



FLOATING POWER PLANT

DE-CARBONISATION OF O&G PRODUCTION – BY COST EFFECTIVE FLOATING WIND TECHNOLOGIES



WIND ENERGY DENMARK
01/10/2019
PRE-NDA

THE COMPANY – FLOATING POWER PLANT A/S

BASIC COMPANY FACTS

Offices:

- Denmark
- Norway
- UK (subsidiary in Edinburgh)

SPVs with DP Energy (FPP owns 50%):

- Scotland
- Ireland
- Wales

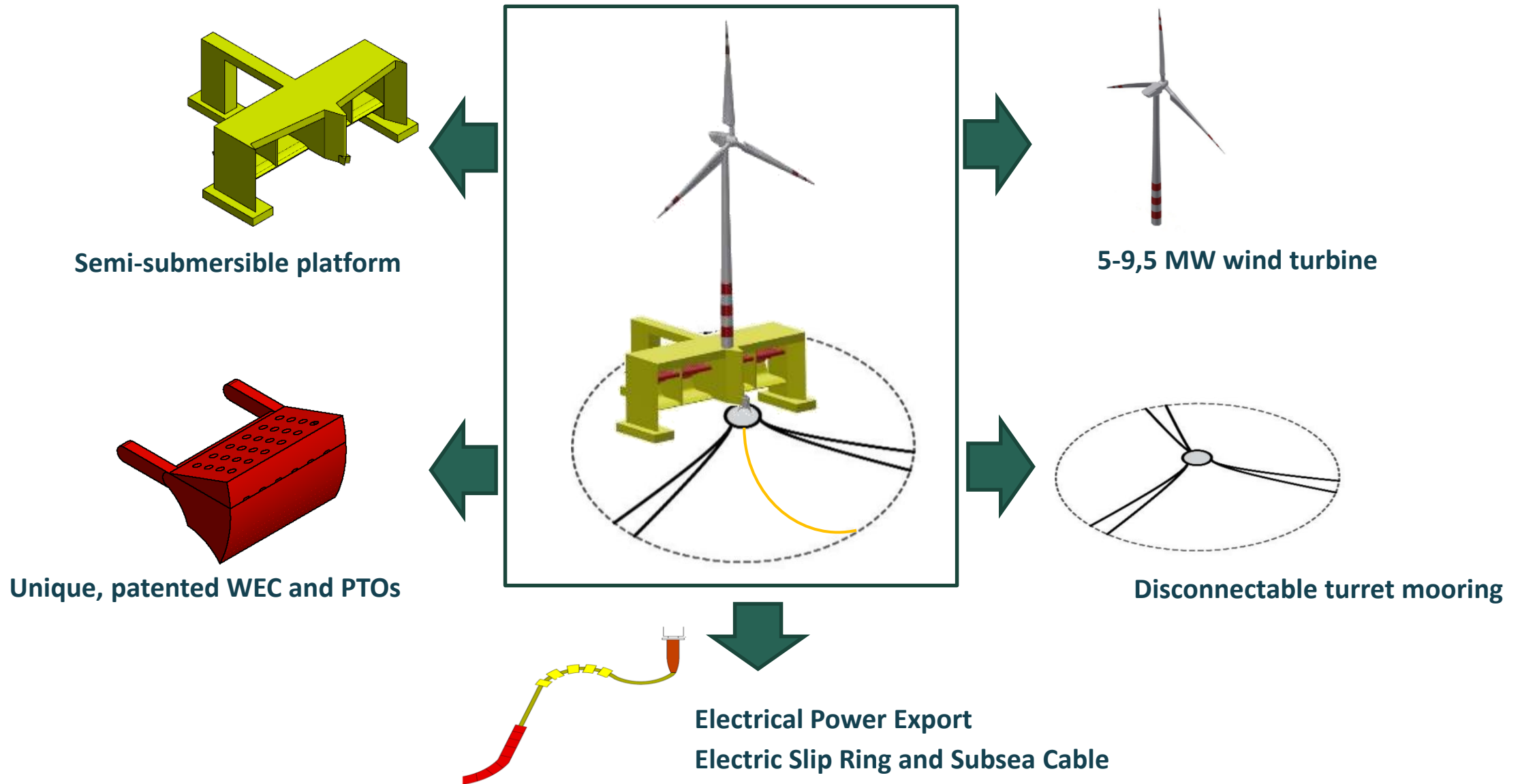


OWNERSHIP STRUCTURE

- +185 shareholders
- Largest consolidated shareholders own 18%.
- FPP is pre revenue company
 - Is currently out raising 10 m€ to accelerate market penetration

Funding source	Raised
Private equity	~ 11,5 m€
Energy fund (debt)	~ 3 m€
Public co-funding	~ 2 m€

