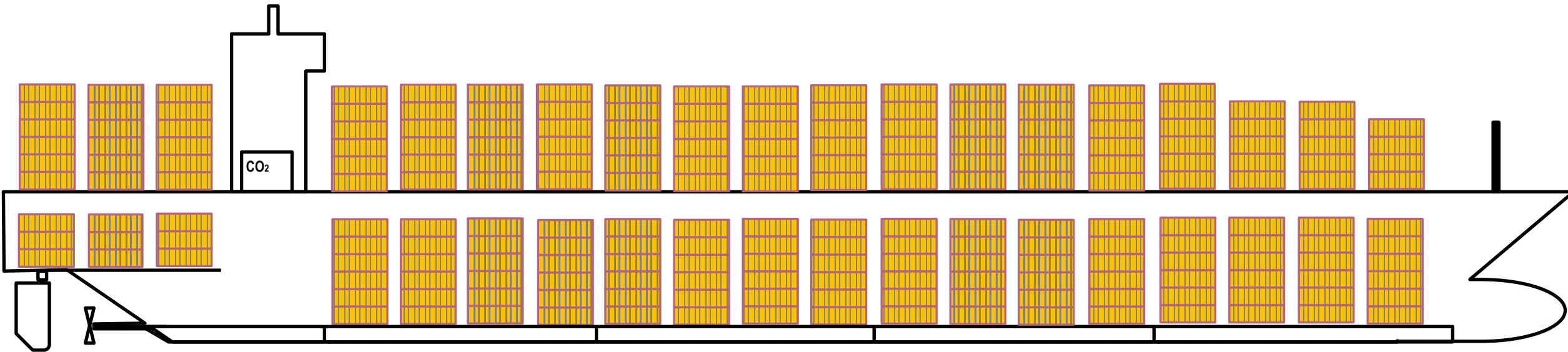
Example „MSC Flaminia“



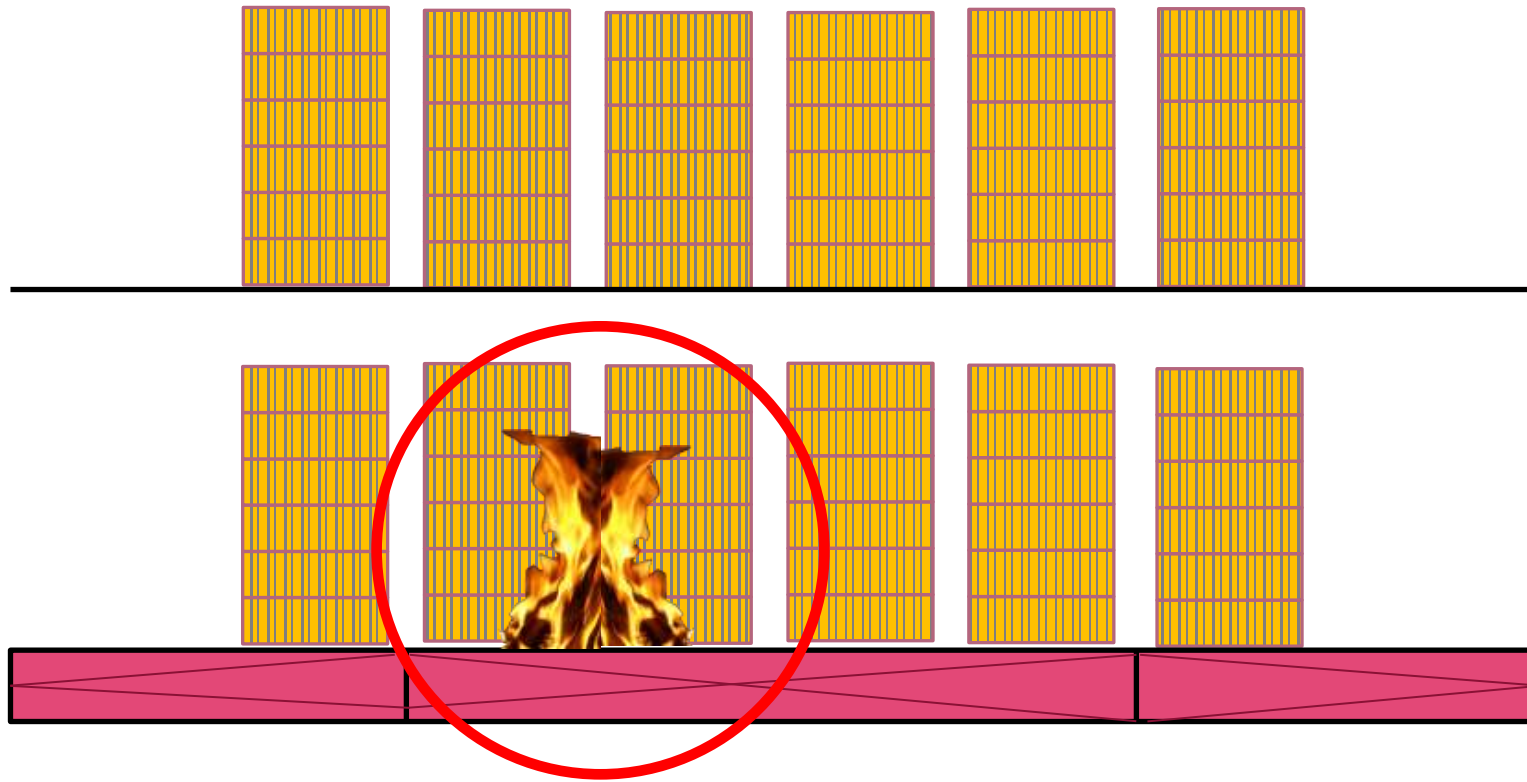
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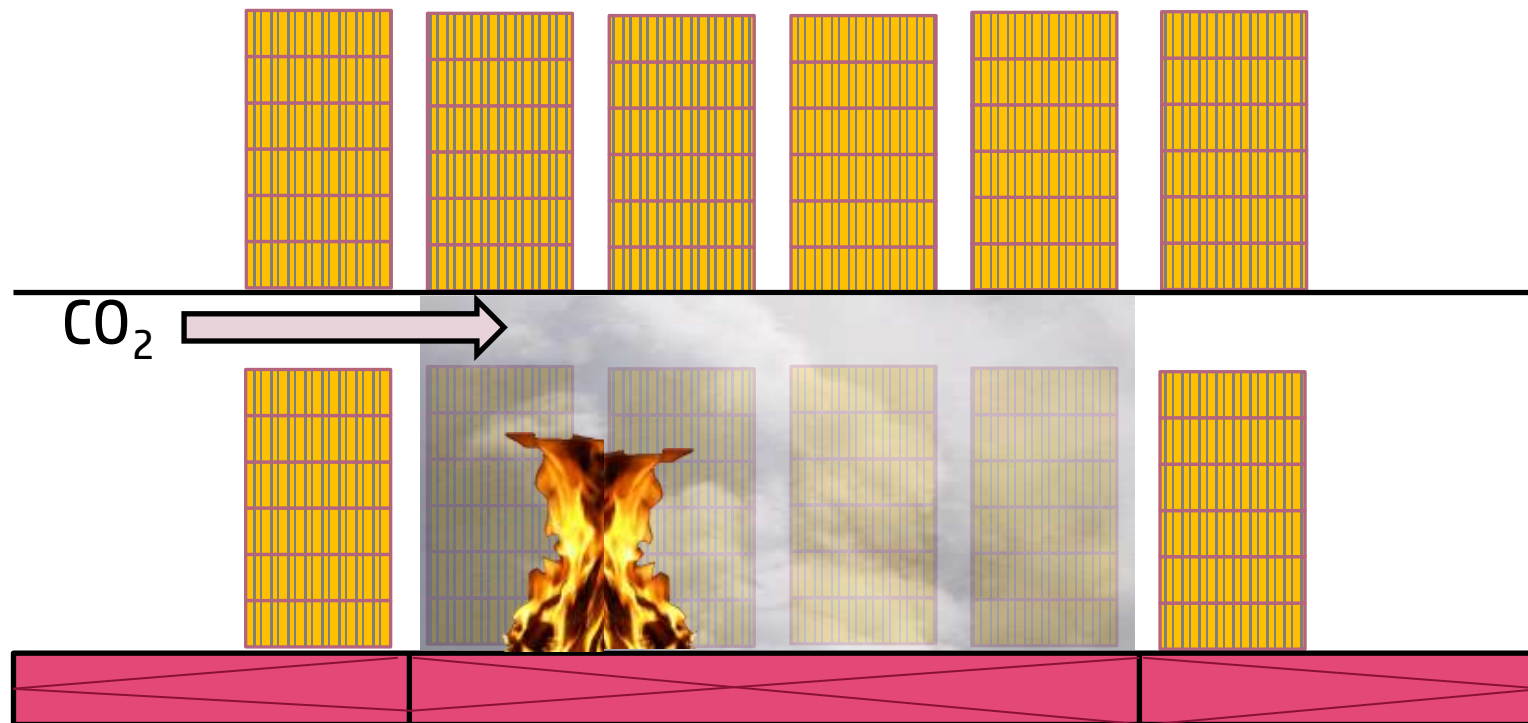
Extinguishing Options Today



