OCEAN WINDS

WindFloat Atlantic

Five years generating clean energy.
Living the pOWer of floating offshore wind.

OCEAN WINDS

Ocean Winds is a pure offshore wind player, leading a new era of clean energy by turning ocean winds into power that light up homes, businesses, and communities. From end-to-end, we develop offshore wind farms at sea and keep them running to deliver reliable, green energy every day.

What makes us unique is the expertise of our people, the experience gained through our projects, and the vision from our sponsors, EDPR and ENGIE. Together, we deliver offshore wind projects that create value and set new standards for lasting impacts.

Ocean Winds is shaping what's next, working with governments, partners, communities and industries to build a world where offshore wind is at the foundation of an attainable and sustainable tomorrow. We're here for the long haul—delivering more than energy to create a legacy that goes beyond today and shapes tomorrow.

With 17 projects in 8 countries, OW is the majority shareholder, and operator of WindFloat Atlantic, the only operating offshore wind farm of Portugal, the first floating offshore wind farm in continental Europe, and the first semi-submersible in the world. It is located off the coast of Viana do Castelo in Portugal.

In operation since 2020, this pioneer project has showcased and demonstrated the possibility of taking offshore wind beyond, by installing floating platforms at sea depths of 100 meters, that have enabled to supply clean energy to 25,000 Portuguese homes and prevents the emission of 33,000 tonnes of CO_2 per year since 2020.

As a pre-commercial project, WindFloat Atlantic is the tangible proof of the viability of floating offshore wind technology and a key step towards large-scale commercial floating wind developments, demonstrating its readiness.

INTRODUCTION. BY JOSÉ PINHEIRO, OW COUNTRY MANAGER FOR IBERIA

> ***In Portugal, OW is WindFloat Atlantic's majority shareholder and also develops asset management. But WindFloat Atlantic is more than an offshore wind farm; it is more than a mere means to provide clean energy. It has gone beyond that, demonstrating the readiness of floating wind technology, showcasing the global offshore wind potential in deep waters – such as those off the Portuguese coast – and highlighting the capabilities of the Portuguese and European industry. It has become a pioneering project, globally recognized.***

OW, born out of a strategic alliance between EDP Renewables and ENGIE, and inheriting their valuable experience and expertise, develops, finances, builds and operates offshore wind farms worldwide. With a current portfolio of around 19 GW, OW has grown a strong pipeline of projects, with a unique one here, in Portugal.

But WindFloat Atlantic is more than just an offshore wind farm; it is more than just a channel to deliver clean energy. It has gone beyond, demonstrating the readiness of floating wind technology, globally unlocking the offshore wind potential of deep waters -like those off the Portuguese coast, and showcasing the capabilities and readiness of the Portuguese market and industry – transforming into a pioneering project, globally recognized.

Our dedicated team at Porto and Viana do Castelo, accompanied by the global support of our company and our sponsors, have led us to celebrate the fifth-year anniversary of our project, which have been filled of experience, learnings, challenges and celebrations.

As we reflect on this journey, five key messages emerge that encapsulate these years full of experience. While we continue to look ahead, we remain committed to turning our ambitions for Portugal's future offshore wind market into reality. Portugal stands out as a prime location for offshore wind development, thanks to its strong winds, which ensure high production potential and efficient operation.

In the context of a demanding energy transition, offshore wind solutions have the potential to meet the high demands high demands in electricity and will be crucial in generating the clean energy the country needs, while also fostering a new technological and industrial value chain.

In Portugal, WindFloat Atlantic is a key pillar for the industry, providing the know-how that has made floating wind energy viable and ready for commercial scale. And we're not talking about the future — OW is already developing commercial floating projects in other geographies, building on this experience. That is also our next step here in Portugal, where it all began.

2011-2016 Prototype testing phase

Tested off the coast of Aguçadoura (Póvoa de Varzim – Portugal), the WindFloat 1 prototype, equipped with a 2 MW wind turbine, faced the real conditions of the Atlantic Ocean and several extreme weather events. The technology proved to be reliable, achieving strong levels of production capacity. The success of this pilot project was a key milestone in the development of WindFloat Atlantic.

2015-2018 Development and Permitting

Necessary permits were obtained, including:

- The environmental permit was received in November 2015.
- The 30-year maritime concession for the WindFloat Atlantic project area, and for REN's export cable also in November 2015.
- The production permit was issued by the DGEG (Directorate General for Energy and Geology) in March 2018.

2018 Financing

- October 2018: The project secured a €60 million loan from the European Investment Bank (EIB) through a special facility called InnovFin Energy Demo Projects, designed to support "first-of-a-kind" projects and developed jointly with the European Commission.
- WindFloat Atlantic also receives funding from the European Commission's NER300 programme, a financing mechanism for commercial demonstration projects using innovative renewable energy technologies.

2018-2020 Fase de construção

In two years, there was an active construction phase that included:

• Platforms manufactured by A. Silva Matos (2 units) at the Lisnave dry dock in Setúbal, and by Navantia-Windar (1 unit) at the quay of the Fene shipyard.

• Load-out of the 2 platforms from the Lisnave dry dock into the river, followed by towing operations to the Port of Ferrol by sea.

• The platform manufactured at the Navantia shipyard was rolled out to a semi-submersible barge from the quay in Fene. The barge sailed to the Outer Port of Ferrol, where the platform was floated by submerging the barge's deck.

• Wind turbines were manufactured by MHI Vestas in Denmark and the UK.

• Transportation of wind turbine components from the manufacturing centres to the Port of Ferrol.

