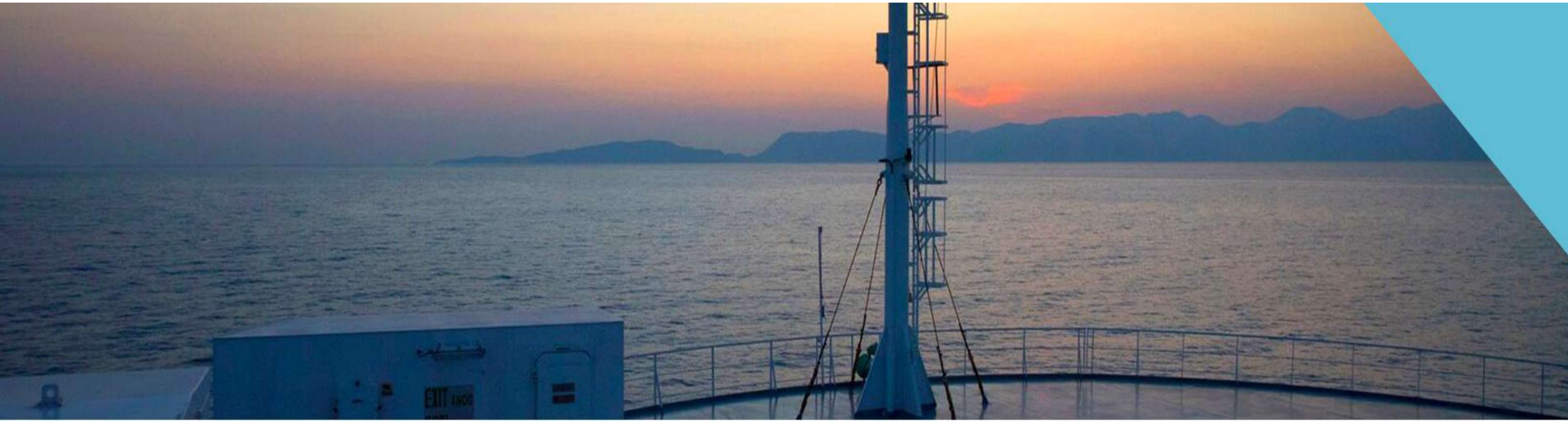
Cold ironing - Hot Topic for over a decade

Company overview

- Largest finished vehicle and static cargo logistics operator in the Mediterranean and the Black Sea region
- Port and logistics operations in three continents
- Integrated liner network
- Youngest fleet of Pure Car and Truck Carriers (PCTCs)
- Over 40 years of history
- Short-sea shipping vehicle transportation service in the Middle East area in 2016
- Expansion to Northern Europe in 2017

