



SEANERGIES

First 10 years
in offshore wind





A decade ago, Navantia took a strategic decision that would broaden the company's mission and also the vision of serving national security, with the aim of building a secure and sustainable future and making a significant contribution to Spain's industrial energy transition.

As part of its efforts to diversify its activities and align itself with sustainability goals that are closely linked to our economic growth, it was decided to enter the green energies market, a project that we now know as "Navantia Seanergies".

As the President of SEPI, I am proud to look back and reflect on this journey. The importance of this commitment has allowed Navantia to diversify its activities into a strategic and future-oriented market, and today, the offshore wind sector has positioned Navantia Seanergies as an international reference in the construc-

tion of offshore wind foundations and substations, an achievement made possible thanks to the vision and support of those who believed in its potential.

SEPI has been a key ally in this project, always convinced of the need for state-owned companies to act as examples of good practice and to lead the implementation of sustainability, innovation and social responsibility policies.

The future ahead is full of challenges and opportunities. Navantia Seanergies' accumulated experience and positioning in the offshore wind energy market provides it with a solid platform to face the challenges of the sector and continue to grow and expand.

Thanks to Navantia's role as a driver of the marine and industrial energy sector in Spain. This will have a direct impact on the entire collabo-

rative ecosystem, contributing to a more sustainable and equitable transition and ensuring that the benefits of economic development are shared fairly.

That is why, on this tenth anniversary, we celebrate not only the achievements, but also the road ahead. Navantia has become a fundamental pillar in Spain's industrial ecological transition, and we are committed to continuing our mission of fostering the country's economic and social development throughout sustainable and innovative practices.

I thank all of those who have made this possible: all of Navantia's employees, our partners, and our customers for the trust they have placed in Navantia Seanergies. Together, we will build a cleaner and more prosperous future for generations to come.

Belén Gualda González

**Chairwoman Sociedad Estatal de Participaciones Industriales – SEPI –
Ministry of Finance**





Letter from the president



The aim of a public enterprise is to raise social awareness.

It must generate benefits for the country where private initiative does not always reach, while at the same time become an example of responsible and sustainable management.

Navantia, as a company owned by the state holding company Sociedad Estatal de Participaciones Industriales (SEPI), undoubtedly fulfils these roles. First and foremost, we are a strategic company whose activities contribute to the protection of our country by providing our Navy with the capabilities it needs to carry out its missions.

By nature, we are a driving force for innovation and skilled employment. Our work would not be possible without a strong, highly specialised

Ricardo Domínguez
Chairman & CEO of Navantia

and committed workforce and a solid productive ecosystem. Our activity involves the use of industrial resources, some of which are the heirs to a century-old legacy; Navantia is responsible for ensuring that these skills remain at the forefront and for driving the transformation of the economic fabric that accompanies us.

We are proud to say that we are a company that generates wealth, training and employment. This is the case both in our traditional activity and in the field of green energy and the construction of elements for offshore wind market, an activity that has crystallised under the Navantia Seanergies brand and which is celebrating its 10th anniversary since the first contract was signed in December 2014.

Offshore wind energy means working for the decarbonisation of the economy and a fair energy transition, strengthening our strategic autonomy and contributing to the creation and consolidation of industrial capacity, the growth of an entire business fabric and the anchoring of the population in the territory.

It is therefore a business that is fully in line with our corporate purpose: “to build a secure and sustainable future based on technological excellence and industrial cooperation”.

Navantia is industrial and technological capacity at the service of the country's aims. It is a source of pride for all of us who are part of the company to contribute to these aims, and a responsibility to live up to the expectations of our fellow citizens.



1.3 billion
contribution to GDP

130 million average per year



3.000 jobs

on average per year in Spain



+140 million

euros of investment



21
projects



9
countries



+220 jackets

built and in process



+110 monopiles

built and in process





+8 M welding metres

equivalent to the distance
Madrid-Katmandu



70% of the world's floating turbine platforms

constructed in steel



8 offshore wind substation projects



+3 million homes supplied

equivalent to all the homes in the
Madrid region



+16 M tonnes of CO2 avoided

by the green energy generated in
the wind farms in which we have
participated





From opportunity to strategic commitment

Navantia began exploring the offshore wind business during the financial crisis of the early 2010s, at a time when a sharp decline in the shipbuilding market was expected. We were looking for a business that would allow us to diversify our sources of income and maintain the activity of our shipyards and the training of our employees and collaborating industries.

Between those initial analyses and the tenth anniversary of our first contract, which we are now celebrating, there has been an enormous amount of enthusiasm and effort, adaptability, strategic choices, cooperation and learning.

I am proud to have been part of this journey from the beginning and to have contributed to consolidating Navantia as a major player in a sector that was unknown to Spain at the beginning of this century.

Although we started from our experience in the offshore oil and gas business, the interest was there, but there was a great lack of knowledge about the offshore wind market.

In a way, Navantia has been following an unexplored path, with no model to follow, because no other company had gone down the same path as us, i.e. starting with specialisation, facilities and commercial strategy focused on shipbuilding.

Of course, we relied on other Spanish companies that were already positioned in other stages of the wind energy value chain, and we took advantage of the industrial clusters that were being created in countries that were pioneers in offshore wind energy, such as Germany and Denmark. We had to learn about new products and new ways of managing projects, and we had to adapt to a business culture that was very different from our own.

In these first steps, we focused on developing a strong business plan, but it was also essential to have a good travelling companion.



Windar already had experience and knowledge of the onshore wind market. It is fair to say that if we have come this far, it is largely thanks to our partner. Our cooperation has been very fruitful for both of us.

Another key aspect has been the trust placed in us by our customers. The first contract that we are now celebrating came from Iberdrola, to whom we are grateful for being our first customer and now one of our most important, who ordered 29 fixed-bottom foundations from a joint venture created by Navantia and Windar, as well as an electrical substation from Navantia.

