



Fairway Forward seminar

Green, smart and safe maritime sector



Fairway Forward

Swedish-Finnish Maritime Collaboration



Ports of Sweden

A part of **TRANSPORTFÖRETAGEN**



Meriteollisuus
Finnish Marine Industries



Suomen Satamaliitto

Finnish Port Association



Suomen Varustamot
Rederierna i Finland
Finnish Shipowners' Association

Program

12.30 Welcome and introduction

12.35 Keynote speech by Prof. Kurt Bodewig,
Coordinator for Motorways of the Seas, European
Commission

12.50 Best practice cases

**13.55 Best practice case follow-up from last year –
what are the developments?**

**14.15 Think tank – sustainable recovery: top politicians
and industry leaders will join the discussion.**

**14.55 – 15.00 Closing remarks - Tiina Tuurnala, CEO,
Finnish Shipowners' Association**





Fairway Forward

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MADE BY THE SWEDISH SHIPPING GAZETTE



DECK 2

Maritime Greentech

Fairway
forward
to a
sustainable
future

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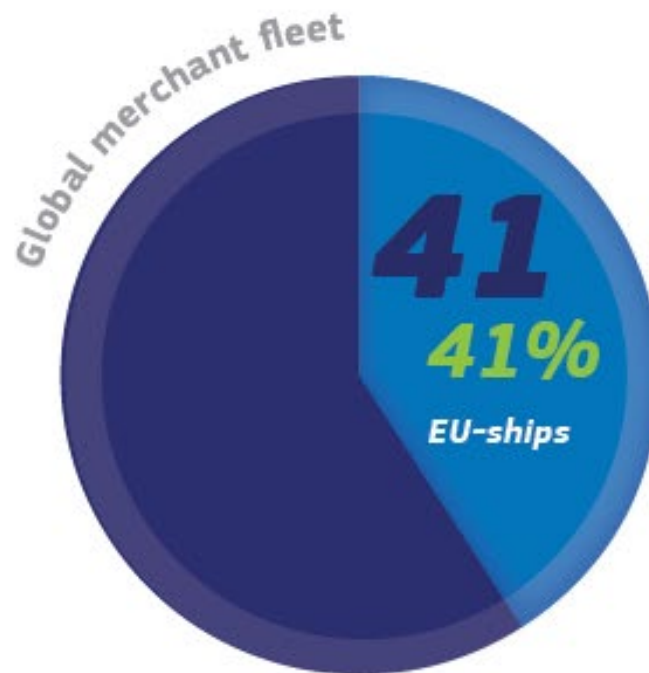
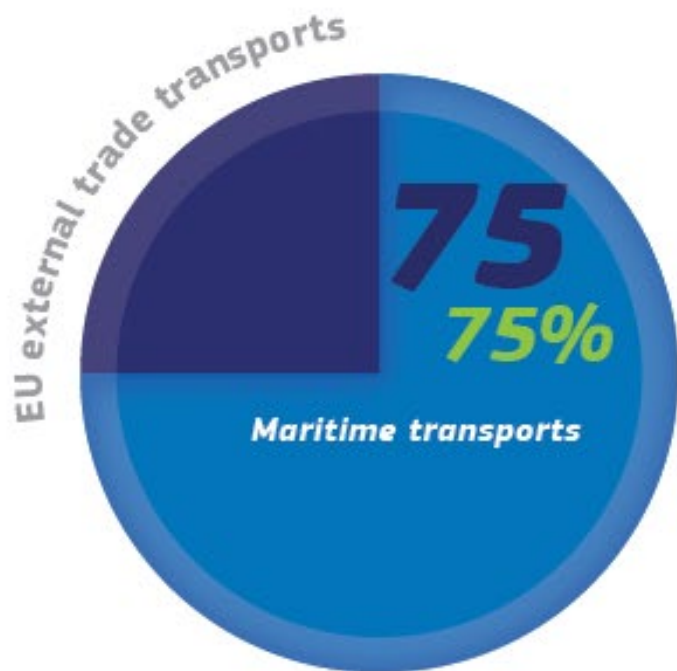
The maritime dimension of TEN-T

Towards the creation of a sustainable, seamless and smart European Maritime Space

