# Finnlines Plc

Roadmap to sustainable shipping

# Finnlines' key figures

Ro-pax vessels	Lane length	Passengers
5 x Star vessels	4,216	554
Finnfellow	3,099	440
Finnpartner, Finntrader	3,050	280

Ro-ro vessels	Lane length	GT
3 x Finneco vessels	5,800	60,515
6 x Breeze vessels	4,192	33,816
Finnmill, Finnpulp, Finnkraft, Finnhawk	3,259/1,853	25,732 -

### January–December 2022





## **Roadmap to sustainable shipping**



Continuous improvement of energy efficiency, which means speed reduction, optimisation of schedules and running on optimal speed, load and trim.

## Evolution of Finnlines' ro-ro vessels

	Year of Built	Service Speed [kn]	Gross Tonnage	Energy Efficiency Tecnologies	g CO₂/ nm x Gī
Birka Exporter	1991	14.7	6,620		29.4
Baltica	1990	17.3	21,224	•	18.5
Finnmill	2002	19.8	25,731	Scrubber, Reblading	17.5
Finnbreeze	2011	20.0	28,002	Scrubber, Reblading	15.5
Finnbreeze (lenghtened)	2018	19.6	33,816	Scrubber, Reblading	13.7
Finneco	2021	20.7	60,370	Promas Lite, Scrubber, Batteries, Air Lubrication, Peakshaving, Waste Heat Recovery, Solar Panels, VFD	7.9









Hybrid ro-ro vessels Finneco I, II and III started operating in summer 2022

## Ultra-green hybrid ro-ro vessels: Finneco I, II, III



![](_page_6_Picture_2.jpeg)

**Battery banks**: lithium-ion battery systems to enable zero-emission operations and to reduce noise in port

![](_page_6_Picture_4.jpeg)

**Solar panels:** 600m2 of solar panels to produce clean electricity to users on board

![](_page_6_Picture_6.jpeg)

Promas Lite systems to increase energy efficiency

![](_page_6_Picture_8.jpeg)

An innovative air lubrication system to create bubble layers which will reduce friction and hydrodynamic resistance

![](_page_6_Picture_10.jpeg)

Optimised hull lines to optimise efficiency

![](_page_6_Picture_12.jpeg)

Main engines type and size carefully selected to achieve the lowest possible fuel oil consumption

![](_page_7_Picture_0.jpeg)

## Eco-sustainable Superstar ro-pax vessels: Finnsirius and Finncanopus

![](_page_8_Picture_1.jpeg)

![](_page_8_Picture_2.jpeg)

Battery banks: lithium-ion battery systems to enable clean energy to be used onboard

![](_page_8_Picture_4.jpeg)

Promas Lite systems to increase energy efficiency

![](_page_8_Picture_6.jpeg)

An innovative air lubrication system to create bubble layers which will reduce friction and hydrodynamic resistance

![](_page_8_Picture_8.jpeg)

Optimised hull lines to optimise efficiency

![](_page_8_Picture_10.jpeg)

**Main engines** type and size carefully selected to achieve the lowest possible fuel oil consumption

![](_page_8_Picture_12.jpeg)

**Use of shore-side electricity** in port to reduce fuel consumption, emissions and noise

![](_page_8_Picture_14.jpeg)

Automooring to ensure faster mooring and efficient port operations

## Fleet carbon intensity reduction

CARBON INTENSITY Finnlines fleet vs. IMO target (based on g CO<sub>2</sub>/GT\*nm figures)

![](_page_9_Figure_2.jpeg)

![](_page_9_Picture_3.jpeg)

## **Energy & Emission reduction toolbox**

#### **Propulsion**

- □ Two speed reduction gears higher propulsion efficiency
- □ VFD shaft generators improved fuel economy with combinator
- □ Air Lubrication reduced required propulsion power
- □ Improved hull design and special paint applications (silicon, XGRIT)

### Auxiliary

- □ Battery bank clean auxiliary power at sea
- □ Shore Power zero emission in port, lower noise

#### Lower power consumption onboard

- □ Air quality driven cargo hold ventilation lower power consumption
- □ VFD in pumps and fans lower power consumption
- □ Waste heat recovery lower energy consumption in heating and AC
- □ Alaska cooler utilization of low sea water temp for AC

#### **Operational measures**

- □ Economies of scale reduced emissions per transported unit
- Continuous optimisation of vessel capacity utilization
- Optimal utilization of speed / consumption curves
- Eco-training for crew and raised awareness onboard

#### Future fuels and engines (not yet commercially available at scale needed)

- □ Alternative fuels: biofuels, hydrogen/fuel cells/green ammonia/green methanol
- □ Engines: Diesel (DM,DE,DF), LNG, Gas Turbine, Nuclear, Electric

![](_page_11_Picture_0.jpeg)

# Thank you

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