

New Generation of Ferries - Finlines and RINA

**A long and trusted
partnership**

2025/11/13



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rina.org

Our experience. Your growth.

Agenda

RINA Intro

Finnlines and RINA

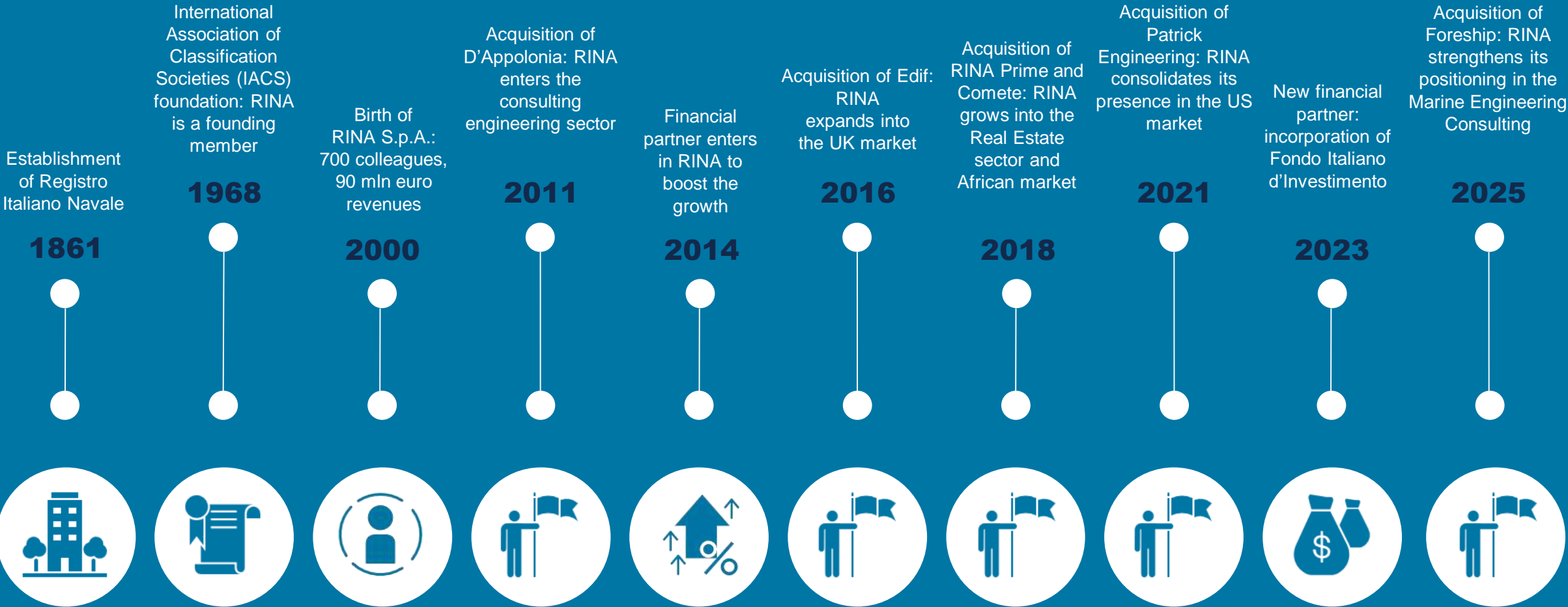
Evolution and emission reduction

New ships – key facts

RINA Marine Consulting



A long journey ..