Prof. Kurt Bodewig, European Coordinator for the Motorways of the Sea

Fairway Forward Webinar – 13 October 2020

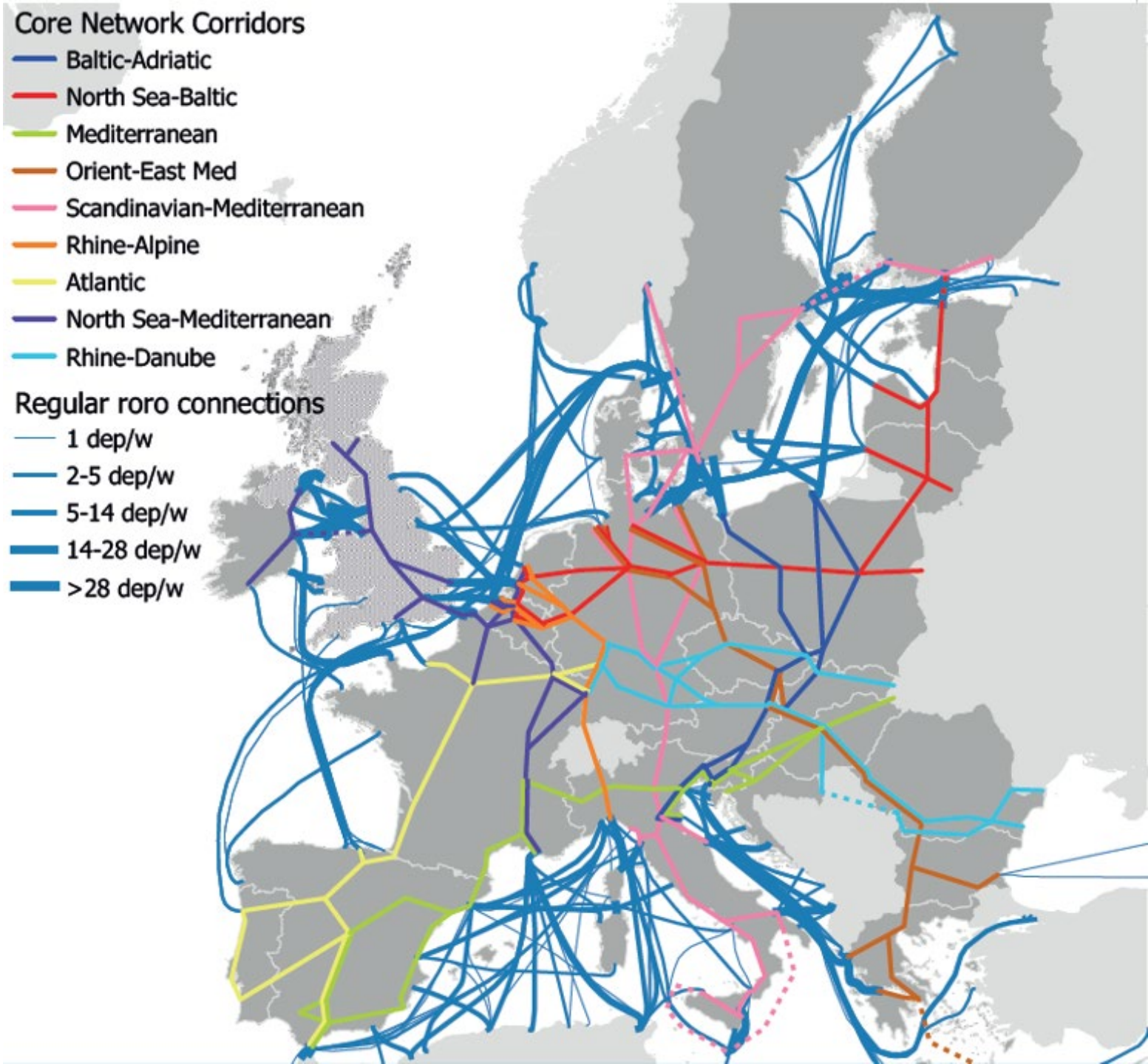
Maritime transport and short-sea shipping



MoS in the TEN-T

Motorways of the Sea

- extend and complement the TEN-T network with its 335 maritime ports,
- support new/upgraded maritime links,
- facilitate intra-EU trade (40% by sea),
- connect EU countries, including peripheral regions and neighbourhood regions.



