



SHAPING OUR GREEN FUTURE

By Xavier LECLERCQ
Vice-President, Owned Fleet
June 25th 2019



CMA CGM a leader in container shipping



CMA CGM, founded 40 years ago by Jacques R. Saadé, is a leading worldwide shipping group.

Now headed by Rodolphe Saadé, CMA CGM enjoys a continuous growth and keeps innovating to offer its customers new maritime, terrestrial, and logistical solutions.

CMA CGM: A GLOBAL PLAYER

CMA CGM
GROUP

MARITIME ACTIVITIES

 CONTAINERSHIPS



 MERCOSUL LINE

 کوماناف
COMANAV

LOGISTICS



PORTS & SUPPORT

CMA SHIPS

CMA TERMINALS

 JL
TERMINAL LINK

CMA CGM GROUP TODAY



20.71

Million TEU
transported

1.1

Million TEU with CEVA



31

Bn revenue
in USD



511

Vessels
including 193
owned



2.69

Million TEU
of fleet
capacity



700+

Offices
worldwide

9 million

Warehouses



160

countries



200+

Shipping
lines



110,000+

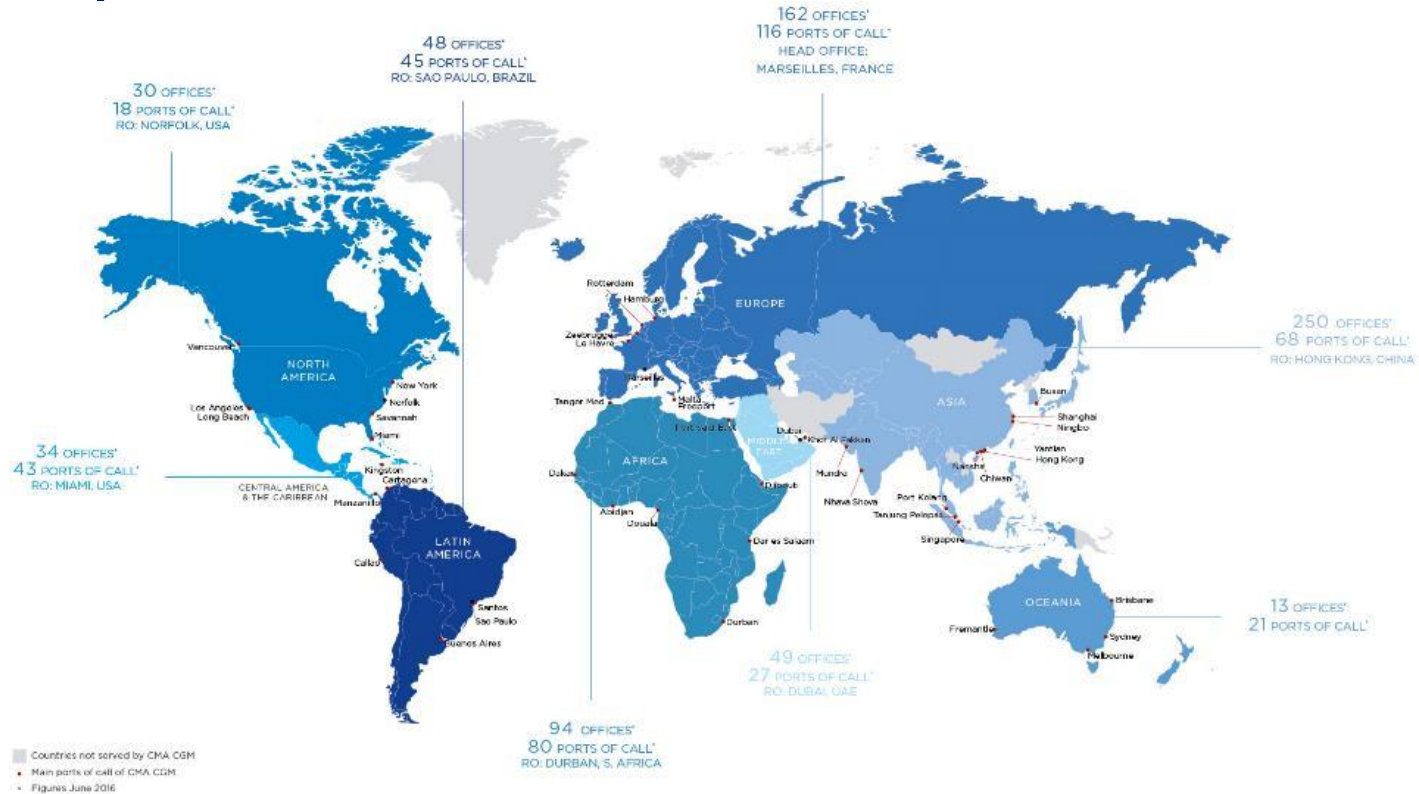
Staff members
worldwide
including 8,400
seafarers



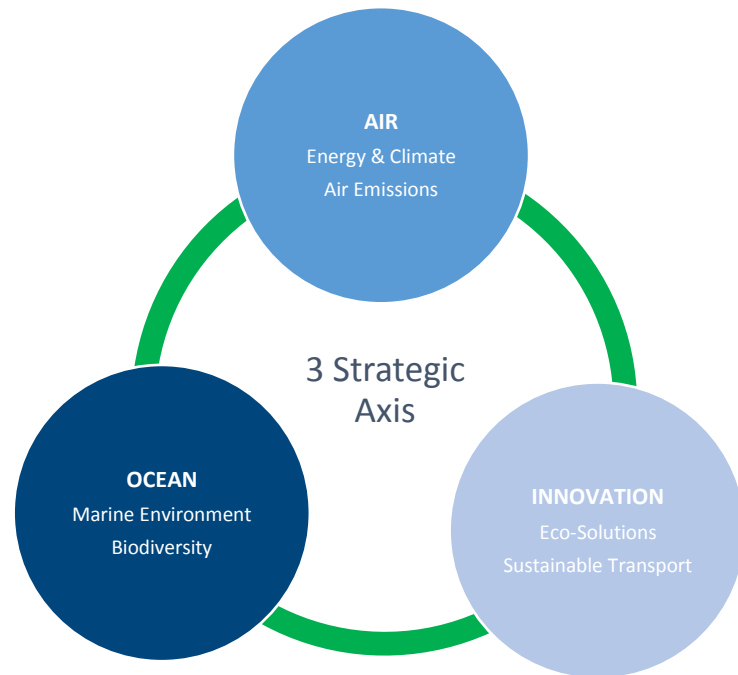
45

Terminals
in operation

A Worldwide presence...