The jackets were built at the Fene shipyard (A Coruña), while Puerto Real (Cádiz) took on the project for the first offshore substation to be built in Spain for a wind farm. Today, both shipyards are a reference in the construction of elements for offshore wind energy.

In the case of Fene, with a high level of specialisation that has given new life to this centre; in the case of Puerto Real, one of the largest shipyards in Europe, which combines this work with shipbuilding.

Navantia has made important investments to strengthen our capacity in both Puerto Real and Fene, in order to increase our efficiency and competitiveness in all our markets.

As a result, we are the only company in Europe that can build the three main types of foundations for offshore wind energy, both fixed-bottom (monopile and jacket) and floating. The last one being essential for the development of offshore wind energy in Spanish waters.





Since 2014, our activity in the sector has accelerated significantly, to the extent that in this period, alone or together with Windar Renovables, we have developed more than 20 projects in nine countries, we have become the largest manufacturer of fixed and floating structures, we have delivered the first electrical substation built in Spain, we have built a factory for XXL monopiles. We have become a global supplier, even locating part of our production outside our borders, as in the Saint Brieuc project in Brittany, France.

This is how we came to the strategic decision to make green energy one of Navantia's core businesses. Our track record in offshore wind, combined with our experience in hydrogen production, led to the creation of a business unit in 2021, demonstrating our clear commitment of Navantia to this activity.

It was therefore a very important message to send to our customers, our partners and our own staff, all of whom are essential to continue growing in this market with such a great future. This business is now Navantia Seanergies, the name under which we will introduce ourselves to the world from 2022, and which sums up what we are: the sea, which is intimately linked to the very essence of Navantia; the fair energy transition, to which we want to contribute; and the synergies that have enabled us to develop industrial skills and create skilled jobs.

With the creation of Navantia Seanergies, we have also extended our ambition to become not only a major industrial player in the green energy sector, but also a leader in the necessary innovative and technological development, and to do so in a collaborative manner. The vehicle created for this purpose is called COEX Green Energies, a centre of excellence on which this ambition is based.

Finally, our beginning into the offshore wind business has also contributed to the cultural, digital and sustainable transformation and development of Navantia, a public company committed to strategic autonomy and the creation of social value.

We invite you to discover along these pages the impact of our activities over the last decade and to join us on our journey towards a more sustainable future.

Javier Herrador,
Navantia Seanergies Vice President



Floating wind energy project Windfloat Atlantic. Ocean Winds



10 years in milestones

First substation for a wind farm built in Spain

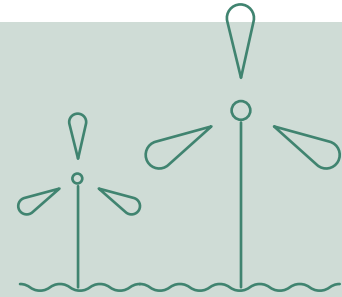
It all started with an **ambitious and challenging first order** for the Wikingen offshore wind farm in Germany, signed with Iberdrola in December 2014. The project included 29 jackets, manufactured in partnership with Windar at the Fene shipyard, and an AC substation, the first to be built in Spain, and its jacket, at the Puerto Real shipyard. This was the beginning of the company's contribution to the offshore wind energy sector, which would culminate in the creation of a new division and brand: Navantia Seanergies in 2022.



Iberdrola substation and Windnaker jacket project.

21 contracts | 9 countries | 10 years

Since then, **21 contracts** for foundations, substations and other elements for offshore wind farms have been signed in **9 countries**, including Europe, the UK and the US, making it a benchmark in the industry. Expectations are for further growth in these areas, as well as in Asia and Oceania.



World leaders in floating foundations

Navantia has been a **pioneer in floating wind power and is currently the largest builder of steel floats foundations in the world**, having contributed to three pre-commercial wind farms in two countries: Hywind Scotland, Windfloat Atlantic and Kincardine.

This experience places us in a privileged position for the development of the National Offshore Wind Plan, which will be based on floating structures.



Windfloat Atlantic floating wind project, Ocean Winds.

Largest track record in the manufacture of WTG jackets foundations

Navantia Seanergies is now the international reference for jackets, with **more than 220 jackets built or in the pipeline**, including the Saint Brieuc and Dieppe Le Tréport projects for Iberdrola and Ocean Winds, with 62 jackets each for French waters, in collaboration with our partner Windar Renovables.



XXL monopiles

Since 2023, **Navantia Seanergies and Windar Renovables have had a monopile factory** at the Navantia Seanergies Fene shipyard (A Coruña), which started with a first project for Ocean Winds, Moray West, and is currently building two orders for Iberdrola, the East Anglia 3 project in the United Kingdom and the Windanker project in Germany.



Other contracts for other European countries are already in the pipeline, with a guaranteed workload until 2028. With this new product, Navantia's Green Energy division is consolidating its position as the only European supplier capable of constructing all types of steel foundations for offshore wind farms.

Innovation in robotics and highly automatic fabrication methods

A successful example of innovation is the **development of a knot welding robot for offshore structures**. After nearly 10 years of development and several iterations, this robot is capable of welding in an hour what would normally take a day, allowing us to expand our production capabilities. This robot incorporates an innovative tandem MCAW system that improves quality, fatigue resistance and joint production times. This solution has been fully and successfully industrialised by Navantia Seanergies in the execution of its jackets projects and is in full operation in the production of knots for the **Le Tréport project**.





Supporting our customers

It has been 10 years of great commercial activity, which has resulted in **21 projects**, some of them still confidential, for 9 **countries**.

We have participated in numerous wind farms in Europe and have recently approached the US market, accompanying our customers.

Bautista Rodríguez COO of Ocean Winds

Navantia Seanergies, an industrial ally with such capabilities and a great team of professionals, has been able to **develop a strategy to lead the supply chain of the offshore wind market** for both fixed and floating foundations and substations.

Its experience in floating places it in a preferential position for wind power plans in the Iberian Peninsula.



We are proud to work for major developers such as **Iberdrola and Ocean Winds** who have repeatedly placed their trust in us to undertake their projects.