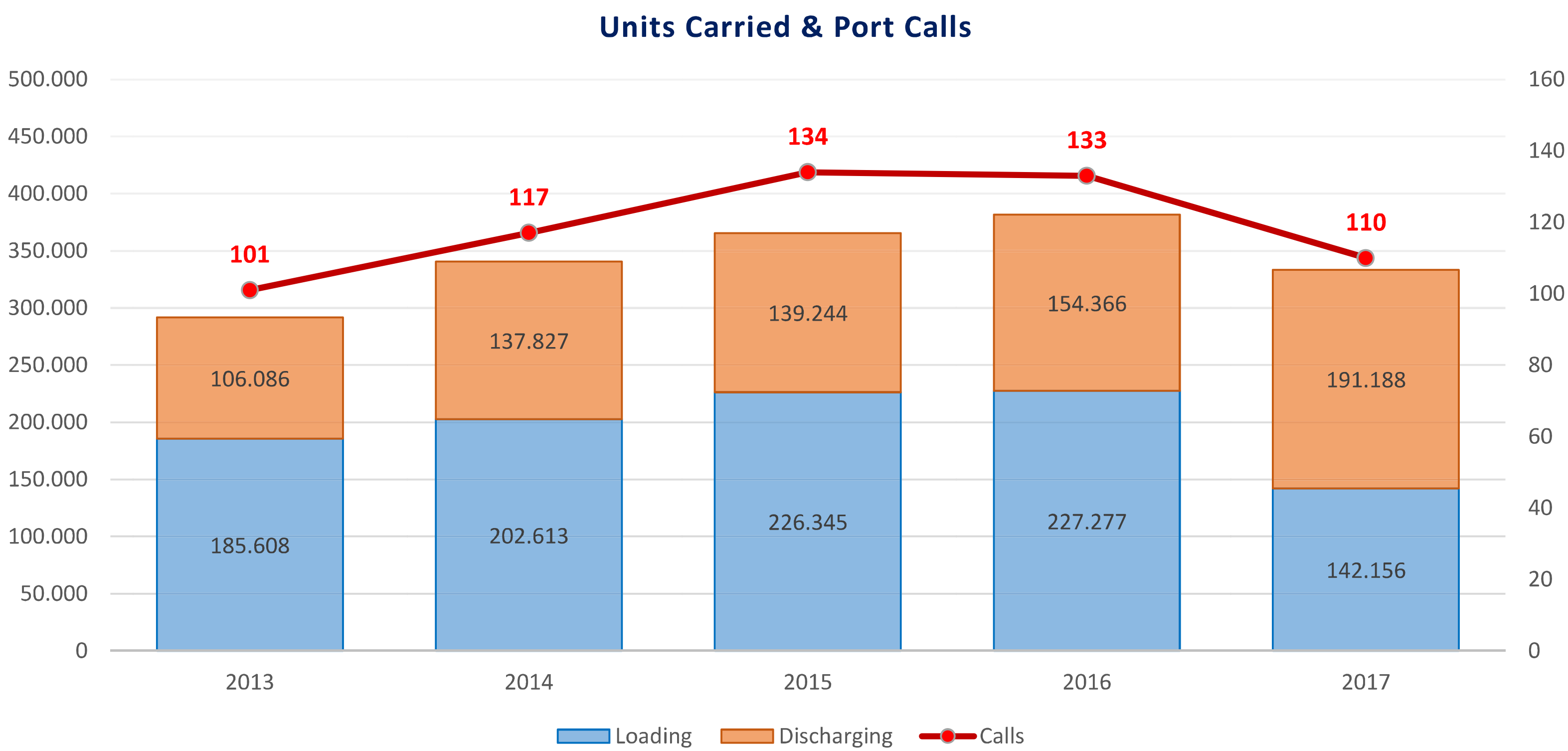


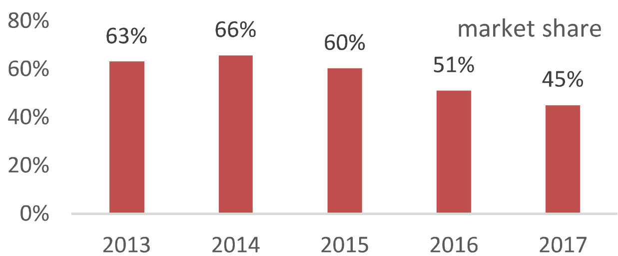
Neptune Lines at a glance

- **Family-owned business, established in 1975**
- **18 Vessels with capacity ranging between 530-5,380 RT**
- **Present in over 30 countries, calling 70 ports across three continents**
- **11 regular service lines, with most recent expansion to Northern Europe**
- **Near 0% damage ratio**
- **More than 1 million units a year**
  Passenger and commercial cars
  High and heavy units
  Static cargo
- **400+ Staff employed (shore and sea)**

