

FLOATING POWER PLANT

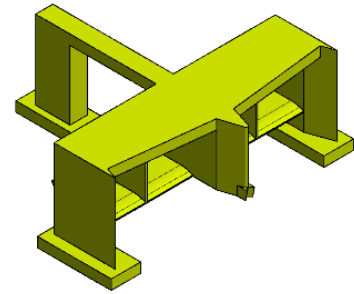


Redefining the future of green energy  
- Dispatchable renewable for remote island

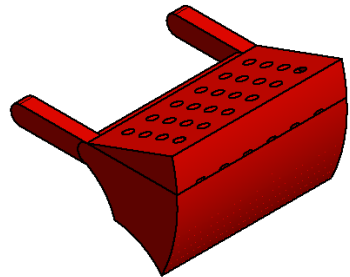
Floating Power Plant A/S  
– Clean Energy for EU Islands - Webinar



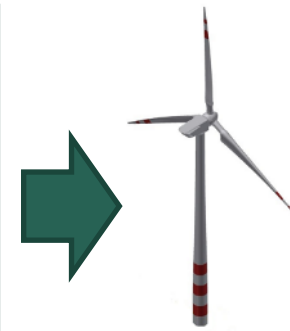
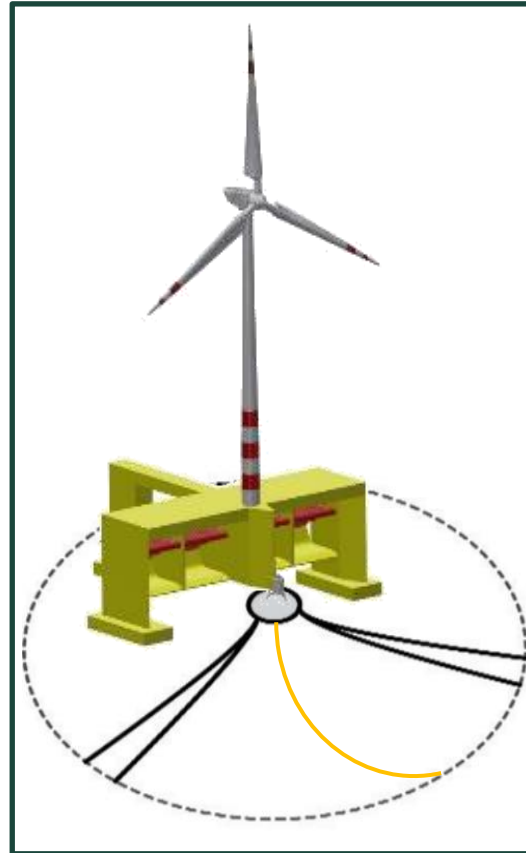
# THE TECHNOLOGY – KEY COMPONENTS



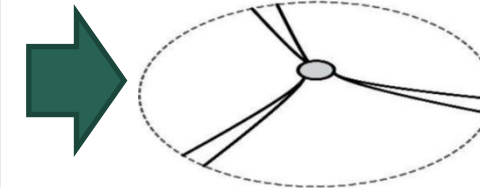
**Semi-submersible platform**  
*build via panels*