Ignacio Galán

Executive Chairman of Iberdrola Group

Ten years ago, **Iberdrola proposed Navantia** to expand its activity and begin to focus also on a sector of the future such as **marine electronics**. Thanks to Iberdrola's international presence, we have already counted on Navantia Seanergies and its partner Windar Renovables **to manufacture highly complex macrostructures such as offshore platforms and substations** in Germany, the United Kingdom, the United States and France, and I am sure that we will continue to collaborate in the coming years. Navantia Seanergies is today a great example of the potential of electrification with renewables to reindustrialize Spain and Europe.





Navantia Seanergies

10 years of offshore wind constructions



Moray West: 14 MP
Moray East: 20 jackets



Hywind Scotland: 5 floaters



Kincardine: 5 floaters



East Anglia One:
42 jackets | OSS 714 MW



Dogger Bank-C: 1 OSS jacket



St. Brieuc: 62 jackets



Dieppe Le Tréport:
62 jackets | 1 OSS jacket



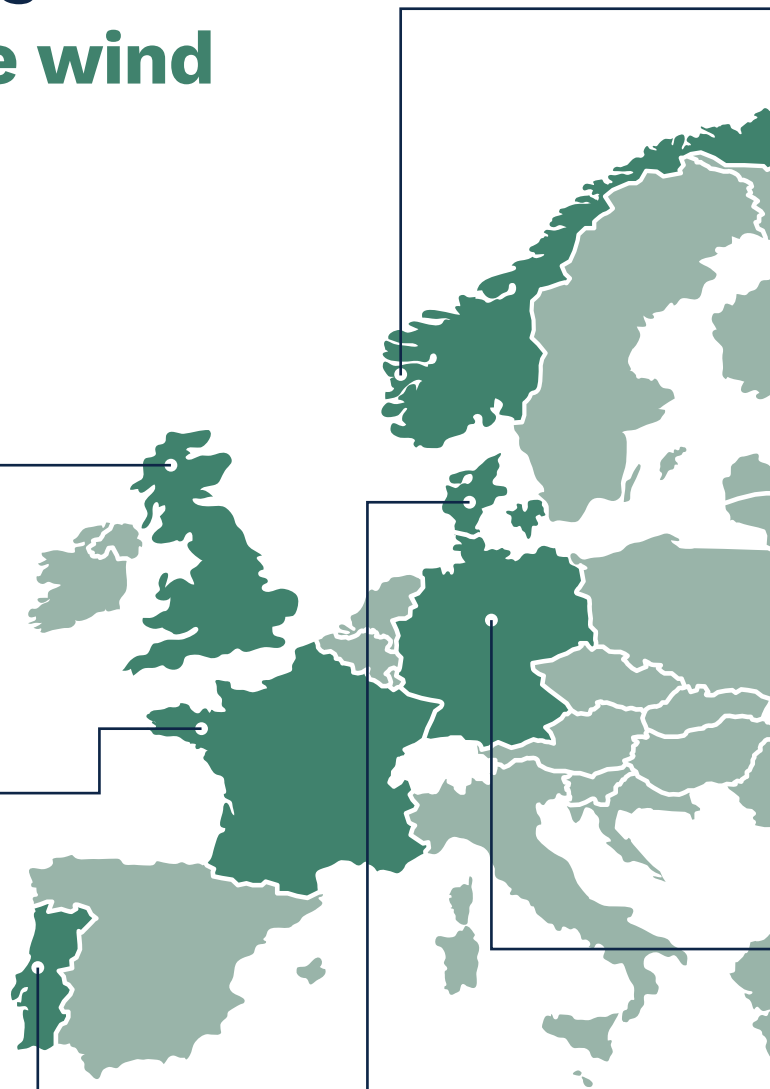
Iles d'Yeu et de Noirmoutier:
1 OSS jacket



