New rules for RoRo Vessels and Ferries – alternative solutions to be combined

Ferry Shipping Summit 2024
Athens November 7-8

Efthymios Stasinos
RINA Marine sr. Business Development Manager

RINA at a glance

RINA today

5300
colleagues

200
offices

70
countries

Our people

More than **90**
nationalities

80%+
educated to **degree level**

42
average **age**

A “Business to Society” company

A trusted partner supporting clients to stay ahead of changes and grow sustainably

Leveraging expertise to contribute to the **sustainable growth** of our clients

Remaining on the **edge of innovation**, to **address key changes that arise**

Partnering with clients in developing **solutions to complex problems**

Who we are

Marine

Rules, technologies and innovative services to manage transport and pleasure vessels

Energy

Energy solutions from O&G to renewables, taking care of sustainability and environmental impacts

Certification

Solutions to support products, people and processes on their way to excellence

Infrastructure & Mobility

The path to the next generation of infrastructure and buildings by ensuring their safety and efficiency

Industry

Accelerating clients' success with technology-driven strategies and solutions

Real Estate

Innovative value proposition of integrated services: Rina Prime Value Services is able to cover all the real estate lifecycle

Marine

Rina Flag Recognitions

- RINA operates on behalf of **122 flag administrations**
- RINA is authorized by **22 European member states**
- In the latest years new agreements have been signed with: Azerbaijan, Bulgaria, Canada, Chile, Iran, Mexico, Oman, Paraguay, Romania, Russia, South Africa, Thailand
- Further agreements are in progress: Argentina, Brunei, Indonesia, Moldavia, Mozambique, Nigeria, Papua New Guinea