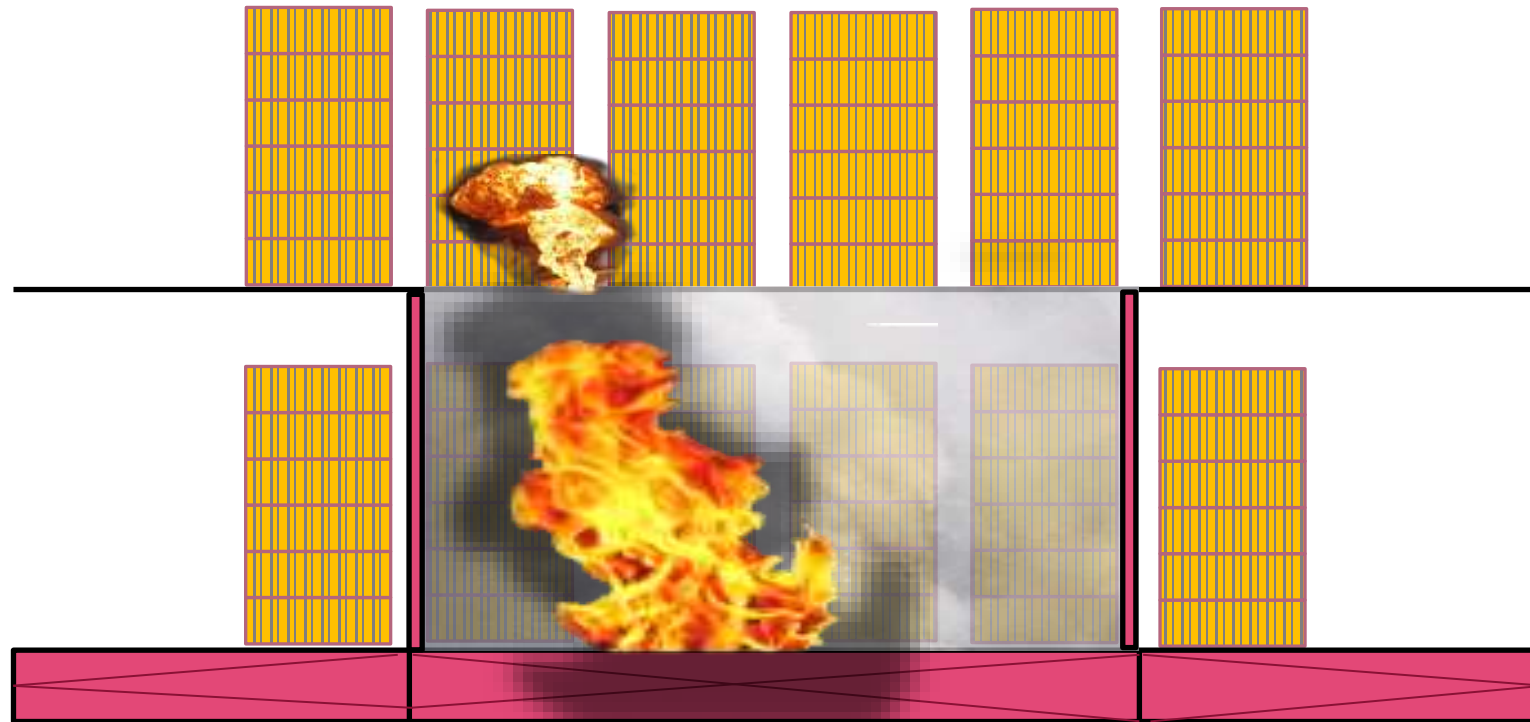
Extinguishing Options Today



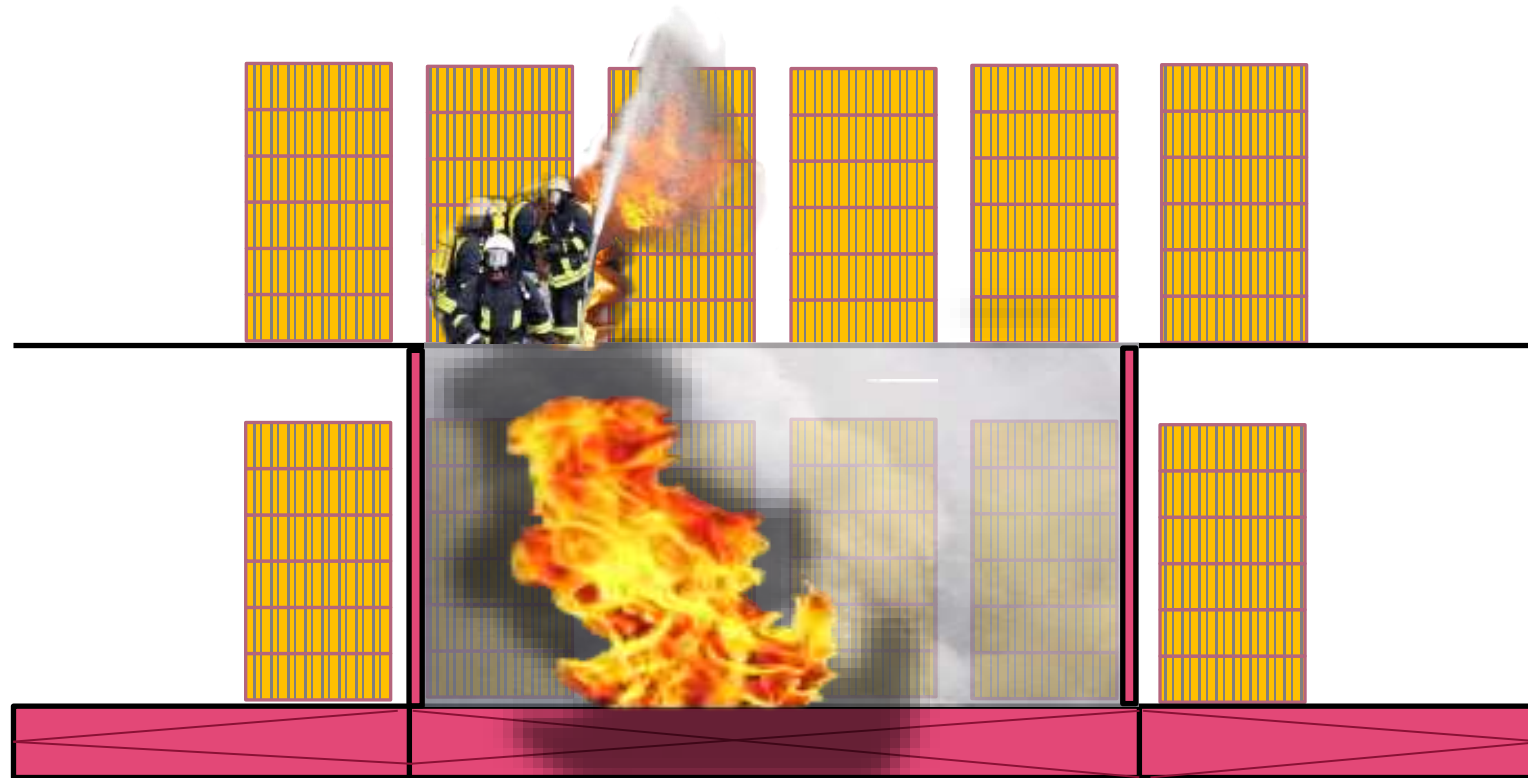
Extinguishing Options Today



Extinguishing Options Today



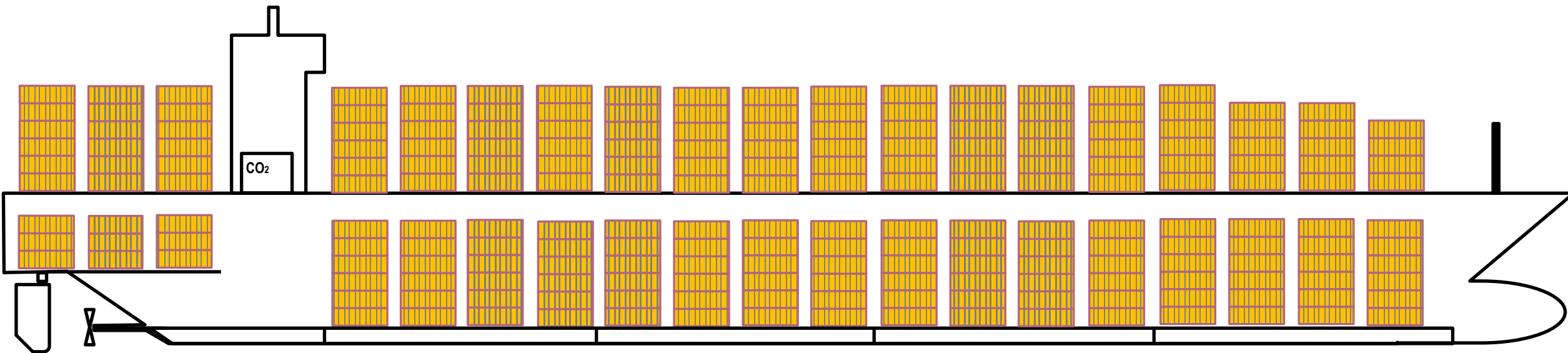