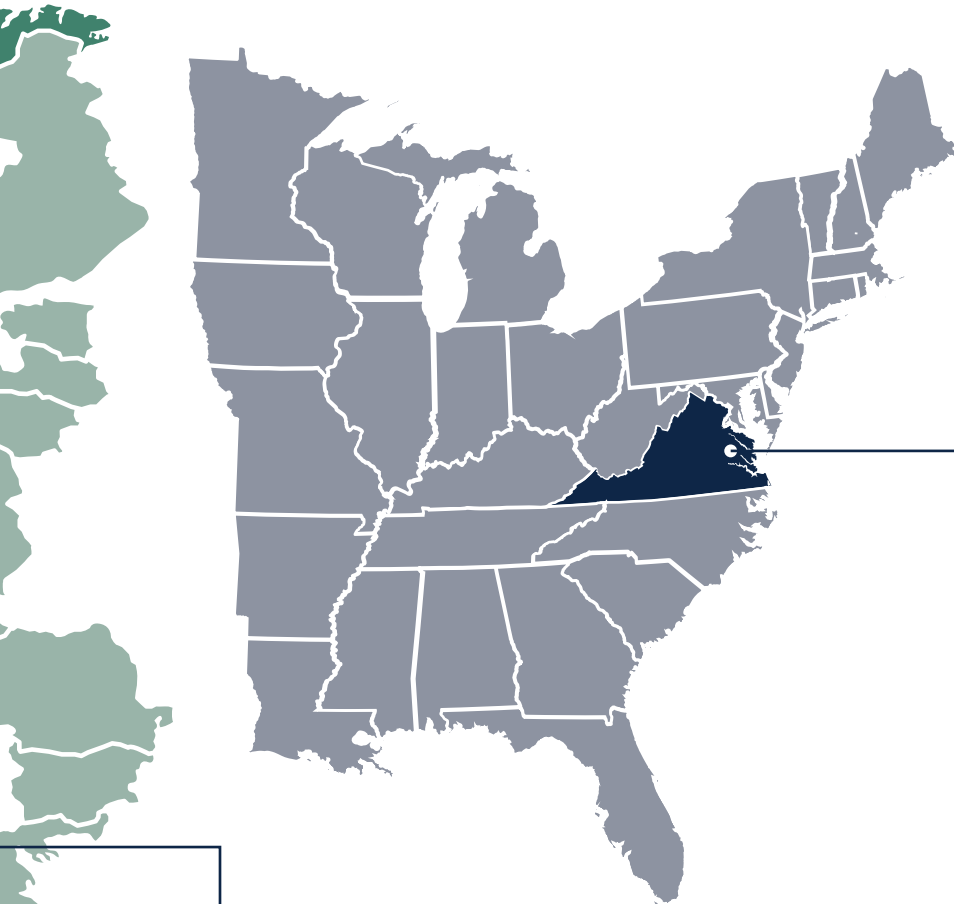
Windfloat Atlantic: 1 floater



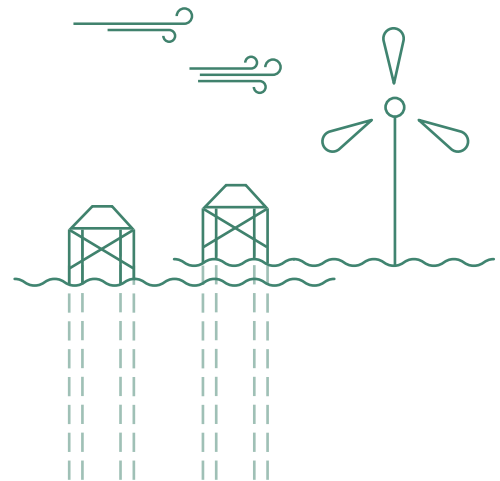
Nissum Bredning: 4 jackets



aibel Johan Sverdrup: HVDC OSS structure



Ørsted Revolution: 2 MSF



Wiking: 29 jackets | OSS 350 MW
Windaker: 21 MP



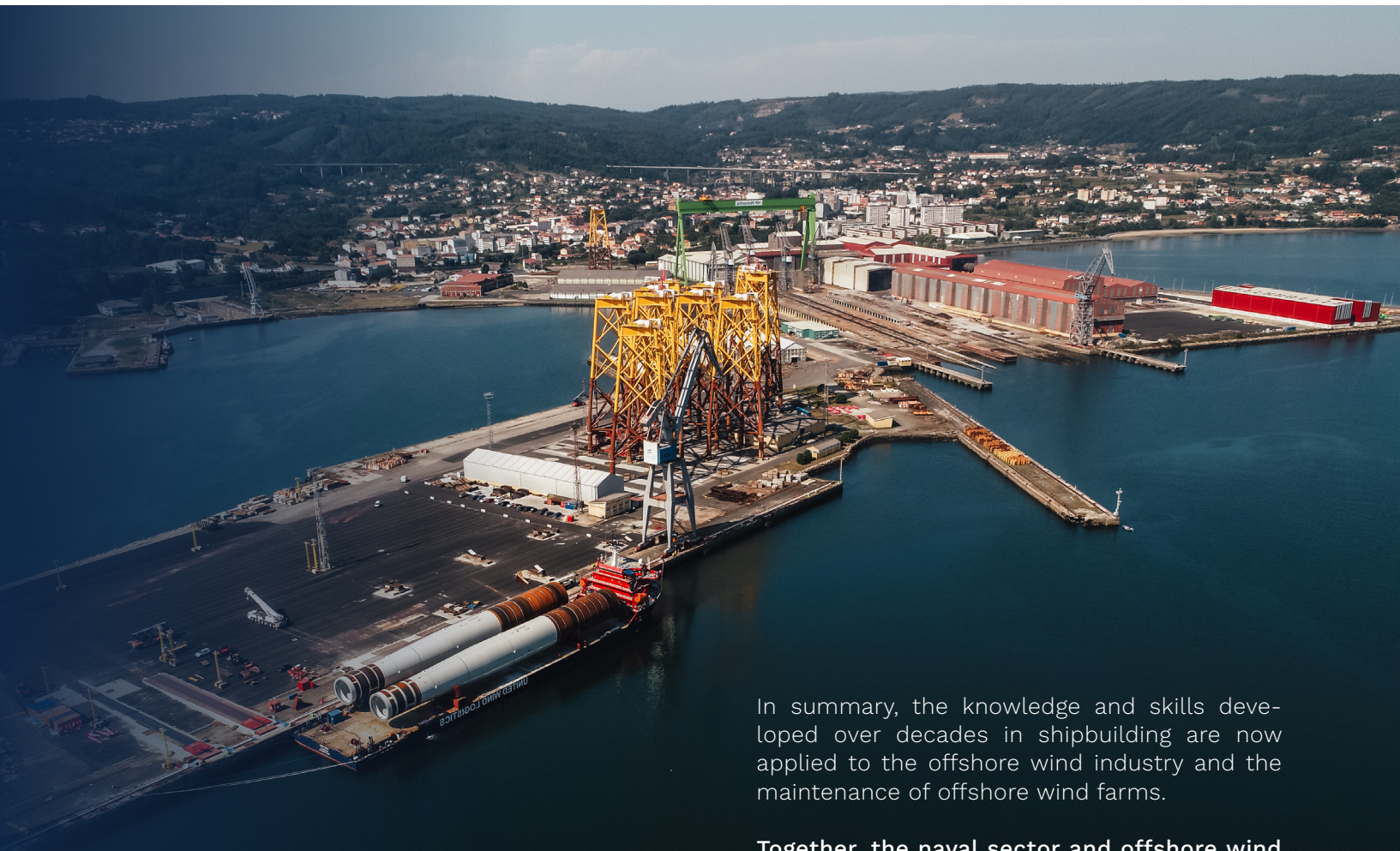
Energy and the sea

The Navantia Seenergies branding represents Navantia's commitment towards the green energies sector. The synergies with shipbuilding, the traditional activity of Navantia's shipyards, are the foundations of this industrial commitment to offshore wind power.