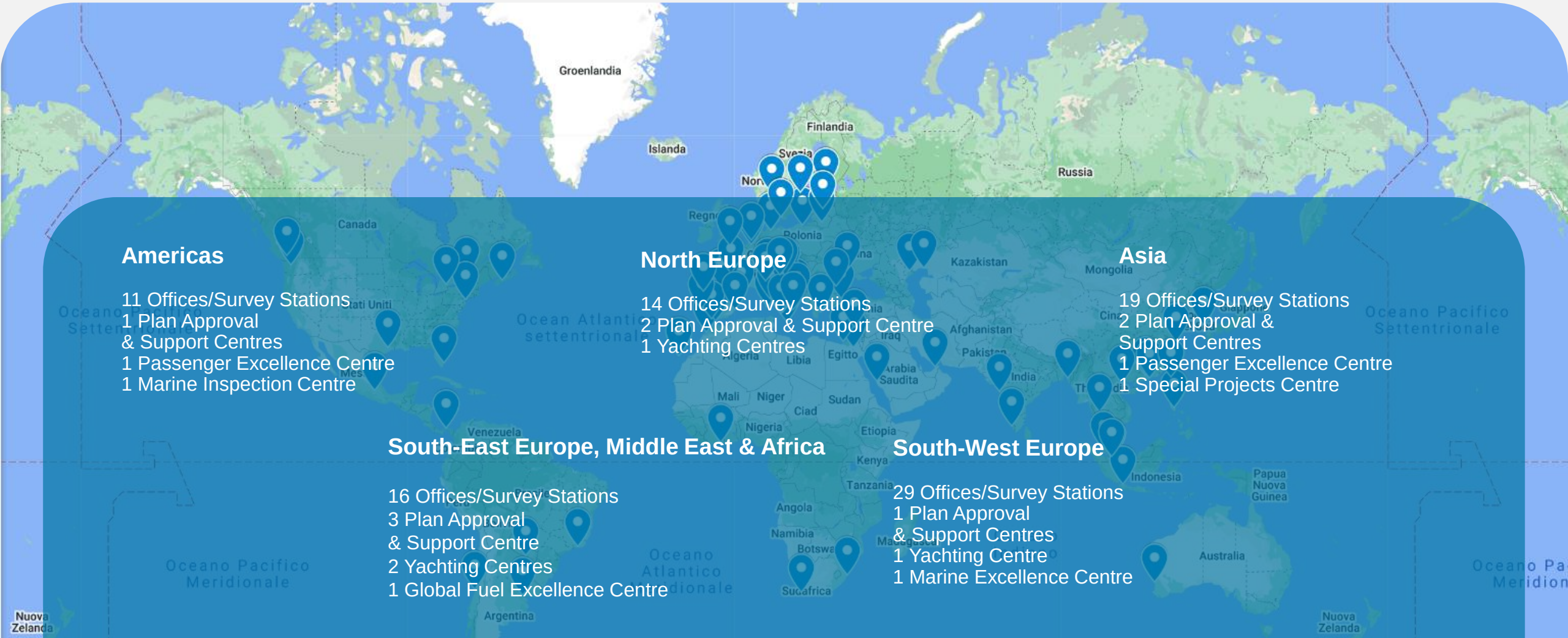
Classification and Statutory Services

Marine Technical Advisory Services

Marine Training

Certification of Material, Product & Personnel

Marine Network



Americas

11 Offices/Survey Stations
1 Plan Approval
& Support Centres
1 Passenger Excellence Centre
1 Marine Inspection Centre

North Europe

14 Offices/Survey Stations
2 Plan Approval & Support Centre
1 Yachting Centres

Asia

19 Offices/Survey Stations
2 Plan Approval &
Support Centres
1 Passenger Excellence Centre
1 Special Projects Centre

South-East Europe, Middle East & Africa

16 Offices/Survey Stations
3 Plan Approval
& Support Centre
2 Yachting Centres
1 Global Fuel Excellence Centre

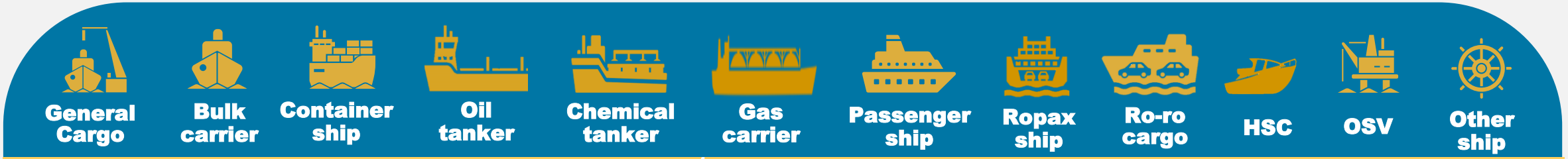
South-West Europe

29 Offices/Survey Stations
1 Plan Approval
& Support Centres
1 Yachting Centre
1 Marine Excellence Centre

Regulatory overview

Upcoming Rules

AFS CONVENTION, 2001 (INTERNATIONAL CONVENTION ON THE CONTROL OF HARMFUL ANTI-FOULING SYSTEMS ON SHIPS)



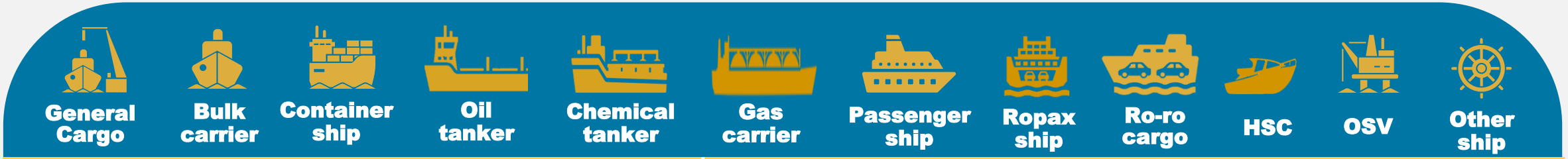
ALL SHIPS / NEW AND EXISTING

1/1/23

Cybutryne ban

- **not apply** or **re-apply anti-fouling systems containing cybutryne from 1 January 2023**
- ships with an anti-fouling system that contains this substance in the external coating layer of their hulls or external parts or surfaces on **1 January 2023** shall either **remove the anti-fouling system**; or **apply a coating that forms a barrier** to this substance leaching from the underlying non-compliant anti-fouling system at the **next scheduled renewal of the anti-fouling** system after **1 January 2023**, but no later than **60 months** following the last application to the ship of an anti-fouling system containing cybutryne
- Appendix 1 to Annex 4 “**Model form of International Anti-fouling System Certificate**”, about the above

Upcoming Rules
BWM CONVENTION



ALL SHIPS / NEW AND EXISTING

1/6/22

Commissioning test & form

- **Commissioning test** to validate the installation **of any ballast water management system** taking into account the Guidance issued by **BWM.2/Circ.70/Rev.1.**
- Updates Appendix I “Form of International Ballast Water Management Certificate”,

1/2/25

Form of BWRB

- The **Form of Ballast Water Record Book (BWRB) (Appendix II),** deleting the duplication of the information contained in the International Ballast Water Management Certificate and reviewing the BWRB items to improve clarity on how to record the operation of the ship.