Shaping the future policy of the

European Maritime Space

Motorways of the Sea
Detailed Implementation Plan
of the European Coordinator

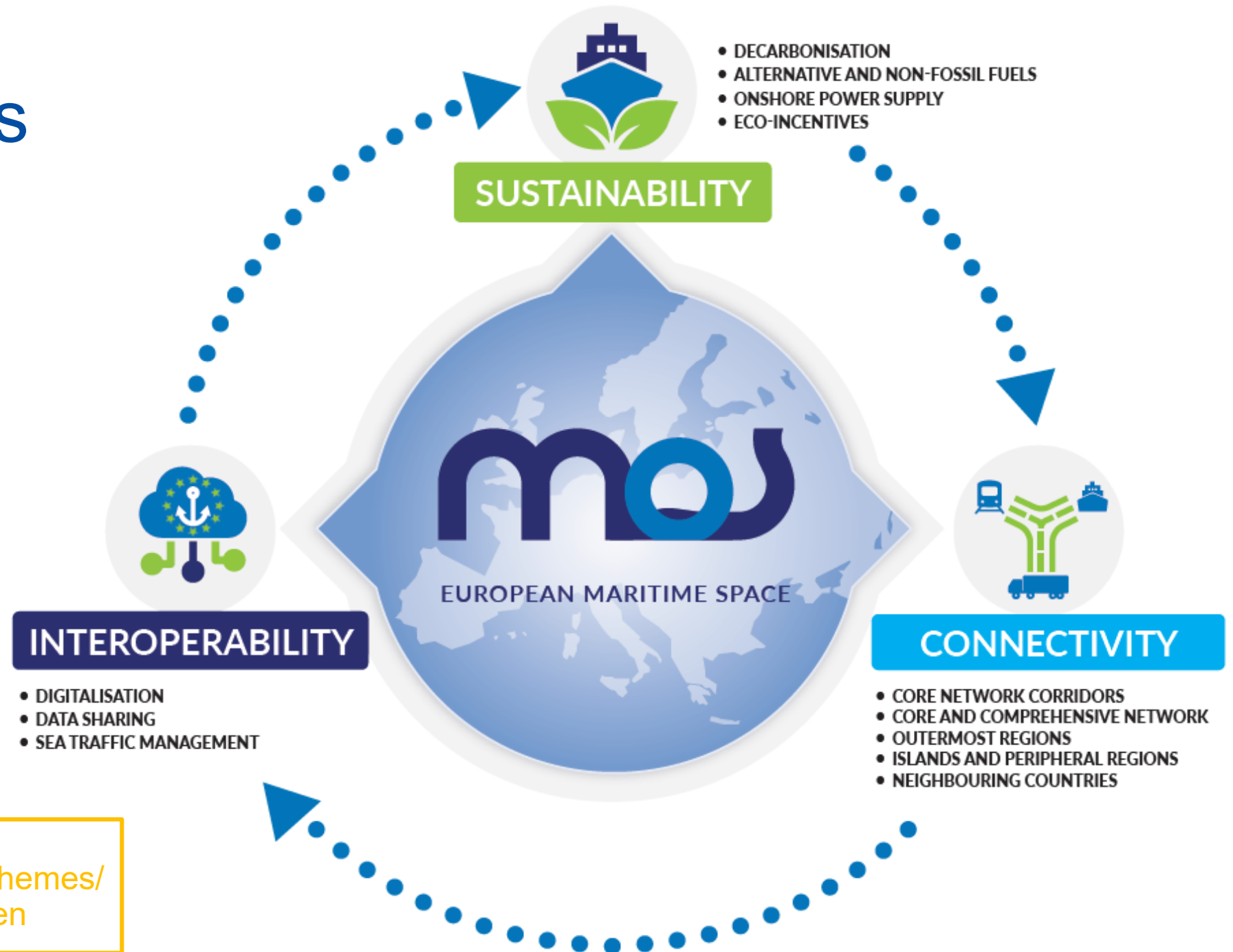
Kurt Bodewig

JUNE 2020

The MoS DIP presents:

- State of play: maritime traffic in European sea-basins
- Legislative drivers and emerging trends for maritime transport / SSS in Europe
- SSS until 2030: defining the “adequate state”
- Current gaps in the European sea-basins and resulting investment needs
- Available funding and financing instruments
- Political recommendations / investment priorities
- Outlook on MoS Future for TEN-T revision

MoS pillars



MoS DIP for download on:
https://ec.europa.eu/transport/themes/infrastructure/motorways-sea_en

Investment priorities and needs: *Sustainable* European Maritime Space

- Ship propulsion and efficiency: Mid-term priority on non-fossil fuel power and long-distance capability
- Alternative fuel shore-side infrastructure and bunkering vessels; shore-side power supply
- Port energy efficiency from fossil fuel based power sources to renewable energy sources
- Port resilience and climate adaptation measures, especially in exposed regions
- Eco-incentives and innovative financial tools rewarding environmental merits



SUSTAINABILITY

Investment priorities and needs: *Seamless* European Maritime Space

- Removing bottlenecks in the loading operations between seagoing vessels and hinterland modes
- Develop direct hinterland connections, preferably by rail and inland waterways, and multimodal terminals
- Traffic Management and optimisation of the port calls
- Support for the development of maritime links with third countries
- Connectivity and territorial cohesion with peripheral regions, outermost regions and islands
- Ice-breaking as an important element in the Northern Baltic



CONNECTIVITY

Investment priorities and needs: *Smart* European Maritime Space

- Interoperability between various stakeholders and data sharing systems
- Efficient customs operations and cargo clearance tools
- National Single Windows and their integration at the EU level (EMSWe)
- Digitalisation of administrative processes and trade facilitation on corridors
- Digital technologies to streamline maritime logistics operations but also speed up cargo checks
- Further development of Sea Traffic Management and of real-time vessel traffic monitoring



INTEROPERABILITY

Thank you for your attention.