Puerto Real shipyard

- **Large facilities** equipped with production means oriented to the assembly of large structures, previously ships and now also foundations and substations, etc.
- **Experience in the management of complex projects**, including defense projects for the construction of frigates and submarines, and now also offshore wind, including EPC capabilities.
- **A wide range of advanced systems**, such as the digital twin or virtual reality, for ship maintenance now enables us to implement a maintenance system for wind farms.
- **Having a supply chain that**, together with others more specialised in wind energy, forms the value chain of Navantia Seenergies.
- **Existence of interconnected Centers of Excellence** that allow us to share and promote innovation in different areas.



Fene shipyard

In summary, the knowledge and skills developed over decades in shipbuilding are now applied to the offshore wind industry and the maintenance of offshore wind farms.

Together, the naval sector and offshore wind energy create jobs and boost the economy. On this journey together, the sea remains our constant ally, energy our guide and synergy our driving force. Together, we are sailing towards a horizon of opportunities.



Our contribution to local development

The Saint Brieuc case

Saint Brieuc's project was a challenging project of the large number of units and because local industrialisation as part of the contract requirements.

Signed in June 2020, it was **the largest offshore wind contract at that time**. It consisted on manufacturing, together with Windar Renowa-

in France and the employment and training of 250 local people over two years. This project, which had the added difficulty of being developed during the Covid19 pandemic, was undoubtedly a great success. That's how Iberdrola described it during the inauguration ceremony in October 2023.

With a capacity of around 500 MW, the plant, which is already operating at full capacity, **generates enough clean energy to meet the electricity needs of around one million people.**



bles, 62 jackets for wind turbines and their piles at three sites in Fene, Avilés and Brest.

This was the first time that we developed **our ability to locate production abroad**, opening an office in Brest, the construction of a factory



Impact in figures

in Brittany, France



830.000 hours
of “local content”



250 people
employed for two years in Brest



70 local companies
subcontracted



10 million
euros of investment



30.000 tons
of steel transformed into
components for the jackets,
(40% of the project in weight of steel)



+50.000 hours
of training for local
employees



7000 m²
covered workshops
equipped with 2 x 40 t
gantry cranes



12 hectares
transformed into
industrial land



The value of working at Navantia Seanergies

At Navantia Seanergies we also have a diverse and highly involved professional and human team that works with the respect of a great company like Navantia and the conviction of making it a sector that will improve energy and therefore the world in which we live.

Antonio, Nuria and Miriam are the proof of this professionalism and aspiration.

Their career path and their testimonies show what it means for them to work at Navantia Seanergies.

Antonio Sánchez is responsible for jackets and floating vessels in the Commercial Department.

He is a reference in the Fene shipyard, where he started working in oil and gas. He is one of the precursors of offshore wind energy in Ría de Ferrol.

As a green energy enthusiast, he shares his extensive experience and his vision with the young members of his team, encouraging them to join in the promotion of marine wind energy “because this is the world we live in and we have to protect it”.





Nuria García is responsible for cost control at the Puerto Real shipyard.

She has found in Navantia Seanageries the opportunity to be on site and to see the beginning and development of offshore wind projects.

Convinced of the crucial role of offshore wind energy, she feels that she is contributing to leaving “a better world for my daughter, our children”.

Miriam Terceño is responsible for projects in the engineering area of Navantia Seanageries and manages several projects from Madrid.

As a naval engineer, she used to work on projects that ended with the delivery of the design “on paper”. “Navantia Seanageries has given me the opportunity to work in the engineering of projects that I see growing and materializing day by day”.

She highlights the great projection of offshore wind power in the future and assures that we are living in a great moment full of opportunities.





Boosting the creation of talent

The development of offshore wind energy has meant the entry into a new sector that requires new profiles with appropriate training.

“Universities, Vocational Training Centres and Business Schools are aware of this new need and are developing **specific programmes to train students in these areas**, as the green energy sector, and offshore wind in particular, offer great employment opportunities.

These profiles will be increasingly in demand in the future: according to the “White Book of the Offshore Wind Industry in Spain” published by the AEE in 2022, the sector is expected to generate up to **7,500 new jobs by 2030**.



The emergence of offshore wind energy has allowed several national companies to participate in international offshore wind projects, becoming world leaders in this sector of great growth and future.

These companies require technical personnel with **appropriate training in the technologies and knowledge required to interact with the sea.**

Navantia has been instrumental in highlighting the need for professionals in the sector to successfully manage the important portfolio of projects it has signed in a short period of time.

The School of Naval and Oceanic Engineering of the Madrid Polytechnic University (ETSIN) has responded to this need for specialised professionals by making a considerable effort to adapt:

1. With the pioneering launch, 7 years ago, of the annual Master's Degree in Marine Renewable Energy Harnessing (MAERM) and the incorporation as professors of more than 40 former experts in the sector.
2. With the launch 4 years ago of an "International Master in Advanced Design of Sustainable Ships and Offshore Structures" in consortium with 10 other European universities, based on the above-mentioned MAERM, and the awarding of the first UPM joint degree.

3. Modification of the qualifying Master in Naval Engineering 2 years ago to include a qualifying specialisation in Marine Renewable Energies.
4. Strengthening the ETSIN university-business chairs with the inclusion of several companies from the renewable energy sector (Iberdrola, Bluenewables, Naturgy and Navantia Seanergies within the Navantia Chair).

These actions are training excellent professionals and confirms a strong desire to align the ETSIN with the interests of the Spanish renewable energy sector.

However, the number of specialised graduates does not seem to be enough to meet the disruptive demand, which is why the ETSIN is committed to promoting collaboration and coordination between the University and companies in the renewable energy sector.

Navantia Seanergies is already carrying out actions to promote such collaboration.

**Antonio
Crucelaegui Corvinos**
**Director of the ETSI
Navales**



The start of offshore wind energy activities and Navantia's introduction into this market supposed a challenge in terms of training the new professionals needed in an environment with excellent human and resource potential for the development of offshore wind energy.

