



Hydrogen in the shipping industry: Feedback from the first world trip of the Energy Observer catamaran and new perspectives



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Agenda

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Energy Observer Presentation

2

Energy Observer catamaran presentation and feedback

3

Energy Observer 2 feeder and challenges

4

Toward a LH₂ ecosystem and multi-sectors synergies

Who we are ?

Energy Observer SAS

Energy Observer SAS is the central pillar of our group, overseeing various subsidiaries and projects dedicated to the energy transition. Its foundations lie in research and development through the first laboratory ship, the Energy Observer, and its Odyssey around the world to meet the pioneers of sustainable development.



Fonds de dotation Energy Observer

The Energy Observer Endowment Fund is dedicated to education and public awareness, with a focus on promoting energy solutions for a more sustainable future. The foundation's mission is to inspire and engage the public in the transition to an environmentally friendly world. It places innovation and ecological responsibility at the heart of its initiatives.



25 people

Energy Observer Productions

Our multi-media audiovisual production team aims to inform and inspire a wide audience about the challenges of energy and environmental transition. It creates engaging content for the web and television, capitalising on expertise forged during seven years' experience around the world, where we explored energy and environment issues in depth.



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EODev

EODev is an innovative French industrial company with the aim of accelerating the energy transition through sustainable, reliable and economically viable solutions. It is a world leader in the design and industrialisation of emission-free electricity generation systems. Its product range includes the GEH2® hydrogen generator for stationary and mobile applications, and the REXH2® generator for the marine sector.



90 people

EO Concept

EO Concept has positioned itself as a key design office, complementing EODev's industrial activities. Specialising in engineering, design office and consultancy, our focus is naval and port energy architecture. Its flagship project is the development of the Energy Observer 2. A 160 m electric Feeder powered by fuel cells and liquid hydrogen.



5 people

Energy Observer 1 : At the beginning



- At the beginning

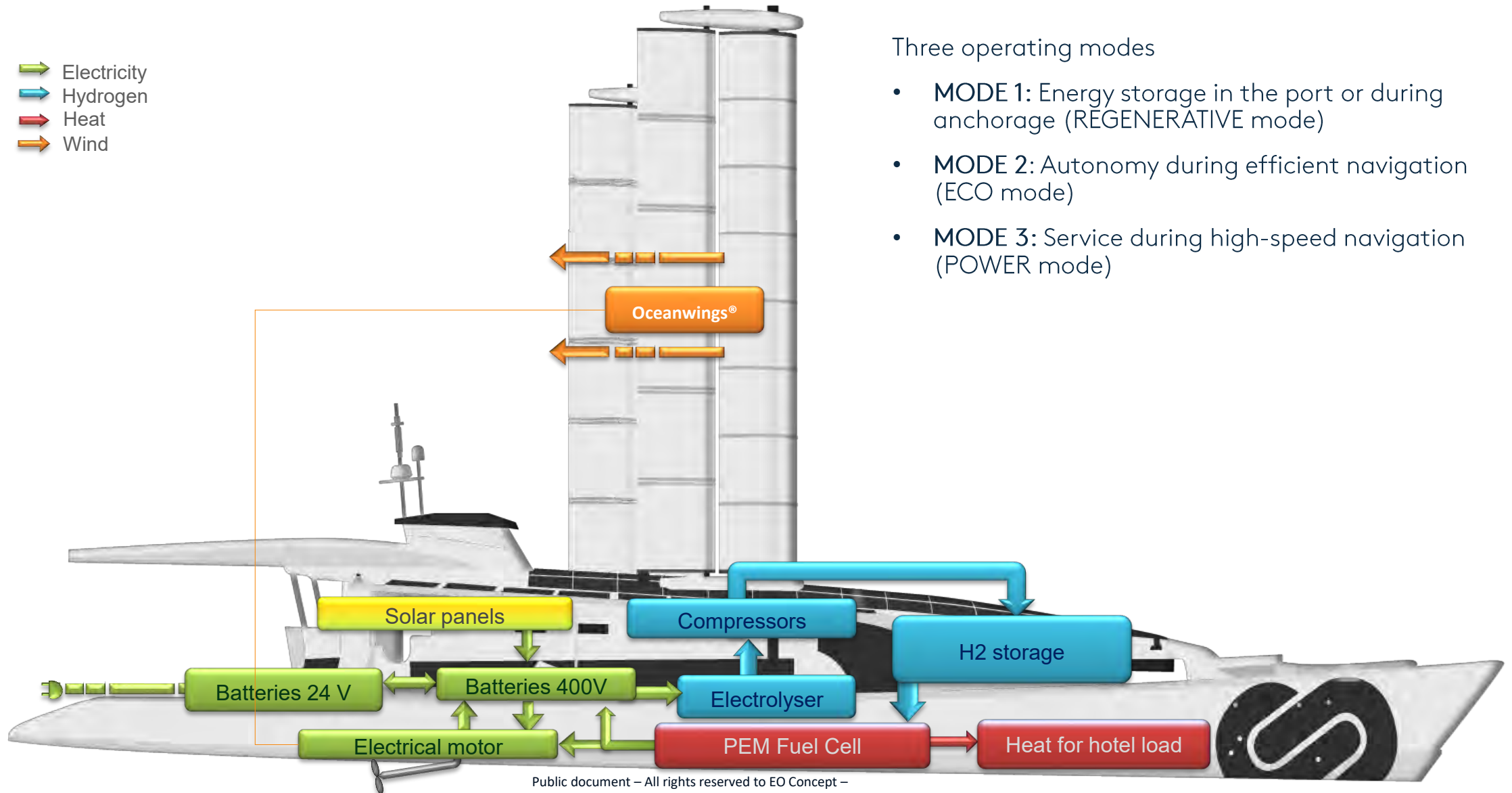
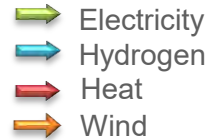
- Construction :1983
- Named « Formule TAG for *Techniques d'Avant Garde* »
- The largest racing catamaran
- Skippers: Mike Birch, Sir Peter Blake (1993)
- Lengths through years : 24.24m, 25.90 m, 28 m puis 31.00 m
- Palmares: Jules Verne racing in 1994 under named « Enza New Zealand »