Contact:

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silke.brocks@ec.europa.eu

Best practice cases

- **Northern Offshore Services: Batteries**
Martin Landström (SWE)
- **Wärtsilä: Ammoniac**
Kaj Portin, General Manager Sustainable Fuels (FIN)
- **Stena Line: Stena Fuel Pilot, AI and machine learning**
Emma Aronsson, Data scientist in AI & Data på Stena Line and
Jan Sjöström, Senior Master at Stena Scandinavica
- **Meriaura: Biofuel- Towards carbon free shipping –**
Thomas Friis, Project Manager, VG-Shipping, (FIN)
- **PORT OULU: Smarter – developing a modern digital port infrastructure**
Mira Juola, Chief of Digital Development (FIN)



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Stena Fuel Pilot
Fairway Forward 2020-10-13



Jan Sjöström,
Senior Master at
Stena Scandinavica

Emma Aronsson,
Data scientist at Stena
Line



Why we are doing this?

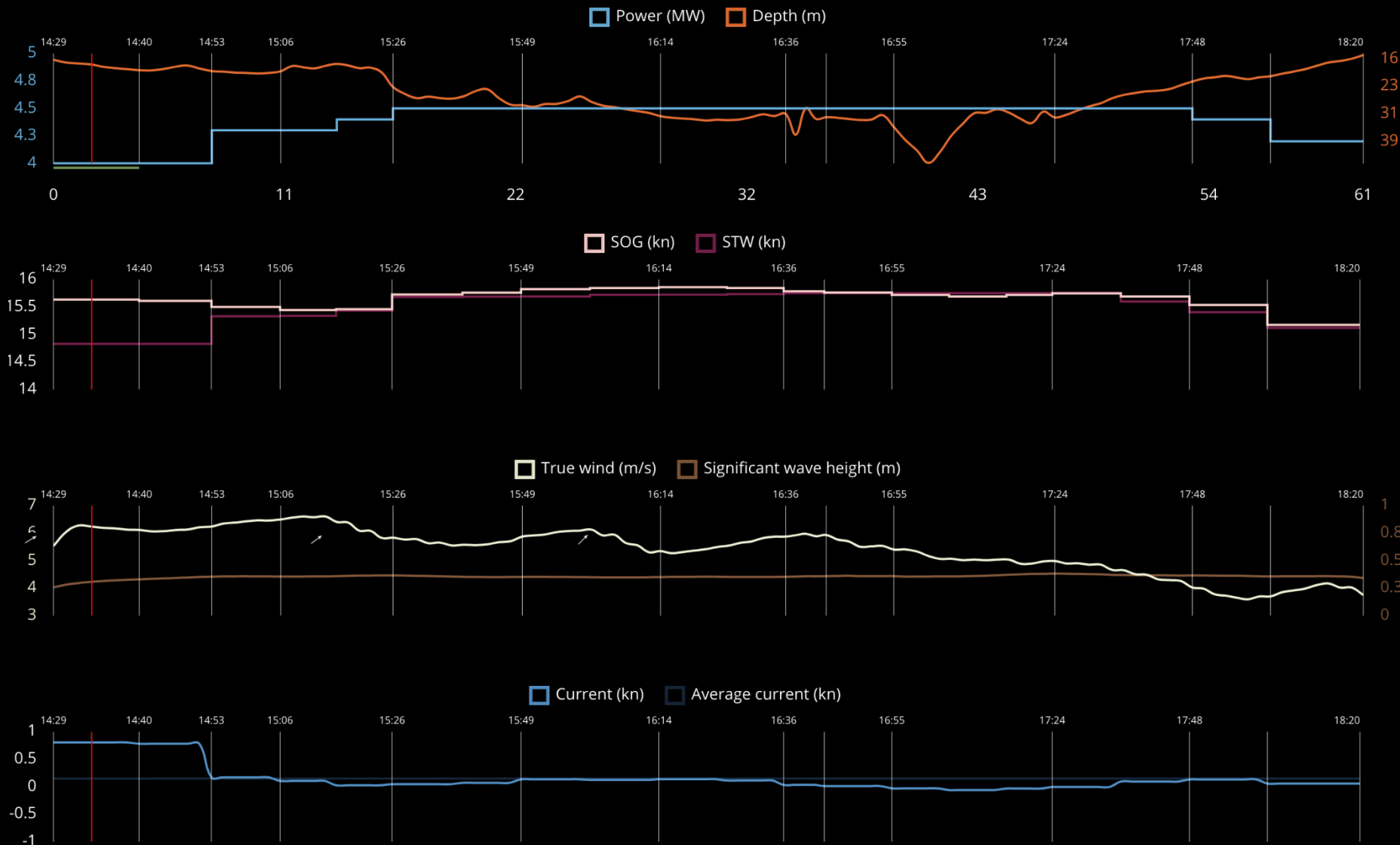
Reduce energy
consumption for
each and every route