This growing need of specialised personnel has led to the creation of training programmes at universities and vocational training centres, as well as contributing to the strengthening of research and innovation in the field of offshore renewable energies.

These 10 years reflect great progress, but also great challenges.

The growth of renewables is unstoppable, as we face the major challenge of decarbonisation and the need to accelerate the energy transition.

This will require technological developments yet to be determined, and the role of marine and ocean engineers will be crucial in the development of offshore wind.

We need to have enough engineers in this field, as well as in other engineering fields, to be able to maintain Spain's current leadership in floating offshore wind, in which it is a pioneer, and which involves the construction of huge, highly complex structures that are also complex to install and maintain.

We therefore need to attract a greater number of students to study and graduate from our schools, because the national scene will need a very large number of engineers from the naval sector and other disciplines.

Close collaboration between the university and industry will also be essential to address these important technological challenges and to be at the forefront of innovation and research. An example of this collaboration is the one we have had for many years with Navantia Seanergies.

All this requires a strong commitment on the part of all those involved and the firm support of the institutions and administrations.



**María Victoria
Redondo Neble**

**Director of School of Naval and Oceanic
Engineering of Cadiz University**



“Faced with the development of offshore wind energy, we have defined new skills, created training programs specialized in renewable energies and adapted existing ones to these new needs. Navantia has always actively collaborated in the development of these training programs as a driving force for the sector as a whole, both companies, associations and social agents.”

Vicente Díaz Casás

**Director of the Polytechnic School of Engineering of Ferrol (EPEF)
Industrial Campus of Ferrol - Universidade da Coruña (UDC)**



“Since 2016 the CIFP Ferrolterra has a Higher Degree Cycle of Industrial Mechatronics with Navantia Ferrol and in 2017 with an Intermediate Degree Cycle of Welding, in Navantia Seanergies in Fene. Today we have 26 Dual Cycles of which Navantia Seanergies participates in 8, all of them related to offshore wind power. The other Dual Cycles involve Navantia’s auxiliary companies whose main activity is offshore wind energy, such as Windar, WindWaves, Gabadi, Intaf, Talleres Galicia, Acebrón, among others.”

Enrique Pazo López

Director of CIFP Ferrolterra



“Since 2022 we saw that offshore wind is an emerging sector and from the IES Castillo de Matrera in Villamartin we bet on this way for the promotion of our students. We currently have a Higher Level Training Cycle in Renewable Energies and an innovation department with a line of offshore wind. Several of our students have done work experience training at Navantia.”

Salvador Vidal Llavata

Director of IES Castillo de Matrera de Villamartín (Province of Cádiz)



Our value chain

Our value chain, consisting of around **500 companies**, forms the **DNA of Navantia Seanergies**, which is essential for tackling projects in the offshore wind sector. For many of these companies, especially the national ones, about 400, **Navantia Seanergies was their first customer in the offshore wind market**, and thanks to these contracts they already have references for working in this sector.

Navantia Seanergies continues to improve its supply chain. To this end, we are sharing our business plans and our strategies to the collaborating industry, so that they can invest with us, helping them to identify their weaknesses and **highlighting their strengths in order to enter and consolidate their position in this market**.



1.200

million in purchasing
volume



439.000

tons of
steel



Suppliers from
16 countries





“For us it is very important to know the development and strategic plans of Navantia Seanergies, adapting our technical capabilities, infrastructures and means of development, in order to be able to fulfill future projects.”

Bruno Rodríguez-Arguelles
Corporate and Logistics of the Suardiaz Group and CEO of Montube



“Positioning ourselves in this sector has been a milestone within the Amper group, and we bet on our traveling companion in this adventure: Navantia Seanergies.”

Roberto Bouzas
General Manager of Windwaves



Industry day | Madrid, February 2023 | 200 companies registered



Windar, an essential partnership

The strategic alliance between **Navantia Seanergies and Windar Renovables**: a fundamental pillar of both companies' positioning us in the offshore wind market.

On the occasion of the tenth anniversary of Navantia's entry into the offshore wind sector, it is important to highlight the fruitful collaboration with the Asturian company Windar Renovables.

This alliance has been an essential pillar in the development and consolidation of both companies in a highly competitive and constantly evolving market.

Since the beginning, the relationship between Navantia and Windar has been characterised by a unique synergy that has allowed to take advantage of the strengths of both companies.

Navantia, with its vast experience in shipbuilding and offshore oil and gas, its capacity for technological innovation and the management of complex projects, has found an ideal partner in Windar, a company specialised in the manufacture of wind turbine towers and modular structures for the wind energy market.

This combination of skills has resulted in the delivery of high quality projects that meet the most strict international standards.

The alliance has had a significant impact on the local and national economy. The creation of jobs, the training of highly qualified professionals and the stimulation of ancillary industries are just some of the positive aspects of this collaboration. The synergy between Navantia Seaneergies and Windar has shown that business cooperation can be a driving force for economic and social development.

As the demand for renewable energy continues to grow, the collaboration between Navantia Seaneergies and Windar Renovables is becoming a model for the sector.

With a shared vision of innovation and sustainability, both companies are well positioned to meet future challenges and continue to lead the offshore wind market a collaboration that will continue to expand in the future, allowing both companies to continue to grow and therefore being an international leadership in the offshore wind market.

Celebrating these ten years of success together is a recognition of the value of working together as a team and an optimistic view of a future full of opportunities.

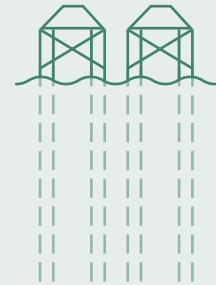
Navantia

SEANERGIES



WINDAR
renovables

13 success stories



The complementarity between Windar Renewables and Navantia Seaneergies was key for **Iberdrola** to place its **trust in us**, awarding us the manufacturing of 29 jackets for the Wiking project.

This alliance has been decisive and fundamental for the growth of both companies, enabling the successful development of thirteen offshore foundation projects already executed, to which another five that are in the pipeline.

