



# Introduction to H2Carrier AS



**The P2XFloater™** *The world's first floating production system for green ammonia*



## Building on proven technologies



### Offshore oil and gas production



By combining leading industry expertise from oil and gas sector with offshore renewables and hydrogen know-how we have developed a cutting-edge **Power-to-X** platform



### Near-shore green energy production



The **P2XFloater™** is an adaption and further enhancement of the trusted **FPSO** (Floating Production, Storage and Offtake) concept, a proven energy facility concept since the early 1970's. By operating in the intersection between land and sea, we are transferring green energy from power source, or grid, to maritime trade routes, whilst minimizing impact.



# P2XFloater advantages

## Time and cost

P2XFloater™ has a significant cost advantage due to a **fast track** centralized EPCI process with an **optimized design** and construction period

## Public and regulatory affairs

The P2XFloater™ is designed according to pre-defined **classification standards** to ease regulatory requirements

## Mobile asset

The P2XFloater™ is able to **relocate** if circumstances regarding the power source should change

## Social impact

**Local employment** opportunities during operation phase. Avoid local **"boom and bust"** by using external work force and facilities during construction phase.

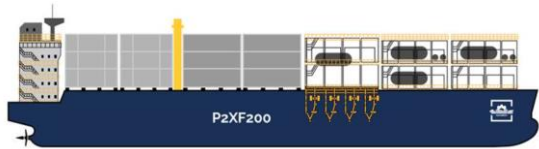
## Circular value chain

The P2XFloater™ is mainly composed of **recyclable steel** and has **minimum permanent structural foundations**





## Our designs



Renewable power: **200MW**

Green NH3 production: **163 000 t/y**

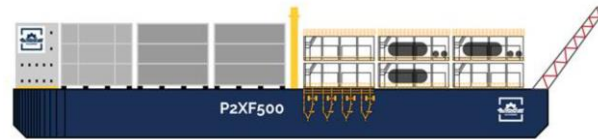
CO2 emissions saved: 260 000 t/y

Electrolyzer capacity: 175MW

Hydrogen production: 27 300 t/y

Hull size: L: 230m x B: 32m

Tank volume: 80 000m<sup>3</sup>



Renewable power: **500MW**

Green NH3 production: **409 000 t/y**

CO2 emissions saved: 650 000 t/y

Electrolyzer capacity: 438MW

Hydrogen production: 68 400 t/y

Hull size: L: 230m x B: 60m

Tank volume: 80 000 – 150 000m<sup>3</sup>



Renewable power: **1000MW**

Green NH3 production: **818 000 t/y**

CO2 emissions saved: 1 300 000 t/y

Electrolyzer capacity: 875MW

Hydrogen production: 138 000 t/y

Hull size: L: 320m x B: 60m

Tank volume: 100 000 – 150 000m<sup>3</sup>



## P2XFloater AiP



In 2022, H2Carrier engaged in a validation process with DNV

Documentation for the P2XFloater was reviewed and H2Carrier went through a hazard identification process (HAZID) with DNV

After this process, DNV awarded H2Carrier an approval in principle (AiP) for the P2XFloater design

Statement no P42196

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APPROVAL IN PRINCIPLE

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This is to state that the design principles of the

**P2X Floater Ammonia Production Unit**

Have been assessed by DNV AS and found to comply with current rules of this Society.

The design principles, specified in /1/, /2/, have been assessed for compliance with the following class notations:

**❧OI Ship-shaped Floating Offshore Installation  
Field(qualifier), POSMOOR, PROD, UWILD**

Subject to satisfactory detailed design verification, taking into account the limitations below, and surveillance during construction, installation and commissioning, DNV considers that a Class Certificate with the requested Class Notations can be issued for the Floating Injection Unit.

**Project owner:** H2Carrier A/S

**Limitations:** This statement does not constitute classification of the design to DNV Rules for Classification, however DNV have no major comments to the received documentation. General comments to the design as well as relevant assumptions are stated in the associated Report on Approval in Principle/1/.

**Reference documents:**

- /1/ Report on Approval in Principle RefNo. P42196-10001
- /2/ DNV-OSS-103, "Rules for Classification of Floating LNG/ LPG Production, Storage and Loading Units" July- 2021

Hovik, 2022-06-30  
for DNV AS

 Digitally signed by Haug, Lars Tore  
Date: 2022.07.01 13:02:02 +02'00'

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# The P2XFloater™ – Enabling large scale ammonia production





# Project: Integrated wind & PtX developments in Lebesby/Gamvik

Through its subsidiary Arktis Energi AS, H2Carrier is developing a wind farm in Lebesby and Gamvik municipalities. The planning initiative has been sent and the formal application to the government (through "NVE") was sent mid-April 2024.

Conventional wind power developers are dependent on a significant upgrade and expansion of the grid in order to distribute new renewable power production. H2Carrier plans to consume all of the wind power on the P2XFloater for production of hydrogen and green ammonia, thus minimizing the need for grid upgrades.