**Unique, patented WEC and PTOs**  
1-4 MW wave power



**4-15 MW wind turbine**



**Disconnectable turret mooring**



**Subsea grid**

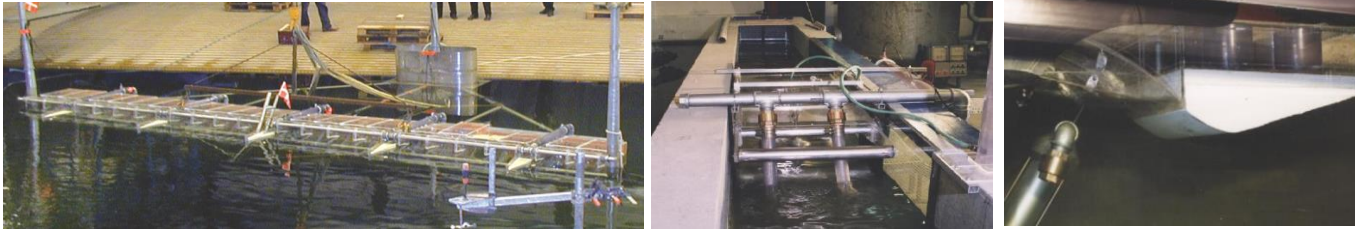


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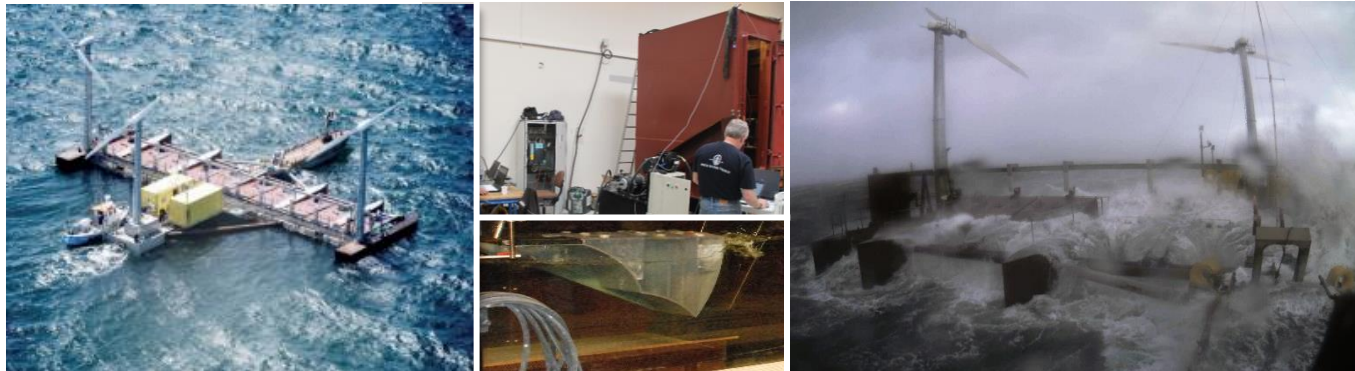
Survival test at IHCantabria June 2021  
Video speed slowed to match full-scale scenario

# Thorough Design Development – Driven by clients

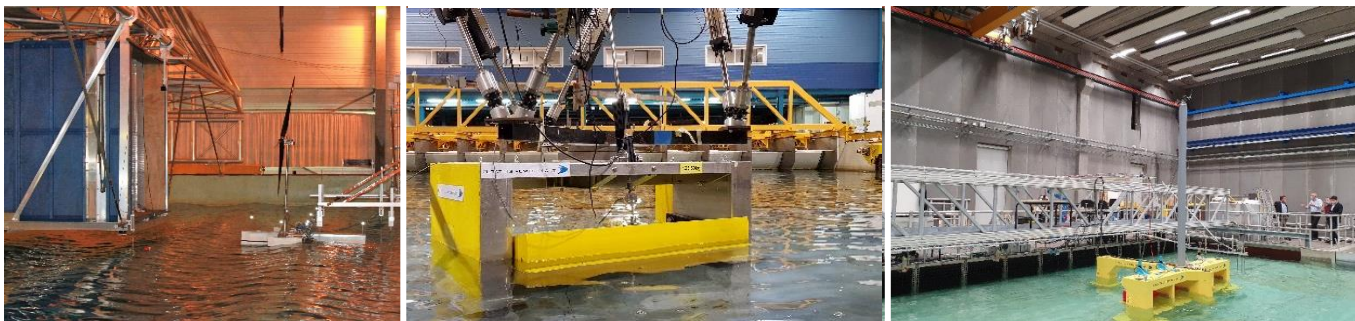
## CONCEPT DEVELOPMENT – idea validation and patenting



## PROOF OF CONCEPT – 4 offshore tests and dry testing



## COMMERCIAL DESIGN & CERTIFICATION BY LLOYDS + DNV GL



## CLIENT DRIVEN DESIGN PROCESSES



FPP are co-owning and developing 3 SPVs with DP energy in Scotland, Wales and Ireland for utility scale floating wind farms based on FPPs technology



For Total Denmark, FPP and Technip FMC has developed baseload electrifications solutions enabled by hydrogen – “a gamechanger in power-to-x”



For Lundin Norway, FPP and partners has developed solutions for supporting O&G production and electrification. Advisory support from Equinor and AKER BP.