Extinguishing Options Today



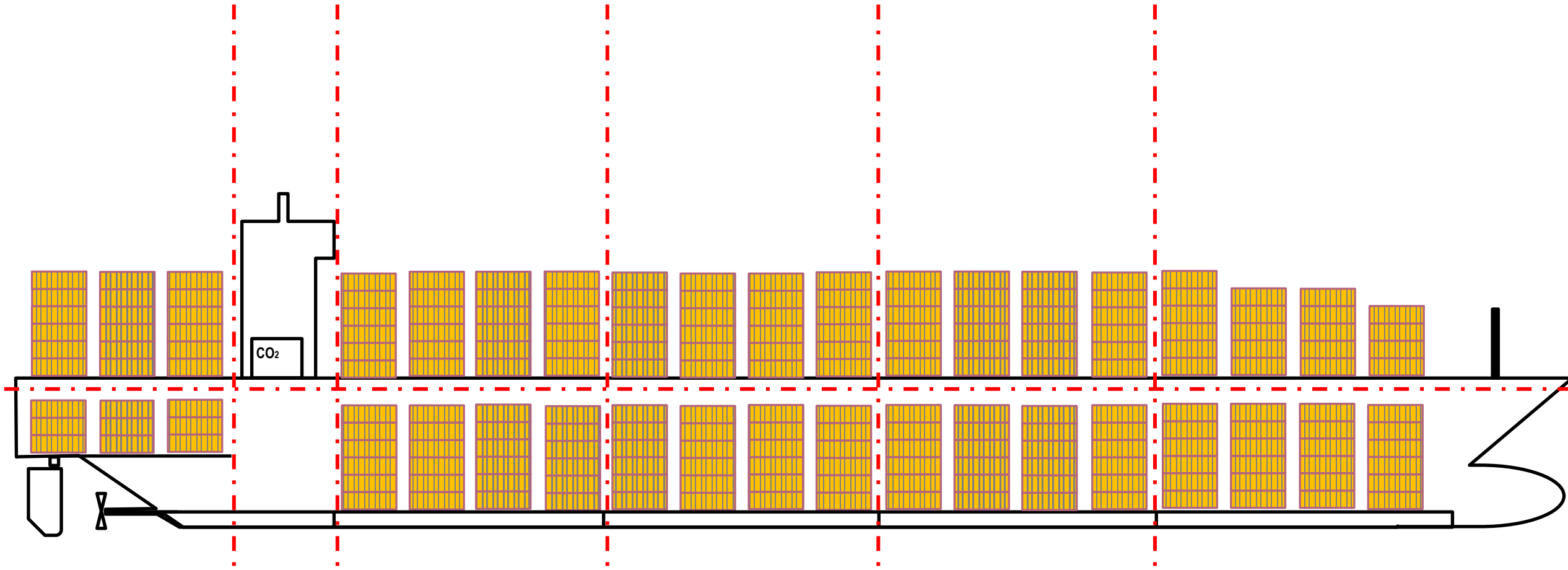
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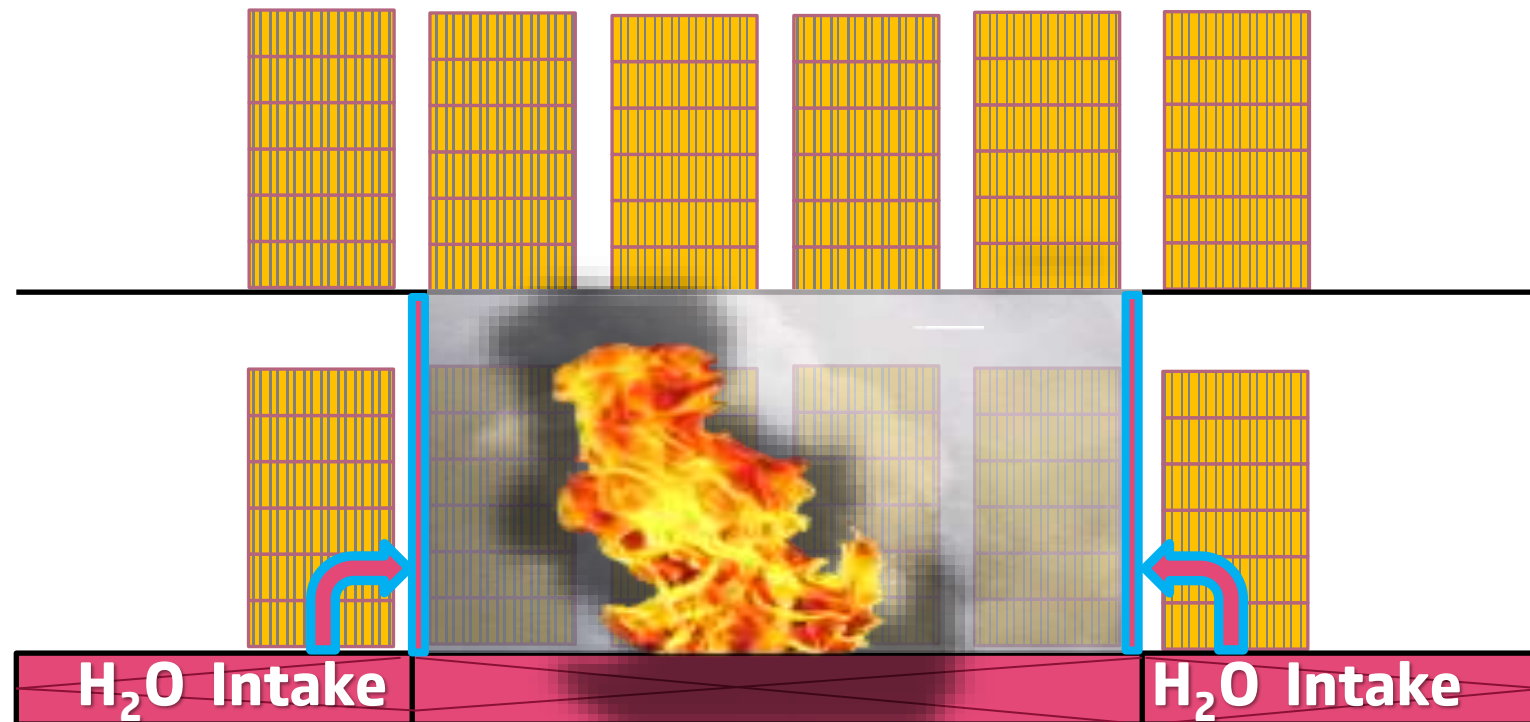
Extinguishing Options of Tomorrow