Our trade routes

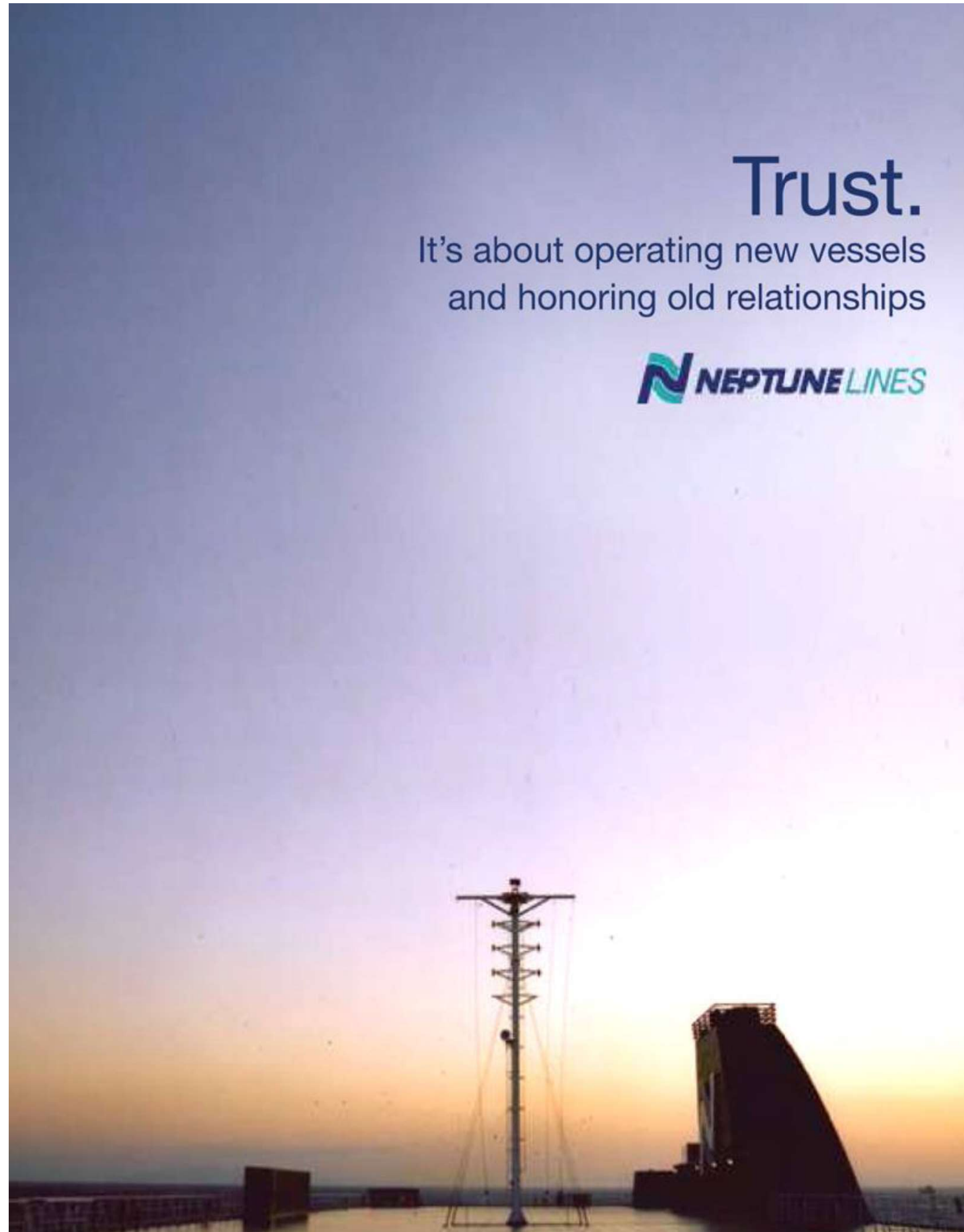
Operating in the port of Koper for over 20 years





