



# FUTURE FOCUS IN SHIPPING

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# ESL SHIPPING TODAY

The leading carrier of dry bulk cargoes in the Baltic Sea region

1949  
—  
Founded

49  
—  
Vessels

16.5 MT  
—  
Cargo volume in 2017

464,000 DWT  
—  
Vessel capacity in 2018

160 M€\*  
—  
ESL-AtoB@C pro forma combined  
net sales in 2017

11 %  
—  
ESL-AtoB@C pro forma EBIT-%  
in 2017

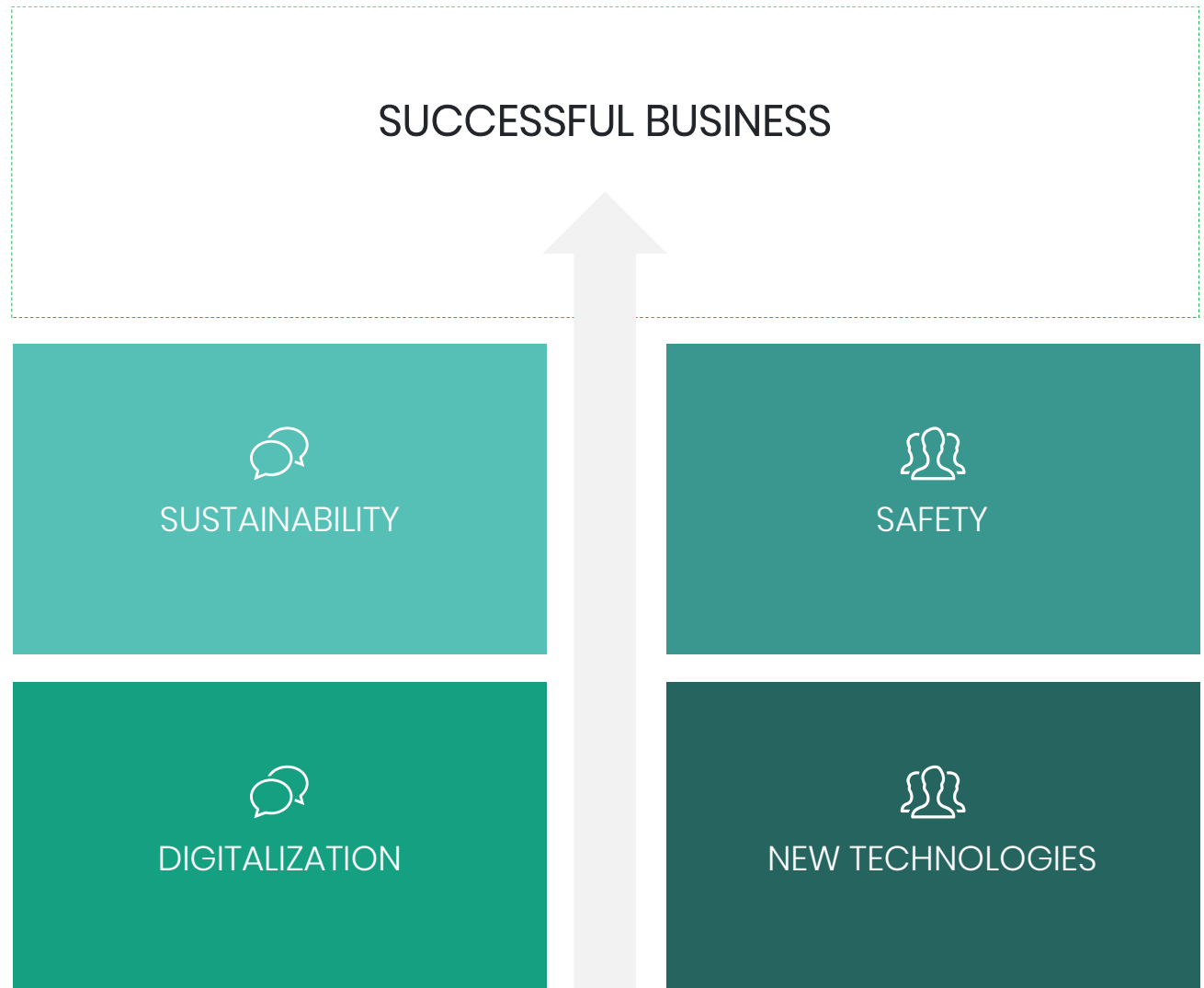
\*Figures are not IFRS-compliant

# ONLY ONE FINNISH COMPANY REGULARLY OPERATING IN THE ARCTIC



# THEMES

Vitally important to understand how shipping will be changed by:



# FOCUS ON SUSTAINABILITY AND SAFETY

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Reduced air emissions at sea  
and in ports

Minimized cargo residues

Compiling with ballast water  
regulations and guidelines

Minimized shipboard waste

Social responsibility for  
multinational crews

Working in shipping is safe:  
Low lost-time injury frequency  
rate\* (LTIF) in 2017

- Finnish industry average 2,95
- ESL Shipping 0,87

# INVESTING IN SUPERIOR COMPETITIVENESS

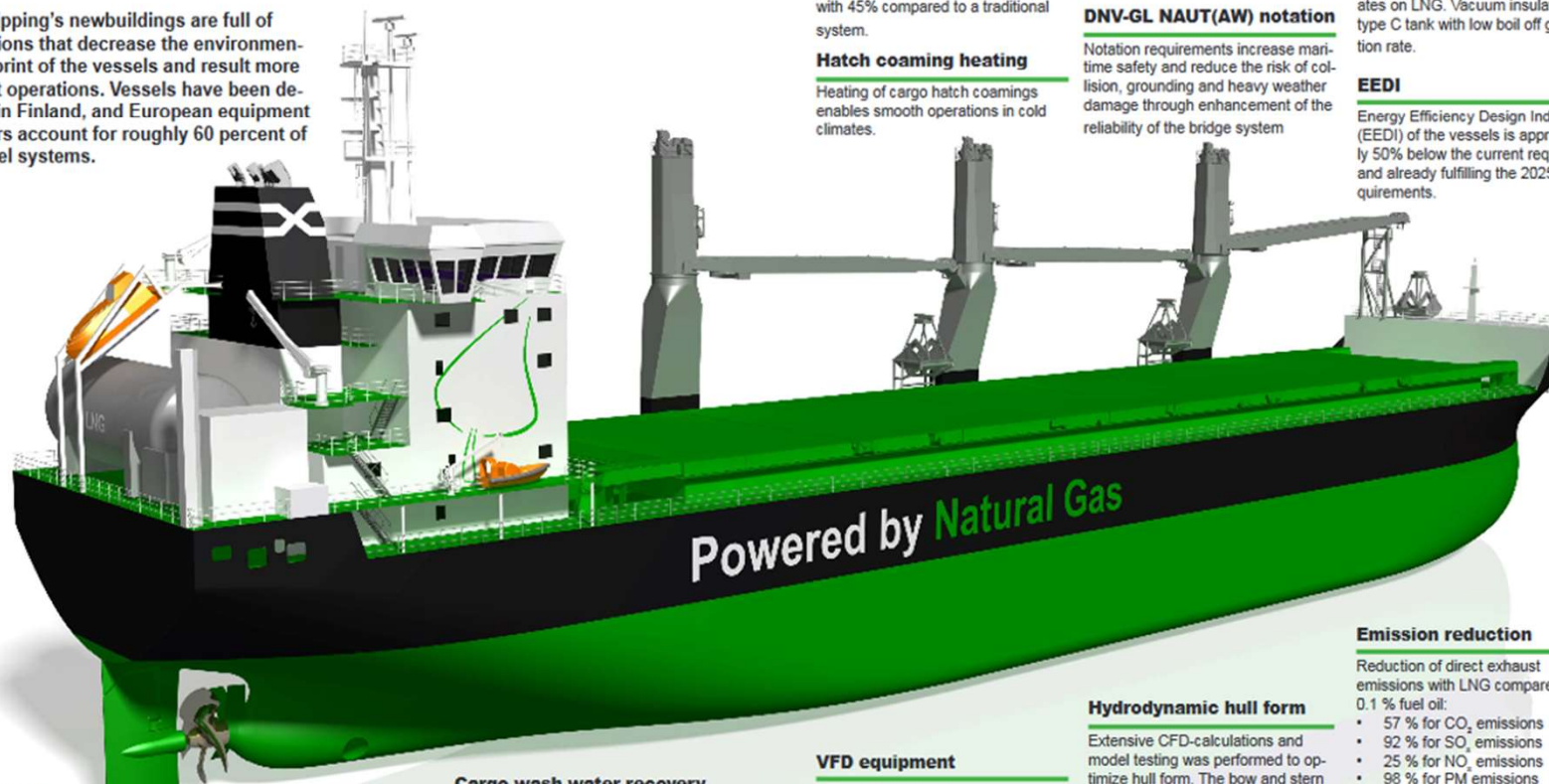
Environmentally friendly LNG-fuelled vessels