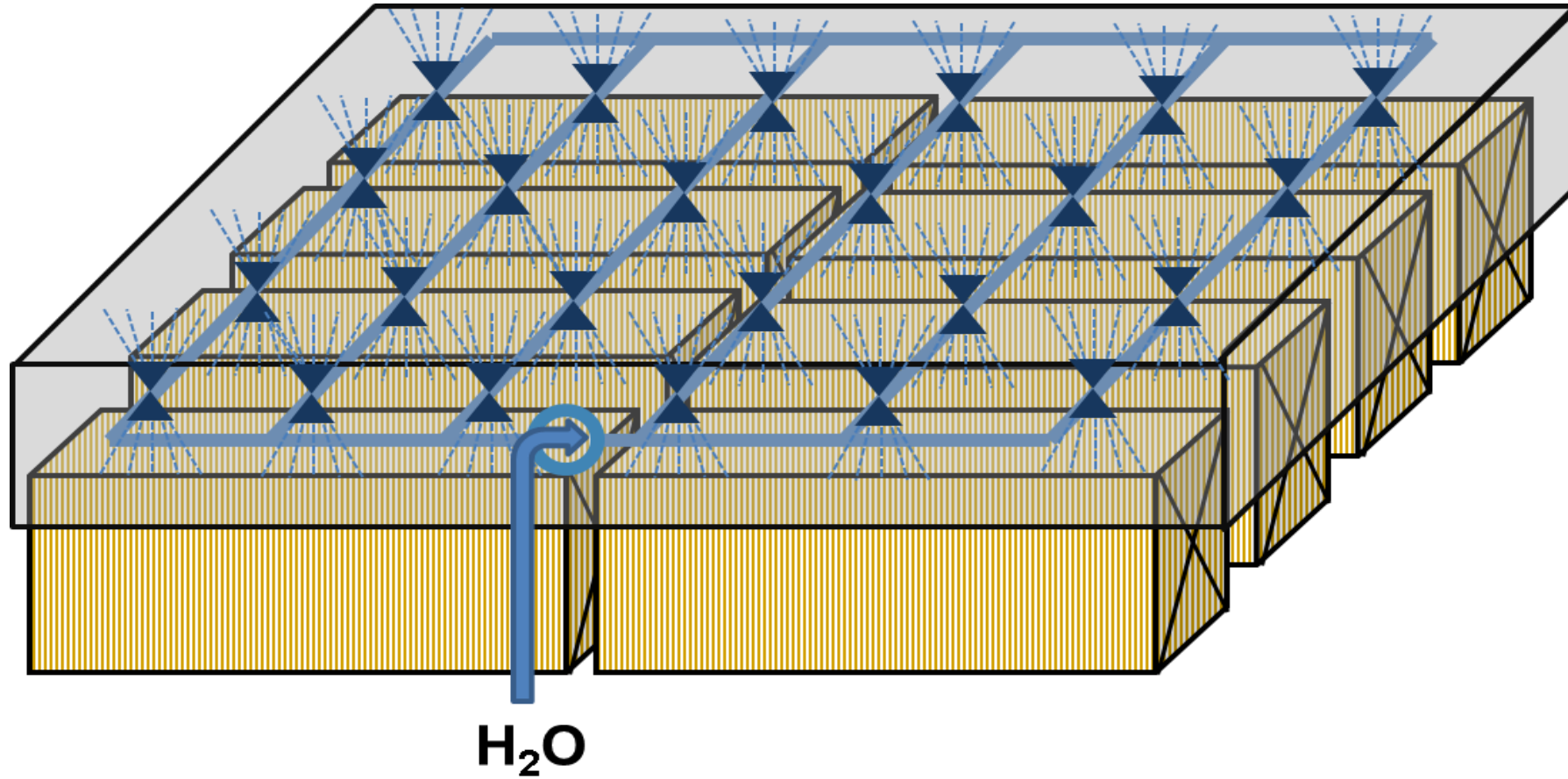
Extinguishing Options of Tomorrow



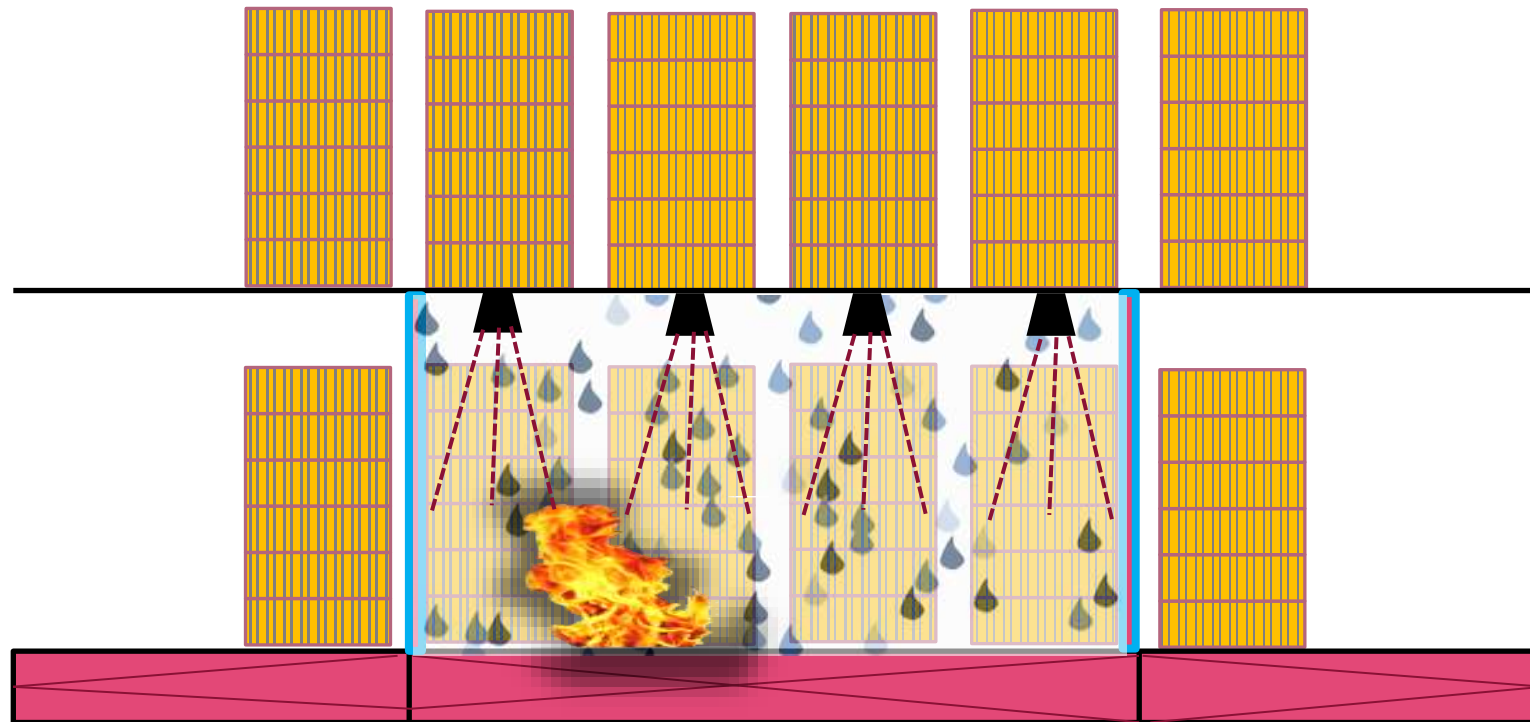
Extinguishing Options of Tomorrow



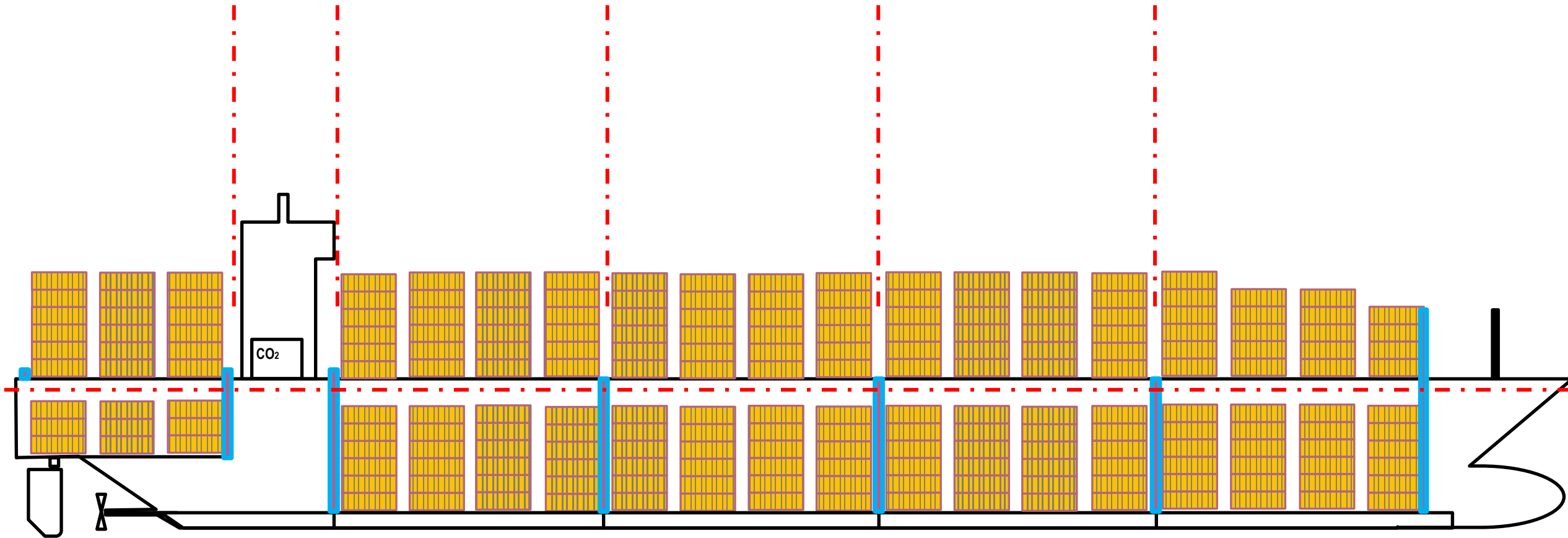
Hatch Cover Stability



Extinguishing Options of Tomorrow

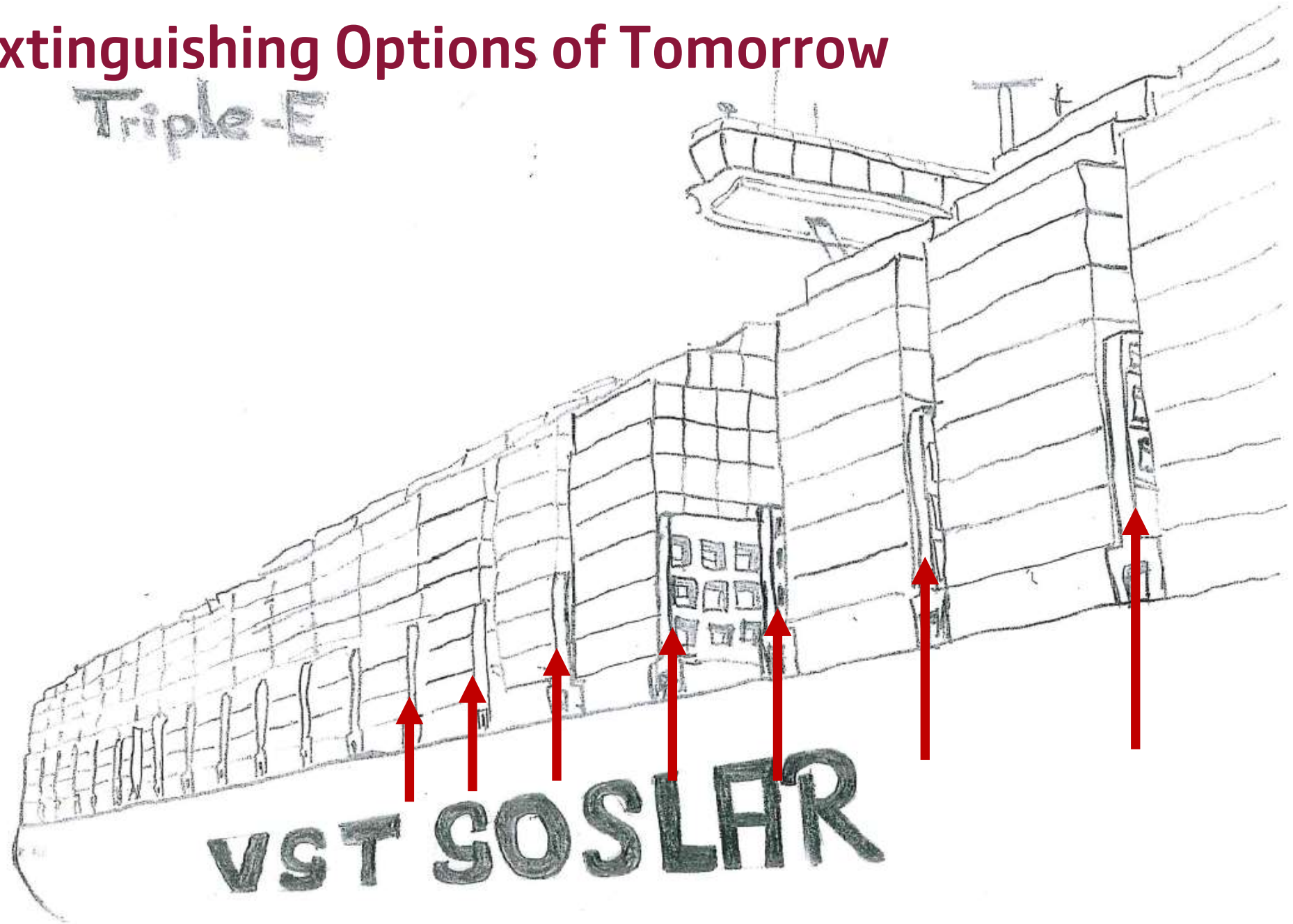