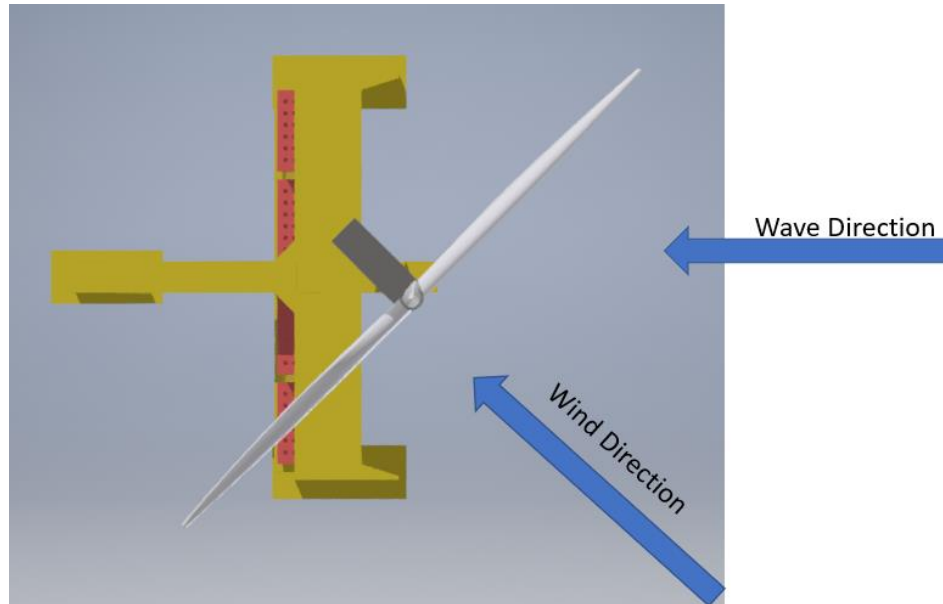
POSEIDON 80 (P80) – KEY COMPONENTS



VIDEO



EASY ACCESS FOR MAINTENANCE



BOAT LANDING



Waves aft of the WECs contain 60 -70 % less kinetic energy -> calmer water

WHY FLOATING WIND AND WAVE POWER? **SPACE AND COST OF ENERGY**



FPP'S VALUE PROPOSITION

- Low cost (Levelised Cost of Energy -LCOE)
 - High power per area of sea
 - Stable platform – minimal modifications to wind turbine
 - Reduced maintenance costs due to easy access
 - Simple installation with standard vessels
- Separate market segment
 - We love high wave and high wind sites!



WHY COMBINE WIND- AND WAVE ENERGY?

Shallow water



• **Fixed foundation market**

- Depth < 45m
- Mean wind > 7 m/s
- Wave power < 20 kW/m

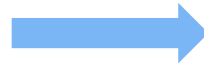
Deep water + still water



• **Floating wind only**

- Depth > 45m < 500m
- Mean wind > 7 m/s
- Wave power < 10 kW/m

Deep water + smaller waves



• **FPP and Floating wind**

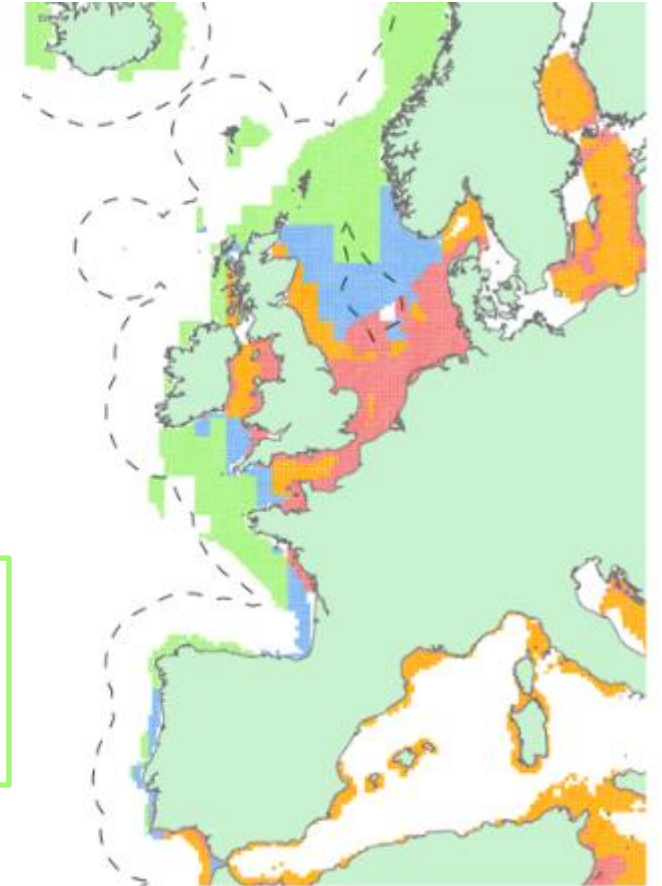
- Depth > 45m < 500m
- Mean wind > 7 m/s
- Wave power 10 - 25 kW/m