Increase safety by
allowing officers to
focus more on traffic
and navigation

Stena Fuel Pilot

- We have developed an AI-based product that predicts the most fuel-efficient way to operate a vessel for each sailing.
- The product supports our captains and officers, and helps reduce fuel consumption and minimize environmental impact substantially.
- Former Senior Master Jan Sjöström with crew on Stena Scandinavica are spearheading the project together with our Head of AI Lars Carlsson and his team.





Mode	Number of fins	Engines
Speed Pilot	0	1 2

	Set	Actual
<input type="checkbox"/> Manual	4.0 Power (MW)	5.9 Power (MW)
<input type="checkbox"/> Manual	15.6 SOG (kn)	16.4 SOG (kn)
	0 Min delay	18:20 ETA

	Set	Actual
T	6 ↗ Wind T m/s	17 → Wind T m/s
	10 UKC m	12 UKC m
	0.0 Adjustment (MW)	75 Trim cm

Stena Fuel Pilot

- Will be launched fleet wide
- Evaluation on Stena Scandinavica shows a fuel reduction of 2-3% per trip
- Upcoming ships to be evaluated

Our ways of working

- Close collaboration between end-users and team
- Masters and crew part of the development process
- Team works on board every now and then, demos, Jan part of team, etc



Take care!

emma.aronsson@stenaline.com
jan.sjostrom@stenaline.com

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MERIAURA



VG-SHIPPING

Biofuel – towards carbon free shipping

Fairway Forward 13.10.2020

Thomas Friis, Project Manager VG-Shipping



Meriaura Group

“Our vision is to be in the frontline of developing sustainable shipping.”

Family owned logistics service provider: group of companies focusing on shipping and shipping related services.

Meriaura Oy, shipping company specialized in industrial and agri bulk and project cargoes.