• Transportation of the platforms to the Outer Port of Ferrol and installation of the wind turbines on the platforms.

• Pre-installation of the mooring systems at sea.

• Towing of the fully assembled units (platform + wind turbine) from Ferrol to the final offshore location off the coast of Viana do Castelo, followed by mooring of the three floating units at the wind farm.

• Electrical connections between the platforms and to the grid.

• Commissioning of the platforms and wind turbines.

2019 Grid connected

• WindFloat Atlantic's grid connection was achieved in December 2019.

• Electricity production started to be supplied to the Portuguese grid through a submarine power cable installed by REN, which comes ashore on the north bank of Viana do Castelo.

• The submarine export cable, installed from the switchyard built by REN, connects to the National Distribution Network at the existing Monserrate Substation, operated by E-REDES, also located in Viana do Castelo.

Commissioning of equipment and start of energy production

•02/2020
First generation
•08/2020
WindFloat Atlantic becomes fully operational

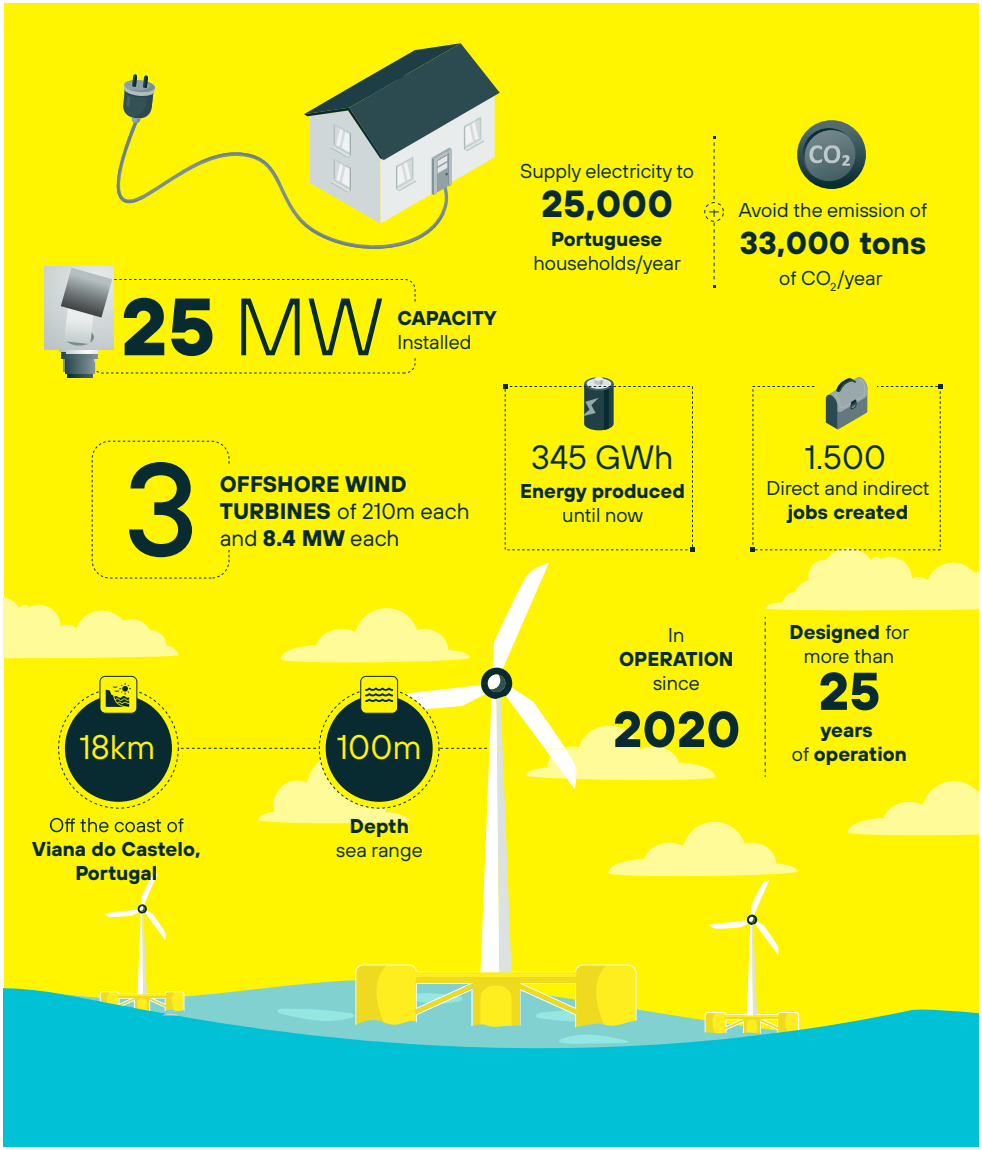
2020-2045 Operation phase - In its first five years, WindFloat Atlantic has produced 345 GWh of clean energy

• The project has established a dedicated operations and maintenance base in the commercial port of Viana do Castelo.
• WindFloat Atlantic has been designed and certified to remain in operation for 25 years.
• permanecer em operação durante 25 anos.

2025 5th Anniversary!