Deep wind + larger waves



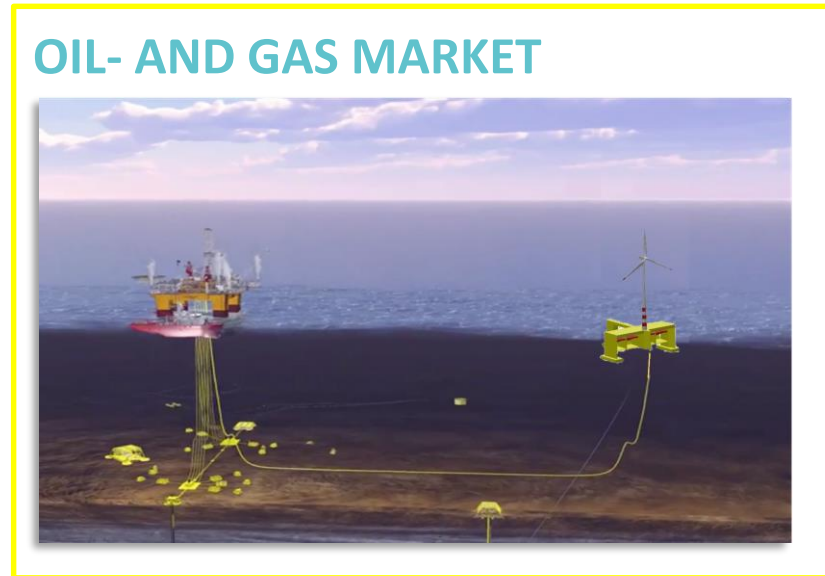
• **FPP Market Leader**

- Depth > 45m < 500m
- Mean wind > 7 m/s
- Wave power > 25 kW/m < 50 kW/m



A MULTIPLE MARKET APPROACH

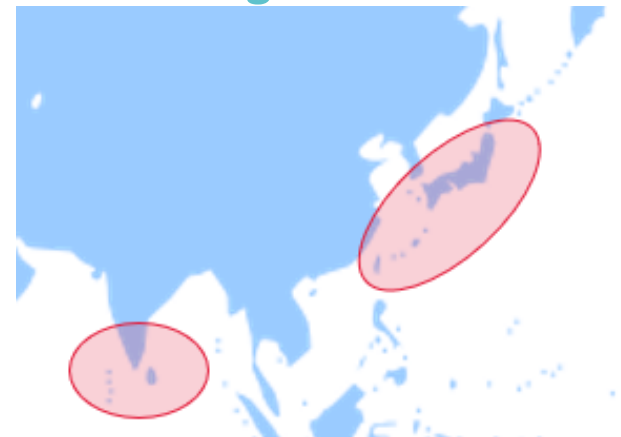
Floating wind farms



Single unit projects for DEMO and remote power



Licensee agreement



EXAMPLES OF NEWS - O&G OPERATION INTEGRATING WITH RENEWABLES

Hydrogen for re-injection into natural gas



BP, Chrysaor, Shell

Industry and Governments back new Net Zero Solution Centre at OGTC in UK



Equinor

Equinor to install 88 MW Floating wind into 2 Norwegian oil fields



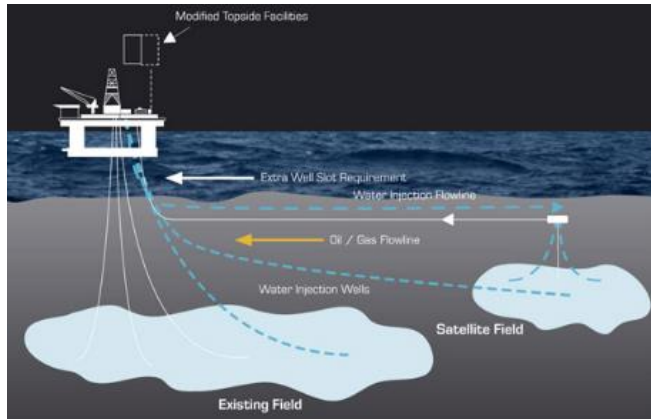
Danish government (EUDP) funded project

Lundin, APL-NOV, Cefront, Semco Martime, AAU and FPP to develop multiple concept for O&G support

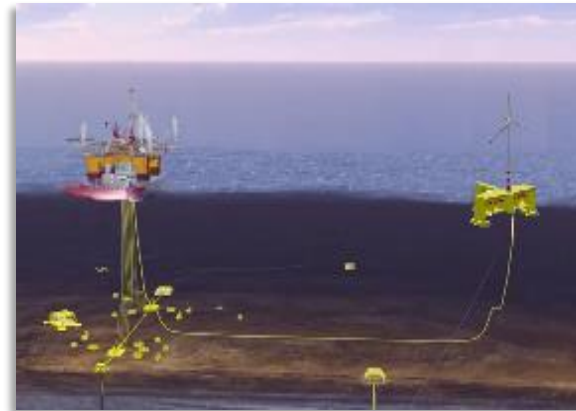


POTENTIAL APPLICATIONS WITHIN OIL AND GAS MARKET

Enhanced Oil Recovery



Direct power



Service / Decom / temporary



WHY RENEWABLES IN O&G

- As fields get older, they often become gas deficient => Gas and/or diesel is transported to site
- To increase production EoR is needed. Distance to shore or topside major limitation for installation (often only 5-20 MW)
- Renewables can provide **increased flexibility** in the design of O&G operation both in new field developments but especially in expansions / late life upgrades.



