



ALFA  
LAVAL



# Alfa Laval's Decarbonizing Journey for Green Shipping

2022 Green Ship Expert Committee,  
The Republic of Korea and The Kingdom of Denmark

Alfa Laval Marine Division,  
Alfa Laval Korea  
September 30, 2022

# At a Glance Alfa Laval

— A global company with roots back to 1883



- ~17,000 no of employees
- Global market leadership
- Strong brand recognition
- 35 major production units (Plus a number of minor production and assembling units)
- More than 100 service centres
- Sales companies in 55 countries (plus representation in 45 other countries)

# Our purpose

Advancing Better™



“We exist to accelerate success for our customers, people and planet”

# Three business divisions



## Energy

This area covers a wide range of industries such as HVAC, oil & gas, chemicals, biofuels – with a special focus on energy efficiency.



## Food & Water

Offers products, solutions and systems in the areas of food processing and water treatment.



## Marine

The company has supplied the marine industry since 1917 and has today a broad offering incl. environmental marine products.

# From bow to stern

100 years in the marine industry

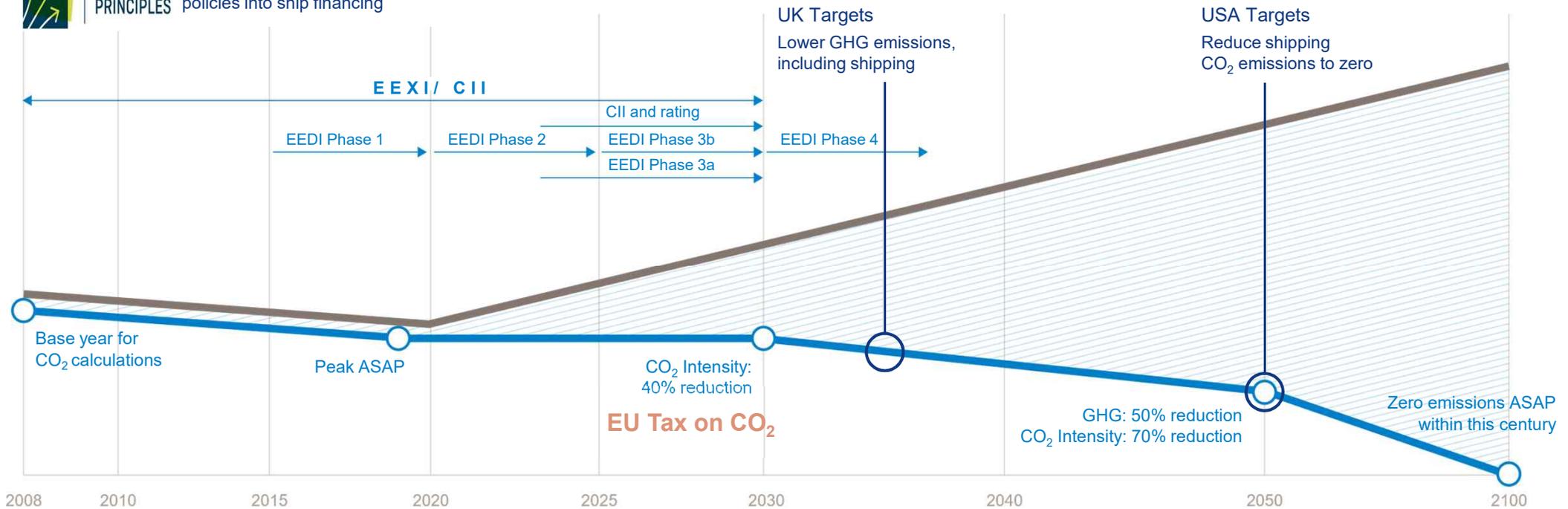


# Changing Maritime Landscape

- Marine legislation paving the way for new fuels and technologies



**POSEIDON PRINCIPLES** To integrate IMO climate change policies into ship financing



Business-as-usual emissions
  Emission pathway in line with the IMO's GHG strategy
  Emission gap

# The transition towards more sustainable shipping



“It is our ambition to develop viable technology solutions in cooperation with other marine players, so that our customers can achieve their climate goals irrespective of the selected fuel pathway.”