Environment is an integral part of our sustainable journey

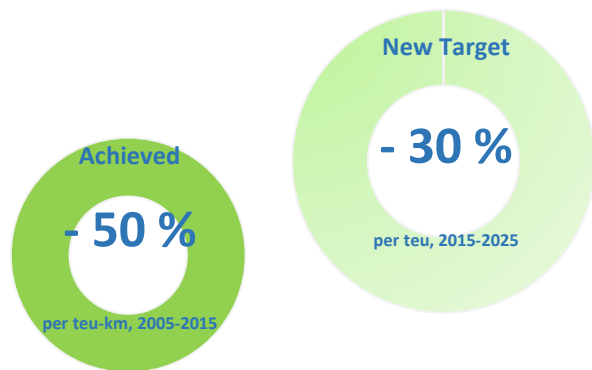


A pioneer group in environmental Commitment



- In April 2018, IMO (International Maritime Organization) adopted strategy for further reduction of CO2 by the shipping industry – **by 50 percent by 2050;**
- The CMA CGM Group has improved its carbon efficiency by **50% between 2005 and 2015;**
- An ambitious goal of an additional 30% reduction between 2015 and 2025;

Leading the climate change agenda



2000 2005 2010 2015 2020 2025 2030

An ambitious carbon target

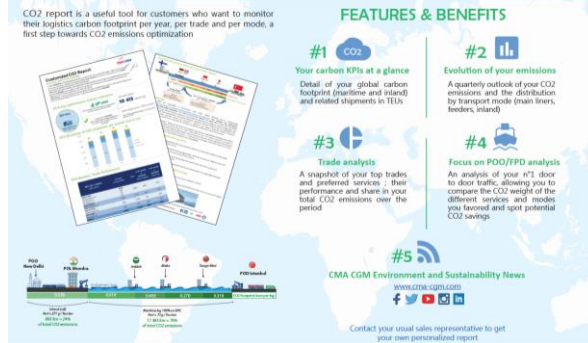


Historic member of the Clean Cargo Group



CUSTOMIZED CO2 REPORT

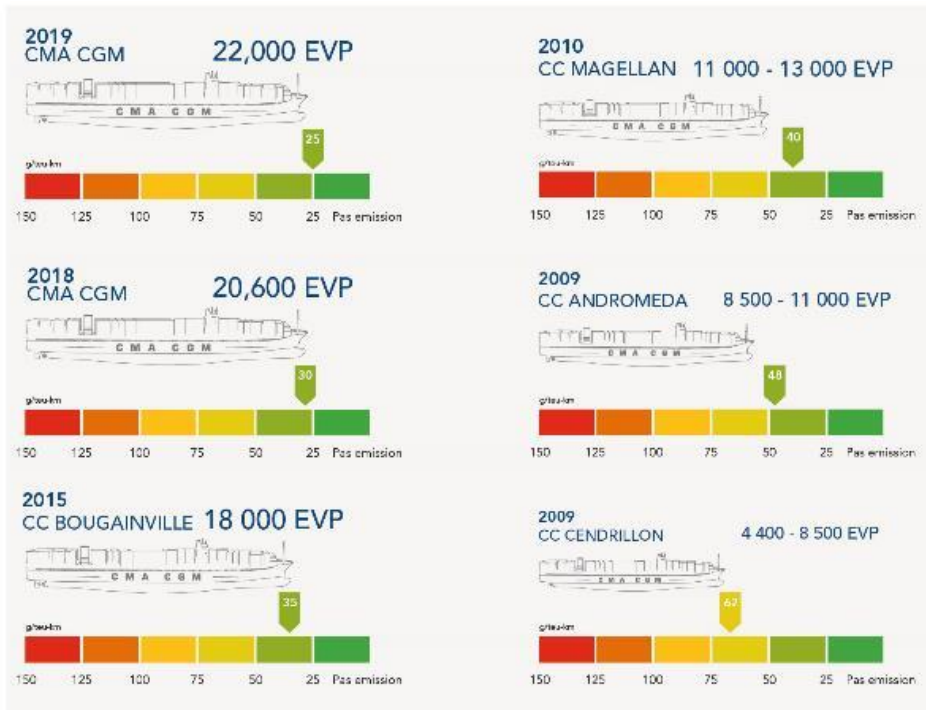
Keys to make your supply chain greener



Premium carbon solutions and services

A carbon footprint among the best in the industry with the new ships

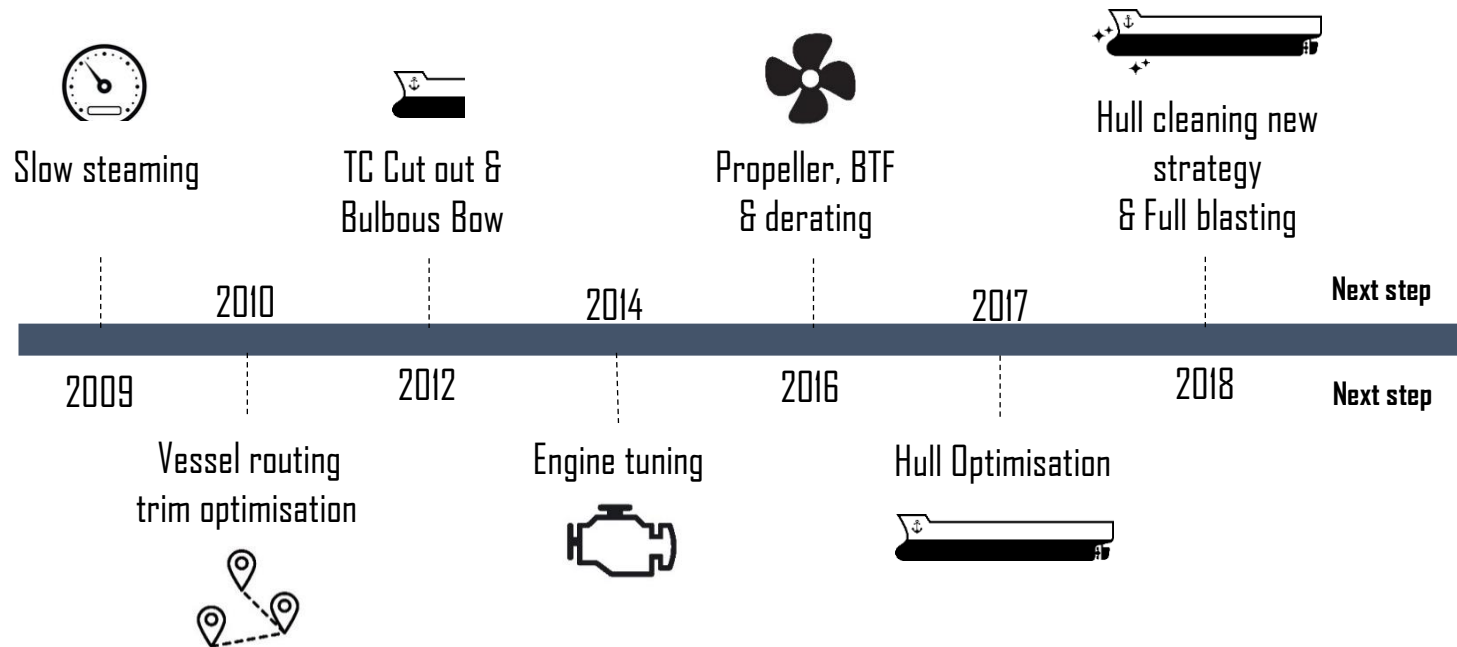
The CMA CGM fleet's carbon efficiency



- A wide range of volume capacities
- A young fleet becoming more environmentally friendly
- From 62g to 25g CO₂/TEU/Km
- Containershipping is more than ever the cleanest mode of transport

SHAPING OUR GREEN FUTURE... 2009 - 2018

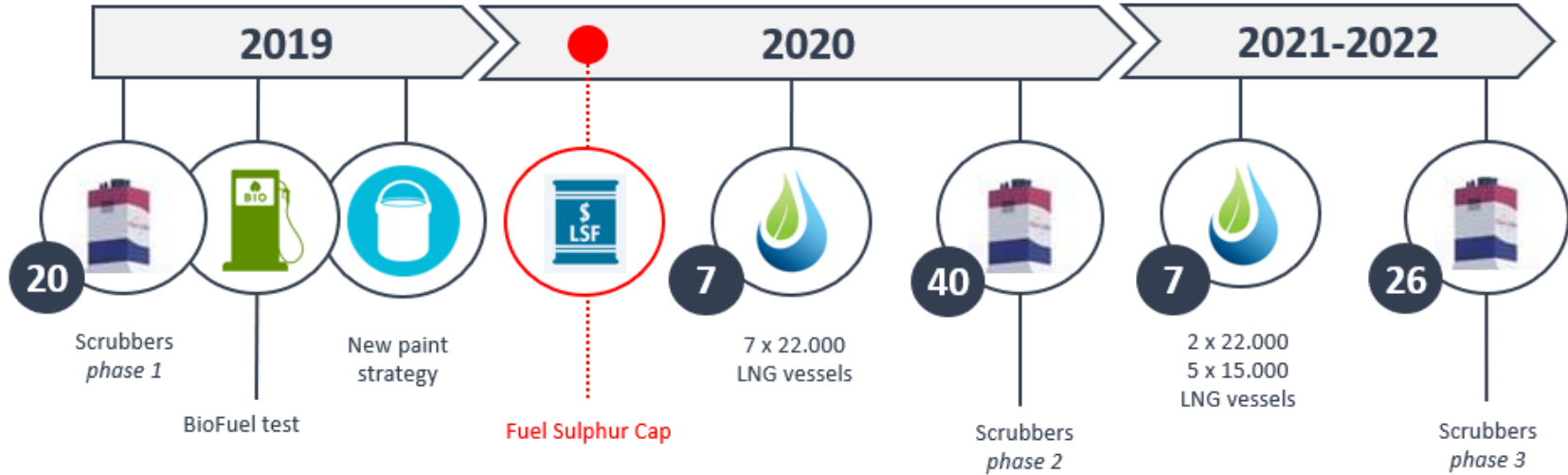
10 years of innovations to reduce our impact on air and water



Solution to meet the challenge :Evaluating risks

	Low Sulfur Marine Fuel	Scrubber (Open & Closed loop)	LNG
+	<ul style="list-style-type: none"> • Easy to implement • Adapted to the current regulation 	<ul style="list-style-type: none"> • Alternative solution to be compliant 	<ul style="list-style-type: none"> • Alternative solution to be compliant • Innovative solution, technological break • Proactive solution considering other regulations: CO2 (-10 à - 25 %), NOX (- 85 %), PM (-99%)
-	<ul style="list-style-type: none"> • Inadequate solution on mid/long term considering other regulations (CO2, Nox or PM) 	<ul style="list-style-type: none"> • Inadequate solution on mid/long term considering other regulations (CO2, Nox or PM) with more constraints to be compliant • More elevated risks of controls, operational constraints regarding wastes • open loop: impact on the environment, risk for your reputation • + 2% CO2 emissions vs low sulfur fuel– increased fuel consumption 	<ul style="list-style-type: none"> • Processes and standards are being developed • Methane emissions (unknow quantities but its heat capacity is 20 times higher than CO2. • Technological risk