FPP's offshore testing has been with and grid connected via an Ørsted offshore wind farm - meeting grid codes, safety, insurance, O&M requirement, etc.



An aerial photograph of a wind turbine with a white tower and three blades, mounted on a bright yellow floating platform (FPP) in the middle of a dark blue, choppy sea. The platform has a cross-like shape with four main arms. The text 'COMMERCIAL SYSTEM FOR THE EU MARKET – THE FPP PLATFORM' is overlaid in the top left corner.

## COMMERCIAL SYSTEM FOR THE EU MARKET – THE FPP PLATFORM

### Key system specifications

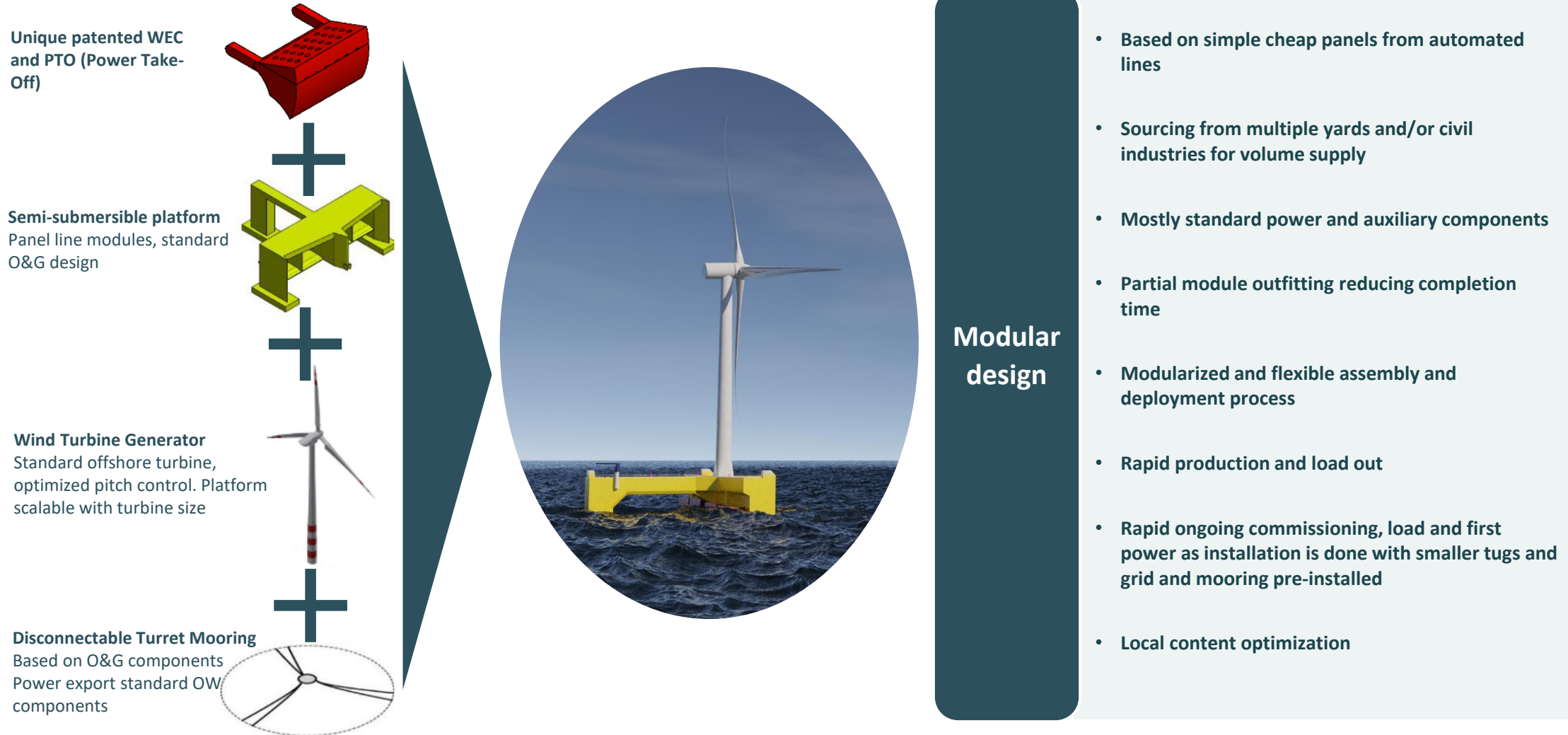
- 80m capture width
- 1-4 MW wave power, dependent on site
- 4-15 MW wind turbine
- Water depth +50