VG-Shipping Oy, ship owner providing Technical and Crew Management

VG EcoFuel Oy, manufactures biofuel and other bioproducts from industrial waste

Biolinja Oy, produces biogas and fertilizers from separately collected biowaste

Sybimar Oy / Little Fish Farm, “dry land” closed circuit fish farm

VG-Trans Oy, land transport company

VG-Port Oy, developing port area in Naantali

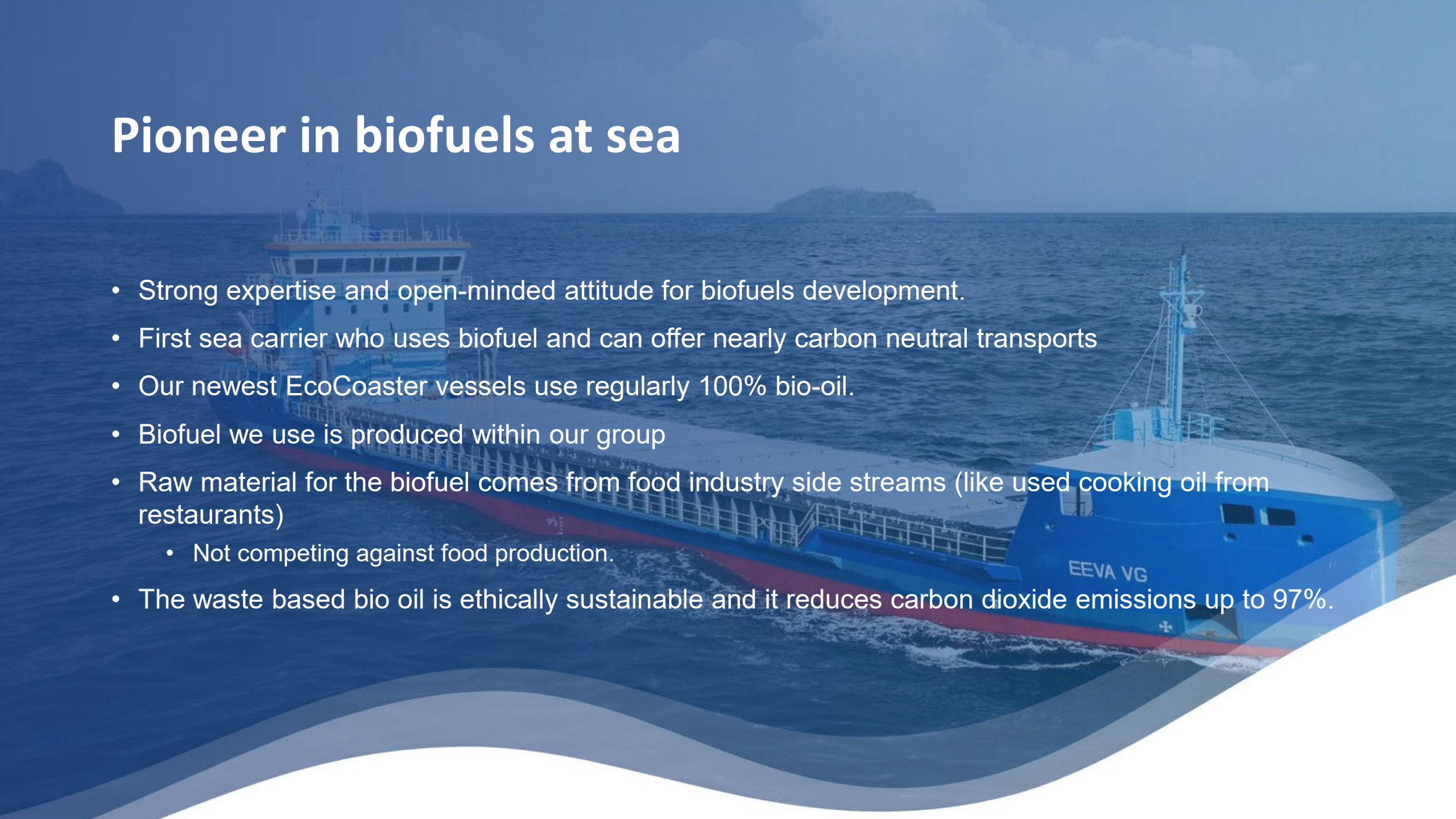
Short history and milestones

- 1986: Jussi Mälkiä and his friends started Meriaura Ltd. first for supporting environmental NGOs, like Greenpeace.
- 1993: Owning and managing was costly which led to commencing commercial activities. The business was small and irregular at first, and the fleet consisted of only one tugboat.
- 1996: First dry cargo vessel was acquired, and VG-Shipping Ltd. established. A few years after business expanded by acquisition of another vessel and chartering cooperation, and by the end of the decade, Meriaura had firmly established itself in the industry with a fleet of 4 vessels.
- 2000: company continued growing rapidly by expanding the number of contract customers, acquiring new vessels and recruiting new staff.
- 2010: Meriaura Group made large investments to renewable energy sector and circular economy.
- 2020: Today Meriaura Group employs more than 200 people with an annual turnover of more than €65 million.