2045 Expected decommissioning

KEY FACTS


Supply electricity to
25,000
Portuguese
households/year
Avoid the emission of
33,000 tons
of CO_2/year
25 MW
CAPACITY
Installed
3
OFFSHORE WIND
TURBINES of 210m each
and 8.4 MW each
345 GWh
Energy produced
until now
1.500
Direct and indirect
jobs created
In
OPERATION
since
2020
Designed for
more than
25
years
of operation
18km
Off the coast of
Viana do Castelo,
Portugal
100m
Depth
sea range

EMPOWERING THE EUROPEAN SUPPLY CHAIN: JOBS, SKILLS AND TRANSFERABLE EXPERIENCE

As a key global player in the offshore wind sector, OW is committed to promoting national supply chain resilience, from construction to operation. By working closely with European, national and local suppliers and stakeholders to strengthen the European supply chain, we have a strong commitment to ensuring the long-term sustainability and success of the industry.

WindFloat Atlantic: A promoter of European supply chain

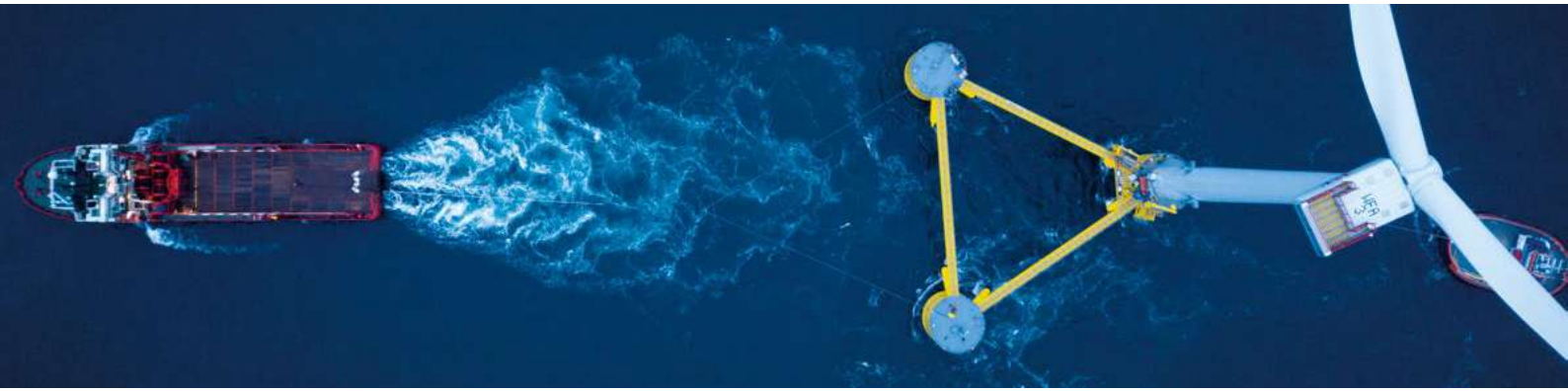
OW's aim was not just to develop the first offshore wind farm in Portugal, but to do so with the support of both Portuguese and European industry. WindFloat Atlantic thus served as a catalyst for national and European industrial participation in floating offshore wind development, demonstrating the significant impact of both.

Beyond its size and pre-commercial nature, WindFloat Atlantic proves the potential to activate, collaborate and connect the European supply chain. It has demonstrated the readiness and availability of supply chain actors across different countries, and how a smaller-scale project helped shape and showcase how Europe has the potential to be a global leader in floating offshore wind energy — not only through its projects, but through the presence of a robust and resilient supply chain.

This pan-European collaboration has already led to tangible results: during the construction phase alone, the project generated around **1,500 direct and indirect Jobs** and attracted over **€125 million in investment**, setting a strong precedent for the economic and industrial value floating offshore wind can bring across Europe.