The LNG vessels will improve profitability by lower operating costs	2 x 25,600 DWT vessel carrying capacity, M/S Viikki & Haaga	Designed with Finnish Deltamarin 60% of vessel systems by European suppliers Built in China
60 M€ Value of investment	Long-term agreement for raw material sea transport with SSAB	50 % More than 50% lower CO2 emissions



# INNOVATIVE NEWBUILDINGS

ESL Shipping's newbuildings are full of innovations that decrease the environmental footprint of the vessels and result more efficient operations. Vessels have been designed in Finland, and European equipment suppliers account for roughly 60 percent of all vessel systems.



## High efficiency propeller and rudder

Optimal hydrodynamic design with rudder bulb to optimize the water flow.

## Exhaust gas heat recovery

Efficient exhaust gas heat recovery

## Electrical motors

In general, electrical motors of 7.5 kW and above has an energy efficiency class of IE3.

## Shore power

Vessel can perform operations

## Cargo wash water recovery system

Vessel is able to re-use the washing water and discharge used washing water to port facilities.

## Ballast water treatment systems

Capacity 2 x 1000 m<sup>3</sup>, UV-type,

## Thermal insulation & Heat recovery

Vessels have improved thermal insulation and are equipped with energy saving solution for air handling unit. Heat recovery wheel reduces cooling energy consumption with 30% and heating energy consumption with 45% compared to a traditional system.

## Hatch coaming heating

Heating of cargo hatch coamings enables smooth operations in cold climates.

## DNV GL Clean Design notation

The notation requires special features such as 5 ppm bilge water separator, biofouling management, ODP = 0 (Ozone depletion potential), GWP max 1300 (Global warming potential)

## DNV-GL NAUT(AW) notation

Notation requirements increase maritime safety and reduce the risk of collision, grounding and heavy weather damage through enhancement of the reliability of the bridge system

## Energy management system

The system enables crew to optimize energy consumption.

## All LNG-powered

All engines and boiler burner operates on LNG. Vacuum insulated IMO type C tank with low boil off generation rate.

## EEDI

Energy Efficiency Design Index (EEDI) of the vessels is approximately 50% below the current requirement and already fulfilling the 2025 requirements.

## Hydrodynamic hull form

Extensive CFD-calculations and model testing was performed to optimize hull form. The bow and stern thruster tunnel openings are provided with scallops and streamline grids. Special attention for monitoring of hull surface roughness was done during the building stage.

## VFD equipment

Engine room fans, BW, SW and LNG-pumps are equipped with variable frequency drive (VFD) to reduce the power consumption.

## Hull coating

Hull is painted with low friction ice-resistant paint. No harmful antifouling paint is used. Frequent hull cleaning

## Emission reduction

Reduction of direct exhaust emissions with LNG compared to 0.1 % fuel oil:

- 57 % for CO<sub>2</sub> emissions
- 92 % for SO<sub>x</sub> emissions
- 25 % for NO<sub>x</sub> emissions
- 98 % for PM emissions

## Permanent magnet PTI/PTO shaft generator with VFD drive

Shaft generator enables flexible and efficient operation of propulsion and power generation at sea as well as extra power for ice conditions through power take in/power take out shaft



ESL Shipping

The  ASPO Company

# BOTHNIA BULK

An industrial partnership for more sustainable Baltic sea transports

A partnership between industrial customers, ports and shipping companies to increase the sustainability of the whole supply chain

The goal is to make the Baltic sea routes more eco-friendly

- Partly funded by the EU
- ESL shipping's share approximately 5 M€



Co-financed by the European Union  
Connecting Europe Facility





# FOCUS ON DIGITALIZATION AND NEW TECHNOLOGIES

Autonomous ships – possible only  
in the long term

Digitalization of daily business

New technologies

High capital requirement,  
technology risk, slow international  
regulation development

Incremental development instead  
of giant leaps

Great challenge for education  
system



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# THANK YOU