Extinguishing Options of Tomorrow

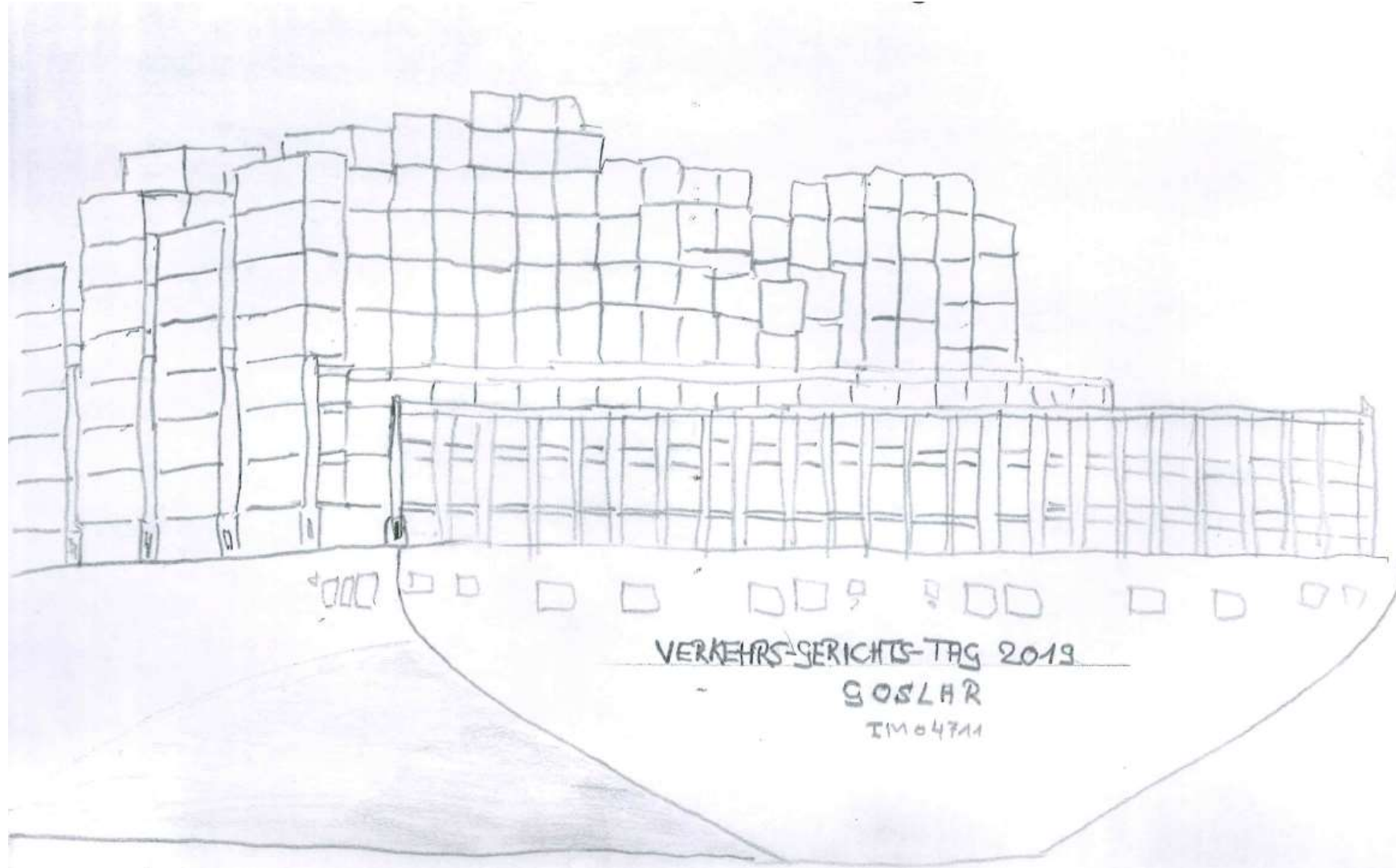


Extinguishing Options of Tomorrow

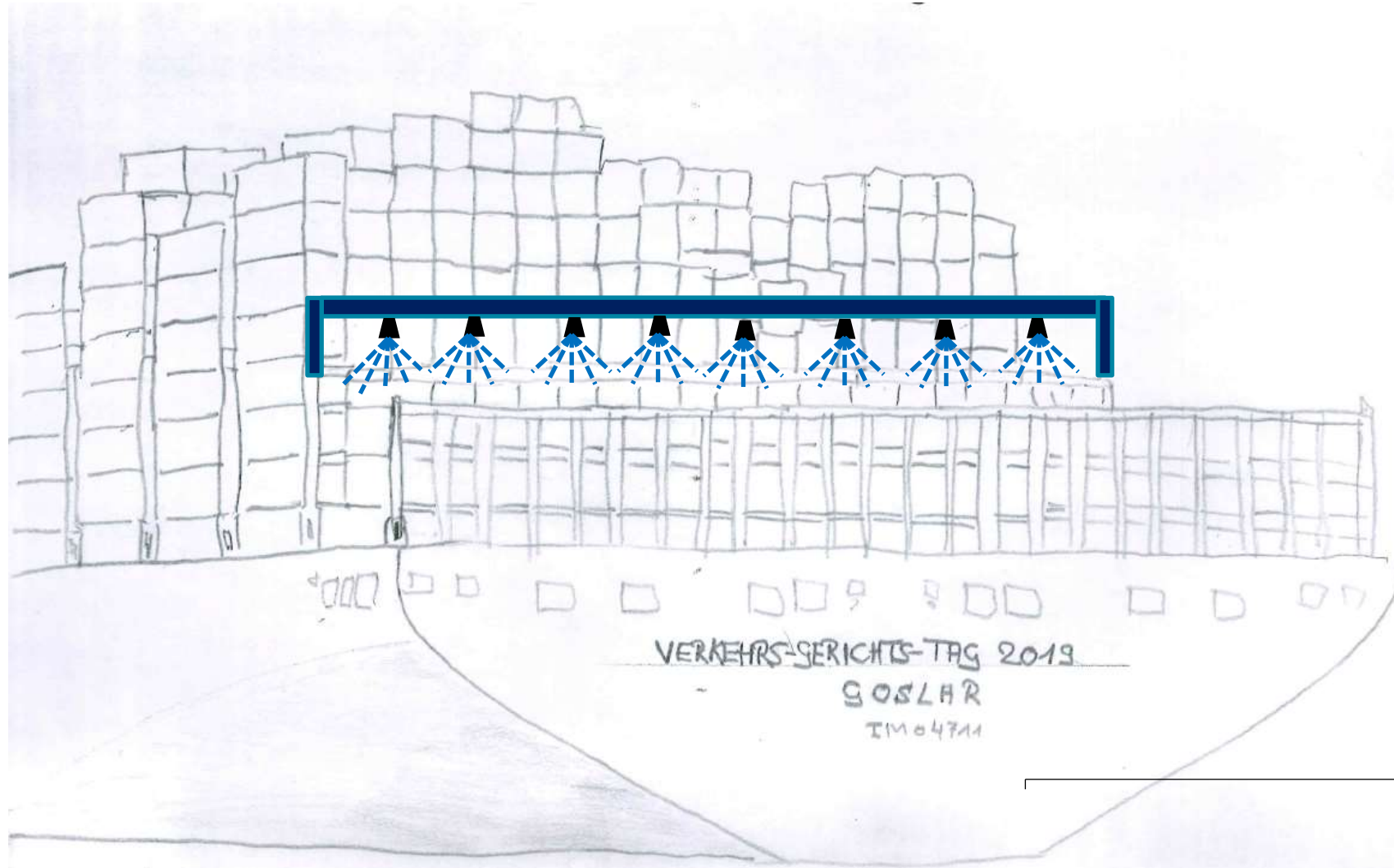
Triple-E



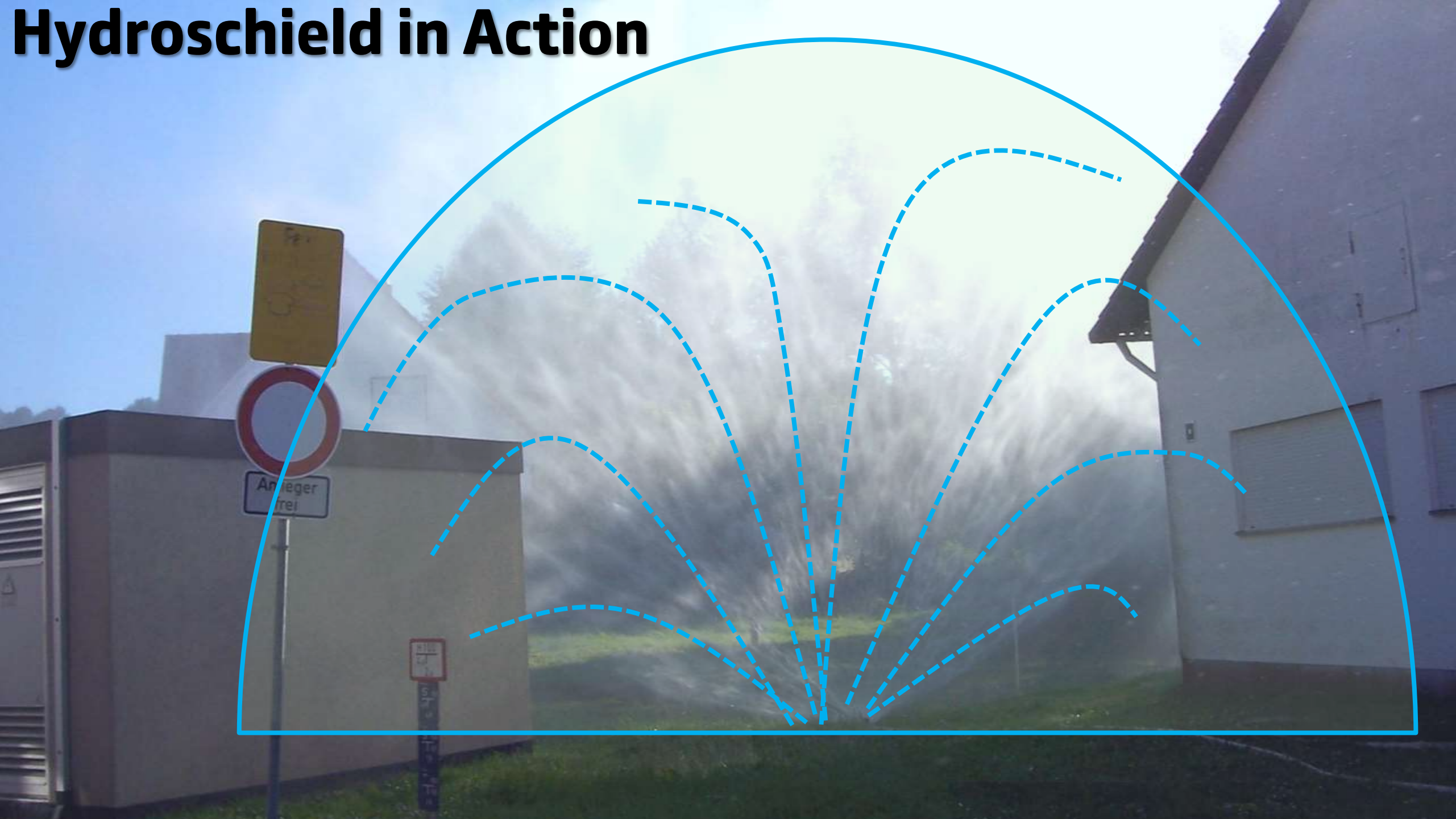
Extinguishing Options of Tomorrow



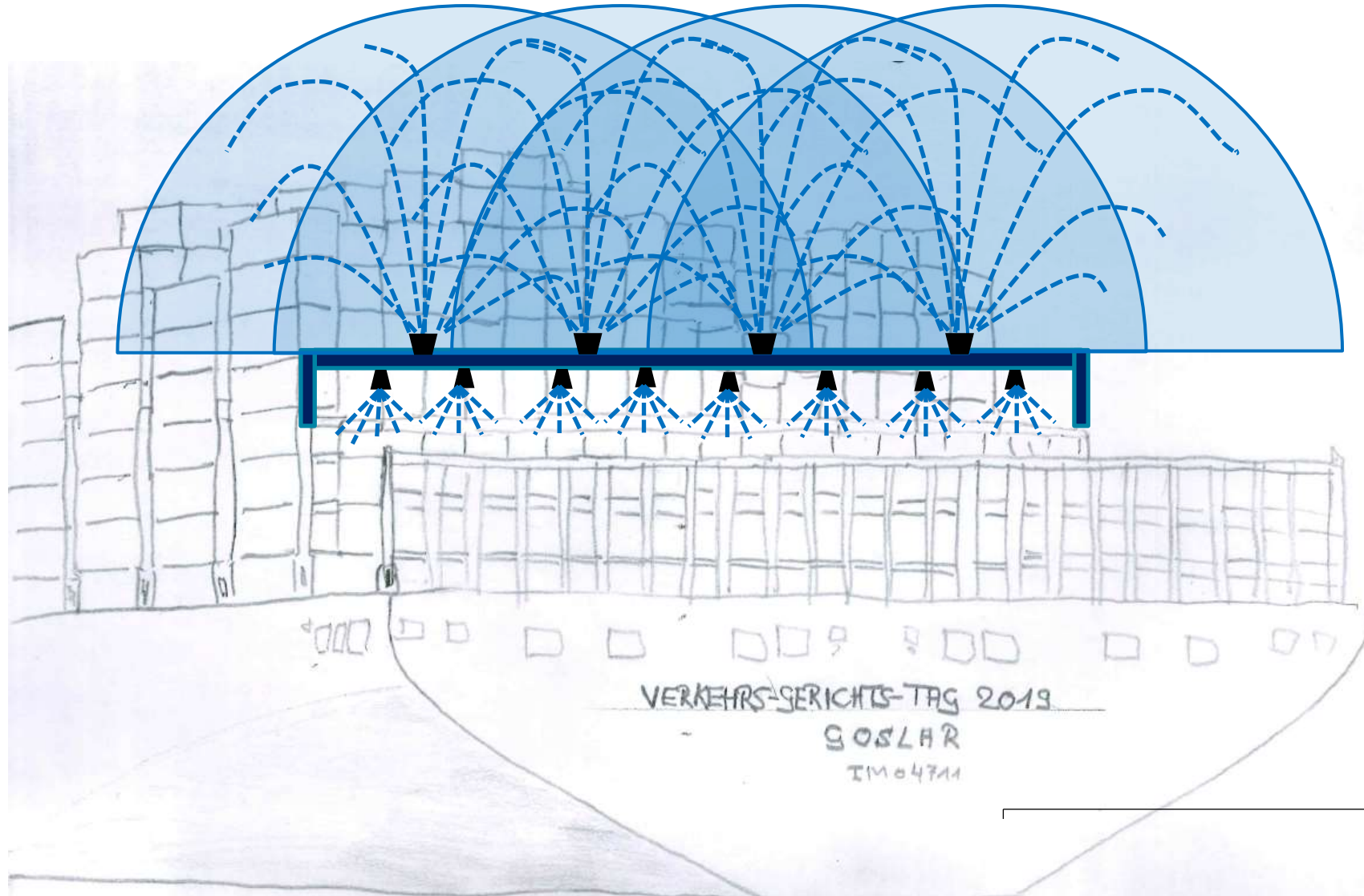
Extinguishing Options of Tomorrow