WHY RENEWABLES IN O&G

- Driven by the increased focus on climate change and sustainability the **general public and some shareholders/investor** are increasing the pressure for operators to reduce the environmental impact of operations. E.g. the environmental cost per barrel oil produced is becoming a key CSR parameter.
- CO2 emission from the actual O&G production (extraction and processing) is substantial. 33% of Norwegian CO2 emissions come from the extraction of O&G.



Norway pledges to become climate neutral by 2030

Parliament approves radical proposal of accelerated emissions cuts and carbon offsetting to achieve climate goal 20 years earlier than planned

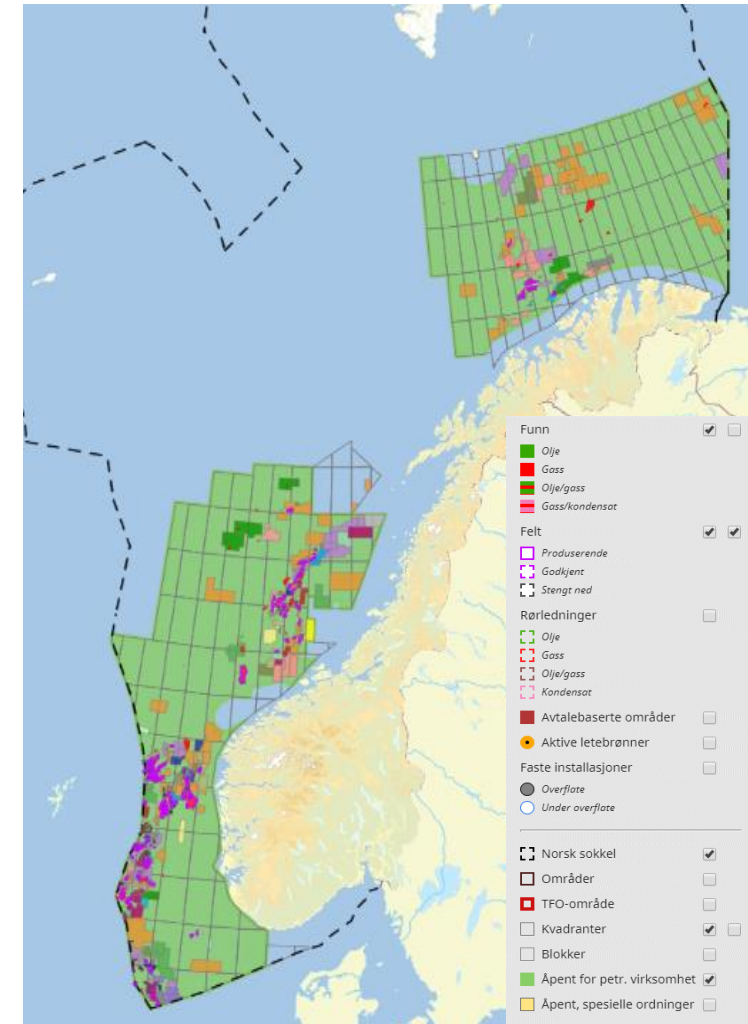


▲ Statoil gas processing and CO2 removal offshore platform near Stavanger, Norway. Photograph: Reuters Staff/Reuters

Norway's parliament has approved a radical goal of achieving climate neutrality by 2030, two decades earlier than planned.