**Sameer Kalra,**  
**President of the Marine Division**

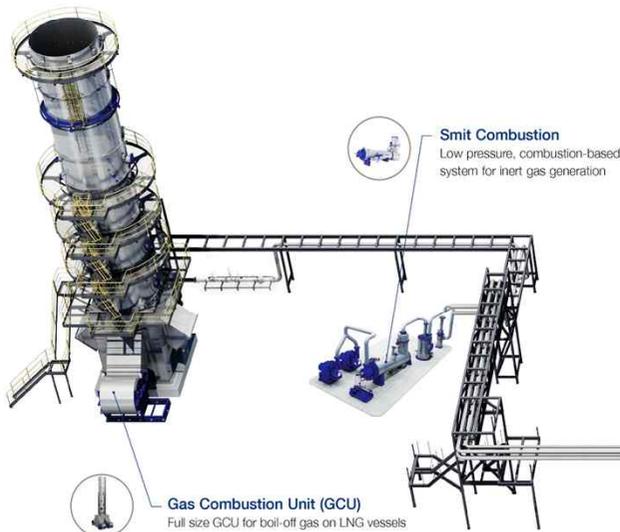
# Developing the future

## Test center new fuels

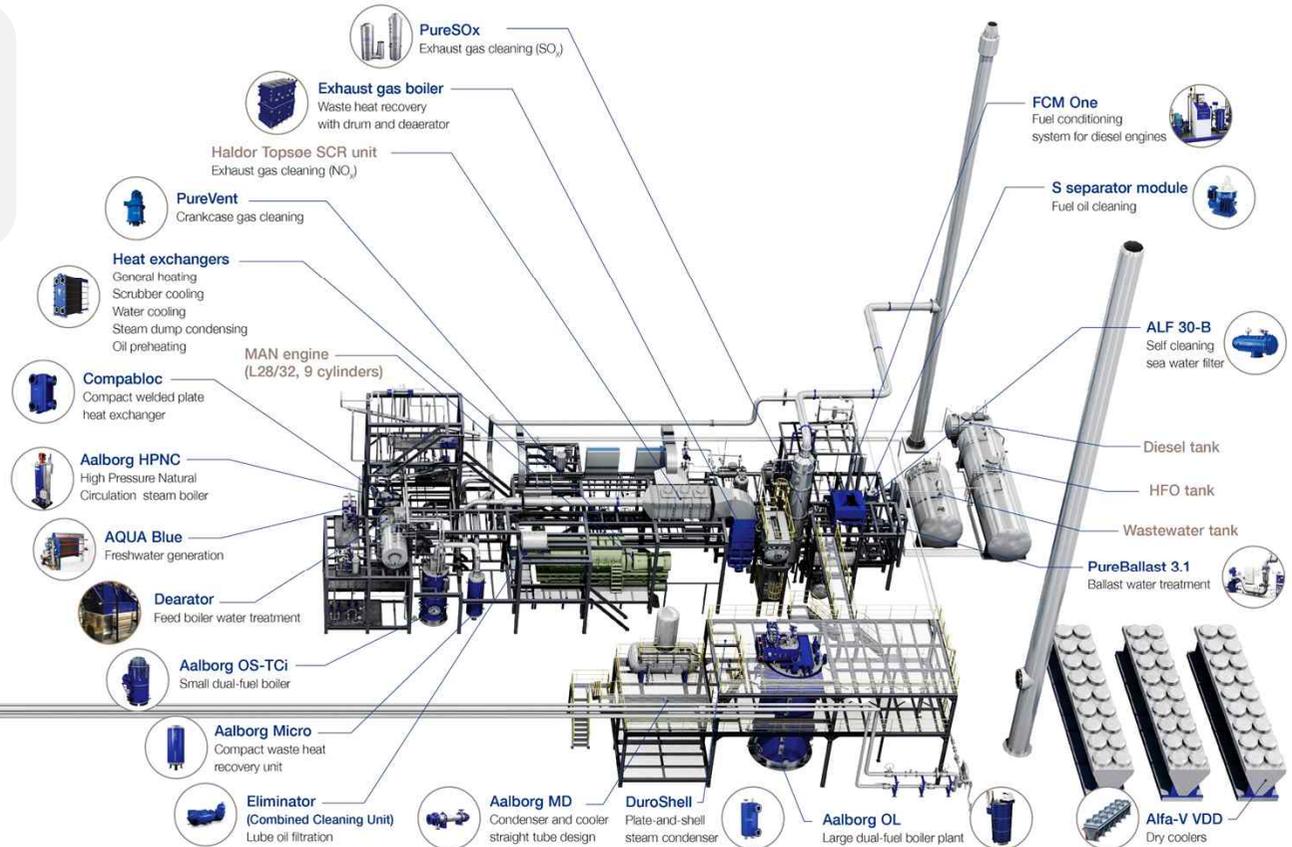
Bio Fuel  
2020

Methanol  
2021

Ammonia  
2022-23



Alfa Laval  
**Test & Training Centre**



# The Alfa Laval journey towards sustainable shipping

From 2004 to 2021



2004

**PureThinking** becomes the framework for Alfa Laval's development of marine environmental solutions. Focused on practical, cost-effective compliance, it paves the way for Alfa Laval PureBilge, PureVent, PureBallast, PureDry, PureSOx, PureNOx and PureCool.



2006

Alfa Laval **PureBallast** becomes the first commercially available ballast water treatment system. In **2009** the first exhaust gas cleaning system Alfa Laval **PureSOx** is installed on board DFDS Ficaria Seaways.



2013

First Alfa Laval **FCM Methanol** prototype designed as test bench. In **2015** 9 units are delivered and in **2018** 4 more units delivered with new design.



2014

**The Alfa Laval Test & Training Centre**, a ship simulation facility, is inaugurated in Aalborg. In **2017**, a **major expansion focusing on fuel challenges** produces innovations faster than ever before.



2019

A growing number of shipowners are powering their vessels with LNG. In over fifty years of work with gas, beginning with cargo and expanding into LNG as fuel, Alfa Laval continues to develop equipment, knowledge and services in this area.



2021

Alfa Laval joins Mærsk Mc-Kinney Møller Center for Zero Carbon Shipping as Strategic Corporate Partner.



2021

