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DSD Shipping



JAPAN – NORWAY WORKSHOP LNG FUELED SHIP AS AN ENVIRONMENTALLY FRIENDLY TOOL: NORWEGIAN EXPERIENCE AND FUTURE PERSPECTIVE

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CORPORATE STRUCTURE

Environmental focus





KVITBJØRN & KVITNOS

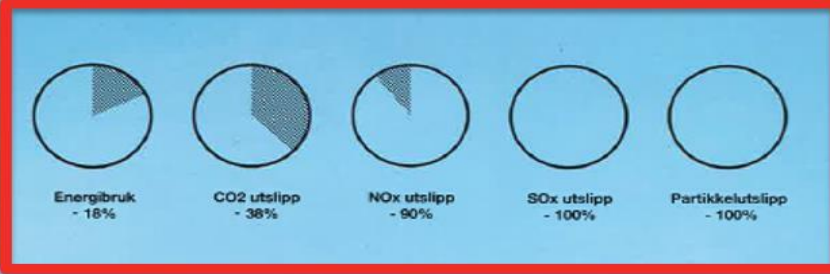
THE WORLDS MOST ENVIRONMENTAL FRIENDLY CARGO SHIPS



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THE WORLDS MOST ENVIRONMENTAL FRIENDLY CARGO SHIPS


VERDENS MEST MILJØVENNLIGE GODSSKIP



Category	Reduction
Energibruk	- 18%
CO2 utslipp	- 38%
NOx utslipp	- 90%
SOx utslipp	- 100%
Partikkelutslipp	- 100%

Skipstypen har vunnet flere prestisjefulle priser både for sitt nyskapende design, men også for sitt bidrag til klimavennlig logistikk. Blant disse kan nevnes Thor Heyerdahl-prisen i 2014, Next Generation Ship Award i 2011, Miljøprisen – Transport & Logistikk i 2013 og Green Ship Technology i 2013.

Også driften er mer miljøvennlig. I forhold til skipene som erstattes benytter de nye LNG-skipene 18% mindre energi. CO2-utslippene reduseres med 38%, NOx-utslippene med 90%, mens SOx- og partikkelutslipp reduseres komplett med 100%.



VELKOMMEN OM BORD

A PART OF THE SOLUTION

World record



ENVIRONMENTAL EFFECT

LNG-Hybrid-»0» pollution

- ✓ LNG powered = 65% reduction in carbon footprint vs truck
- ✓ Hybrid (LNG/EL) = ca 75-80% reduction in carbon footprint vs truck
- ✓ «O» emission is the future



PERFORMANCE

Operation

- Energy efficiency
- Effectivity in harbor
- Maneuverability
- Noise level (internal and external)
- Operational range
- Maintenance



CHALLENGE

LNG heating system and supply

- LNG holds -150 degrees Celsius
- Movements – Washing – pressure drop – Engine black out
- Pre heating system
- LNG availability in the world
- Price on LNG vs MGO



100% ELECTRIC POWERED

Lavik-Oppedal



Electric Powered Ferry

100% electric by battery

- Capacity 120 cars
- Low energy consumption
- Low emission
- Innovation (apply existing technology in new ways)