RINA Today



6,600
colleagues



200
offices



70
countries



>90
nationalities



75%
educated to
degree level



42
average
age



29%
women in STEM
in RINA



28%
women in managerial
positions

Marine

- RINA operates on behalf of **123 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

RINA Marine Achievements

81,7 M GT of classed ships

8.856 classed ships

1.440 classed yachts

7,1 M GT in orderbook

30% in Passenger ships orderbook

423 new yacht projects worldwide

#1 World ranked for Ferries Classification

FIGURES

- IACS Chairmanship



- 860 Marine Experts worldwide



- Over 3.000 ships with SERTICA suite installed



Finlines – Evolution of RoPax vessels



Finlines' ro-ro passenger vessels grow in size



Hansa class

Finnhansa, Finnpartner, Fintrader, Transeuropa

Clipper class

Finnclipper, Finneagle, Finnfellow

Star class

Finnstar, Finnmaid, Finn lady, Europalink, Finnswan (ex. Nordlink)

Superstar class

Finncanopus, Finnsirius

Built	1994–1995	1999–2000	2006–2007	2023
Gross tonnage	32,531-32,534	29,841/ 29,841/ 33,769	45,923	65,692
Length	183	188.3	218.80	235
Breadth	28.7	28.7	30.5	33.3
Lane metres	3,200	2,459/2,459/ 2,918	4,215	5,200
Passengers	114	440	550 (later raised to 554)	1,100

Finncorps – Evolution of RoPax vessels



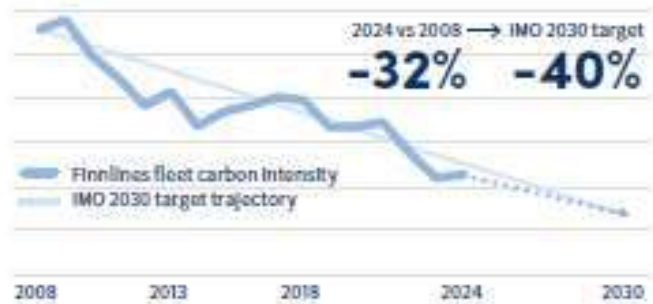
KEY ENVIRONMENTAL FIGURES

SUPERSTAR VESSELS' CARBON INTENSITY (based on g CO₂/GT*nm figures)

New Superstar vessels boost energy efficiency, cutting carbon intensity compared to the previous vessels on the route between Finland and Sweden

-45%

FINNLINES FLEET CARBON INTENSITY (based on g CO₂/GT*nm figures)



14.5 g CO₂/GT*nm in 2024
 14.4 g CO₂/GT*nm in 2023

Passenger Co₂ emissions by route



Next generation – Superstar+



3 ships for Finnlines plus 6 ships for Grimaldi and Minoan Lines



Key facts

- Delivery: April 2028, November 2028, May 2029
- LOA: 240m
- Breadth: 34m
- Draft: 7m
- Speed: 22 knots
- 5.100 lane meters plus 1.000 m² car garage
- Max. persons 1070; 320 cabins
- Installed power 35 MW
- Dual fuel methanol engines



Next generation – Superstar+

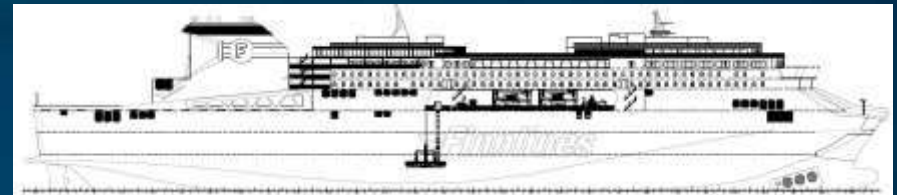


RINA class notation – C+, RO-RO PASSENGER SHIP, ICE CLASS 1A SUPER, INWATERSURVEY, COMF-NOISE PAX B, CREW B, COMF-VIB PAX B, CREW B, STAR-HULL, AIR_LUB, MON-SHAFT, DANGEROUS GOODS, HVSC, CLEAN AIR, CLEAN SEA, AUT-UMS, SYS-NEQ-1, SYS-IBS, UNRESTRICTED NAVIGATION, TAS, SRTP, BWM-T, PMS, GREEN PLUS, METHYL/ETHYL ALCOHOL FUELLED, BATTERY POWERED SHIPS