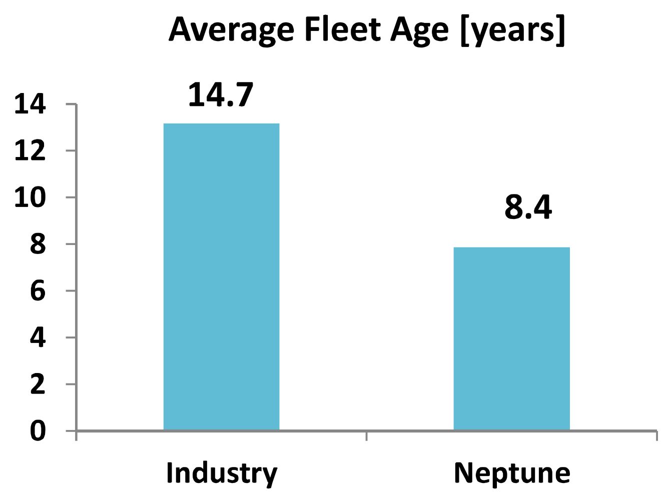
Flexible asset base

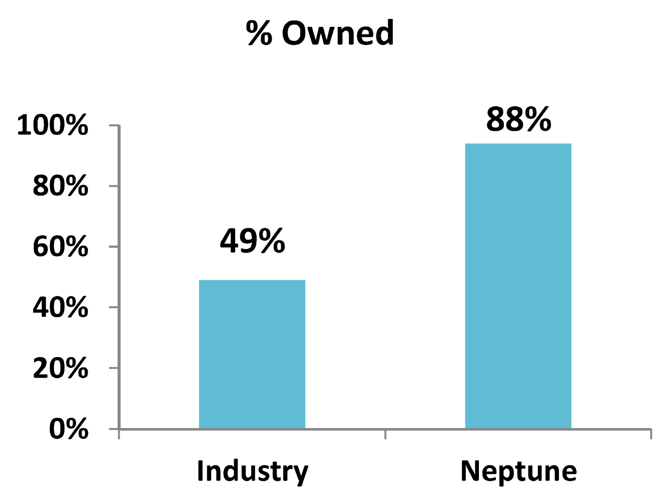
- **46,000 car carrying capacity (fleet)**
- **16,000 lane meters**
- **Highly versatile vessels:**
  - Hoistable decks
  - Ramp strength
  - Stern and quarter ramps
- **Balanced fleet mix ranging from 530 to 5,380 RT**
- **3 types of sister vessels**
- **Eco-friendly modifications – SECA zone compatible**



Modern fleet tailored to our clients needs

- **Differentiated model with emphasis on owned tonnage**
- **Approximately €0.5 billion invested in high- specification modern vessels**
  - Built at high quality yards in Europe, South Korea and Japan with Advanced Ship Design
- **Tailored for the ports our clients use**
- **Smart Ship Connectivity**
- **Can assure quality and control of operations**





Source: Fearnleys, based on mid-size car carriers, up to 4,000-ceu

Fleet

VESSEL	BUILT	CAPACITY [CEU]
NEPTUNE GALENE	2014	3.800
NEPTUNE THALASSA	2014	3.800
NEPTUNE HORIZON	2010	3.800
NEPTUNE ILIAD	2010	3.800
NEPTUNE ITHAKI	2010	3.800
NEPTUNE ODYSSEY	2010	3.800
NEPTUNE KEFALONIA	2009	3.800
NEPTUNE HELLAS	2009	3.800
NEPTUNE THELISIS	2006	2.200
NEPTUNE OKEANIS	2005	2.200
NEPTUNE AEGLI	2002	1.800
NEPTUNE DYNAMIS	2002	1.800
NEPTUNE AVRA	1989	1.500
TINKERBELL MAR	1987	530
NEPTUNE PLOES	1983	930
MONZA EXPRESS	2010	3.800
NOCC KATTEGAT	2004	5.380

- 100% of fleet owned tonnage is participating in the **C**lean **S**hipping **I**ndex (CSI).
- All ships will be able to operate with LSFO as of 2020 to comply with MARPOL regulation
- NL participates in Poseidon Med II project (LNG bunker network Med) by providing a LNG fuelled test vessel

Sustainability

Our Quality System

We are leaders when it comes to regulatory compliance and implementation of best business practices.
We are being audited regularly from top auditing organizations.

Commitment to Sustainability

First ship management company in Greece to submit a ‘Sustainability Report’ as per GRI G4 Sustainability Reporting Guidelines.