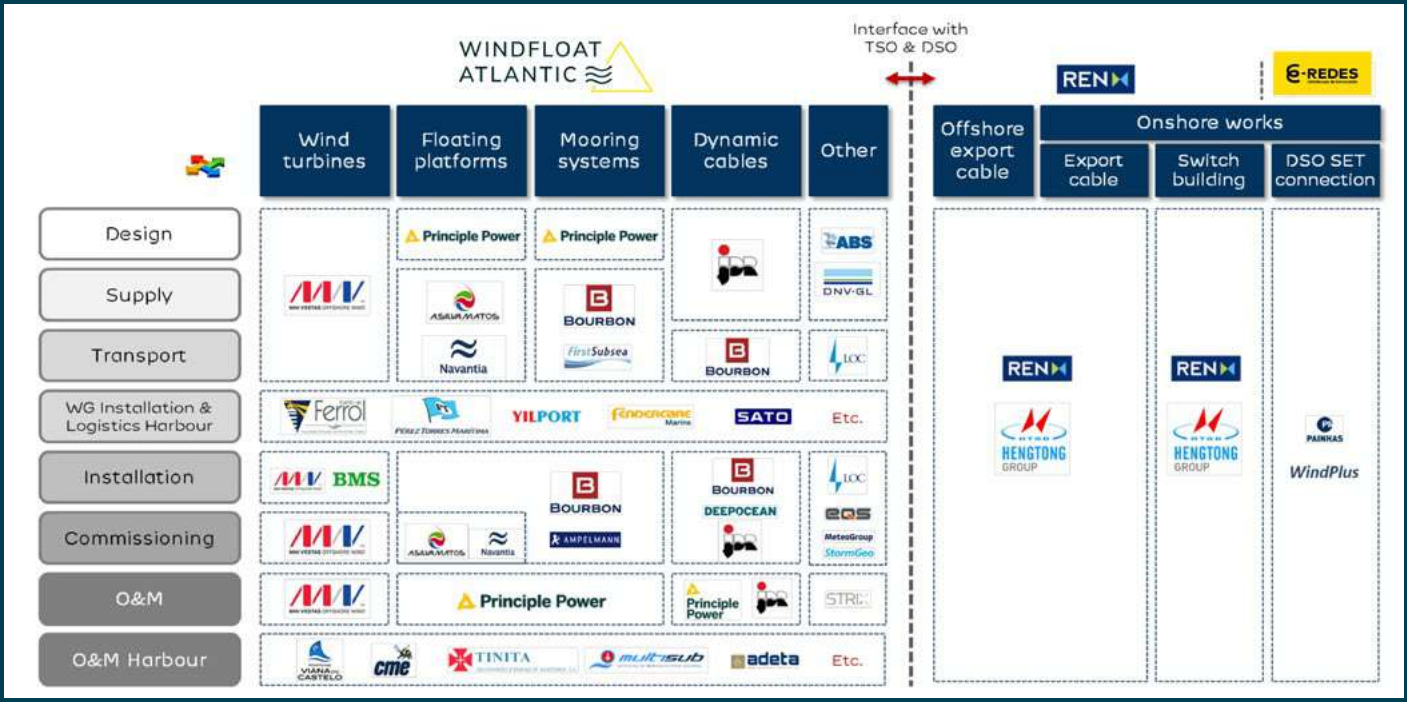
1.500
jobs generated

125
million in investment



Therefore, with a key objective of building such a unique, efficient and resilient wind farm, we followed a focused and coordinated strategy to achieve maximum efficiency within our established timeline. Thanks to a well-structured action plan, a committed and skilled team, and the close collaboration of various European suppliers, we successfully met our construction deadlines.

The figure below summarises the main suppliers and stakeholders involved in the project:



National supply chain role in our floaters!

National suppliers played a key role in the successful delivery of WindFloat Atlantic. Their involvement was not only crucial in meeting the project's technical and logistical requirements, but also instrumental in showcasing the capabilities and potential of the Portuguese supply chain to support offshore wind at a commercial scale.

Site selection and environmental considerations were a major focus for the installation of the WindFloat platforms in a maritime public domain area. During the permitting process, surveys and environmental monitoring, Portuguese companies were key partners in ensuring that wind resources could be harnessed while minimising environmental impacts.

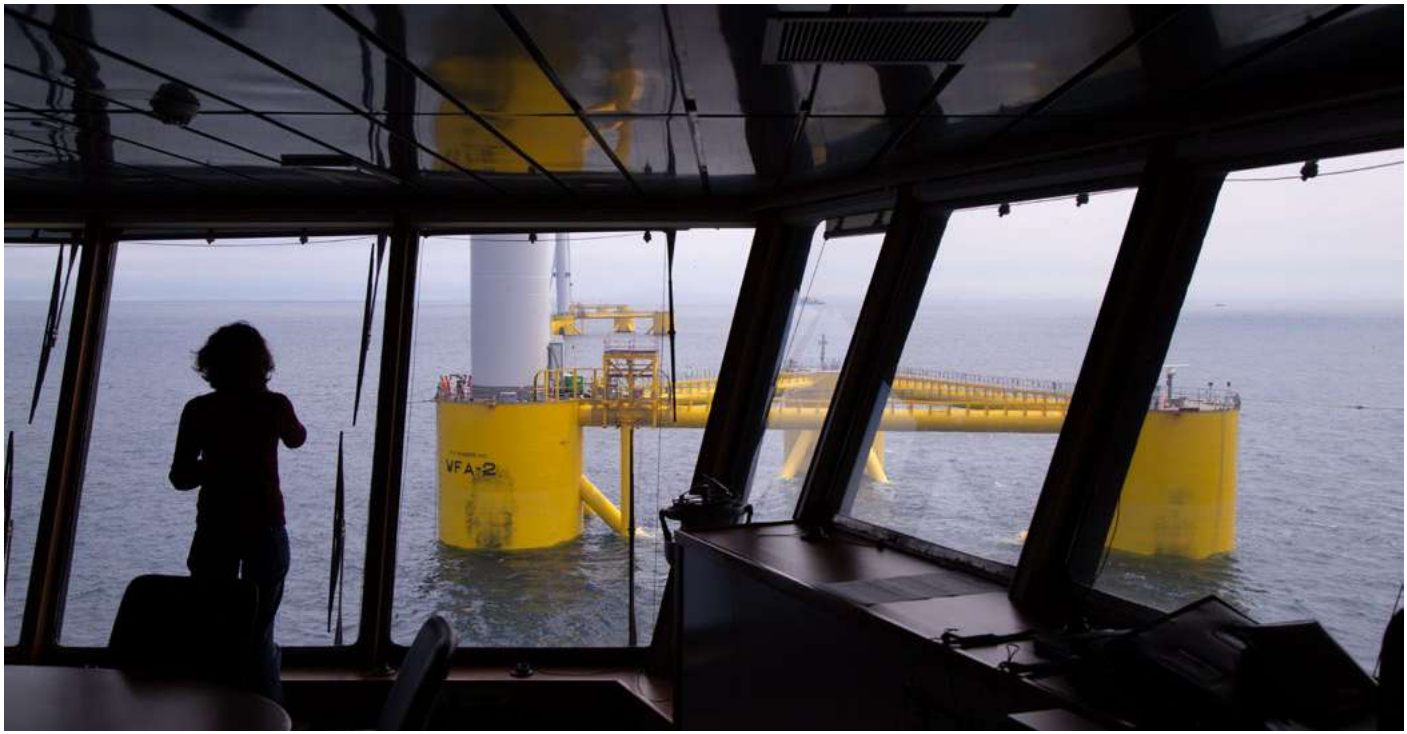
Starting with Ports

The Ports of Leixões and Viana do Castelo played a crucial role in supporting the various companies involved at these stages. Both ports served as logistics and industrial support hubs, providing storage and transportation of components, acting as entry points for imported parts, supporting industrial and maritime suppliers, and hosting support vessels as well as engineering and logistics teams.