- Today

- Laboratory vessel, Hydrogen ambassador
- Re-designed at St Malo from 2015 to 2017
- It completes a world tour to reach St Malo on June 14th
- Length : 30.5 m (101 feet)
- Width : 12.8 m
- Weight: 33 t

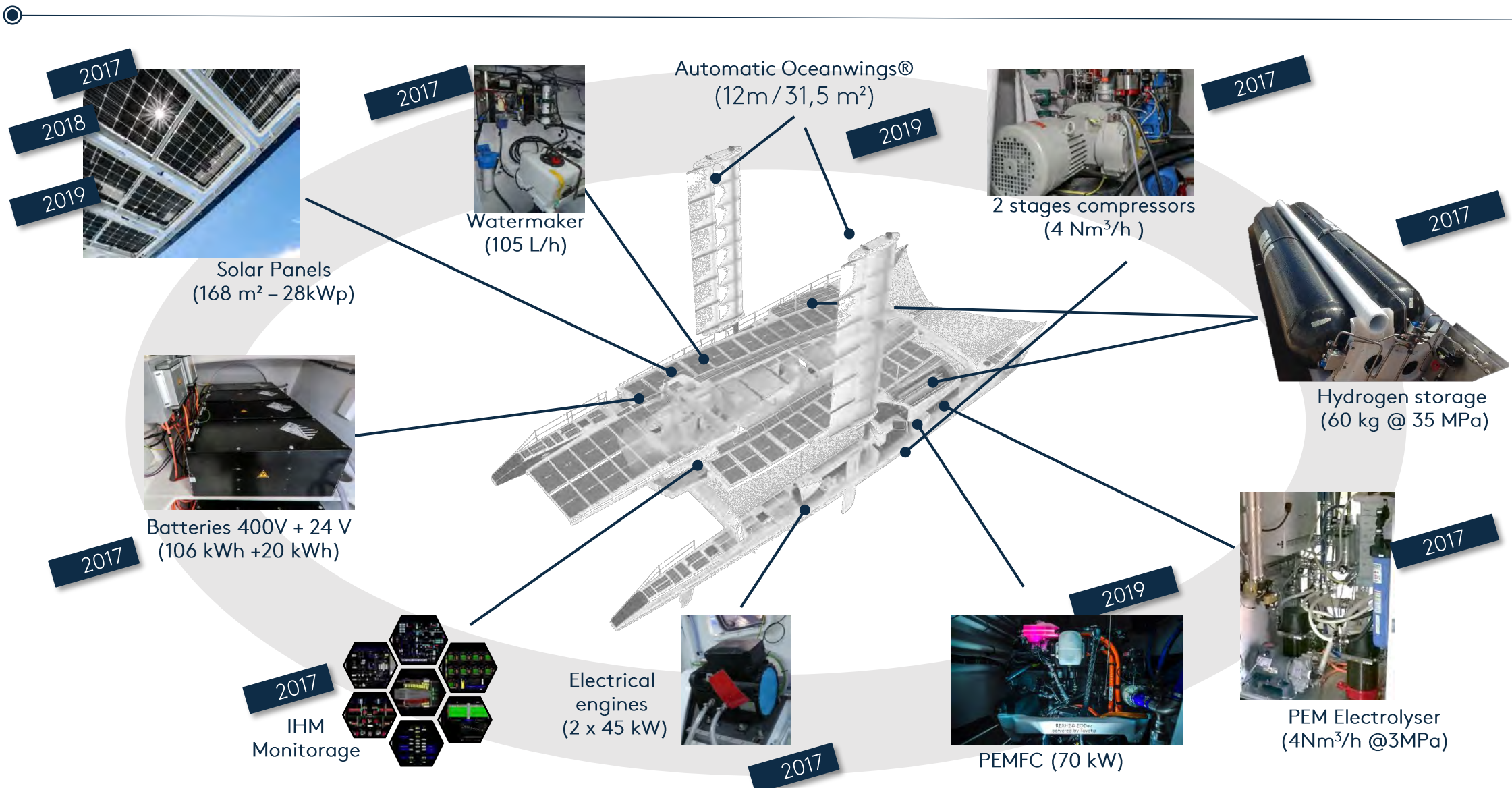
Energy Observer 1 : Energy supply chain



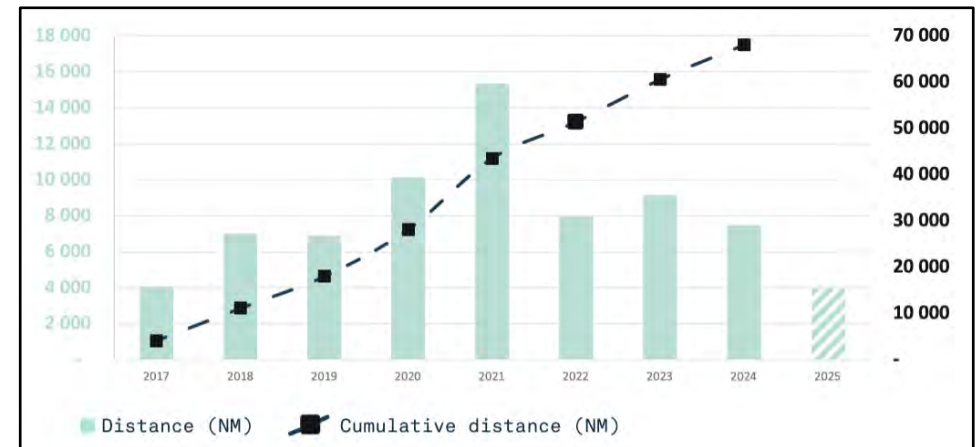
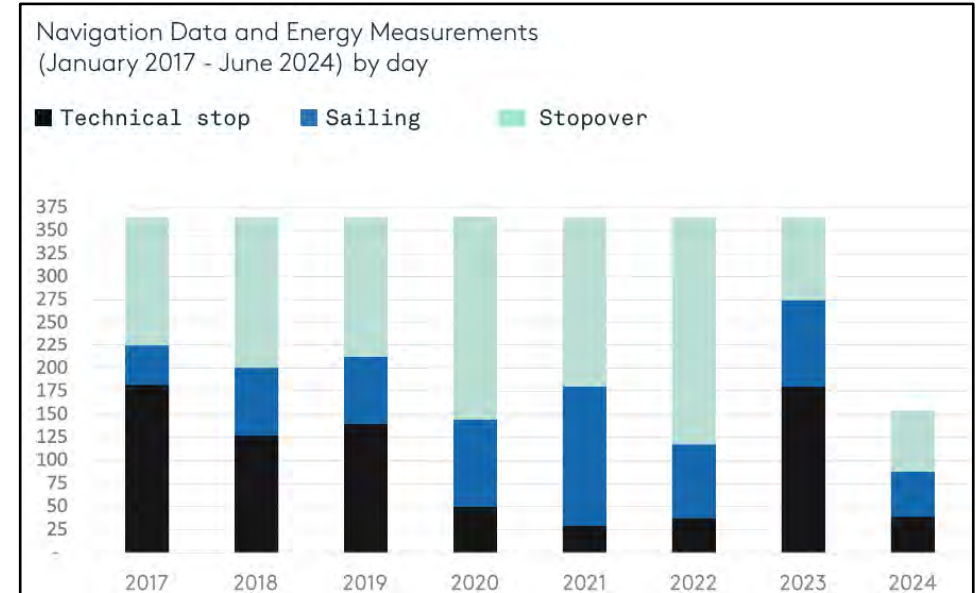
Three operating modes

- **MODE 1:** Energy storage in the port or during anchorage (REGENERATIVE mode)
- **MODE 2:** Autonomy during efficient navigation (ECO mode)
- **MODE 3:** Service during high-speed navigation (POWER mode)

