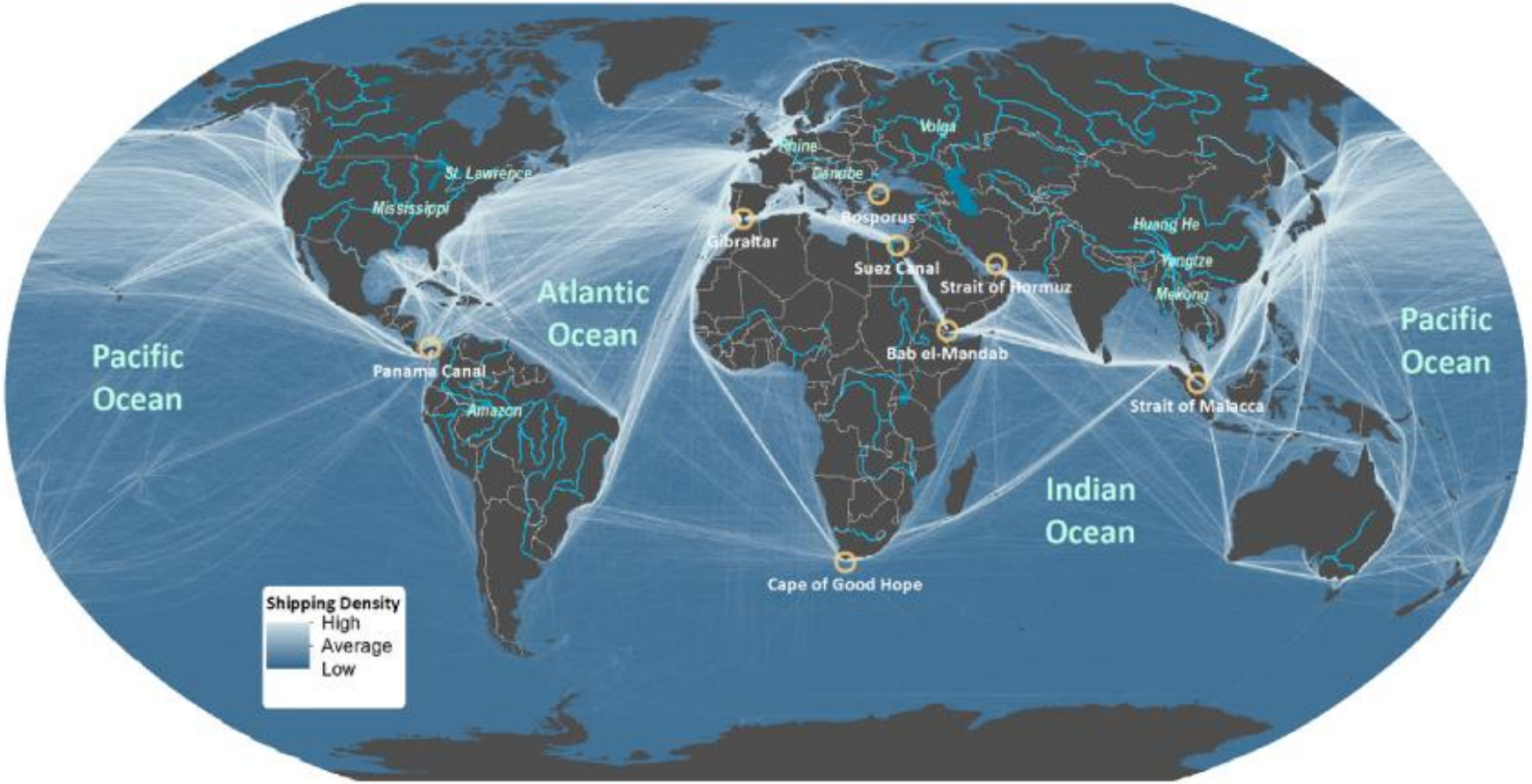
Magnuss

James Rhodes

Co-Founder & CEO

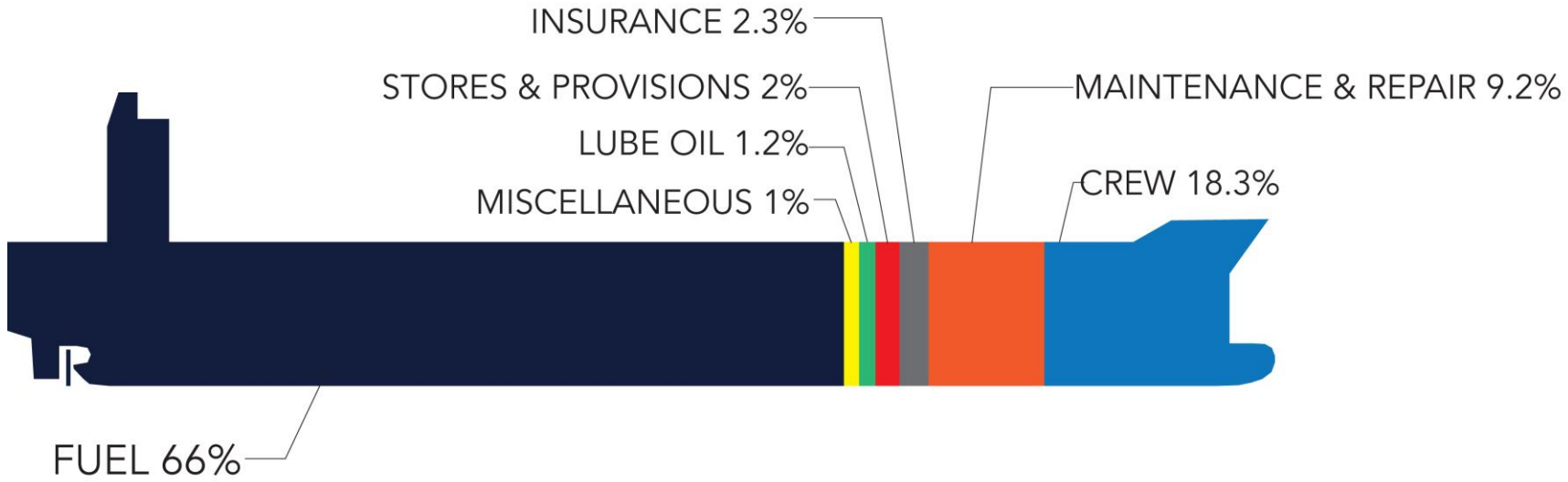
GLOBAL IMPACT

Shipping transports 90% of all goods



PROBLEM # 1

Economic - Shipping requires a lot of high cost fuel



PROBLEM #2

Environmental – Shipping emits 1B tons of CO_2 / yr

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WIND POWER FOR THE WORLD'S SHIPPING FLEET

SOLUTION

Supplement engine power with wind

- Fuel Savings of up to 50%
- Real means to reduce carbon emissions
- Proven tech applied in a unique way