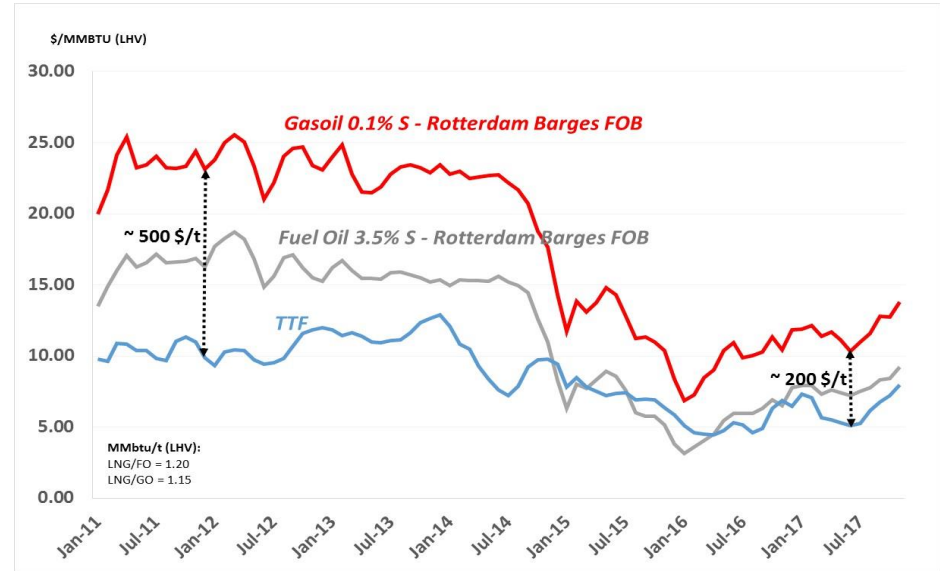
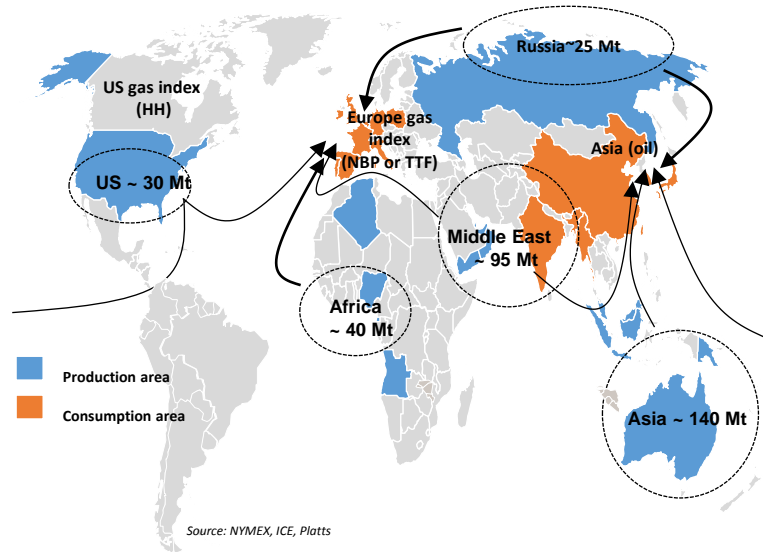
SHAPING OUR GREEN FUTURE... 2019 – 2022...



PERFORMANCE



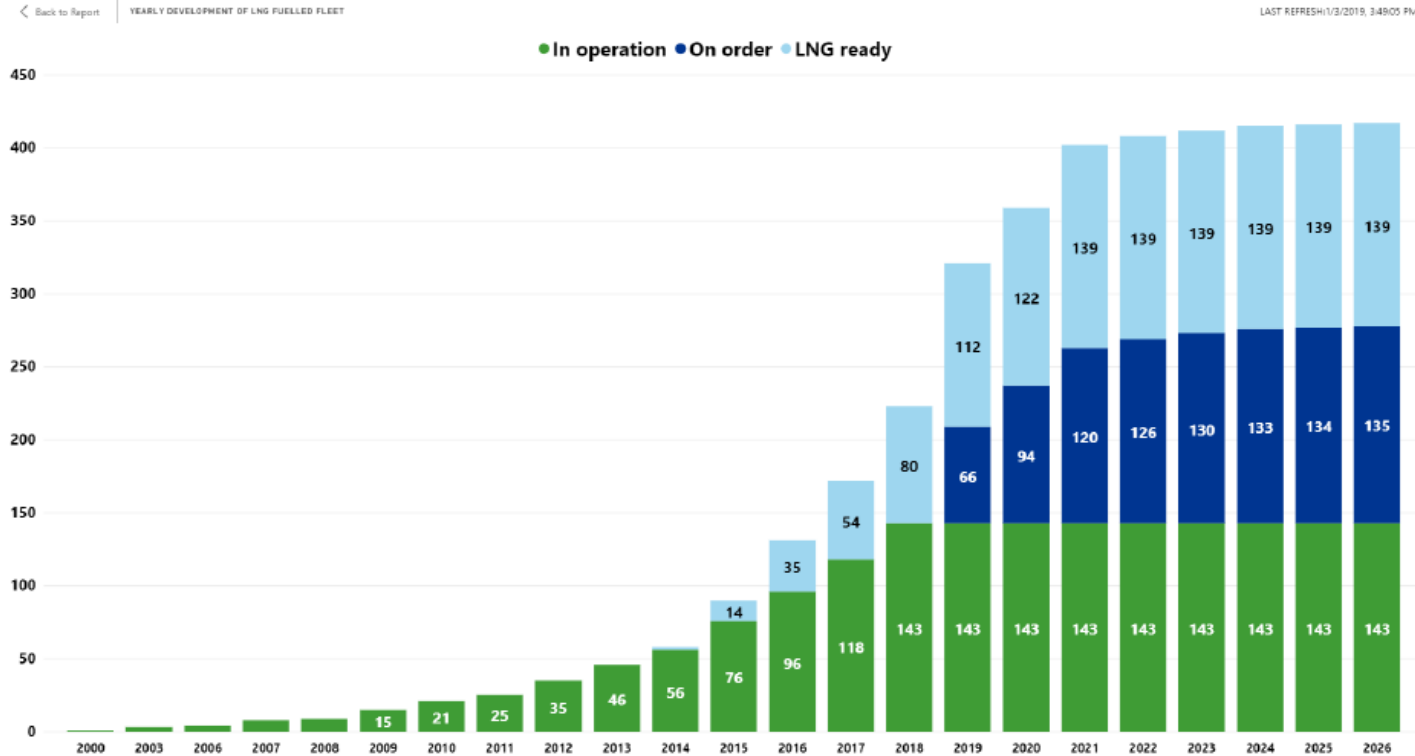
LNG market: A fast growing competitive market



- **70 to 150 years of gas reserves**
- **LNG is a fast growing market evaluated at 350 Mt 2020 ~ 10% world gas consumption (+4-5%/y)**
- **Today bulk gas is cheaper than gasoil and heavy fuel oil on an energy parity basis**

SHAPING OUR GREEN FUTURE... 2019 – 2022...

LNG as FUEL ships are developing



Source: DNV-GL, Alternative Fuels Initiative website

SHAPING OUR GREEN FUTURE... 2019 – 2022...

