



# Coexistence between Offshore wind and Biodiversity

November 2022



Based on our belief that offshore wind energy is an essential part of the global energy transition, we develop, finance, build and operate offshore wind farm projects all around the world.

Ocean Winds (OW) is the result of a Joint Venture between two of the biggest worldwide players in energy:



**ENGIE**, French multinational energy and services company and global leader of the zero-carbon transition.

- **Key Figures of ENGIE**

- 101,504 employees
- €57.9 billion revenue
- 100.3 GW installed power generation capacity
- 34.4 of renewables total installed capacity

**EDPR** (Energías de Portugal Renováveis), subsidiary of EDP and global leader in the renewable energy sector and the world's fourth-largest wind energy producer.

**Key Figures of EDPR**

- 2,150 employees
- €1,758 million total revenue
- 13.6 GW installed power generation capacity (100% renewables)

# 2020 - WindFloat Atlantic, the 1<sup>st</sup> European floating offshore wind farm

## LOCATION

18 km of the coast of Viana do Castelo, Portugal, in 100m water depth, in a area of sand and sediments, suitable for mooring

## TECHNOLOGY

3 wind turbines V164 - 8.4 MW each

3 WindFloat floating platforms

Dynamic cables for the collecting system

## INTERCONNECTION

Constructed by PT TSO (REN) allowing a direct connection to 60kV to an existing onshore substation operated by PT DSO (E-REDES)

## FINANCING

EIB: Project Finance 60 M€

EU FUNDING - NER300

PT ENVIRONMENTAL FUND (FA)

WINDPLUS



## STATUS

In Operation

- 25 MW CAPACITY
- DESIGNED FOR 25 YEARS OF OPERATION
- EQUIPMENT FABRICATION STARTED IN Q1 2018
- OFFSHORE INSTALLATION IN SUMMER 2019 / WINTER 2020
- OPERATION & MAINTENANCE BASE IN THE NORTH OF PORTUGAL, USING LOCAL TEAMS & LOGISTICS





An aerial photograph of an offshore wind farm in the ocean. Three large white wind turbines with yellow bases are visible, spaced out across the blue water. In the background, there are mountains and a cloudy sky. The text 'WFA – Environmental Obligations & Status' is overlaid in yellow on the bottom left.

# WFA – Environmental Obligations & Status

November 2022





# DCAPE → WFA Environmental License (Decision on Environmental Conformity of the Construction Design)

## PRE-INSTALLATION:

- Approved Environmental Monitoring Plan
- Archaeological Assets Identification– 1 year (campaigns every 2 months)
- Cetaceans and Anthropogenic Noise – 1 year
- Geological Substrate Monitoring Programme – Before Export Cable installation
- Water quality monitoring programme – 2 collections

## INSTALLATION:

- Archaeologist present during anchor and mooring lines installation
- Export Cable - Electromagnetic fields Propagation impact on Fish and Eels.
- Geological Substrate Monitoring Programme – After Export Cable installation
- Socioeconomics Monitoring – Complaints Book and Pamphlet
- Water quality monitoring programme – 2 collections

# DCAPE → WFA Environmental License (Decision on Environmental Conformity of the Construction Design)

## OPERATION:

- Birdlife – 3 year (campaigns every 2 months + Radar imaging)
- Platform Marine Growth Colonization – 4 collections, in the first 5 years
- Cetaceans – first 3 years; and Anthropogenic Noise – first year
- Chiropters (bats) – first 3 years
- Socioeconomics Monitoring – Complaints Book for project life (25 years)
- Water quality monitoring programme – 2 collections per year, for the first 2 years.