Rules in draft

FSS CODE (INTERNATIONAL CODE FOR FIRE SAFETY SYSTEM)

ROPAX CONSTRUCTED ON OR AFTER 1 JANUARY 2026

1/1/2026

Active and passive fire protection

- **individually identifiable fixed fire detection and fire alarm system** in vehicle, special category and ro-ro spaces (open and close),
- **fixed fire detection and fire alarm system and a fixed water-based fire-extinguishing system for the area on the weather deck** intended for the carriage of vehicle
- **effective video monitoring** in vehicle, special category and ro-ro spaces
- **structural fire protection provisions** for spaces **sub-divided with internal decks**
- requirements for **openings** in ro-ro spaces and special category spaces and the arrangement of weather deck intended for the carriage of vehicles
- suitable **signage and marking on deckhead and bulkhead** where **fixed pressure water-spraying systems** are fitted

FuelEU Maritime Regulation | Requirements

ALL SHIPS

- By **31 August 2024**, Company shall submit to the verifier a monitoring plan for each of their ships
- From **1 January 2025**, Company shall monitor and record the required information
- From **1 January 2025**, ship's GHG intensity index shall be below the target (91.16 ($grCO_{2eq}$/MJ)) reduced every 5 years from 2% (2025) to 80% (2050)

PAX AND CONTAINER SHIPS

- From **1 January 2030** in EU ports – subject to AFIR - shall connect to OPS unless:
  - short stay (< 2 hours);
  - use a zero-emission technologies
  - emergency/safety reasons
  - maintenance/functional test required by officer
  - unavailability/incompatibility connection points in the port
  - risk to the grid stability

Be updated on Rules
RINA Applications for free

Rules & Marine Notice

- Member Area Marine provides access to regulatory documentation such as RINA Rules and Circulars, RINA Marine Notices (MNOs) and the RINA publication IMO Conventions Codes and Amendments listing new IMO rules requirements coming in to force according to the ship type.

Chat with Expert

- A technical forum that allows customers to chat with RINA experts' community on specific technical subjects. Access to the application is to be requested to your local RINA office

Marine Directory

- RINA Marine Directory helps customers and partners to contact our offices worldwide. Wherever you go, keep in touch.

Member Area Marine

- Member Area Marine provides access to PSC and ESP survey documentation, technical software.

Alternative solutions & Case studies

Carnival XL Project

Shipyard: Meyer Werft - Papenburg

Shipowner: AIDA - P&O

Size: 5 × cruise ships (183.200 GT)