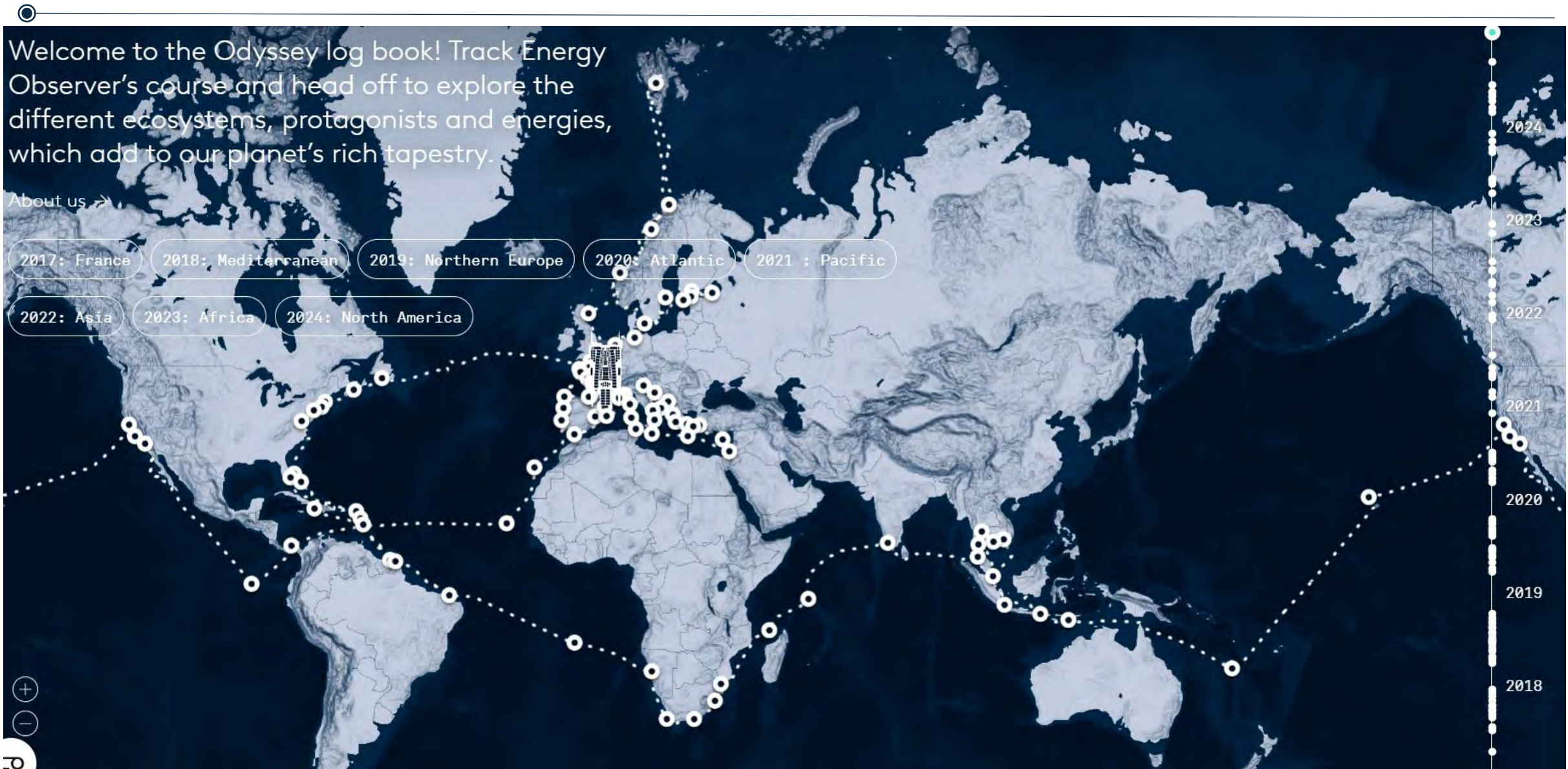
Implementation of the technical bricks onboard



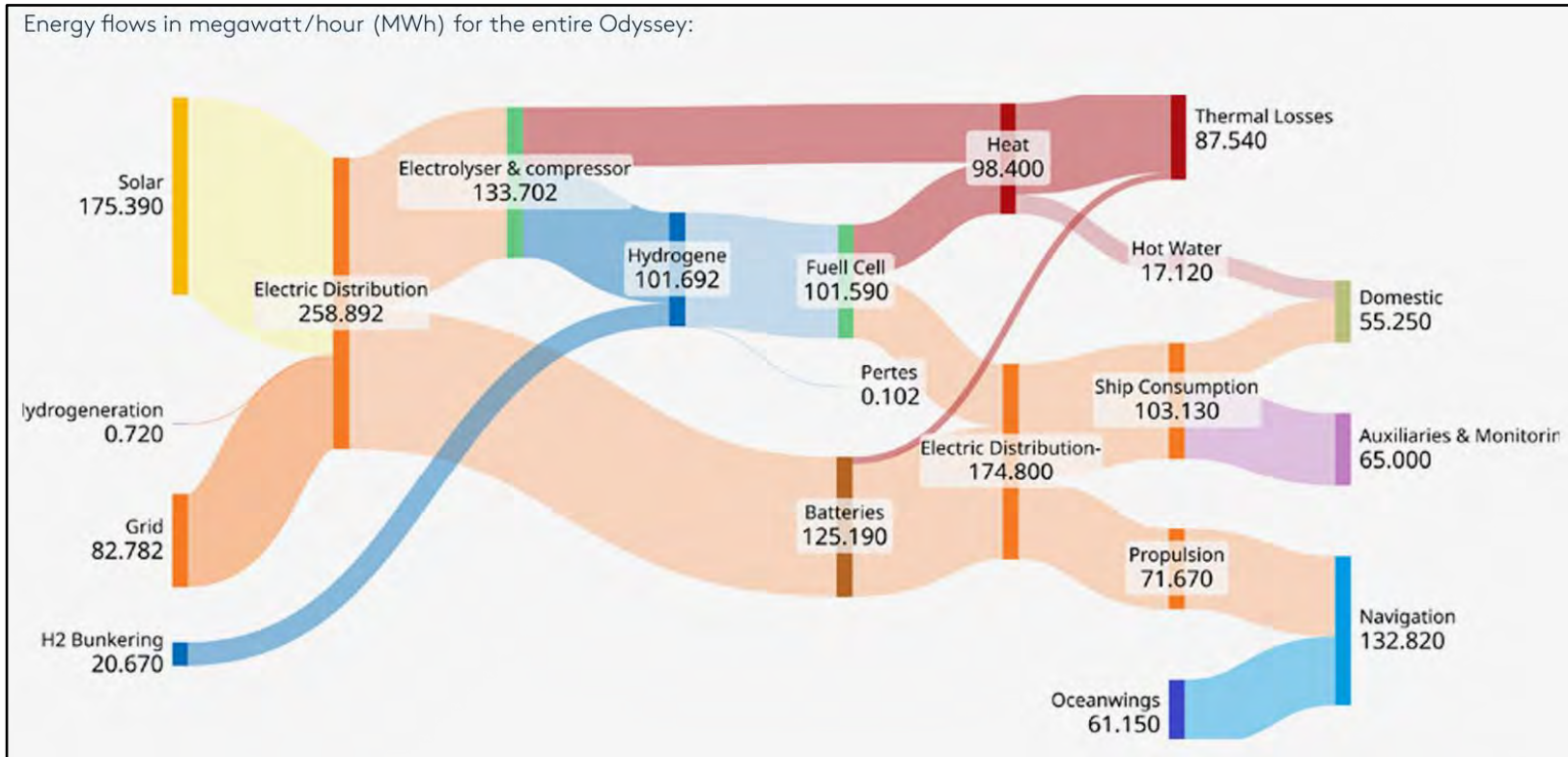
Key figures of the Odyssey (1)