Next generation – Superstar+



- Modern main engines (low sfoc – good fuel economy and reduced emissions)
- New fuels (methanol, low emissions)
- VFD shaft generators (optimum propeller speed and pitch – improved fuel economy and reduced emissions)
- Air lubrication (reduced resistance – reduced required propulsion power)
- Air quality driven cargo hold ventilation (air changes adjusted to demand – lower power consumption)
- VFD in pumps and fans (flow adjusted to demand – lower power consumption)
- Waste heat recovery by a hot water accumulation tank and an absorption chiller (reduced energy consumption in heating and AC)
- Heat pumps for domestic heating during port calls
- Alaska cooler (utilization of low sea water temp in AC)
- Shore power connection (no auxiliary engines in port – reduced emissions and noise)
- Battery bank (charged in port – clean auxiliary power at sea)
- Air space stern tube seals (no oil leaks to sea)
- SCR's
- Hybrid exhaust gas scrubbers including a zero-discharge tank



Next generation – Superstar+



- Main engines
- Propulsion power
- ME fuel
- Reduction gears
- Twin screw CPP
- Stern tube
- Rudders
- Bow thrusters (FPP)
- Anti roll
- Exhaust gas boilers
- Oil fired boilers (MDO)
- Auxiliary engines (MDO)
- Shaft generators VFD
- Battery bank
- Shore power connection

Finnsirius/canopus

4Wärtsilä 6L46F

28800 kW

HFO

two speed

5,4 m

water lub

2xhigh lift flap

3x1700 kW

Fin stabilizers

4x1800 kg/h

2x6500 kg/h

3x2750 kW

2x2550 kW (rpm 70-100%)

2x2,5 MWh

11 kV 3,5 MVA

Superstar+

2xWärtsilä (8+6)L46F-M2

35000 kW

HFO and methanol

one speed

5,4 m

air space oil lub

2xhigh lift flap

3x2100 kW

Fin stabilizers

2x1800+2x2400 kg/h

2x6500 kg/h

3x2860 kW

2*3150 kW (rpm 70-100%)

2x1 MWh

11 kV 5 MVA

Next generation – Superstar+



Unit	Marine diesel oil	Heavy fuel oil	Methanol
Density (kg/m ³)	900	975	792
LHV (MJ/kg)	42.7	40	19.9

40 MJ of energy requires 1 kg or 1 dm³ of heavy fuel oil (HFO), equivalent to **2.01 kg** or **2.5 dm³** of methanol.

Assuming 140 t (about 139 m³) HFO per voyage means some **281 t** and **351 m³** MeOH, respectively.

Next generation – Superstar+ - Methanol as fuel

Methanol is different from traditional marine fuels due to its **low flashpoint and toxicity**:

- vapour/ air mixture which can burn at about **11 °C** (flashpoint).
- hazardous chemical with significant **toxic, flammable and reactive properties** that **can adversely affect human health and the environment** if the fuel is not properly handled.
- highly flammable, **burns with non-visible flame in daylight conditions at low temperature, produces little or no smoke, and is readily miscible in water.**
- **challenges fire-extinguishing** activities as the vapours are heavier than air and **can be ignited throughout a wide range of concentrations.**

When extinguished with water spray

- the **volume of water shall be at least four times the volume of the methanol pool** because methanol **concentrations of over 25% in water remain flammable.**

Large methanol pool fires are best extinguished with

- **water spray or Alcohol Resistant Aqueous Film Forming Foam (AR-AFFF)** with foam-water proportioning equipment.