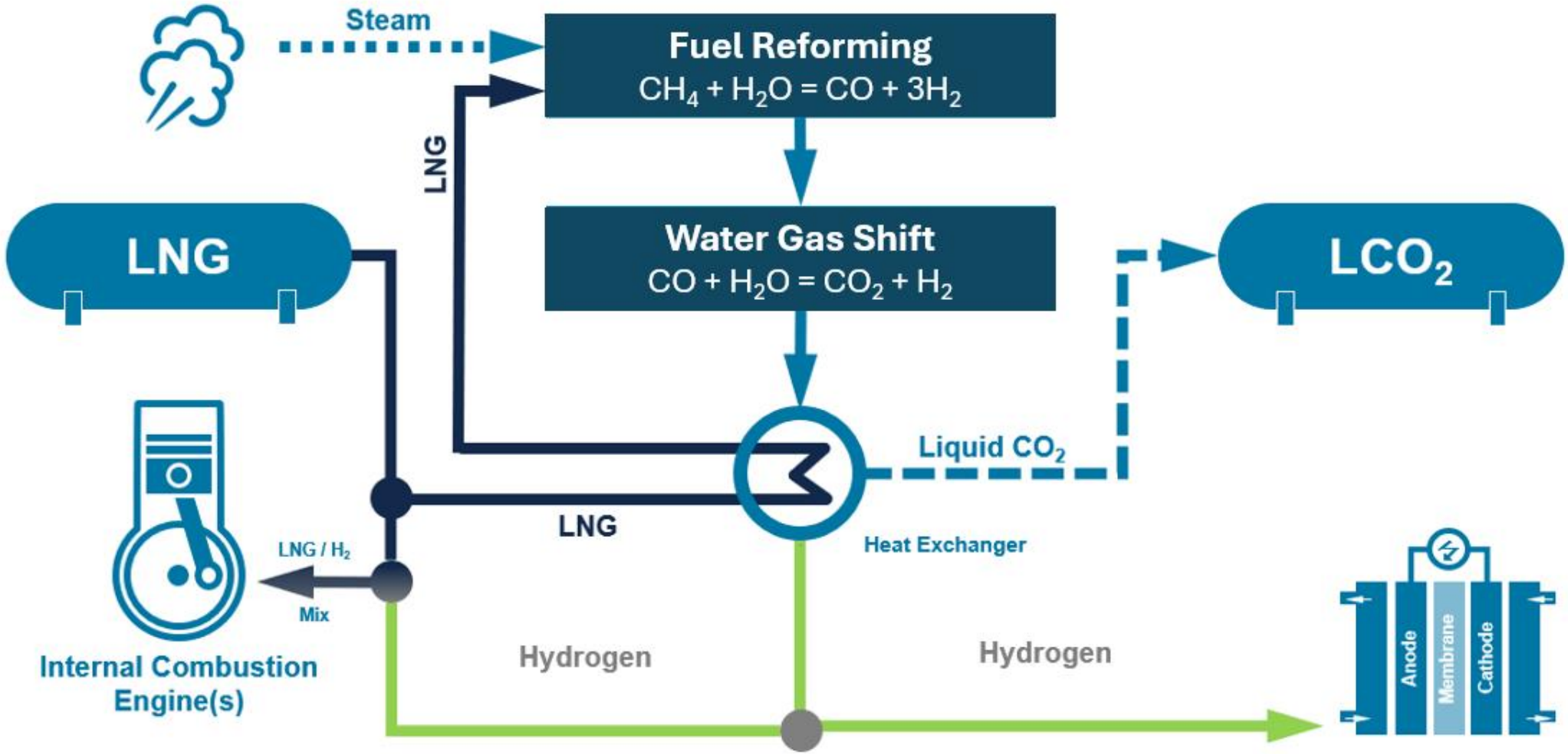
Shipyard: Meyer - Turku

Shipowner: Costa Crociere - Carnival Cruise Line

Size: 4 × cruise ships (183.200 GT)

Revolutionary “green design”. The first ships in the cruise industry to be powered at sea by LNG

Pre-combustion capture / Steam Methane Reforming



Onboard Hydrogen Generators

	Post-	Pre-
Process	Chemical	Physical
Hazardous Materials	!	✓
Purity of CO2	!	✓
CO2 concentration	!	✓
Flow rate	!	✓
Extra logistics & purchasing	!	✓
Scalable	!	✓
Energy consumption	!	✓
Space required	!	✓
Sensitive to vibrations	!	✓
Sensitive to impurities	!	✓

MSC Explora Class

Shipyard: Fincantieri
Shipowner: MSC
Size: 6 x 64.000 GT cruise ships, which will hold up to 1.000 passengers

They will feature the latest maritime and environmental technologies available.
The V and VI vessels will be fitted with hydrogen fuel cells for zero emission in port.

Scalable fuel cell system based on marine certified modules

Scalable from 200 kW to MW-scale

- PEMFC systems built in cabinets and certified by fuel cell suppliers
- Cabinets can be organized in lineups or back-to-back installation
- Pre-engineered skid mounting enables standardized interfaces
- Container arrangement allows for on-deck installations
- Solutions suitable for newbuild or retrofit projects

IMAGES: Ballard, PowerCell Sweden

SWS largest ever cruise ship to be built in China

Shipyard: Shanghai Waigaoqiao Shipbuilding (SWS)
Shipowner: Carnival Group
Size: 1 x 140.000 GT cruise ships, which will hold 6500 between passengers and crew on board

The cruise project will be built according to the highest standards ever applied in China for environmental protection with RINA additional class notations “Green Plus” and “HVSC” (High Voltage Shore Connection).

Why Cold Ironing?

Cold Ironing is part of Net Zero Solution for the energy transition

IMO RESOLUTION MEPC.323(74)

INVITATION TO MEMBER STATES TO ENCOURAGE VOLUNTARY COOPERATION BETWEEN THE PORT AND SHIPPING SECTORS TO CONTRIBUTE TO REDUCING GHG EMISSIONS

This could include regulatory, technical, operational, and economic actions, such as the provision of Onshore Power Supply (preferably from renewable sources)