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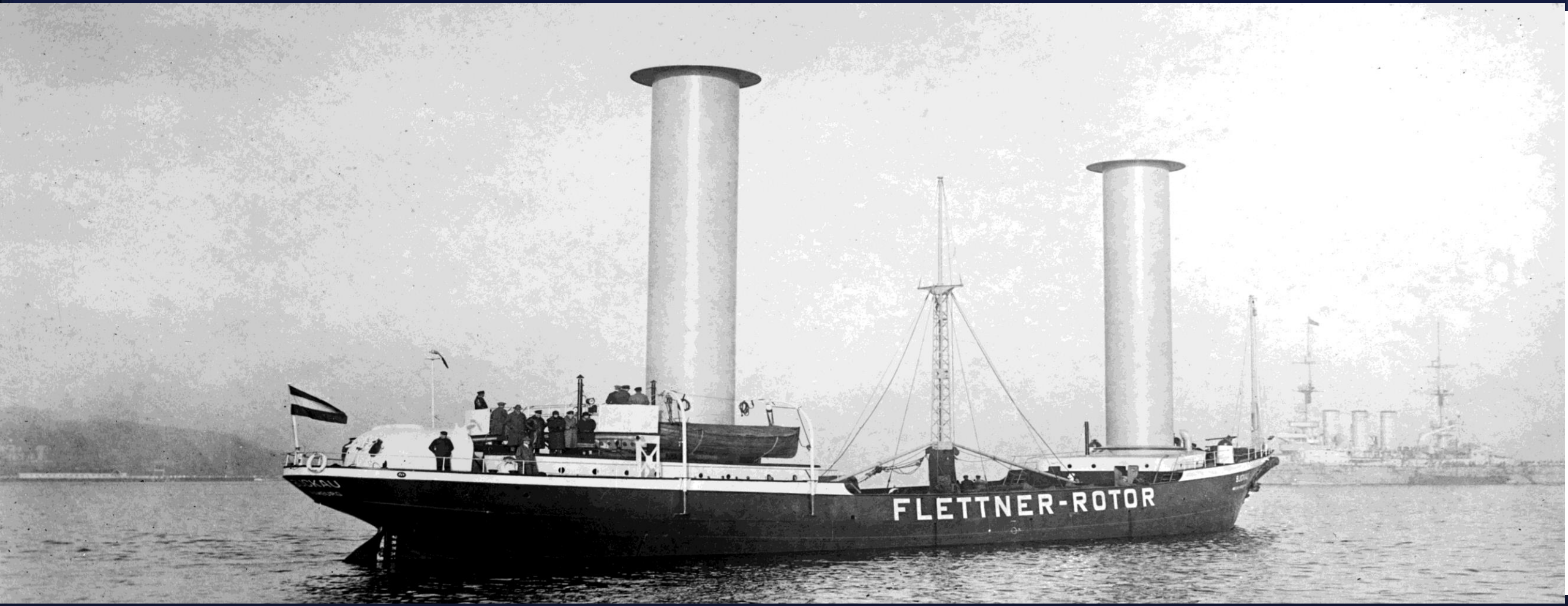
FLETTNER ROTOR

Rotating cylinders used in 1926 to propel ships



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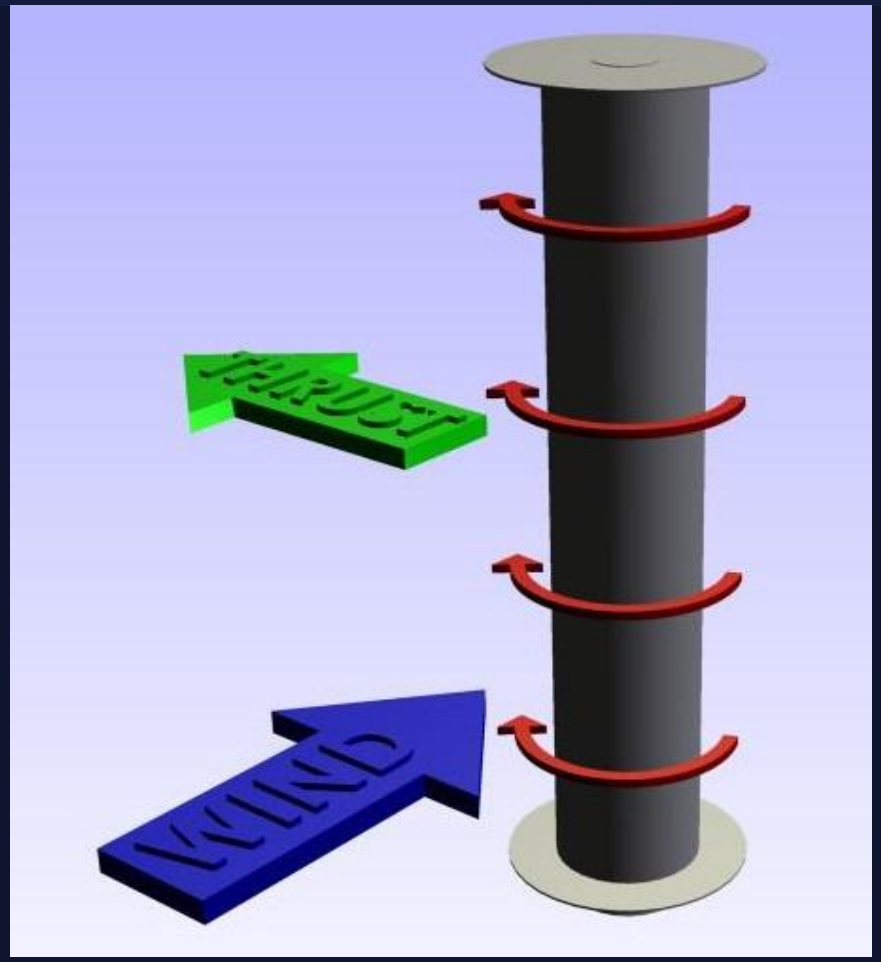
MAGNUS EFFECT