Safety is the biggest concern when handling methanol. To achieve safe carriage

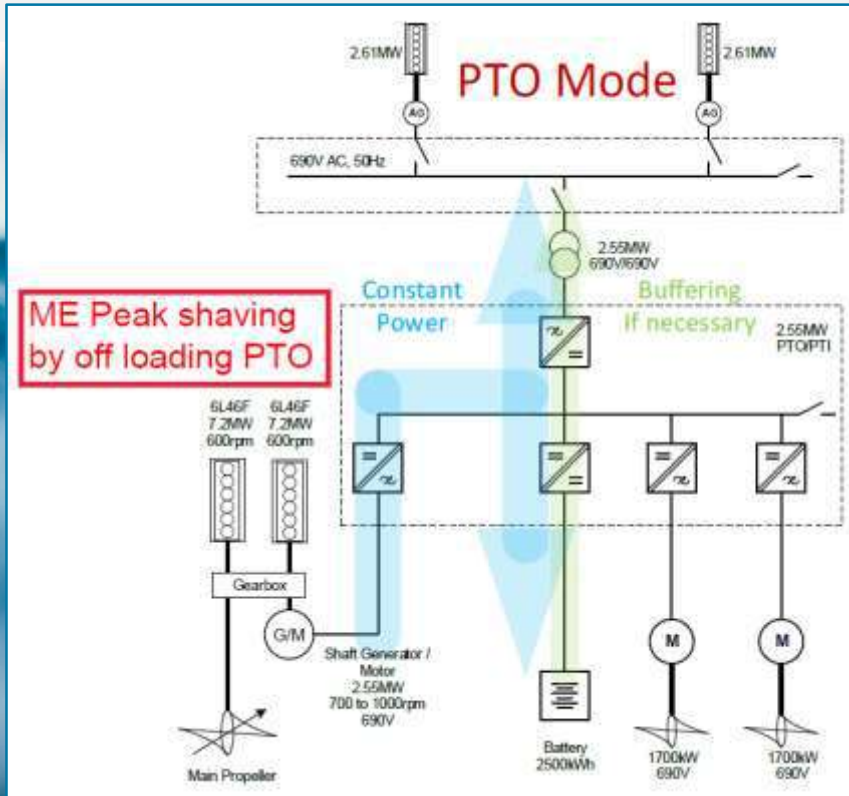
- methanol storage **tanks must be maintained in an inert condition with an oxygen content of 8% or less** and clear areas around pressure/vacuum relief valves (P/V valves) and manifolds.
- tanks should be protected by **cofferdams**, which should be filled with water or inerted with nitrogen.

Next generation – Superstar+ - extract GA plan



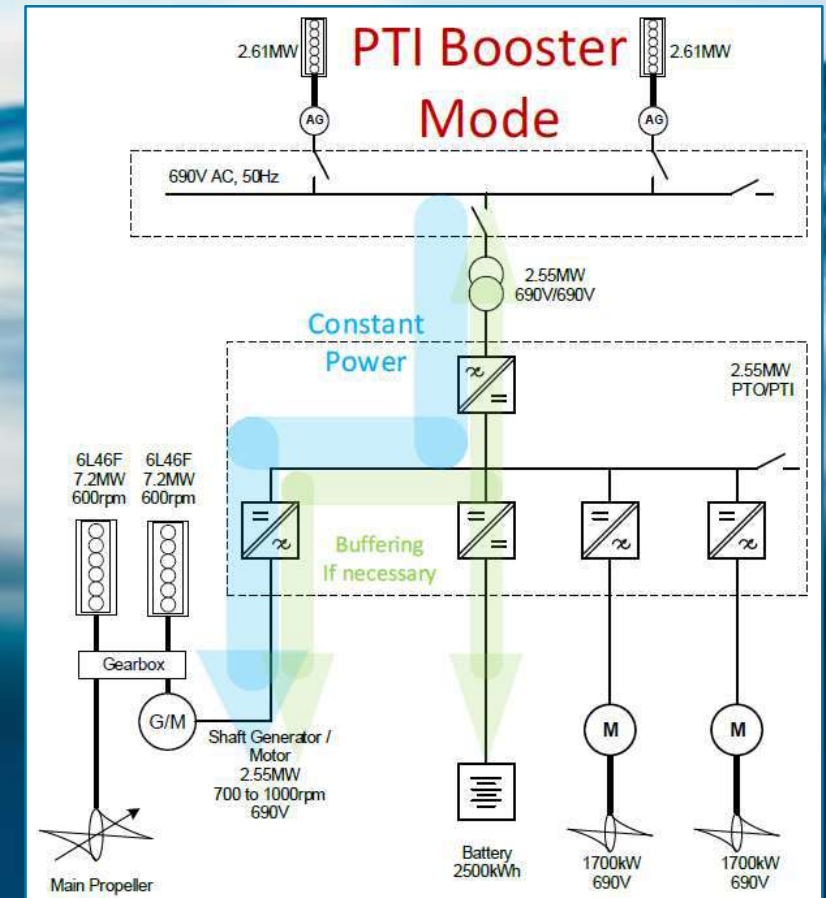
HFO abt. 800 m³
MDO abt. 500 m³
MeOH abt. 1200 m³