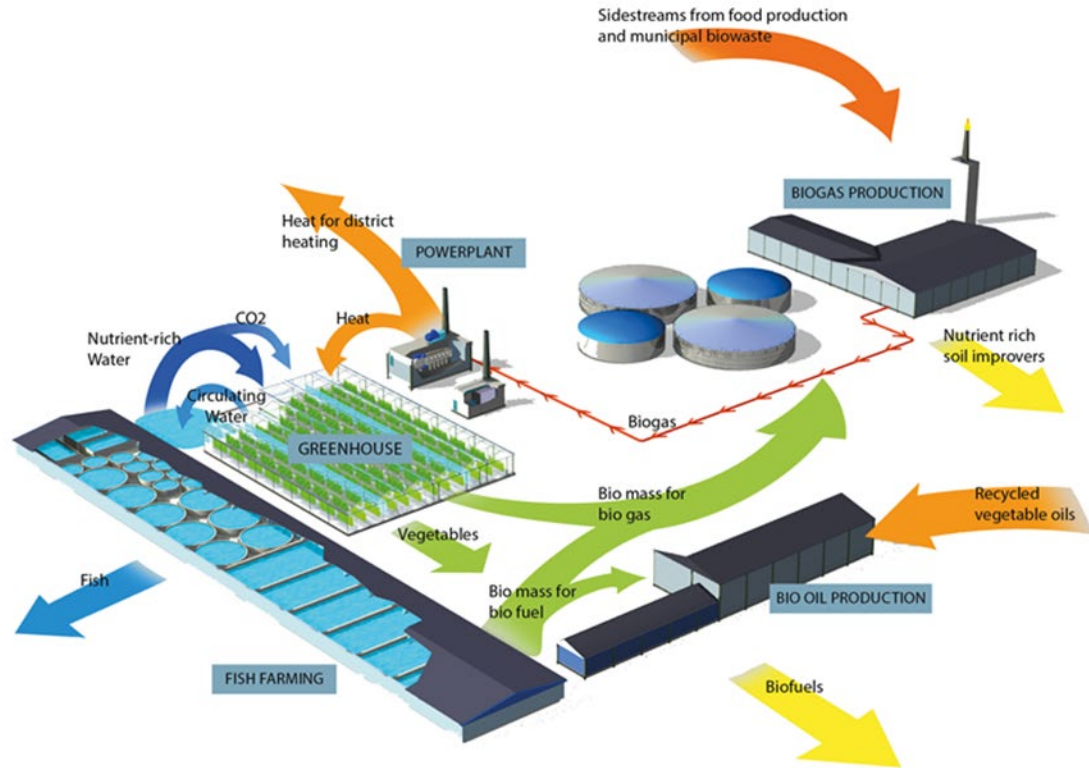


Pioneer in biofuels at sea

- Strong expertise and open-minded attitude for biofuels development.
- First sea carrier who uses biofuel and can offer nearly carbon neutral transports
- Our newest EcoCoaster vessels use regularly 100% bio-oil.
- Biofuel we use is produced within our group
- Raw material for the biofuel comes from food industry side streams (like used cooking oil from restaurants)
 - Not competing against food production.
- The waste based bio oil is ethically sustainable and it reduces carbon dioxide emissions up to 97%.



Biofuel and -gas production in Uusikaupunki



Meriaura Group has made major investments in circular economy solutions

The closed-loop concept developed by Sybimar is an innovation that combines food and energy production into a whole where waste, nutrients, water, heat and carbon dioxide cycle back into production.

The ecosystem includes a fish farm, a biogas plant, a bio-oil production plant in Uusikaupunki

The entire production chain is as carbon neutral as possible

Nutrient discharges from land-raised fish put a much less strain on the sensitive Baltic Sea.

The whole is unique in Finland, even in the whole world.

Biofuel production

- Produces environmentally sustainable and climate-friendly **recycled and waste-based** bio oils
 - Fish oils
 - Recycled vegetable oils
 - Side products from the forest industry
 - Other recycled oils
- Process energy from biogas -> sidestreams from production to the biogas plant
- VG Marine EcoFuel is used on VG-Shipping vessels



MANAGEMENT SYSTEM CERTIFICATE

Certificate No:
214379-2017-CCS-FIN-FINAS

Initial certification date:
22 February 2017

Valid:
15 October 2018 - 22 February 2022

This is to certify that the management system of

VG EcoFuel Oy

Kaatopaikantie, 23500 Uusikaupunki, Finland

RES - Renewable Energy Systems

This certificate is valid for the following scope:
**Production and sales of renewable fuels using
mass balance model with own greenhouse gas
calculation**



Biofuel production

- Solution and answer to cutting emissions (CO₂ & SO_x)
- Production audited by DNV GL -> sustainability system certificate
- Biofuels produced from waste or side products can achieve very high GHG emission reductions and be sustainable if:
 - efficient logistics
 - low energy consumption during processing
 - no competition with food production
- Challenges:
 - Limited amount of suitable raw materials available
 - Raw materials may come in small quantities, efficient logistics is challenging

Developing more environment friendly ships and ship concepts

- Open deck heavy cargo carrier
 - M/V 'Meri' in 2012 -> first ship in the world designed for using bio fuel
- VG EcoCoaster™ dry cargo carriers 'Eeva VG' and 'Mirva VG' in 2016
 - extremely energy efficient -> consumption almost halved
 - capable of using alternative fuels
 - Vessels use regularly waste based bio fuel (up to 97% lower life cycle emissions)
 - more climate friendly shipping solutions hasn't been invented and launched to the shipping market since our EcoCoasters



VG EcoCoaster™

- The most environmentally friendly coaster



- Possibility to use 100% bio oil
- Nox, Sox and GHG emissions extremely low
- Catalysator
- Hull optimized for slow steaming
- Engines optimized for slow steaming
- Hybrid solution for ice conditions
- 40-50% lower fuel consumption
- Heat recovery
- Ballast water management
- 2 Eco-Coasters in Meriaura fleet since 2016

VG EcoCoaster™ combined with Biofuel



Meriaura EcoVoy Contract – carbon neutral sea transport



Meriaura introduced an almost carbon neutral transport contract. Meriaura EcoVoy-concept is based on our low-consumption, biofuel-powered EcoCoaster vessels. When using waste-based biofuel, transports' lifecycle emissions are 92 – 96% lower than with fossil fuels.