In order to respond to these ambitious projects, Windar has invested heavily in both **Avilés** and **Fene**.

Navantia-Windar is a strategic alliance with a strong past, a solid present and a more than promising future.



Justo Acedo
Chief Executive Officer of
Windar renovables

International value chain

Navantia Seanergies has 15% of its **suppliers** outside Spain, of which 80% are European, mainly from the **Netherlands, Germany, the United Kingdom and France**, such as **Ramboll and Seah**.



“I see Navantia Seanergies as a very strong industrial partner in the offshore wind industry. If we add their extensive offshore wind expertise and Ramboll’s design expertise, we are a very strong combination for our customers.”

Michael Simmelsgaard
COO, Group Executive Board at Ramboll



“Since 2016, we have secured for Navantia the supply of tubular structures from Korea to manufacture jackets. Our aim is to continue to support Navantia Seanergies to be a leader in offshore structures.”

Juan Kim
SeAH Steel Offshore Foundation Sales Team Leader

The Saint Briec case: Pioneers in creating local supply chain

In the Saint Briec project, **Navantia Seanergies pioneered** the development of an **industrial cooperation model** in the area around the marine park, which has had a strong impact on local businesses, generating wealth and local employment.

In the French region of Brittany, a total of **70 companies** have joined the supply chain. Many of these companies, which were not part of the offshore wind sector, have been able to specialise thanks to a **training plan of more than 50,000 hours**.



Sharing our vision and experience

Based on our experience and **in-depth knowledge of the offshore wind sector** that we have developed over the past decade, we contribute to the sustainable growth of the sector by sharing this knowledge with **suppliers, customers, ports, administrations, R&D&I agents, training centres** and other stakeholders to promote the creation of a balanced, strong and resilient national industrial value chain.



Asociación Empresarial Eólica

WindEurope



We are part of national and European business associations and sectoral working groups, working with leading companies and organisations to develop the regulatory environment for the sector, **avoiding anti-competitive practices and promoting a fair regulatory framework** for all offshore wind industry players, maximising the competitiveness of the European offshore wind hub in its contribution to energy independence.



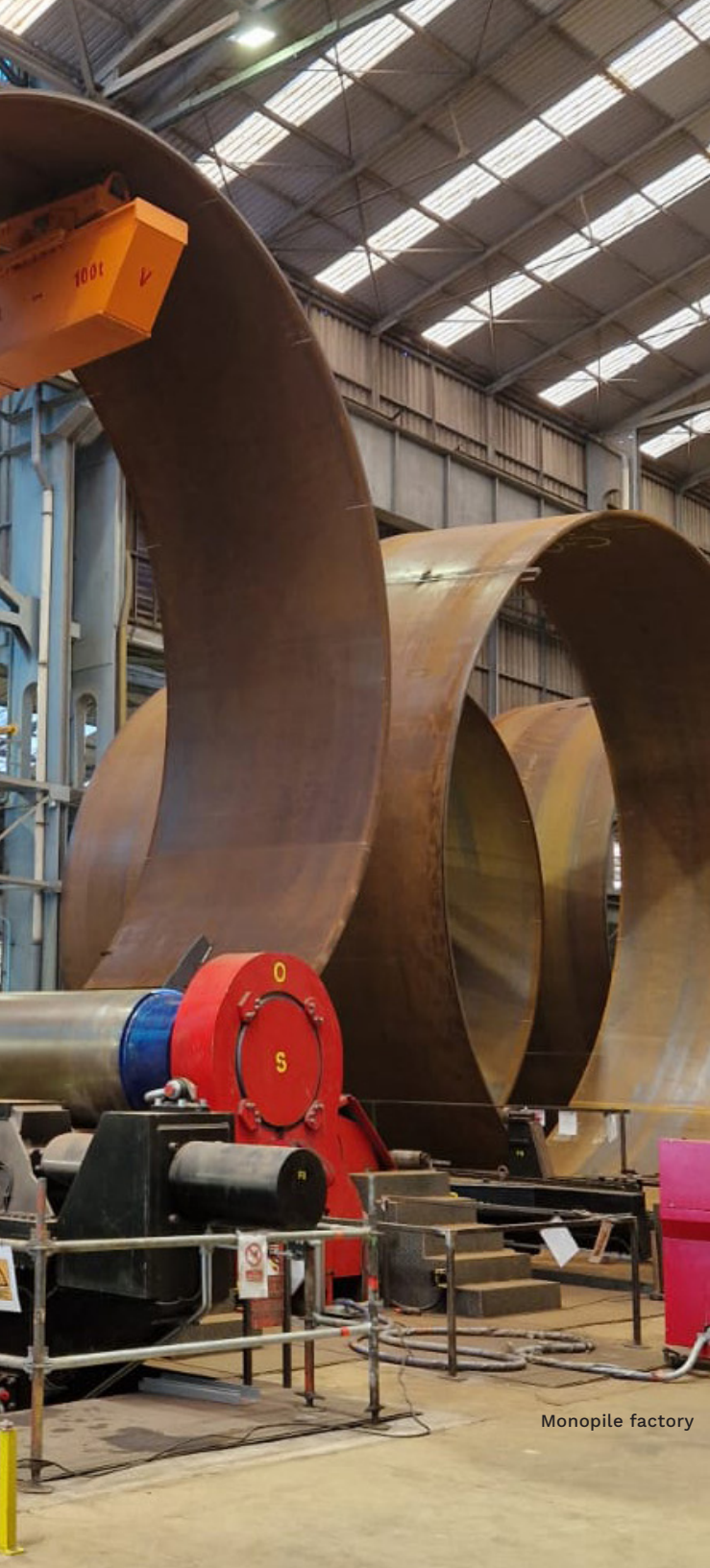
Increasing capacities

As already mentioned, one of the advantages of Navantia Seanergies is its facilities, which are characterised by high technological capacity and almost 2.5 million m² of industrial space with access to the sea in Spain. In recent years, and in view of the enormous growth expected in the offshore wind market, Navantia has made various investments to optimise its facilities and to accommodate larger projects, a greater number of units and increased productivity through robotics and automation.