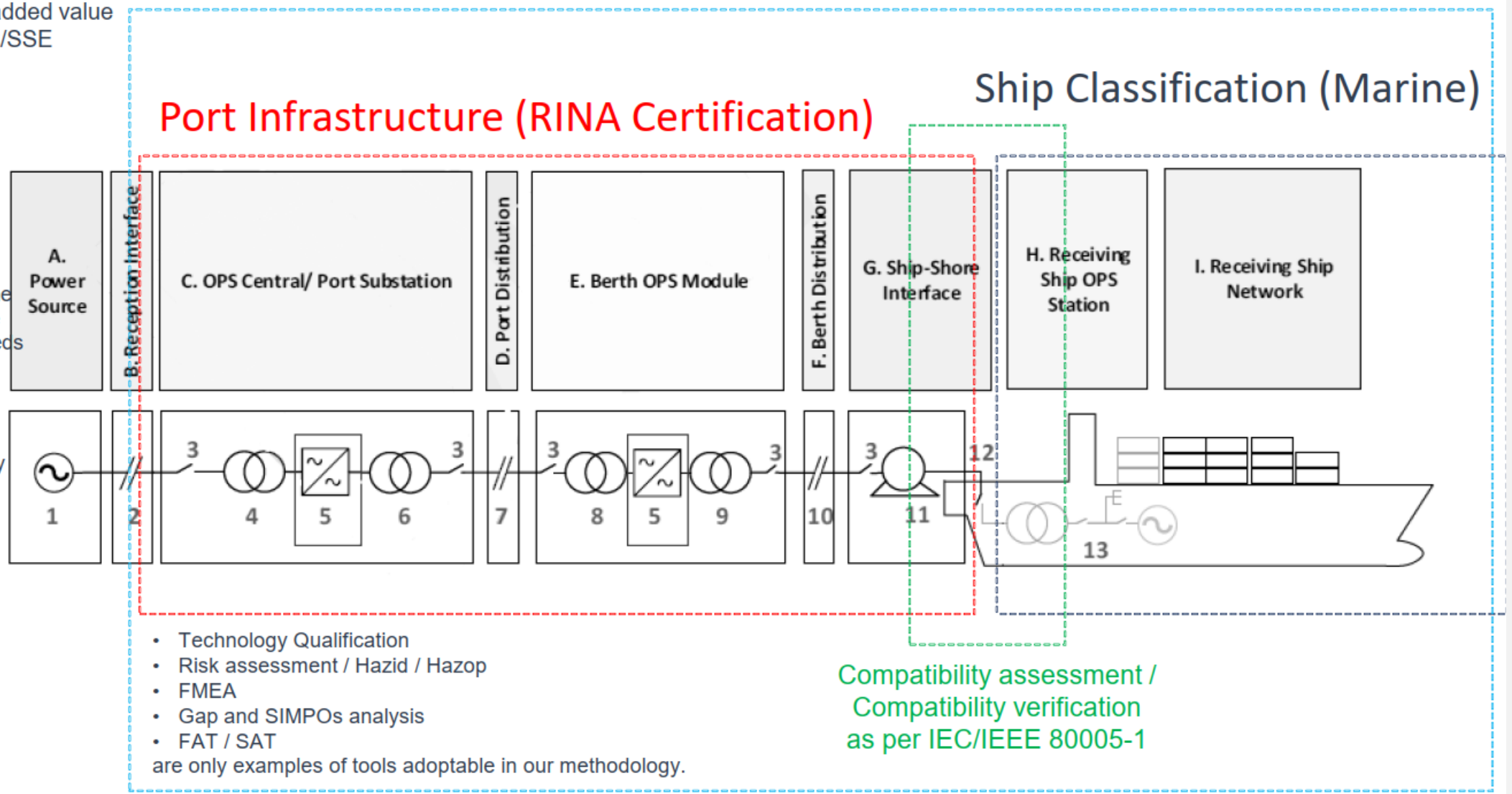
Overall Certification Footprint – Our Concept

Our goal is to provide added value by validating the HVSC/SSE infrastructures to:

- Ports
- Administrations
- Flag
- Shipyards
- Shipowners
- Makers

By adopting the «overall certification footprint» to the entire HVSC infrastructure considering Port+Ship needs as an **Integrated system**.

We can "tailor-made" feasibility studies, considering the technology adopted, the operability process, all involved stakeholders' needs, and compliance with the applicable standards and laws.



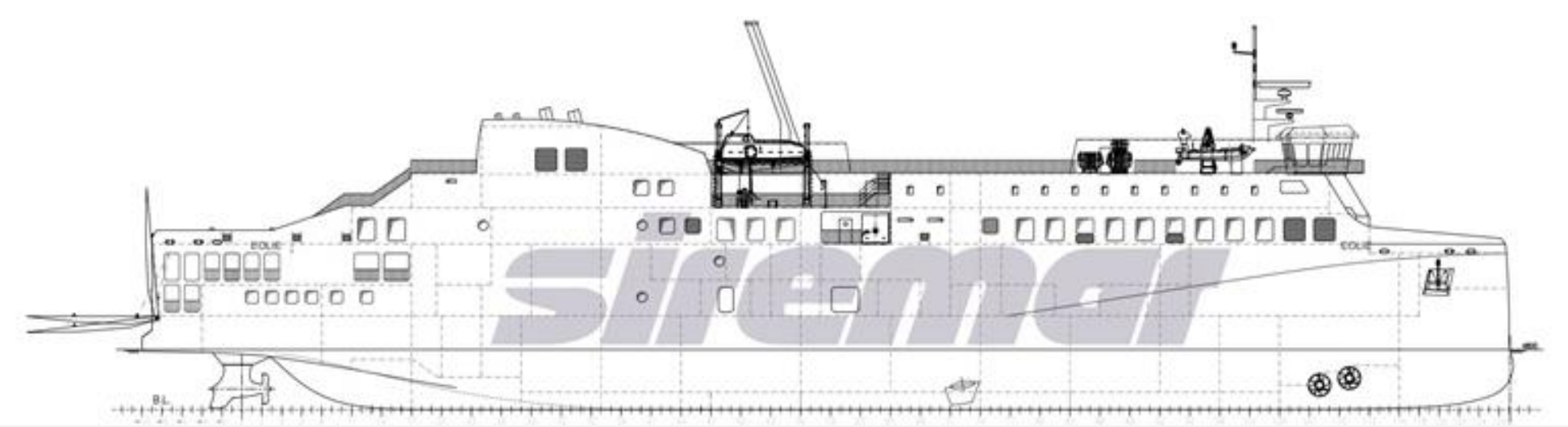
Siremar new Ro-Ro Pax

Shipyard: Sefine

Shipowner: Siremar

Size: 1 × Ro-Ro passenger ferry (114 cars; 800 pax)