LNG Bunkering infrastructure is develloping



LNG BUNKER VESSELS are developping

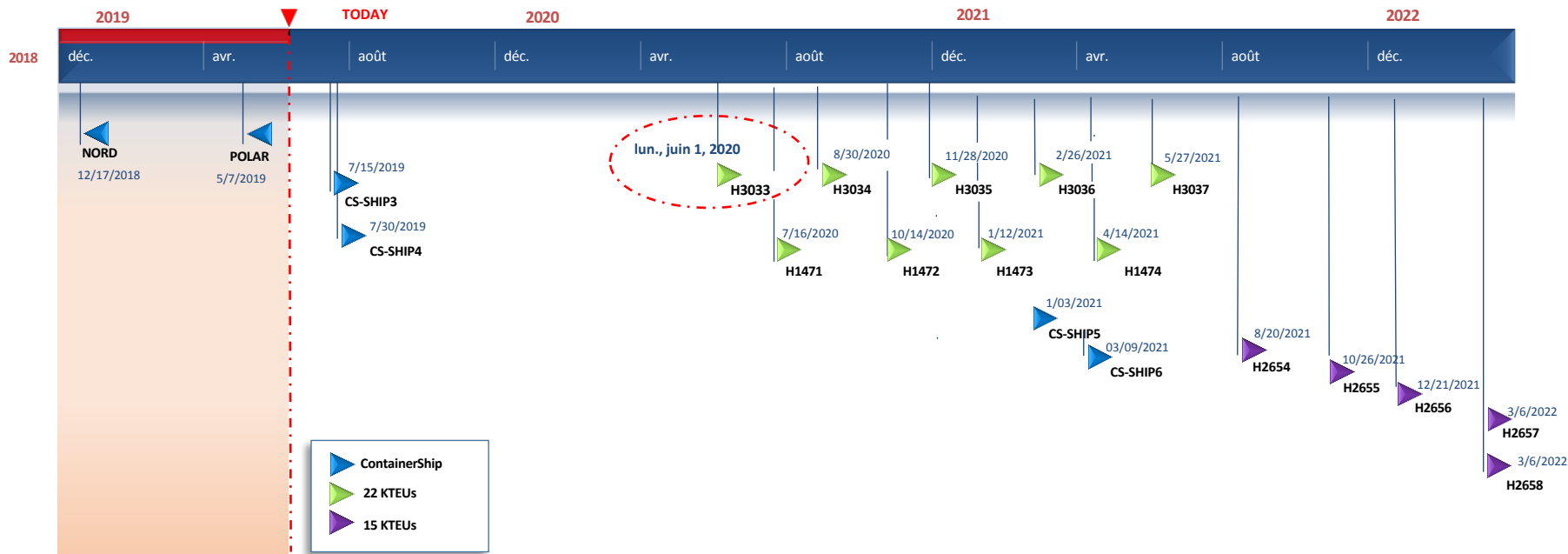
Order	Owner	Name	Size (cbm)	Containment	Status	Operational area	Class
2013	Seagas	Seagas	1x180	Type C Tank	Built 2013 conversion	Baltic	DNVGL
2014	NYK Lines	Engie Zeebrugge	1x5,100	Type C tank	Built 2017	Europe	BV
2014	Shell	Cardissa	1x6,500	Type C tank	Built 2017	Europe	LR
2014	Sirius	Coralius	1x5,800	Type C tank	Built 2017	Europe	BV
2016	Schulte Group	Kairos	1x7,500	Type C tank	Built 2018	Europe	LR
2017	Itsas Gas Bunker	Oizmendi	1x600	Type C tank	Built 2018	Spain	BV
2016	JAX	Clean Jacksonville	1x2,200	Membrane Mark III	Built 2018 Barge at USA	USA	ABS
2017	Titan LNG	FlexFueler1	1x760	Type C tank, barge	Built 2018 barge	Europe	
2017	Stolt Nilsen		3x7,500	Type C tank	Keppel Nantong, 2019 1st	TBD	DNVGL
2017	Korea Line		2x7,500	Membrane KC-1	Samsung, 2019	Korea	KR
2017	Shell		1x3,000	Type C tank, barge	Victrol/CFT, 2019	Europe	
2018	Total/MOL		1x 18,600	Membrane Mark III	Hudong, 2020	TBD, Europe	BV
2018	Q-LNG		1x4,000	Type C tank, ABT barge	USA, 2019?	USA	ABS
2018	FueLNG (SNG)		1x7,500	type C tank	Keppel Nantong, 2020	Singapore	ABS
2018	ENN (China)		1+1x8,500	Type C tank	DSIC, 2020	China	CCS
2018	CLS Japan		1x3,500	Type C tank	KHI, 2020	Japan	NK
2019	Stolt		2x 20,000	Type C tank	SOE+SDARI design	TBD	DNVGL
2019	MOL (Pavilion)		12,000	Membrane Mark III	Sembcorp, 2021	Singapore	BV
2019	Ecobunker	Dual bunker + oil	1x2500	SPB Type B tank	JMU, 2021	Japan	NK
2019	<i>CNOOC GasPower</i>		<i>1x6,000 1x1,2000</i>	<i>Type C tank</i>	<i>2021/2022</i>	<i>China</i>	<i>CCS</i>

20 LNG bunkering vessels on order with LNG capacity from 180 m³ to 20 000 m³

Source: DNV-GL

SHAPING OUR GREEN FUTURE... 2019 – 2022...

20 ships in 2022



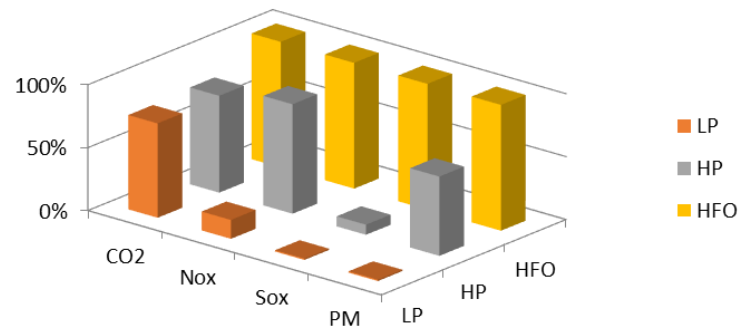
SHAPING OUR GREEN FUTURE... 2019 – 2022...