Thrust created perpendicular to the wind



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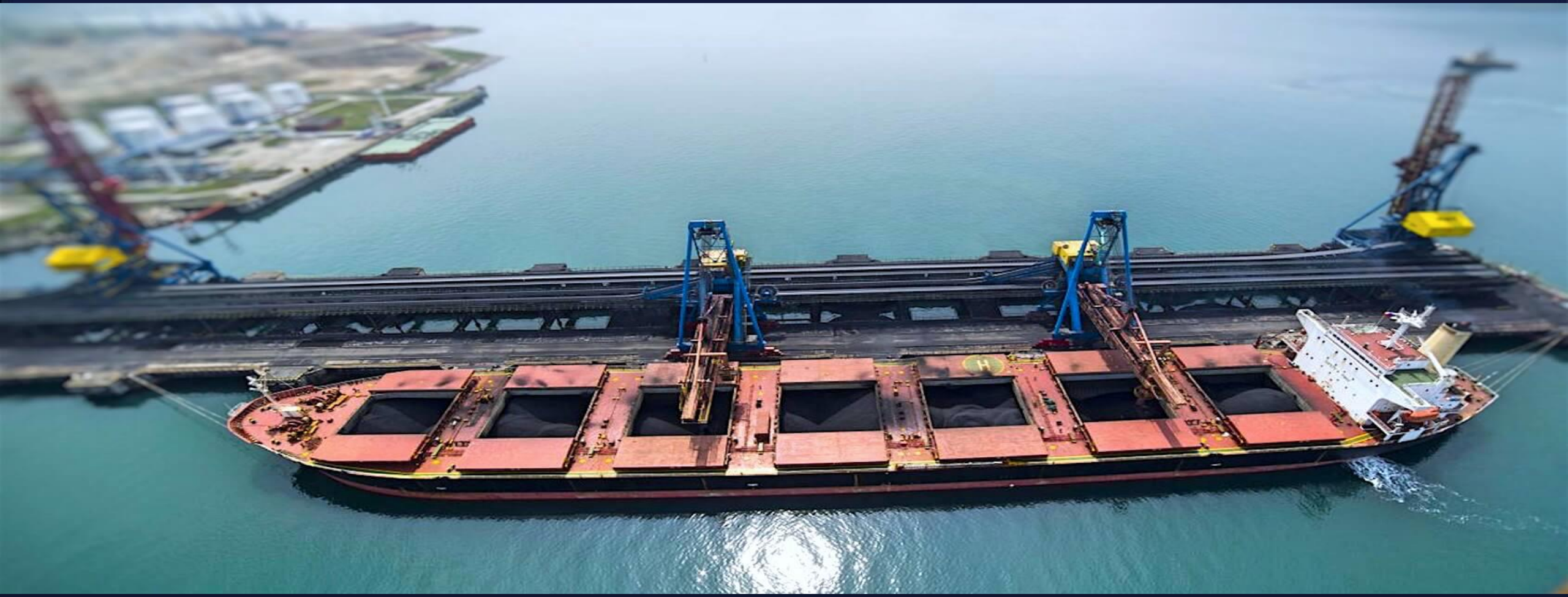
TECHNOLOGY RE-IMAGINED