Key figures of the Odyssey (2)



Key figures of the Odyssey (3)



Consumption

- Life onboard : 5,500 kWh /year
- Systems control: 1,000 W for 171 sensors and 158 actuators
- Propulsion:
 - average consumption is 8.65 kW,
 - 2.01 kWh per nautical mile travelled,
 - 46% from wind

Full report

<https://energy-observer.imgix.net/documents/eo-dossierdepresse-legrandretour14juin-EN.pdf>

Towards new challenges



2 objectives

- Develop a commercial model and prove that hydrogen can address maritime market !
- Scaling up the fuel cell power in a container ship

Energy Observer 2: the lowest cargo ship in the world



Energy Observer 2: Characteristics (1)

Technical Specifications

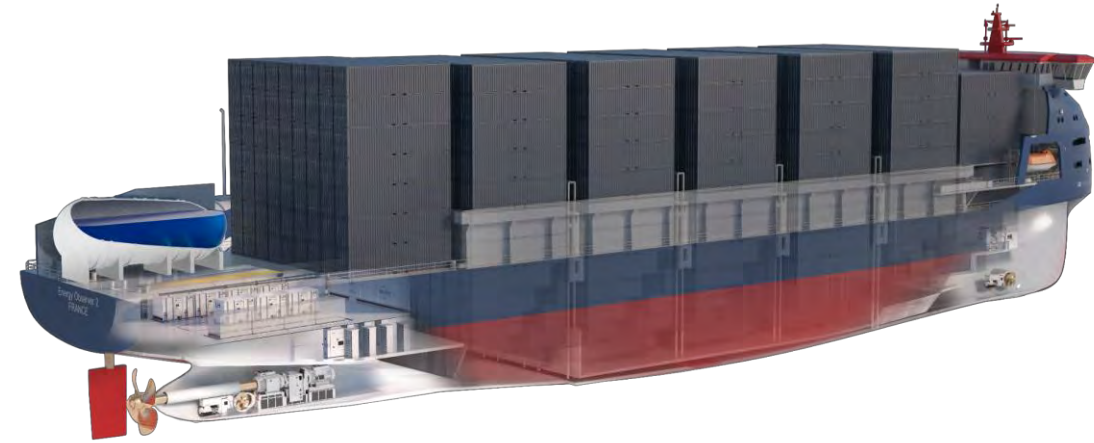
Type:	Feeder Zero emission
Length:	155m
Beam:	24.5m
Draught (design):	8.80m
Deadweight (design):	~12 000 dwt
Crew:	18 ppl
Capacity:	1100 TEU
Flag	French Flag
Architect	LMG Marin

Energy chain characteristics

Fuel Cells:	4.8 MW / 12 modules 400 kW LH ₂
LH ₂ Storage:	42 t (net) – 50 t (gross)
Batteries:	1 MWh
Safety Genset:	2 x 1.8 MW

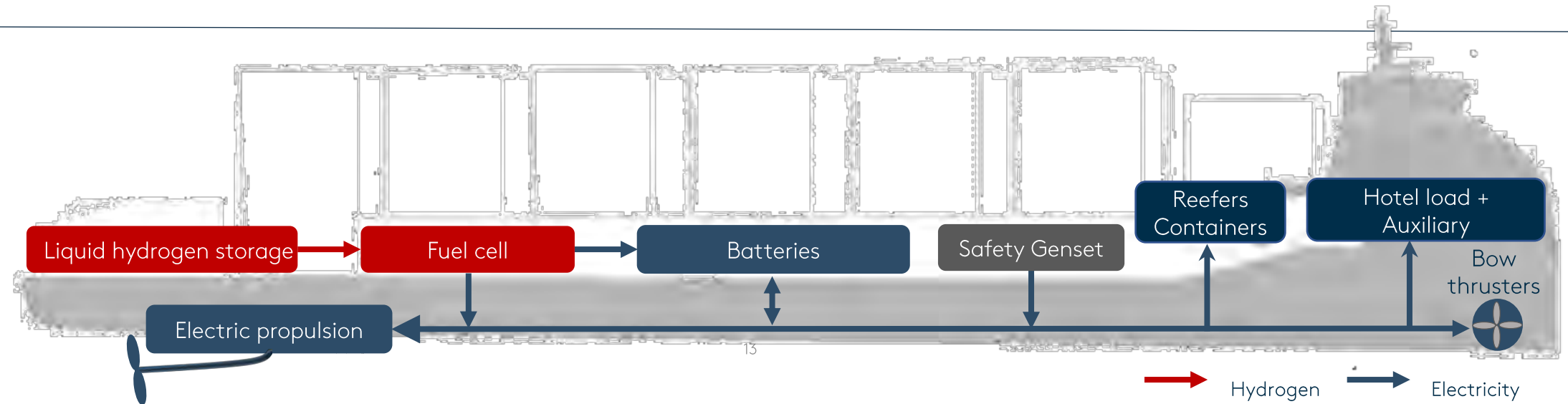
Operational Proforma LH₂ characteristics