Hydroschild in Action



Extinguishing Options of Tomorrow



Partitioning of the Maersk Honam



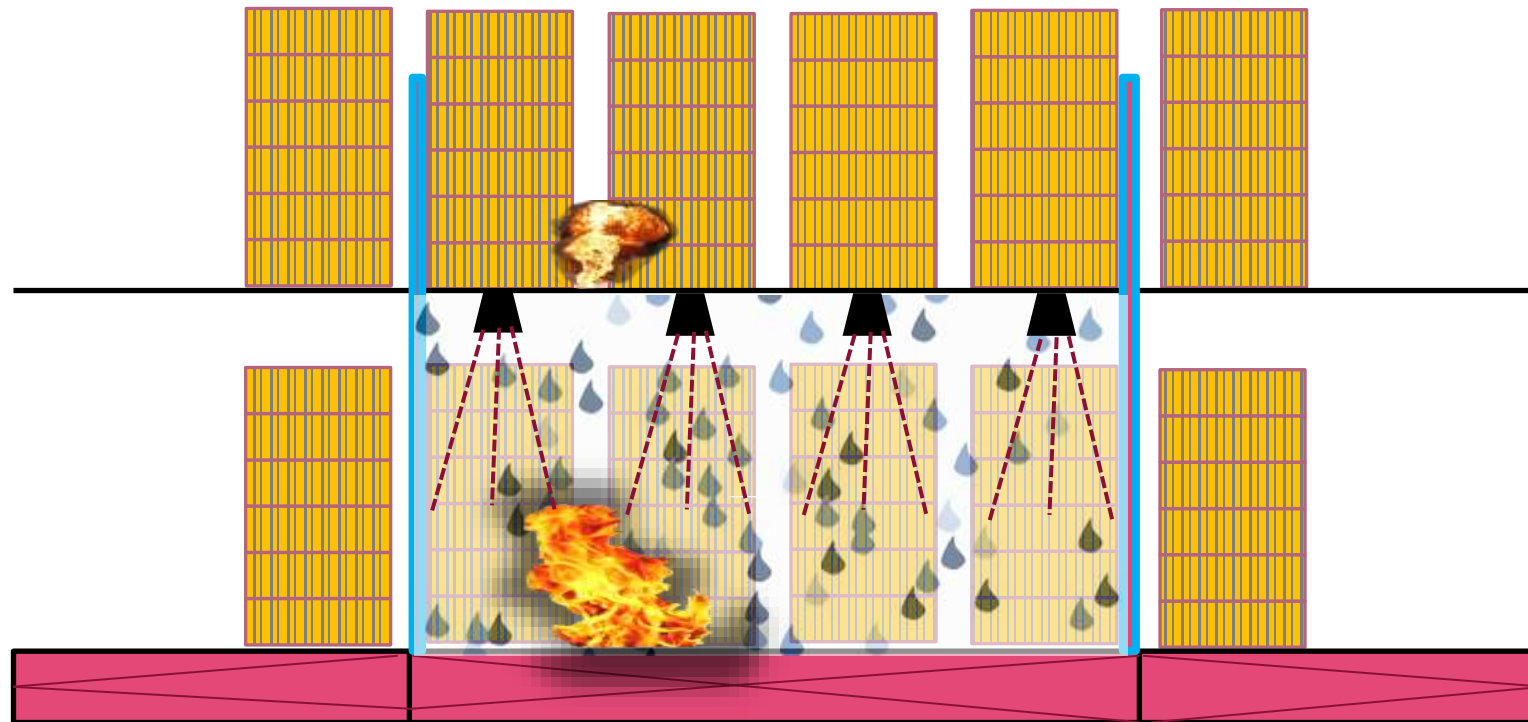
Cooling the Deckhouse



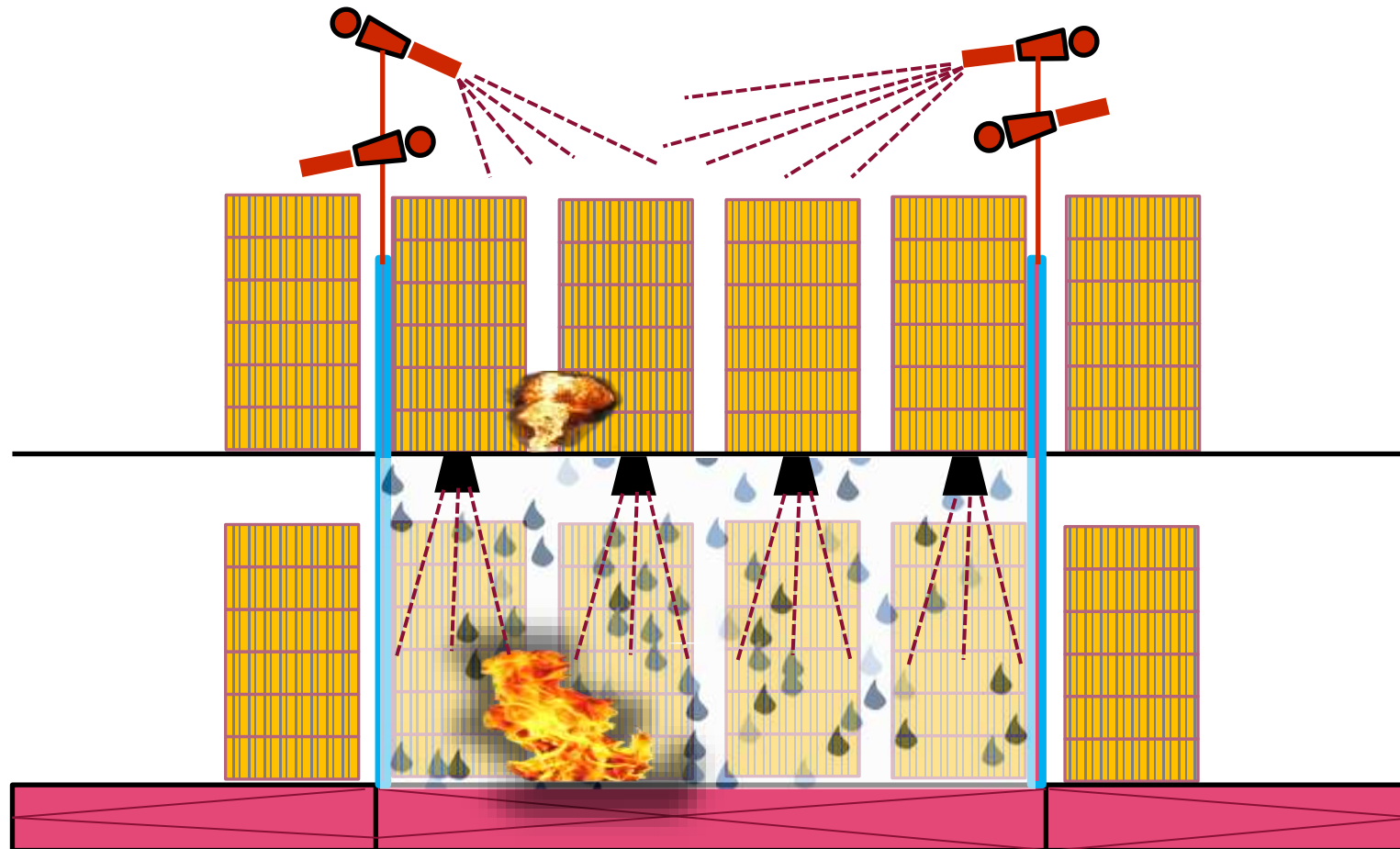
Partitioning of the Maersk Honam



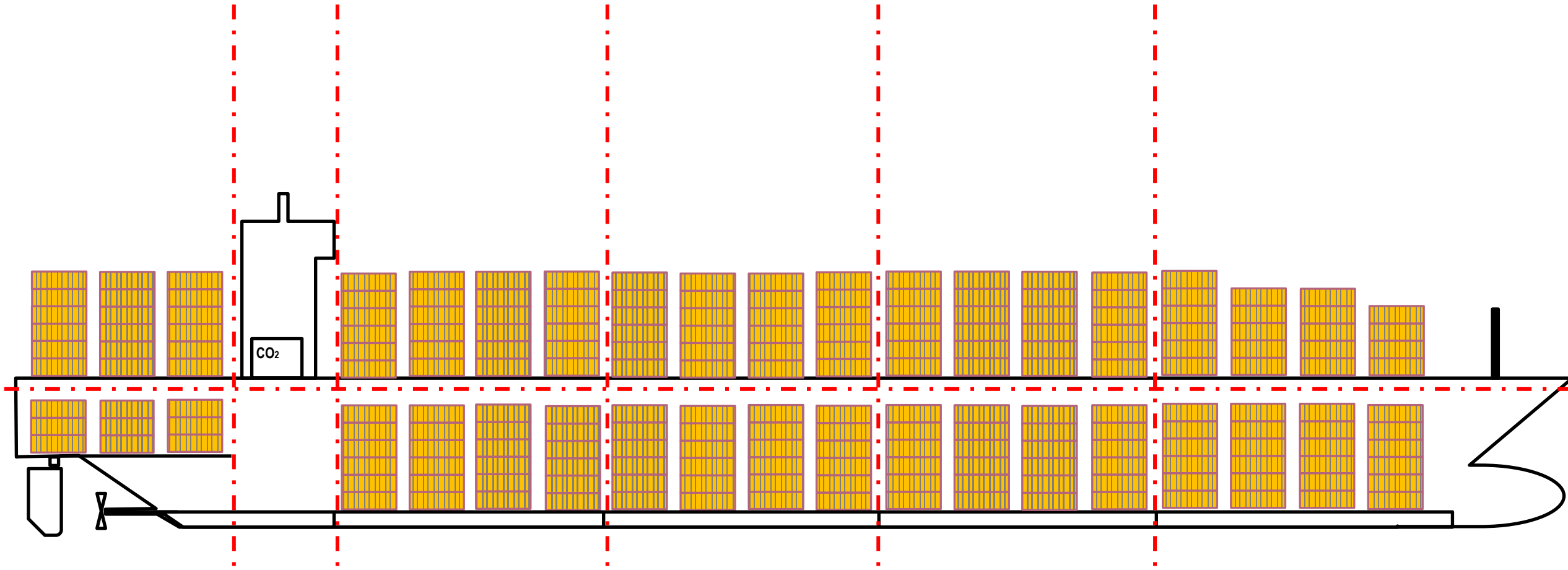
Extinguishing Options of Tomorrow