The diesel/LNG-electric ferry will be powered by four dual fuel auxiliaries – two with an output of 2,900kW each and two with an output of 1,300kW each
A 1,000kW battery pack together with 250m² of solar panels will provide the ship's hybrid element



Finnlines Superstar Ro-Ro pax vessels

Shipyard: Jinling Shipyard (Weihai)

Shipowner: Grimaldi Group

Size: 2 × Ro-Ro passenger vessels (5,100 lane metres; 1100 pax)

The thruster control system and the energy management system for performance optimization will enable the vessels to operate free of emissions on either batteries or shore power while in port

MOBY new Ro-Ro Pax

Shipyard: Guangzhou Shipyard International

Shipowner: MOBY

Size: 2 × Ro-Ro passenger vessels (69.500 GT; 2500 pax)

From an environmental point of view the vessel will have a series of equipment that will make it possible to reduce emissions without sacrificing performance and thanks to new innovative scrubbers, there will be the possibility of switching from traditional power to LNG natural gas

GNV four new Ro-Ro Pax

Shipyard: Guangzhou Shipyard International

Shipowner: GNV

Size: 4 × Ro-Ro passenger vessels (1500 pax)

All new ships will be equipped with exhaust gas cleaning systems (EGCS), selective catalytic reduction (SCR) and heat recycling technologies to meet IMO Tier III and EEDI Phase II requirements.

Battery Retrofit on Cruise Ferry

RINA as class in 2 cruise ferry projects (Cruise Roma and Cruise Barcellona)