To this day, these remain key logistical hubs for the WindFloat Atlantic project. The Port of Viana do Castelo currently serves as the Operations & Maintenance (O&M) base, supporting regular and corrective maintenance activities, while the Port of Leixões functioned as a feeder port during the installation phase, leveraging its industrial facilities to support Viana do Castelo and the entire offshore installation operation.

At Lisnave, the entire workforce and all companies involved in the platform construction worked together to successfully and safely deliver the largest floating offshore platforms to date to the Port of Ferrol.

Prior to flooding the dry dock, Multisub played a key role in the "load out" logistics. Additional buoyancy was added to the platforms using inflatables. Portuguese tugboats (Rebonave) and Lisnave cranes assisted in towing the platforms out of the dry dock. Once safely afloat in the Sado River, the inflatables were removed by Multisub divers, the platforms were connected to the towing vessel, and the maritime journey to the Port of Ferrol began.



PORTS USED DURING CONSTRUCTION

USED PORTS IN PORTUGAL

LISNAVE SHIPYARD IN PORT OF SETÚBAL:

- **20 months** (03/2018 to 11/2019).

2 units fabricated.

PORT OF LEIXÕES:

- **10 months** (08/2019 to 06/2020).

Used for larger SOVs (Support Operating Vessels).

PORT OF VIANA DO CASTELO:

- **10 months** (10/2019 to 08/2020).

Used for smaller boats (e.g. CTV and tugboats).
Onshore base for the offshore commissioning works.
Investment of 750.000 € in a new building.

USED PORTS IN GALICIA

NAVANTIA SHIPYARD IN FENE/FERROL:

- **17 months** (02/2018 to 07/2019).

1 unit fabricated.

OUTER PORT OF FERROL::

- **10 months** (07/2019 to 05/2020).

Onshore assembly of the 3 WTGs.

From manufacturing to logistics and marine operations, Portuguese companies have contributed — and continue to contribute — with expertise, infrastructure, and commitment to the operations of WindFloat Atlantic. This demonstrates that Portugal is not only a promising location for floating offshore wind development, but also a country with the talent and industrial capacity to support its advancement at a commercial scale.

More than 20 local and national companies are involved annually as service providers in the operation of the wind farm, including but not limited to:

Collaboration with REN and E-REDES

REN – Redes Energéticas Nacionais, as the Portuguese Transmission System Operator (TSO), was responsible for the development, construction, and operation of the offshore grid connection of the floating wind farm to the onshore electricity grid.

E-REDES, as the country's Distribution System Operator (DSO), oversaw building the onshore electrical connection between REN's switchyard and the onshore distribution substation of Monserrate, in Viana do Castelo.

The WindFloat Atlantic's grid connection, achieved in December 2019 as planned, was the result of a joint effort between the project, REN and E-REDES. It required close coordination between all parties in the construction works, implementation of communication systems, pioneering electrical protection systems, electrical and fibre optic testing, and the commissioning and energisation protocols.

These partnerships reflect how WindFloat Atlantic has strengthened the resilience of the national value chain, added value to the Portuguese economy, and laid the groundwork for the future development of offshore wind in the country.

FOSTERING KNOWLEDGE: FROM INDUSTRY TO ACADEMIA AND BEYOND

At OW, we recognise that advancing floating offshore wind is also strengthened by dynamic, collaborative actions — where knowledge is shared, talent is nurtured, and innovation is fostered.

As an active member of key national industry associations such as **APREN and Fórum Oceano**, OW contributes to shaping the sector's future in Portugal. These partnerships support the promotion of offshore wind and the blue economy, enable cross-sector collaboration, and help accelerate the development of the wider supply chain by connecting stakeholders from industry, academia, and public institutions.

Collaboration with academia has played an essential role in reinforcing this dynamic ecosystem. Through ongoing initiatives and programmes, WindFloat Atlantic has helped bridge industry and education — ensuring a two-way exchange between knowledge and innovation.

The project has supported several research and development programmes, including **Atlantis, EU-Scores, DigiFloat, and Aerosub** — all of which contribute to the advancement of floating offshore wind technologies.

WindFloat Atlantic has also fostered engagement with universities through participation in career fairs, lectures, and local events that raise awareness and interest among students and encourage their involvement in this competitive sector. These relationships have led to concrete outcomes, including **two PhD theses (one concluded and one ongoing) and five master's dissertations (three concluded and two ongoing)** in areas such as structural engineering and biodiversity, as well as six professional and summer internships in naval, mechanical, and electrical engineering.

Additionally, the project has relied on and contributed to specialised consultancy services in fields such as engineering and environmental studies — further demonstrating the value of academic-industry collaboration in building a resilient and forward-looking offshore wind sector. For instance, the platform colonisation environmental campaign was contracted locally to **IPVC** (Instituto Politécnico de Viana do Castelo).