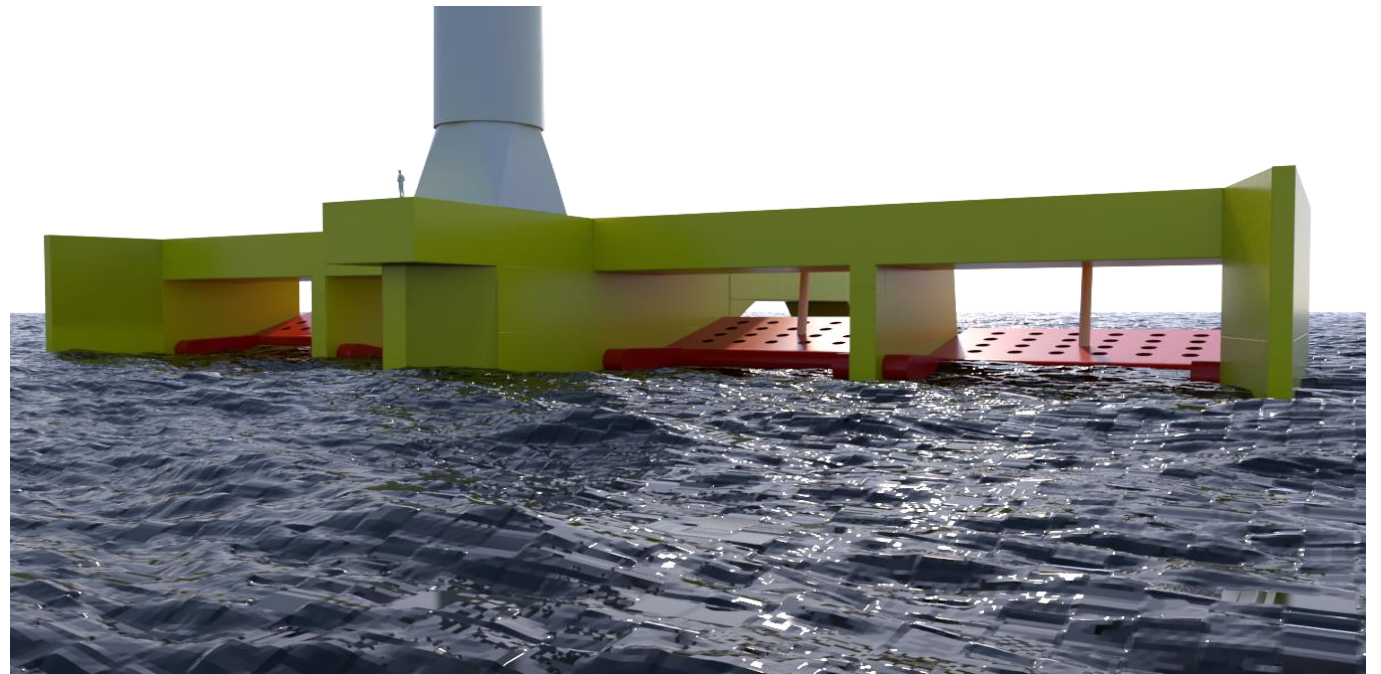
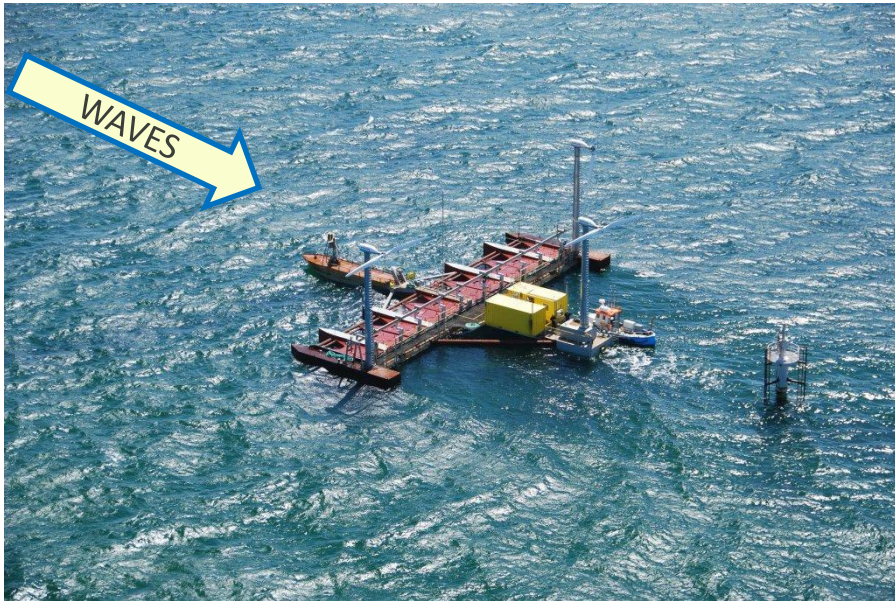
WHY RENEWABLES IN O&G

- The **cost of offshore renewables** has come down rapidly, making renewables a feasible alternative to other power generation sources.
- New offshore renewable technologies that are feasible in deeper waters and harsh conditions are emerging