Commissioning:	2029
Navigation:	Inter-regional / intra-European
Number of stopovers:	~10
Distance:	~1,800 nautical Miles
Cycle duration :	14 days
Speed per leg :	12.5 knots
Boost capacity :	16 knots

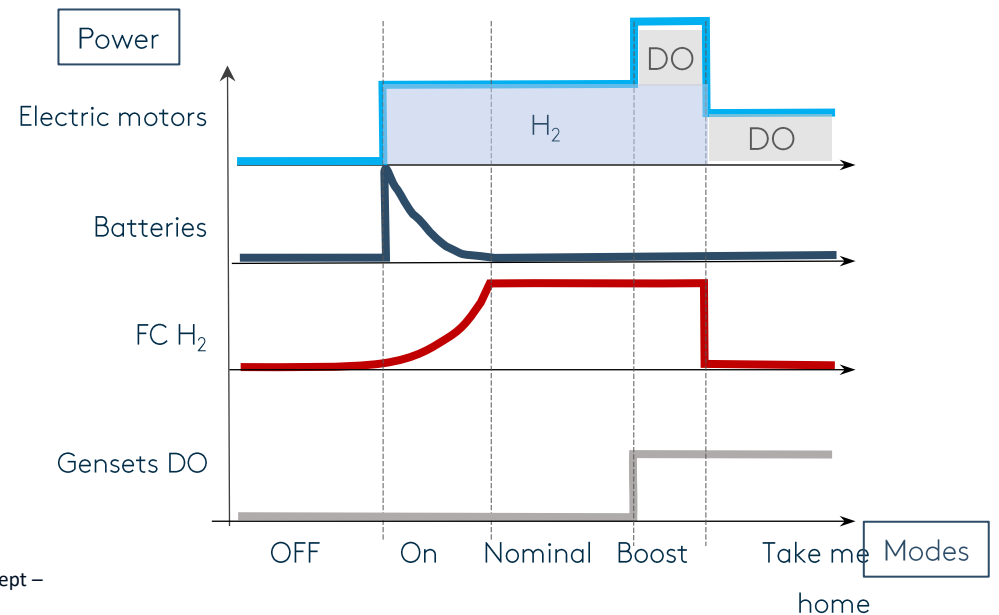


3D views of the EOConcept Fuel Cell Room integrating EODev modules based on a new generation of Toyota fuel cells delivered in 2026

