

Hydrogen powered inland vessel

Making Marine Applications Greener Webinar 2020



Future Proof Shipping

Creating a zero-emissions shipping world

Our Vision

A zero-emissions shipping world

Our Mission

We will contribute to a future proof shipping world by creating new maritime value chains to make the industry free of fossil-fuels and harmful emissions.

We offer zero-emissions marine transportation solutions



Zero-emissions Tonnage Provider

We offer zero-emissions short-sea and inland vessels for charter.



Advisory & Project Development

An integrated services offering comprising project development & management, technical, financial and commercial services tailored to our customers' needs.

Our first project: Zero-emissions inland vessel

An existing inland vessel will be retrofitted in 2021



- Vessel type: **Inland cargo vessel**
- Dimensions: **110m * 11.45m**
- Total power on board (currently) is about **1.4 MW**.
- During the retrofit, the internal combustion engine will be removed, and the new zero-emissions propulsion system, including fuel cells, batteries, an electric motor and hydrogen storage will be installed on board.

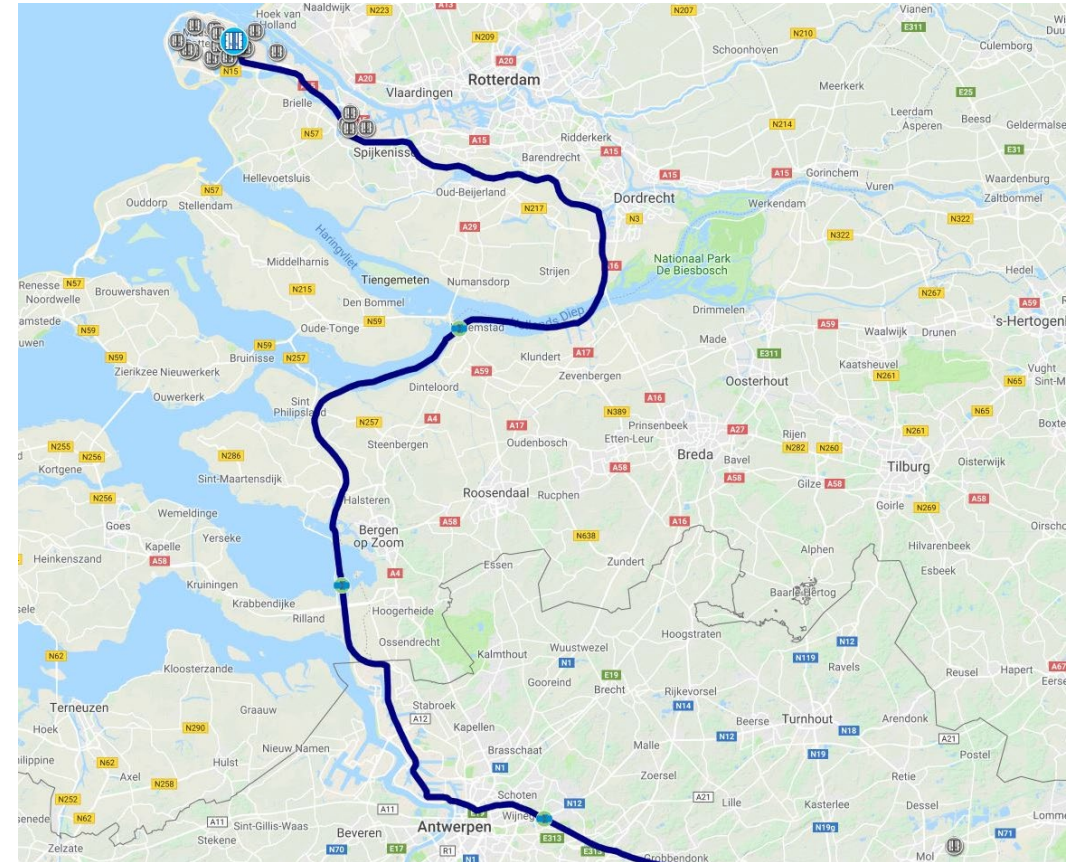
Concept sketch of the retrofitted vessel



- 825 kW installed fuel cell capacity, propulsion and auxiliary power
- 504 kWh Lithium ion battery pack for peak shaving, secondary and bridging power
- 750V DC bus bar, e-motor for propulsion

This vessel will operate between the NL and BE

- Distance: **404 km** (round trip)
- Average sailing time: **34 hours**
- Hydrogen usage per **roundtrip** – **1600 kg**
- Compressed hydrogen storage @ 300 bar
- Hydrogen container swap @ at one of the container terminals.
- Class: **Lloyd's Register**
- Require exemption from **CCNR**
- We are working on securing 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.



(* Based on emissions data from the 3rd IMO GHG Study.
To be verified during the energy profiling phase.)

Estimated timeline

Preparation

**Completed
January 2020**

Profiling

March – August 2020
**First stage of HAZID
completed. Working
towards securing
exemption certificate.**

Retrofit

**Expected
Q2 2021**

**Zero-
emission
vessel
operational**

**Expected start
mid- 2021**

We are navigating towards..

6 zero-emissions inland vessels

2 zero-emissions short-sea vessels

2 zero-emissions ocean-going vessels

Let's define shipping's new normal!

futureproofshipping.com

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