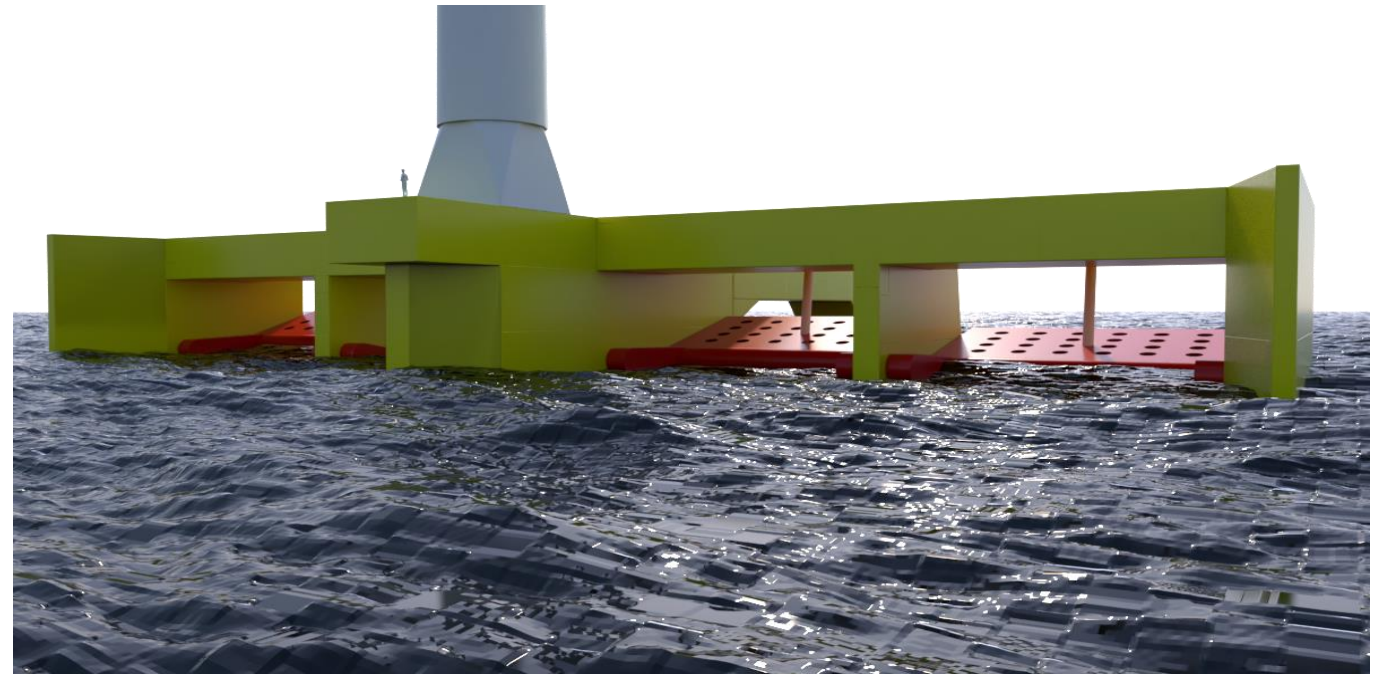
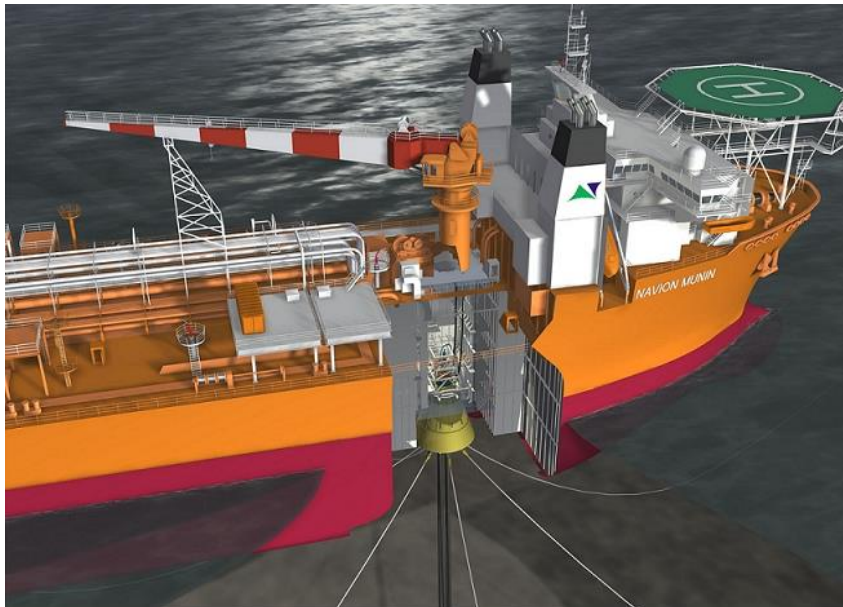
WHY FPP IN O&G – TECHNOLOGY “ALMOST” PURPOSE BUILD

- **Greater power capacity and a reduced cost of energy**
- **A more consistent and predictable power output**
- **Increased safety, both from the lee/harbour effect provided by potentially removing hazardous equipment from other manned platforms on the field.**






WHY FPP IN O&G – TECHNOLOGY “ALMOST” PURPOSE BUILD

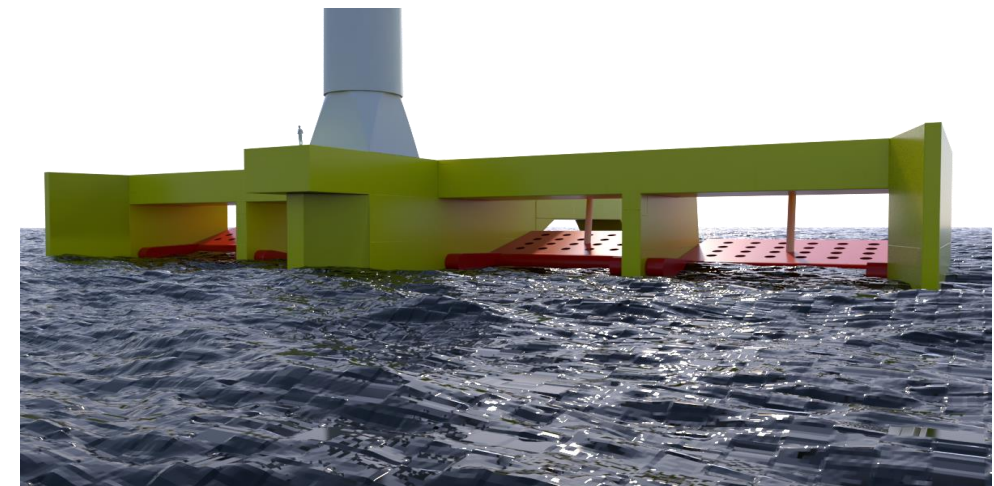
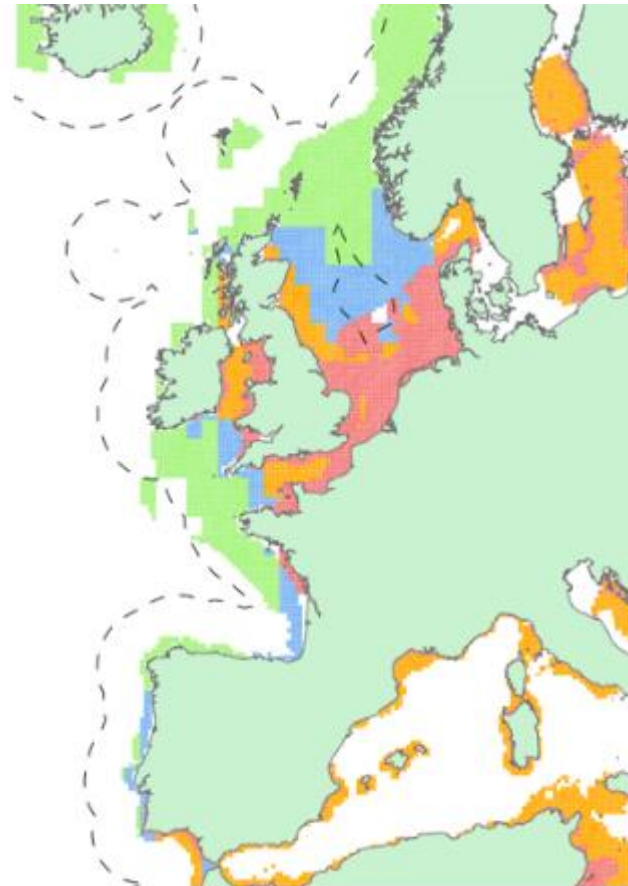
- Technology is **build up of High TRL subsystems** and standard components from O&G and offshore industry.
- The mooring design **secure flexible and cheap operations and installation**