## DECOMMISSIONING:

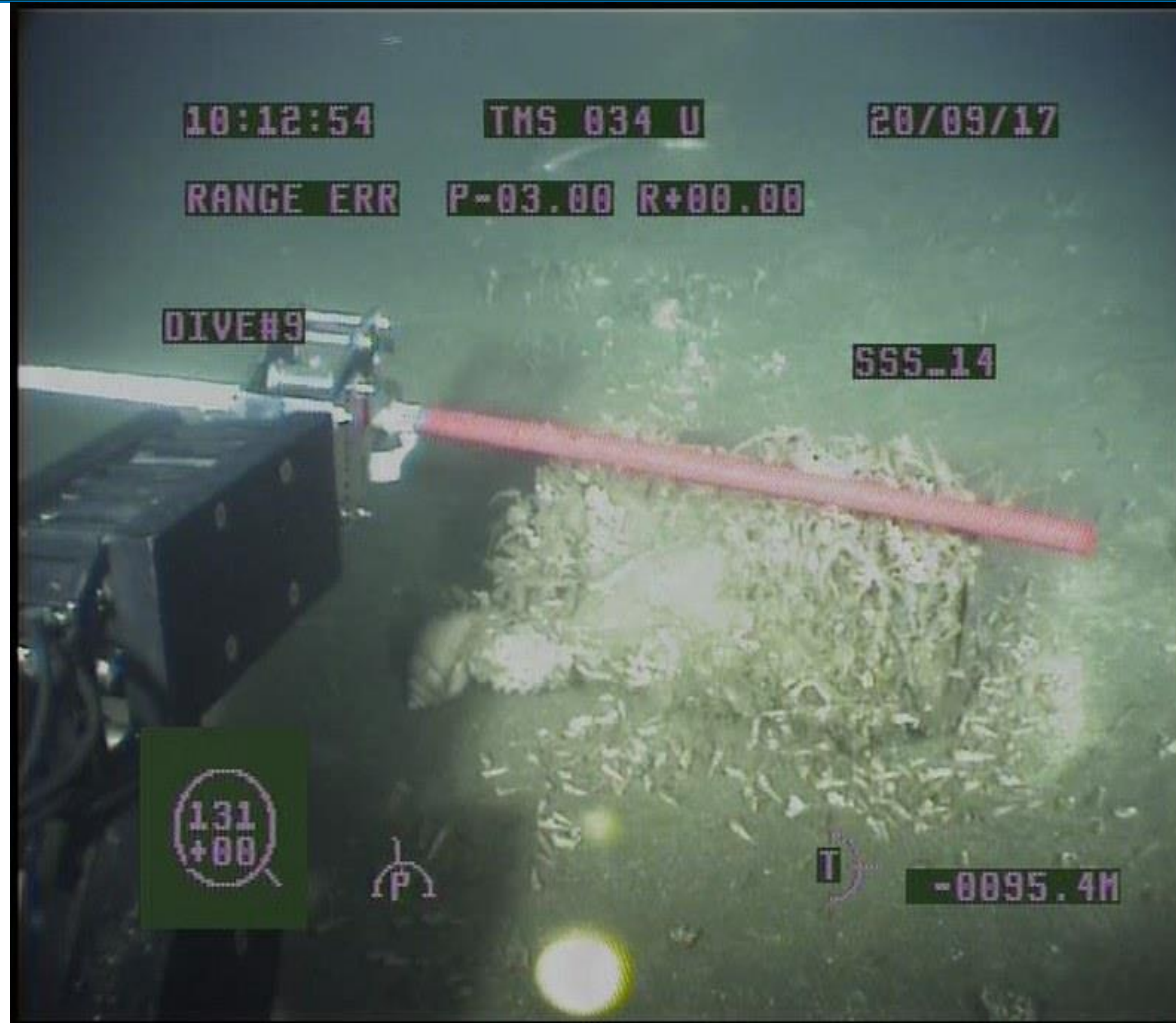
- Specific Environmental Management Plan – with Waste Management Plan
- Socioeconomics Monitoring – Complaints Book



## Archaeological

Possible Assets Identified in our area were not in anchors or mooring lines route.

No archaeology findings found during ROV layout operations.