Next generation – Superstar+ - energy concept



Features include:

- Flexible use of shaft generators, batteries, and gen sets
- PTO and PTI boost
- Peak shaving
- Black out prevention



Next generation – Superstar+ - shore connection



11 kV power supply

Vuossari 5 MVA

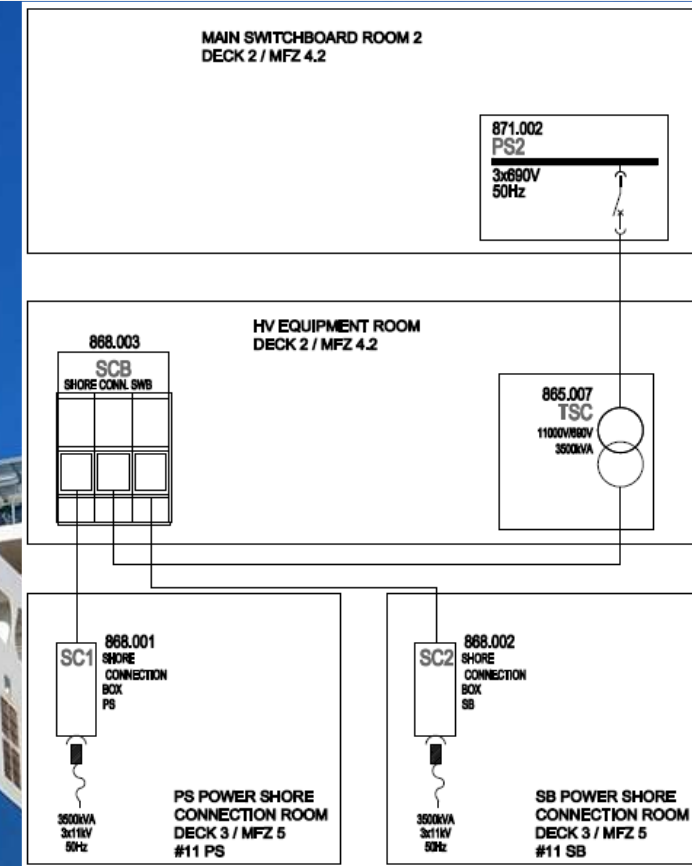
Travemünde 4 MVA

Hotel load (AC, heat pumps)