### Key value propositions of wind + wave

- Unique market segment in high energy sites
- Greater power capacity and a reduced cost of energy
- Better power quality as waves lag wind
- Highly scalable and modular design
- Enables integration of auxiliaries, ideal for P2X

# Scalable modular design based on a standard ship building value chain

The platform supply and design is based on a standard ship building value chain and modularization to reduce cost, minimize fabrication and enable high volume supply





## A MULTIPLE MARKET SEGMENT APPROACH

### Floating wind farms

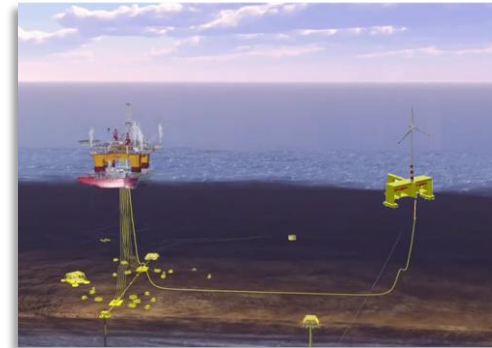


- Largest scale grid connected projects
- Key offering:
  - Opening new energetic market areas
  - Significantly increase power quality
  - More and cost competitive power

### Offshore Power to X (blue economy)

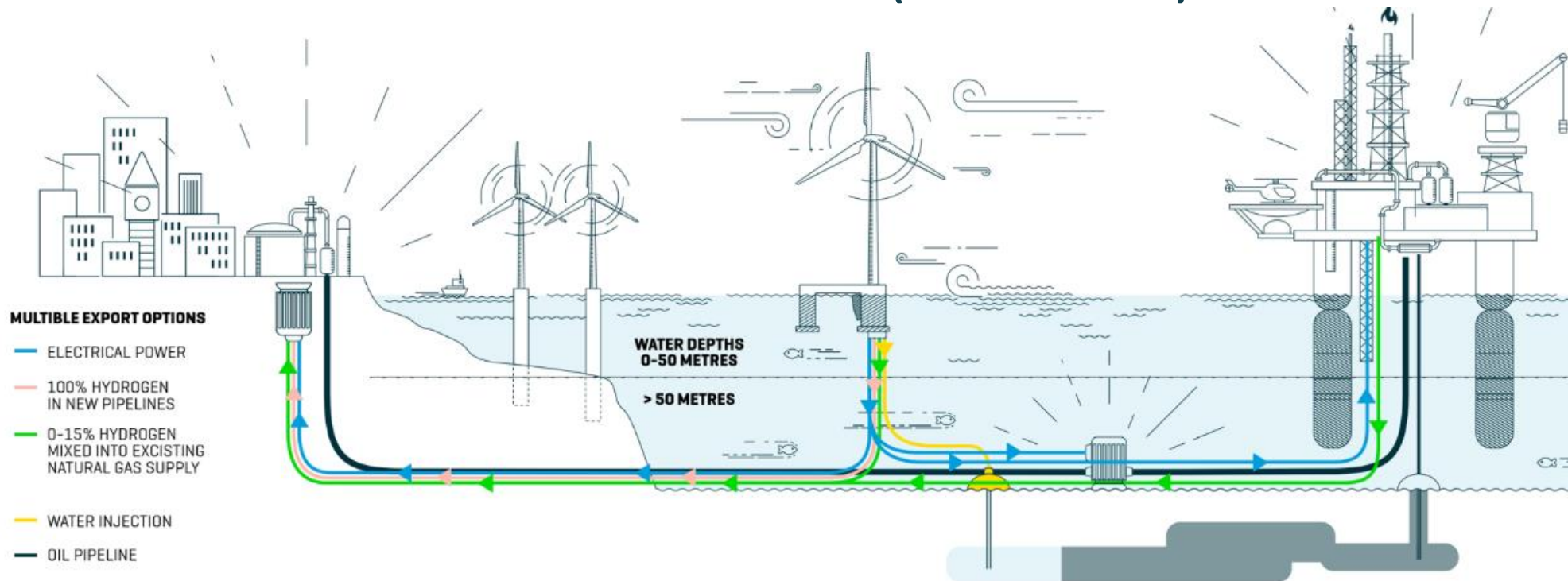
Oil and gas

Remote islands



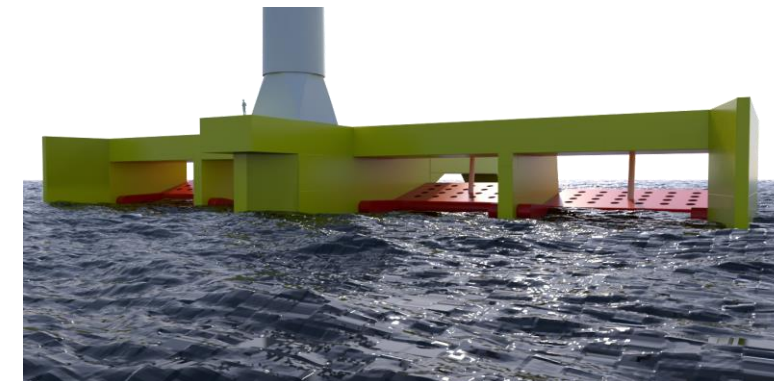
- Small to medium scale offgrid / weak grid projects
- Key offering:
  - The integration of hydrogen (see next slide) gives FPP the ability to provide constant renewable power
  - Opening new energetic market areas
  - Ideal for offgrid deployments

# FPP'S MULTIPLE P2X MARKET APPLICATIONS (O&G MARKET)



## FPP's unique value proposition towards the Oil and Gas market

- **Greater power capacity** and a **reduced cost of energy**
- A more **consistent and predictable power output** as waves lag wind, continuing to produce power when a floating wind turbine alone would have stopped
- **Increased safety**, both from the **lee/harbour effect provided** and by removing equipment from asset.
- Technology is **built up of High TRL subsystems** and standard components from O&G/Offshore Wind
- The technology is **designed for exploitation of high energy sites**.
- **Space for auxiliaries**, the FPP Platform has significant indoor area for auxiliary systems e.g. storage, power generation, process equipment, helipads etc.





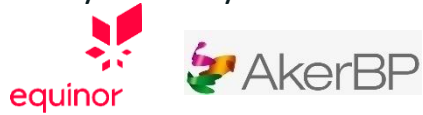
# A GAMECHANGER IN P2X – PROVIDING BASELOAD POWER ENABLED BY HYDROGEN PRODUCTION ON SITE

## Completed P2X-projects

- With Lundin Norway
  - Development of concepts to integrate renewables in Oil and gas
  - Key Partners:



- Key Advisory:



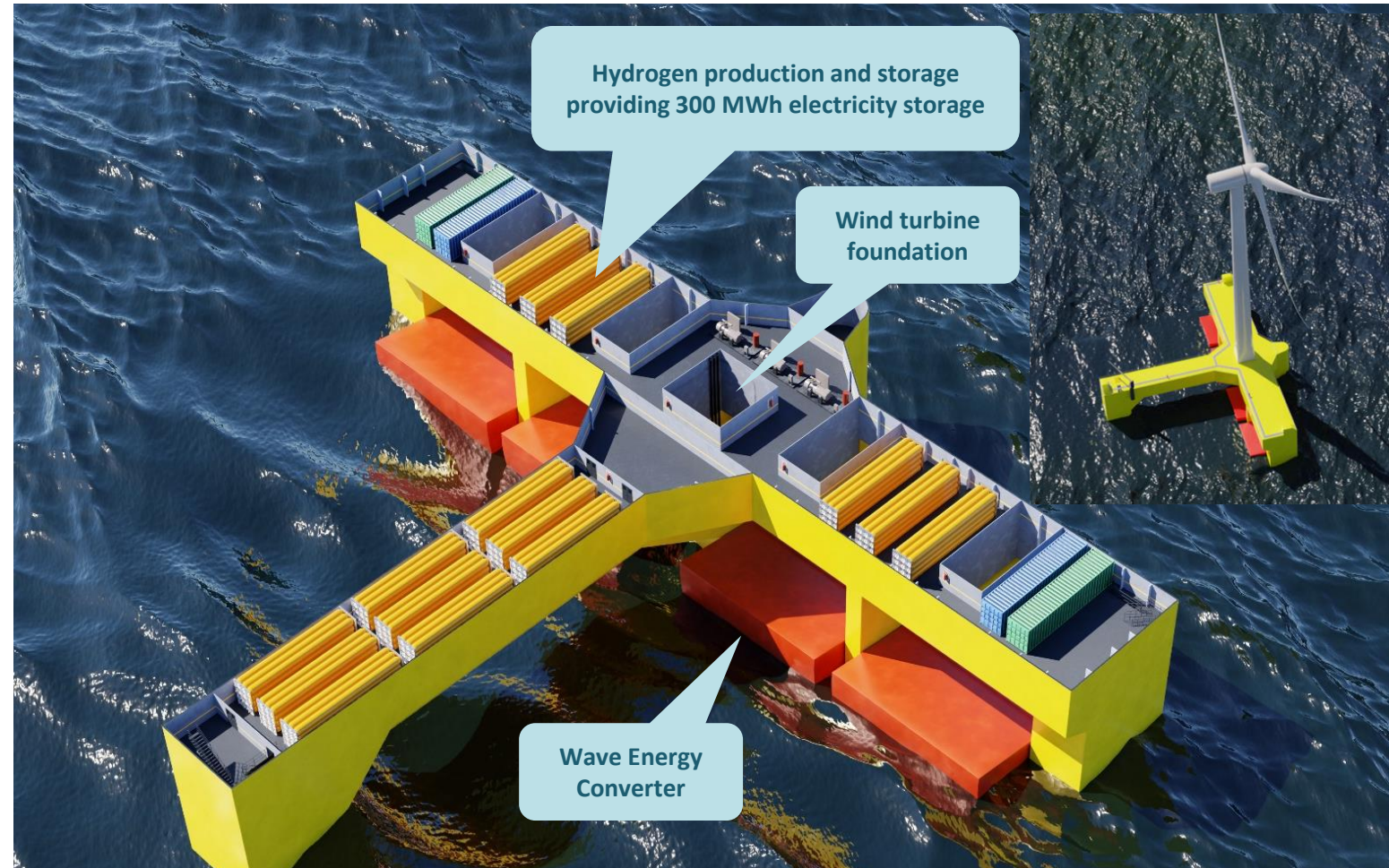
- With Total Denmark
  - Development of concept to provide “constant” renewable power offshore
  - Key Partners:



Centre for Oil and Gas - DTU  
The Danish Hydrocarbon Research and Technology Centre



## Overview of the platform interior with substantial storage space and room for hydrogen production



Concept: Wind and wave power is delivered directly to an Oil and gas platform. Excess renewable power is converted into hydrogen, stored and turned into electricity when there is now/reduced wind and wave resource.