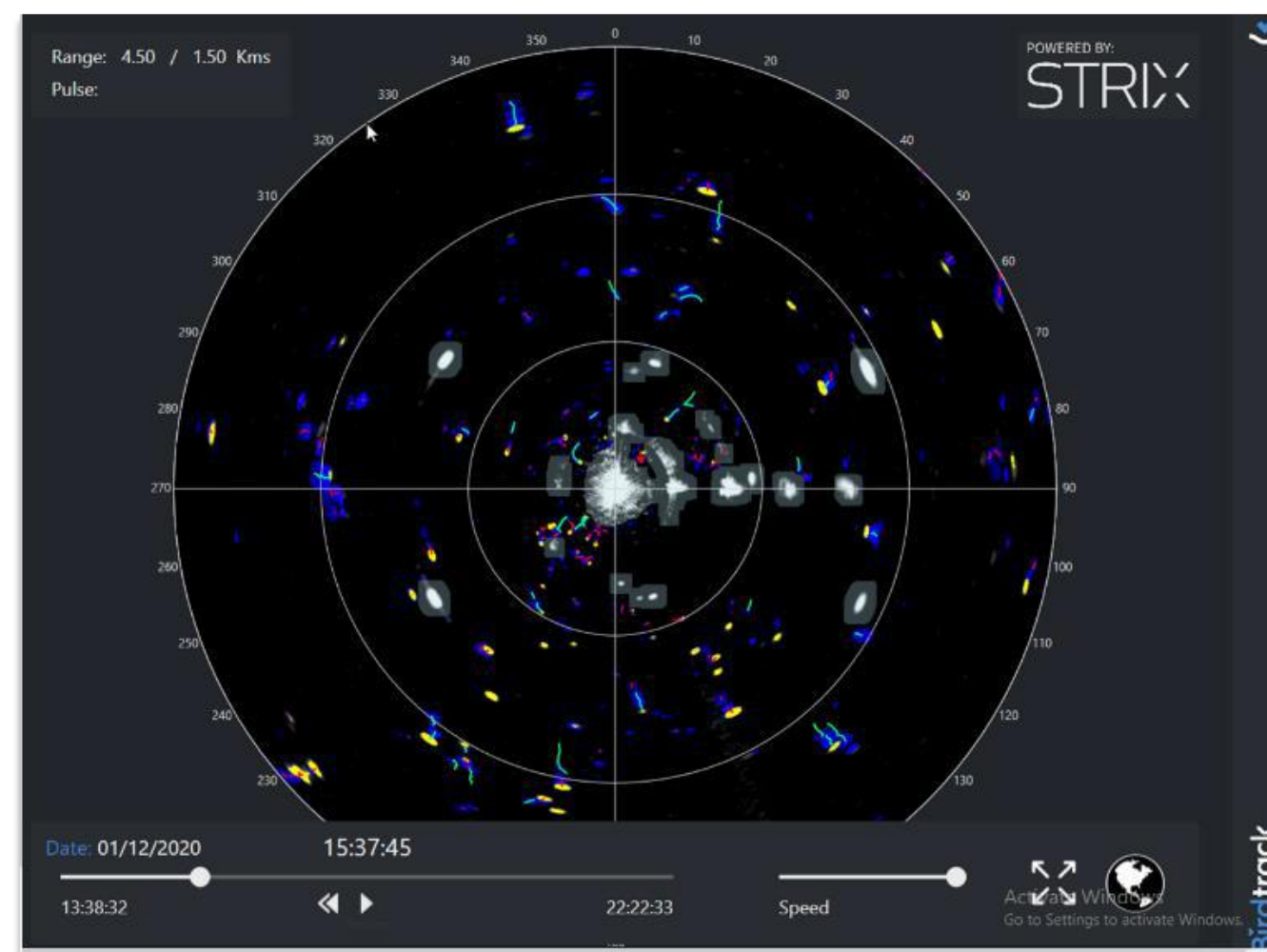
# Current Status

## Birdlife (year 0 and 1st)

**21 species detected** – one endangered (*Pufinus mauretanicus*).

**Only 3 species in collision risk with turbine:** 2 of sea gulls (*Larus fuscus*, *Larus michahellis*) and the Northern gannet (*Morus bassanus*).

**Radar image**, installed in 1 platform.





## Cetaceans and Anthropogenic Noise (year 0)

Detections by visual census every 2 months, and c-pods. Anthropogenic Noise by hydrophone.

Common dolphin (*Delphinus delphis*), was the one most found, and harbour porpoises (*Phocoena phocoena*) All of the specimens are more frequently detected by audio closer to shore, outside the control and windfarm areas.



## Chiropters (bats) – first year ongoing

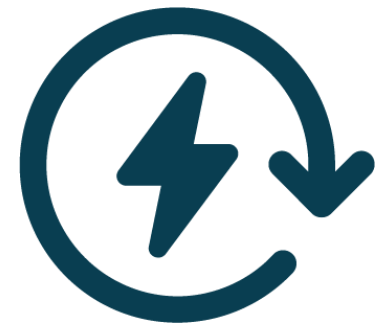
Batlogger installed in the nacelle closest to shore, requirement came from WF prototype experience, where bats were detected at 5 Km from shore.

Preliminary data indicate that we already have 11 recordings in WFA of at least 2 species *Nyctalus leisleri* and *Tadarida teniotis* (18.5 km from shore).





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## **Electromagnetic fields Propagation impact on Fish and Eels. & Geological Substrate Monitoring Programme – (Export Cable installation)**

Both of these are of TSO responsibility, OW/WindPlus has little information.



## **Socioeconomics Monitoring – Complaints Book**

No complaints were made in the local parishes' complaints book, not by email, nor letter or phone. Therefore no actions, nor mitigations needed so far



## **Water quality monitoring programme (year 0 and 1<sup>st</sup>)**

In all samples (in both summer and winter), only oils were detected in both control (north) and windfarm (south) area, even before construction. Being higher in the control area. Origin is unknown, however possible due to vessels activity. Besides this, all parameters were as predicted and no unforeseen substance present.