Reefers

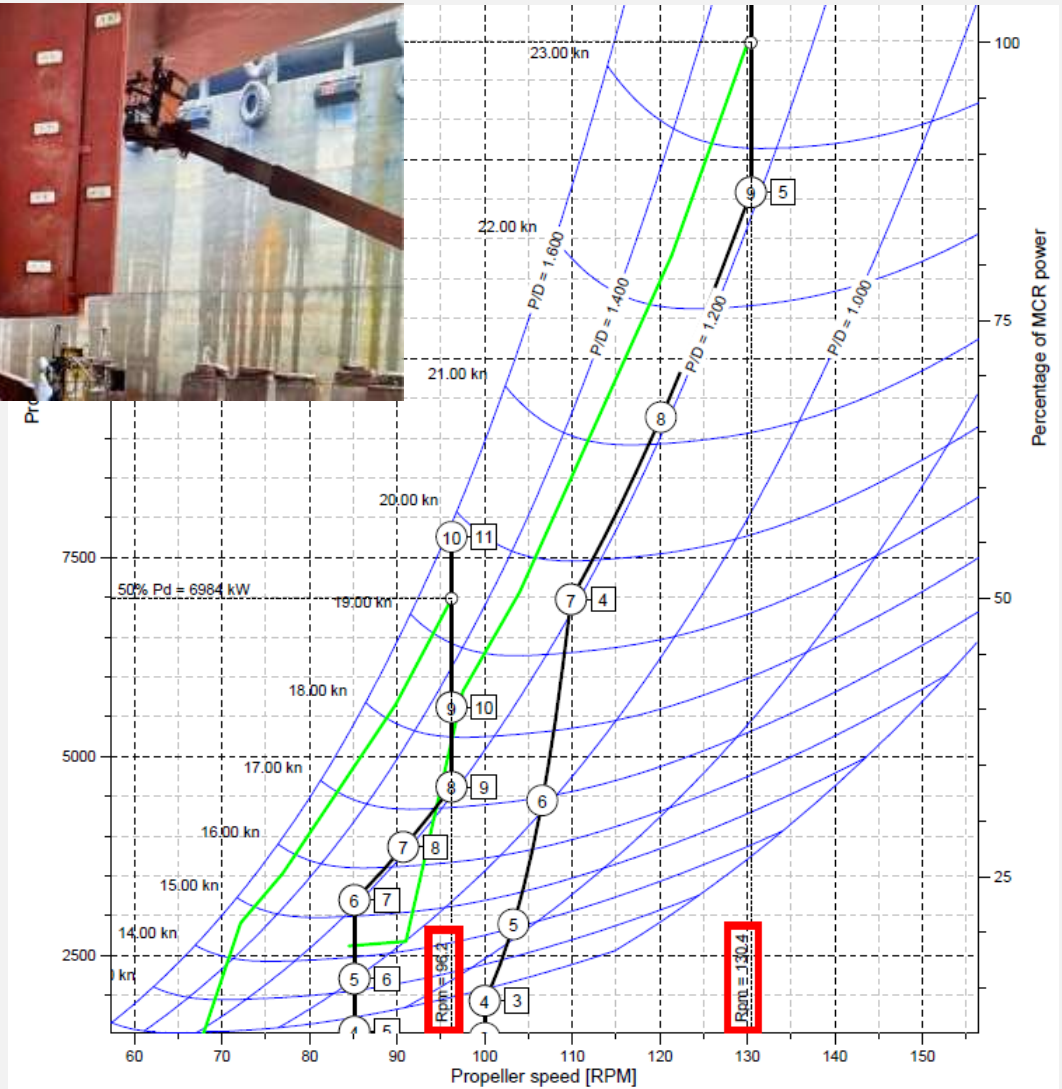
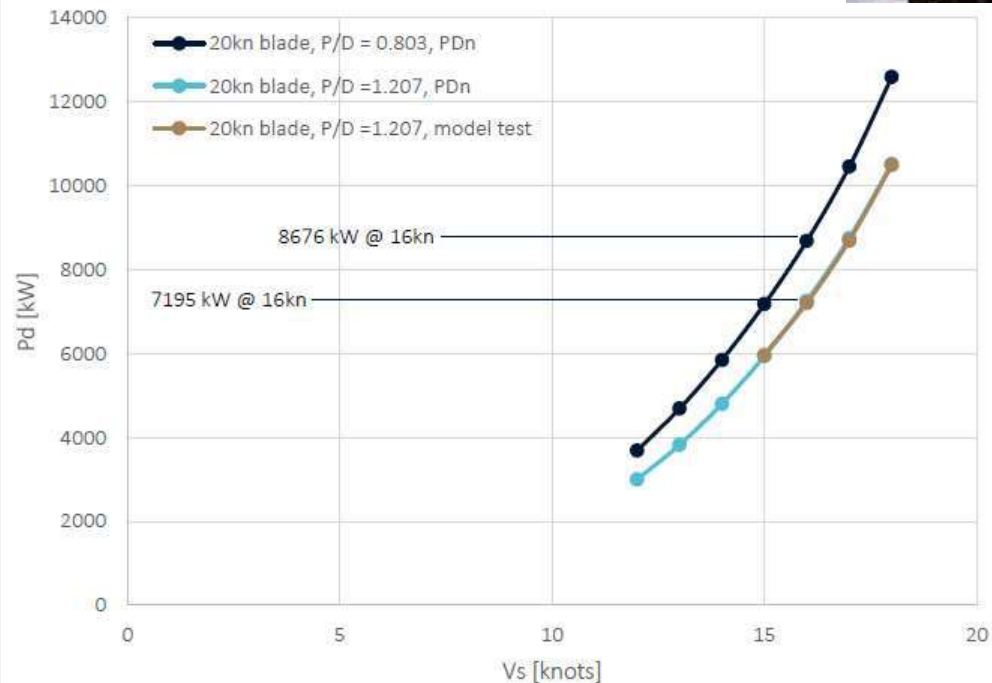
Charging of batteries