WHY FPP IN O&G – TECHNOLOGY “ALMOST” PURPOSE BUILD

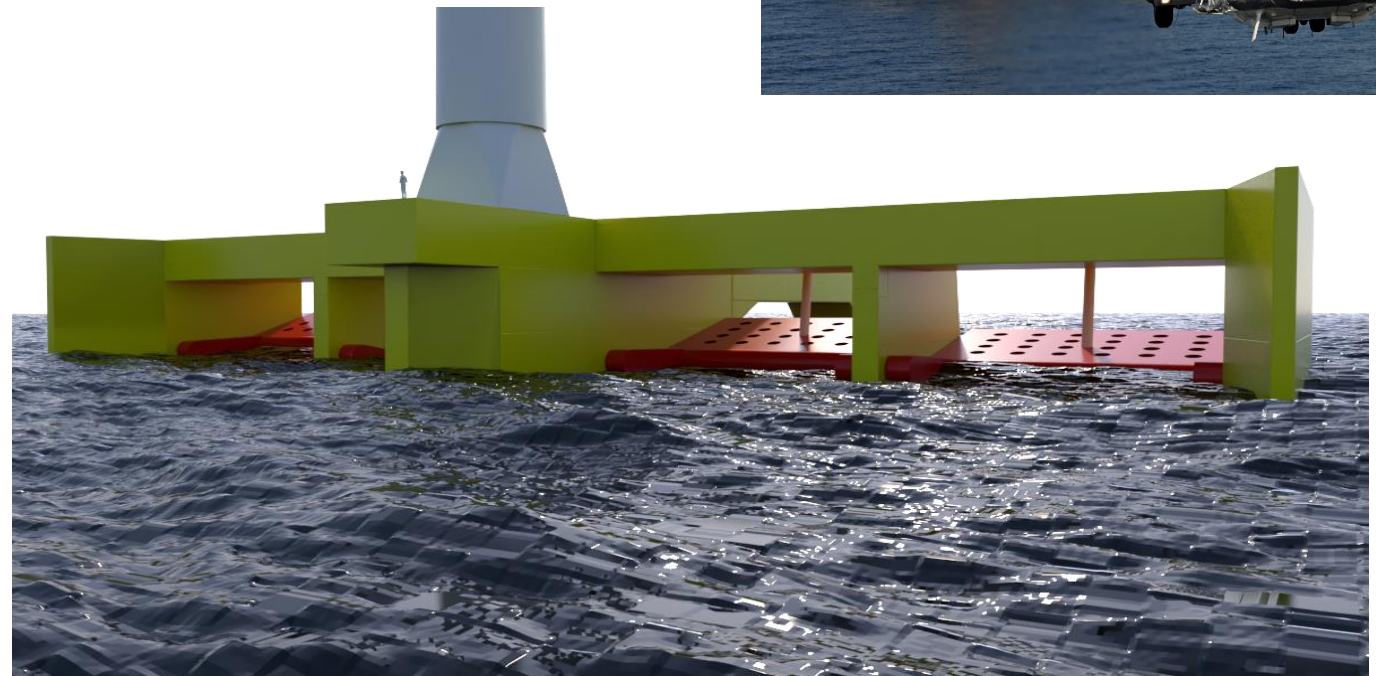
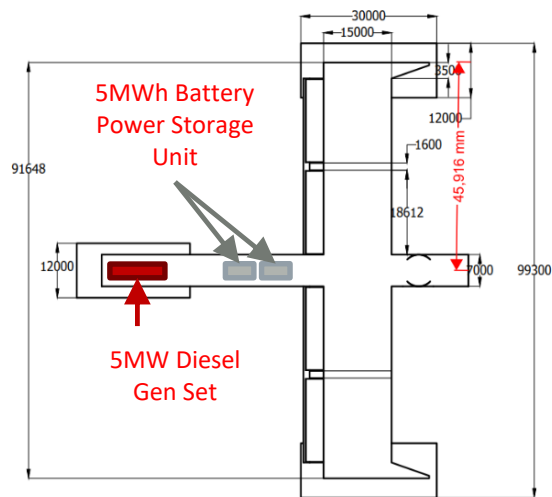
– The technology is designed for exploitation of high energy sites.