Alfa Laval acquires StormGeo, a global leader in weather intelligence and advanced data science solutions.



2021

Alfa Laval and Wallenius agree on a joint venture to develop modern wind propulsion. Further to that Alfa Laval invests in the development of air lubrication technology for sustainable shipping by acquiring a minority stake in Marine Performance Systems B.V.



2021

Fuelling a new phase in decarbonization with methanol will demand new technologies and a different way of looking at the energy balance on board. Alfa Laval is at the cutting edge of methanol solutions – and is ready to partner with you in making the transition.

# Sustainable shipping initiatives 2022

Decarbonisation Toolbox



StormGeo



Oceanbird

StormGeo

Marine Performance Systems



Technology

Wing sails for commercial vessels.

Weather intelligence and advanced analytics

Air lubrication

Agreement

50/50 joint venture with Wallenius

Acquisition

Acquired a minority stake

Benefit

Using the wind for vessels propulsion for reducing Green House Gas emission

Mitigate risk, improve safety and make sustainable choices

8-12% fuel savings

# Future fuels and energy developments 2022

Decarbonisation toolbox



## E-PowerPack



Power from waste energy with Organic Rankine Cycle

Technology

Significant fuel savings and carbon dioxide (carbon footprint reduction)

Benefit

## Fuel cells



Fuel cell system based on high-temperature proton exchange membrane (HTPEM) technology

Clean operation with no particulate emissions

# Future Ship design with Alfa Laval



## Ocean going vessels

## Coastal vessels