More than **140 million** euros have been allocated to the main investments:

- The creation, in partnership with Windar, of an **XXL monopile factory** in Fene, with two simultaneous high-efficiency production lines, and the construction of a new painting cabin capable of blasting and painting large monopiles, which will allow us to manufacture and paint up to 60 monopiles per year, giving us access to a booming market with very promising expectations.
- The provision of **52,000 m² of working space** under the gantry in Fene, which will allow us to carry out several projects simultaneously, multiplying the assembly areas for large structures under the cover of a large 800 tonne gantry crane.





Monopile factory

- The installation of a production line at the Puerto Real shipyard, which will be able to manufacture panels measuring 20 x 22 metres and weighing up to 150 tonnes, using single-sided welding based on hybrid laser technology up to a thickness of 30 mm, combined with robotic assembly and welding of profiles. This installation is ideal for **large panels such as those required for floating wind turbine structures**, allowing production to be automated and significantly increasing the delivery rate and quality of these flat panel units.
- One of the main bottlenecks in production is the availability of spray booths suitable for the type and size of products. Since 2019, the Puerto Real shipyard has had two paint spray booths, 50 metres long, 40 metres wide and 20 metres high, each weighing 400 tonnes. The cabins are lifted by gantry cranes and placed over the structures to be painted in one of the three planned locations. This gives a very relevant versatility and capacity, **allowing large structures to be painted in a very efficient way.**
- A Green Energy Centre of Excellence has been created in the two offshore wind work centres, Fene and Puerto Real, a hyper-connected centre that will be an international reference for innovation and research in offshore wind energy.



Investment in innovation

ECOFOSS, the first major wind project of the Green Energy Center of Excellence.

- ECOFOSS is a project **funded by the “PERTE”** (Strategic Projects for Economic Recovery and Transformation) Naval.
- **Collaborative** innovation project..
- A **zero-emission** floating substation.



Our **Green Energies Centre of Excellence (CoEx Green Energies)**, created to be the innovation engine of Navantia Seanergies for the development of open and collaborative innovation, presented its first project, ECOFOSS, at WindEurope 2024, in collaboration with five other technological companies.

The aim of ECOFOSS is to develop a floating HVAC offshore wind substation with **zero greenhouse gas emissions** thanks to a green hydrogen plant designed for use at sea that will supply power to auxiliary equipment during maintenance and emergency situations.

ECOFOSS is the major offshore wind project sponsored by “PERTE” Naval and led by Navantia Seanergies, which has experience in the design and construction of foundations and offshore substations, as well as in the production of hydrogen for the propulsion of S-80 class submarines.

ECOFOSS: design of a zero-emission floating substation



This is a highly **innovative** concept in line with the strategy of floating offshore wind farms, which are set to increase in number due to their advantages over fixed wind farms: stronger winds and no visual impact on coastal communities. It is also equipped with a hydrogen plant, making it completely green.

ECOFLOSS is a **collaborative** project driven by a consortium of six companies, with each partner bringing its specific experience and expertise to the project. Redeia is responsible for Spain's electricity transmission network, which takes electricity from where it is generated to our homes and businesses. Sener, on the other hand, is a leading engineering and technology company, with energy as one of its areas of expertise. Ocean Ecostructures has created a system where marine life and biodiversity grow, so that the surface of the underwater substation simulates the natural environment. Ditrel specialises in grid connection systems for energy harvesting technologies, and Uptech Sensing is known for its fibre optic monitoring solutions for energy transmission cable systems.

It is one of the projects in the **INNCODIS Development of an INNovative industrial ecosystem for a Competitive, Diversified and Sustainable Naval Sector guarantee sector**, promoted by Navantia and Pymar and involving a group of more than 50 companies.

It is an action funded by the **“PERTE” NAVAL** call, launched by the Ministry of Industry and Tourism and part of the Recovery, Transformation and Resilience Plan (PRTR). Funded by the European Union - Next Generation.



The exciting future

We have the experience, the value chain, the talent, the innovation and the energy to face an exciting future, with the development of the National Offshore Wind Plan as **our first major goal**.

The PNIEC has set a target of **3GW of offshore wind power by 2030**

Achieving this goal means continuing to work:

- with technologists **to optimise** their designs from a constructive point of view,
- with **developers** to offer an economically viable industrial proposition while maximising the non-price criteria of future auctions.
- and in **gaining capacity** for floating wind energy inside and outside our facilities, including ports, among others
- to further **boost** the supply chain in an efficient manner.



Innovation in processes, products and services

Innovation is one of the keys to the future. For this reason, Navantia Seamounts will continue to invest in process innovation, **maximising the use of robotics and introducing artificial intelligence**, which will allow us to improve production technology and achieve mass production, allowing us to scale up and reduce the price of structures, which is essential in the case of floating structures. Work will also continue on product innovation to broaden the portfolio and offer new solutions, such as zero-emission floating substations and hybridisation between technologies.

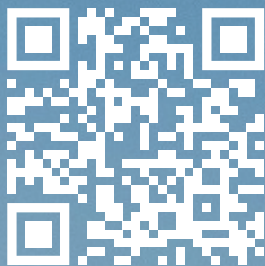
Implementing smart maintenance projects. In the coming years, we intend to implement our first offshore wind farm maintenance projects using technologies from our synergies with the marine world, such as digital twins, unmanned vehicles, virtual reality and training. This type of maintenance will extend the life of the farms and make them more sustainable, and we have our own innovation engine: the **Centre of Excellence for Green Energies (COEX Green Energies)**.



New opportunities in other geographies

As a global player, we will continue to **explore opportunities in countries further and further afield**. Having already completed a first offshore wind project in the United States, we are now exploring countries such as Korea and Australia.

In doing so, we rely on our value chain and a solid track record with our international partners.



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