Gold recognition from EcoVadis (Renault Assessor) for our progress on Sustainability

Regulatory Framework Structure

Code of Conduct

(UNGC) United Nations Global Compact Signatory

(MACN) Maritime Anti-Corruption Network

(CSI) Clean Shipping Index

(GRI G4) Global Reporting Initiative

(ISO 9001) Quality of Services

(ISO 14001) Environmental Management

(OHSAS 18001) Health & Safety

Shipping and the environment

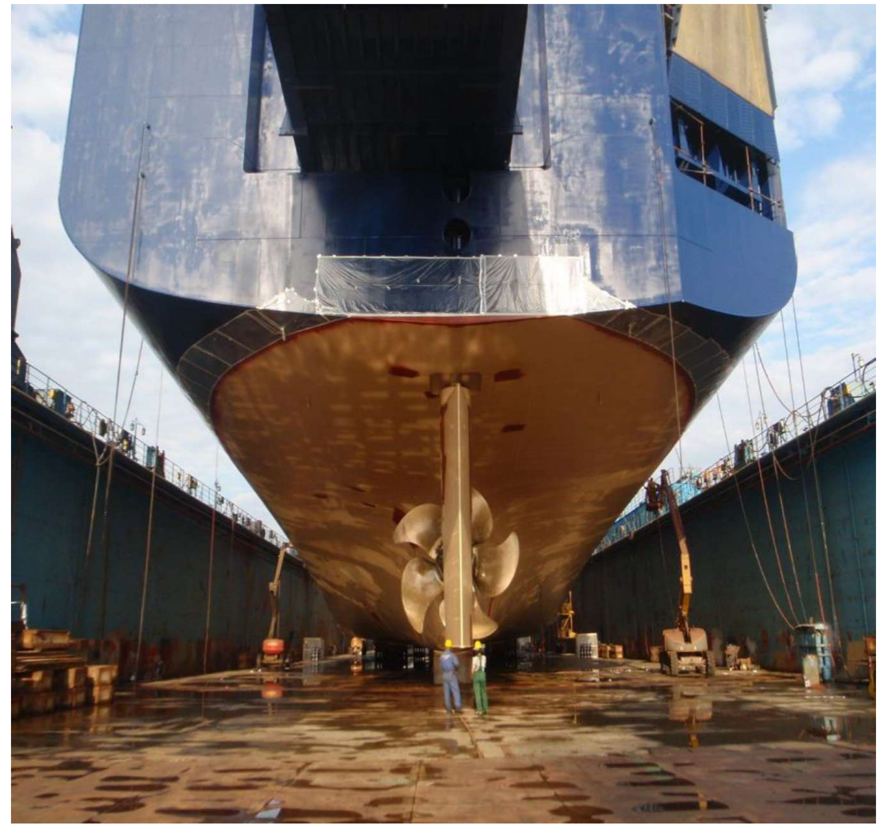
- **Axiom**

"Shipping is the most environmental friendly form of transportation (in both emissions and energy used per ton of cargo carried)"

However the industry should operate responsibly and continue its efforts to mitigate the negative impacts on the environment