Lithium-Ion battery installation (up to 1 MW/h) retrofit

Liberty Lines new HSC

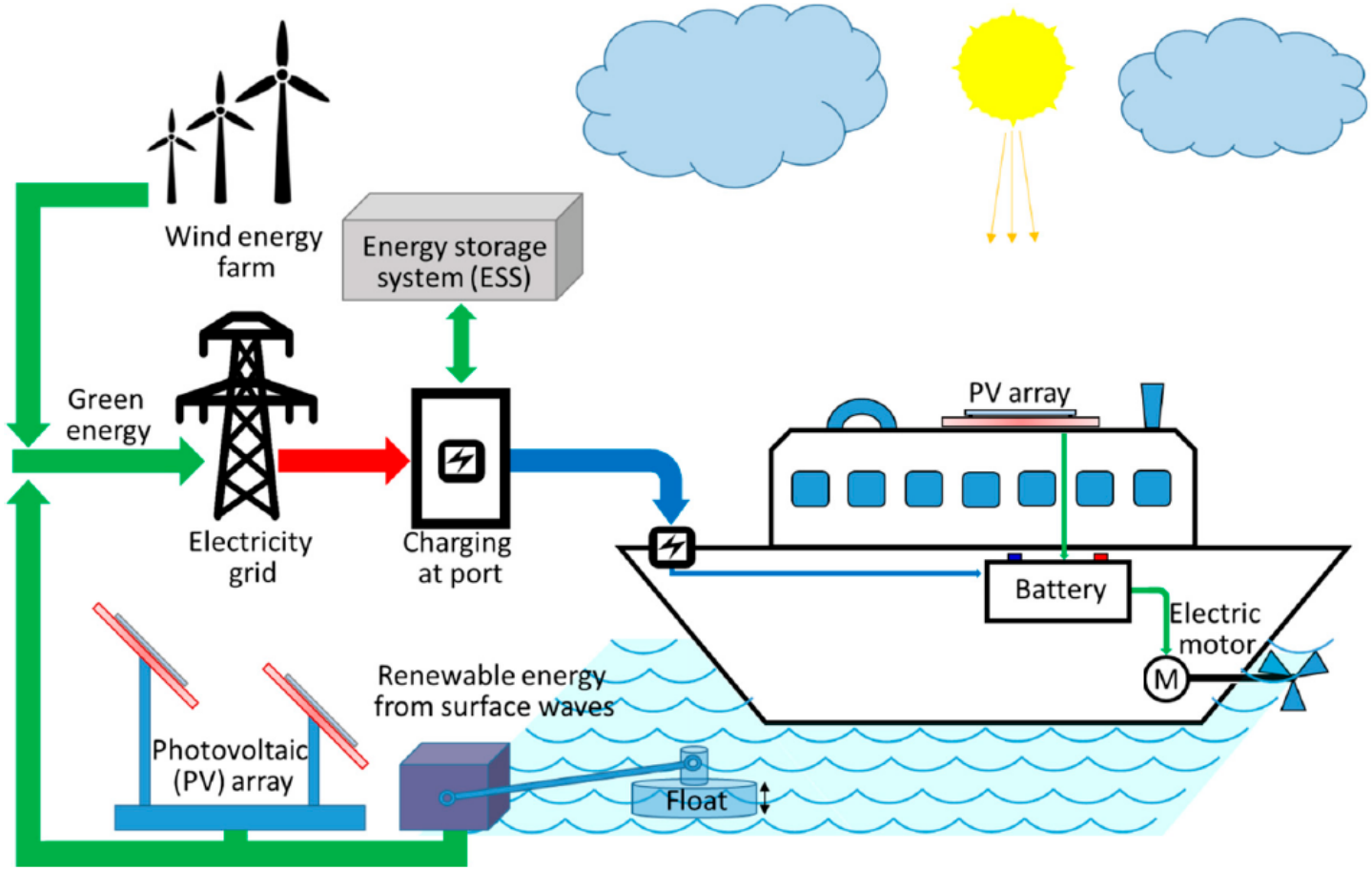
Shipyard: Armon Vigo

Shipowner: Liberty Lines

Size: 9 + 9 × HSC ferry (***Hydrogen Ready***)

Equipped with an integrated propulsion system that will be supplying both traditional and electric propulsion
Capable to enter and exit the harbours producing zero emissions as the ships can navigate at a speed of 8 knots using full electric mode and 30 knots in cruise mode

AN ECO-FRIENDLY FULL ELECTRIC PROPULSION SYSTEM



TYPICAL EXAMPLE: VESSEL ON-BOARD CHARGING

Hydromover - Particulars

LENGTH OA	18.5	m
LENGTH BP	17.3	m
LENGTH WL	18.5	m
RULE LENGTH	17.78	m
BREADTH PER DEMI HULL	2.65	m
BREADTH MOLDED	8.0	m
DEPTH	3.35	m
Case 1 (empty)	36.4t	1.19m Draught
Case 2 (half load)	49.5t	1.42m Draught
Case 3 (full load)	62.6t	1.55m7Draught
SCANTLING DRAUGHT	1.6	m
SPRINT SPEED (FL)	~12.0	kn ONLY FOR ~2 MINUTES!!
ECONOMIC CRUISING SPEED	8.0 – 10.0kn	
CLEAR DECK AREA	60	m^2
DECK LOADING	1.5t/m^2	
GROSS TONNAGE	~80 GT	

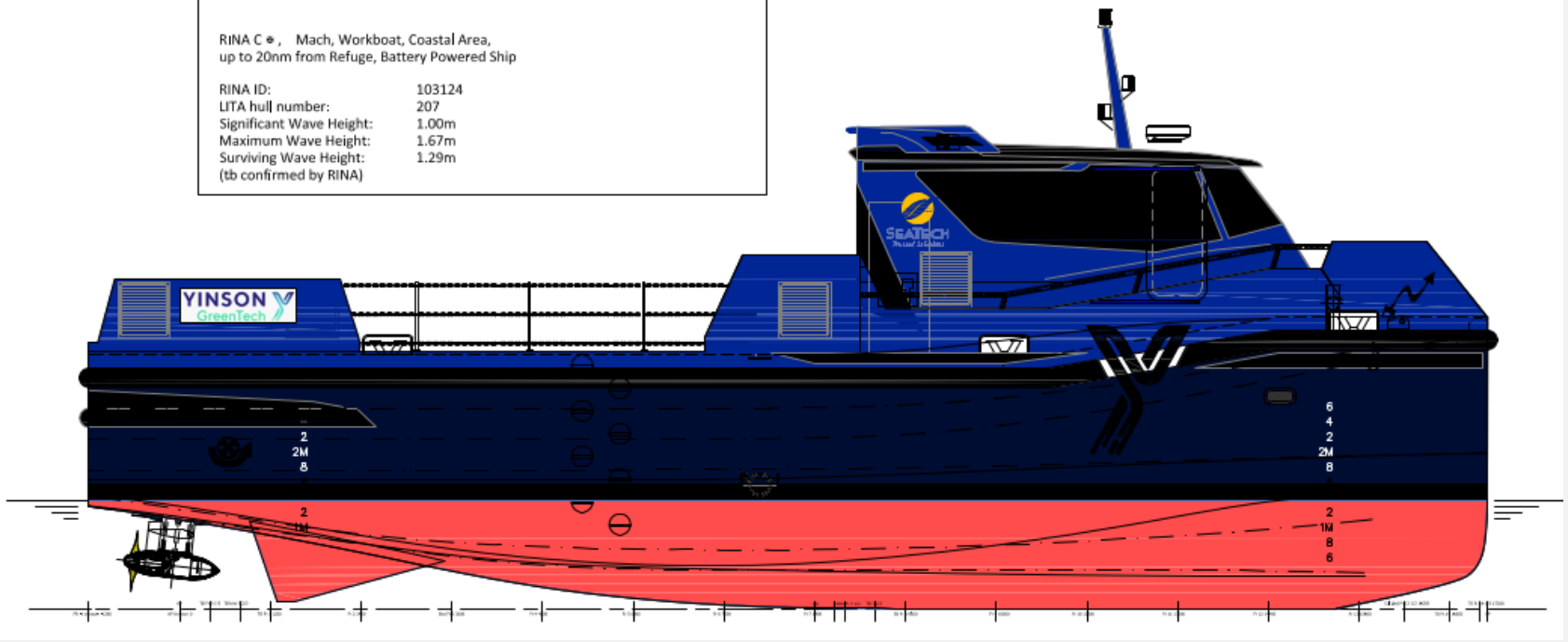
RINA C ⊕, Mach, Workboat, Coastal Area,
up to 20nm from Refuge, Battery Powered Ship