Meets the needs of today’s shipping operations



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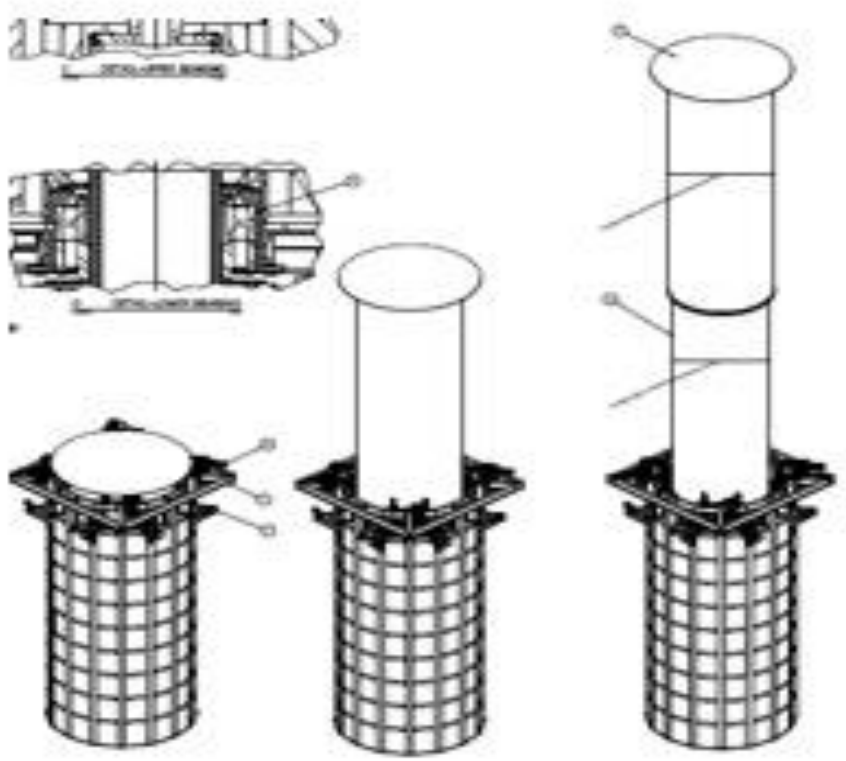
VOSS (Vertically-variable Ocean Sail System)

Wind-based, auxiliary propulsion



VOSS - DEPLOYED

Power to propel a ship

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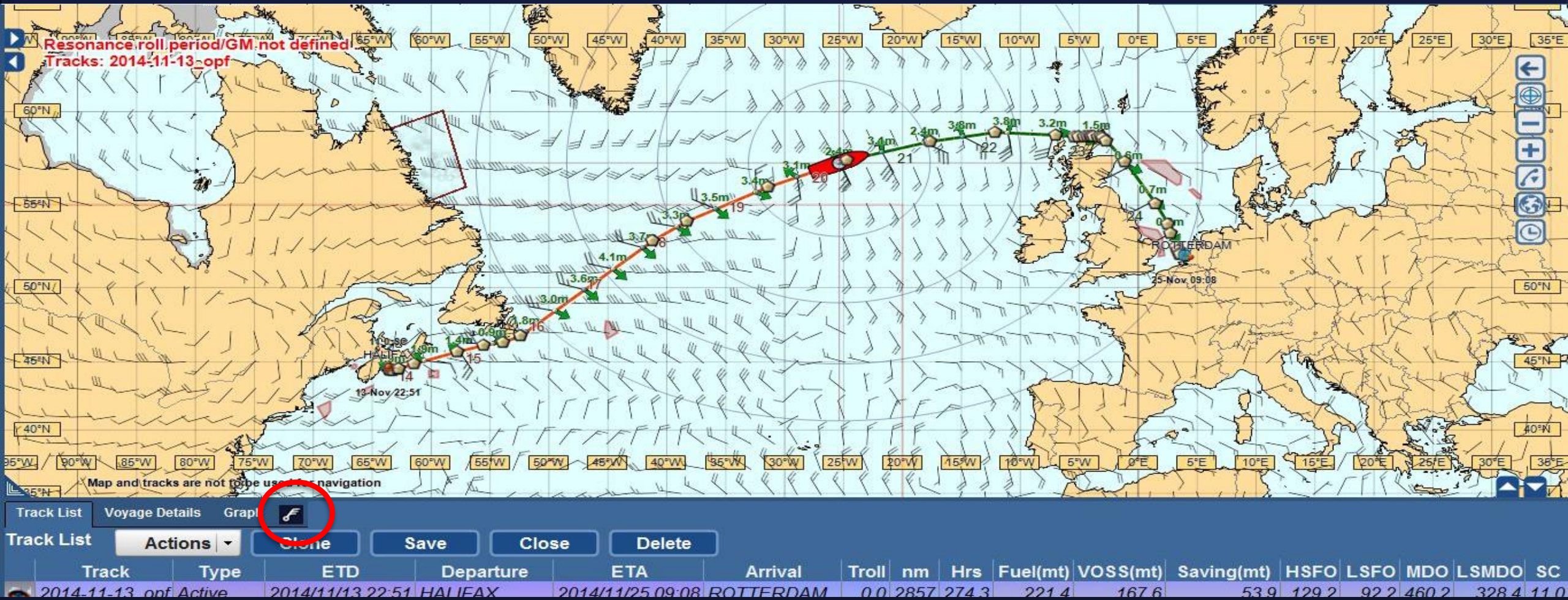
VOSS - RETRACTED