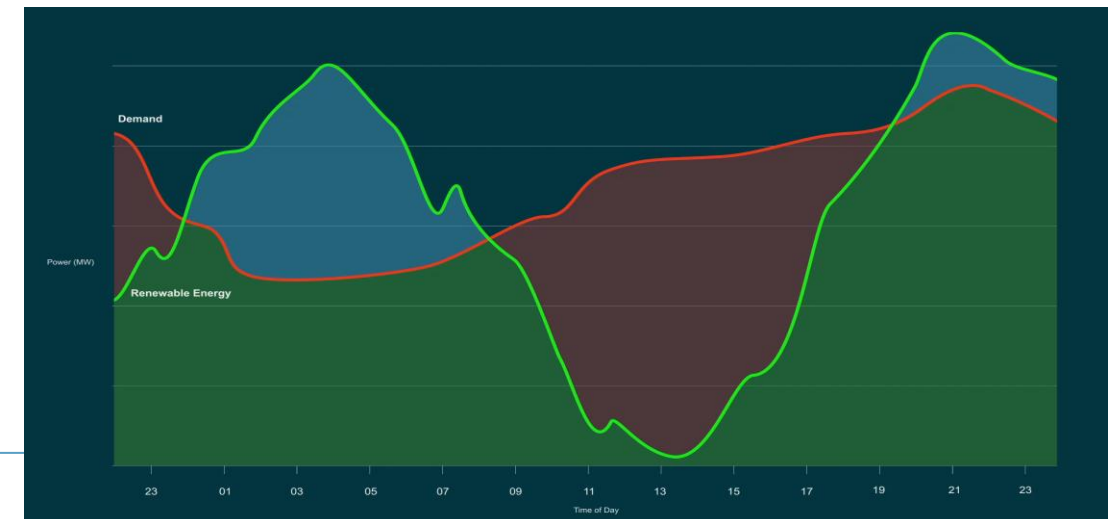
# ISLAND MARKET POWER TO X: RELIABLE RENEWABLES USING OFFSHORE HYDROGEN

## Key challenges for remote islands:

- Limited onshore space
- Tourism
- Needs dispatchable renewable power
- Non-stiff (weak) grid
- Often limited value chain and skills set
- Currently ship in diesel og gas
  - High cost
  - Significant CO2 emissions and air pollution
  - Reduced import

## FPPs value proposition for islands market:

- Dispatchable renewable power
- Out of sight & limited space needed for onshore installations
- Scalable, flexible and modular installations that fit local capabilities and value chain
- Flexible production and assembly options
- Different business models available
  - Technology sales
    - (local developer / owner)
  - Lease model
    - Partners and FPP own and operate



# FPP CANARIAS (PLOCAN) - OVERVIEW


- **Deployment at PLOCAN test site in Gran Canaria**
  - 70-100 m depth, medium wind and wave resource
  - Deployment of P-Plocan
    - 4,25 MW Wind and 1MW Wave
    - Project to include hydrogen
      - 1 MW electrolysis, 48 MWh storage, 1,2 MW fuel cell
  - Deployment H2 2025
- **Setup**
  - FPP Canarias S.L. registered an fully operational
  - Spot market tariff, working on being increased
    - Revenue 12-16m€
  - R&D Tax credit
    - 17.6 m€ certified (14m€ monetised)
    - 15 m€ not certified (12m€ monetised)
- **Site Development**
  - Lease (option agreement for 10 years) secured
  - Grid connection available
  - Existing consents and licenses
    - EIA submitted







# Market development – a stepping-stone process

 Projects in 15-300 MW range

 Limited competition

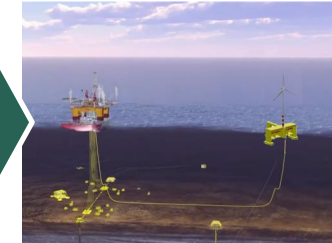
 Reduced lease process, direct client engagement

 Significant developer opportunity

 Need for “fixed consortium/partner group” with fixed contracts and warranty setup

## P2X: Electrification of O&G production

- FPP in process with +15 operators/projects
- Market of 3-5 GW by 2030
- No subsidy needed
- Projects need “constant” renewable power



## P2X: Renewable power to Remote Islands

- FPP in early development of first 2 projects
- Market of 2-3GW by 2030, >15 GW by 2050
- Legislation needed to move diesel/gas cost to dispatchable renewable power options
- Projects need “demand driven” renewable power



## P2X: Green hydrogen production

- FPP in first stages of design with TechnipFMC
- Market of 1-3 GW by 2030
- Needs volume and series production to get cost down
- New pricing structure needed for green hydrogen