RINA ID:	103124
LITA hull number:	207
Significant Wave Height:	1.00m
Maximum Wave Height:	1.67m
Surviving Wave Height:	1.29m

(tb confirmed by RINA)

BATTERY INFO:

1. Capacity - 70.4kWh
2. DC voltage range - 620v to 800v



Hydromover – Swappable Batteries

FULL PORT ELECTRIFICATION

Interchangeable ePODS

Quick swap of batteries using cranes to exchange. Less than 5-minute turnaround.

Automated electric robotic shuttles.

Interchangeable ePODS power the entire port: ships, trucks, cranes, buildings, renewables.

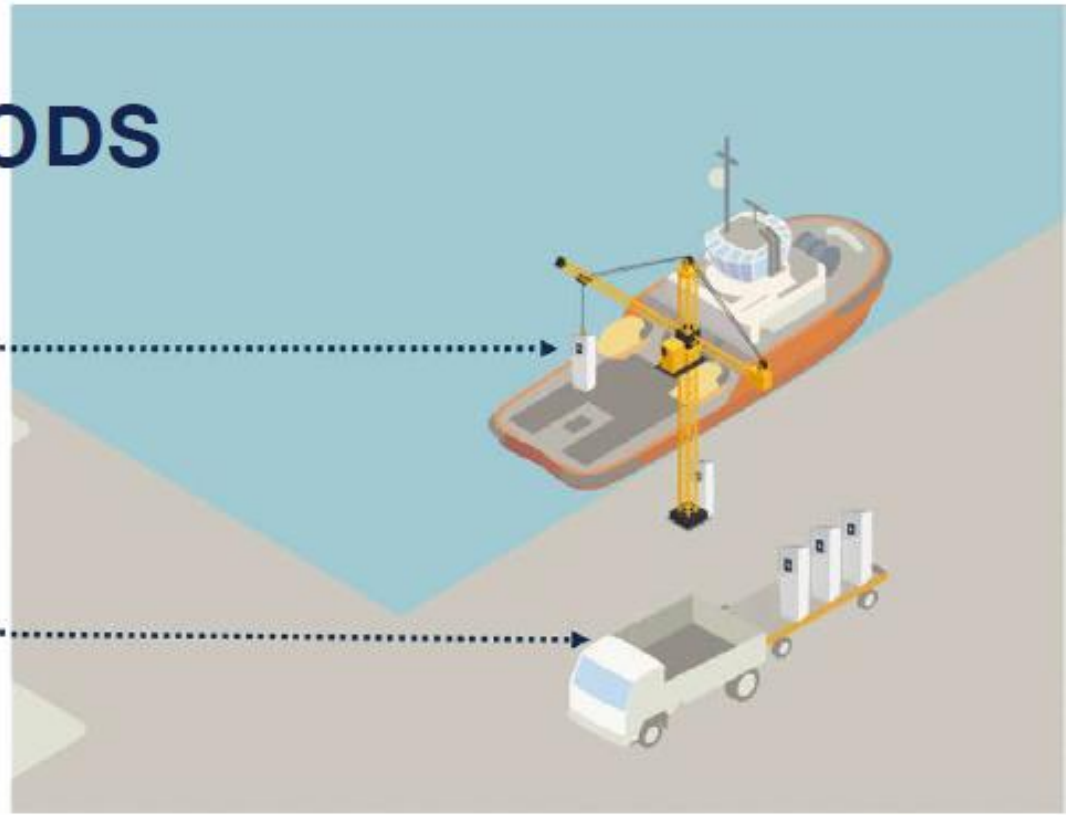


Illustration courtesy of Shift.

For more info:

Thank you for your attention