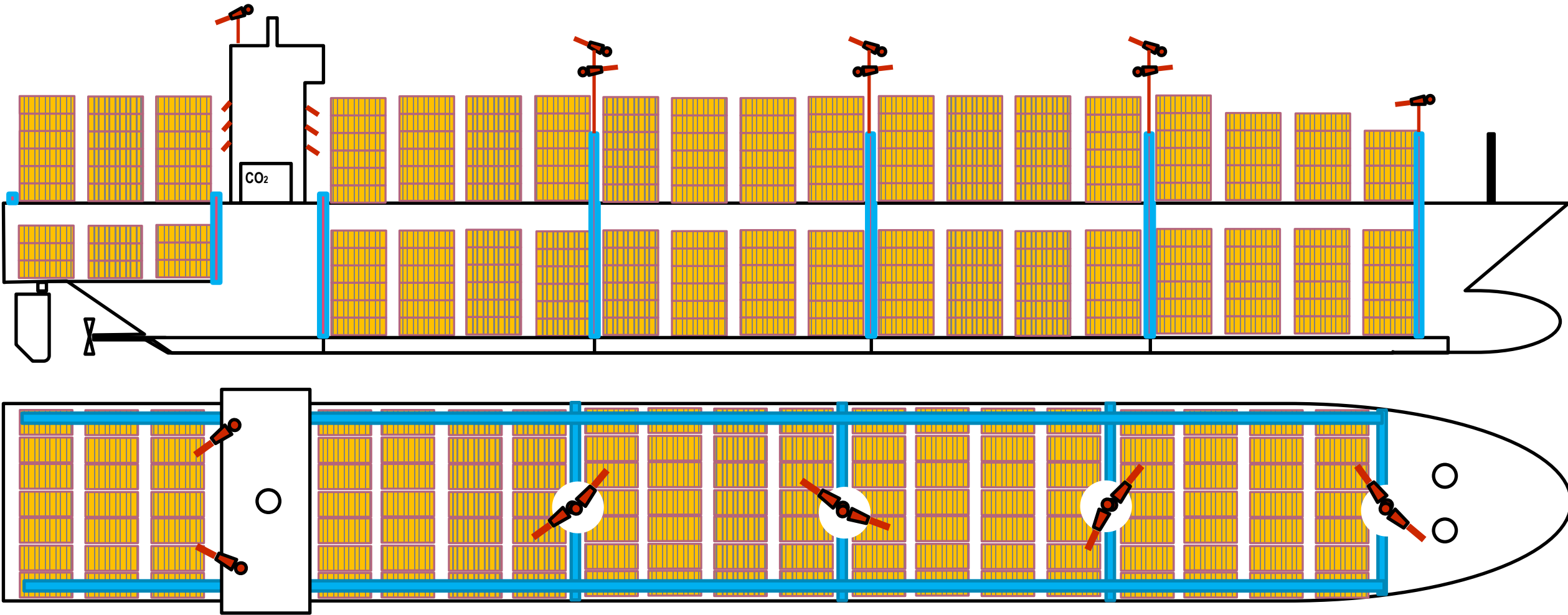
Extinguishing Options of Tomorrow



Extinguishing Options of Tomorrow



An Adequate Firefighting System



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MSC



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The Problem of Lithium Ion Batteries