Benefits of DUAL FUEL vessels

ME 2 strokes Low pressure technology (WINGD) design has been selected over high pressure:

- ✓ Compliant with NOx tier III in gas mode
- ✓ Less risk with low pressure
- ✓ Less equipment, and « easier » management of LNG supply

	Low pressure	High Pressure
CO2	-25%	-23%
NOx	-85% => Tier III	-13% => Tier II only
SOx	-99%	-92%
PM	-99%	-37%
	++	+



1 400 WENCHONG – Vessel Presentation



NORDIC / CONTAINERSHIPS
CSSC Wenchong H5510 ~3 / 5538 / 5543



MAIN PARTICULARS

Length over all	169.95 m
Length between perp	160.96 m
Breadth	29.6 m
Depth	14.85 m
Draught, design	8.5 m
Draught, scantling	9.6 m
Air draft	
Deadweight on Td	13 000 Ton
Deadweight on Ts	13 000 Ton
Lightship weight	9 066 Ton
Service Speed	19.15 Ton
(10 080 kW, Td, 15%SM)	
SWBM	xxx t.m

Bow & Stern Thruster

CLASS : ABS

+A1, Container Carrier, E, + AMS, +ACCU, SH, SHCM, TCM, UWILD, ICE CLASS 1A, RW, CPS, GFS(DFD), BWT, GP, RRDA, CSC, CLP-V

TANK CAPACITIES

Heavy fuel oil	815 m³
Marine diesel oil	155 m³
LNG	660 m³
Fresh water	106 m³
Ballast water	8 700 m³

MAIN ENGINE

WIND	7RTFLEX 50DF
MCR	10 080 kW @ 124 RPM
HFO spec (ME/Aux. Eng./Boiler)	700/700/700cSt SG1.01
Propeller type	CPP 4 Blades
Row / stern thruster	920 / 720 kW

FUEL OIL CONSUMPTION OF MAIN ENGINE

L.C.V=10,200kcal/kg)	
D.F.O.C at NCR	35 MT / day of LNG + 1MT / day of MGO
	46 MT/day
Cruising range	3 200 NM on LNG 6500 NM on fuel

POWER SUPPLY

Diesel Generators	1* 1110 +3* 620 kW
Shaft generator	1800 kW
Emergency Generator	kW

CAR

Type
 Stack
 Only one aux engines is DF, 3 other aux engines run on MDO
 Shaft generator

COMPLEMENT

Crew of 19 persons

VESSEL CAPACITIES

With max. number of Containers

	IMO visibility guideline
On deck (6 tiers)	844 TEU
In hold	536 TEU
Total	1 380 TEU
Rows max. in holds/on hatches	9 / 10 Rows
Tiers max. in holds/on hatches	5 / 6 Tiers
El. Plugs (for reefer Container)	
Total	372 FEU
Stability (xx t/TEU, hetero at Ts)	xxx TEU
Stability (14 t/TEU homo. at Ts)	1 120 TEU
(based on 8ft binches, 45% Container VCG)	

NAVIGATION EQUIPMENT

2 –consoles Radar Plant with ARPA
 1- ECDIS
 1 - Auto Pilot / 1 Gyro compass
 1 - DGPS navigator + 1 DGPS
 and 1 echo sounders

NT : 6 875
 Suez NT : xxx



ENVIRONMENT



1 400 WENCHONG – Project status

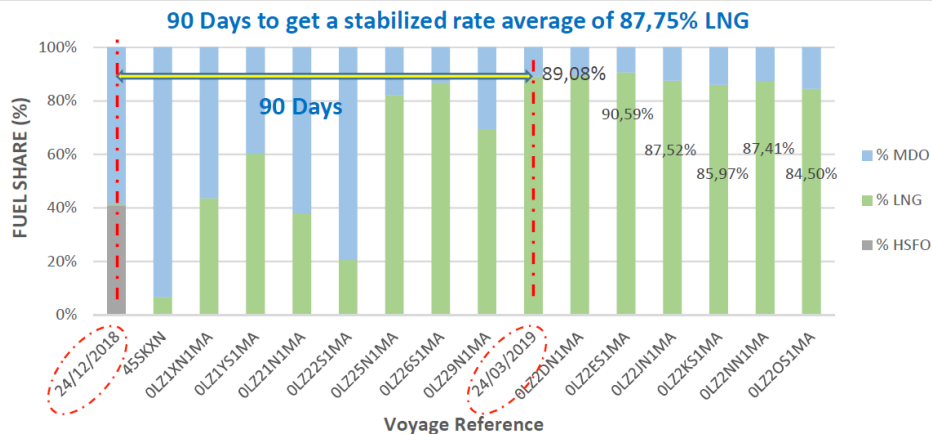
4 vessels were ordered by CONTAINERSHIPS

Further to acquisition by CMA CGM, 2 additional vessels were ordered.

First 2 vessels (CONTAINERSHIPS NORD & CONTAINERSHIPS POLAR) are delivered.

Next vessel to be delivered in July 2019: CONTAINERSHIPS AURORA

3 months after delivery, the LNG consumption ratio is stabilized above 85%.



22000 TEU Project

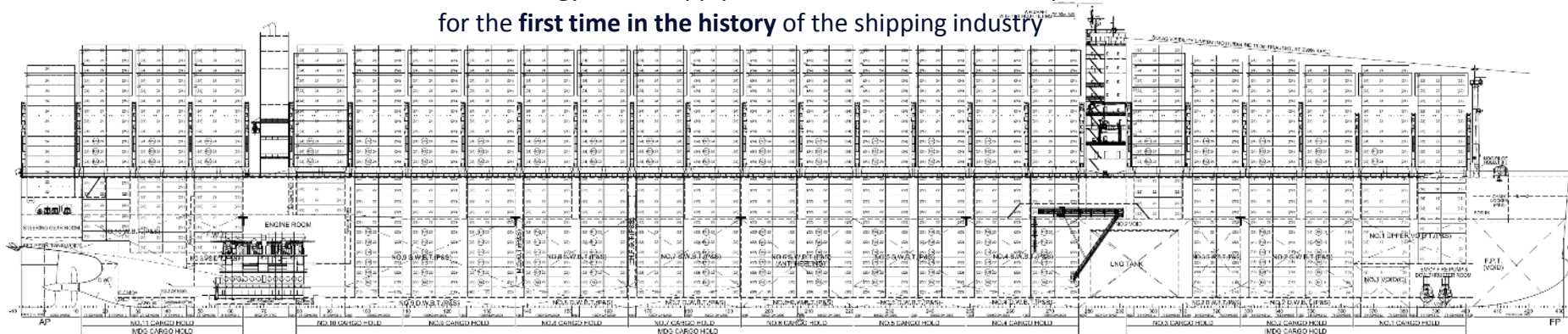


LNG Tank of 18,000 m³

LOW PRESSURE DUAL-FUEL ENGINE:
Engine fueled with gas and oil
(less than 2% of fuel needed to create the spark necessary for their ignition)