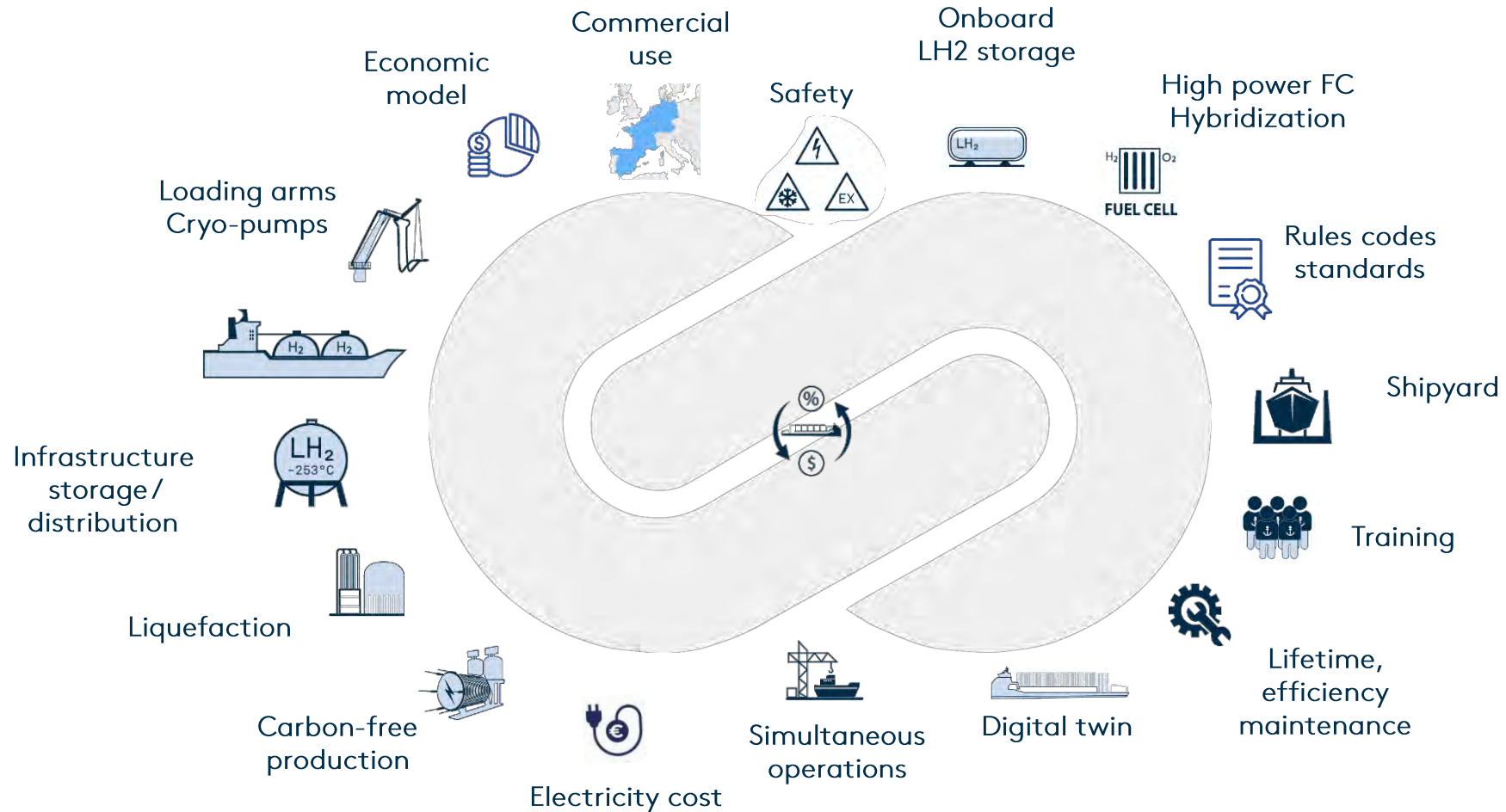
Energy Observer 2: Characteristics (2)



- A 100% electric cargo ship
- Hydrogen / Batteries / Diesel hybridization
 - HYDROGEN FUEL CELLS: Main function across the entire power profile
 - BATTERIES: Power demands in transient mode
 - DIESEL GENERATORS: Emergency and power boost function