The Problem of Lithium Ion Batteries



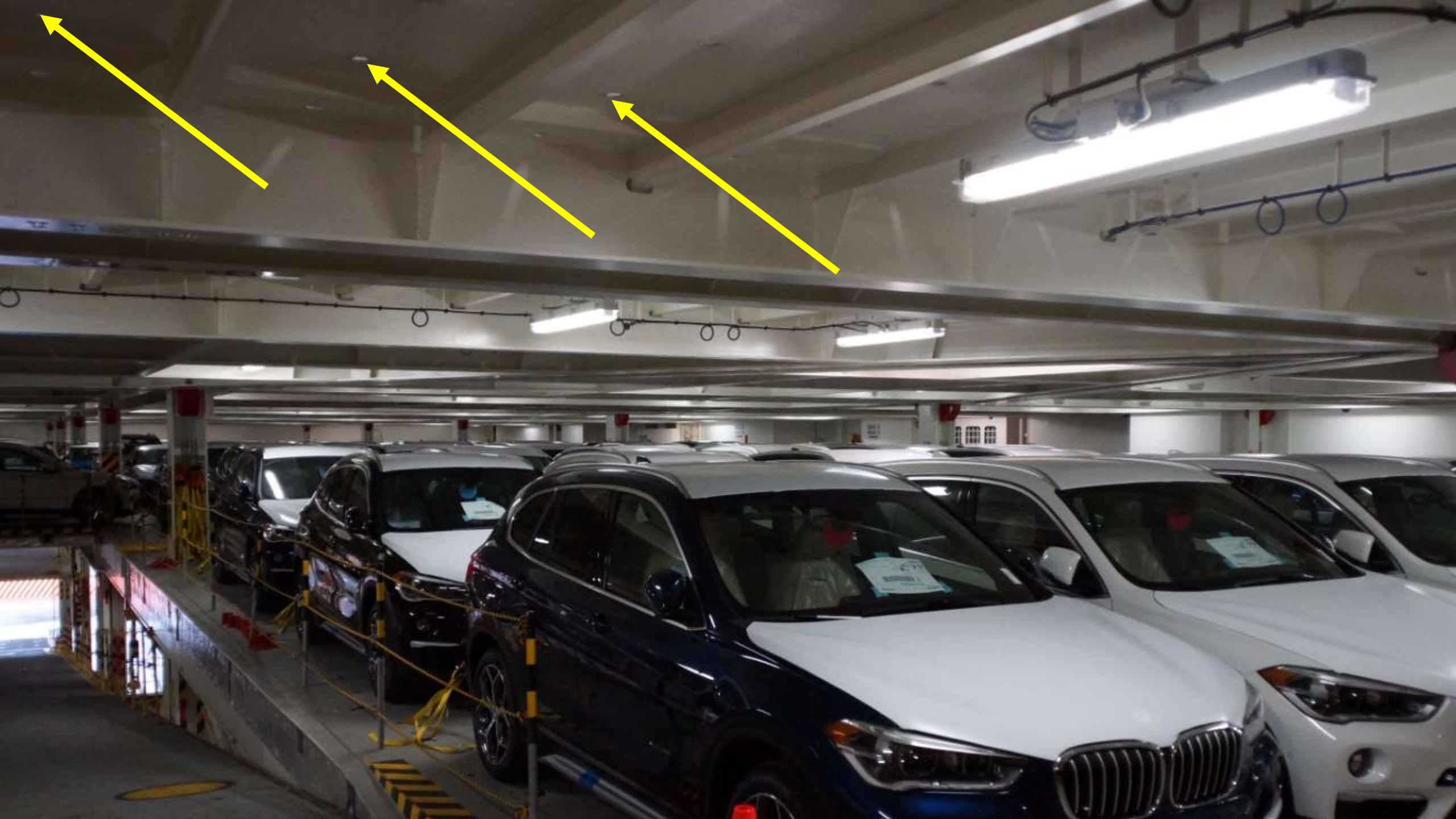
The Problem of Lithium Ion Batteries











How CO₂ Works

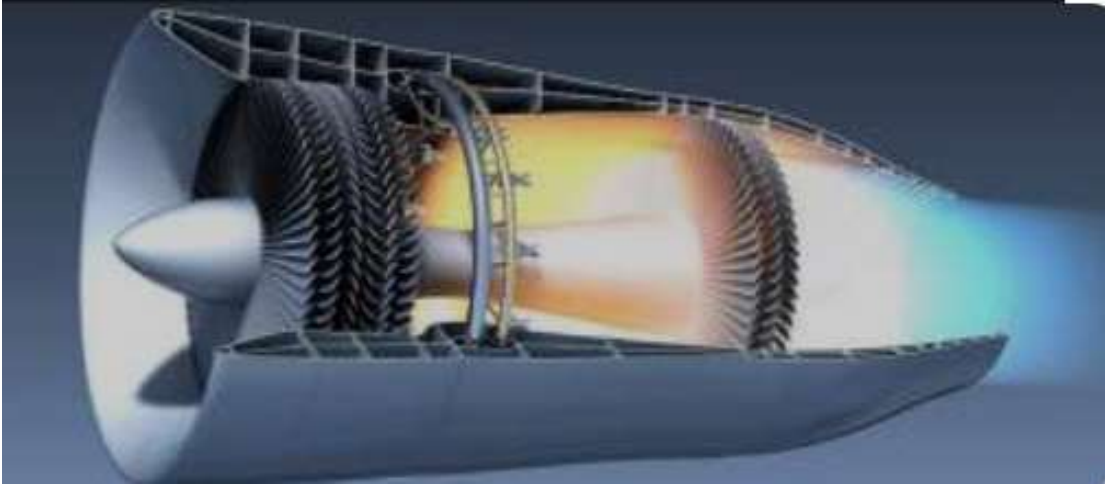
- **The air has 21 % of O₂**
- **Normal fire needs 10 to 12 % of O₂**
- **With CO₂ we try to dilute the O₂ to under 10%
to damper the fire**

How CO₂ Works

- **Burning LI-Batteries produced H₂**
- **Hydrogen needs only 4.5% of O₂**
- **Diluting the O₂–concentration under 10% will not damper the fire**
- **Flooding the decks more quickly with CO₂ to reach a concentration of O₂ below 4.5% will damper...**

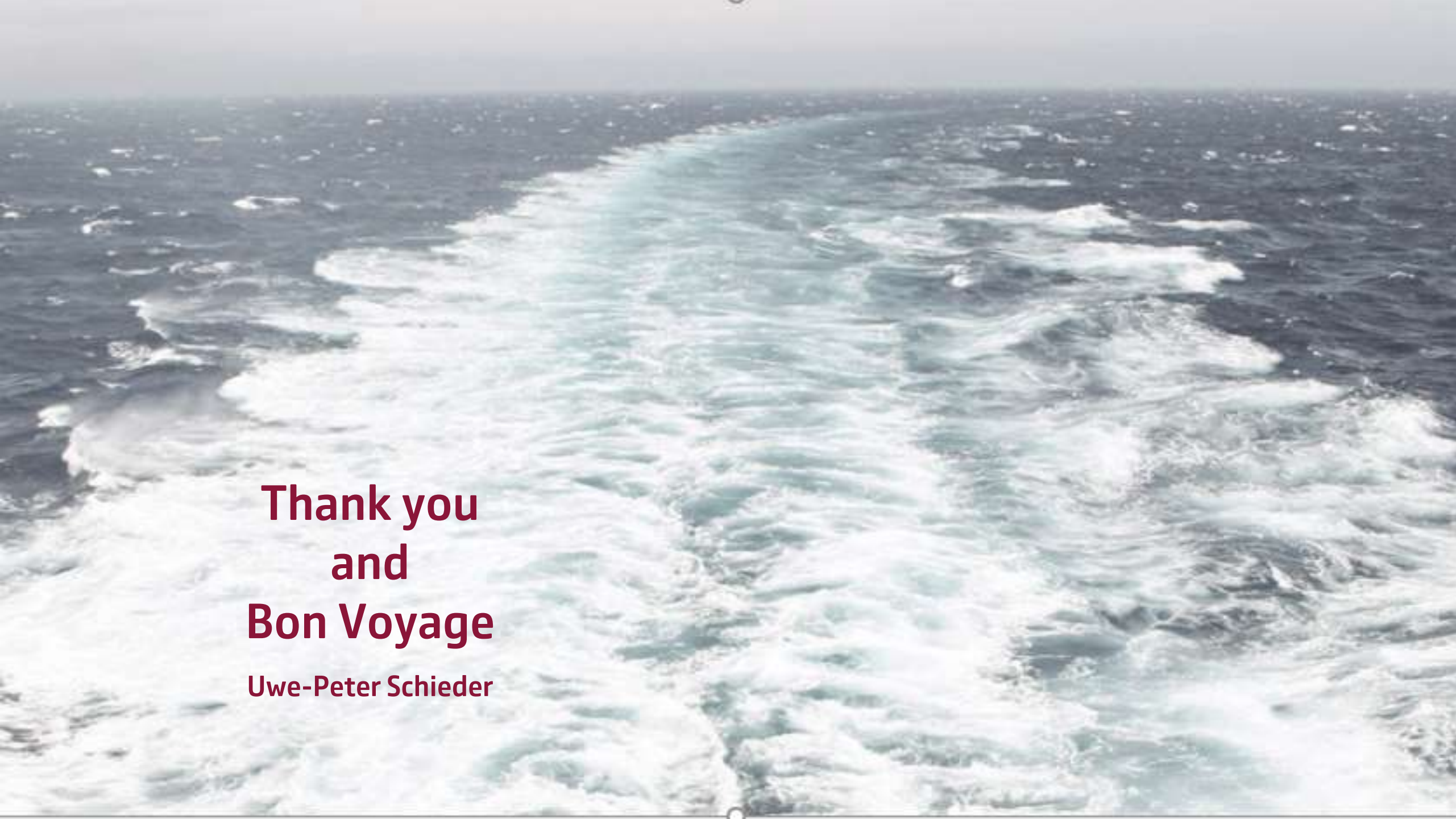
One Solution

- **Using aircraft turbines**
- **They produce a rest O₂ in the exhaust gas of 0.5% in large quantity**
- **Cool the exhaust gas with water**





**Cool the fire with
high pressure
water mist**

An aerial photograph showing the wake of a ship moving through the ocean. The wake is a long, narrow path of white, frothy water that stretches from the bottom center towards the horizon. The surrounding water is a deep, dark blue-grey color. The horizon line is visible in the upper third of the image, where the ocean meets a pale, overcast sky.

**Thank you
and
Bon Voyage**

Uwe-Peter Schieder