# New Biodiversity Study



**Not a license obligation**



**Analyse all environmental programs results so far**



**1 year - 4 campaigns of 2 months for each season to study:**



## Ichthyofauna

- fish species, density, diversity, spatio-temporal dynamics, and economic and ecological value in the windfarm location vs outside

## Plankton

- three sampling stations (1 in the windfarm, 2 outside for control, N and S)
- temperature, salinity, pH and chlorophyll
- zooplankton morphology
- total biomass, and taxonomic identification



# 2022- EFGL, building the first environment oriented pre-commercial project

## LOCATION

Over 16 kilometers off the coast of the Leucate-Le Barcarès area in the Mediterranean Sea in water depths of 65 to 80 meters

## TECHNOLOGY

3 wind turbines V164 - 10 MW each  
3 WindFloat floating platforms

## LOCAL PARTNER

Banques des Territoires

## ENVIRONMENT FOCUSED

- Enhance marine biodiversity with artificial habitats
- Improvement of bird behavior knowledge
- Implementation of ICCP to avoid any release of metals

## STATUS

In Construction

- **30 MW CAPACITY**
- **HOUSEHOLDS POWERED: 50,000**
- **DESIGNED FOR 20 YEARS OF OPERATION**
- **FID JANUARY 2022**
- **IN WATERS BY THE END OF 2023**





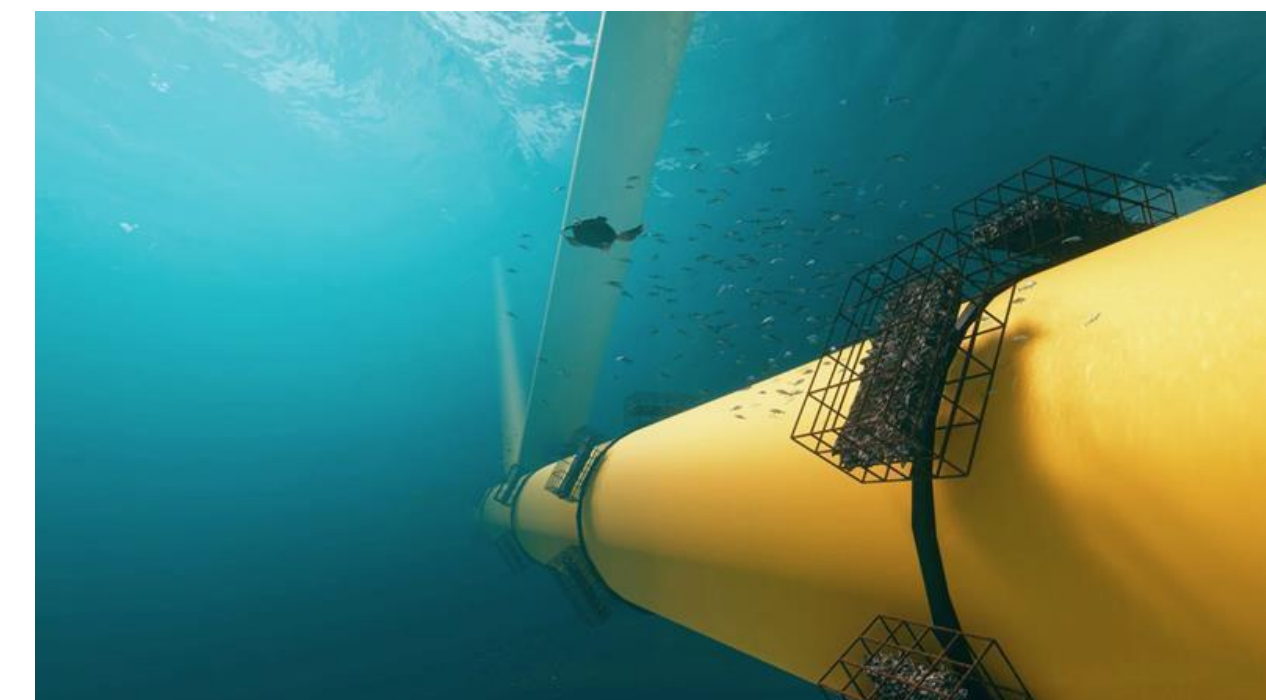
# Eoliennes Flottantes du Golfe du Lion, designed as an experimentation platform



In view of improving its reliability for EFGL use, coming test in WFA of a design tailored deterrent system to protect the handrails of the WindFloat from bird perching.



Ecodesign approach whose finality is to install artificial habitats on one EFGL floater to develop marine biodiversity.







Thank you!

OW  
OCEAN WINDS