Case Study

Going offshore to produce Hydrogen
Offshore Green Hydrogen – a good solution?

**PROS**
- Delocalize potential risks
- Leverage Wind Power Production
- Greater superficies
- Direct Access to Water
- More Societal Acceptance

**CONS**
- Case Specific Economics
- New Technologies
Case Study – Offshore floating wind farm 1GW

- Water depth: 90 m
- Distance from shore: 60 km
- 102 floating wind turbines
- 1 HVDC sub-station
- Design life: 20 years
- Production cost: 88€/MWh
Offshore development – Scenarios overview

**Electricity & hydrogen production**
- Offshore H2 production
  - Centralized production
  - Distributed production
- Onshore H2 production
  - Centralized production

**Pure hydrogen production**
- Offshore H2 production
  - Centralized production
- Onshore H2 production
  - Centralized production
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OnGrid Scenarios – Hybrid electrical and H2 production

H2 offshore production distributed

H2 onshore production [benchmark]

Maximum capacity factor of Electrolyser considered in this scenario
On-Grid Scenarios – Costs comparison

Increase of CAPEX/OPEX compensated by less inline electricity losses

May be of interest to go offshore to overcome onshore regulation constraints
OffGrid Scenarios – Pure H2 production

H2 offshore production Distributed

H2 offshore production Centralized

H2 onshore production [benchmark]
H2 production cost is decreased in offshore scenario when distance from shore increases.
1. Decentralized Hydrogen production seems to be a good concept when mutualized with floating power production.

2. Exporting Hydrogen instead of electricity is cheaper for long distances with less losses plus e-storage benefits.

3. Decentralized Hydrogen production is a good enabler to exploit remote fields where electricity export is too expensive and/or limited connections to the electrical grid & temporary e-storage needs.
NereHyd™
Combined Power and H2 Production
Lhyfe & DORIS Partnership – A common objective

Our Objective
“Becoming one of the first massive & affordable offshore green hydrogen producers”

Strengths
Expertise in hydrogen value chain
Expertise in hydrogen production
Network of H2 end users
Network of investors

Strengths
55 years of offshore experience
North Sea O&M experience
Offshore wind expertise
Network of partners
NereHyd™ – Roadmap

DORIS: offshore expertise + DNA of innovation
Lhyfe : Partner pioneer in green H2 production

Power production by NereWind™

Hydrogen plant fully integrated:
- PEM Electrolyser technology
- Water treatment onboard
- Gaz treatment
- Specific Electrical Equipment

2024
- Demonstrateur NereHyd 1 MW
  - Réseau

2029
- Ferme Pre-commerciale NereHyd 10 MW
  - Hors-réseau

2035
- Ferme Commerciale NereHyd 1 GW
  - Hors-réseau
With 20 years of expertise in offshore wind, DORIS brings a competitive, versatile and efficient semi-submersible design, named NereWind™.

Designed with:

- Multi-columns
- Double Trusses
- Attenuation Chambers
- Steel, Concrete or Hybrid Alternatives
- For Largest Turbines (10 and 15 MW)
NereHyd™ – Main bricks & features

NereWind™

Smart integration

Unmanned Asset & Optimized Control

Ongrid & Offgrid Architectures
THANK YOU