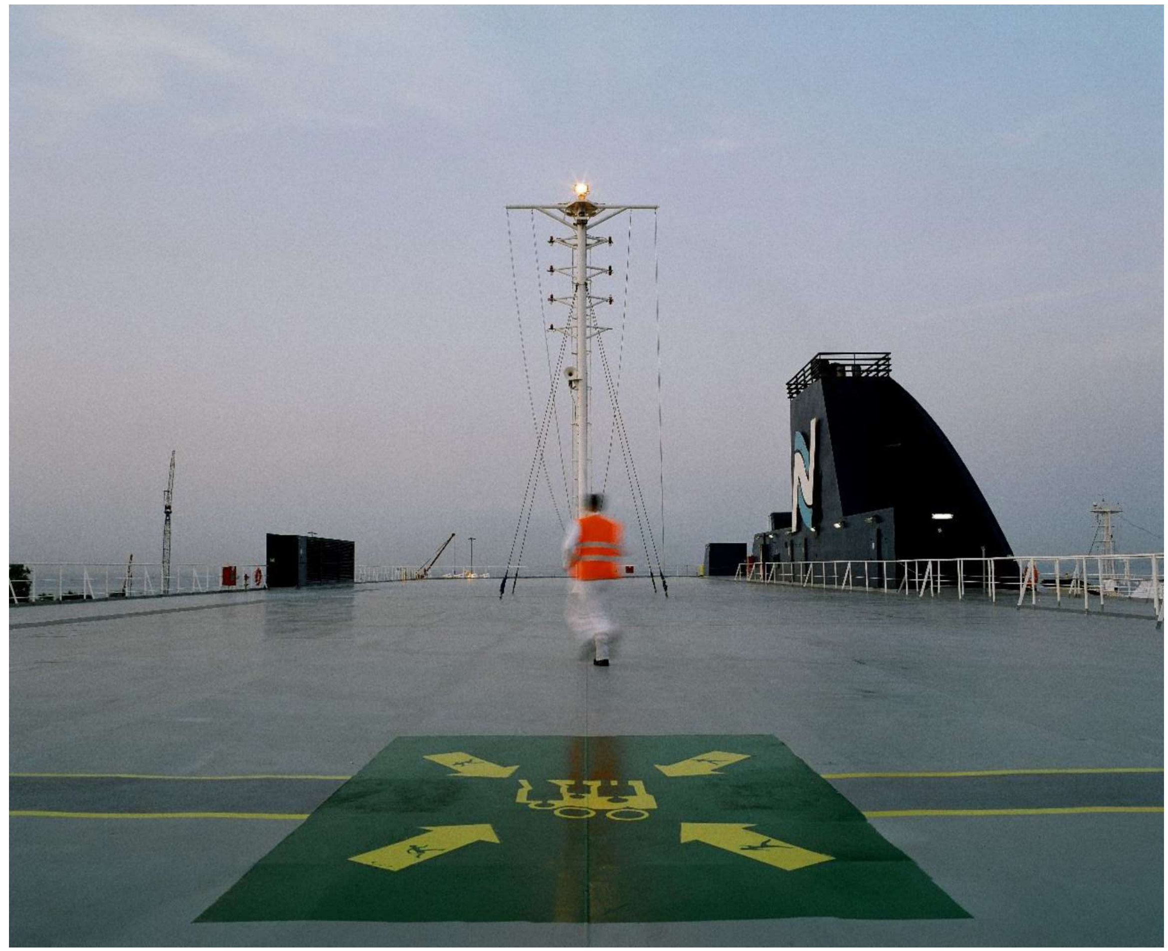
Environmental policy / measures on Neptune’s fleet

- Hull coating: foul release coatings (silicon based) – 8 ships
- Trim Optimization and ballast control – 12 ships
- Reblading to improve fuel consumption – 2 ships
- Variable speed drives on sea water pumps and E/R fans – 8 ships
- MAN Eco nozzles installed – 8 ships
- Energy saving devices on propeller and rudder – 5 ships
- LED lights installation to replace fluorescents onboard – 12 ships



Cold Ironing / Alternative Marine Power

- Transfer power production from “dirty” shipboard sources to much cleaner land based shore (environmentally friendly) power stations aiming in
    - Reducing Carbon emissions and other pollutants (NO_x, SO_x and particulate matter) and
    - Reduce noise in port areas
- Q: who pays



Challenges for the shipowner

- Mandatory environmental emission reductions measures rebase higher vessel operating costs (BWS, ECA zones, 2020 Sulphur cap etc) which challenges shipowners focus on cost minimisation

<u>Cold ironing</u>

- Standardization / Compatibility (voltage level, frequency, plugs etc)
- Installation cost (Large investment is needed. For 800 kw shore connection, cost for onboard installation is estimated @ 0.4-0.5M euro per vessel. Cost is needed to cover step down transformer, switchboards, control panel, cabling and reel system)

Challenges for the shipowner

- **Connection – disconnection time (needs to be limited to 30min to minimize idle time for the ship)**
- **Cold ironing solutions are more cost effective for cruise ships, containerships and passenger ships with higher energy needs in port (2000-4000 kW’s) than car carriers with smaller power needs (800 kW)**

Opportunities / Solutions for shipowner side

- **Cost of connection and shore power supply should be competitive and below the cost of using ship's auxiliary engines (Fuel and spares and service) – Savings on fuel consumption**

Koper: 110 calls in 2017 with an average berth time of 45 hours per call
Total annual MGO fuel consumption: 823 tons
2017 cost of MGO fuel for the fleet: USD 473,000

- **Discount on port dues should be offered to ships using shore power to offset the investment cost**

- **More port calls where shore power can be utilized improves return on investment**

NEPTUNE LINES

Thank you for your attention