AMNS
EMISSIONIN



Next generation – Superstar+ - propulsion optimization

Two speed reduction gears:
propulsion efficiency gain at the lower design speed by lowering rpm and increasing pitch



The background of the advertisement features a woman with long dark hair, wearing a white sweater, looking down at an open book. The book is glowing with a bright blue light. In the background, a city skyline with several tall, illuminated skyscrapers is visible at night. A large cruise ship is sailing on the water in front of the city. The overall scene is bathed in a blue light, creating a futuristic and professional atmosphere.

RINA **Marine Consulting**

Our experience. Your growth.

Consulting services



- Selection of propulsion
- Alternative fuels and related solutions, High voltage shore connection
- Ship energy consumption optimization: project concept selection, system projects, including CFD Support in environmental impact characteristics during operations (EEDI, EEXI, CII)
- Compliance with new international and EU Regulations
- IHM and life cycle assessments
- Alternative design study to specific and tailored technical and compliance needs
- Review of construction drawings and ship's specifications
- Ship specification preparation
- Yard standards review
- Maker list preparation

Risk Assessment

Risk Assessment:

- Mandatory for Class Rules & IGF Code for LNG fuelled ships
- Battery Installation
- Fuel Cell Installation
- Alternative Fuels: Hydrogen, Methanol, Ammonia

Methodologies:

- Design Screening
- Qualitative analysis:
 - HAZID (HAZard IDentification)
 - FMEA (Failure Modes and Effects Analysis)
 - HAZOP (HAZard and OPerability)
- Quantitative analysis:
 - Fault & Event - tree analysis
 - Dispersion analysis