- Tank Capacity of 18,600 m³
- Dimensions:
61.3 meter-large
399.9 meter-long
- 22 000 EVP
- Shipyard: China State Shipbuilding Corporation
 - Trading House : CSTC
 - Design institute : MARIC
 - Yards : Jiangnan Heavy Industries
and Hudong Heavy Industries
- Engine: WINGD 12X92DF
- LNG tank : GTT Mark III
- Class: Bureau Véritas

- The result of a **7 years R&D** project in cooperation with shipyards, engine makers, ports and many other partners
- A technology we will apply on 22,000 TEUs containerships for the **first time in the history** of the shipping industry



22 000 CSSC – Vessels presentation



CMA CGM NEWBUILDING 22 000 Teus DUAL FUEL

CSSC – HZ & JN

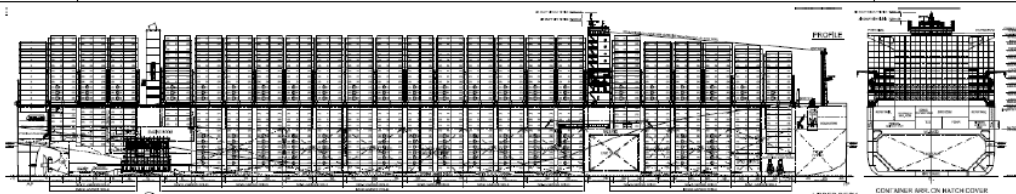
EEDI : 7.47 under HFO, 5.86 under LNG



中远海运重工(集团)有限公司
CHINA YUANTONG MARINE ENGINEERING GROUP CO., LTD.



江南造船(集团)有限责任公司
JIANGNAN SHIPYARD (GROUP) CO., LTD.



MAIN PARTICULARS

Length over all	399.9 m
Length between perp	393.9 m
Breadth	61.3 m
Depth	33.5 m
Draught, design	14.5 m
Draught, scantling	16 m
Air draft	75 m
Deadweight on Td	184 400 Ton
Deadweight on Ts	218 819 Ton
Lightship weight	69 560 Ton
Service Speed	21.55 knots
(Ts, NCR, 15% Sea Margin)	
SWBM	1 436 000 t.m

CLASS : BV

I, *Hull, *Mach, Container Ship, DUAL FUEL
Unrestricted Navigation, VERISTAR HULL FAT 25,
*Aut-UMS, Monshaft, In Water Survey, CPS (BW)
CLEANSHIP, GREENPASSPORT EU, *Aut-Po
Lashing WW, LI-HG-S2, ESA, *ALP, SDS

TANK CAPACITIES

LNG	18 600 m ³
Heavy fuel oil	2 500 m ³
Marine diesel oil	1 500 m ³
Lubricating oil	500 m ³
Fresh water	550 m ³
Ballast water	51 000 m ³

MAIN ENGINE

WINDG	12X92 DF
MCR	63 840kW) @ 80 RPM
HFO spec (ME/Aux. Eng./Boiler)	700/700/700cSt
	SG1.01
Fixed pitch propeller	5 Blades
Bow	2* 3 000 kW

FUEL OIL CONSUMPTION OF MAIN ENGINE

(L.C.V=42 700 KJ/kg)	
D.F.G.C at NCR	192 MT/day
DFOC at NCR	239.1 MT/day
Cruising range	21 000 NM

POWER SUPPLY

Diesel Generators	2x Wartsila 9L34DF 4320 kW
	4x Wartsila 8L34DF 3840 kW
Em/cv Generator	340 kW

6 aux engines DF (2 larges and 4
smallers)

Panel weight max.45 tons of each panel
(excluding container loose fittings)

COMPLEMENT

Crew of 40 p + 7 Suez crew

VESSEL CAPACITIES

With max. number of Containers

IMO visibility guideline

On deck (12 tiers)	13 328 TEU
In hold	9 784 TEU
Total	23 112 TEU

Rows max. in holds/on hatches	22 / 24 Rows
Tiers max. in holds/on hatches	12 / 12 Tiers
(Hold : 11 x 9'6" or 9x8'6"+3x9'6")	

El. Plugs (for reefer Container)

On Deck	1 400 FEU
In Hold	800 FEU
Total	2 200 FEU

Stability (9 t/TEU, hetero at Ts)	20900 TEU
Stability (14 t/TEU homo. at Ts)	14530 TEU
(based on 8ft 6 inches, 45% Container VCG)	

NAVIGATION EQUIPMENT

- 4 – Multipurpose consoles Radar Plant with ARPA
- 1- ECDIS/ conning
- 1 - Auto Pilot / 2 Gyro compass
- 2 - DGPS navigator
- 1 speed log single axis, 1 speed log triple axis and
- 2 echo sounders

TONNAGE :

GT : 237200	NT : 134415
Suez GT : xxx	Suez NT : xxx



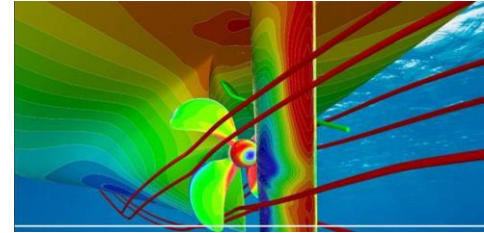
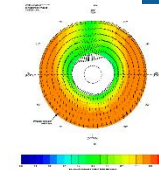
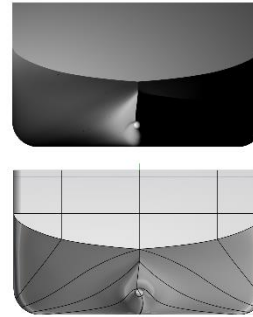
ENVIRONMENT



22 000 CSSC – Hull Optimization



- ✓ Hull form have been optimized.
- ✓ New shape of forward part with vertical bow.