For these contracts Meriaura engages to source, produce and use EcoFuel at least the amount that equals to the total consumption of the voyages executed under the contract.

In the end this help our customers to create added value for their business.

Meriaura Group will soon present:

Carbon neutral shipping concept - New era for dry bulk cargo shipping



Shipping concept – key points

- 100% renewable energy powered -> combining biofuel with other hybrid technology
- Platform thinking
- Optimal structure for containers, megaunits, bulk or general cargo
- Digital control system for cargo flows
- Highest possible automated cargo handling system
- Digitized schedule optimization
- Cargo units to serve as safe and high-quality warehousing units
- High-end energy efficiency in ship design



Thank you

- Fairway Forward 13.10.2020
- Thomas Friis, Project Manager VG-Shipping

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Best practice cases – follow-up

- **Wallenius: Towards truly sustainable shipping** (SWE) – Speaker: Per Tunell, Chief Operating Officer, Wallenius Marine
- **Rauma Marine Constructions and Wasaline: Building innovations in ferry technology** (FI) Speaker: Håkan Enlund, Executive Vice President, Sales and Marketing RMC 3
- **Forsea: Battery-powered ferries** (SWE) – Speaker: Jens Ole Hansen, Chief Operating Officer, Forsea
- **Port of Helsinki: Creating a carbon neutral harbour** (FI) Speaker: Andreas Slotte, Head of Sustainable Development, Port of Helsinki
- **Gävle port: Modern Port technology** (SWE) Speaker: Linda Astner, Manager Port Authority





FAIRWAY FORWARD FOLLOW-UP

Andreas Slotte

Head of Sustainable Development

|| PORT OF
HELSINKI ||

GOALS AND MOTIVATIONS

- Port of Helsinki 100% **carbon neutral** by 2035
- Affect CO2 emissions in **whole harbor area**
- Minimum **30% reduction of total CO2** emitted in harbor by 2035
- Program leaves room for **future advancements of technology** to be implemented along the way







2021



2023



2021





THANK YOU!

Best practice cases – follow-up

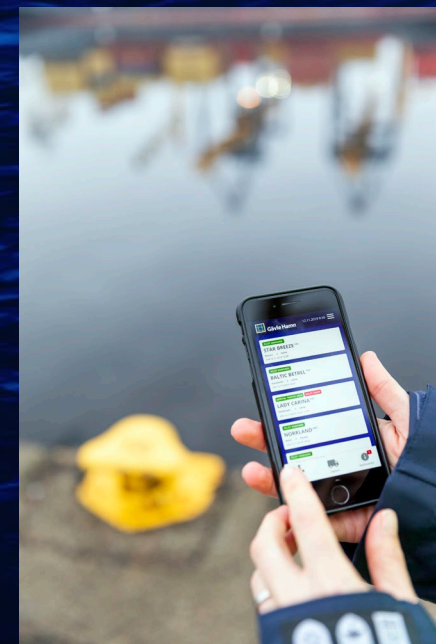
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Port Activity App shares estimated and actual times between port actors:

- MSW
- AIS Live+ AI
- Ship info (STM or web form)
- Port Info System
- Pilot System
- Terminal Systems
- Manual Input
- Push Notices



Port Single Showroom

Linda Astner, Sustainable Business Manager, Port of Gävle



THANKS!



Gävle Hamn



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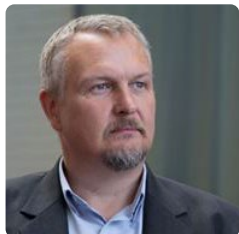
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Think tank – sustainable recovery



- Eero Lehtovaara, ABB Marine & Port



- Johanna Boijer-Svahnström, Viking Rederi AB



- MEP Jakop Dalunde (Group of the Greens/European Free Alliance)



Climeon waste heat recovery

Dynamic ventilation and lightning



Azipod

NG/LNG

Wärtsilä 31 DF V10 engines

LNG Waste cold recovery

85%
nitrogen
emissions
15% less CO₂
emissions

The recovery of
waste cold saves
55 tons of fuel per
year

The
recovery
of waste heat
saves **4000
tons of CO₂/
year**

Saves
aprox.
10-15%
compared to
traditional HVAC
system

Particulate
and sulphur
dioxide emissions
zero

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