No obstructions to operations or adverse conditions

…. SOFTWARE

Routing for “best wind” increases fuel savings potential



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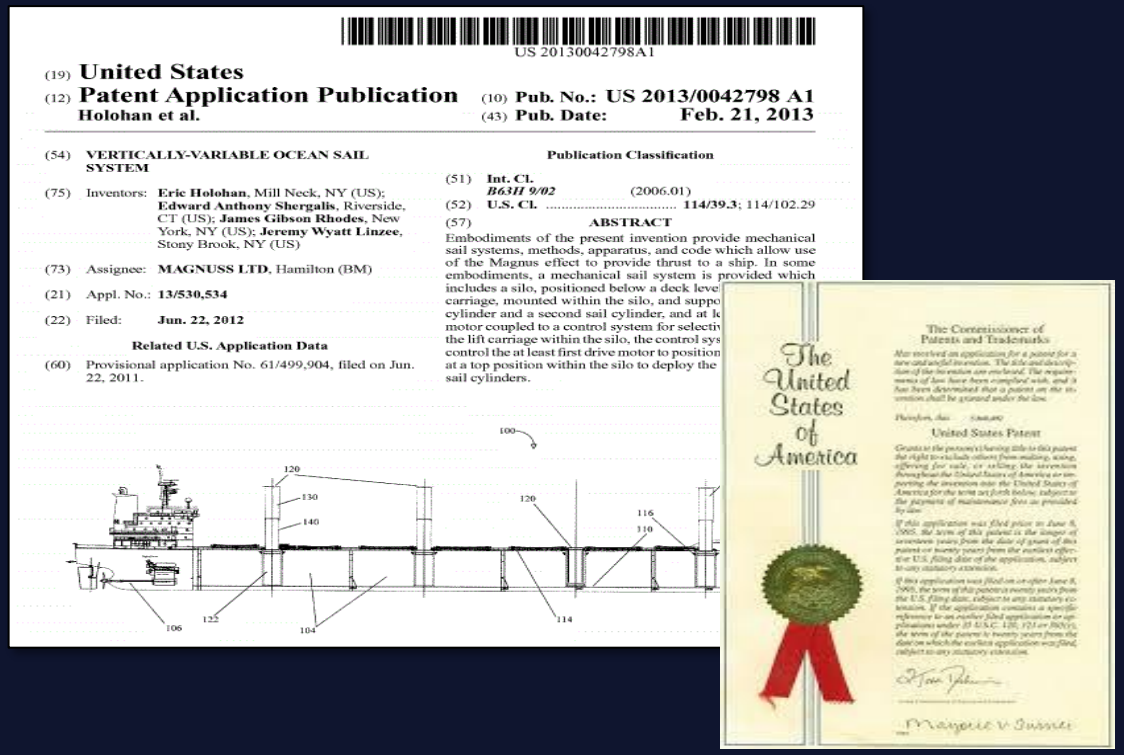
PATENTED & CLASS APPROVED

International coverage



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(12) **Patent Application Publication**
Holohan et al.