> ***"WindFloat Atlantic has proven the ability of both national and European industry to drive positive impact — showcasing capable, committed suppliers with the expertise needed to unlock Portugal's full offshore wind potential. At Ocean Winds, we continue to work closely with key associations, academia and research institutes to help shape the environment for upcoming auctions — by sharing knowledge, fostering talent and promoting the opportunities these projects will bring."***
>
> **Marta Branco,**
> Project Development Manager, Portugal

2. SUPPLYING CLEAN AND EFFICIENT ENERGY FOR PORTUGUESE HOMES

WINDFLOAT® TECHNOLOGY: A PROVEN FLOATING OFFSHORE WIND SOLUTION

WindFloat Atlantic successfully demonstrated the viability of floating wind technology in waters over 100 meters deep, setting a new industry reference, and proving its potential to unlock and scale offshore wind globally.

WindFloat Atlantic offshore wind farm uses three wind turbines mounted on semi-submersible floating platforms based on **WindFloat® technology, designed by Principle Power**, of which OW is also a key shareholder.

Originally inspired by platforms used in the oil and gas industry, this technology was successfully demonstrated with the mentioned WindFloat 1 prototype back in 2010.

Therefore, WindFloat® technology was developed to overcome the limitations of traditional offshore wind farm installations, which were limited by the depth of the sea. By using these floating platforms, the WindFloat Atlantic project enabled the installation of multi-MW wind turbines in offshore locations at depths greater than 100 meters — areas that were inaccessible to the traditional fixed structures.

FLOATING REFERENCE

WindFloat Atlantic has made significant strides in the development of floating offshore wind technology, including:

- **Advancing floating offshore wind:** WindFloat Atlantic has been instrumental in pushing floating offshore wind (FoW) technology towards commercial deployment.
- **Proven floating technology:** Demonstrated successful floating technology, with prototypes achieving Technology Readiness Level 9 (TRL9) and current projects in pre-commercial stages.
- **15 years of experience:** Over a decade and a half of accumulated expertise in floating offshore technology, positioning OW as a leader in the sector.
- **Driving supply chain and technical development:** Actively supporting the development of the supply chain and strengthening technical capabilities within the sector to enable large-scale floating offshore wind projects.
- **Proven external financing capacity:** WindFloat Atlantic was the first offshore project using floating technology to secure bank financing through project finance — a standard financial structure in infrastructure projects.

However, several challenges must still be overcome to enable the large-scale development of floating offshore wind:

• On **the technological side**, it is essential to develop reliable, full-scale solutions that integrate next-generation wind turbine generators (WTGs) and operate efficiently under real-world conditions.

• From a **financial standpoint**, enhancing the bankability of floating offshore wind projects is crucial. This includes the industrialisation of floating platforms and the reduction of technical and operational risks related to installation and operation — both of which are key to attracting investment and securing financing for commercial-scale developments.

• Finally, **achieving cost competitiveness is essential**; lowering the Levelized Cost of Energy (LCOE) will be vital for FoW to compete with other renewable energy sources and establish a sustainable market presence.

By successfully implementing WindFloat® technology and continuously operating it for five years — and beyond — WindFloat Atlantic has established the foundation for long-term operation and demonstrated the potential of floating offshore wind solutions to enable scalable, efficient, and resilient energy production. This lays the groundwork for future technological advancements in commercial offshore wind projects."

Daniel Ribeiro, Asset Manager

DELIVERING CLEAN ENERGY THROUGH EFFICIENT OPERATIONS (O&M)

For OW, delivering clean and decarbonized energy means also having well-established Operations & Maintenance (O&M) processes, carefully planned and executed with complete safety — this is our top priority. We are committed to maintaining the highest standards in operations and maintenance to ensure the well-being of our team while driving operational success and sustainability that contribute to this global transition.

<u>Three pillars: Security, Safety & Excellence</u>

• Since September 2020, the project's three turbines have been supplying power to the Portuguese national grid, showcasing the potential of floating wind technology and each January, it has been reported with pride that the project's electricity production has steadily increased, reaching 78 GWh in 2022, 80 GWh in 2023, and 86 GWh in 2024.

78 GWh
in 2022

80 GWh
in 2023

86 GWh
in 2024

• WindFloat was connected to the grid in **December 2019** and reached full commercial operation in September 2020. By March 2025, the project had recorded a total cumulative production of **345 GWh**, supplying electricity each year to around **25,000 households in Viana do Castelo, while avoiding more than 33,000 tonnes of CO_2 emissions.**

Did you know?

Over its 5 years in operations, WindFloat Atlantic has successfully navigated unprecedented challenges. Notably, in 2023, during Storm Ciaran, the system withstood waves reaching **20 meters in height and wind gusts of up to 139 kilometers per hour**, demonstrating its resilience and robustness.

OUR O&M TEAM

On these past **5 years**, between the O&M activities, which included preventive and corrective actions, more than **20 thousand hours have been worked** yearly on average, without any accidents that required first aid, treatment or provoked leaves due to injury. However, to ensure full control in the event of an accident, our team maintains a strict safety protocol, as well as simulation exercises, "safety drills" to anticipate any situation.

Besides specific corrective maintenance interventions, the project total numbers have surpassed expectations, and bring excellence, not only to the project, but for Floating Offshore Wind.

WindFloat Atlantic was created as a channel to gain experience from it. Therefore, that excellence is what is being achieved in floating offshore wind by having true experience that WindFloat Atlantic provides.

This acquired knowledge is being incorporated into new projects; new approaches to engineering in floating offshore wind projects; the operational information gathered on systems and processes; and the insights gained from operating and maintaining the world's first semi-submersible floating offshore wind farm — **all of this enables OW to deliver quality and excellence in future commercial floating offshore wind projects.**

PIONEERING O&M INNOVATION

O WindFloat Atlantic tem sido também um centro de soluções inovadoras e de projetos piloto de pesquisa e desenvolvimento **(R&D+i)**, destacando-se os seguintes, entre vários outros já realizados ou em curso.

