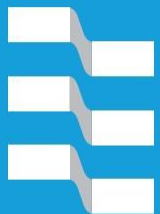


Future Proof Slides for BCTN/Nike 420 event



18 April 2023

BCTN is
member
of the



INLAND
TERMINALS
GROUP®

YOUR GREEN WAY TO SHIP



Future Proof Shipping

futureproofshipping.com

Our first vessel: The FPS Maas



Dimensions: 110m x 11.45m



Capacity: 192 TEU after conversion

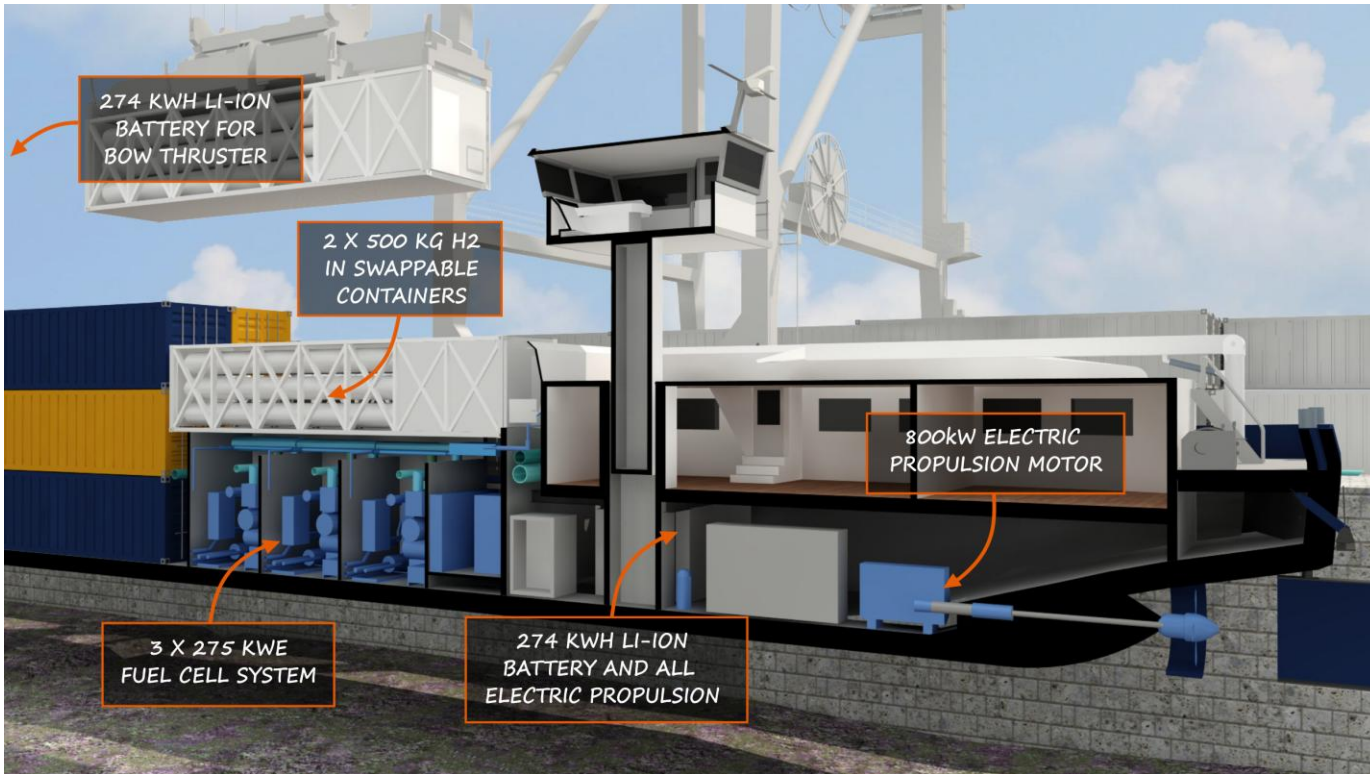


Route: Rotterdam – Meerhout



Onhire: May 2023

The **FPS Maas** is currently in dock for conversion



What will happen during the retrofit of the FPS Maas?