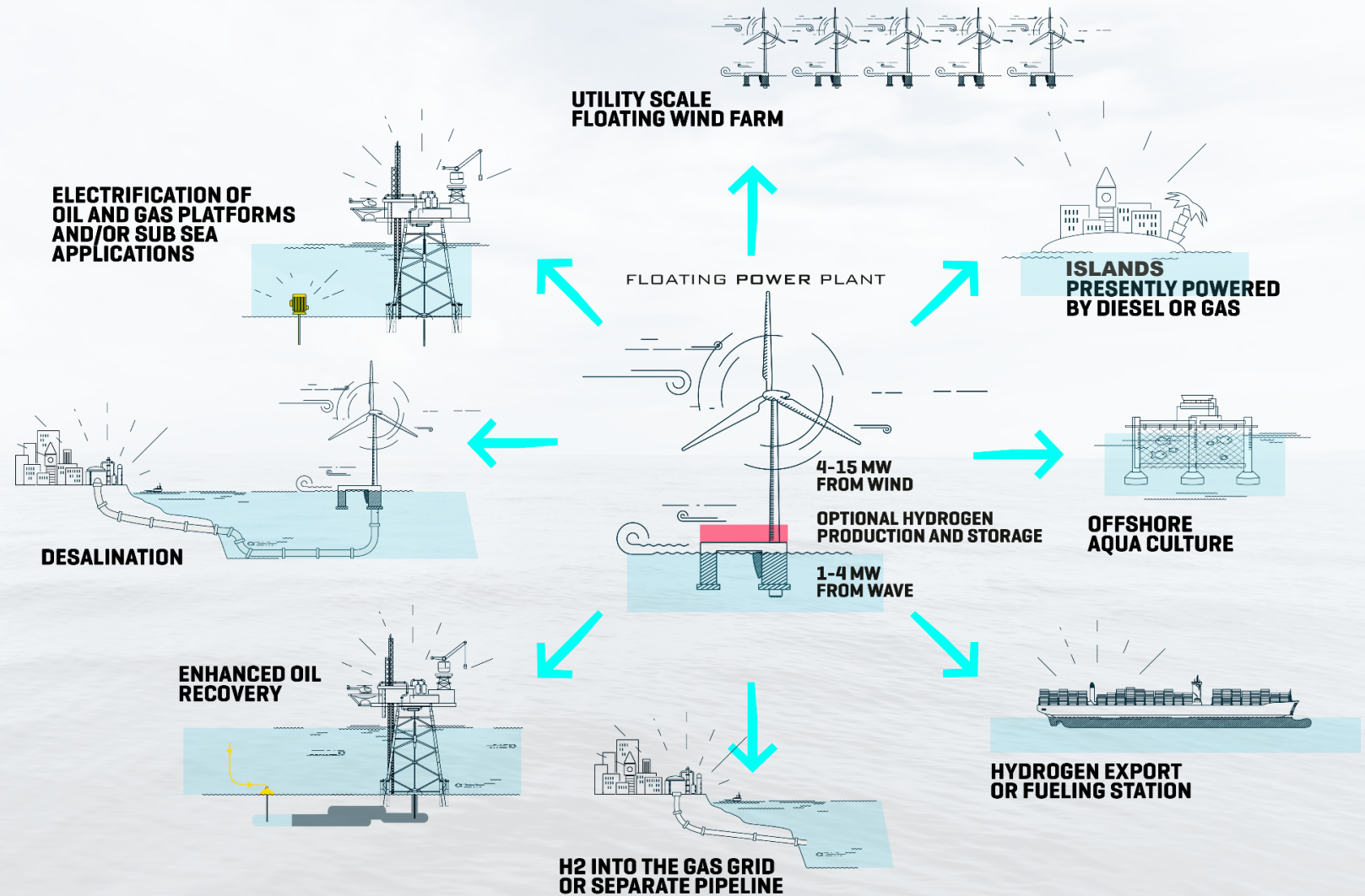
## Floating Offshore Wind

- FPP in process with 7 developers/projects
- Market of ~14 GW by 2030
- More accessible/can be deployed at higher energy sites
- Better power quality/marginal cost for wave energy converter



 Projects in 200-1000 MW range

# One technology – a multitude of green applications



Want to know more:  
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