



# Research & Innovation to achieve our decarbonation ambition

SHIPPING THE FUTURE

10th September 2020



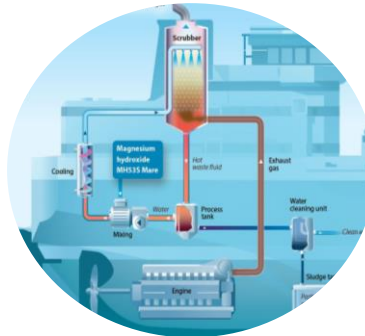
# Proud to act for a greener shipping activity

- CMA CGM fully committed for many years in lowering its environmental impact.
- Not only words but facts : investment and drive by our management and whole company.
- Three concrete examples that highlight the leadership of CMA CGM for green shipping :



## Most important retrofit plan

Engine, bulbous bow, propeller, with a reduction up to 20% of GHG emissions since 2008.



## Closed loop scrubbers

Choice of closed loop scrubbers with the lower environmental impact despite higher cost.



## Pioneer of LNG as fuel for shipping

The choice of LNG as a transition to zero emission. Most efficient available solution now, and for the coming years. Developed by and for CMA CGM as a pioneer for shipping industry : supply chain, bunkering, storage, engine ...

# A clear R&D strategy toward decarbonisation

Three main axis to meet IMO / EU targets and our decarbonation objectives



## New Combustibles

Lower to zero GHG emission:

- LNG
- Bio fuels / gas
- Synthetic fuels / gas
- New green energies (H2?)

### Ongoing projects :

- LNG ships
- First biofuel tested, target 10% of our energy mix
- R&D projects on new energies



## Efficient Ships

Lower fossil energy consumption with technical improvements **on new building & retrofit.**

### Ongoing projects :

- Energy audit of owned and chartered fleet
- Retrofit plan to gain % per %
- Codesign to ensure most efficient ship design



## Greener Operations

Improve ships, terminal & logistics **operations** to reduce global energy consumption over the entire supply chain.

### Ongoing projects :

- Smart & Connected ships / terminals with IoT and data analysis
- Intermodal development

If above solutions are not sufficient, a last solution would be to reduce ship speed and increase ship number



## Speed reduction with business impact

Speed reduction can reduce carbon footprint, but increase : number of ships, CAPEX / OPEX, transit time ... The global impact on business activity is then huge.



# The long road of shipping decarbonisation

Beyond short term initiatives, **CMA CGM is looking to neutral carbon energies** and already initiated preliminary studies.

## First observations are :

- Shipping decarbonisation will be extremely complex and expensive, with no current available technologies fit for regular industrial use.
- Container shipping decarbonisation will be the most complex
  - Long distances that require high volume and compact energy storage
  - Complex storage of cryogenic liquefied gas
  - High ship power

A strong EU support is expected to support shipping industries efforts and investments estimated by analysts at \$1400B to reach decarbonisation.

*Ex : CMA CGM submitted a project to IPCEI Hydrogen call, with Engie / Ariane to develop a supply chain of green hydrogen from liquefactor to ship storage & propulsion.*



# PROUD T ACT

**#NATURALGAS**

CMA CGM ACQUIRES THE 1ST LNG POWERED CONTAINER SHIP IN THE WORLD

**#NORTHERNROUTE**

CMA CGM WILL NOT BE TAKING THE NORTHERN SEA ROUTE