- During the retrofit, the combustion engine is replaced with hydrogen technology, removing both the main engine and gearbox, and installing a new modular propulsion system.
- This consists of electric motors, hydrogen tanks, a PEM fuel cell system (necessary for converting hydrogen into electricity) and a battery system.
- The hydrogen and fuel cell system is installed in the cargo space of the vessel, with the hydrogen being placed above the fuel cell system in two 40ft containers (approximately 1000kg at 300 bar).
- The fuel cell system is triple redundant with 825 kW capacity (to supply propulsion and auxiliary power) and battery packs for peak shaving, secondary and bridging power.

The FPS Maas retrofit project: A complex trajectory of many years

FPS Maas milestones: 2020 - 2023



Explanation

- Since 2016 the FPS team has been working on sustainable solutions for the maritime industry, of which more than 2 years on the Maas retrofit project.
- Many challenges have been overcome:
 - Choice for zero-emission technology
 - Design & marine system integration
 - Regulatory (safety)
 - Retrofit implementation
 - Commercial & Operations
 - Logistics
 - Purchasing (hydrogen)
- The result will be great. The FPS Maas is in dock for retrofit right now, and is on schedule to sail 100% emissions free in May 2023.

FPS Maas will use compressed hydrogen as fuel





And a triple redundant PEM Fuel Cell System

We are collaborating with experts across the value chain

🚀 We are working closely with:

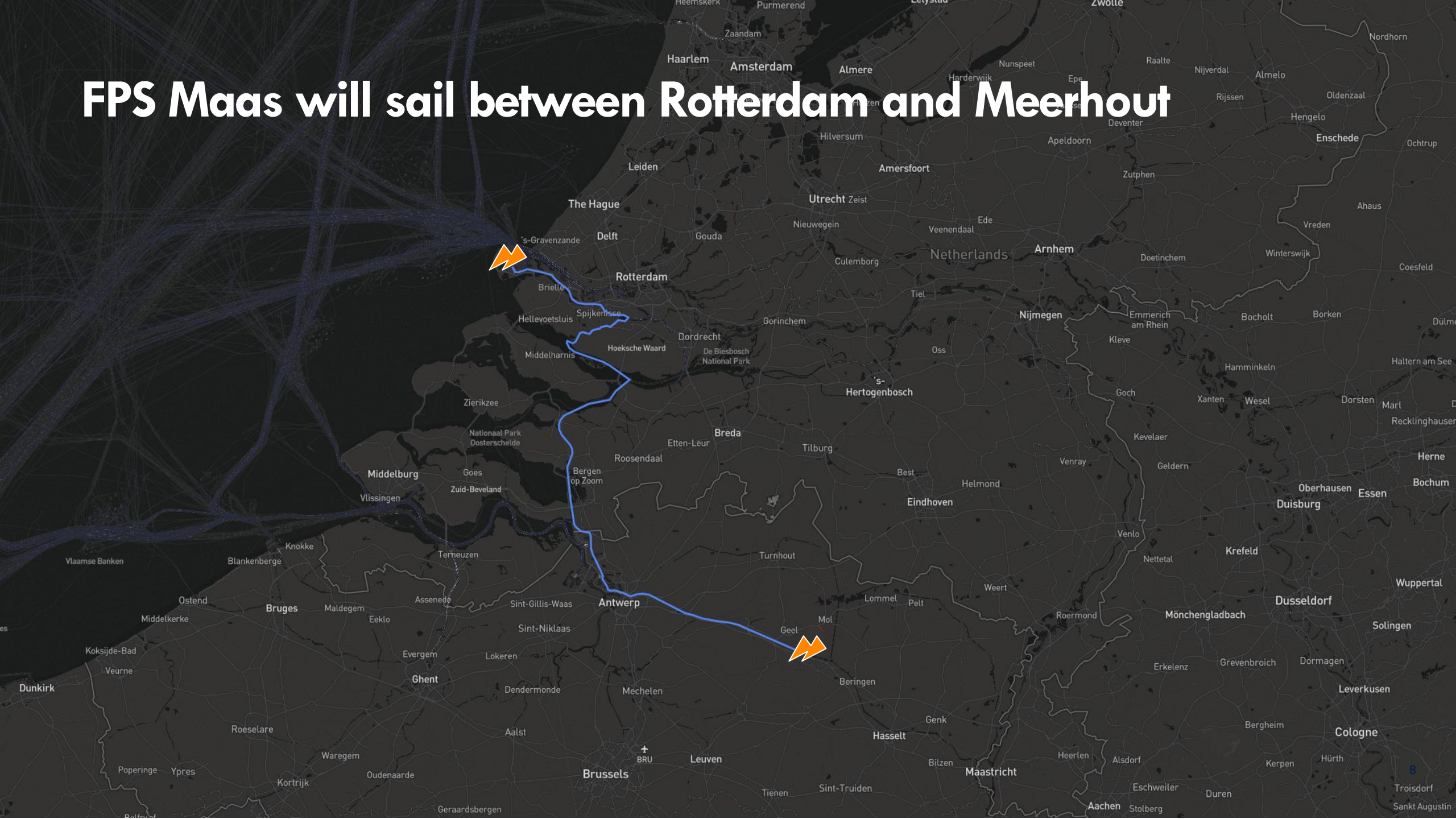


🚀 We are supported by EU and NL subsidy funding from:

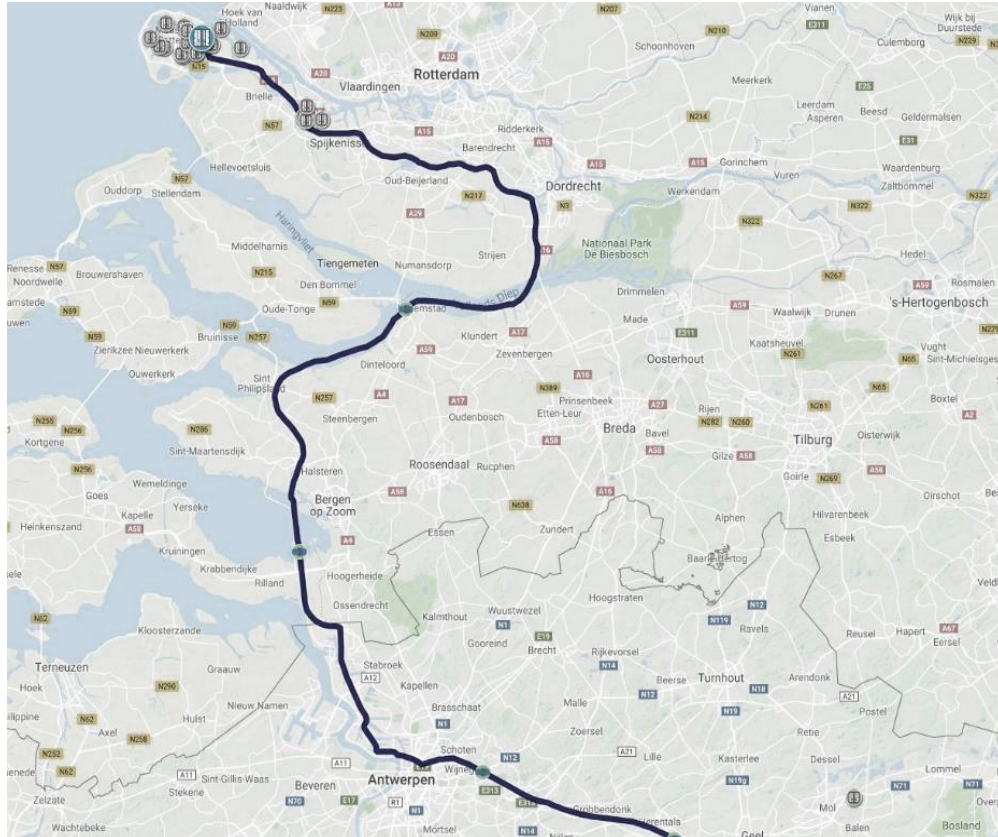


Rijksdienst voor Ondernemend Nederland

FPS Maas will sail between Rotterdam and Meerhout



The ZE vessel will have a significant impact



- We have secured a supply of green hydrogen to ensure smooth operations.
- We expect to reduce emissions by **2000 tons CO2e annually*** by using fuel cells and green hydrogen on this vessel sailing between Rotterdam and Antwerp.

(* Based on emissions data from the 3rd and 4th IMO GHG Study, and energy consumption measured during ‘profiling’)

Let's define shipping's new normal together!



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Connecting the Flows

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