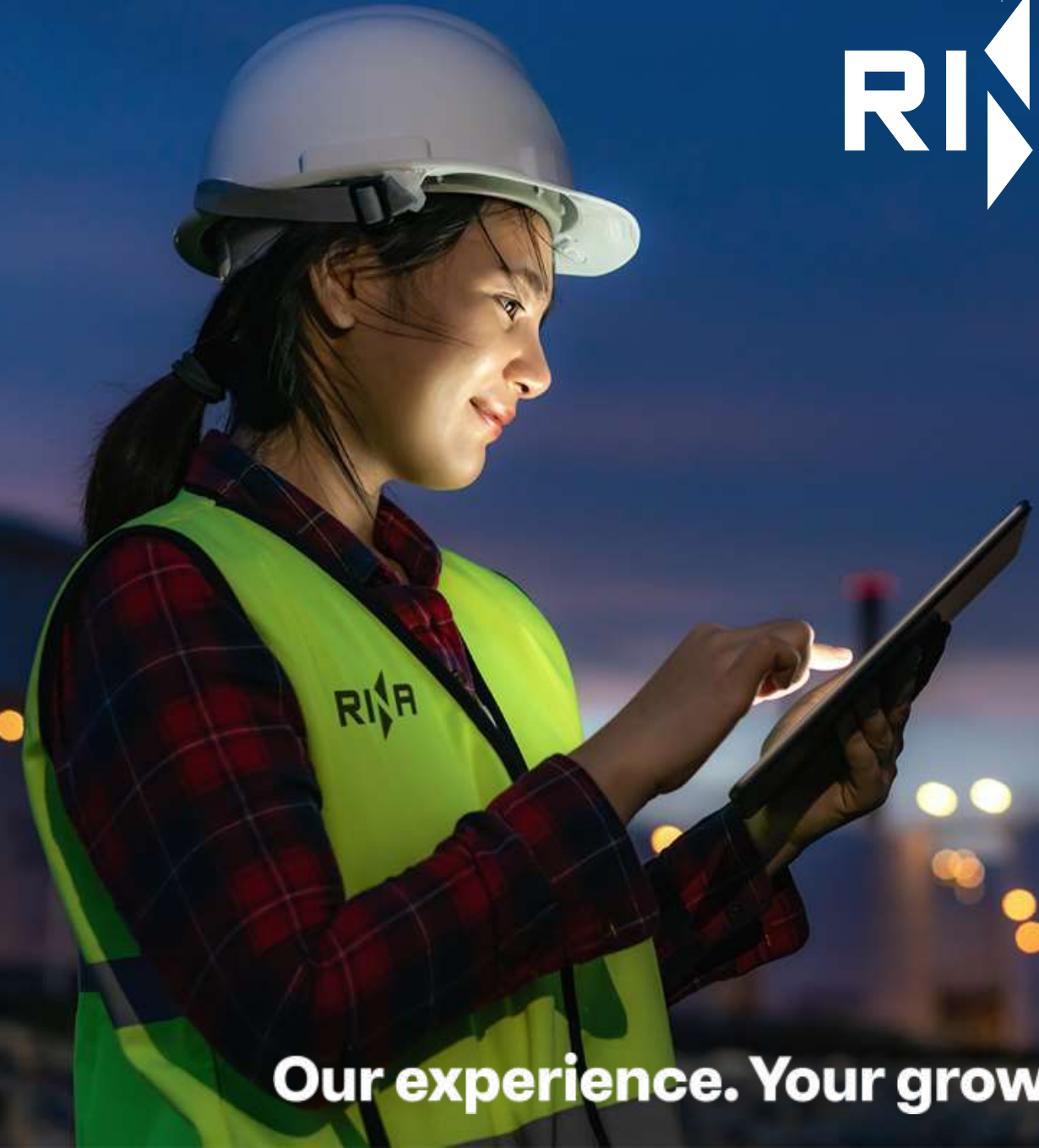
Deliverables:

- Report and worksheet delivered for each methodology



High	The level of risk is not acceptable and risk control measures are required to move the risk figure to the previous regions.
Medium	The level of risks is acceptable, provided that further reduction measures are considered to be not practically applicable (ALARP).
Low	The level of risks is acceptable, applying the safeguards provide or general control measures.

Thank you for your attention



ANDREAS ULLRICH
GLOBAL MARKET DIRECTOR PASSENGER SHIPS&FERRIES
+491735306744



@RINA1861



@rina



@weatrina



@RINA1861

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