WindFloat Atlantic has also been a hub for innovative solutions and pilots, being a key part for the testing of projects such as **ATLANTIS**, which advocates for integrating robotics in offshore wind farms to decrease the levelized cost of energy (LCOE) by minimizing the reliance on support vessels for inspection and maintenance operations offshore, showcasing the project's commitment to contribute to transformative initiatives that optimize operational efficiency and develop innovative solutions.

The project has also collaborated with an English start-up, **Zelim**, in a project where the live cameras of our WindFloat Atlantic project were used to trial their AI software, enabling the detection of people overboard and capable of finding and tracking people, vessels, and other objects, in real-time and in harsh maritime conditions.

The project was also involved in **EU-SCORES**, a demo for combining wave energy converters and solar PV systems with offshore wind farms to use offshore space more efficiently and balance the electricity grid to achieve a resilient and cost-effective 100% renewable energy system.

The project has also been used to recurrently test innovative solutions to allow to increase the performance of the operations as lightweight ROV to perform visual inspection and support underwater O&M activities, drones to perform blade inspections, AUV (Autonomous Underwater Vehicle) to be used on underwater condition inspection and site surveillance.

3. WORKING WITH LOCAL COMMUNITIES FOR A POSITIVE IMPACT

WindFloat Atlantic stands as a testament to the opportunity of coexistence — where offshore wind energy goes hand in hand with engagement and respect for the surrounding community showcasing that offshore wind is pOWered through collaboration, and shared commitment.

From the very beginning of its development, WindFloat Atlantic has prioritised open dialogue, transparency, and collaboration with the people of Viana do Castelo, embracing their willingness to know more about renewable energy and offshore wind, but also supporting traditions, the territory and special places, as well as local actions.

Protecting the Oceans

Through OW's international programme **Protecting the Oceans**, marine pollution and environmental awareness are pursued, by organising beach clean-ups and engaging with local communities and NGOs. These actions are part of our wider commitment to highlighting the impact of plastic on marine ecosystems, promoting more responsible habits, and supporting a more sustainable future in the areas where OW is present.

In Viana do Castelo, two editions have been organised Cabedelo Beach and Rodanho Beach, with the support of the **Associação Portuguesa do Lixo Marinho and in collaboration with the Câmara Municipal de Viana do Castelo**. These initiatives have brought together more than **100 participants in total**, who helped remove waste and learned about the importance of protecting marine biodiversity.

Educational Program: Wind Experts

Educating future generations is essential to building a more sustainable world! Through Wind Experts, Ocean Winds' educational programme for children —now in its third edition in Portugal — more than 300 students have already learned about renewable energy and offshore wind.

The initiative raises awareness of climate change through dynamic online lessons designed to promote knowledge and encourage young students to take part in the fight against global warming. To put their learning into practice, students build offshore wind turbines using recycled materials — a fun and creative challenge that reinforces their understanding.

At the end of each edition, the students' creativity is celebrated by awarding the winning school with a donation to support continued learning and environmental education.

OW Local Ambassador

To celebrate 2024 Global Wind Day, Ocean Winds welcomed internationally awarded local kitesurfer Pedro Afonso as an official OW Ambassador. Born in Viana do Castelo, Pedro completed a symbolic 18 km kitesurf journey around the WindFloat Atlantic project. This initiative highlighted our strong local commitment while showcasing the power of the wind and sea that powered both Pedro's journey and our innovative wind farm.

Local Presence

OW proudly takes part in the Day of the Port of Viana, organised by APDL, welcoming visitors to our O&M Base to explore the project through a 3D model and a 360° virtual experience of our floating wind farm. Our team also joined the Port Race—running and walking alongside the local community. A great opportunity to share our work and strengthen local connections!

> ***"We are perceived as an important economic agent in Viana do Castelo, with a good relationship with the local community. We feel part of the community and therefore it is essential for us to maintain and strengthen our relationship with the various stakeholders, developing various activities with the local community and in collaboration with stakeholders from the local administration, academia, port authorities, the fishing community, civil society, among others."***
>
> **Gonçalo Viegas,**
> Stakeholder Associate

4. OEXISTING WITH THE ENVIRONMENT: PROTECTING AND ENHANCING IT

This commitment has ensured that the development and operation of the wind farm are carried out in harmony with the surrounding ecosystem.

In addition to the **Environmental Impact Assessment (EIA)** developed for WindFloat Atlantic during its development phase, several mandatory environmental studies required by its license have been carried out.

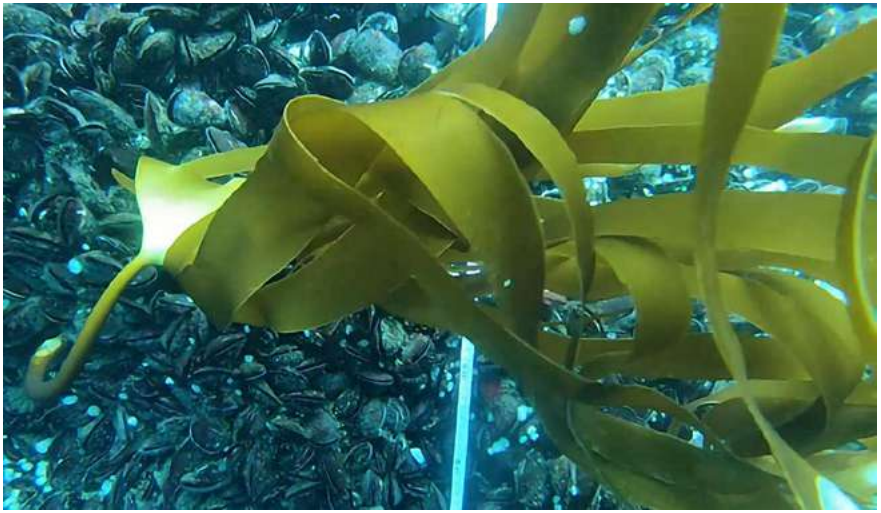
These include monitoring **programs with multiple campaigns** over several years: before construction (2018), during construction (2019 and 2020), and during the operational phase (since 2020). The programs cover archaeology, socioeconomics, water quality, marine mammals, the impact of anthropogenic noise on these, birds, bats, and marine life colonizing the submerged platform walls, not excluding studies on the export cable by REN and the distribution by E-redes.