(10) **Pub. No.: US 2013/0042798 A1**

(43) **Pub. Date: Feb. 21, 2013**

(54) **VERTICALLY-VARIABLE OCEAN SAIL SYSTEM**

(75) Inventors: **Eric Holohan**, Mill Neck, NY (US); **Edward Anthony Shergalis**, Riverside, CT (US); **James Gibson Rhodes**, New York, NY (US); **Jeremy Wyatt Linzee**, Stony Brook, NY (US)

(73) Assignee: **MAGNUSS LTD**, Hamilton (BM)

(21) Appl. No.: **13/530,534**

(22) Filed: **Jun. 22, 2012**

Related U.S. Application Data

(60) Provisional application No. 61/499,904, filed on Jun. 22, 2011.

Publication Classification

(51) **Int. Cl.**
B63H 9/02 (2006.01)

(52) **U.S. Cl.** **114/39.3**; 114/102.29

(57) **ABSTRACT**

Embodiments of the present invention provide mechanical sail systems, methods, apparatus, and code which allow use of the Magnus effect to provide thrust to a ship. In some embodiments, a mechanical sail system is provided which includes a silo, positioned below a deck leve carriage, mounted within the silo, and suppo cylinder and a second sail cylinder, and at le motor coupled to a control system for selectiv the lift carriage within the silo, the control sys control the at least first drive motor to position at a top position within the silo to deploy the sail cylinders.

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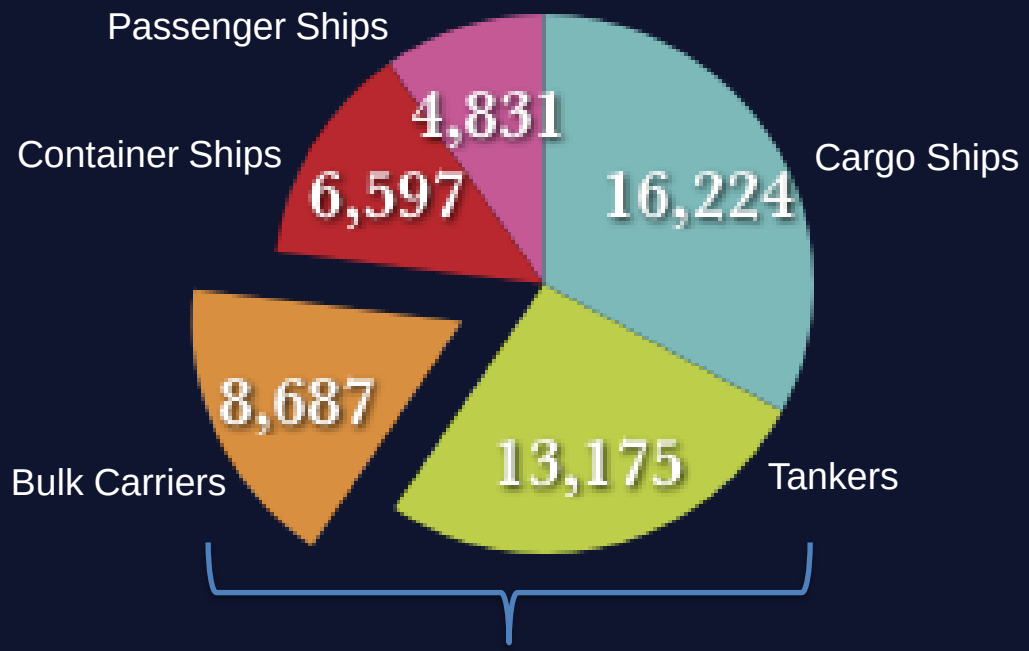
LARGE MARKET

Ideal for dry bulk carriers and tankers



Target market is 22,000 ships

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WIND POWER FOR THE WORLD'S SHIPPING FLEET

VALIDATED CUSTOMER INTEREST

Quantifiable benefits based on real world data

- **Savings = 30-50% per yr**
- **Payback = 2-3 yrs**
- **Decision?**
  - **☑GO**
  - **❑NO-GO**

READY TO CUT STEEL

Full-scale, commercial build out

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MAGNUSS – WIND POWER FOR SHIPPING

Double bottom line benefit


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