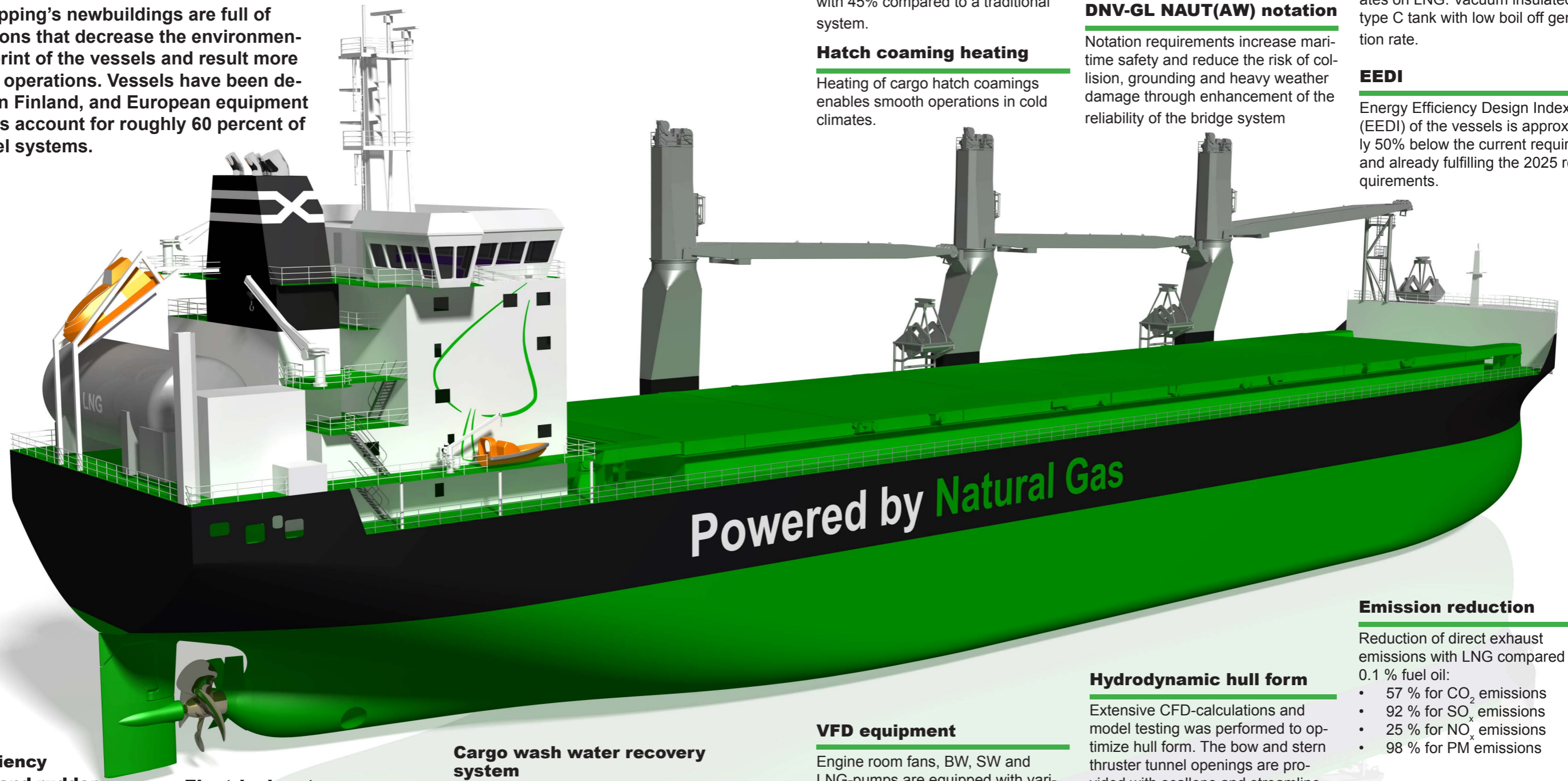


INNOVATIVE NEWBUILDINGS

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 for all combustion engines.

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 in port on shore-electricity, reducing emissions in port up to 100%.

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 m³, UV-type, United States Coast Guard approved ballast treatment units.

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.

Stator fins

The vessel is equipped with four stator fins in order to optimize the flow to the propeller and to increase propeller efficiency.

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 will be performed to reduce the drag of the hull.

Emission reduction

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

- 57 % for CO₂ emissions
- 92 % for SO_x emissions
- 25 % for NO_x 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 generator.