FUTURE – CARGO FERRY

Plug in hybrid



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BACKGROUND AND GOAL

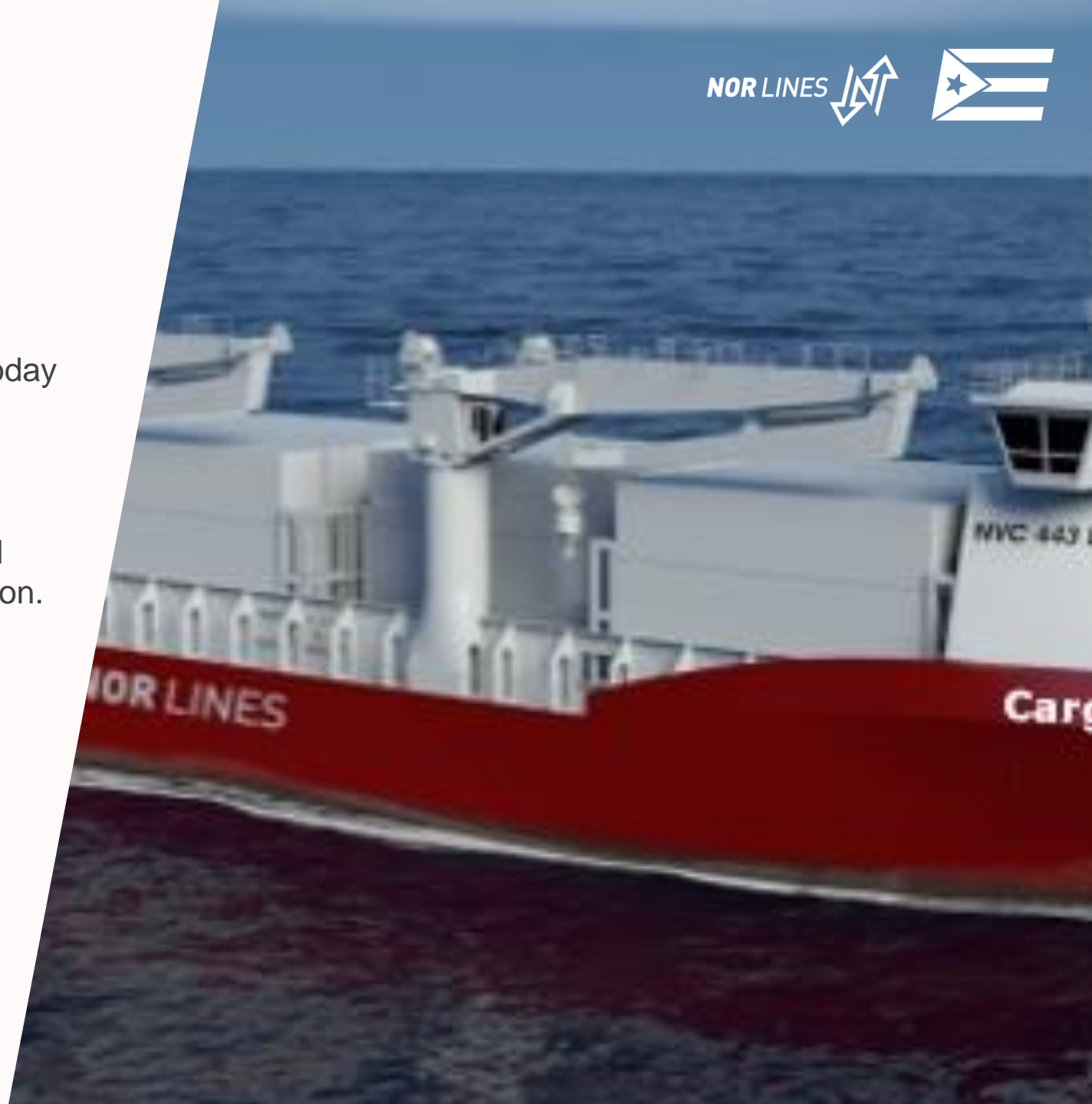
Cargo ferry – plug in hybrid

Background:

Transfer 5-7 mill tons (30%) of goods traveling on road today to sea.

Goal:

- Develop a sustainable and competitive plug in hybrid ship concept that give lowest possible carbon emission.
- LNG at sea
- Electric into harbor, in harbor and out of harbor.
- Automatic cranes and mooring systems
- Innovation (apply mostly existing technology in new ways)



TO BE A FRONT RUNNER IS HIGH RISK

Needs to be reduced!

- Environmental technology as LNG = increased cost.
- Battery technology not developed enough for long distances.
- Use of battery technology do not give pay back in todays marked.
- Extreme low profit margin in short sea operation in Norway (pay back on investment?).





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Det Stavangerske Dampskibsselskab AS

THANK YOU