-  • **Fixed foundation market**
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-  • **FPP and Floating wind**
 - Depth > 45m < 500m
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-  • **FPP exclusively**
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WHY FPP IN O&G – TECHNOLOGY “ALMOST” PURPOSE BUILD

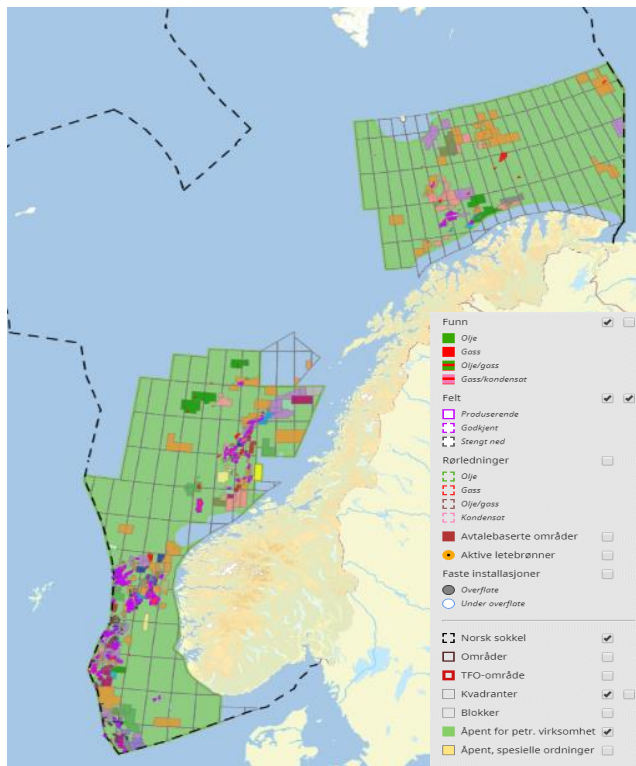
- **Space for auxiliaries**, the P80 has significant indoor area for auxiliary systems e.g. storage, power generation, process equipment, helipads, etc.



NORWAY, DK AND UK ARE FPP'S INITIAL OIL AND GAS ENTRY MARKETS

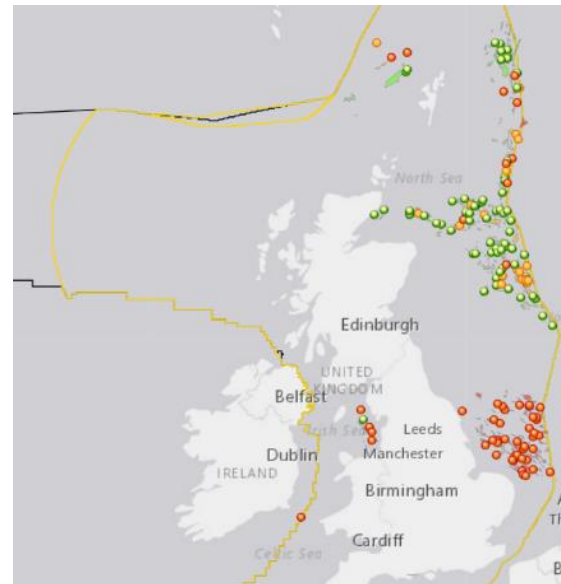
Norway

- Yearly value 442 bNOK



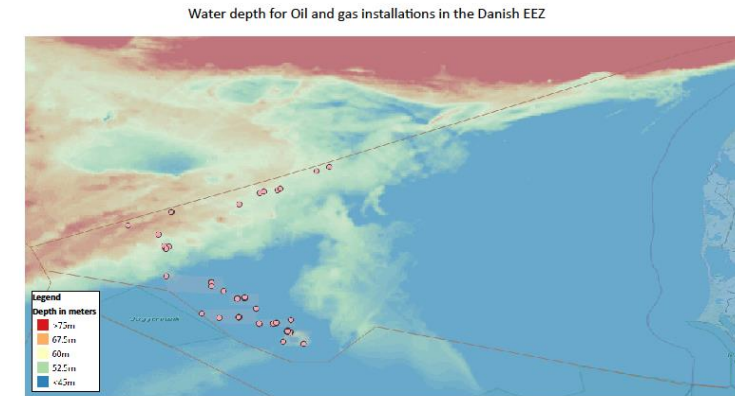
UK

- Yearly value \$43.63bn



DK

- yearly value ~25 bDKK



FLOATING POWER PLANT

Thanks
Questions ?