Energy Observer 2: Key points

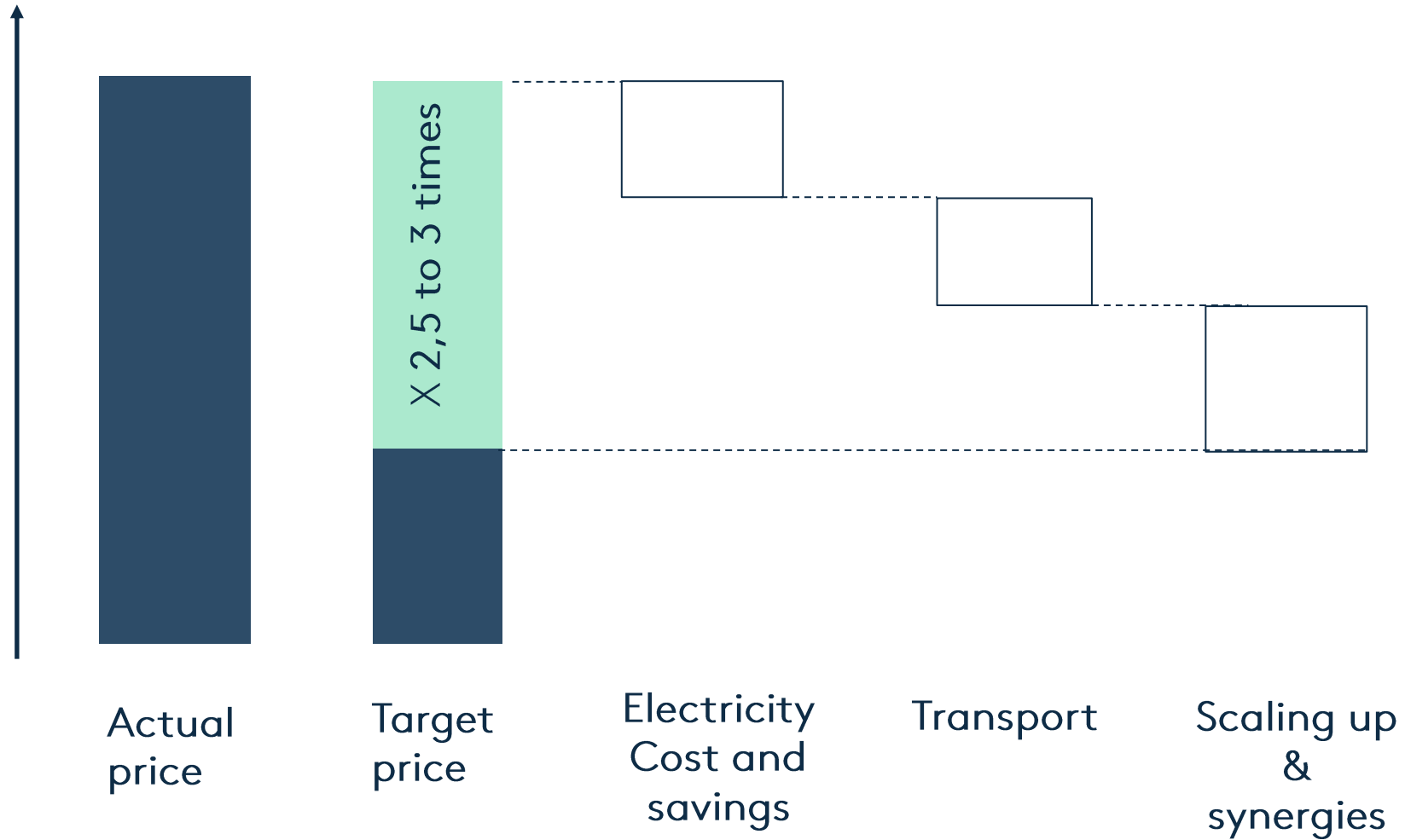


LH2 HARBOUR INFRASTRUCTURE

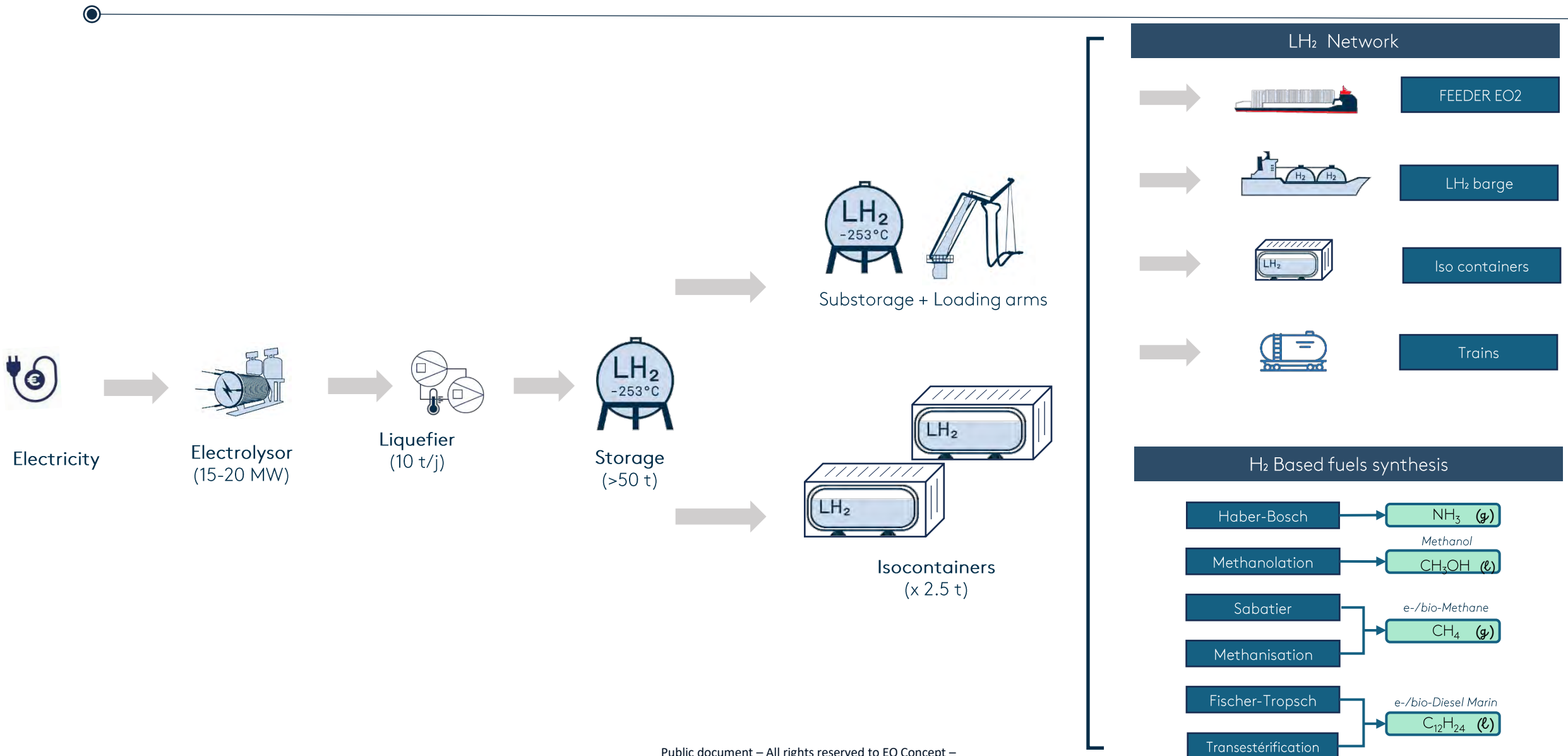
ENERGY OBSERVER 2 FEEDER



Cost saving approach



Toward a LH₂ ecosystem and synergies



From the commercial route to LH₂ at EU alliance



- Let's start with a LH₂ alliance : Pool the resources, Share the uses case
- Combine new energy providers and future offtakers