22 000 CSSC – Vessels presentation – Construction status

- ✓ Steel cutting done for 8 vessels
- ✓ Keel laying done for 4 vessels



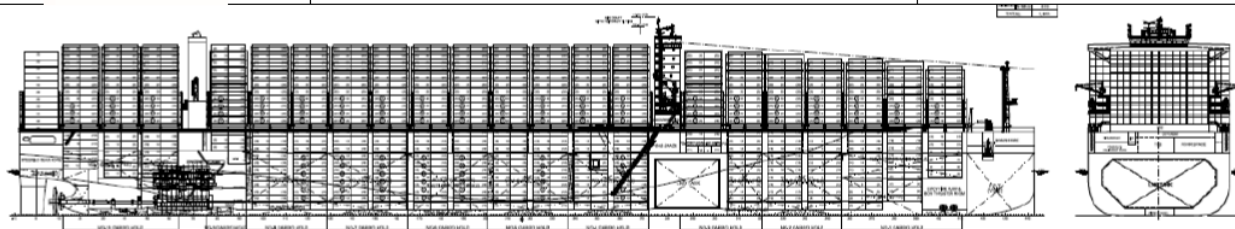
15 000 CSSC – Vessels presentation



ENVIRONMENT



CMA CGM NEWBUILDING 15 000 DF CSSC



MAIN PARTICULARS

Length over all	366 m
Length between perp	350.5 m
Breadth	51.2 m
Depth	30.2 m
Draught, design	14 m
Draught, scantling	15.5 m
Air draft	67.5 m
Deadweight on Td	128 000 Ton
Deadweight on Ts	152 000 Ton
Lightship weight	xxx Ton
Service Speed	22.0 Ton
(Ts, 90%SCMR, 15% Sea Margin)	
SWBM	8 900 000 kN.m

CLASS : BV

I, *Hull, *Mach, Container Ship, dual fuel, Unrestricted Navigation, Whisp 2, *Aut-UMS, *Aut-Port, Lashing-WW, LI-HG-S2, ESA, *ALP, SDS In Water Survey, *Veristar hull FAT 25, CPS (WBT), Monshaft, Green Passport EU, Cleanship

TANK CAPACITIES

Heavy fuel oil	2500 m ³
Marine diesel oil	1500 m ³
Lubricating oil	500 m ³
Fresh water	500 m ³
LNG	14 000 m ³
Ballast water	40 000 m ³

MAIN ENGINE

WINGD	10X92DF
MCR /	
SMCR	53200 kW / 49 000 kW @ 80 /76 RPM
FPP	5 Blades
Bow thruster	2 * 2500 kW

FUEL OIL CONSUMPTION OF MAIN ENGINE

(L.C.V=10,200kcal/kg)

D.F.G.C at NCR	148 MT / day
D.F.O.C at NCR	185.1 MT/day
Cruising range	20 000 NM

POWER SUPPLY

Diesel Generators	4* 4150 + 1* 2660 kW
Emergency Generator	340 kW

CARGO HATCH COVER

Type	Steel pontoon type
Stack weight	
Panel weight	5 aux engines DF

COMPLEMENT

Crew of 34persons + 5 passengers (3 cabins) + 7 Suez crew

VESSEL CAPACITIES

With max. number of Container 15 000 teus, 11 tiers on deck

On deck (11 tiers)	9048 TEU
In hold	6050 TEU
Total	15098 TEU
Rows max. in holds/on hatches	18/ 20 Rows
Tiers max. in holds/on hatches	11 / 11 Tiers
El. Plugs (for reefer Container)	
On deck	1 400 FEU
In hold	400 FEU
Total	1 800 FEU
Stability (xx t/TEU, hetero at Ts)	xxx TEU
Stability (14 t/TEU homo. at Ts)	10000 TEU
(based on 8ft 6inches, 45% Container VCG)8	

NAVIGATIC

4 – Multipurpose
1 - ECDIS / cc
1 - Auto Pilot
2 - DGPS navigator
1 speed log single axis, 1 triple axis speed log and
2 echo sounders

1800 reefer plugs (1400 on deck and 400 in hold)

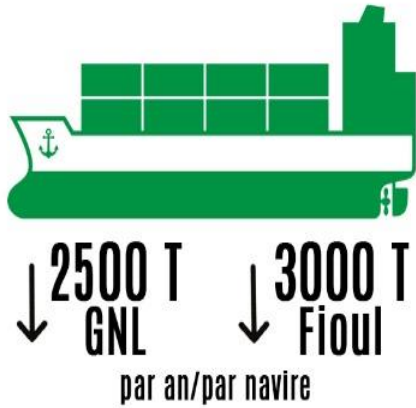
TONNAGE :

GT : xxx	NT : xxx
Suez GT : xxx	Suez NT : xxx

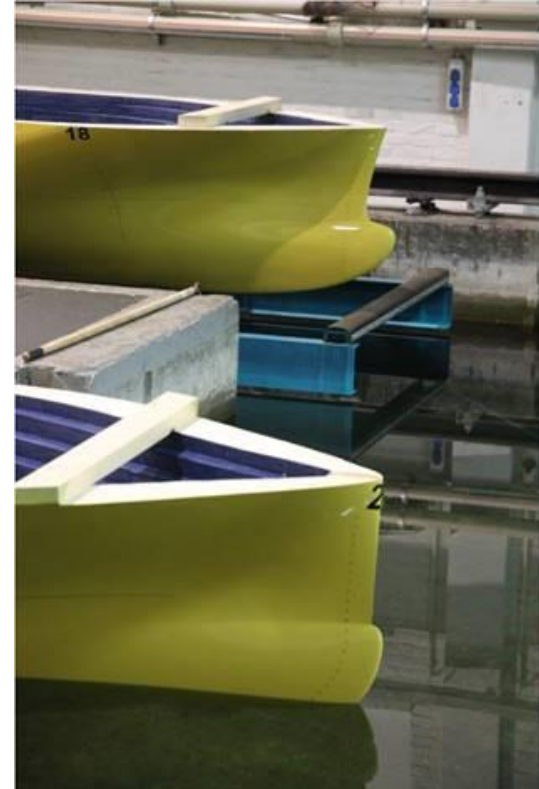


15 000 CSSC – Vessels optimization

Hull form optimization completed.



Performance optimization will continue



Hull form
optimization

Propeller
optimization

Rudder
optimization

ESD analysis

Final
performance
evaluation



THANK YOU FOR YOUR ATTENTION



Simops with LNG Bunker Vessel