The project is currently developed by H2Carrier with the intention to invite other renewable power and PtX companies to participate at a later stage



## Lebesby/Gamvik municipalities



### Production parameters

Area: 115km<sup>2</sup>

Renewable power: 950MW

Capacity factor: ~48%

Green NH<sub>3</sub> production: 390 000tpa

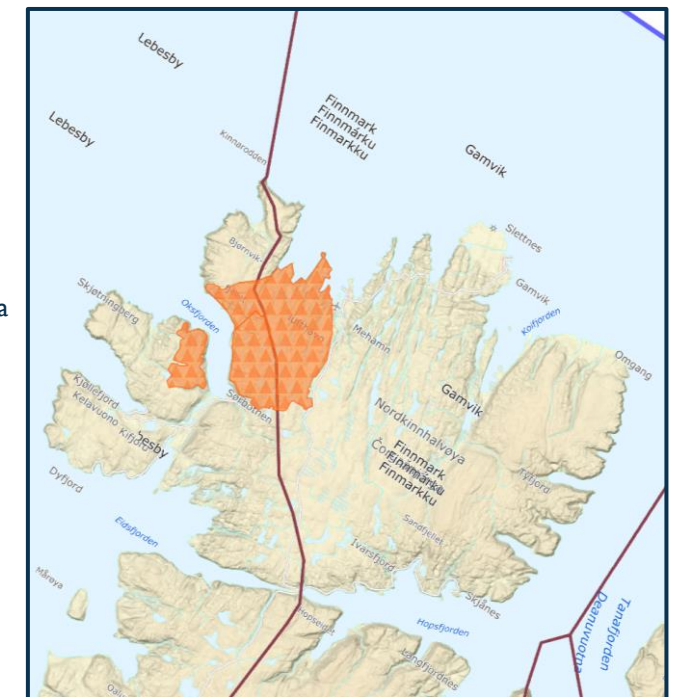
CO<sub>2</sub> emissions saved: 624 000tpa

Electrolyzer capacity: 855MW

Hydrogen production: 69 600tpa

Rotterdam 1 500 nm

Yokohama 6 000 nm



[www.lebesby.kommune.no](http://www.lebesby.kommune.no)

[www.gamvik.kommune.no](http://www.gamvik.kommune.no)



# Project: Integrated wind & PtX developments in Lebesby/Gamvik

In parallel with the project in Lebesby/Gamvik, H2Carrier is developing plans for a wind farm in Berlevåg and Båtsfjord municipalities. Again, the plan is based on exploring new renewable resources without having to wait several years for a significant upgrade and expansion of the grid.

The formal application to the government (through “NVE”) for the wind farm was sent mid-April 2024.



## Illustration of the P2XFloater™ located in Berlevåg, Finnmark

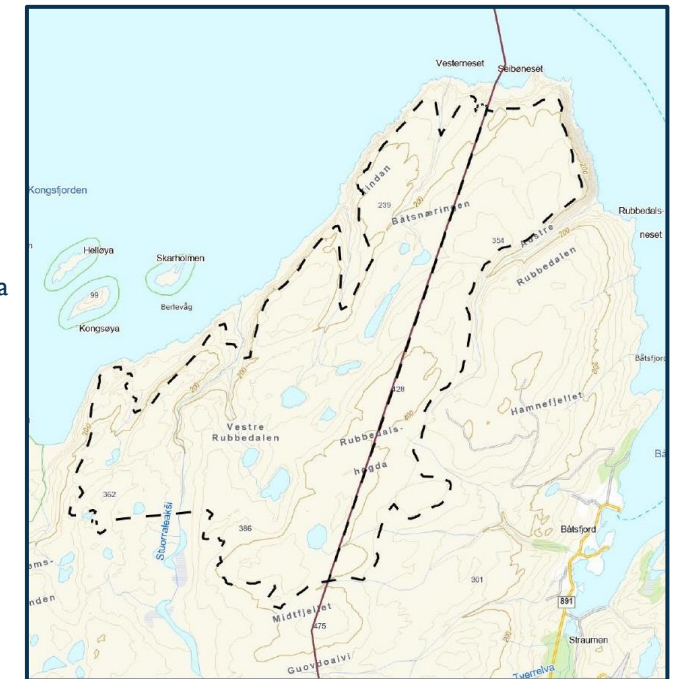


## Berlevåg/Båtsfjord municipalities



### Production parameters

- Area: 64km<sup>2</sup>
- Renewable power: 600MW
- Capacity factor: ~45%
- Green NH<sub>3</sub> production: 245 600tpa
- CO<sub>2</sub> emissions saved: 393 000tpa
- Electrolyzer capacity: 540MW
- Hydrogen production: 43 860tpa
- Rotterdam | 500 nm
- Yokohama 6 000 nm



[www.berlevag.kommune.no](http://www.berlevag.kommune.no)  
[www.batsfjord.kommune.no](http://www.batsfjord.kommune.no)





# Summary

## The P2XFloater™

P2XFloater™ enables access to renewable energy sites with the lowest cost of power which combined with centralized construction offers the lowest levelized cost of ammonia

Design developed for two years and Approval in Principle (AiP) of the design awarded by DNV

## Green ammonia

Ammonia is an essential commodity for fertilizer production

Ammonia is a non-carbon energy carrier with high volumetric energy density which makes it attractive as a sustainable fuel within the maritime sector

Green ammonia uses water, air and renewable power as feedstock

## H2Carrier AS

H2Carrier represents the link between renewables, shipping and Power-to-X. An investment in H2Carrier is a positioning for the future hydrogen-based economy

Huge untapped market potential enabling development of non-commercial renewable energy

Immediate exposure to large PtX development portfolio with significant upside from scaling of business, commodity prices and non-carbon incentives

Agile team with high ambitions and broad experience

H2Carrier AS is a member of:



**AMMONIA ENERGY**  
ASSOCIATION



**energy**  
valley



**Norsk**  
Hydrogenforum



**arctic energy**  
partners



**Arena Ocean**  
Hyway Cluster