Additionally, OW is currently conducting continued studies to develop an integrated analysis of the biodiversity within the offshore wind farm and on the descriptions related to the support of fishing activities.

This holistic study started in 2023 and is about to conclude its second year. It includes an analysis of all mandatory studies completed so far, in addition to extra campaigns focused on better understanding marine life: fish, invertebrates, and plankton.

What are the findings related to biodiversity?

After consistent studies, findings indicate that the project may be influencing the local marine ecosystem, particularly the abundance of various species groups that are typically found along this stretch of the Portuguese coast.



- In terms of monitoring points, an increase in the abundance of phytoplankton, octopus, common dolphins, fish with higher biomass, species sensitive to electromagnetic fields, and birds (in general) has been observed in the project area.

- The WindFloat Atlantic project appears to be acting as both a shelter and a feeding zone, primarily for fish and octopuses.

- Exotic species, such as mussels, starfish, algae, and many other marine animals, have been detected within the benthic communities that have grown on the submerged sections of the platforms. These are being continually monitored.

- Common bird species, such as gannets and large seagulls, face a risk of collision with the wind turbines. This is not the case for the few endangered species in the vicinity, as they fly too low and, therefore, are never at risk of colliding with the turbine blades.

- Approximately **270 species are successfully coexisting** with the project.

- **Seven exotic species were recorded**: four from the flora and three from the fauna, all unfortunately very typical in Europe.

- A total of **33 different bird species** were observed, with 17 recorded during the baseline surveys and 31 during the operational surveys.

- Five **marine mammal species were sighted**, with the common dolphin being the most frequently observed, but orcas and dwarf whales were also spotted. In addition to these mammals, a monk seal was also observed!

Has fishing activities disappeared in Viana do Castelo?

Fishing landings in Viana do Castelo have not decreased since the offshore wind farm began operations.

When the area for the wind farm was designated, a series of exclusion zones related to the WindFloat Atlantic project were established by the Portuguese authorities, in coordination with WindFloat Atlantic and REN for their cable export corridor. Therefore, fishing activity in the vicinity of the wind farm has remained unaffected (except within the exclusion zone of the farm itself).

The WindFloat Atlantic project is proving to be an important driver of biodiversity in the region, fostering the growth of marine life by providing both shelter and feeding grounds for a variety of species. By contributing to the abundance of marine life, it also creates a more sustainable fishing environment, ultimately benefiting the local communities that rely on these resources."

Ricardo Portela Rosa
Environmental & Permitting Associate

5. INSPIRATION WORLDWIDE "FROM PORTUGAL TO THE WORLD... "

PIONEERING POSITION

As a pioneering project developed in Portugal, WindFloat Atlantic has demonstrated that floating wind technology is ready to be scaled—showing the full potential of floating offshore wind energy and placing Portugal on the map as a leader in this global transition to clean energy.

As a pre-commercial project, WindFloat Atlantic aims to be the concrete realization of proven offshore wind technology and represents a step towards large-scale commercial floating projects.

The technical feasibility of the project was demonstrated with the full-scale prototype called "**WindFloat 1**," featuring a commercial 2 MW Vestas V80 turbine. This first project operated 5 km off Aguçadoura, Póvoa do Varzim (Porto), for about 5 years, starting in December 2011, without any relevant technical incidents.

Thanks to this prototype, the current WindFloat Atlantic offshore wind farm was developed in Viana do Castelo, demonstrating the readiness of floating technology at commercial scale.

Therefore, nearly 15 years of technological development and operational experience have provided Ocean Winds with unparalleled knowledge in floating offshore wind, essential for those aiming to deliver large-scale commercial projects.

A pioneering vision for floating offshore wind technology, embraced many years ago, positioned Ocean Winds as the leading company with proven expertise in Portugal—succeeding in a field with immense potential for the energy sector and the emerging blue economy.

LESSONS LEARNED APPLIED WORLDWIDE

WindFloat Atlantic has become a true living laboratory for floating offshore wind, consolidating itself as a global reference.

Since its installation, the project has attracted thousands of visitors from all over the world, including delegations from Japan, South Korea, Spain, France, Poland, Ireland, the United States, and Brazil. Governments, energy sector companies, universities, research centers, schools, and other R&D institutions have visited the site to closely examine the technology, operations, and the challenges overcome—**witnessing, in practice, the real impact of the project**.

In addition to its demonstrative value, WindFloat Atlantic is a strategic pillar for the growth of our global floating offshore wind portfolio. The lessons learned here directly feed into the development of commercial projects in both emerging and established markets.

Jose Pinheiro,
OW Country Manager for Iberia, stated